# SR 14 CORRIDOR MANAGEMENT PLAN
# COLUMBIA RIVER GORGE
# NATIONAL SCENIC AREA

**JULY 1997**

*Outstanding Professionals . . .*
*Outstanding Quality*

DAVID EVANS AND ASSOCIATES, INC.

# SR 14 CORRIDOR MANAGEMENT PLAN
# COLUMBIA RIVER GORGE
# NATIONAL SCENIC AREA

*Prepared for*

**Washington State Department of Transportation**
**Southwest Region**

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**July 1997**

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# INTRODUCTION

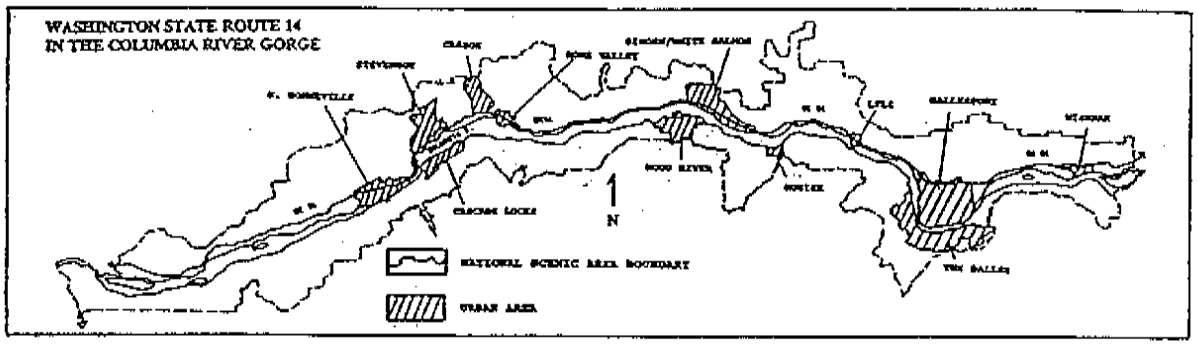
The *State Route (SR) 14 Corridor Management Plan* completes a four year multi-agency effort to define and guide highway improvement projects through the Columbia River Gorge National Scenic Area (CRGNSA). The *SR 14 Corridor Management Plan (CMP)* consists of three independent reports, plus appendices, all bound in this document. Together they represent the SR 14 Corridor Management Plan.

A Memorandum of Understanding to guide the development of the *SR 14 Corridor Strategy and Action Plan* and the management of the highway was signed on August 3, 1993 by the Steering Committee. This committee met monthly throughout the development of the SR 14 CMP. The Steering Committee includes: Washington State Department of Transportation, Southwest Region, Southwest Washington Regional Transportation Council, Skamania County Transportation Policy Organization, Klickitat County Transportation Policy Committee, Columbia River Gorge Commission, and USDA Forest Service.

*SR 14 Supplemental Highway Design Guidelines* integrate findings of the Historic Survey, the CRGNSA Management Plan, and strategies of the SR 14 Corridor Strategy and Action Plan. These design guidelines are to be used for development of the recommended projects.

The *SR 14 Route Development Plan (RDP)* is a WSDOT document used to describe highway conditions and deficiencies and define projects to correct deficiencies. The SR 14 RDP follows WSDOT requirements and is tailored to the uniqueness of SR 14 through the CRGNSA.

Four appendices to the CMP provide additional information. Appendix A includes the WSDOT Route Development Plan sheets, which contain detailed highway data used in the definition of deficiencies. Appendix B is the public involvement plan and a copy of the first newsletter. Appendix C is a truck movement report prepared during this study specifically to address concerns of the public about the origin and destination of truck traffic, truck diversions from Oregon's I-84, and through truck traffic. Finally, Appendix D is an *Historic Features Survey* prepared to identify historic highway features of local significant that characterize SR 14 through the scenic area.




# About SR-14

A portion of Washington State Route 14 (SR-14) serves the Washington side of the Columbia River Gorge National Scenic Area, connecting communities and recreational areas on the north side of the river with the Portland/Vancouver area to the west and south central/southeastern Washington at its east end. The area of study begins east of Washougal at mile post 18 and extends east to approximately SR-97 at mile post 101. The corridor begins in east Clark County, traverses Skamania, and part of Klickitat Counties, passing through the urban areas of North Bonneville, Stevenson, Home Valley, White Salmon, Bingen, Lyle, Dallesport, Wishram, and the rural center of Skamania as defined in the Management Plan for the Columbia River Gorge National Scenic Area.

SR-14 in the Columbia River Gorge is designated as a rural principal arterial and bicycle touring route within the Washington State Systems Plan.

SR-14 was constructed on its present alignment in the 1930's and the only major improvements to the highway, within the above limits, occurred with the realignment from Bingen to Lyle in the 1960's and during the early 1970's when the construction of the Bonneville Dam required relocation of a portion of the route. The Bonneville segment was relocated to higher ground and reconstructed to federal design standards.

The SR-14 Corridor traverses five different areas in terms of topography. The land use along SR-14 is primarily rural in nature, except for several urban centers. Most of the SR-14 corridor is abutted by rock escarpments on the north side, and embankments to the Columbia River or railroad tracks on the south side. Between Washougal and North Bonneville the route is elevated above the Columbia River, passing through rolling and mountainous terrain. From North Bonneville to Stevenson, SR-14 descends to the same elevation as the Columbia River. Between Stevenson and Home Valley the route is again elevated above the river, traversing primarily through forest land. From Home Valley to Murdock, the route again descends along the river. Between Murdock and SR-97, the route ascends onto a plateau over the river, traversing primarily grasslands.

# SR-14 Corridor Strategy And Action Plan

## for

## SR-14 in the Columbia River Gorge National Scenic Area

*Prepared by:*

**Southwest Region of the**
**Washington State Department of Transportation**

*In conjunction with:*

**Columbia River Gorge Commission**
**Klickitat County Transportation Policy Committee**
**Skamania County Transportation Policy Committee**
**Southwest Washington Regional Transportation Council**
**USDA Forest Service - Columbia River Gorge National Scenic Area Office**

**September 20,1996**

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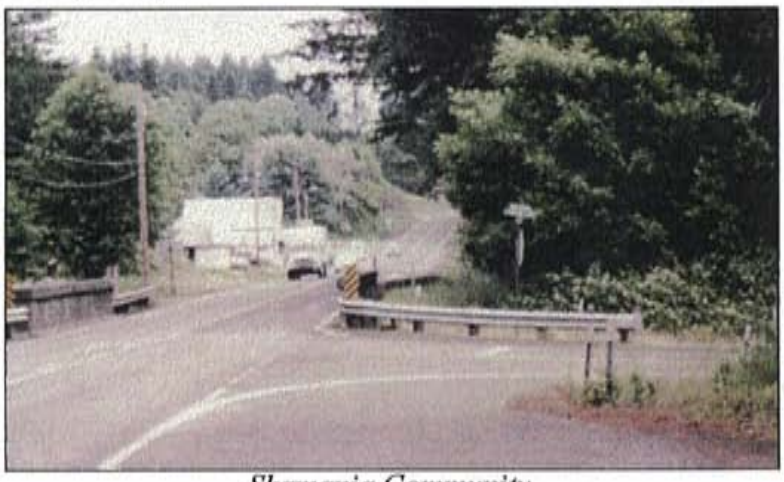
long-term direction for corridor improvements that address important safety and socio-economic needs while protecting the highway's rural character.



*Skamania Community*

The following qualities reflect the SR-14 "Rural Character:"

SR-14 is a two lane highway that follows the surrounding terrain, and adheres to the design standards of 12 foot travel lanes with 4 foot shoulders where feasible. The speed limits range from 50-55 mph, with lower recommended speeds given geographic constraints or roadside development. There is a close relationship between roadside vegetation and the adjacent landscape features on either side of the road. The highway is visually nested into the landscape, vistas and viewsheds creating a connection between the viewer and the landscape. Structures along the rural highway often use native or compatible construction materials and consider the relationship with the surrounding settings. The lack of large billboards, bright signs, or a proliferation of signs strung out along the highway is another important feature of rural character.

For the purpose of this report, this document will reference the posted speed and not design speed. The posted speed is the legal speed limit as indicated on signs throughout the corridor.

various participating agencies. These results are the foundation of the SR-14 Strategy.

## NEXT STEPS

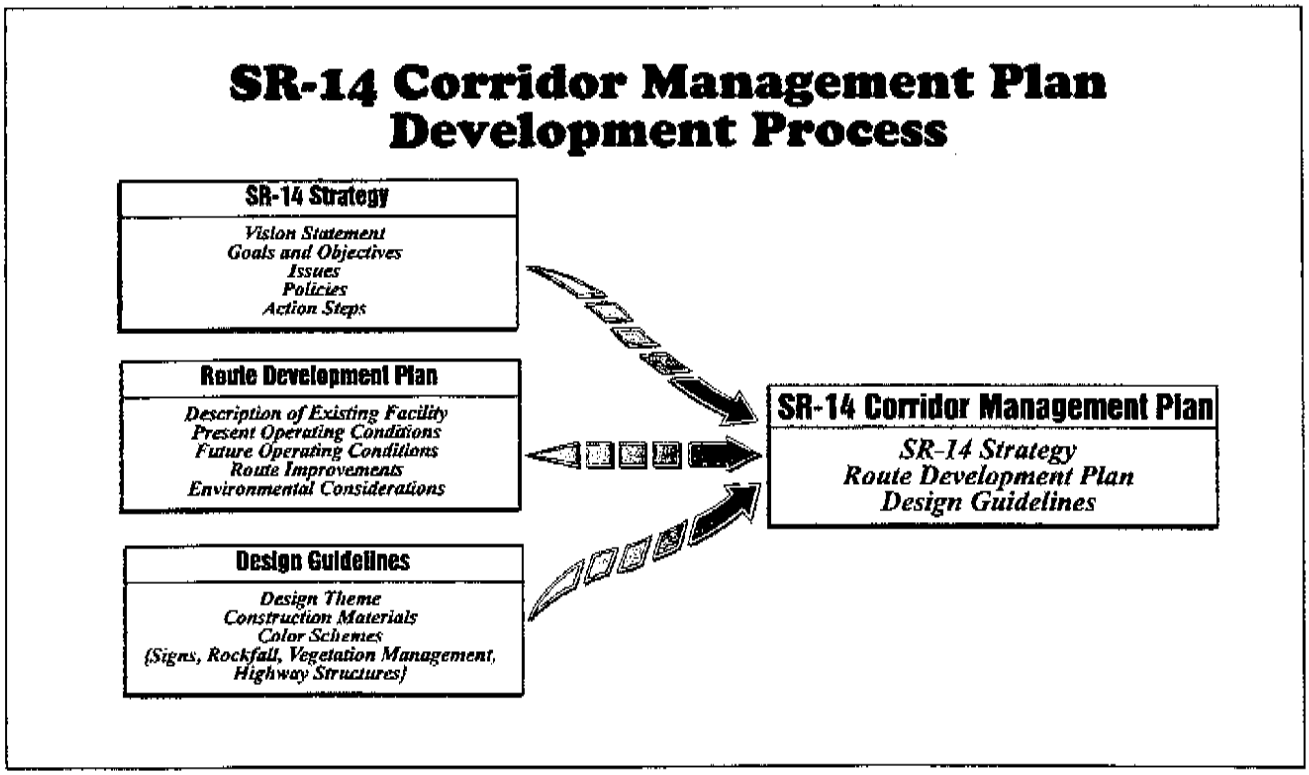
The next step includes the development of a Route Development Plan and Design Guidelines. The final step will incorporate the Strategy, Design Guidelines, and the Route Development Plan into a single comprehensive document, *"The SR-14 Corridor Management Plan in the Columbia River Gorge."*

- The Route Development Plan will identify the improvements needed in order to meet the vision, goals and objectives for SR-14. It will describe the existing highway, present and future operating conditions, and identify transportation improvement needs.
- Design Guidelines will be developed for many of the highway structures and features. Examples are Design Guidelines for new or rehabilitated bridges, roadside vegetation, and highway alignments within the context of the surrounding landscape.

## DEFINING RURAL CHARACTER

Preservation of the corridor's rural character is a central theme of the SR-14 Strategy. The definition of rural character is essential to the understanding of the SR-14 Strategy and its Vision, Goals and Objectives.

Many important elements of the highway corridor's rural character could be unintentionally eliminated or altered over time by various highway improvement projects. While individual projects may achieve necessary highway design objectives, and individually their impacts may be minimal, the cumulative effects of multiple projects may substantially transform the road's character. A principle challenge for the SR-14 Strategy is setting a



*View from Cape Horn*

# VISION

*State Route 14 is a central feature for residents and visitors to experience and travel the Gorge in Washington. The State Route 14 experience should be one of a rural 2-lane highway linking communities and key recreational sites and blending with one of the nation's most spectacular landscapes. State Route 14 in envisioned as:*

- *A vital intrastate and local artery linking Gorge communities and meeting* regional *transportation needs.*
- *A model of highway design that provides for public safety first; and respects, compliments, and lays light on the scenery, environment, topography and historic character of the area.*
- *Highlighting, protecting, and restoring the scenic, natural and cultural riches, communities and recreation sites along its corridor, and standing as a beautiful attraction in itself.*
- *Unique in its identity among Gorge highways, where the rural character of the landscapes and small towns can be experienced.*
- *A road where a moderate pace of travel may be enjoyed, where the journey itself is as important as reaching the destination.*

*SR-14 east of Washougal (MP 19.7)*

# GOALS AND OBJECTIVES

The following goals and objectives were developed from the vision statement.

**GOAL #1: Improve safety along SR-14 with respect for the protection and enhancement of resources.**

**OBJECTIVES:**

1.1 Mitigate rockfall hazards in a manner that protects scenic resources and minimizes landscape alteration.

1.2 Reconstruct or replace hazardous highway structures utilizing designs that reflect historic architectural styles.

1.3 Improve bicycle, pedestrian and motorist safety by providing pathways where feasible or other improvements to reduce multimodal conflicts.

1.4 Resolve parking congestion at crowded recreation sites and improve pedestrian safety between parking areas and recreation areas.

1.5 Provide additional slow vehicle turnouts, passing lanes, and improve motorist information to reduce conflicts between speeds of motorists.

1.6 Correct highway geometrics where existing slopes, curves, and intersections create hazardous conditions.

1.7 Encourage through-truck traffic to use alternate transportation corridors, such as Interstate 84.

1.8 Provide safe railroad crossings for pedestrians, bicyclists, and motorists, while discouraging trespass and unauthorized crossings.

**GOAL #2: Enhance the economy of communities along the highway.**

**OBJECTIVES:**

2.1 Improve motorist access to and expand parking capacity in downtown business districts.

2.2 Provide improved visitor services/tourist information signage while protecting corridor visual quality.

2.3 Provide additional resource-based recreation opportunities and tourist attractions and improve access to existing attractions.

2.4 Encourage and foster intermodal transportation linkages within the highway corridor.

2.5 Encourage improvement of Columbia River bridges that pose safety hazards and impede interstate commerce and tourism.

**GOAL #3: Design Highway 14 as a national attraction by protecting and enhancing scenic, natural, cultural and recreation resources within the highway corridor, with respect to local residences, and business.**

**OBJECTIVES:**

3.1 Provide highway improvements that meet local and regional transportation and economic needs without adversely affecting local residences and businesses or scenic, natural, cultural, and recreation resources within the corridor.

3.2 Manage vegetation in the highway right-of-way for maintenance purposes, elimination of noxious weeds, and creation or restoration of views and vistas in a manner that does not adversely affect scenic or botanical values.

3.3 Provide additional recreation opportunities within the highway corridor in a carefully planned manner that respects private property, and protects public safety as well as natural, cultural, and scenic resources.

3.4 Establish safe and continuous bicycle/pedestrian pathways or lanes along the highway corridor.

3.5 Improve public accessibility to recreation opportunities, with respect for private property and to reduce trespass.

3.6 Identify, protect, and restore highway features of historic interest and significance.

3.7 Coordinate proposed highway improvements with tribal governments to ensure that tribal treaty rights are protected.

3.8 Pursue actions that protect the corridor's rural character and strengthen the highway's identity as an attraction in itself.

**GOAL #4: Manage the SR 14 Corridor in the most efficient and effective manner possible.**

**OBJECTIVES:**

4.1 Establish a coordinated, cooperative implementation program between local, state, federal, tribal, railroad, and private entities to meet the goals and objectives of the SR 14 Corridor Strategy.

4.2 Ensure ongoing public involvement in planning and seek consensus on programmatic and project priorities.

4.3 Seek creative and innovative funding approaches that emphasize interagency partnerships and "leverage" public funds as much as possible, making the most efficient use of limited public moneys.

4.4 Consider financial costs, including financial constraints, of alternatives in developing program and project priorities.

*SR-14 Klickitat River Bridge*

# ISSUES

## OVERVIEW

The key agencies and community members identified the issues of concern within the corridor as the first step in the SR-14 management planning process. Input on these issues was obtained through several public meetings and a corridor newsletter. Additional background information on the issues was further developed by the interagency technical working group. These issues became the basis for the SR-14 Charrette discussions. The SR-14 Strategy and Action Plan use these same issues to organize the policies that set the framework for future decision-making in the SR-14 corridor. (Issues and key questions are not intended to be a policy statement).

## KEY ISSUE AREAS

Ten key issue areas focus the strategy for SR-14. All of these issues are interrelated in some way, particularly in regard to the highway's rural character (See Defining Rural Character - Page 3). Preservation of the corridor's rural character is a central theme of the SR-14 Strategy.

In addition to Rural Character as the common theme, 10 key issue areas are discussed below.

### Rockfall Mitigation

Issues

Rockfall is a hazard in the SR-14 corridor and must be mitigated to ensure greater public safety throughout the corridor. However, rockfall mitigation structures that dominate the surrounding landscape, and the cumulative impact of these structures, can impair scenic resources. There are many techniques for rockfall mitigation, with varying degrees of impact on the landscape. Applying rockfall mitigation techniques that blend with the surrounding landscape may entail additional costs in some instances, but can also prove less expensive.

Key Questions

How can new rockfall mitigation be designed and implemented to be visually subordinate to the surrounding landscape? How can existing rockfall mitigation structures be enhanced to become visually subordinate to the surrounding landscape? Is there a need for modifying the project design process to allow for early review, ensuring that a proposed project will be consistent with the Management Plan?

*Sweeney Curves*

**Highway Geometrics**

Issues

Some existing vertical and horizontal alignments on SR-14 create curves that restrict visibility and pose safety hazards. Some road intersections have sight distance restrictions causing safety problems. Conflicting rates of speed between cars, trucks, bicycles and recreational vehicles can cause hazards and generate driver frustration. Passing lanes and pullouts can address this problem in places. Realignment of curving highway segments and adding lanes may increase speed, and may also conflict with the Strategy's goal of retaining the 2-lane rural character of the highway. There is a need to reconcile geometrics proposals addressing level of service (related to projected increases in traffic), access, provision of consistent speeds throughout the corridor, and safety, with preservation of the corridor's rural character.

Key Questions

How can necessary highway geometrics changes be made consistent with the corridor's rural character and with minimal resource impacts? What guidelines could address passing lanes and other widening projects to protect the 2-lane nature of the highway in the long run? What guidelines could address realignments to correct safety problems while preserving route features that contribute to the highway's rural character? What is a satisfactory level of service and what role should level of service play in future planning? Are there alternative traffic management strategies to improve highway level of service without geometric changes? What is the appropriate speed of the highway? Should it be consistent throughout the corridor? Are more passing lanes needed? If so, where and how many? Do non-structural alternatives for improving highway safety exist? Is there a need to review and update traffic projections and the resulting level of service projections?

**Highway Structures & Historic Features**

Issues

Narrow and aging highway structures may be functionally obsolete or structurally deficient. As a result, many highway structures will have to be repaired, rehabilitated or replaced. At the same time, historic highway structures may contribute to the rural character of the highway. The Management Plan for the Columbia River Gorge National Scenic Area, and State and Federal law protect structures on, or eligible for the National Register of Historic Places. Structures that are not on or eligible for the National Register are not protected, but might be worthy of preservation. New, lowest-cost standard structures may clash with the surrounding landscape, degrading

scenic resources. Designing replacement structures that blend with their surrounding landscape may entail additional costs. There is a perceived need for a more thorough survey of SR-14 historic structures.

Key Questions

For structures that are not on National Register, what guidelines (treatment of existing structures and design of new structures) would protect the cultural and scenic resources of the corridor? Can some of the highway's historic structures be rehabilitated rather than replaced? Can additional funds be obtained for new or rehabilitated structures?

*Swell City: Wind Surfing Site*

**Recreation**

Issues

Parking congestion and pedestrian traffic at recreation sites with limited parking areas cause highway hazards, for both recreationists and motorists. Better access from the highway to several existing recreation sites may enhance economic development and recreation opportunities. Where current recreation use is heavy, there are corresponding concerns for the potential impacts to cultural, natural and scenic resources, private property and highway/railroad safety. Outside of the highway right of way the railroad poses a hazard for people trying to access the river. The railroad poses a barrier to expanding river-related tourism development.

Key Questions

What highway improvements and/or other measures can reduce safety hazards at existing recreation sites? What joint measures can improve access to existing tourist attractions and recreation sites along SR-14? What joint measures can be taken to eliminate safety problems associated with unauthorized railroad crossings at river access sites? Can measures be taken to resolve safety problems associated with informal roadside parking areas along the highway? At new river access sites, what joint strategies should be pursued to provide for safe railroad crossings? How can highway corridor plans facilitate enhancement of tourism/recreation attractions? What partnering/leveraging approaches can help implement these improvements?

**Vegetation Management**

Issues

Vegetation management can create and maintain scenic vistas that enhance the traveler's experience of the SR-14 corridor. Vegetation management can also cause adverse impacts to the natural and scenic resources of the corridor. Some of these adverse impacts can be easily avoided with better coordination between agencies responsible for vegetation management, and those responsible for the protection and enhancement of the corridor's resources. Opportunities exist for vegetation management that will protect natural (sensitive species, native vegetation) and scenic resources (vistas, rural character). Institutional obstacles and lack of funding may prevent implementation of many enhancements.

Key Questions

Are there existing or potential conflicts between current vegetation management practices and the SR-14 Strategy's goals and objectives? If so, how can these conflicts be resolved? How can vegetation management be used to enhance the rural character of the highway?

**Through-Trucks**

Issues

Trucks that travel both much faster and much slower than the normal flow of traffic cause frustration and may increase hazards for drivers. There is a perception that through-truck traffic in the SR-14 corridor is increasing. A complex regulatory structure in both Washington and Oregon influences the routes chosen by through-truck operators. Although there is little data on the percentage of through-trucks versus local trucks on SR-14, it has been speculated that the operating hours of weigh stations on SR-14 and I-84 play a role in the routes chosen by through-trucks in the Gorge. There is a need for a thorough truck survey of through trucks along SR-14.

Key Questions

To what degree can through-truck routes be influenced? What information would be necessary to assess the significance of the problem, the options available, and suggest solutions?

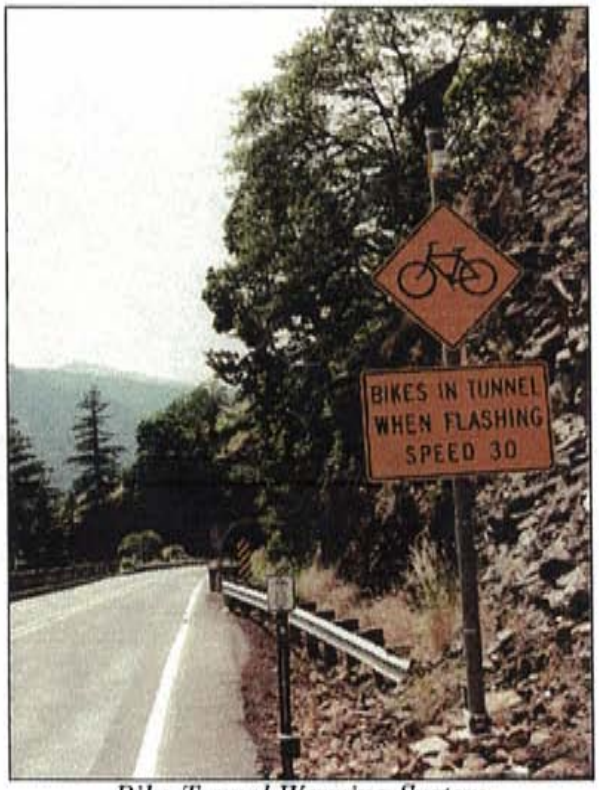
**Bike/Pedestrian Access**

Issues

Adequate shoulder width is necessary for safe bicycle travel on highways. Through some segments of the SR-14 corridor, the shoulder width is inadequate. The width of the highway is restricted by topographic constraints in many segments. In these areas there is a potential for safety conflicts between motorists and bicyclists as bicyclists are forced into the travel lanes. WSDOT through a public planning process has identified SR-14 as a rural bicycle touring route, although it is not being promoted as such. Future shoulder widening projects must protect and/or enhance the corridor's natural, cultural and scenic resources. Where the shoulder width is inadequate a separated pathway should be considered.

Key Questions

What areas of SR-14 have inadequate shoulder widths for bicycle use? What is the potential for safety conflicts where shoulder widths are inadequate? What can be done to improve the corridor for bicycle use? In areas of the highway where shoulders cannot be widened for bicyclists, how can safety issues be addressed?

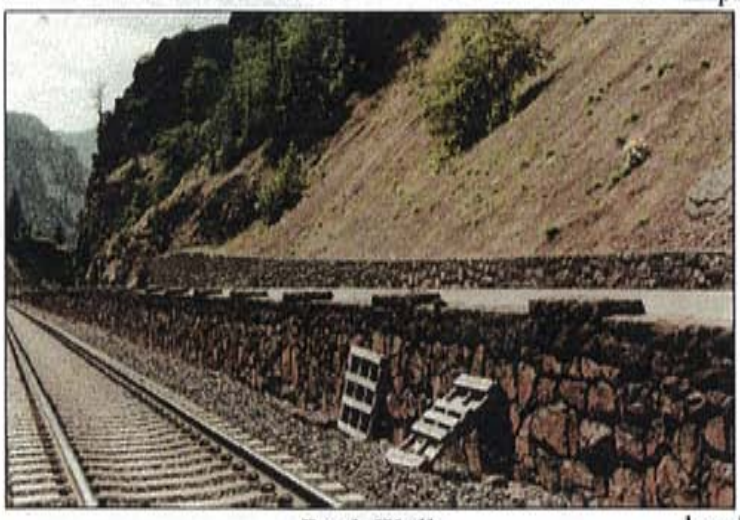



*Bike Tunnel Warning System*

**Signing/Tourist & Recreation Information**

Issues

Signs for tourist services, local businesses, recreation sites and interpretation of natural/historical features are in place throughout the corridor. Improved signage is needed for the enhancement of tourism-based economic development. At the same time, there are areas of sign "clutter" where signs could be eliminated, combined or reorganized to be more effective. Multiple jurisdictions and facility managers make the coordination of signage difficult and a lack of Columbia River Gorge National Scenic Area identity is the result. A new graphic sign program sponsored by the Forest Service will enhance many signs in the Gorge, yet more enhancement work remains to be done. In addition, several information centers in the corridor need to be enhanced. Signing must be clear, understandable and conform to the Manual of Uniform Traffic Control Devices (MUTCD).



*Rock Wall*

Key Questions

How can adequate signing be provided while protecting scenic resources? How can traveler information centers be developed or enhanced? How can "clutter" problems be corrected and prevented? Can the Graphic Signing Program be more fully implemented?

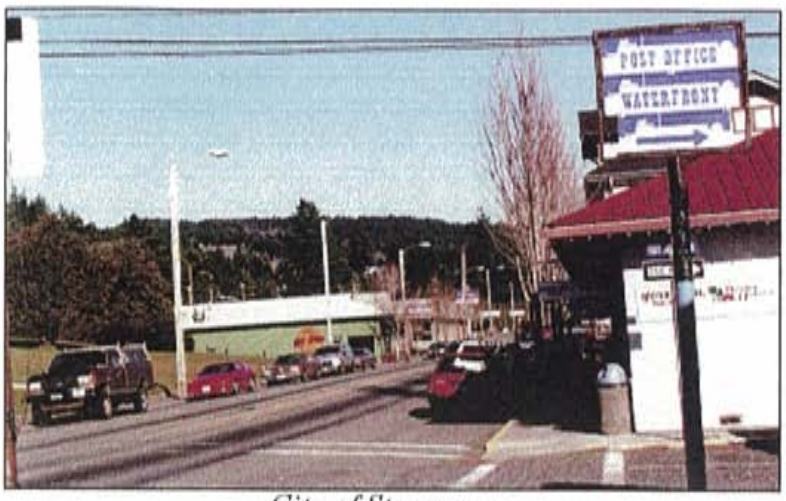
**Intermodal/Multimodal Transportation**

Issues

Existing intermodal and multimodal transportation opportunities are limited in the Gorge; usage of these existing opportunities is minimal. There is a need for increased intermodal and multimodal transportation opportunities and usage, to enhance tourism-related economic development, improve mobility for local residents, and address congestion and resource impacts at some recreation sites.

Key Questions

What specific types of intermodal linkages or multimodal opportunities are priorities for enhancing the local economy, recreation opportunities and serving local community needs? How can public agencies facilitate implementation of these opportunities? How can highway improvement projects encourage or enhance intermodal/multimodal transportation opportunities? How can facilities needed to foster intermodal and multimodal transportation be incorporated into new recreation developments along the highway? Can existing recreation facilities be improved to incorporate intermodal or multimodal transportation? What measures should be taken to ensure adequate availability of information to local residents and travelers about alternate modes of transportation and intermodal connections? How can funding be obtained to implement intermodal facilities, park and ride lots, etc?




*City of Stevenson*

**Downtown Improvements**

Issues

SR-14 is the major through-route for several of the corridor's Urban Areas and rural centers, and functions as the main street of Stevenson, Home Valley, Bingen, Lyle, and Skamania. The highway plays an important role in the local economies of these communities. Downtowns can be enhanced with improvements to on-street parking, access and, other amenities.

Key Questions

What highway improvements should be pursued to improve downtown business districts along SR-14? What types of partnerships/leveraged funding approaches could be pursued to maximize the benefits of highway projects? What types of improvements should be the highest priorities to provide the greatest economic benefit to communities along the SR-14 corridor?

# POLICIES AND ACTION STEPS

## INTRODUCTION

The Charrette process was intended to be a consensus-based decision making process to develop policies and action steps for the SR-14 corridor. This section of the Strategy presents some of these recommendations. Individual projects will be addressed in the Route Development Plan.

## RECOMMENDED POLICIES

The policy recommendations resulting from the Charrette provide a framework for decision-making for future projects and programs within the SR-14 corridor. These policies give general direction for each issue area. They provide a conceptual foundation on which the Route Development Plan and Design Guidelines will be developed.

### Corridor-Wide Action Step

A collaborative pursuit of funding for projects that implement the policies of this document was recommended by the participants of the Charrette. Through the cooperative pursuit of funding many of the recommended policies and action steps for the SR-14 corridor will be achieved.

### Corridor-Wide Plan Process

For several issue areas, a Corridor-Wide Plan Process was recommended by the participants of the Charrette. This process will be used to address rockfall mitigation, highway geometrics, highway structures and historic features, and bike and pedestrian access through the length of the corridor. Through this process, conceptual projects would be developed to be consistent with the SR-14 Strategy. The key steps in the Corridor-Wide Plan Process are as follows:

**Corridor-Wide Plan Process**

***For rockfall mitigation, highway geometrics, highway structures and historic features, and bike and pedestrian access***

1. *WSDOT develops conceptual options for corridor-wide highway improvements.*
2. *Interagency team (MOU signatories) assesses impact of proposed highway improvements.*
3. *Interagency team achieves consensus on potential highway improvements.*
4. *WSDOT develops Route Development Plan.*
   a. *Public involvement*
   b. *Environmental review*
   c. *Incorporate recommendations in Regional Transportation and State System Plans.*
5. *Develop and publish Route Development Plan.*

**Individual Project Development Process**

As projects identified in the Route Development Plan receive funding, they will follow this individual project development process. The individual project development process will develop and refine design details of projects, as necessary for their completion. The key steps in the individual project development process are as follows:

***Individual Project Development Process***

1. *Project identified in Route Development Plan/System Plan/RTP is selected for funding.*
2. *WSDOT develops and reviews preliminary range of alternatives.*
   *a. Engineering analysis is performed to level which provides a "high degree of certainty" for feasibility of project.*
   *b. WSDOT consults with relevant NSA agencies in pre-application conference. Preliminary guidance on alternatives is provided.*
3. *WSDOT conducts basic level design, culminating in selection of preferred alternative.*
   *a. Public involvement.*
   *b. Preliminary design. Sufficient for NSA application and review of alternative(s).*
   *c. RTPO review.*
   *d. Submit NSA application.*
   *e. NSA review completed and decision issued on design alternative.*
4. *Complete detailed design, specifications, estimates.*
5. *Construct project.*
6. *Finished project is critiqued by MOU signatories.*

**Rockfall Mitigation**

Rockfall is a significant hazard in some areas of the SR-14 Corridor. Mitigation of rockfall hazards must ensure the safety of the traveling public, and at the same time comply with the resource protection guidelines of the Management Plan for the Columbia River Gorge National Scenic Area.

Key agencies recognize that selecting a specific method for treating rockfall and mitigating scenic impacts can only be done on a case-by-case analysis. An analysis of the corridor's rockfall hazards and appropriate treatment has been recommended as a high priority Action Step. Form, line, scale, texture and color are primary considerations in formulating an appropriate technique for rockfall treatment. Cost to the public is another consideration.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| High | **Corridor Rockfall Plan**: Address the corridor's unstable slopes and propose techniques for mitigation. | WSDOT |
| High | **Rockfall Design Guidelines**: Develop menu of options for lessening impacts of rockfall mitigation techniques. | WSDOT |
| High | **Columbia River Gorge Management Plan Exception Language**: Develop exception language in CRG Management Plan for addressing public safety. | Gorge Commission<br>Local Jurisdictions |

| | | |
|---|---|---|
| Low | **Demonstration Rockfall Project**: Implement a project that demonstrates mitigation of impacts to scenic, cultural, natural, and recreational resources. | WSDOT |

**Highway Geometrics**

The topic of highway geometrics focuses on major structural changes within the highway corridor, largely to improve safety. These structural changes include shoulder widening, intersection improvements, addition of passing lanes, and realignment of substandard curves. The following policies have been developed to retain rural character, and address travel speed and curves, passing opportunities, and intersections.

Rural Character:

- Maximize or preserve vegetation closeness to highway right of way where appropriate. The road landscape should be narrow within safety standards.
- Route alignment should follow the natural terrain, within reasonable design parameters.
- Retain cultural (fences, buildings) and natural features in close proximity to the highway, where clear zone criteria allow.
- The design and construction of highway structures should use, emulate, or blend with the surrounding landscape.
- Maintain and enhance visual access to adjacent, characteristic landscape. Design highway for moderate travel speed of 50-55 mph with some exceptions.

Travel Speed and Curves:

- Documented safety or structural deficiencies will direct geometric changes.
- Increasing travel speed in slower highway segments to create a corridor-wide consistent travel speed will not be the sole reason for geometric realignment.
- Travel speed may vary so that the alignment location blends with the landscape.
- Non-structural alternatives (landscaping, traffic calming measures, etc.), will be evaluated where applicable, to reduce excessive speed for safety reasons.
- Winter conditions must be considered with any non-structural alternative.
- Consider transition zones in and around unsafe curve areas (gentle curves, signing, vegetation, etc.).
- A poor level of service impacts safety and rural character and therefore will be a factor in determining needed geometric changes.

Passing Opportunities:

- Passing lanes will only be considered where there is a documented deficiency in level of service.
- Passing lanes are preferred to pullouts in areas where the passing lanes would not impact the highway segment's rural character.
- Properly designed and placed pullouts will be considered as one of several design options where passing opportunities are needed.

Intersections:

- Recognize the increased traffic volumes generated by growth, in designing safe and efficient intersections.

- When redesigning intersections for safety purposes, evaluate alternatives to minimize alteration of the landscape and rural character, while meeting minimum safety requirements.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| High | **Route Development Plan**: Develop a plan that describes highway conditions, future operating conditions, and identifies transportation improvement needs. | WSDOT |

**Highway Structures & Historic Features**

The historic and scenic character of SR-14 is supported by its diversity of structures, the artistry and detail of their designs, and the eras they represent. The corridor's structures are interesting and sometimes charming elements by themselves. The cumulative contribution of these many structures enriches the historic character and scenic quality of the whole corridor. The following policies have been developed to address highway structures:

- Recognize visual design elements of extant 1930s - 1950s structures on SR-14 and apply current safety standards.
- Manage SR-14 within the NSA as a comprehensive unit.
- New or replacement structures consider designs that are compatible with existing historical structures and landscape setting.
- Structures that are on or eligible for the National Register should be rehabilitated with compatible design, that is consistent with current safety standards.
- Historical structures should be rehabilitated where feasible instead of being replaced.
- Relate design of structures to where they are seen from (viewshed).
- Tunnels are an important feature of the character of the SR-14 landscape and are worthy of preservation. Tunnel safety issues need to be addressed.
- Where possible, guardrails should follow a consistent design throughout the Gorge. The design should be selected with the landscape setting in mind. Replacement of existing substandard guardrail will follow the agreed to design guidelines.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| High | **Design guidelines**: Develop design guidelines to provide direction for highway improvements and maintenance. | WSDOT |
| High | **WSDOT Scenic Area Coordinator**: Establish a coordinator to coordinate National Scenic Area issues. | WSDOT |
| High | **Bi-State National Scenic Byways**: Seek designation of SR-14, I-84, and Scenic Highway as National Scenic Byway. | WSDOT and ODOT |
| High | **Corridor Historical Structural Rehabilitation Plan**: Address the rehabilitation of historic structures. | WSDOT |
| High | **Corridor-Wide Historic Structure Survey**: Survey structures in the context of the corridor's historic significance. | WSDOT |
| Medium | **Special Workshop for Training on Maintenance Issues**: Schedule workshop to address maintenance of historic structures (rock walls, bridges, etc.). | WSDOT |

**Recreation**

SR-14 is a gateway to most of the key recreation areas on the Washington side of the Gorge, particularly those along the Columbia River. The recent growth in recreational activities has brought both benefits and negative impacts to the highway and the surrounding communities. Several of the most popular recreation sites directly adjacent to SR-14 regularly experience parking and congestion problems. The follow policies address highway concerns associated with recreation:

Recreation Parking:

- Pursue partnerships to eliminate or minimize parking conflicts with SR-14.
- Consider realignment of the highway as a programmatic and financial means of incorporating parking for adjacent or nearby recreation sites.
- Encourage multimodal access to recreational sites.
- Always consider scenic quality when adding parking for recreation sites.

Recreation Signage:

- Signage should identify recreation sites well in advance.
- Pedestrian crossings near recreation sites should be signed at conflict locations, consistent with MUTCD and engineering safety practices.
- Consolidate signs for recreation sites.

Other:

- Consider multiple uses (biking, hiking, fishing, etc.
- Consider AMTRAK as multimodal alternative to highway travel for access into the Columbia River Gorge National Scenic Area.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| High | **Access Study:** Study need for access from SR-14 to potentially high use recreation sites, including westbound left-turn lanes and at-grade railroad crossings. | WSDOT and Recreation Agencies |
| Medium | **Increase Highway Enforcement Near Recreation Sites**: Enforce parking and other highway rules. | WA State Patrol |
| Medium | **Coordinate Access to Recreation Sites**: Improve the coordination between WSDOT and recreation management agencies. | WSDOT and Rec. Management Agencies |
| Medium | **Parking Plan:** Parking plan to control off highway recreation site usage. | WSDOT, Forest Service, State Parks |
| Medium | **Sign Recreation Sites**: Set and post parking and pedestrian crossings near recreation sites, **when appropriate.** | WSDOT |
| Low | **Provide Bus Parking at New Recreation Sites** | State Parks, Forest Service, and WSDOT |
| Low | **Shuttle System**: Develop shuttle system from centralized parking area to recreation sites. | Private Business or Public Transit |
| Low | **Consolidate Signs at Recreation Sites** | State Parks, Forest Service, Counties, |

| | | |
|---|---|---|
| Low | **Map of Recreational Sites**: Develop a map of recreation sites, including any restrictions. | State Parks, Forest Service, Counties |

**Vegetation Management**

Effective management of vegetation in the right of way creates a transition space between the road and the landscape beyond; in this way roadside vegetation is an important part of the traveling experience. Appropriate vegetation management also contributes to the protection of important natural resources such as sensitive species, soil and water quality. The following policy addresses vegetation management:

- Review potential vegetation impacts and develop preliminary landscape plans at an early enough stage in project development to allow design modifications.
- Seek out the expertise of private conservation groups when conducting inventories.
- Encourage working relationship between WSDOT landscaping and vegetation management staff and local specialists.
- WSDOT, in cooperation with local agencies, should provide technical assistance for public projects that will improve the SR-14 corridor's scenic and botanical values.
- WSDOT, in cooperation with local agencies, should provide public outreach and education through media such as the WSDOT newsletter (*Express*) and PUD newsletters.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| Low | **Native Plants Workshop**: Participate in a workshop covering plant identification, noxious weeds, desirable native plantings, and water quality. | WSDOT |
| Low | **Vegetation Issues Contact List**: Develop a list of local experts and agencies to contact about vegetation issues. | Forest Service and Gorge Commission |

**Through-Trucks**

There is an increase in conflict between freight truck traffic and automobile traffic. While many trucks on SR-14 are making local deliveries, others are using the highway as a through route. There is a general feeling that much of this through-traffic would be more suitable on Interstate 84 in Oregon. The factors contributing to this problem are regulatory as well as physical. Due to curves and hills trucks often travel at different speed than the rest of traffic. In addition, the complex truck licensing and taxing structures of Oregon and Washington differ extensively. There is an assumed relationship between the operation of weigh stations on I-84 and the number of trucks on SR-14. While limited research has been done to prove or disprove the truck problem, it is clear that there are a number of factors that influence the route chosen by a truck operator. The following policies address through-truck traffic:

- Improvements are supported where trucks and other slower vehicles degrade level of service.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| High | **Truck Use Survey**: Assess through-truck traffic and factors that influence it. | WSDOT |
| Medium | **Increase truck enforcement activities**: Open weigh station more hours. | WA State Patrol |

**Bike/Pedestrian Access**

Washington Department of Transportation has identified SR-14 through the Gorge as a rural bicycle touring route. The corridor is currently a popular bicycle route, and is used by local and visiting bike enthusiasts in the warmer seasons. The corridor experiences substantial pedestrian use near urban areas and recreational sites. Moreover, increasing tourism and recreation in the Gorge promise that the use of SR-14 by bicyclists and pedestrians will continue to be an important issue. The following policies address those issues associated with bicyclists and pedestrians.

- SR-14 should accommodate bike and pedestrian use by providing 4' shoulder where practicable.
- At critical road geometric areas and where a 4' shoulder can not be provided a separated path should be considered.
- If a 4' shoulder or separated path is not practicable , provide between 2'-4' shoulders when project and/or terrain allows.
- Mitigate high use at-grade pedestrian crossings.
- Plan and provide for pedestrian crossings in urban areas, rural centers, and at recreation sites.
- Integrate and connect bicycle and pedestrian routes to provide a usable system.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| High | **Corridor Bike Plan**: Address existing conditions, needs, and solutions for bicycle improvements. | RTC |
| Medium | **Re-Stripe within the Existing Right of Way**: Re-stripe without changing lane widths to accommodate bicycle traffic both directions, where feasible. | WSDOT |
| Medium | **Widen Shoulders to Accommodate Bicycles**: Widen shoulders for safe bicycling travel, where practicable. | WSDOT |
| Low | **Promote Proper Bike Use**: Educate public to promote proper bike use on SR-14. | WSDOT and Counties |
| Low | **Sign for Bicycles** | WSDOT |

**Signing/Tourist & Recreation Information**

Signs along SR-14 provide a range of information for motorists. Signs that identify tourist services, facilities, commercial establishments, recreation sites, and interpretation of local history are important means of communication with highway travelers. The signs are erected and regulated by local, state, and federal agencies. The following policies address signs.

- Reduce sign clutter.
- Implement and maintain multi-jurisdictional thematic sign program as agreed to by affected jurisdictions.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| Medium | **Provide Informational Signs at Visitors Centers**: Provide informative signs at Visitor Centers. | Visitor Centers |
| Medium | **Sign Guidelines**: Develop sign guidelines for placement, maintenance, and tourist centers. | MOU signatories |

**Intermodal/Multimodal Transportation**

SR-14 was designed to accommodate primarily one mode of transportation - motor vehicles. With the growing importance of the Columbia Gorge as a recreation area and tourist destination there has been an increased need to find intermodal and multimodal solutions to transportation issues. Providing additional multimodal transportation choices and improving intermodal linkages along the SR-14 corridor can improve the economy, commerce, recreation opportunities, quality of life, while reducing conflicts. The following policy addresses intermodal/multimodal transportation:

- Consider multimodal choices and intermodal linkages within the SR-14 corridor.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| Medium | **Park and Pool/Ride Locations**: Explore need and locations to serve carpool and transit trips to Gorge employment centers. | WSDOT and RTPO |
| Low | **Maximize Multimodal Use of White Salmon Park and Ride** | Klickitat County RTPO |
| Low | **Establish a Stevenson Amtrak Station** | Stevenson and Skamania RTPO |
| Low | **Bi-State Transit Service**: Establish transit service between Washington and Oregon, with service on the SR-14 corridor. | Local Governments |
| Low | **Transit Service**: Explore transit service from C-TRAN or others to serve western Skamania County. | Skamania County RTPO |
| Low | **Joint Planning WSDOT and Burlington Northern**: Joint Planning of right of way and facility expansion plans. | WSDOT and Burlington Northern |
| Low | **Public Outreach on Intermodal/Multimodal Choices**: Develop outreach to public and major employers. | WSDOT and Local Government |

**Downtown Improvements**

SR-14 passes through eight designated urban areas and two rural centers in the Scenic Area. SR-14 is the main street for five of these communities and is the primary arterial providing access to all the other communities along the corridor. The highway is critical to the economic well-being of these communities in terms of bringing in commerce from outside the community. The following policies address downtowns in the SR-14 corridor:

- Provide pedestrian and bike facilities in the downtowns and rural centers.
- Increase emphasis on future highway improvements that address levels of service in urban and rural areas.
- Improve coordination between WSDOT and local agencies in project development.

| Priority | SR-14 Strategy Action Step | Lead Agency |
|---|---|---|
| High | **City Access Management Plans**: Develop plans to manage highway access to properties within Cities. (RCW 47.50) | Cities |
| Medium | **Traffic Calming Measures for Central Business Districts**: Explore methods for slow traffic entering central business districts and rural centers. | Cities and WSDOT |
| Medium | **Develop Master Plans for Central Business Districts** | Cities |

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## INTRODUCTION

State Route (SR) 14 was constructed on its present alignment in the 1930's. The only major improvement to the highway, from mile post 18 to mile post 97, occurred with the realignment from Bingen to Lyle in the 1960's and during the early 1970s when the construction of the Bonneville Dam required relocation of a portion of the route. Highway design standards, current at the time, were applied during design and construction in the 1930s, 1960s, and 1970s.

The SR 14 corridor traverses seven different areas in terms of topography. The land use along SR 14 is primarily rural in nature, except for several small urban centers. Most of the SR 14 corridor is abutted by rock escarpments on the north side, and embankments to the Columbia River or railroad tracks on the south side. There are seven highway tunnels. Many people appreciate the beauty of the bridges and the rock retaining walls built during the earlier time periods.

Local economies are shifting to more tourism and recreational activities, putting new demands on the highway. However, all of the traditional economic activities continue throughout the corridor. SR 14 has a wide variety of users with differing operational expectations.

## PURPOSE AND OBJECTIVES

SR 14 traverses the Columbia River Gorge National Scenic Area. The Washington State Department of Transportation (WSDOT) was the lead for development of the *SR 14 Corridor Strategy and Action Plan,* WSDOT, Southwest Region, September, 1996. This plan established a detailed framework for improvements to SR 14 throughout the scenic area. A significant recommendation of the Strategy and Action Plan was to develop Highway Design Guidelines for SR 14.

A design charet was conducted with the Steering committee and interested stakeholders. Drawings from the charet are included throughout these design guidelines to provide a visual for the design intent.

The purpose of these Design Guidelines is to identify appropriate highway features for projects within the highway right-of-way, including: geometrics, construction material, color schemes, signs, bridge design features, guardrail, and vegetation. WSDOT-owned scenic turnouts, rest areas, and park and ride areas are also addressed by these guidelines. Careful selection of these features, coordinated through the agencies involved, will fulfill the vision for SR 14 through the scenic area as presented in the *SR 14 Corridor Strategy and Action Plan.* Improvement projects are identified in the Route Development Plan (RDP).

The Design Guidelines are supplemental to WSDOT Design Standards. The guidelines do not apply to incorporated cities, because Washington State law grants control of right-of-way development to incorporated cities. Within local urban areas (unincorporated cities), WSDOT will coordinate the application of these guidelines with the appropriate agency. The design guidelines are intended for use by the following:

- Project planners and designers as a reference for preferred building materials, colors, and types of facilities for sites throughout the Gorge.
- Operations and maintenance personnel to ensure facility care, maintenance, and replacement consistent with this

document, while maintaining as-built conditions.

- Cooperating agencies as a source of information regarding general development concepts and the *desired physical characteristics* of improvement projects along SR 14 through the National Scenic Area.

- Potential project partners to develop an understanding of WSDOT standards considered appropriate within the National Scenic Area.

The guiding philosophy for developing and evaluating potential highway improvements in the National Scenic Area is to communicate and instill the respect and protection of aesthetics, natural resource, and recreational values while providing a safe and efficient highway for all modes of travel.

For WSDOT-owned facilities, modifications to accommodate visitor use and needs along the corridor should promote reasonable consistency and continuity throughout the Gorge.

These design guidelines provide a foundation for the development of projects of a unified identity within the National Scenic Area. They will be used in conjunction with WSDOT safety and design standards for the design of future projects.

## REQUIRED PROJECT REVIEW

In the National Scenic Area, all highway projects that go beyond repair and maintenance must be reviewed for consistency with the *Management Plan for the Columbia River Gorge National Scenic Area.* The review is conducted by the USDA Forest Service, county planning departments, or the Columbia Gorge Commission. Final approval of materials, exterior colors, plant materials and other aspects of highway projects may be made on a project-by-project basis.

## GUIDELINE DEVELOPMENT CONSIDERATIONS

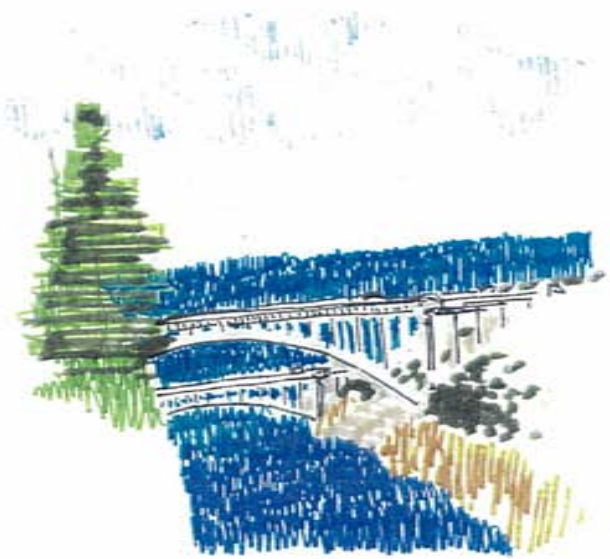
## HISTORIC SURVEY

The *SR 14 Corridor Management Plan* includes an *Historic Features Survey* that was conducted to prepare an historic context statement for SR 14 and identify historic character defining features. These were not necessarily features that would be listed in a historic register. The purpose of the historic features survey is to address the historic elements of SR 14 in the development of projects and in these highway design guidelines. The report is an interesting and charming historic description of SR 14 that should be read to capture the significance of SR 14 throughout history. The Historic Features Survey is found in Appendix D.

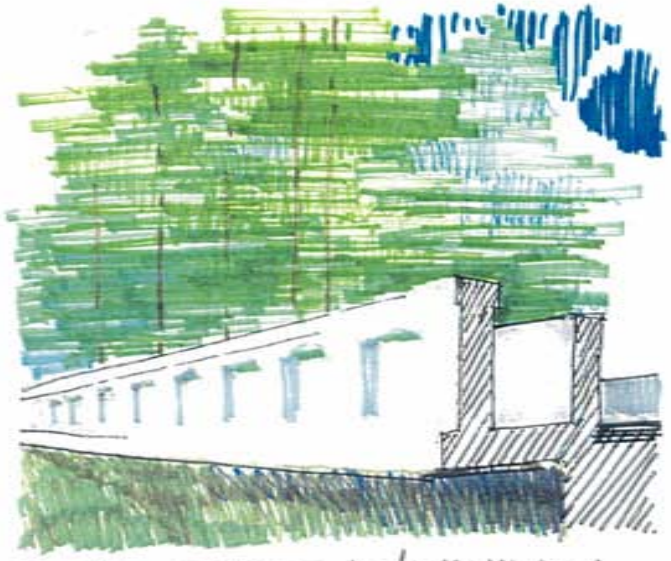
## HISTORIC CONTEXT

SR 14 follows an overland transportation route that was closely tied to the Columbia River as the primary water transportation corridor through the Cascade Range. Early passage through the Gorge required the use of both overland and water transportation. The North Bank Highway, one of SR 14's predecessors, was designed for horse-drawn vehicles, but it was also the first road used by cars and trucks. Built as a farm-to-market road between 1907 and 1916, the North Bank Highway was improved and re-routed in the following decades.

Beginning in 1919, the Washington State Highway Department began modernizing the North Bank Highway. One goal was to produce the best all-weather route over the



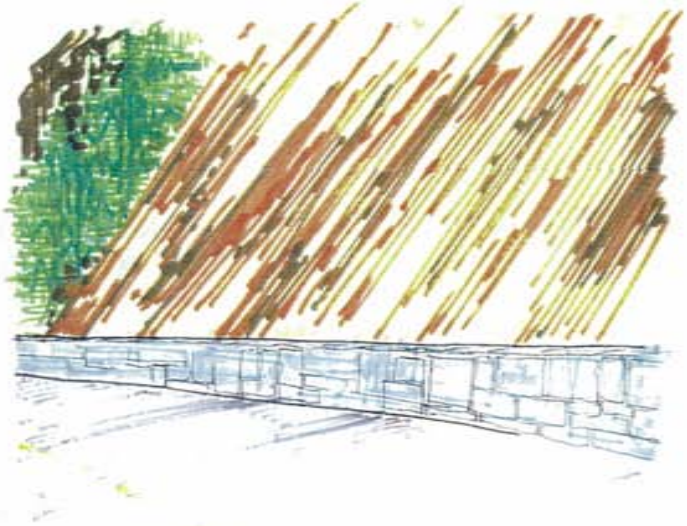
a. LONG SPAN ARCH



b. BALLUSTRADE W/ WALKWAY

c. ARTICULATED PIER/SUPPORT

d. STYLIZED MONUMENTAL ARCH



e. WALLS & RAILS

f. "STICK" TYPE CONSTRUCTION

Cascades in the Pacific Northwest. Another goal was to build a scenic highway that would attract tourists to southwest Washington. The name of the North Bank Highway was changed to the Evergreen Highway in 1929.

During the Depression engineers wanted to transform the Evergreen Highway into the first highway in the Gorge to be on a permanent all weather surface with easy grades and a minimum of curves. The Evergreen Highway was intended to be the best passage through the Cascade range in the Northwest. The highway department also continued to recognize the scenic value of the road and built roadway features that allowed tourists to enjoy the beauty of the Gorge. Improvement projects included building concrete bridges, rerouting, eliminating curves, and decreasing grades from 10 percent to a maximum of six percent. The completion of the Evergreen Highway in 1936 modernized and greatly increased use of this overland transportation corridor on the Columbia's north bank.

The Evergreen Highway was renamed SR 14 in 1955. SR 14 has been an important source of transportation, commercial and agricultural development and scenic value throughout its existence. The Gorge and the driving experience also attracted an increasing number of tourists.

## HISTORIC FEATURES

Several key historic periods influenced architectural styles in the Gorge. These styles are a base reference for future projects. Styles include: Native American, Gothic Revival, Historic Highway and Period Building Styles, and Rustic Style.

Careful study of the landscape setting and historic styles, documented in the Columbia River Gorge National Scenic Area (CRGNSA) *Design Guidelines*, reveals the following unifying threads through the fabric of the built environment.

- Arch forms
- Stone and timber columns
- Basalt stone masonry
- Organic earth-tone colors
- Use of native and natural materials
- Heavy proportion and weight evoking a sense of permanence
- Strong tie to historic influences
- Fine craftsmanship and careful attention to decorative detailing

The roadway itself is a significant element of the built environment through the Gorge and includes many of the features identified above. Examples include the Lyle tunnels, the rubble "castle" retaining wall at milepost 54, the stone curbs of the turnout of milepost 54. The objective is to incorporate native materials and a design theme that reflects these historic characteristics, but may not provide exact replicas.

## LANDSCAPE SETTING

The scenic appeal of the Gorge is due to the dramatic contrasts of mountain and valley, dry eastern and moist western plant communities, and natural and human influenced landscapes. SR 14 is the primary means by which travelers experience these contrasts on the Washington side of the Gorge. Design of the roadway and companion facilities substantially influences the traveler's perception of the Gorge. The *CRGNSA Design Guidelines* identify several landscape settings briefly described below:

SR 14 CHARETTE / INTERMODAL TRANSPORTATION JUN '95

- **Gorge Walls, Canyonlands, and Wildlands** Steep wooded slopes, canyon walls and sheer rock faces with limited vegetation and side canyons with small ribbons of riparian flood plains.

- **Coniferous Woodlands** Thickly forested, largely coniferous, characterized by mostly small scale silvicultural operations. Hilly or mountainous terrain.

- **Oak-Pine Woodlands** Climactic transition zone of dry oak pine woods and grassy prairie interspersed with scattered rural development. Gently rolling to hilly terrain with some steep slopes and deep side canyons. Rich variety of vegetation.

- **River Bottomlands** Lush flood plains and riparian forests along the Columbia, confined to flat or gently sloping lands. Largely deciduous forest and marsh.

- **Pastoral** Agrarian character, typified by areas of pasture and intensive agriculture punctuated by clusters of farm buildings and wind breaks. Level or gently rolling terrain. Non-native vegetation predominant.

- **Rural Residential** Characterized by scattered dwellings located in readily accessible, flat, or gentle terrain.

- **Grasslands** Characterized by large expanses of grass and shrub covered terraces, very sparsely settled. Gentle to steeply sloping hillsides with some rugged cliffs.

## RECREATION OPPORTUNITIES

SR 14 provides access to a variety of recreation opportunities. Improved access from the highway to several existing recreation sites may enhance economic development and recreation opportunities. Of particular concern is the popularity of the Columbia River Gorge as a wind surfing site with worldwide recognition. Wind surfers need parking and assembly areas for their sails. Parking for fishing is also a concern. The close proximity of the river and highway at popular spots creates congestion safety problems, and a design challenge. Other recreation opportunities include hiking and bicycling.

## BARRIER-FREE ACCESSIBILITY

WSDOT facilities will be accessible to all. All site planning and design activities will consider a full range of access needs as a key element in project planning and development, ensuring that routes to and from major and/or selected features or attractions of the site are accessible; that the new structures are accessible and site furnishings incorporate universal design concepts; and appropriate site furnishings meet or exceed minimum design standards.

## DESIGN GUIDELINES

### Highway Geometrics

Highway geometric improvements include shoulder widening, intersection improvements, addition of passing lanes, and realignment of substandard curves. These improvements are designed to improve safety and/or develop a roadway with a consistent travel speed. These design guidelines address travel speed and curves, clear zone, passing opportunities, intersection channelization, and bicycle and pedestrian facilities as improvements are identified. They are supplemental to WSDOT Design Standards. The Design Level for SR 14 is Modified Design Level. The design level specifies standards for highway geometrics such as lane and shoulder widths, slopes, and stopping sight distance. These standards are typically a function of the design hourly volume and

design speed. For the Modified Design Level, the design speed equals the operating speed (typically the 85th percentile speed of traffic and the posted speed limit).

SR 14 is planned as a two-lane rural highway. The design speed selected in the *SR 14 Corridor Strategy and Action Plan* is 50-55 mph on rural sections. The Modified Design Level applies to SR 14 because the selected design speed is usually the same or close to the posted speed. Also, four-foot shoulders were selected for SR 14 which is consistent with the Modified Design Level. The Full Design Level standards would exceed design parameters selected in the *SR 14 Corridor Strategy and Action Plan.* To maintain reasonable travel times, passing lanes may be provided.

Design standard deviations are expected to occur on a project-specific basis because of the significant design constraints along SR 14. Design deviation approvals are processed by the WSDOT service center in Olympia. Design deviations should take into consideration the SR 14 Highway Design Guidelines and the *SR 14 Corridor Strategy and Action Plans.*

In cases where safety improvements would impact the scenic, natural, cultural and recreation values of the highway, then other improvements such as speed controls and appropriate warning systems (signing, markings, and delineation) should be considered.

**Rural Character**

The following maintain and enhance the rural character of the highway.

- Maximize or preserve vegetation closeness to highway right-of-way where appropriate. The roadside landscape will often be narrow.
- Route alignment will follow the natural terrain, within design parameters.
- Retain cultural (fences, buildings) and natural features in close proximity to the highway, where clear zone criteria allow.
- Maintain and enhance visual access to adjacent landscape.
- Work with communities to apply visual clues that indicate the traveler is entering an urban area.

**Travel Speed and Curves**

- Documented safety or structural deficiencies identified in the WSDOT risk program, will initiate consideration of geometric changes.
- Increasing travel speed in slower highway segments to create a corridor-wide consistent travel speed will not be the driving force for geometric alignment.
- Deviations to a consistent design speed may be based on blending the alignment with the landscape.
- Congestion impacts rural character and therefore will be a factor in determining needed geometric changes.

**Clear Zone**

The clear zone is defined as the total roadside area, starting at the edge of traveled way, available for use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a nonrecoverable slope, and/or a clear run-out area. The clear zone cannot contain a side slope in excess of WSDOT standards for a safe recovery. The minimum desired width is dependent upon the posted speed, side slopes, and traffic volume.

- SR 14 design will meet minimum clear zone requirements, or mitigate requirements with a barrier, in conformance with the WSDOT *Design Manual*.
- All break away devices within the clear zone must meet WSDOT requirements.
- Non-breaking structures may be located within the clear zone if no reasonable alternative exists, and then they must be protected by a barrier.
- Barrier design will be consistent with these design guidelines.
- Clear zone deviations will be considered only after a thorough engineering study has addressed any alternatives and the safety concerns.

**Passing Opportunities**

- Passing lanes will only be considered where there is a documented deficiency in safety and level of service.
- Passing lanes are preferred to pullouts.
- Properly designed and placed pullouts will be considered as one of several design options where passing opportunities are needed and rural character is affected by widening.

**Intersections**

- When redesigning intersections, alternatives will be evaluated to minimize alteration of the landscape and rural character, while meeting minimum safety requirements.

**Bicycle and Pedestrian Facilities**

SR 14 through the Gorge is designated by WSDOT as a rural bicycle touring route. The corridor is a popular bicycle route, and is used by local and visiting bike enthusiasts. The corridor experiences substantial pedestrian use near urban areas and recreational sites. The following guidelines address design issues associated with bicyclists and pedestrians.

- Bicycle and pedestrian use is accommodated by providing four-foot wide shoulders where practical.
- Narrower shoulders may be provided when project and/or terrain does not allow four-foot shoulders.
- In severely constrained areas where a 4-foot shoulder can not be provided, a separated path should be considered.
- Address pedestrian crossing issues in urban areas, rural centers, at recreation sites, and high-use areas.

## CONSTRUCTION MATERIALS

The selection of materials for highway features throughout the Gorge is based on their compatibility with the landscape setting and historical style, design theme, and accessibility considerations, as well as operation and maintenance considerations. Historic materials include asphaltic concrete, concrete, rubble, cut stone, and wood. The use of natural materials common to specific areas of the Gorge is preferred.

It is important to the design theme and visual quality of the Gorge to mitigate visual impacts of structures so they visually blend with the surrounding land. It is equally important to maintain historical features of structures that are of value to the local communities.

Materials utilized in highway design and construction must meet safety and design standards. Consideration should be given to the natural topography and landscape

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character to minimize impacts. Visual impacts must be addressed for the driver on SR 14 and for other users of the Gorge that look at SR 14 from the hillsides, the river, or from I-84, referred to as key viewing areas.

**Rock**

Quarried stonework detailing may be used where it is an integral visual element in areas, such as visitor interpretive facilities and parking areas. Native rock will be used primarily in rough cut form to blend with the character of the surrounding landscape. Simulated stone surfaces may be substituted for natural stone.

Rock should be set in a random pattern that varies the use of larger and smaller pieces throughout the masonry element. Typically, larger rock pieces, representing at least half the total quantity of material to be used, should be laid in the lower courses of the element. Smaller rocks should be a minimum of 4-6 inches thick. Wall faces should have a batter at 6:1 ratio.

Mortar joints should be tight and drop set to reveal strong shadow lines. Visible tool or drill marks on any exposed faces should be minimized to the greatest extent feasible. Dry stone masonry is also an appropriate construction technique. With dry stone walls, all voids must be filled with compacted soil as wall courses are laid.

Highway elements, such as the outboard faces of guardwalls, bridge abutments, retaining walls, and tunnel entrances should be considered for treatment with rock from approved sources or simulated rock if:

- Structure or surface is visible from key viewing areas;
- Surfaces are outside of the clear zone; and
- It is economically feasible within the scope of the project.

Formliners used should match existing structural rock found in the project vicinity. Patterns and materials for formliners will be standardized for cost-effectiveness. All walls associated with the highway structure must meet current WSDOT design standards.

**Concrete**

The visible use of concrete within the Gorge facilities will be limited as much as possible. Where the use of concrete is essential, it should be color-treated (i.e. dulled to tone down), or stenciled, or faced with natural or fabricated stone masonry.

**Asphalt**

Asphalt surfacing is preferred for access drives and parking areas and may be considered for high-use pedestrian areas. Asphalt at historic sites or scenic areas may be edged with flush-cut stone curb. Stone edging, natural or fabricated, may be considered for high-use pedestrian areas and paths. Logwheel stops may be chosen for use in rustic locations, such as trailhead parking.

**Paints, Stains, Preservatives**

Specific requirements for the following will vary by area within the Scenic Management Area. Material surfaces will be non-reflective, and colors should generally be subdued earth tones. Stains are preferred over paints and naturally weathered wood is preferred over the use of stains. Selected stains may produce the desired character, which can be retained with clear preservatives. The above does not apply to signing or safety markers.

### Metals

Appropriate uses of metals include the joining and fastening of materials, supporting and stabilizing sign installations, for small structures and guard rails. This section does not limit any non-visible use of metal in highway applications. Generally, and to the extent feasible, metal components should be hidden from view with the exception of metal used in highway signs and guardrails.

### Synthetics

Synthetic materials should generally be avoided, except where they can increase the durability, safety, reduce maintenance, and provide cost savings of a facility without diminishing the aesthetic, historic, or recreation values. The most likely applications are in landslide or rockfall areas, or in the design of interpretive and information display panels and facility components, such as toilets, trash cans, etc., to counteract the effects of weather and vandalism.

### Wood

Wood is generally not considered an appropriate building material for highway elements with the exception of sign posts, guardrail posts, and bollards. These elements will conform to WSDOT standards. All other wood structures, such as information kiosks, must be outside of the clear zone.

If applicable, native or native-appearing wood timbers should be used in the construction of new structures and buildings providing the look of heavy timbers. It is also appropriate if the timber structures are a visual feature or focal point (entrance gateways, interpretive signs, etc.).

### Color Schemes

In all projects that are subject to review under the Management Plan for the Natural Scenic Area, exterior colors will be approved by the appropriate agency.

In rural areas visible from SR 14, existing WSDOT maintenance facilities will be repainted with appropriate Gorge colors as repainting becomes necessary.

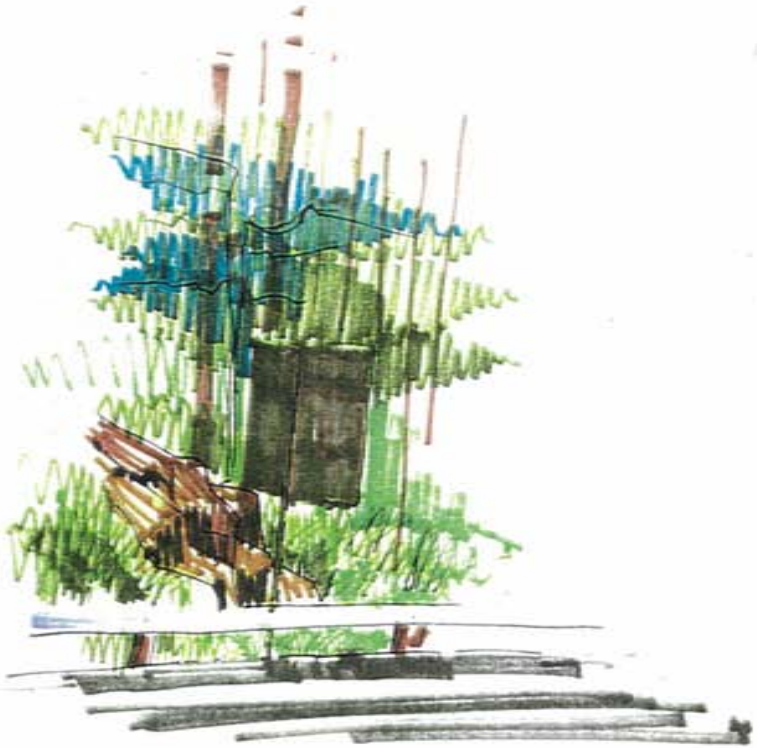
## SIGNS

Developing a unified and coordinated approach to signs is probably one of the most important elements in maintaining an identity for SR 14 through the Gorge. Signs are the most visible and frequent man-made structures that drivers see. The signs need to be easy to read and clearly convey orientation and traffic safety information. They must be carefully designed and located to avoid creating hazards to drivers while allowing convenient maintenance.

Recognizing SR 14 through the Gorge as a unique entity, the cooperating managing agencies have developed a unified sign system as the standard for all scenic area information signs along public roads in the National Scenic Area.

All traffic control signs occurring along the SR 14 mainline will conform to *Manual of Uniform Traffic Control Devices* (MUTCD) and WSDOT sign standards. Sign supports occurring within the clear zone must meet WSDOT safety design criteria. MUTCD signs are not subject to review under the *National Scenic Area Act* land use ordinances. Standard WSDOT highway guide posts will be used on SR 14.

All new sign backs and metal sign posts will be treated or lightly-painted with a dark, natural or earth-tone color to eliminate glare.



PAINTED
BACK &
POST.

Construction signing will not receive any sign back treatment. One color shall be applied throughout SR 14.

Main entry signs and geographic interest signs for the CRGNSA are in place. The signs were provided by a grant from the Federal Highway Administration.

### Commercial Signs

Commercial establishments form an important component of SR 14. SR 14 operates as a main street through many of the communities such as Stevenson and Bingen. Sidewalks and store fronts are located at the edge of the travel lane. Each incorporated city regulates its own commercial signing.

The Federal Scenic Vistas Act and WSDOT *Scenic Byway Logo Signing Guidelines*, December 1996, apply throughout SR 14. New signs in the scenic area are also subject to guidelines in the *Management Plan for the Columbia River Gorge National Scenic Area*, except in urban areas.

## STRUCTURES

It is important to the design theme and visual quality of the Gorge to mitigate visual impacts of structures so they visually blend with the surrounding land. It is equally important to maintain historical features of structures that are of value to the local communities. This section provides options that should be considered in both highway and non-highway applications where appropriate and feasible.

### Bridges

Construction work on bridges and tunnels for highway traffic must meet appropriate WSDOT safety and design standards. Repair, rehabilitation, or replacement work on existing bridges should consider using shapes, materials, and colors consistent with existing structures and the adjacent environment. For example, new bridges should be designed with concrete columns, sidewalks, and arched supports, in the spirit of bridges built in the 1920s and 1930s.

Concrete abutments, tunnel entrances, and walls should use simulated stone or natural stone facing where financially feasible. Color treatment should be consistent with the general guidelines for the SR 14 corridor. Re-use of existing stones could be considered to achieve the visual quality of the original structure. The workmanship should complement and enhance the existing environment.

When replacing bridge rails, a crash-tested design with visual characteristics suitable for the site should be considered. Although replicas of older rail types will not generally meet necessary design and safety standards, use of a crash-tested design reminiscent of existing rails should be considered. Where metal elements are necessary, galvanized surfaces will be treated to minimize reflection and produce a subdued appearance. Weathering steel elements will be considered where appropriate.

### Retaining Walls

If retaining walls are to be constructed where they are visible from SR 14, or from key viewing areas, the following options should be evaluated for use:

- For walls outside of the clear zone, or protected by a barrier, the use of native stone, stone veneer over concrete, or a formliner (simulated stone) "rockery" wall constructed of large interlocking stones is appropriate; and

- Color treatment is the minimum mitigation for concrete surfaces visible from SR 14 or key vicinity areas.

In the general scope of this document, dry-laid stone or "rockery" walls are preferred over either gabions or concrete retaining walls where practical and economically feasible.

### Culvert Treatments

Newly constructed culverts or existing culverts within roadway projects that are visible from the roadway should be constructed in an unobtrusive manner. Visible culvert faces should be constructed with the same materials and design theme as other Gorge structures, if feasible. Fill will be blended to the slope of the culvert.

### Artificial Stone

Recent developments in the concrete industry have refined surface treatment techniques that allow the creation of very realistic simulated stone surfaces through high-relief formliners. Walls constructed using these methods may be substituted for natural stone where final appearance and durability will not be seriously compromised or where there is a significant cost advantage.

Until simulated rock faces meet current WSDOT and Federal Highway Administration (FHWA) safety standards, use along the SR 14 mainline will be limited to areas outside of the designated clear zone or behind appropriate barriers.

### Stone Curbs

Natural or artificial cut stone curbs may be considered for use in constructed parking areas throughout Gorge facilities rather than standard concrete tire stops or curbs. Stones should be securely anchored or mortared in place so as to withstand repeated stress from car tires, and not stand more than six inches above the surrounding pavement.

### Bollards

Bollards to control vehicular and pedestrian traffic may be components of a rest area, park and ride, or scenic site. The dominant native material of each individual site will dictate the character of the bollard, i.e., wood, stone, or a combination thereof. Concrete may be utilized in almost any situation where there is limited natural building material.

## BARRIERS

Natural barriers and guardrails are preferred for use within the SR 14 corridor. Barriers are used for traffic control and to prevent parking in inappropriate areas. Guardrails are used to provide protection from safety hazards along the roadway. Detailed design guidelines for guardrails are in a following section on ***Guardrails***.

It is not desirable to select a single barrier for the entire Gorge, due to aesthetic site considerations, structural and safety standards, and maintenance concerns such as repair costs, snow removal, and snow loading. Barrier types used will be consistent throughout the Gorge and within the overall theme. Acceptable barrier types and the preferred areas for their use are described below.

### Berms

All berms adjacent to SR 14 must meet current WSDOT design and safety standards. Berms should be revegetated with native plant material to match the species, composition, and growth patterns of the surrounding area where appropriate.

Soil berms should receive an erosion control seed mix at the minimum. Redirectional berms may substitute for guardrails or other barriers under certain circumstances where adequate space for construction is available.

In all projects involving new soil disturbance and revegetation, appropriate seed and plant types will be approved by the appropriate review agency.

**Plantings**

Roadside plantings can be used to control unauthorized vehicular access into roadside areas, frame desirable and screen undesirable views, and provide erosion control. Proper plant selection and selective thinning can be used to manage winter sunlight exposure to the pavement. Plants used within the clear zone should be limited to groundcovers, shrubs, or small trees with an ultimate trunk size of less than four-inch diameter at breast height.

If evergreen trees are used, they should be planted an appropriate distance from the edge of the pavement not only to prevent vehicular collision, but to limit shading of the roadway during the winter. If trees are to be used immediately adjacent to the roadway and behind guardrail or berms, consider the use of deciduous trees that will not shade the road surface in the winter. All plant materials should be indigenous species and planted in natural-appearing patterns.

**Boulder Placement**

Boulders are not a suitable barrier for SR 14 mainline unless outside the clear zone.

## GUARDRAILS

Several types of guardrails were used during the original construction of SR 14. These include timber reinforced with steel backing, stone guard walls with arches and concrete hip caps, and delicate reinforced concrete arched bridge rails. None of these older guard rails types meet current WSDOT standards for flexibility or redirection of traffic (where a rigid barrier is required).

When projects include an original native stone guardrail, careful consideration should be given to maintaining the existing structure.

For most traffic control situations standard steel "W" beam guard rail should be used. Weatherized steel guardrail will be installed rather than galvanized steel because it is less reflective and meets the intent of Scenic Area Management Plan. Location and end treatment of guard rails should meet current WSDOT design standards. No restrictions will be placed on wooden guardrail posts.

Stone veneer over concrete is not a suitable finish for a highway barrier within the clear zone. Stone veneer or a formliner (simulated stone) may be used, if the barrier or guardwall occurs outside of the clear zone.

Timber guard rails are a rigid structure do not meet current WSDOT design standards for safety.

**Concrete Traffic Barrier**

All concrete traffic barriers will be designed as directed by the ***Structures*** section of this document. The Jersey barrier, or a cast-in-place Jersey-shaped barrier, can impact the visual quality of a given area. Concrete traffic barrier should be terminated as soon as is feasible past the ends of a bridge. If space permits, use of a buried terminator for barrier ends should be considered. If the barrier extends outside of the clear zone and space for a redirectional berm does not exist, consider termination into a rock veneer or formliner wall if feasible.

Smaller developed sites, such as pullouts and some viewpoints immediately adjacent to SR 14, should be evaluated for use of guardrail or concrete traffic barrier if:

- The site is within the designated clear zone; or
- Due to small size, changing from guardrail to rock, then back to guardrail would cause a break in visual continuity.

## SLOPE STABILIZATION

Steep, rugged terrain and occasional falling rocks are a natural part of the environment in the Columbia River Gorge. Mitigation of rockfall hazards must ensure the safety of the traveling public, and at the same time comply with the resource protection guidelines of the *Management Plan for the Columbia River Gorge National Scenic Area*.

The managing agencies recognize that selecting a specific method for treating rockfall and mitigating scenic impacts can only be done on a case-by-case analysis. The *SR 14 Strategy and Action Plan* identified the development of a menu of options for rockfall mitigation techniques as a high-priority action.

Existing steep and erosive slopes that pose problems should be evaluated for treatment with one of the following methods:

- toe wall construction with engineered slopes;
- biotechnical structures/methods;
- erosion control fabric;
- reinforced slopes (geotextiles);
- laying back or rounding slopes;
- wire mesh or wire rope slope protection (in a color that blends with surroundings);
- rockfall fences/nets; and
- rockfall ditches.

Additional methods of slope stabilization may be acceptable if they meet general Gorge criterion. Other methods will be evaluated on an individual basis. Not every slope needs treatment, and in many cases no action may be the best choice. Every effort should be made not to create new sliver cuts on existing healed slopes.

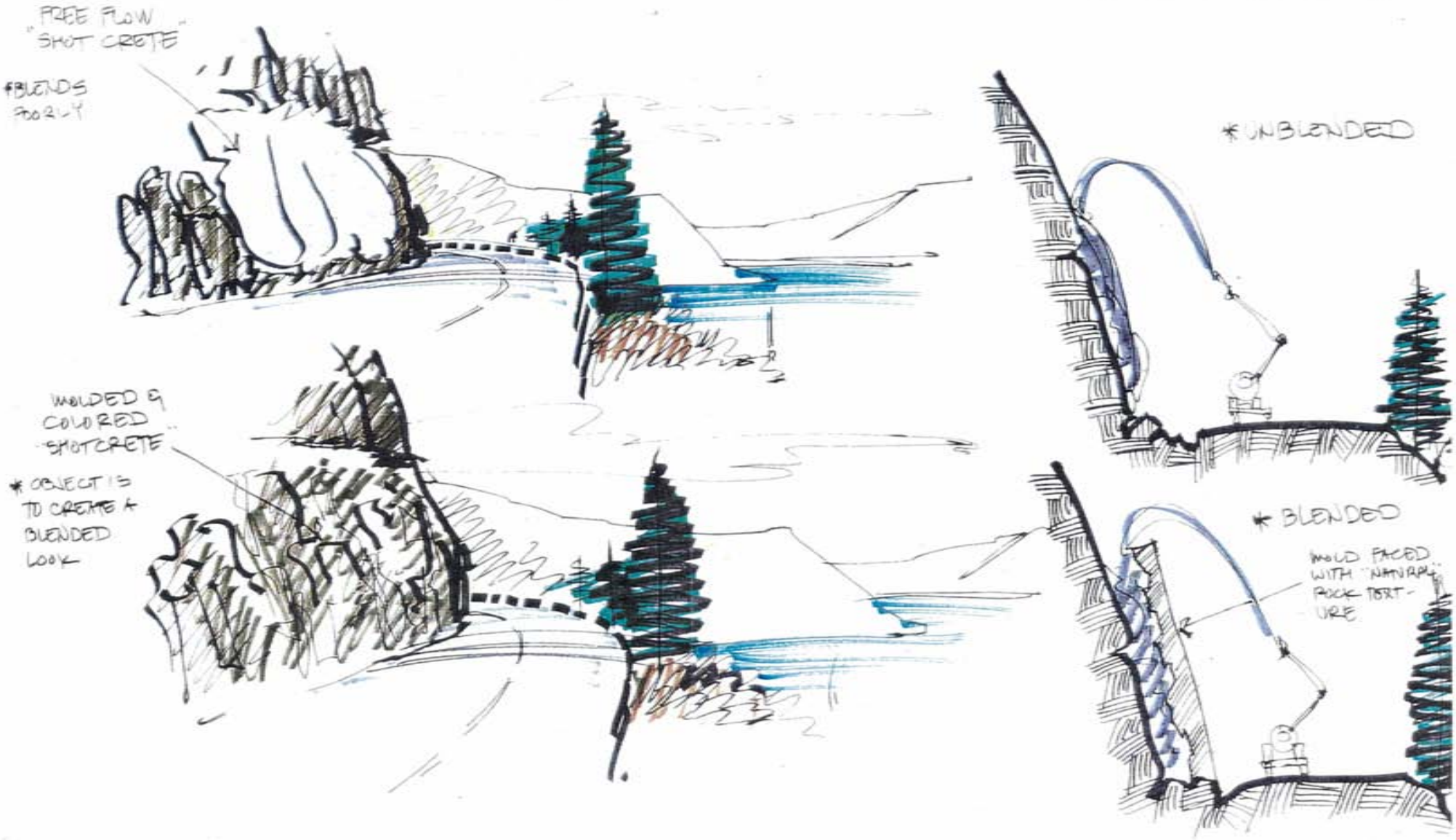
All slope stabilization and retaining structures along SR 14 within the clear zone will consider methods described here and meet the recommendation and approval of the WSDOT. Visual impacts will be considered from all areas of the Gorge, as well as from SR 14.

An analysis of the corridor's rockfall hazards and appropriate treatment was also recommended as a high priority Action Step in the *SR 14 Strategy and Action Plan*. WSDOT maintains an updated unstable slope inventory which includes a rating and statewide ranking of unstable conditions.

### Toe Wall Construction

One way to treat steep ravelling slopes is to build a toe wall (retaining wall) and fill behind it. Because the new slope will not be as steep as the original, it will be more stable and easier to revegetate. Toe walls can be constructed of various materials: dry-laid stone, reinforced concrete, or concrete with stone facing. Other options include "rockery" walls and gabions constructed out of native stone. The use of toe walls is dependent on the height and angle of the slope. Rockery walls are not considered to be structural in nature and should not be

2 CROSS SECTIONS:

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assumed for retaining requirements but rather should be applied as an erosion control method.

On slopes visible from SR 14 or other key viewing areas and outside of the designated clear zone, designs should consider the use of "rockery" walls or dry-laid stone. "Rockery" walls are typically constructed out of large, interlocking boulders of native stone generally found within the project limits. The dry-laid stone technique should be considered if the wall is to be small and if practical to do so.

Concrete visible from the SR 14 mainline or the Gorge will be treated as per the ***Construction Materials*** portion of these guidelines.

In areas such as the toe of a fill slope below the highway structure or where other toe wall options are not practical or economically feasible, the use of gabions may be appropriate. Gabions should be avoided in locations highly visible to the public, but if used, they should be designed so as to blend into the terrain to the greatest extent possible. If possible, gabions should be constructed out of native flat stone with the wire basket treated with *Permion*™ or *Eonite® 460* to reduce visual impact. Visible rows of gabions should be as unobtrusive as possible. In forested areas, designs should consider establishing pockets of soil and vegetation behind, or at the base of walls.

In areas of difficult access or visually sensitive areas a Keystone wall system of interlocking blocks can be utilized to construct retaining structures. The concrete blocks have a natural appearance and can be constructed quickly in difficult areas. Generally a Keystone wall can be constructed by a one- or two-person crew and can be combined with other methods of slope stabilization. These walls can be combined with geotextiles or synthetic soil reinforcement. Wall height is limited by the amount of stabilization needed and the use of tie-back systems for the wall. In addition the tie-back system the wall should be constructed with adequate drainage to prevent excessive active pressures on the wall.

**Biotechnical Methods**

For projects subject to review under the *National Scenic Act* land use ordinances, seed and plant types will be approved by the appropriate reviewing agency.

Biotechnical methods use plant material or a combination of vegetative and structural elements for long-term prevention and control of surface erosion and shallow slides. The vegetative elements are used for both functional and aesthetic reasons. The fibrous root systems of deciduous plant species (and some grasses) tightly bind the soil.

Desirable deciduous species for these methods include willow species and red alder, among others. Techniques include contour wattling, fascine (bundle) planting, live cribwall, vegetated gabion, live-stake planting, brush layering, erosion control fabric or a combination of several methods. The application of an erosion control seed mix should be strongly considered in association with any of the following biotechnical structures.

The use of various erosion control or biotechnical structures will be carefully evaluated in both highway and non-highway projects where soil erosion is occurring or where it might take place.

Contour wattling should especially be considered for applications in streamside erosion control design. Where possible, utilize native cuttings from the project site. Cuttings may be collected from off the project site if they are found within 500 feet of elevation above or below the site and within the same major drainage.

Live stakes are live, rootable cuttings typically driven into the ground. This technique is especially good in riparian areas or between areas stabilized by other biotechnical methods. The seed mix may consist of two or more varieties for west and east rocky areas.

Vegetated gabions use live branches placed between layers of gabions. Live branch cuttings must be long enough to extend beyond the wire baskets. These make an excellent low wall.

Fascine (bundle) planting involves binding live cuttings in variable length bundles of six-to-eight inches in diameter and placing in trenches of equal depth. This technique is well-suited to rocky slopes and those prone to shallow slides.

Brush layering uses live cuttings placed perpendicular to the slope. In areas where limited amounts of cuttings are available, straw bales of wheat stubble may be acceptable. These layers are trenched into the soil horizontally along a slope and anchored with stakes. Live cuttings are installed on the bench created above the layer.

**Erosion Control Fabric/Natural Fiber Revegetation Mat**

Placement of erosion control fabrics seeded with erosion control grass is a common method of erosion control along state highways. This method may be greatly enhanced by introducing seeds of red alder in the erosion control seed mix in appropriate situations. Red alder will produce large fibrous root systems similar to that of willow.

All attempts will be made to use native or naturalized grass seed when possible. A preferred plant list and seed mixtures are contained in the section on ***Roadside Vegetation*** at the end of these guidelines. If hydroseeding, the seed shall be placed prior to netting for increased coverage.

Erosion control fabric will be made of all natural fiber. Available types include jute netting and excelsior fabric. Jute netting is commonly used, but decomposes within three years. Coir fabric, made from coconut fibers, may last more than five years. Coir fabric should be the choice where establishment of vegetation may take several years or on steeper slopes. Various weights of coir fabric have been used on slopes steeper than 1:1.

Synthetic fabric or synthetic-backed fabric will be avoided as they do not completely decompose within the environment.

**Erosion Control Fabrics/Synthetic Fiber Revegetation Mat**

Synthetic erosion control fabrics are polypropylene fabric or polyvinyl chloride monofilaments bonded together into a three-dimensional web designed exclusively to serve as an erosion control and/or revegetation mat. The woven mats are designed to shield the soil from wind, rain, and storm water forces, and prevent soil, seed and fertilizer from washing away. They will decompose with sunlight.

The fabric has been engineered to provide a combination of high porosity and density which allows the fabric to retain the

necessary moisture and heat required for seed germination and permits the growth of grass and other vegetation through the mat. Fabrics are created from nonbiodegradable or photodegradable fibers that will provide reinforcement to the root systems of vegetation as it becomes established.

It is recommended by the manufacturers that the seed and mulch be placed prior to laying the fabric to reduce the exposure time. A vegetative mixture of hearty deep rooting grasses compatible with the growing season and climate should be used.

**Reinforced Oversteepened Slopes (Geotextiles)**

Embankment soil slopes can be reinforced using two types of geotextiles, a geogrid or a cellular confinement system. Both systems are designed to improve the soil interaction characteristics on engineered slopes. These methods are typically an erosion control technique utilized in areas where an embankment must be oversteepened.

If there is insufficient room to achieve a 2H:1V slope for the extension of the embankment, the slope may be steepened utilizing reinforcement within the embankment fill. In areas with suitable foundation conditions a rock embankment may provide protection to a grade with a 1.5:1 slope.

A steepened reinforced slope consists of compacted fill with layers of reinforcement such as a geogrid or geotextile to add internal stability to the fill.

Geogrids and geotextiles are reinforcing materials typically made of a High Density Polyethylene or polyester materials. They are typically woven sheets which have been punched and drawn to create a porous reinforcing material. Geotextiles typically come in roll widths ranging from three to five meters and varying strengths. Geogrids come in narrow rolls and will typically have higher tensile strength properties.

To create a reinforced slope, the native slope must first be benched to accommodate the placement of the engineered fill. The benches should be no less than two meters wide to allow for the access of appropriate compaction equipment, and facilitate the required embedment of the reinforcement into the native slope. Within the lifts of the fill material, geogrids or geotextiles are utilized to reinforce the slope. The placement of the reinforcement includes extending it out of the slope and wrapping the fabric over the face of the slope, up to the next consecutive lift. Upon conclusion of the slope construction the face of the fill is typically protected with native vegetation or a synthetic material placed at the surface for temporary control of surface erosion.

Cellular confinement systems consist of a lightweight, flexible series of high density polyethylene strips that are bonded together to form a high-strength three dimensional honeycomb-shaped cellular construction. Colored material is available and should be selected for each landscape setting. The fabric can be utilized as a slope cover, filling the individual cells with soil, sand, small rock, concrete or any other suitable erosion resistant material. These systems are for soil slides, but not rock slides.

When a cellular confinement system is used for constructing a retaining wall it functions as both the fascia and as the reinforcing element. The filled section of fabric creates a large heavy mattress that become the building blocks for a gravity retaining wall. The cellular nature of the fabric allows walls of considerable height to be built without additional reinforcing elements such as grids

or metal tie-backs. The plan and design of any vertical structure should be prepared by a structural engineer.

### Terraced Slopes

Terraced slopes provide stretches of level ground where salvaged topsoil can easily be replaced and where larger plants can be installed. Staggered terraces are preferable to a series of parallel benches extending around the entire slope.

Terraced slopes involve significant grading and should be considered when other options are not feasible or cost effective.

### Laying Back Slopes

Reducing slope grades back to the angle of repose or flatter reduces the potential for stability problems and mitigate erosion. The trade-off is the greater short-term impact on surrounding vegetation.

Slopes treated in this manner should be revegetated when possible with the methods described earlier in this section. In the Scenic Area, this technique should be used with discretion. It would be appropriate where the slope can be laid back to an existing natural bench or if the top of the slope has a crest that would benefit from rounding. Flattening the slope would not be appropriate where old-growth trees or a larger area of sensitive vegetation must be removed, or if the slope in question is extremely high. Slope flattening will be considered only in those areas where a significant safety hazard exists and there are no other feasible mitigation method that can be applied. In all cases, opportunities to salvage and reuse topsoil, plant materials, duff, and forest litter should be explored when slopes will be terraced or laid back.

### Slope Rounding

Slope rounding, the practice of rounding slopes at the top of soil or rock cuts, will be considered for use on all highway and non-highway projects that include major cuts.

This practice helps to blend the cut into surrounding topography and can reduce erosion. All "rounded" areas should be considered for revegetation if applicable.

### Disposal of Debris

No waste material resulting from construction or standard maintenance activities may be sidecasted over the edge of SR 14. Proper disposal sites will be approved on a project basis, but must not be visible from key viewing areas. Consider disposal sites in areas where future projects such as climbing lanes or actual SR 14 facilities may occur.

Sidecasting of winter slide debris, not including snow, resulting from emergency situations (such as road closure) will be minimized to the greatest extent feasible. Emergency debris disposal sites should be designated outside the National Scenic Area whenever possible. Inside the National Scenic Area, emergency debris disposal sites may be pre-approved by the appropriate agency.

Slide debris collected by maintenance personnel may be temporarily deposited along SR 14 in existing pullouts. All debris must be hauled to appropriate disposal sites as soon as possible.

### Rock Faces

Cutting of rock faces may be inevitable in some areas of SR 14 projects. All attempts should be made to reduce and minimize major rock cuts, and sliver rock cuts because they can often result in poor visual quality.

a. GABIONS
AS IS

b. GABIONS
BLENDED
WITH FILL &
VEGETATION

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The possibility of removing rock along natural fracture planes will be explored with projects. Where the stability of the rock is not adversely affected and the rock slope remains outside of the designated clear zone, consideration will be given to undulating smooth rock cuts to increase texture and make the cuts appear more natural. This method may involve the removal of a limited number of additional trees at the top slope. All rock cuts will meet approval of WSDOT Geotechnical Services Branch.

Newly exposed rock will be evaluated for possible application of weathering treatment, if the fracture face will be significantly lighter than the existing rock surrounding it. Products, such as *Permion*™ or an approved equal, may be used in this staining process. Each rock face will be evaluated individually for treatment.

Weathering treatment may not be necessary if:

- Existing rock varies greatly in natural color; or
- Newly exposed rock will occur in areas of talus or active slides where light, newly exposed rock is commonplace; or
- Exposed rock face is not adjacent to other rock where great contrast might occur; or
- Newly exposed rock is naturally dark in color.

**Rockfall Containment Devices**

In some cases, rockfall containment devices of some type may need to be installed due to safety issues. Wall type such as gabions and toe walls, should follow the guidelines established elsewhere in this document.

Wire mesh and/or wire rope nets (Geobrugg) slope protection, when used, will be securely anchored to the slope and treated with an approved weathering agent, such as *Eonite ® 460*, or fabric encapsulated in a colorized PVC coating, to reduce visual impact if it will be visible from SR 14 or key viewing areas. Treatment is not necessary in areas not visible from the highway or Gorge facilities.

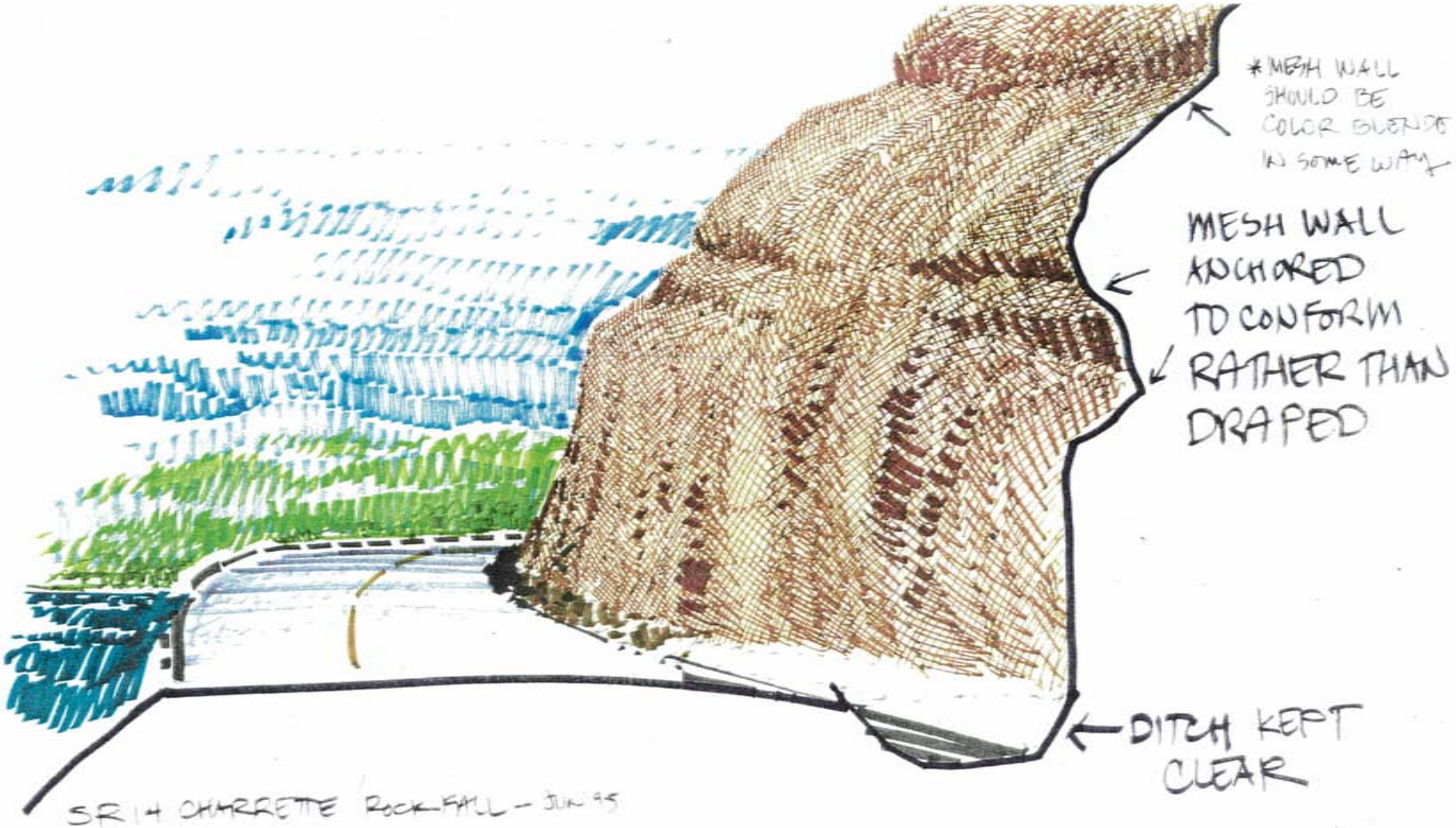
Wire mesh, cable, or rope net slope protection that requires treatment should be treated prior to installation, unless the slope will also be treated with a weathering agent.

Other rock-catchment devices may be available for use within the Gorge. Any device will be as low profile as is practical. Utilize measures to reduce visual impacts including, but not limited to, metal treated with *Eonite ® 460*, pigmented concrete and vegetative buffers.

**Rock Fences and Nets**

Rock fences and wire rope nets consist of a system of flexible nets constructed from wire rope in a regular pattern and supported by steel posts at an engineered spacing. The Geobrugg Wire Rope Nets have proven to be an efficient method of containing rockfall with minimal alteration of the slope. Fences should be colored to blend with the rock slope.

Fences and nets have been used for rockfall mitigation since the late 1950's to dissipate and stop sporadically occurring rockfall using lightweight components and dampening devices. The systems are designed for ease of installation, durability, maintenance and can be applied in an environmentally sensitive and visually appealing manner. Fences can be combined with other slope stabilization techniques or wire mesh slope protection for additional hazard mitigation.


* MESH WALL SHOULD BE COLOR BLENDED IN SOME WAY
MESH WALL ANCHORED TO CONFORM RATHER THAN DRAPED
DITCH KEPT CLEAR
SR 14 CHARRETTE ROCKFALL - JUN 95

### Temporary Devices

It is recognized that highway maintenance within steep terrain is both costly and time-consuming. Temporary barriers and temporary stockpiles of debris may be unavoidable in certain situations.

Temporary barriers will be visually mitigated to the greatest extent possible and within available resources. The barrier should be replaced to the physical and/or visual condition from which it was degraded. Mitigation should be according to applicable sections of this document.

### Rock Fall Ditches

Rock fall ditches can be utilized in areas with sufficient roadside area to construct a deep ditch which will capture rocks prior to entering the roadway. Typically these ditches are wide enough to provide access to equipment to clean and maintain the ditch. Ditches can be combined with other methods of rock fall protection including wire rope nets, vegetation or walls placed between the roadway and ditch. Vegetation may also be used up-slope from the ditch to assist in slowing and reducing the rock speeds.

The geometry and size of the rockfall ditch is determined by the angle of the slope, typical rock size and available maintenance. It is important that the ditch be constructed in a manner that will prevent rocks from bouncing or skipping over or out of the ditch.

### Scaling

Scaling is the technique of removing loose, cracked or potentially dangerous rocks from a steep slope by prying the rock loose or by selective controlled blasting. Scaling is very labor intensive and requires close coordination between workers on the slope, and the ground crew. Scaling may also be necessary on slopes that have been produced through uncontrolled blasting which creates abundant random fracturing. Fracturing allows the potential for water and/or freezing behind the rocks which will cause them to become loose.

Scaling of a rock slope may be necessary prior to the application of other slope protection techniques.

## ROADSIDE VEGETATION

### Tree Preservation

To preserve the scenic value of the road corridor, large trees will be saved where possible unless no reasonable options exist. Specimen trees (36-inches or larger), outstanding evergreen or deciduous trees, and vegetation within environmentally sensitive areas, such as streamside riparian habitat, should carry special importance and will be evaluated on a case-by-case basis. Ordinarily, tree wells will not be considered a cost-effective alternative within the SR 14 right-of-way.

Care should be taken to avoid damaging trees during construction. The common practices of driving and parking construction equipment or stockpiling materials under large trees is prohibited. The resulting soil compaction and root damage can be as destructive to the tree as the effects of filling around it. Barricades or fences will be used in sensitive areas to help minimize this type of damage.

The following methods are to be applied to both highway and non-highway situations:

***Sensitive Alignment*** - The most effective method of preserving large trees and other desirable vegetation is a carefully designed road alignment that avoids these important

resources. This method is especially suitable for scenic turnouts and other visitor facilities where roadway geometry is not so critically important. Final road alignment or improvements will reflect the "best option" in terms of road safety, material suitability, and cost, as well as scenic and environmental assets.

If several large trees are to be accommodated within a proposed fill, the slope should be evaluated for shortening. Shortening is recommended only if the soil can be stabilized at a steeper grade and it is economically feasible to do so in both highway and non-highway situations. Shortening fills may reduce other environmental impacts as well.

Other methods of preserving specimen trees include a combination of shortening slopes and installing toe walls.

In areas along SR 14, gabions are not a preferred material for toe wall construction. Dry-laid stone or "rockery" walls are preferred in areas visible from key viewing areas. However, gabion walls vegetated by live stakes and/or live cuttings may be considered in less sensitive view areas. Gabion walls vegetated in this manner may be appropriate as a lower cost alternative to stone or "rockery" walls.

In areas along SR 14, gabions are not a preferred material for toe wall construction. Dry-laid stone or "rockery" walls are preferred in areas visible from Gorge facilities. However, gabion walls vegetated by live stakes and/or live cuttings may be considered in less sensitive view areas. Gabion walls vegetated in this manner may be appropriate as a lower cost alternative to stone or "rockery" walls.

**Planting Guidelines**

When revegetating abandoned road embankments, unwanted turnouts, and other disturbed areas, the long-term goals are to control erosion and re-establish indigenous, low-maintenance vegetation that is compatible with the nearby undisturbed native plant communities and does not present undue hazards to motorists. Some specific ways of achieving these goals are as follows.

***Slope Preparation*** - The surface of graded slopes will be slightly rough, not smooth and even. Roughened slopes are easier to revegetate because the increased texture provides better seed establishment sites. Slopes "walked" with heavy equipment should be walked in a vertical manner so tract marks are horizontal to the direction of water flow.

Native topsoil will be salvaged and replaced wherever possible. This practice improves the planting medium and restores the native seed bank. Native topsoil includes soil, forest duff and litter, humus, and a certain amount of downed logs and branches. Topsoil replaced on the site gives the rehabilitated site a more natural appearance and accelerates the re-establishment of native species.

***Plant Materials*** - Indigenous plant materials will be used wherever possible. Several seed mixes composed of indigenous pioneer grass, forb, and shrub species suitable for a variety of applications should be developed. These seed mixes can be used for erosion control on large open slopes and disturbed soil areas throughout the Gorge. Seed mixes should be composed on a site-specific basis, and may be subject to review under the *National Scenic Area Act* land use ordinances. Seed and plant sources

considered indigenous for purposes of the project are discussed following the plant list.

If non-native vegetation or seeds must be used a short-lived, non-invasive species that cannot survive outside of the road corridor should be used. It should be appropriate to the environmental and climatic conditions of the planting site. If road construction creates a large, open slope sun- and drought-tolerant species should be planted. Larger shrubs and trees or "forest-edge" species can be used in areas adjacent to undisturbed forest. The success of forest-edge species is often enhanced by the application of native duff, forest litter, and woody debris.

Salvaging existing vegetation is a good way to obtain plant material that is well adapted to local environmental conditions. Some criteria for selecting salvage species are:

- the species transplants successfully;
- enough individuals grow closer together to allow an efficient salvage operation;
- existing vegetation cannot be propagated easily or cheaply;
- larger plant material is needed in the planting design; and
- suitable nursery stock is not available.

***Survivability*** - As a general rule of thumb, large, transplanted trees and shrubs may require supplemental water if transplanted during the growing season. Smaller plant material transplanted in the fall or early spring stands a much better chance of survival. Additionally, it has been found that smaller transplanted plant material often performs better and has a higher survivability rate than larger, more established trees and shrubs. Root mass and vitality are the criteria most closely associated with successful transplanting, all other things being equal.

In all cases, any vegetation to be saved and transplanted elsewhere should have an intermediate site where it can be temporarily heeled in.

***Planting Design*** - Planting design will imitate the patterns of naturally occurring plant communities. Planting in clusters or with random spacing rather than straight rows is preferred. Abrupt edges between undisturbed natural vegetation and cut slopes should be softened by using undulating clearing and grubbing limits. Where clear-cutting of mature forest has exposed rows of bare tree trunks, the row effect can be mitigated by planting larger material or fast-growing pioneer species close to the edge. Once established, this material will reduce the visual and environmental impact of the exposed edge. Planting various sized transitional shrubs, forbs, and grass species can also break up the abrupt transition between forest and bare or grassy slopes. Saving occasional clusters of large trees or masses of mature shrubs would also be desirable.

***Planting in the Clear Zone*** - Low mat-forming shrubs or grasses will be used within 15 feet of the road edge. This practice will help maintain good sight distances and reduce maintenance costs. Grasses may inhibit establishment of large woody shrubs and trees, as well as undesirable weed species next to the road. If mowing is necessary in the clear zone, visual impacts can be reduced by proper timing and a regular mowing schedule. The establishment of low ground covers or low, mat-forming shrubs may eliminate the need for mowing altogether.

To achieve variation in plant height while maximizing safety within the clear zone, consider planting several types of multi-stemmed shrubs or small trees that remain less than four-inches in diameter.

## PLANT LIST

This list is only a general guide of acceptable native plant species. Many other species of trees, shrubs, forbs, and grasses may be acceptable and available. All plant species should be evaluated on an individual and site-specific basis to determine suitability.

Highway projects that include revegetation should consider using a limited number of plants (typically two to five species) contained in this list that are known to perform within the severe conditions of a highway corridor. At the minimum, seeding of native grasses should be performed on areas of disturbed soil for basic erosion control.

A √ indicates preferred plants.

### West Side, Low Elevation

***Trees***

√ Douglas Fir
√ Red Alder
√ Big Leaf Maple
√ Oregon White Oak
. Western Hemlock
. Western Red Cedar

***Shrubs***

. Flowering Currant
√ Mountain Ash
√ Oceanspray
√ Pacific Willow
. Red Elderberry
√ Red Osier Dogwood
. Salmonberry
√ Scouler's Willow
√ Serviceberry
. Thimbleberry
√ Vine Maple

***Low Shrubs***

√ Bald-hip Rose
. Bunchberry
. Five-leaf Bramble
√ Kinnikinnick
√ Nootka Rose
√ Oregon Grape
. Pacific Blackberry
. Red Huckleberry
√ Salal
. Slender Wintergreen
√ Snowberry
. Thin-leaved Huckleberry
. Twin Flower

***Forbs***

. Coltsfoot
√ Firewood
√ Pearly Everlasting
√ Sword Fern
. Vanilla Leaf
. Western Star Flower
. Wild Strawberry

***Grasses***

√ Annual Ryegrass (15 lbs/acre pure live seed [PLS])
. Bentgrass (51 lbs/acre PLS)
√ Blue Wildrye
. California Brome
√ Red Fescue (native) (5 lbs/acre PLS)
√ Wheat grass (5 lbs/acre PLS)

### East Side

***Trees***

√ Black Cottonwood
√ Ponderosa Pine
√ Oregon White Oak
√ Quaking Aspen
√ Rocky Mountain Maple

***Shrubs***

√ Nootka Rose
√ Oceanspray
. Oregon Grape
. Red Osier Dogwood
√ Snowberry

***Low Shrubs***

√ Kinnikinnick
√ Thimbleberry

***Forbs***

√ Lupine

***Grasses***

√ Annual Ryegrass (15 lbs/acre PLS)
√ Blue Wildrye (5 lbs/acre PLS)
√ Bluebunch Wheatgrass (5 lbs/acre PLS)
. California Brome
√ Idaho Fescue (5 lbs/acre PLS)

# SR 14 CORRIDOR MANAGEMENT

# ROUTE DEVELOPMENT PLAN

## MP 18.00 Vic. to 97.83 Vic.

*Prepared for*

**Washington State Department of Transportation**
**Southwest Region**

*Prepared by*

**David Evans and Associates, Inc.**
**2828 SW Corbett Avenue**
**Portland, OR 97201-4830**

**July 1997**

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# ROUTE DEVELOPMENT PLAN

## INTRODUCTION

This Route Development Plan (RDP) is intended to present the existing physical and operating conditions of State Route (SR) 14 through the Columbia River Gorge National Scenic Area, from milepost (MP) 18.00 (west of Washougal) to 97.83.

The RDP identifies the deficient sections and recommended improvements to accommodate future preservation mobility, safety, and economic initiative projects to meet the needs of SR 14 through the Columbia River Gorge National Scenic Area. It is the objective of this RDP to provide input to the Washington State Department of Transportation (WSDOT) *State Highway System Plan*, the WSDOT Southwest region's budgetary process, and to summarize the future needs of the corridor.

## SECTION 1: HIGHWAY LOCATION, CLASSIFICATION, AND FUNCTION

### LOCATION

The Revised Code of Washington (RCW) 47.17.060 established SR 14 as follows:

"*Beginning at a junction with state route number 5 at Vancouver, thence easterly by way of Stevenson to a junction with state route number 97 in the vicinity of Maryhill; also*

*Beginning at a junction with state route number 97 in the vicinity of Maryhill, thence easterly along the north bank of the Columbia River to a junction with state route number 82 in the vicinity of Plymouth.*"

A vicinity map is presented in **Figure 1**.

### CLASSIFICATION AND FUNCTION

The 80-mile study corridor, milepost (MP) 18.00 Vic. to 97.83 Vic., of State Route 14 is a two-lane facility classified as a minor arterial. It is an important Washington state highway connecting south central and southeastern Washington with the Portland/Vancouver area. The study corridor traverses three counties (Clark, Skamania, and Klickitat), serving four incorporated towns (North Bonneville, Stevenson, White Salmon, and Bingen) and five unincorporated areas (Skamania, Home Valley, Lyle, Dallesport, and Wishram Heights). SR 14 is on the National Highway System (NHS).

#### Freight and Goods Transportation System

The Freight and Goods Transportation System (FGTS) is based on a study done for the Legislative Transportation Committee (LTC), as requested by the 1990 Legislative Session. The purpose was to look at the use of, benefits from, and damage to the state's highway transportation system by truck borne freight movement. Under the direction of the Transportation Analysis Group (TAG) the study identified a preliminary system utilizing criteria based on the level of annual gross tonnage carried. The final report identified a system of state, county and city routes that serve the transportation of products within the state and connects to freight routes in adjoining states and the Province of British Columbia. The Revised Code of Washington (RCW) 47.05.021 (Senate Bill 5963, 1993 Legislative Session) directed the Transportation Commission to adopt a Freight and Goods Transportation System including state highways, county roads and city streets. The final FGTS System was adopted by the Commission on March 16, 1995 as resolution 516.

WSDOT pavement engineers in cooperation with local government engineers established the following classifications presented in **Table 1**.

Figure 1

State Route 14
Route Development Plan

Vicinity Map

State Route 14
Columbia Gorge National Scenic Boundary

Scale: 1" = 3 miles

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WDOT0113, plot date: June 24, 1997 Plot Center: 562288,5045744

**Table 2: Access Classification**

| Beg MP | End MP | Section Des ption | Existing or Proposed Classification[a] | Speed Limit |
|---|---|---|---|---|
| 0.00 | 19.37 | SR 5 to East Washougal | Class 1 | 55 |
| 19.37 | 39.24 | E. Washougal N. to Bonneville | Class 2 | 55 |
| 39.24 | 40.67 | North Bonneville | Class 1 | 55 |
| 40.67 | 43.00 | N. Bonneville to Stevenson | Class 2 | 55 |
| 43.00 | 46.00 | Stevenson | Class 5 | 25 |
| 46.00 | 49.40 | Stevenson to Wind River | Class 2 | 50/55 |
| 49.40 | 50.79 | Wind River to Home Valley | Class 1 | 55 |
| 50.79 | 65.00 | Home Valley to Hood River Bridge | Class 2 | 55 |
| 65.00 | 69.37 | Bingen | Class 5 | 35/50 |
| 69.37 | 75.75 | Bingen to Lyle | Class 1 | 55 |
| 75.75 | 76.75 | Lyle | Class 5 | 35 |
| 76.75 | 101.38 | Lyle to SR 97 | Class 2 | 55 |

a) Class 1 = Full control, minimum 1 mile spacing for intersecting roads.
Class 2 = Partial Control, minimum 1/2 mile spacing.
Class 3 = same as Class 2 with lower operating speeds.
Class 4 = same as Class 3 with lower operating speeds.
Class 5 = minimum spacing of 1/4 mile for intersecting roads.

## Other Transportation Systems

Currently, there is no intercity bus service along SR 14. Greyhound Bus Lines operates along I-84 on the south side of the Columbia River. The SR 14 route generally parallels the Burlington Northern Santa Fe Railroad operating on the north side of the river. The tracks serve both freight and AMTRAK passenger trains, with 20 trains on a typical day.

There is an existing park-and-ride lot in the study corridor located in the vicinity of the Bridge of the Gods at MP 41.48. A second park and ride will open in the fall of 1997 at the Hood River Bridge.

SR 14 is designated as a Bicycle Touring Route in the State Highway System Plan. The *SR 14 Corridor Strategy and Action Plan* established that "SR 14 should accommodate bike and pedestrian use by providing a four-foot shoulder where practicable".

**Table 1: FGTS Classification**

| FGTS Classification | Annual Gross Tonnage | Approximate Number of Large Trucks per Day |
|---|---|---|
| T-1 | Over 10,000,000 | over 800 |
| T-2 | 5,000,000 to 10,000,000 | 400 to 800 |
| T-3 | 300,000 to 5,000,000 | 24 to 400 |
| 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.

SR 14 is an important truck route, although most of the through trips in the Columbia River Gorge are attracted to Interstate 84 on the Oregon side of the river. The FGTS tonnage class for SR 14 in the Gorge is T-3 (300 to 5,000 annual tons). There are several logging operations/timber processing and gravel pit facilities in the corridor as well as the Bonneville Dam.

SR 14 is a scenic route traversing the Columbia River Gorge National Scenic Area. State parks, county parks, and lakes provide recreational activities such as camping, boating, windsurfing, and fishing. Skamania Lodge, the Columbia River Interpretive Center, and Maryhill Museum also attract visitors to the region. These recreational opportunities result in a high peaking of traffic during the summer months, particularly on weekends.

**Access Control Classification System**

The Access Control Classification System and Standards are defined by Washington Administrative Code (WAC) Chapter 468.52. The access classification for control of access is Class 2 in rural areas, with some segments designated limited access, and Class 5 through urban areas. The access classification is presented in **Table 2.**

## SECTION 2: DESCRIPTION OF EXISTING FACILITY

### TERRAIN AND ROADSIDE CHARACTER

SR 14 is primarily a winding, two lane road that follows the surrounding terrain and varies in its elevation and distance from the Columbia River through the Gorge. It is rural in character except for where the route passes through the communities of Stevenson, Bingen/White Salmon, and Lyle.

SR 14 traverses five different areas in terms of topography. The elevation of the route between Washougal and North Bonneville (MP 18.0 to 37.0) is higher than the Columbia River and passes through rolling foothills terrain that includes Forest Service land and periodic farms. Along most of this section, the road is abutted by rock escarpments on the north side, and high embankments on the south side.

From North Bonneville to Stevenson (MP 37.0 to 45.0), SR 14 drops in elevation to parallel the Columbia River. In this section, rock escarpments are prevalent on the north side of the road, with the Burlington Northern Santa Fe Railroad on the south side.

Between Stevenson and Home Valley (MP 45.0 to 50.0), the route climbs again to an elevation higher than the Columbia River. It traverses primarily forest land, with rock escarpments on the north side and high fill embankments on the south side.

From Home Valley to Murdock (MP 50.0 to 97.83), the route again descends to river elevation, paralleling the river with rock escarpments on the north side and the BNSF Railroad primarily on the south side. The railroad is located on the north side of SR 14 between MP 59.5 to 61.6.

### ROUTE CONTINUITY

SR 14 is connected with Interstate 5 and the Portland/Vancouver metropolitan area at its western terminus, allowing for continued travel in the north /south direction. SR 14 intersects with U.S. 97 east of the route development plan area. The route continues along the north side of the Columbia River until it reaches the east terminus where it connects with Interstate 82 in the vicinity of Umatilla, Oregon.

## HISTORY

State Route (SR) 14 was constructed on its present alignment in the 1930's. The only major improvement to the highway, from mile post 18 to mile post 97, occurred with the realignment from Bingen to Lyle in the 1960's and during the early 1970's when the construction of the Bonneville Dam required relocation of a portion of the route. Highway design standards current at the time were applied during design and construction in the 1930s, 1960s, and 1970s.

The more recent projects that have occurred on SR 14 are:

| | |
|---|---|
| 1995 | Old Hatchery Road to Bergen Rd, MP 50.80 to 52.89 (OL1303)[1] |
| 1995 | Clark County Line to Cape Horn, MP 21.68 to 25.01 (OL1708) |
| 1995 | Nelson Creek Rd I/S and Franz Lake Turnout, MP 31.42 to 31.54 & MP 45.60 to 45.81 (OL1923) |
| 1995 | Tunnel Bicycle Warning Systems, MP 57.91 to 77.11 (OL1934) |
| 1995 | Tunnel No. 5 - Wire Mesh, MP 60.27 to 60.35 (OL1001) |
| 1995 | Lyle Tunnels, MP 76.60 to 77.00 (OL2205) |
| 1993 | Little White Salmon River Bridge #14/126, MP 56.75 to 57.04 (XL0575) |
| 1993 | Tunnel No. 5 to White Salmon River Bridge, MP 61.33 to 63.48 (OL1001) |
| 1993 | Courtney Rd to Klickitat River Bridge, MP 69.21 to 75.76 (OL1223) |
| 1992 | Smith Cripe Road Vicinity, MP 14.16 to 29.91 (XL0648) |
| 1990 | SR 500 to Top Steigerwald Hill , MP 14.39 to 19.37 (XL0199) |
| 1988 | Chamberlain Lake Rest Area, MP 73.94 to 74.02 (L8542) |
| 1987 | Half Bridge to Prindle, MP 24.60 to 27.87 (L8223) |
| 1986 | Bingen to Locke Lake, MP 66.72 to 69.25 (L7257) |

(1) Contract number

## GEOMETRICS

The design level for SR 14 is Modified Design Level (see *SR 14 Corridor Management Plan; Supplemental Design Guidelines.*) The WSDOT design manual defines Modified Design Level as: *"The Modified Design Level is an intermediate level that preserves and improves existing roadway geometrics, safety, and operational elements by resurfacing, rehabilitation and reconstruction."* SR 14 is planned as a two-lane rural highway and the design speed selected in the *SR 14 Corridor Strategy and Action Plan* is 50-55 mph on rural sections. The design speed equals the posted speed limit for the modified design level The required lane width is 11 ft (3.3 m) to 12 ft (3.6 m); usually 12 ft (3.6 m) based on the existing average daily traffic (ADT). Four-foot (1.2 m) shoulders were selected for SR 14, which is consistent with the Modified Design Level.

Existing geometric deficiencies are defined by the modified Design Level Standards and the WSDOT risk rating. The risk rating is a function of the posted speed limit, lane and shoulder widths, and horizontal and vertical curves. The existing geometric deficiencies are presented in Figures 2a through 2h of Section 4. Highway grades are also presented in Figure 2. Highway geometric data is shown in the Route Development Plan sheets in **Appendix A.**

SR 14 is a two-lane highway, with climbing lanes at three locations. The climbing lanes exist at the following locations: MP 27.40 to 28.12 westbound, MP 29.31 to 29.84 westbound, MP 47.62 to 48.01 westbound. The existing lane widths are either 11 ft (3.3 m) or 12 ft (3.6 m), and shoulder widths range from 1 ft (0.3 m) to 10 ft (3.0 m).

Between MP 18 and MP 97.83, there are varying segment grades that range from -5.77 percent to 6.47 percent. The Highway Capacity Manual composite grade analysis program has been utilized to determine the speed of a typical truck (200 lb/hp) on different segments on SR 14. Based on this analysis, the segments where the speed of a typical truck could drop 15 mph below the posted speed limit have been identified. A total of 8.29 miles eastbound and 7.73 miles westbound have been identified as having the potential to cause truck speeds to fall 15 mph below the speed limit.

## BRIDGES AND STRUCTURES

The highway structures and features addressed in this section include the bridges, tunnels, guardrails, stone walls and other structures that are within the WSDOT right-of-way in the SR 14 corridor.

These structures associated with SR 14 provide much of its character. The historic and rural character of the road is supported by the diversity of structures, the artistry and details of their designs, and the eras they represent. These features do not have to be "old" to lend character to the road. The guardrails, stone walls, bridges and other features reveal a road that has evolved through many episodes of construction and reconstruction. The bridges, guardrails, and tunnels are interesting and sometimes charming elements by themselves; however, when a road evokes the history and character of a place, as SR 14 does, the traveler's experience is greater than the sum of its parts.

To retain the special historic and rural character of SR 14, its character must not be incrementally eroded by the replacement of its historic structures with new ones providing only modern character. Structures that may not be eligible for the National Historic Register may nevertheless possess qualities of historic interest, or aesthetic beauty worthy of preservation or emulation. Where these existing structures do not meet current safety standards, an objective of the *SR 14 Corridor Strategy and Action Plan* is to "Reconstruct or replace hazardous highway structures utilizing designs that reflect historic architectural styles." Endowing a new structure with such historic and/or aesthetic qualities may involve additional cost beyond that of a strictly utilitarian design.

The WSDOT cultural resources program maintains the listing of state highway structures to facilitate the SEPA review process. Historic structures are categorized based on the original 1980 state-wide survey:

Category 1: Either on, or eligible for, the National Register of Historic Places;

Category 2: Not eligible for the National Register, but of interest to Washington State; and

Category 3: Not of interest (in terms of formal registration on either a National or State Register.

There are 20 bridges in the SR 14 corridor, seven tunnels, and several stone walls. **Table 3** presents an inventory of bridges and tunnels on SR 14 through the Gorge. Several SR 14 structures were listed as Category 2: bridges of historical and engineering interest to the state.

Table 3 also includes the structure length and curb to curb width. Only nine of the structures meet standards for 12-foot lanes and four-foot shoulders. The Cultural Resources Category and date of completion is indicated for structures identified by the Washington Office of Archaeology and Historic Preservation. The SR 14 *Needs Study* recommendations and WSDOT *Highway Systems Plan* status are summarized from the *SR 14 Strategy: Highway Structures and Historic Features*.

**Table 3: Bridges and Tunnels**

| MP | Bridge # | Crossing Name | Length (ft) | Curb-Curb Width (ft) | Cultural Resources Category [a] (Date) | SR 14 Needs Study Recommendations | WSDOT HSP Status |
|---|---|---|---|---|---|---|---|
| 18.09 | 014/034 | Gibbons Creek | 65 | 40 | 3 | No action recommended | None |
| 18.77 | 014/035 | BNSF Rail Road OC | 382 | 40 | 3 | No alterations necessary | None |
| 20.90 | 014/038 | Lawton Creek | 44 | 24 | 3 | Replacement | None |
| 24.92 | 014/103 | Half Bridge | 75 | 16 | 3 | Replacement | Highway Realignment |
| 25.04 | 014/104 | Cape Horn Slide | 479 | 24 | 3 | Replacement; realignment from MP 21.72 | Highway Realignment |
| 32.87 | 014/107 | Duncan Creek | 45 | 25 | 3 | Replacement | Replacement |
| 34.24 | 014/109 | Woodward Creek | 130 | 25 | 3 | Replacement | Replacement |
| 37.19 | 014/111 | BNSF OC Tunnel | 180 | 40 | 3 | None | None |
| 37.43 | 014/112 | Hamilton Creek | 270 | 44 | 3 | Bridge resurfacing | None |
| 37.89 | 014/113 | Cascade Dr OC | 160 | 44 | 3 | None | None |
| 40.48 | 014/115 | BNSF Rail Road OC | 319 | 44 | 3 | None | None |
| 43.90 | 014/118 | Rock Creek | 200 | 23 | 2 (1938) | Bridge widening | Bridge widening |
| 49.34 | 014/122 | Wind R - Al Henry Br | 663 | 40 | 3 | None | None |
| 56.87 | 014/126 | L. White Salmon R | 471 | 24 | 2 (1937) | None | None |
| 58.08 | 014/128 | Tunnel #1 13.5' ht. | 130 | 24 | 2 (1937) | None | None |
| 58.45 | 014/129 | Tunnel #2 13.5' ht. | 408 | 24 | 2 (1937) | None | None |
| 58.92 | 014/130 | Tunnel #3 13.5' ht. | 257 | 24 | 2 (1937) | None | None |
| 59.03 | 014/131 | Gulch Bridge | 215 | 24 | 2 (1937) | Bridge replacement | None |
| 59.44 | 014/132 | BNSF Rail Road OC | 126 | 24 | 3 | Bridge replacement | None |
| 59.61 | 014/133 | Tunnel #4 13.5' ht. | 261 | 24 | 3 | None | None |
| 60.23 | 014/134 | Tunnel #5 13.5' ht. | 212 | 24 | 2 (1937) | None | None |
| 61.62 | 014/137 | SPS Rail Road OC | 158 | 24 | 3 | Bridge replacement | None |
| 63.45 | 014/201 | White Salmon River | 296 | 40 | 3 | None | None |
| 75.76 | 014/212 | Klickitat River | 265 | 24 | 2 (1933) | Bridge replacement | None |
| 76.77 | 014/215 | Tunnel #6 13.0' ht | 389 | 26 | 2 (1933) | Lighting, lining, headwalls | None |
| 76.86 | 014/216 | Tunnel #7 13.0' ht | 233 | 26 | 2 (1933) | Lighting, lining, headwalls | None |
| 86.03 | 014/221 | Gulch Half Bridge | 40 | 14? | | Bridge replacement | |
| 86.12 | 014/222 | Horsethief Canyon | 92 | 24 | 2 | Bridge replacement | |

(a) Washington Office of Archaeology and Historic Preservation, updated March, 1995.

## TRAFFIC CONTROL FEATURES

Traffic control devices are used to ensure highway safety by providing for the orderly movement of all traffic, motorized and non-motorized, throughout the highway. They direct and assist vehicle operators to traverse the highway facility safely. They provide warnings as needed to ensure the safe operation of the individual traffic elements of the traffic stream. Traffic control devices consists of signs, signals, and pavement markings.

Existing signs on SR 14 are adequate and effective. The devices used are regulatory, warning, and guide signs. Regulatory signs, like a speed limit sign, give notice of traffic laws or regulations. Warning signs, like a winding road sign, call attention to conditions that are potentially dangerous to traffic operations. Guide signs show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information.

The posted speed limit is 50-55 mph in rural areas and 25-40 in urban areas. The posted speed limited is carefully determined by the 85th percentile speed of free-flowing vehicles. The posted speed limit will equal the design speed for the Modified Design Level selected for SR 14. **Table 4** presents posted speed limits by milepost.

**Table 4: Posted Speed Limits**

| From MP | To MP | Posted Speed (MPH) |
|---|---|---|
| 18.00 | 21.00 | 55 |
| 21.77 | 26.28 | 50 |
| 26.28 | 44.02 | 55 |
| 44.02 | 44.58 | 25 |
| 44.58 | 48.01 | 50 |
| 48.01 | 63.17 | 55 |
| 63.27 | 64.71 | 50 |
| 64.71 | 66.15 | 40 |
| 66.15 | 66.66 | 25 |
| 66.66 | 67.00 | 35 |
| 67.00 | 75.82 | 55 |
| 75.82 | 76.54 | 35 |
| 76.54 | 97.83 | 55 |

All the intersections on SR 14 are two-way stop controlled with the right-of-way assigned to SR 14 motorists. The intersections at Russell Avenue in Stevenson and SR 141/Oak Street in Bingen are equipped with intersection control beacons, with the SR 14 traffic facing the flashing circular yellow signal.

Longitudinal pavement markings on SR 14 are properly placed and conform to highway standards. The centerline of the highway is painted with yellow lines to delineate the separation of opposing traffic flows. Broken yellow lines are used in those sections where passing is permitted, and solid yellow lines are used when passing is restricted. Double solid yellow lines are used to indicate maximum passing restrictions. Solid white lines are used to mark the edges of the pavement. Wide solid white lines are used to delineate left or right turn lanes.

## RIGHT-OF-WAY

Right-of-way (R/W) widths along SR 14 are extremely variable, ranging in widths from less than 15 feet to greater than 550 feet. R/W width in the westbound direction ranges from 26 feet to 200 feet. The average westbound R/W width is approximately 50 feet. R/W width in the eastbound direction ranges from 15 feet to 500 feet. The average eastbound R/W width is approximately 30 feet.

## SECTION 3: PRESENT AND PROJECTED OPERATING CONDITIONS

### TRAFFIC VOLUMES

Traffic volumes along SR 14 vary according to the location, time of the day, and season. Traffic volumes and truck percentages are included in the RDP sheets in **Appendix A**. The 1994 average daily traffic (ADT) ranges from as low as 2,200 to as high as 8,400 ADT. Total truck traffic percentage ranges from 7.0 percent to 24.9 percent. The highest traffic volumes are between MP 44.18 to 44.66, Seymour Avenue to the Stevenson east city limits, and between Hood River Bridge Road and Ash Street (MP 65.08 to 66.34) in the White Salmon/Bingen area.

### 1996 LEVEL OF SERVICE

Nearly all of SR 14 operates with a level of service (LOS) in the B to C range, with some segments of the highway operating with a LOS A. The WSDOT *State Highway System Plan* service objectives defines LOS C as adequate on rural highways. Level of Service is included in the RDP Sheets in Appendix A.

The level of service for the five unsignalized intersections with the highest traffic counts were also analyzed. The intersections included in the analysis are Seymour Avenue (MP 44.18), Russell Avenue (MP 44.26), Hood River Bridge Road (MP 65.08), SR 141/Oak Street (MP 66.41), and SR 142 (MP 75.87). The minor leg traffic movements of all the intersections considered for analysis operate with a level of service in the A to C range.

### 2015 LEVEL OF SERVICE

The average daily traffic annual growth rate was determined from ADT data from 1970 to 1994. The annual growth rates range from 2.31 percent at Cook-Underwood Road (MP 56.28) to 7.66 percent at Hood River Bridge Road (MP 65.08), with an average growth rate of 3.68 percent.

Within the next 20 years, it is expected that minimal developments along SR 14 will take place due to land zoning regulations and the rural nature of the route. A two percent annual growth rate was used to project the present ADT to 2016. The resulting PM Peak hour LOS is included in the RDP sheets in Appendix A. The 2016 LOS is estimated to fall below LOS C in the following three segments: Washougal east city limits at MP 18.12 to the beginning of the westbound climbing line at MP 27.4; Bridge of the Gods at MP 47.47; and from the Cook-Underwood Road at MP 63.32 to Maple Street in White Salmon at MP 66.47.

As shown on the Route Development Plan sheets, the projected increase in traffic volume in the year 2020 is expected to change the operating conditions on SR 14. If the present geometric conditions remain unchanged, most of SR 14 is estimated to operate with a level of service in the C to D range. The sections from MP 44.58 to 47.47 and MP 63.52 to 65.08 are estimated to operate at LOS E.

The minor leg traffic movements at the intersections with SR 142, SR 197, SR 97 northbound left, and SR 97 southbound left intersections should continue to operate at LOS B. The minor

leg traffic movements at Seymour Avenue are estimated at LOS D, Russell Avenue is estimated at LOS E, Hood River Bridge Road will be LOS F, and at SR 141/Oak Street will be level of service D for the northbound leg and level of service F for the southbound leg.

## SECTION 4: ROUTE IMPROVEMENTS

A detailed summary of highway operating conditions and recommended improvement projects on SR 14 is presented graphically in **Figure 2a** through **Figure 2h** at the end of this section. Each of the recommended projects is numbered consecutively with a letter identifying the project type. A project identification legend on each figure identifies each project type for quick reference. For example, S = safety, CL = climbing lane; and R = rockfall. The project priority, relative to other projects within the corridor, is highlighted in bold as high, medium, or low. These priorities are based on responses to a survey distributed to the SR 14 Steering Committee and will be used in conjunction with WSDOT priority programming determination.

Highway conditions along each segment and recommended improvement projects are summarized in text on a page facing each figure. Project costs are identified in bold for projects that require prioritization. The cost of rockfall and bridge preservation projects that are within another improvement project segment are not included in that project's costs.

The width and condition of the highway shoulders is significant to traffic safety, and bicycle touring throughout the corridor. The *SR 14 Corridor Strategy and Action Plan* selected a four-foot shoulder as the standard for improvements which is consistent with the modified design level. Four-feet provides a balance between the impacts of widening, cost, safety, and bicycle touring needs.

### MOBILITY

The State Highway System Plan mobility service objective is to provide uncongested conditions (level of service C) on rural highways and to mitigate congestion on urban highways in cooperation with local and regional jurisdictions when the peak period level of service falls below D. Figures 2a through 2h show the highway sections that have mobility deficiencies at the present time (1996) and by 2016. At 1.0 the benefits of a project equals the cost.

#### Access Management

Maintenance of the existing access classification will ensure the highest level of mobility while providing access consistent with the needs of users.

### SAFETY

The State Highway System Plan service objective for highway safety is to provide the safest possible highways within the available resources. The Safety subprogram of Highway Improvements will provide specific funding for collision reduction and collision prevention efforts. The collision reduction effort aims at improving a high accident corridor (HAC). The criteria used to locate a high accident corridor are: total severity points per mile, average severity per accident, and total number of accidents. The collision prevention effort aims at improving a section that poses probability of running off the road (RISK). The criteria used to locate a RISK section are: ADT, horizontal curvature, vertical grade, width of shoulder, and signed speed limit.

The HAC and RISK sections are identified in Figures 2a through 2h of the *Executive Summary* with the corresponding recommended improvement. These sections are described as a safety deficiency. The RISK rating is shown in the RDP sheets in Appendix A.

Realignment projects are recommended that include correcting substandard horizontal and vertical curves, lane and shoulder widening, and improving other safety features. Widening projects are also recommended in those areas where there are no identified safety deficiency to improve highway geometrics and provide bicycle route continuity. Shoulders are widened to 4 feet (1.2 m).

## PRESERVATION

Preservation projects are significant to route improvements on SR 14. About one-third of the sites identified in the *Statewide Unstable Slope Inventory* are related to rockfall on SR 14 through the scenic area. The Unstable Slope Inventory is based on a system for identifying and classifying rock fall hazards throughout the state highway system. The rating system consists of 10 categories or factors that are evaluated, scored and totaled resulting in a numeric rating of an identified problem site. The rating system is also used to identify portions of individual highway systems that have problems with significant rock fall hazards. The 10 categories or factors include: economic considerations, annual maintenance costs and potential regional economic impacts which are listed in a matrix format with each factor scored by assigning points. The point total for a rock fall area, the higher the potential hazard.

Figures 2a through 2h show the segments from the unstable slope inventory and rockfall improvement projects from the HSP preservation program.

There are numerous bridges and structures on SR 14, many of which are included in the HSP preservation program The bridge inventory is presented in Section 2, Description of Existing Facility, in Table 3. Bridges are also indicated in Figures 2a through 2h.

## ECONOMIC INITIATIVES

The *State Highway System Plan* service objectives for economic initiatives are:

1. Support efficient and reliable freight movements on state highways.
2. Support tourism development and other Washington industries.
3. Preserve, restore, enhance, and maintain the heritage resources along state routes, where appropriate, within state-owned rights of way and easements, and cooperatively with communities and agencies for heritage resources of state-interest outside state-owned rights-of-way, as identified in Corridor Management Plans.

Economic initiative projects on SR 14 include: tunnel warning systems for on-coming truck traffic; increasing tunnel heights where feasible; joint development of scenic vistas; and shoulder widening for bicycle safety. Shoulders are widened to four feet (1.2 in) wherever feasible. Projects are identified in Figures 2a through 2h. A written summary of each project is included with each sheet of Figure 2.

## ENVIRONMENTAL RETROFIT

There are no environmental retrofit projects planned for SR 14.

## CONDITIONS AND RECOMMENDED IMPROVEMENTS

### SEGMENT A

Milepost (MP) 18 to MP 28; beginning of CRGNSA and east boundary of Clark County Urban Growth Area (UGA), around Cape Horn, and back to the river's edge at MP 28 - **Figure 2a**.

#### Conditions

This section of SR 14, especially around Cape Horn, is a winding mountainous road. Traffic forecast from MP 18.0 to about MP 27.5 estimates that this section will be over capacity within the next 20 years. Traffic today is frequently backed up behind slow moving trucks or recreational vehicles due to the geometry of the existing roadway.

Travel lanes are 11 feet wide from about MP 19.6 to MP 28.0. Shoulder widths are typically four feet or wider, but much of the shoulder edge is deteriorating. The narrower lane (standard is 12 feet) combined with four-foot deteriorating shoulders causes this section to feel narrow. There is an existing westbound climbing lane from approximately MP 27.7 to MP 27.0.

The section around Cape Horn from MP 22.0 to about MP 27.5 is identified as a safety deficiency. A safety deficiency is defined by the risk rating which is calculated based on the highway curvature, lane and shoulder widths, and posted speed limit. A high accident corridor (HAC) exists just east of the Cape Horn half bridge. An HAC is determined by a statistical calculation based on actual accident experience.). There is rockfall activity at two locations that are on the statewide priority list for unstable slopes.

### Project Summaries

***Project Number 1M - MP 18.12 to MP 19.90,***
***Washougal City Limits to MP 19.90*** ***Cost $13,634,000***

This project, included under the Mobility section of the HSP, proposes to widen the roadway to four lanes or construct intermittent passing lanes. The Steering Committee ranked this project as a **medium** priority for the corridor. The roadway along this project follows an identified geologic hazard and crosses two fish bearing streams. The benefit/cost ratio is 0.25.

***Project Number 2CL - MP 19.90 to MP 20.58, Vicinity Lawton Creek*** ***Cost $2,644,000***

This project, listed under the Mobility section of the HSP, proposes construction of a westbound climbing lane directly after the widening project 1M. The Steering Committee ranked this project as a **medium** priority for the corridor. The roadway along this project follows an identified geologic hazard, potential endangered species habitat and a fish bearing stream. The benefit/cost ratio is 0.30.

***Project Number 3BR - MP 20.90 to MP 20.91, Lawton Creek Bridge Replacement*** ***$ N/A***

The Lawton Creek Bridge is scheduled for replacement or rehabilitation on the statewide bridge inventory. Environmental conditions identified include geologic hazards and fish habitat.

***Project Number 4M,S - MP 21.72 to MP 27.47, Cape Horn Bypass*** ***Cost $38,560,000***

This project, listed under the Mobility section of the HSP, proposes to construct a new alignment around Cape Horn to improve mobility and safety. A completely new alignment would avoid the multiple and difficult improvements necessary on the existing alignment around the Cape. A number of environmental issues are identified due to the project length including geologic hazards, potential habitat endangered species and wildlife habitat. The benefit/cost ratio is 0.36. The Steering Committee ranked this as a **high** priority project relative to the other corridor projects. It will remain on the list recognizing that funding will be a significant challenge. Projects 5 through 11 described below will identify needed improvements on the existing alignment.

***Project Number 5CL - MP 22.70 to MP 24.20,***
***Marble Road Vicinity to Half Bridge*** ***Cost $4,667,000***

This project, listed under the Mobility section of the HSP, proposes construction of an eastbound climbing lane. This project would improve mobility by providing a passing opportunity around slow moving trucks and recreational vehicles. The Steering Committee ranked this project as a **high** priority for the corridor. Environmental concerns identified within this project section are habitat for wildlife, including some endangered species. The benefit/cost ratio is 0.25.

***Project Number 6CL - MP 24.00 to MP 24.80, Vicinity Half Bridge*** ***Cost $2,307,000***

This project, listed under the Mobility section of the HSP, proposes to construct a westbound climbing lane. This project would improve mobility by providing a passing opportunity around slow moving trucks and recreational vehicles. The project would overlap with the eastbound climbing lane, project 5CL, by two-tenths of a mile at the top of the crest. The Steering Committee ranked this project as a **medium** priority for the corridor. Environmental concerns identified include endangered species and other wildlife habitat, and geologic hazards. The benefit/cost ratio is 0.18.

***Project Number 7V -Vic. MP 24.8, Vista Enhancement*** ***$ N/A***

This project, to construct a scenic vista with parking at Cape Horn, is currently under development. There will be two main alternatives in the Environmental Assessment. One alternative is on the north side of SR 14 and the other alternative is on the south side. Access from the highway is at approximately MP 24.8. There would be an eastbound left-turn lane and a westbound right-turn lane with the north side alternative. For the south side alternative there would be an eastbound left-turn lane. The driveway access is at the beginning of the planned westbound climbing lane project (6CL). The driveway access is also at the west end of project 7S that includes minor realignment and shoulder widening. This project, through a combination of funds, is expected to be fully funded within one to two years.

***Project Number 8S - MP 24.80 to MP 25.90, Rockfall Protection*** ***Cost $1,545,000***

This project, listed under the Safety section of the HSP, proposes to realign the roadway, widen shoulders, and provide rockfall protection within this high accident corridor (HAC) segment. Environmental conditions identified include geologic hazards. The Steering Committee ranked this project as a **high** priority for the corridor. The benefit/cost ratio for this segment is 1.18 based on the rockfall protection project **(9R)**, because of accidents due to the rockfall. The rockfall rating is 279, placing it high on the statewide list.

***Project Number 10BR - MP 24.92 to MP 24.93, Half Bridge Replacement*** ***$ N/A***

The half bridges at Cape Horn are scheduled for replacement or rehabilitation on the statewide bridge inventory. Environmental conditions include geologic hazards. The project costs have not been estimated.

***Project Number 11CL - MP 25.95 to MP 27.40,***
***Cape Horn Slide Bridge to Prindle Road Vicinity*** ***Cost $4,252,000***

This project, listed under the Mobility section of the HSP, proposes to extend the existing westbound climbing lane. The Steering Committee ranked this project as a **medium** priority for the corridor. The environmental data identifies endangered species habitat within this segment. The benefit/cost ratio is 0.57.

***Project Number 12S - MP 25.62 to MP 26.27, Realignment*** ***Cost $4,500,000***

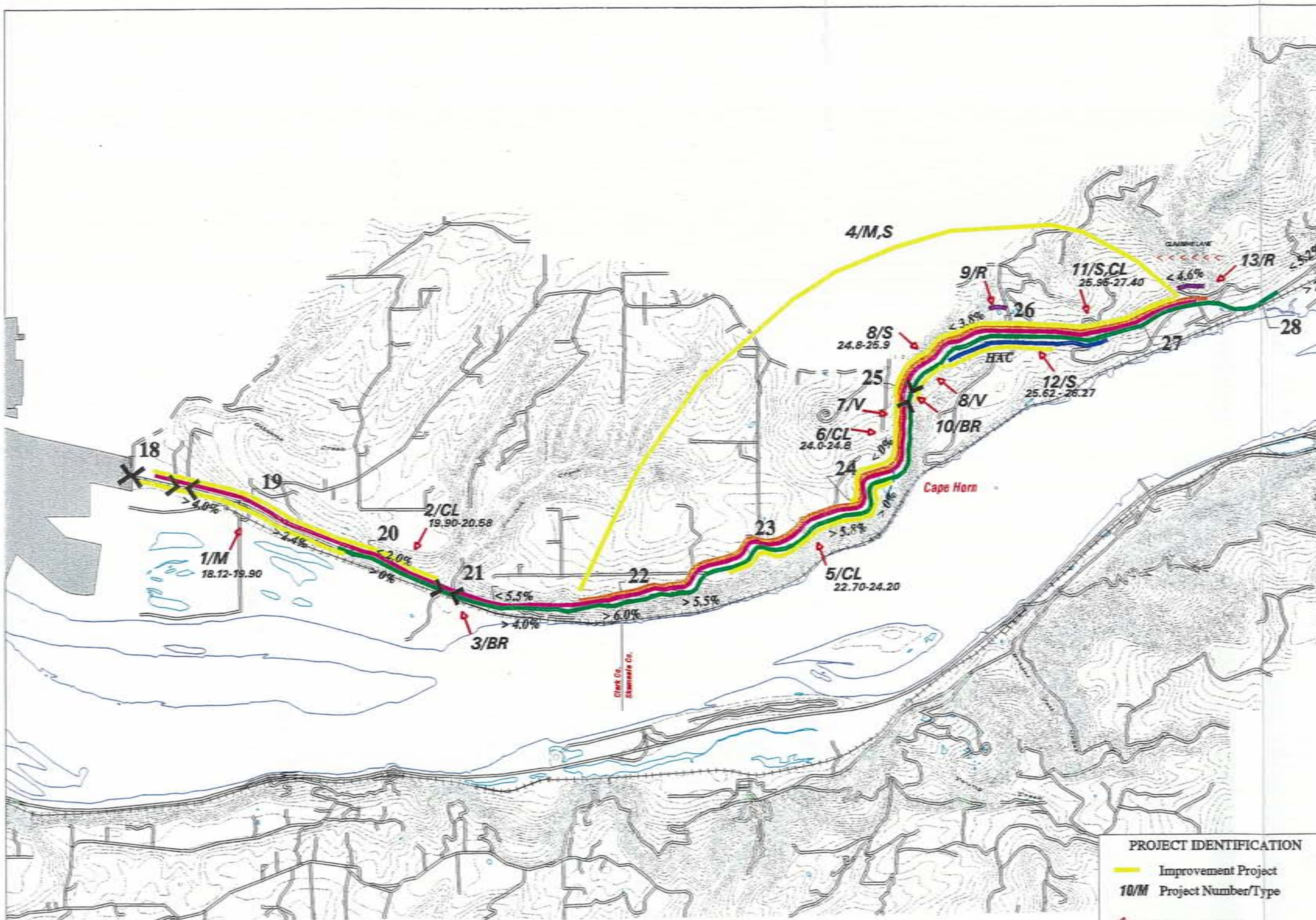
This project, listed under the Safety section of the HSP, proposes minor realignment of the roadway and shoulder reconstruction with one foot of widening. The Steering Committee ranked this project as a **high** priority for the corridor.

***Project Number 13R, Rockfall Protection*** ***$ N/A***

This is a rockfall protection project adjacent to the existing climbing lane. The rockfall rating is 219, placing it in the middle of the statewide list. As a priority within the corridor for rockfall protection this project is rated **low**.

Figure 2a

# State Route 14
# Route Development Plan




## Legend

- 18 Milepost
- Roads
- Railroad
- Water Courses
- Contours
- High Accident Corridor
- Future Congestion
- Safety Deficiency
- Lane Width = 11 feet
- Shoulder Width < 4 feet
- Unstable Slope
- > < Bridge
- Tunnel
- > 5.0% Grade and Uphill Direction
- Urban Area

*Columbia River Gorge National Scenic Area*

1" = 4000 ft.

**PROJECT IDENTIFICATION**

- Improvement Project
- 10/M Project Number/Type
- Project Marker

B = Bicycle
BR = Bridge
CL = Climbing Lane
M = Mobility
P = Parking
R = Rockfall Protection
S = Safety Improvement
T = Tunnel
V = Vista Enhancement

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## SEGMENT B

MP 28 to MP 38; just east of Cape Horn to North Bonneville - **Figure 2b**.

### Conditions

This segment of SR 14 generally follows the Columbia River, entering Skamania County east of Duncan Creek Bridge, and then around Beacon Rock at Beacon Rock State Park. The capacity of the roadway is adequate for future traffic volumes.

Travel lanes are 11 feet wide from MP 30 to approximately MP 33. Shoulder widths are typically four feet or wider, but much of the shoulder edge is deteriorating. The narrower lane (standard is 12 feet) combined with four-foot deteriorating shoulders causes some sections to feel narrow.

There are safety deficiencies between MP 30 and 31, and from MP 33.7 to MP 35.0 defined by the risk rating which is calculated based on the highway curvature, lane and shoulder widths, and posted speed limit. There is rockfall activity at five locations that are on the statewide priority list for unstable slopes.

**Project Summaries**

***Project Numbers 14R, 15R, Rockfall Protection*** ***$ N/A***

There are two rockfall protection projects adjacent to the existing westbound climbing lane between MP 29 and 30. The rockfall ratings are 54 and 51, placing them low on the statewide list. As a priority within the corridor for rockfall protection the rating is also **low**.

***Project Number 16S - MP 30.15 to MP 30.67, Realignment*** ***Cost $1,600,000***

This project, listed under the Safety section of the HSP, proposes roadway realignment, widened shoulders, and rockfall protection **(17R)** within this section. Rockfall protection project 17R is rated 273, placing it in the middle of the statewide priority list. The Steering Committee ranked this project as a **low** priority for the corridor. Geologic hazards are identified within this segment. The benefit/cost ratio for this segment is very low at 0.07.

***Project Number 18R - MP 30.90 To 31.10, Rockfall Protection*** ***$ N/A***

This rockfall protection project is in the middle of the statewide unstable slope priority listing with a rating of 216. As a priority within the corridor for rockfall protection, the rating is **low**.

***Project Number 19BR - MP 32.87 to MP 32.88, Duncan Creek Bridge Replacement*** ***$ N/A***

The Duncan Creek Bridge is scheduled for replacement or rehabilitation on the statewide bridge inventory. As a corridor priority, it ranks **medium to high**. There are geologic hazards identified in the creek vicinity. The project cost is estimated at $1,400,000. As a WSDOT preservation project, the cost does not affect the corridor project prioritization.

***Project Number 20BR - MP 34.24 to MP 34.26, Woodard Creek Bridge Replacement*** ***$ N/A***

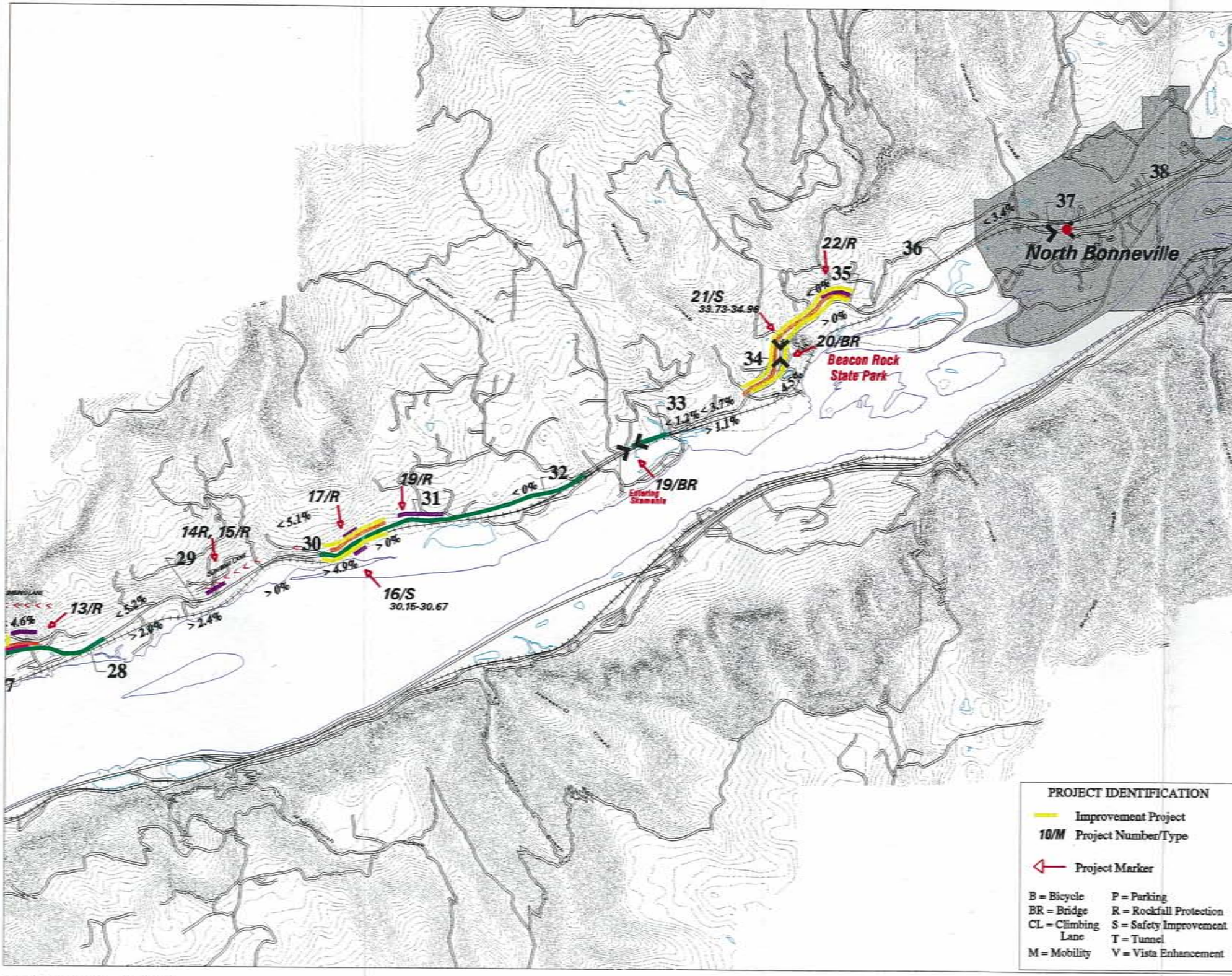
The Woodard Creek Bridge is scheduled for replacement or rehabilitation on the statewide bridge inventory. Environmental conditions identified include geologic hazards, potential habitat for endangered species, water, and fish habitat. The project cost has not been estimated.

***Project Number 21S - MP 33.73 to MP 34.96,***
***Skamania Landing Road Vicinity to Beacon Rock State Park*** ***Cost $3,705,000***

This project, listed under the Safety section of the HSP, proposes to realign the roadway, widen shoulders, and provide rockfall protection **(22R)**. The Steering Committee ranked this project as a **high** priority for the corridor. The rockfall protection project is rated 210, placing it in the middle of the statewide priority list. Environmental conditions identified include geologic hazards, potential habitat for endangered species, and fish habitat. The benefit/cost ratio for this segment is the highest within this section of the corridor at 2.24.

Figure 2b

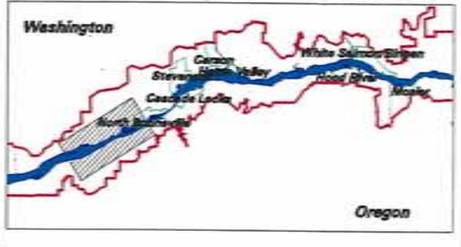
# State Route 14
# Route Development Plan




## Legend

| | |
|---|---|
| 18 | Milepost |
| | Roads |
| | Railroad |
| | Water Courses |
| | Contours |
| | High Accident Corridor |
| | Future Congestion |
| | Safety Deficiency |
| | Lane Width = 11 feet |
| | Shoulder Width < 4 feet |
| | Unstable Slope |
| > < | Bridge |
| | Tunnel |
| > 5.0% | Grade and Uphill Direction |
| | Urban Area |

*Columbia River Gorge National Scenic Area*




**PROJECT IDENTIFICATION**

| | |
|---|---|
| | Improvement Project |
| 10/M | Project Number/Type |
| | Project Marker |

| | |
|---|---|
| B = Bicycle | P = Parking |
| BR = Bridge | R = Rockfall Protection |
| CL = Climbing Lane | S = Safety Improvement |
| | T = Tunnel |
| M = Mobility | V = Vista Enhancement |

1" = 4000 ft.

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**SEGMENT C**

MP 38 to MP 50; North Bonneville to Home Valley - **Figure 2c**.

**Conditions**

This segment of SR 14 goes through Stevenson, past the Carson junction, and generally follows the Columbia River. The highway follows the Sweeney curves between Stevenson and the Carson junction. Traffic volumes are expected to increase in the future, causing the LOS to drop below C (a congestion deficiency) in Stevenson.

Travel lanes are 11 feet wide for about a half mile west of Stevenson, and from the east side of Stevenson to Home Valley. Shoulder widths are four feet wide around the Sweeney curves, and wider through other sections.

There are safety deficiencies between MP 41.50 and 42.15, and from MP 45 to 48, including the Sweeney curves, defined by the risk rating. There is rockfall activity at seven locations that are on the statewide priority list for unstable slopes.

## Project Summaries

***Project Number 23S - MP 41.55 to MP 42.15,***
***Bridge of the Gods to Ash Lake Road Vicinity*** ***Cost $305,000***

This project, listed under the Safety section of the HSP, is a project to realign the roadway, widen shoulders, and provide rockfall protection **(24R)**. Rockfall protection project 24R is rated 168, placing it about in the middle on the statewide priority list. The Steering Committee ranked this project as a **high** priority for the corridor. Environmental conditions identified include geologic hazards, potential habitat for endangered species, water, and fish habitat. The benefit/cost ratio for this segment is 3.21.

***Project Number 25BR - MP 43.90 to MP 43.93, Rock Creek Bridge Replacement*** ***$ N/A***

The Rock Creek Bridge is scheduled for widening and replacement on the statewide bridge inventory. There are wetlands and fish habitat identified in the creek vicinity. The project cost has not been estimated.

***Project Number 26M - MP 43.99 to MP 44.67,***
***Stevenson Two Way Couplet, Phase 2*** ***Cost $2,270,000***

This project, listed under the Mobility section of the HSP, proposes to construct the second phase of the Stevenson two-way couplet. There are no significant environmental conditions that would affect project construction. The benefit/cost ratio is 0.21.

***Project Number 27S - MP 44.89 to MP 48.09,***
***Vicinity of Stevenson to Carson Depot Road Vicinity*** ***Cost $1,000,000***

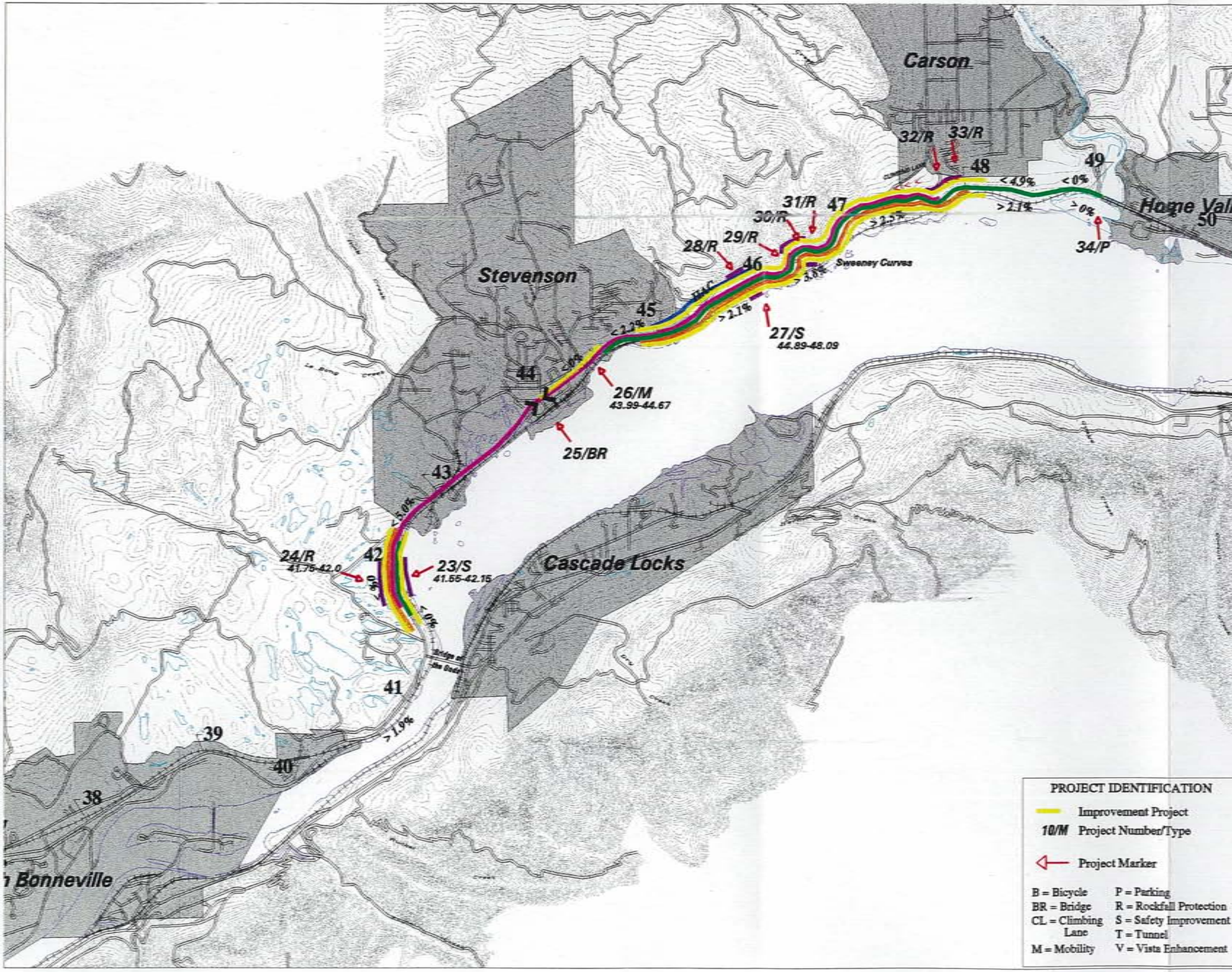
This project, listed under the Safety section of the HSP, is a project to realign the roadv[illegible] widen shoulders, and provide rockfall protection **(28R, 29R, 30R, 31R, 32R, 33R)** within this section. Rockfall protection project 28R and 32R are rated 132 and 138, placing them low on the statewide priority list, and the remaining four have a rating of 204 to 234, placing them in the middle of the statewide list. The Steering Committee ranked this project as a **high** priority for the corridor. No significant environmental conditions were identified that would affect project construction. The benefit/cost ratio is 3.28, the highest in the corridor.

***Project Number 34P - Vic. MP 49, Recreation Parking*** ***Cost $100,000***

This is a medium priority non-WSDOT project to develop a parking area off the highway right-of-way, for recreational fishing activity. Environmental conditions identified include geologic hazards, water and wetlands, fish habitat, and a possible historic site.

Figure 2c

# State Route 14
# Route Development Plan




## Legend

- 18 Milepost
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- Railroad
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- Contours
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- Future Congestion
- Safety Deficiency
- Lane Width = 11 feet
- Shoulder Width < 4 feet
- Unstable Slope
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- Tunnel
- > 5.0% Grade and Uphill Direction
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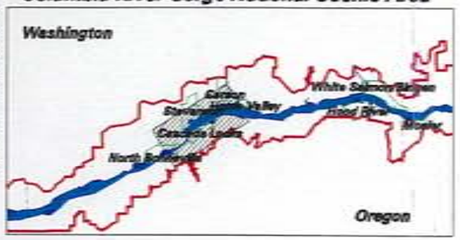
**Columbia River Gorge National Scenic Area**




**PROJECT IDENTIFICATION**

- Improvement Project
- 10/M Project Number/Type
- Project Marker

B = Bicycle
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V = Vista Enhancement

1" = 4000 ft.

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WDOT0113, plot date: June 24, 1997

**SEGMENT D**

MP 50 to MP 60; Home Valley to Gulch Bridge - **Figure 2d.**

**Conditions**

This segment of SR 14 follows the shoreline of the Columbia River, tightly squeezed between the railroad tracks and the steep cliffs. There are five tunnels from MP 58 to MP 60. The shoulders within the tunnels are very narrow, and tunnel heights vary from 12 feet 9 inches to 18 feet 9 inches (standard is 14 feet 6 inches). Trucks, especially those unfamiliar with the tunnels, frequently straddle the center line when drivers are nervous about the vertical clearance.

Travel lanes are 11 feet wide for the entire segment from Home Valley, east to MP 60. Shoulder widths are less than four feet from approximately MP 52.5 and beyond MP 60.

There is only one short segment with an identified safety deficiency, just west of MP 52. There is rockfall activity within four sections that are on the statewide list for unstable slopes.

**Project Summaries**

***Project Number 35B - MP 52.36 to MP 56.87, Bicycle Touring Route*** ***Cost $622,000***
This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. Shoulder widening in this section is partially complete from previous projects. Rockfall protection projects **36R, 37R, 38R, 39R, and 40R** are within this section. The rockfall ratings are from 234 to 381 for all except 39R, which is 156. These rockfall projects are in the middle to high on the statewide priority list. The Steering Committee ranked this project as a **low** priority for the corridor. Environmental conditions identified include geologic hazards and endangered species habitat. The benefit/cost ratio for this segment was not calculated because bicycle improvement projects would be funded from the WSDOT Economic Initiative program.

***Project Number 41P, Vic. 56.8, Recreation Parking*** ***Cost $100,000***
This is a non-WSDOT project to develop a parking area for recreational fishing activity off the highway right-of-way. The Steering Committee ranked this project as a **medium** priority for the corridor. Environmental conditions identified include geologic hazards, water and wetlands, fish habitat, and a possible historic site.

***Project Number 42T - MP 58.00 to MP 60.00,***
***ITS Truck and Bike Detectors and/or Signs at Tunnels*** ***Cost $1,000,000***
This project, listed under the Mobility section of the HSP, proposes to install electronic warning systems and truck detectors to inform on-coming traffic of trucks within the tunnels. Signing would be provided to inform motorists of the system, and provide additional clearance information to trucks. This project includes all tunnels along the SR 14 corridor. The Steering Committee ranked this project as a **high** priority for the corridor. Environmental conditions identified in the vicinity of all the tunnels include geologic hazards, water and/or wetlands, wildlife habitat for both endangered species and birds.

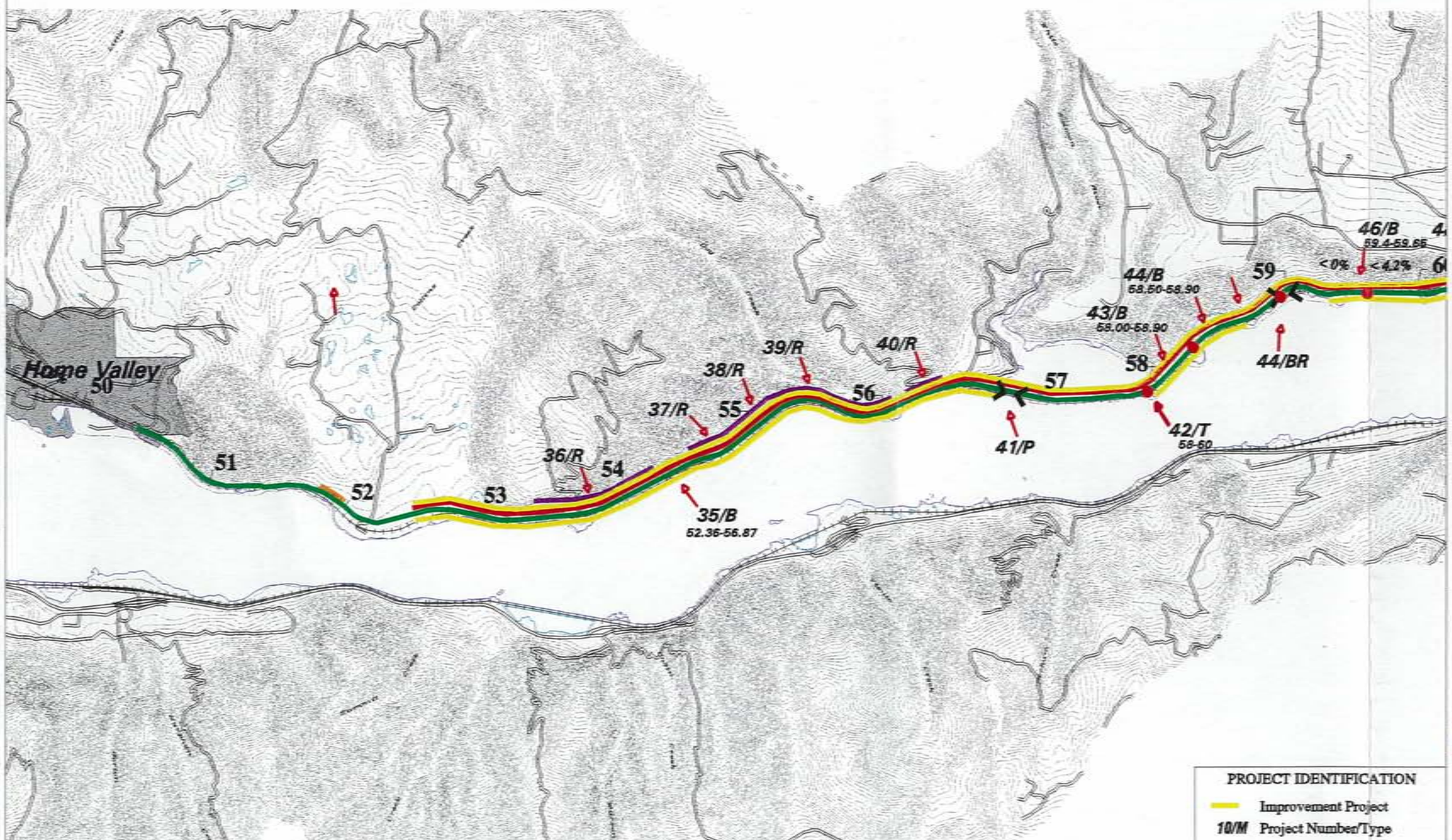
***Project Number 43B - MP 58.00 to MP 58.90, Bicycle Touring Route*** ***Cost $295,000***
These projects, listed under the Economic Initiative section of the HSP, propose to widen all shoulders to four feet. The Steering Committee ranked this project as a **high** priority for the corridor. Environmental conditions identified include geologic hazards, wildlife habitat, historic sites, and fish habitat.

***Project Number 44BR - MP 59.03 to MP 59.07, Gulch Bridge Replacement*** ***$ N/A***
The Gulch Bridge is scheduled for replacement on the statewide bridge inventory. There are geologic hazards and endangered species habitat identified in the creek vicinity. The project cost has not been estimated.

***Project Number 45B - MP 59.40 to MP 59.65, Bicycling Touring Route*** ***Cost $845,000***
This is a project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. The Steering Committee ranked this project as a **medium** priority for the corridor. Environmental conditions identified include geologic hazards, potential habitat for endangered species, and historic sites.

Figure 2d

# State Route 14
# Route Development Plan




## Legend

- 18 Milepost
- Roads
- Railroad
- Water Courses
- Contours
- High Accident Corridor
- Future Congestion
- Safety Deficiency
- Lane Width = 11 feet
- Shoulder Width < 4 feet
- Unstable Slope
- Bridge
- Tunnel
- 5.0% Grade and Uphill Direction
- Urban Area

*Columbia River Gorge National Scenic Area*

**PROJECT IDENTIFICATION**

- Improvement Project
- 10/M Project Number/Type
- Project Marker

B = Bicycle
BR = Bridge
CL = Climbing Lane
M = Mobility
P = Parking
R = Rockfall Protection
S = Safety Improvement
T = Tunnel
V = Vista Enhancement

1" = 4000 ft.

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WDOT0113, plot date: June 24, 1997

**SEGMENT E**

MP 60 to MP 69; Gulch Bridge to MP 69 - **Figure 2e**.

**Conditions**

This segment of SR 14 continues along the Columbia River, tightly squeezed between the railroad tracks and steep cliffs up until MP 62. Klickitat County begins at approximately MP 63.4 where SR 14 enters the Cities of White Salmon and Bingen. The urban area extends to approximately MP 69 near the end of this segment.

Travel lanes are 11 feet wide up until MP 61.3. Shoulder widths are less than four feet for almost all of the segment.

There are two short sections with an identified safety deficiency; between MP 61 and MP 62 and for a short section at MP 68. There is rockfall activity within five sections that are on the statewide list for unstable slopes.

**Project Summaries**

***Project Number 46B - MP 59.65 to MP 60.25, Bicycle Touring Route*** ***Cost $670,000***
This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. The Steering Committee ranked this project as a **medium** priority for the corridor. Environmental conditions identified include geologic hazards, potential habitat for endangered species, and historic sites.

***Project Number 47B - MP 60.25 to MP 61.44, Bicycle Touring Route*** ***Cost $1,580,000***
This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. Rockfall protection project **48R** is also within this section. The rockfall rating is 193, placing it in the middle of the statewide priority list. The Steering Committee ranked this project as a **medium** priority for the corridor. Environmental conditions identified include geologic hazards, potential habitat for endangered species, and wildlife habitat.

***Project Number 49S,B - MP 61.44 to MP 62.01,***
***Fish Hatchery Road to Cook Underwood Road*** ***Cost $2,705,000***
These projects, listed under Safety and Economic Initiatives in the HSP, propose realignment and shoulder widening. The Steering Committee ranked this project as a **high** priority for the corridor. Environmental conditions identified include geologic hazards and endangered species habitat. The benefit/cost ratio as a safety improvement project is 0.01.

***Project Number 50B - MP 62.01 to MP 63.32, Bicycle Touring Route*** ***Cost $1,536,000***
This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. Rockfall protection project **51R** is also within this section. The rockfall rating is 429 placing it high on the statewide priority list for unstable slopes. The Steering Committee ranked this project as a **high** priority for the corridor. Environmental conditions identified include geologic hazards and endangered species habitat.

***Project Number 52M - MP 63.32 to MP 63.34,***
***Cook-Underwood to SR 141 Spur*** ***Cost $195,000***

This project, listed under the Mobility section of the HSP, proposes to address the congestion at the intersections of Cook-Underwood Road near the White Salmon River Bridge. Intersection improvements with left-turn pockets would be provided on the highway. The project would also include shoulder widening to four feet. The Steering Committee ranked this project as a **high** priority for the corridor. Environmental conditions identified include potential endangered species habitat, fish habitat, and historic sites. The benefit/cost ratio is 0.03.

***Project Number 53P,B - MP 63.32 to MP 63.52, Recreation Parking*** ***Cost $1,000,000***

This is a non-WSDOT project to formally develop the parking areas currently in use within the highway and railroad right-of-ways for recreation use. The project would include parking, signing, paving, and shoulder widening. The shoulder widening is included in the Economic Initiative section of the HSP. The Steering Committee ranked this project as a **medium** priority for the corridor. Environmental conditions identified include potential endangered species habitat and historic sites.

***Project Number 54M - MP 63.52 to MP 63.54, SR 141 Spur Intersection*** ***Cost $195,000***

This project, listed under the Mobility section of the HSP, addresses the congestion at the intersection of SR 14 with the SR 141 Spur. The project would also include shoulder widening to four feet, included in the Economic Initiative section of the HSP. Rockfall protection project **55R** is also within this section. The rockfall rating is 381 placing it high on the statewide priority list for unstable slopes. The Steering Committee ranked this project is a **high** priority for the corridor. Environmental conditions identified include potential endangered species habitat and historic sites. The benefit/cost ratio is 0.06.

***Project Number 56S - MP 63.61 to MP 64.85, SR 141 Spur Vicinity to Bingen*** ***Cost $800,000***

This safety project proposes to widen shoulders to four feet. The Steering Committee ranked this project as a **high** priority for the corridor. No environmental conditions were identified as a concern for construction within this segment. The benefit/cost ratio for this segment is 2.83.

***Project Number 57M - MP 64.78 to MP 65.10, White Salmon to Hood River Bridge*** ***$ N/A***

This project, listed under the Mobility section of the HSP, to construct turn lanes, a park-and-ride lot, and intersection improvements at Dock Grade and Hood River Bridge will be completed by the fall of 1997.

***Project Number 58M - MP 65.10 to MP 66.25,***
***Hood River Bridge to Walnut Street Vicinity*** ***Cost $6,762,900***

This project, listed under the Mobility section of the HSP, addresses future congestion for this section of SR 14. This project proposes widening to three lanes, (two lanes with a two-way left turn lane). No environmental conditions were identified as significant to project construction through this segment. The benefit/cost ratio is 0.35.

***Project Number 59M - MP 66.25 to 67.00,***
***Walnut St. Vicinity to Wishram Heights*** ***Cost $1,668,400***

This project, listed under the Mobility section of the HSP, addresses future congestion for this section of SR 14. The project would include intersection improvements and left-turn lanes or

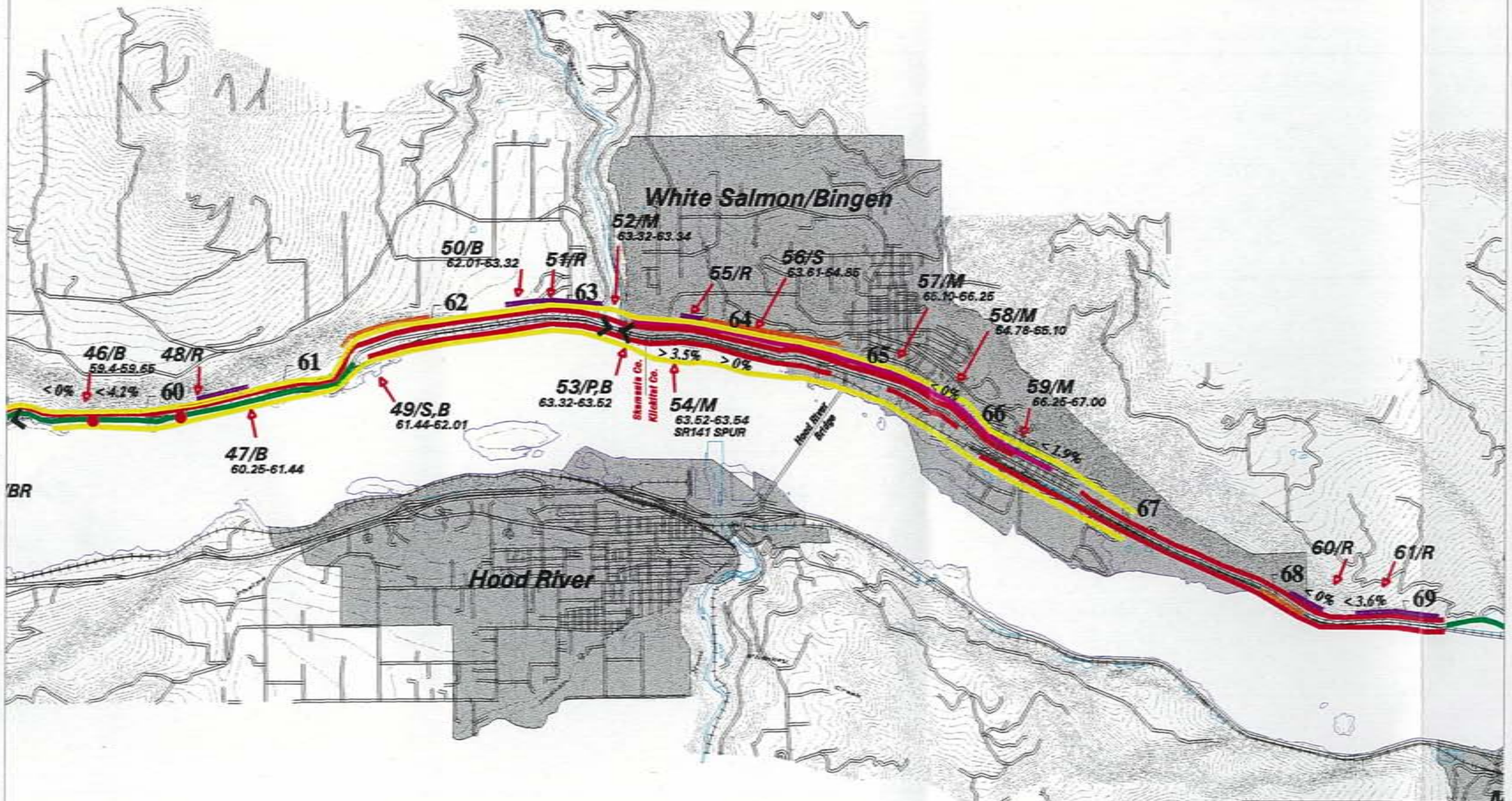
pockets on the highway. The Steering Committee ranked this project as a **high** priority for the corridor. No environmental conditions were identified as significant to project construction through this segment. The benefit/cost ratio is 0.93.

***Project Numbers 60R, 61R -***
***MP 68.30 to 68.40, and MP 68.75 to 69.00, Rockfall Protection*** ***$ N/A***

These two rockfall protection projects have rockfall ratings of 186 and 357, placing them in the middle and high on the statewide unstable slope list. As a priority within the corridor for rockfall protection, 52R rates low and 53R rates high. Environmental conditions identified include potential endangered species habitat.

Figure 2e

# State Route 14
# Route Development Plan




## Legend

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- Contours
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Columbia River Gorge National Scenic Area

## PROJECT IDENTIFICATION

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- 10/M Project Number/Type
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**SEGMENT F**

MP 69 to MP 79 - **Figure 2f**.

**Conditions**

This segment of SR 14 follows the Columbia River. It passes by Chamberlin Lake Rest Area and through Lyle.

Travel lanes are 11 feet wide up from approximately MP 69 to Lyle. Shoulder widths are generally greater than four feet.

There are no safety deficiencies identified for this segment, based on the WSDOT accident data or risk rating. There is rockfall activity within three sections that are on the statewide list for unstable slopes.

## Project Summaries

***Project Number 62R - MP 73.10 to MP 73.90, Rockfall Protection*** ***$ N/A***

This rockfall protection project is high on the statewide unstable slope priority listing with a rating of 297. As a priority within the corridor for rockfall protection, the rating is **medium**. Environmental conditions identified include potential endangered species habitat. The cost for this project was not estimated. Rockfall protection projects are funded statewide with the highest priority projects funded first.

***Project Number 63R - MP 74.60 to MP 74.65, Rockfall Protection*** ***$ N/A***

This rockfall protection project is in the middle of the statewide unstable slope priority listing with a rating of 225. As a priority within the corridor for rockfall protection, the rating is **low**. Environmental conditions identified include potential endangered species habitat.

***Project Number 64BR - MP 75.76 to MP 75.81, Klickitat River Bridge Replacement*** ***$ N/A***

The Klickitat River Bridge is scheduled for replacement on the statewide bridge inventory. Environmental conditions identified include geologic hazards, potential habitat for potential endangered species and fish habitat in the creek vicinity. The project cost has not been estimated.

***Project Number 65B - MP 76.34 to MP 76.54, Bicycle Touring Route*** ***Cost $235,000***

This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. The Steering Committee ranked this project as a **low** priority for the corridor. No significant environmental conditions were identified that would affect project construction.

***Project Numbers 66R, 67R - MP 76.85 to MP 77.80, Rockfall Protection*** ***$ N/A***

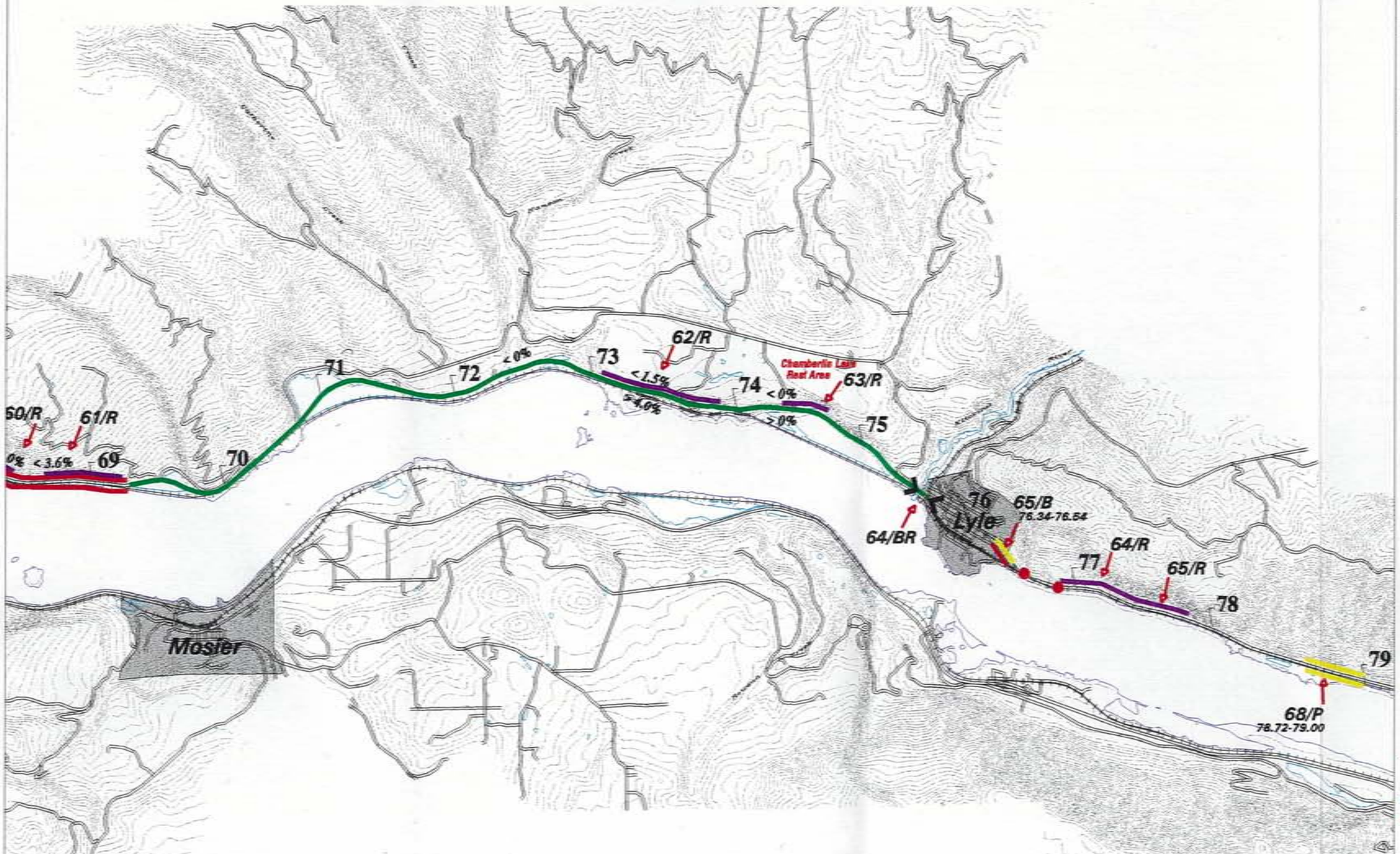
Two rockfall protection projects are included in this section. These two project sections rate high on the statewide unstable slope priority listing with a rating of 453 for both. As a priority within the corridor for rockfall protection the rating is **high.** Environmental conditions identified include geologic hazards and wildlife habitat.

***Project Number 68P, Vic. MP 78.80 Warning Signs*** ***Cost $1,000***

This is a **medium** priority project within the corridor to provide warning signs to alert motorists of the windsurfing site with parking and pedestrian activity near the highway.

Figure 2f

# State Route 14
# Route Development Plan




## Legend

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**SEGMENT G**

MP 79 to MP 89 - **Figure 2g**.

**Conditions**

This segment of SR 14 goes through Dallesport, where it leaves the shore of the Columbia River. Leaving Dallesport at about MP 85, it returns to the Columbia River at about MP 87.5.

Shoulder widths are less than four feet within a segment through Dallesport and from MP 85 to 86 just east of Dallesport.

There are no safety deficiencies identified for this segment, based on the WSDOT accident data or risk rating. There is rockfall activity within three sections that are on the statewide list for unstable slopes.

**Project Summaries**

***Project Number 69R - MP 80.30 to MP 80.40, Rockfall Protection*** ***$ N/A***

This rockfall protection project is in the middle of the statewide unstable slope priority listing with a rating of 219. As a priority within the corridor for rockfall protection, the rating is **low**. Environmental conditions identified include geologic hazards and potential endangered species habitat. The cost for this project was not estimated. Rockfall protection projects are funded statewide with the highest priority projects funded first.

***Project Number 70M - MP 81.40 to MP 82.40, Intersection Congestion*** ***Cost $2,140,000***

This project, proposed locally, would address the congestion at the intersections of SR 14 with county roads through Dallesport. Left or right-turn lanes would be provided to improve traffic flow. The project overlaps with project 69B and would include shoulder widening to four feet. The Steering Committee ranked this project as a **medium** priority for the corridor. This project would require local funding in order to be constructed. This project does not appear in the HSP because no deficiency has been identified by the WSDOT. No significant environmental conditions were identified that would impact project construction.

***Project Number 71B - MP 81.90 to MP 83.30, Bicycle Touring Route*** ***Cost $1,030,000***

This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. The Steering Committee ranked this project as a **medium** priority for the corridor. Environmental conditions identified include potential endangered species habitat.

***Project Number 72R - MP 83.80 to MP 84.00, Rockfall Protection*** ***$ N/A***

This rockfall protection project is in the middle of the statewide unstable slope priority listing with a rating of 270. As a priority within the corridor for rockfall protection, the rating is **medium**. Environmental conditions identified include potential endangered species habitat.

***Project Number 73B - MP 84.90 to 86.20, Bicycle Touring Route*** ***Cost $1,519,000***

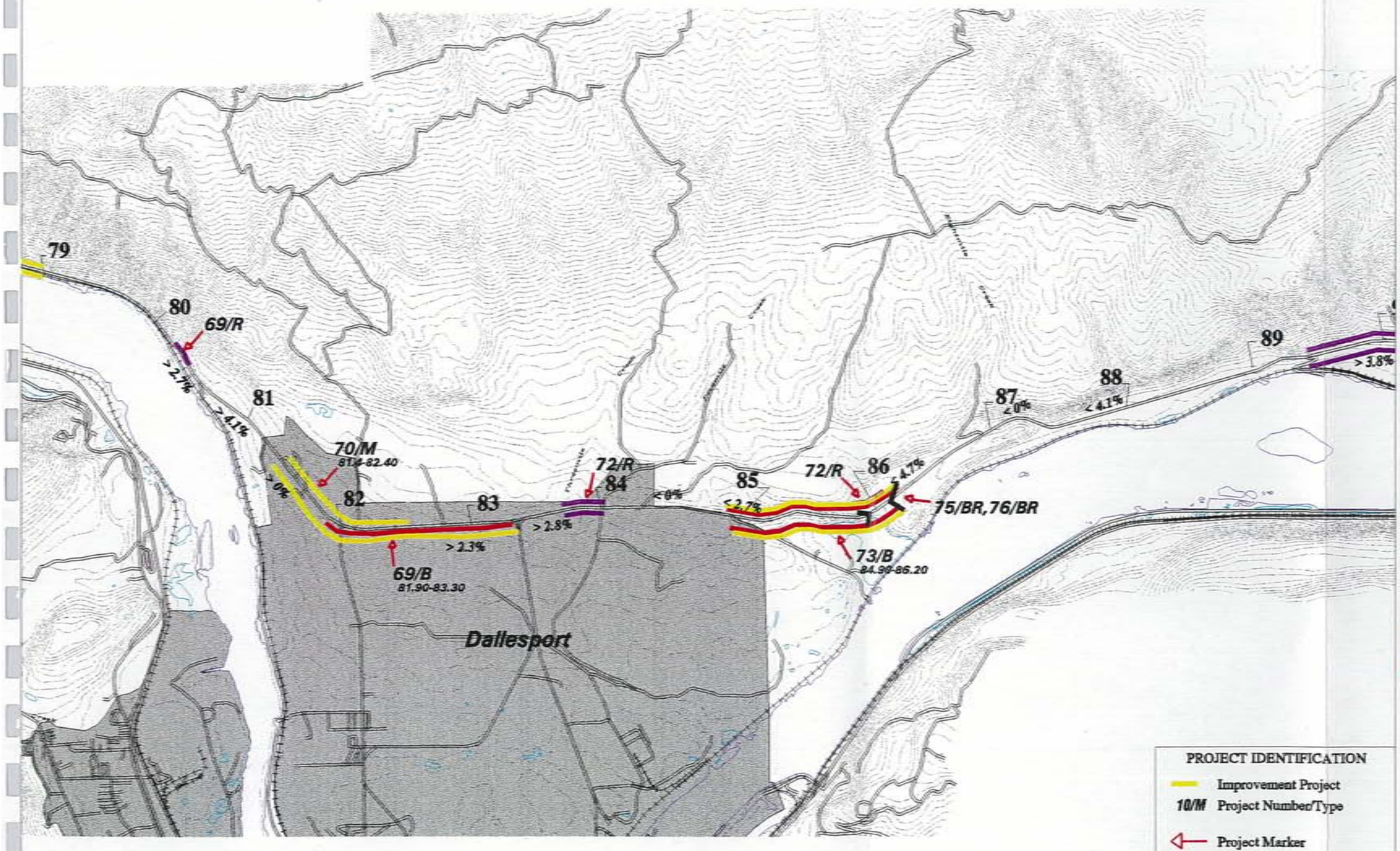
This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. Rockfall protection project **74R** is also included in this segment at the Gulch Half Bridge. This rockfall segment has a rating of 249 placing it in the middle of the statewide priority list. The Steering Committee ranked this project as a **low** priority for the corridor. Environmental conditions identified include geologic hazards, potential endangered species habitat, and historic sites.

***Project Numbers75BR, 76BR - MP 86.03 to MP 86.04 and MP 86.12 to MP 86.13, Bridge Replacement*** ***$ N/A***

The Gulch Half Bridge and the Horsethief Canyon Bridge are scheduled for replacement on the statewide bridge inventory. There are geologic hazards, potential habitat for potential endangered species and possible fish habitat identified in the creek vicinity. The project cost has not been estimated.

Figure 2g

# State Route 14
# Route Development Plan




## Legend

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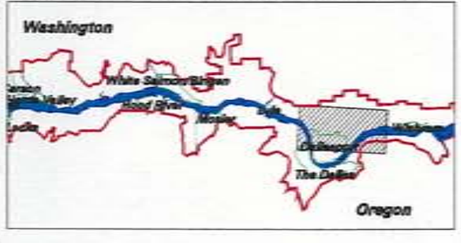


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**SEGMENT H**

MP 89 to MP 97.83; the Columbia River Gorge National Scenic Area (CRGNSA) east boundary - **Figure 2h**.

**Conditions**

This segment of SR 14 leaves the Columbia River at about MP 89.3 and goes through Wishram, continuing to the end of the CRGNSA.

Shoulder widths are less than four feet within a half mile segment at the west end of Wishram, through the curves between MP 94.45 and MP 95.5, and from MP 96 to 98.63 mostly on the north side of the highway.

There are no safety deficiencies identified for this segment, based on the WSDOT accident data or risk rating. There is rockfall activity within three sections that are on the statewide list for unstable slopes.

**Project Summaries**

***Project Number 77R - MP 89.51 to MP 91.65, Rockfall Protection*** ***$ N/A***

This rockfall protection project is low on the statewide unstable slope priority listing with a rating of 156. As a priority within the corridor for rockfall protection, the rating is **low**. Environmental conditions identified include geologic hazards and wildlife habitat. The cost for this project was not estimated. Rockfall protection projects are funded statewide with the highest priority projects funded first.

***Project Number 78B - MP 92.00 to MP 92.50, Bicycle Touring Route*** ***Cost $473,000***

This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. Intersection improvements through Murdock would be considered at the time a project is developed. The Steering Committee ranked this project as a **low** priority for the corridor. There were no significant environmental conditions identified that would impact project construction.

***Project Number 79V - Vic. MP 93.50, Earth Berm Removal*** ***Cost $10,000***

This project would remove an earth berm on the south side of the highway that blocks views of the Columbia River. The Steering Committee ranked this as a **low** priority project. There are no significant environmental conditions identified that would impact project construction.

***Project Number 80B - MP 94.45 to MP 95.50, Bicycle Touring Route*** ***Cost $1,234,000***

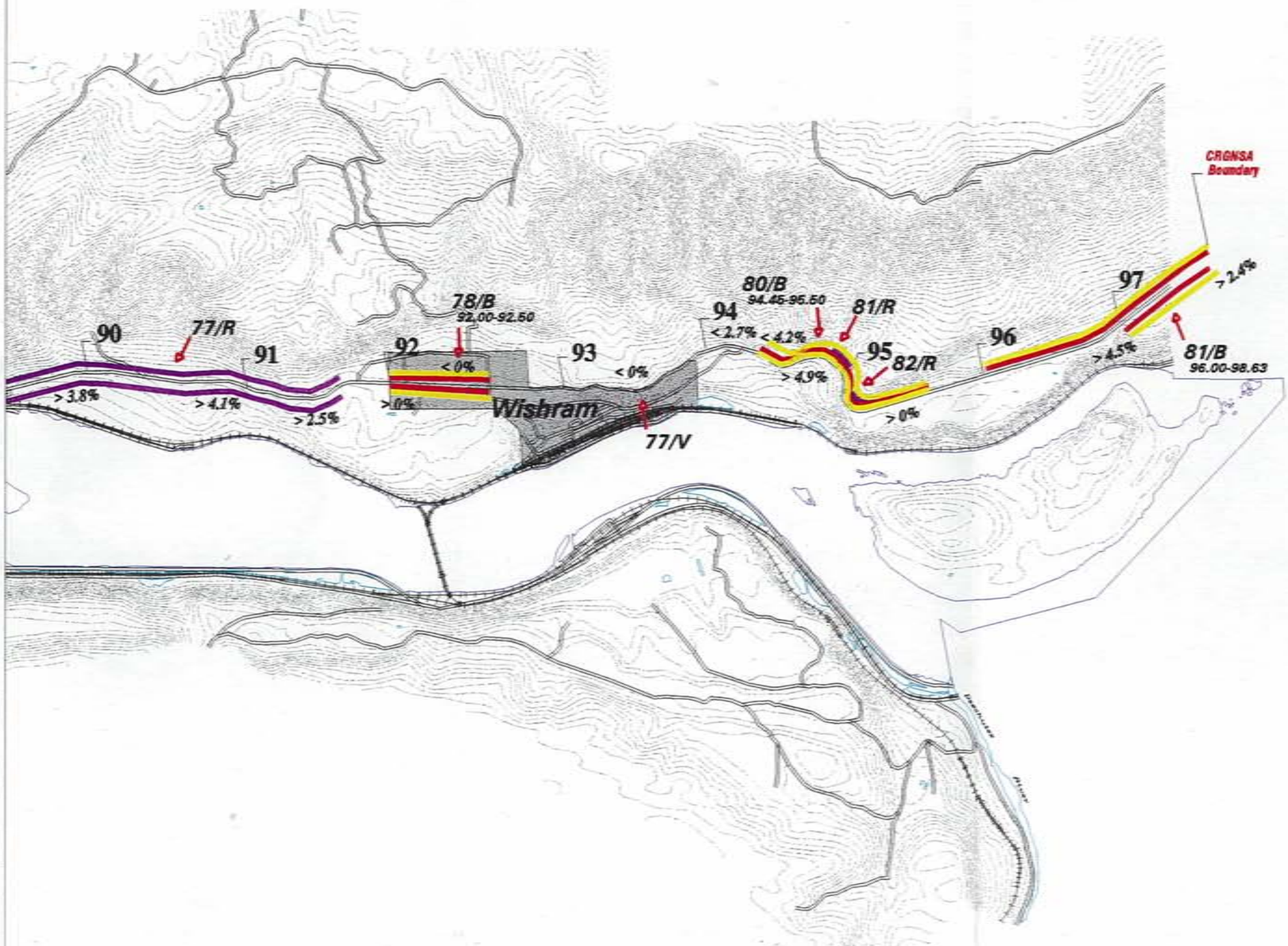
This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. Rockfall protection projects **81R** and **82R** are also included in this section. The rockfall projects have a rating of 156 and 132 placing them low on the statewide priority list. The Steering Committee ranked this project as a **low** priority for the corridor. There were no significant environmental conditions identified that would impact project construction.

***Project Number 83B - MP 96.00 to 96.53, Bicycle Touring Route*** ***Cost $3,080,000***

This project, listed under the Economic Initiative section of the HSP, proposes to widen all shoulders to four feet. The Steering Committee ranked this project as a **low** priority for the corridor. Environmental conditions identified include wildlife habitat.

Figure 2h

# State Route 14
# Route Development Plan

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## SECTION 5: ENVIRONMENTAL AND ROADSIDE PRESERVATION

All proposed projects within the Columbia River Gorge National Scenic Area (CRGNSA) fall under the National Scenic Area Act and *the Columbia River Gorge National Scenic Area Management Plan*. Environmental and roadside preservation issues will be reviewed by the appropriate county agency and/or the Gorge Commission and state agency, and will comply with applicable policy.

An environmental screening was prepared for projects within the RDP using a GIS database prepared by the Columbia River Gorge National Scenic Area (CRGNSA). Recommended projects were screened for potential environmental impacts by overlaying the recommended improvement projects of Figures 2a through 2h with the environmental data. The project descriptions included with Figures 2a through 2h also list potential environmental issues disclosed from the environmental data. The maps are with the WSDOT Southwest Region. Projects within this RDP (MP 18.00 to MP 97.83) are not within a non-attainment area.

Roadside preservation design techniques are necessary to accomplish the recommended improvements are detailed in the *SR 14 Corridor Management Plan, Supplemental Highway Design Guidelines*.

## SECTION 6: PUBLIC INVOLVEMENT AND CONSISTENCY WITH OTHER PLANS

A Memorandum of Understanding was entered into on October 15, 1993 between the Washington Department of Transportation, Southwest Washington Regional Transportation Council, Skamania and Klickitat County Transportation Policy Organizations, Columbia River Gorge Commission, and USDA Forest Service for the purpose of jointly developing a strategy to guide the management of SR 14 in the CRGNSA. These key agencies, with responsibilities along the SR 14 corridor, cooperatively developed a strategy to guide further planning and management of SR 14 in the Scenic Area. The *SR 14 Corridor Strategy and Action Plan* was adopted in September 1996 by the agencies involved. (This strategy is included in the SR 14 Corridor Management Plan).

The strategies and actions directed the WSDOT and agencies involved to develop a corridor Management Plan which includes an *Historic Features Survey*, *Truck Movement Report*, and *Supplemental Highway Design Guidelines*. The bi-state Gorge Transportation Steering Committee was involved throughout the development of the *SR 14 Corridor Management Plan*, including the *Route Development Plan*.

During the process of developing the RDP, opportunities for public input were provided. Open houses for citizens were held in November, 1996 identifying problems, issues and concerns. The open houses were held in White Salmon and Stevenson to solicit input from citizens of both Skamania and Klickitat Counties.

In May, 1997, following development of preliminary RDP recommendations by the Steering Committee, a second round of two open houses was held, also in White Salmon and Stevenson. The identified deficiencies and proposed projects were presented and discussed at the meetings. An opportunity was provided to identify other potential projects.

A public involvement plan was developed early in this phase of the SR 14 Corridor Management Plan process. It is included in **Appendix B**. A newsletter was published in March, 1997 and mailed to 300 people on the mailing list. The newsletter is also included in Appendix B.

Implementation of the SR 14 Route Development Plan will continue to involve the stakeholders to ensure the plan remains consistent with the SR 14 Corridor Strategy and Action Plan, the Management Plan for the CRGNSA, Scenic Area Act, Gorge Management Plan, Skamania and Klickitat Regional Transportation Plans, and local comprehensive plans.

## SECTION 7: FUNDING AND IMPLEMENTATION OF THE RDP

### PROJECT PRIORITY

This section of the SR 14 RDP summarizes the recommended highway improvements as presented in the previous section. **Table 5** identifies each project by the project identification number used in the Figures 2a through 2h and the milepost. Mobility, Safety, and Economic Initiative projects have been prioritized by the Steering Committee relevant to their priority within the corridor. Each project has been identified as high, medium, or low priority. It is important to recognize that projects are prioritized relative to their priority within the corridor and relative to the goals and objectives of the *SR 14 Strategy and Action Plan*. Rockfall projects (preservation category) were prioritized relative to other rockfall projects. Bridge projects were not prioritized.

### PROJECT COSTS AND FUNDING SOURCES

Table 5 also identifies the WSDOT *State Highway System Plan* (HSP) project type, cost estimate, and benefit/cost ratio. Cost estimates were provide by WSDOT Southwest Region from the HSP, and also prepared for new projects developed for the RDP. The benefit/cost ratio was calculated where applicable.

The total cost of projects in the Mobility, Safety, and Economic Initiative programs are also presented in Table 5. These are improvements needed over the next 20 years. The development of these improvements were based on need and were not financially constrained. Improvements included in the financially constrained element of the HSP should be the high priority projects with a benefit/cost ratio greater than 1.0. However, final decisions are made based on available budgets at the WSDOT Southwest Region.

### FINANCIAL RESOURCES

Current funding of WSDOT highway projects based on existing revenues is limited to maintenance, traffic operations, and preservation projects. Safety projects are partially funded. Very little funding is available for new construction. Available revenues are determined from the WSDOT 20-year revenue scenario based on existing levels of funding.

Historically, the WSDOT funds have increased through increases of the gas tax. If the historical increase in funding is projected over the next 20 years, additional categories of projects can be funded. These are the remainder of the Safety projects, environmental retrofit, economic initiatives, the core HOV system, and partial funding of mobility projects. The statewide funding priority is in that order.

## Table 5: Summary of Improvement Projects for the State Highway System Plan

| PROJECT NUMBER[a] | MILE POST | | PROJECT | PROJECT TYPE[c] | COST | BENEFIT/COST | PRIORITY[d] |
|---|---|---|---|---|---|---|---|
| | Begin | End | | | | | |
| 1M | 18.12 | 19.90 | Washougal City Limits to MP 19.90 - widen roadway | Mobility | $13,634,000 | 0.25 | medium |
| 2CL | 19.90 | 20.58 | Vicinity Lawton Creek - climbing lane | Mobility | $2,644,000 | 0.30 | medium |
| 3BR | 20.90 | 20.91 | Lawton Creek Bridge Replacement | Preservation | n/a | | n/a[e] |
| 4M,S | 21.72 | 27.47 | Cape Horn Bypass (bypasses projects 5-11) | Mobility | $38,560,000 | 0.36 | high |
| 5CL | 22.70 | 24.20 | Marble Road Vicinity to Half Bridge - climbing lane | Mobility | $4,667,000 | 0.25 | high |
| 6CL | 24.00 | 24.80 | Vicinity Half Bridge - climbing lane | Mobility | $2,307,000 | 0.18 | medium |
| 7V | 24.8 | Vic. | Vista Enhancement | Programmed | n/a | | n/a |
| 8S | 24.80 | 25.90 | Rockfall Protection | Safety | $1,545,000 | 1.18 | high |
| 9R | 25.90 | 26.27 | Rockfall Protection - rating 279[b] | Preservation | n/a | | high |
| 10BR | 24.92 | 24.93 | Half Bridge Replacement - Cape Horn | Preservation | n/a | | n/a |
| 11CL | 25.95 | 27.40 | Cape Horn Slide Bridge to Prindle Road Vicinity - climbing lane | Mobility | $4,252,000 | 0.57 | medium |
| 12S | 25.62 | 26.27 | Realignment | Safety | $4,500,000 | | high |
| 13R | 27.30 | 27.32 | Rockfall Protection - rating 219 | Preservation | n/a | | low |
| 14R | 29.20 | 29.27 | Rockfall Protection - rating 54 | Preservation | n/a | | low |
| 15R | 29.90 | 29.95 | Rockfall Protection - rating 51 | Preservation | n/a | | low |
| 16S | 30.15 | 30.67 | Realignment | Safety | $1,600,000 | 0.07 | low |
| 17R | 30.40 | 30.41 | Rockfall Protection - rating 273 | Preservation | n/a | | low |
| 18R | 30.90 | 31.10 | Rockfall Protection - rating 216 | Preservation | n/a | | low |
| 19BR | 32.87 | 32.88 | Duncan Creek Bridge Replacement | Preservation | n/a | | medium to high |
| 20BR | 34.24 | 34.26 | Woodard Creek Bridge Replacement | Preservation | n/a | | n/a |
| 21S | 33.73 | 34.96 | Skamania Landing Road Vicinity to Beacon Rock State Park - realign roadway | Safety | $3,705,000 | 2.24 | high |
| 22R | 34.85 | 35.00 | Rockfall Protection - rating 210 | Preservation | n/a | | low |
| 23S | 41.55 | 42.15 | Bridge of the Gods to Ash Lake Road Vicinity - realign roadway | Safety | $305,000 | 3.21 | high |
| 24R | 41.75 | 42.00 | Rockfall Protection - rating 168 | Preservation | n/a | | low |

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| PROJECT[a] NUMBER | MILE POST | | PROJECT | PROJECT TYPE[c] | COST | BENEFIT/COST | PRIORITY[d] |
|---|---|---|---|---|---|---|---|
| | Begin | End | | | | | |
| 25BR | 43.90 | 43.93 | Rock Creek Bridge Replacement | Preservation | n/a | | n/a |
| 26M | 43.99 | 44.67 | Stevenson Two Way Couplet, Phase 2 | Mobility | $2,270,000 | 0.21 | n/a |
| 27S | 44.89 | 48.09 | Vicinity of Stevenson to Carson Depot Road Vicinity - realign roadway | Safety | $1,000,000 | 3.28 | high |
| 28R | 45.75 | 45.85 | Rockfall Protection - rating 132 | Preservation | n/a | | low |
| 29R | 46.20 | 46.30 | Rockfall Protection - rating 204 | Preservation | n/a | | low |
| 30R | 46.40 | 46.60 | Rockfall Protection - rating 210 | Preservation | n/a | | medium |
| 31R | 46.70 | 46.80 | Rockfall Protection - rating 225 | Preservation | n/a | | medium |
| 32R | 47.55 | 47.60 | Rockfall Protection - rating 138 | Preservation | n/a | | low |
| 33R | 47.70 | 48.10 | Rockfall Protection - rating 234 | Preservation | n/a | | low |
| 34P | 49.00 | Vic. | Recreation Parking | Non-WSDOT | $100,000 | n/a | n/a |
| 35B | 52.36 | 56.87 | Bicycle Touring Route | Economic Initiative | $622,000 | n/a | low |
| 36R | 53.80 | 54.10 | Rockfall Protection - rating 381 | Preservation | n/a | | high |
| 37R | 54.50 | 55.50 | Rockfall Protection - rating 270 | Preservation | n/a | | low |
| 38R | 55.05 | 55.35 | Rockfall Protection - rating 255 | Preservation | n/a | | medium |
| 39R | 55.60 | 56.10 | Rockfall Protection - rating 156 | Preservation | n/a | | low |
| 40R | 56.10 | 56.20 | Rockfall Protection - rating 303 | Preservation | n/a | | high |
| 41P | 56.80 | Vic. | Recreation Parking | Non-WSDOT | $100,000 | | medium |
| 42T | 58.00 | 60.00 | ITS Truck and Bike Detectors and/or Signs at Tunnels | Economic Initiative | $1,000,000 | n/a | high |
| 43B | 58.00 | 58.90 | Bicycle Touring Route | Economic Initiative | $295,000 | n/a | high |
| 44BR | 59.03 | 59.07 | Gulch Bridge Replacement | Preservation | n/a | | n/a |
| 45B | 59.40 | 59.65 | Bicycle Touring Route | Economic Initiative | $845,000 | | medium |
| 46B | 59.65 | 60.25 | Bicycle Touring Route | Economic Initiative | $670,000 | n/a | medium |
| 47B | 60.25 | 61.44 | Bicycle Touring Route | Economic Initiative | $1,580,000 | | medium |
| 48R | 60.30 | 60.40 | Rockfall Protection - rating 192 | Preservation | n/a | | low |
| 49S,B | 61.44 | 62.01 | Fish Hatchery Road to Cook-Underwood Road | Economic Initiative | $2,705,000 | 0.01 | high |
| 50B | 62.01 | 63.32 | Bicycle Touring Route | Economic Initiative | $1,536,000 | n./a | high |
| 51R | 62.50 | 63.20 | Rockfall Protection - rating 429 | Preservation | n/a | | high |

| PROJECT[a] NUMBER | MILE POST | | PROJECT | PROJECT TYPE[c] | COST | BENEFIT/COST | PRIORITY[d] |
|---|---|---|---|---|---|---|---|
| | Begin | End | | | | | |
| 52M | 63.32 | 63.34 | Cook-Underwood to SR 141 Spur | Mobility | $195,000 | 0.03 | high |
| 53P,B | 63.32 | 63.52 | Recreation Parking | Economic Initiative | $1,000,000 | | medium |
| 54M | 63.52 | 63.54 | SR 141 Spur Intersection | Mobility | $195,000 | 0.06 | high |
| 55R | 63.55 | 63.60 | Rockfall protection - rating 381 | Preservation | n/a | | high |
| 56S | 63.61 | 64.85 | SR 141 Spur Vicinity to Bingen widen shoulders | Safety | $800,000 | 2.83 | high |
| 57M | 64.78 | 65.10 | White Salmon to Hood River Bridge - completed by fall of 1997 | n/a | n/a | | n/a |
| 58M | 65.10 | 66.25 | Hood River Bridge to Walnut Street Vicinity - widening | Mobility | $6,762,900 | 0.35 | |
| 59M | 66.25 | 67.00 | Walnut St. Vicinity to Wishram Heights - left-turn lanes | Mobility | $1,668,400 | 0.93 | high |
| 60R | 68.30 | 68.40 | Rockfall Protection - rating 186 | Preservation | n/a | | low |
| 61R | 68.75 | 69.10 | Rockfall Protection - rating 357 | Preservation | n/a | | high |
| 62R | 73.10 | 73.90 | Rockfall Protection - rating 297 | Preservation | n/a | | medium |
| 63R | 74.6 | 74.65 | Rockfall Protection - rating 225 | Preservation | n/a | | low |
| 64BR | 75.76 | 75.81 | Klickitat River Bridge Replacement | Preservation | n/a | | n/a |
| 65B | 76.34 | 76.54 | Bicycle Touring Route | Economic Initiative | $235,000 | n/a | low |
| 66R | 76.85 | 77.24 | Rockfall Protection - rating 453 | Preservation | n/a | | high |
| 67R | 77.40 | 77.80 | Rockfall Protection - rating 453 | Preservation | n/a | | high |
| 68P | 78.80 | Vic. | Warning Signs - parking and pedestrian activity | Operations | $1,000 | n/a | medium |
| 69R | 80.30 | 80.40 | Rockfall Protection - rating 219 | Preservation | n/a | | low |
| 70M | 81.40 | 82.40 | Intersection Congestion | Mobility | $2,140,000 | | medium |
| 71B | 81.90 | 83.30 | Bicycle Touring Route | Economic Initiative | $1,030,000 | n/a | medium |
| 72R | 83.80 | 84.00 | Rockfall Protection - rating 270 | Preservation | n/a | | medium |
| 73B | 84.90 | 86.20 | Bicycle Touring Route | Economic Initiative | $1,519,000 | | low |
| 74R | 85.80 | 86.10 | Rockfall Protection - rating 249 | Preservation | n/a | | medium |
| 75BR | 86.03 | 86.04 | Bridge Replacement - Gulch Half Bridge | Preservation | n/a | | n/a |
| 76BR | 86.12 | 86.13 | Bridge Replacement - Horsethief Canyon Bridge | Preservation | n/a | | n/a |
| 77R | 89.51 | 91.65 | Rockfall Protection - rating 156 | Preservation | n/a | | low |
| 78B | 92.00 | 92.50 | Bicycle Touring Route | Economic Initiative | $473,000 | n/a | low |

| PROJECT[a] NUMBER | MILE POST | | PROJECT | PROJECT TYPE[c] | COST | BENEFIT/COST | PRIORITY[d] |
|---|---|---|---|---|---|---|---|
| | Begin | End | | | | | |
| 79V | 93.50 | Vic. | Earth Berm Removal, Vista Enhancement | Economic Initiative | $10,000 | n/a | low |
| 80B | 94.45 | 95.50 | Bicycle Touring Route | Economic Initiative | $1,234,000 | n/a | low |
| 81R | 94.66 | 94.67 | Rockfall Protection - rating 156 | Preservation | n/a | n/a | low |
| 82R | 95.15 | 95.25 | Rockfall Protection - rating 132 | Preservation | n/a | n/a | low |
| 83B | 96.00 | 96.53 | Bicycle Touring Route | Economic Initiative | $3,080,000 | n/a | low |

| | | |
|---|---|---|
| Total Program Cost | Mobility | $79,295,000 |
| | Safety | $13,455,000 |
| | Economic Initiative | $17,834,000 |

(a) Reference number from Figures 2a through 2h
(b) Source: WSDOT Statewide Unstable Slope Inventory (rockfall rating)
(c) *State Highway System Plan*
(d) As ranked by Steering Committee. Rockfall projects are relative to other rockfall projects. Bridge projects are not ranked.
(e) Not Applicable

It is important to note that presently the "financially constrained" list of mobility strategies does not include the capacity expansion improvements recommended in this RDP. SR 14 mobility improvements are presently listed in the "non-constrained" portion of the State Highway System Plan. This means that under current funding resources that mobility improvements on SR 14 would not be funded for the next 20 years. Also, any safety projects with a benefit/cost ratio less than 1.0 are not included in the financially constrained list of safety projects in the HSP, and would not be funded over the next 20 years under the existing revenue scenario. None of the economic initiative projects are included in the financially constrained HSP because this entire category of projects will only receive funding if the WSDOT is able to receive revenue increases similar to historic trends.

The SR 14 Steering Committee understands the present HSP status of funding revenues and prioritization of funding by programs (preservation, safety, mobility, and economic initiative projects). The SR 14 improvement projects will be re-evaluated during future *State Highway System Plan* updates. Possibly at that time SR 14 projects will prioritize higher, or revenues will increase, allowing some or all of the improvement projects to move to the 20-year financially-constrained list.

Another funding issue of concern for the SR 14 corridor is the multiple needs within each problem area. One improvement project can include for example; minor realignment and shoulder widening to address a safety deficiency, a truck climbing lane to address a mobility deficiency, an economic initiative improvement to widen shoulders for bicycle touring, and one or two rockfall projects. Under current funding programs projects must be categorized and compete based on the benefit/cost ratio with benefits only estimated for the project type. For example, if the project is a mobility project the benefits are calculated based on travel time savings only, and if the project is a safety project the benefits are calculated from the estimated reduction in accidents only. The SR 14 Steering Committee recognizes this approach to project prioritization, which reinforces the need to re-evaluate projects during future *State Highway System Plan* updates.

Of final concern are high priority projects with a benefit/cost ratio less than 1.0. Under existing funding constraints projects cannot be funded without a benefit/cost ratio greater than 1.0. It is important to recognize that the cost part of the equation is the cost to WSDOT. Funding provided by other agencies may be applied to the project cost to reduce the WSDOT cost and increase the benefit/cost ratio. These projects can be identified in Table 5 by reviewing the high priority projects with benefit/cost less than 1.0.

# APPENDIX A

# ROUTE DEVELOPMENT PLAN SHEETS

PLOT1

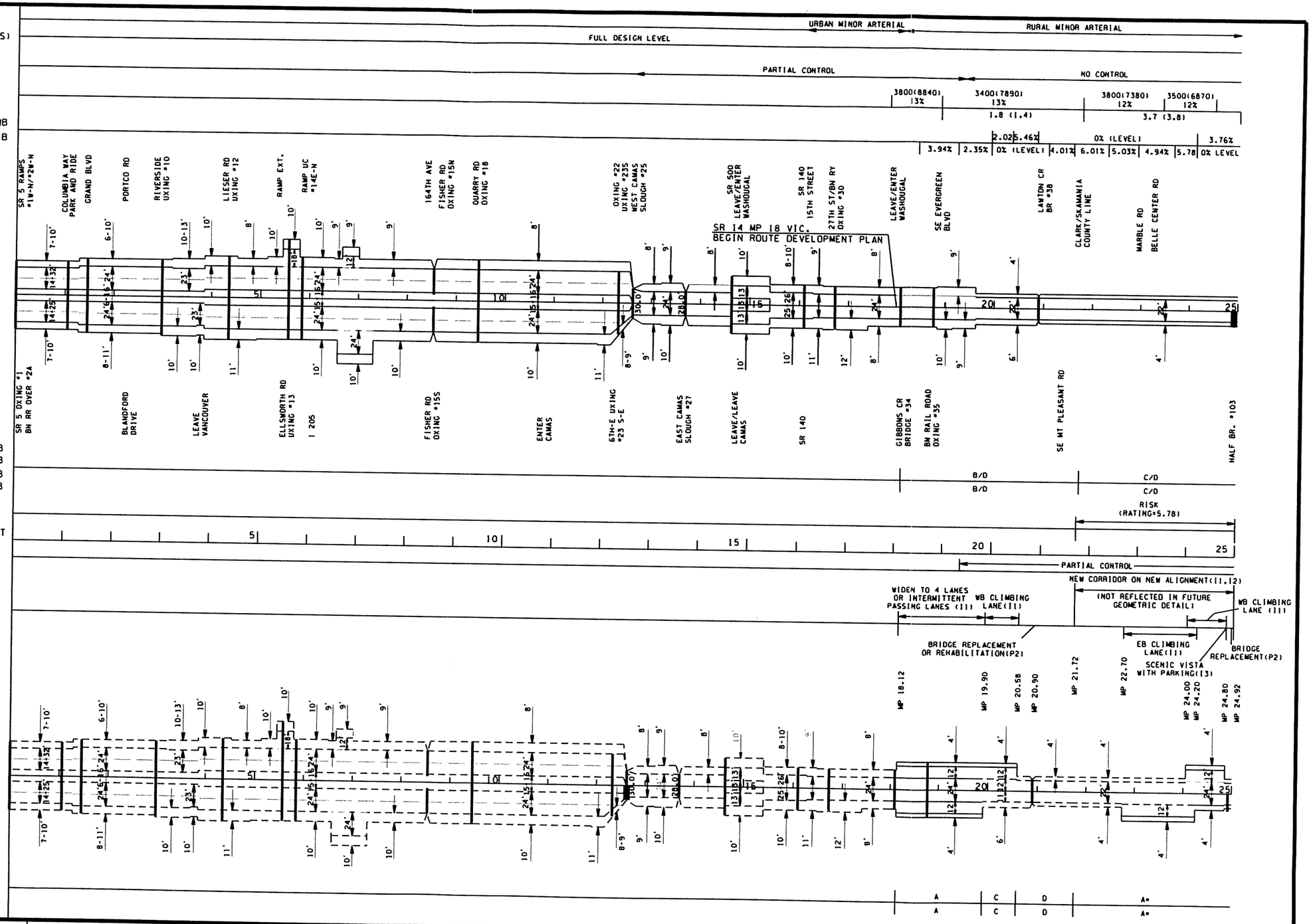
## PRESENT ROADWAY DATA

1. FUNCTIONAL CLASSIFICATION
2. DESIGN LEVEL (FOR IMPROVEMENTS)
3. ACCESS CONTROL
4. 1994(2020) ADT AND TRUCK %
5. 1994 ACC. RATE (MULTI YEAR)
6. COMPOSITE GRADES — WB, EB
7. PRESENT GEOMETRIC DETAIL
8. 1994/2020 LEVEL OF SERVICE — SB, WB, EB, NB
9. SAFETY DEFICIENCY TYPE
10. PROPOSED ACCESS CONTROL
11. PROPOSED PROJECTS
    - MOBILITY IMPROVEMENT — PROGRAM I1
    - SAFETY IMPROVEMENT — PROGRAM I2
    - ECONOMIC INITIATIVE — PROGRAM I3
    - PRESERVATION (STRUCT.) — PROGRAM P2

LEGEND:
- ** WSDOT PROGRAMMED PROJECT
- WIDEN SHOULDER TO 4' MIN. FOR BICYCLE TOURING ROUTE

## FUTURE ROADWAY DATA

12. FUTURE GEOMETRIC DETAIL
13. 2020 LEVEL OF SERVICE WITH IMPROVEMENTS — SB, WB, EB, NB
    - * LOS WITH NEW CORRIDOR ON NEW ALIGNMENT




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DESIGNED BY J.A. ABUYAN | | | | REGION NO. | STATE | FED.AID PROJ.NO. | PROGRAM DEVELOPMENT DIVISION |
| ENTERED BY J.A. ABUYAN | | | | 10 | WASH | | |
| CHECKED BY G.R WESTBY | | | | JOB NUMBER | | | |
| PROJ. ENGR. M. LEGRY | | | | CONTRACT NO. | | | |
| REG. ADM. G.E. SMITH | DATE | DATE | REVISION | BY | | | |

Washington State Department of Transportation

ROUTE DEVELOPMENT PLAN

REFERENCE SHEET NUMBER

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## PRESENT ROADWAY DATA

(1) FUNCTIONAL CLASSIFICATION: RURAL MINOR ARTERIAL

(2) DESIGN LEVEL (FOR IMPROVEMENTS): FULL DESIGN LEVEL

(3) ACCESS CONTROL: NO CONTROL — PARTIAL

(4) 1994(2020) ADT AND TRUCK %: 3300(6450) 12%; 3100(6000) 12%; 2800(5500) 16%; 3100(6080) 16%; 3500(6870) 16%; 4450(8620) 16%; 5600(10870) 10%; 5030(9790) 10%; 7730(15100) 10%; 6250(12220) 10%; 6000(11750) 9%; 2430(4770) 16%; 3130(6110) 13%

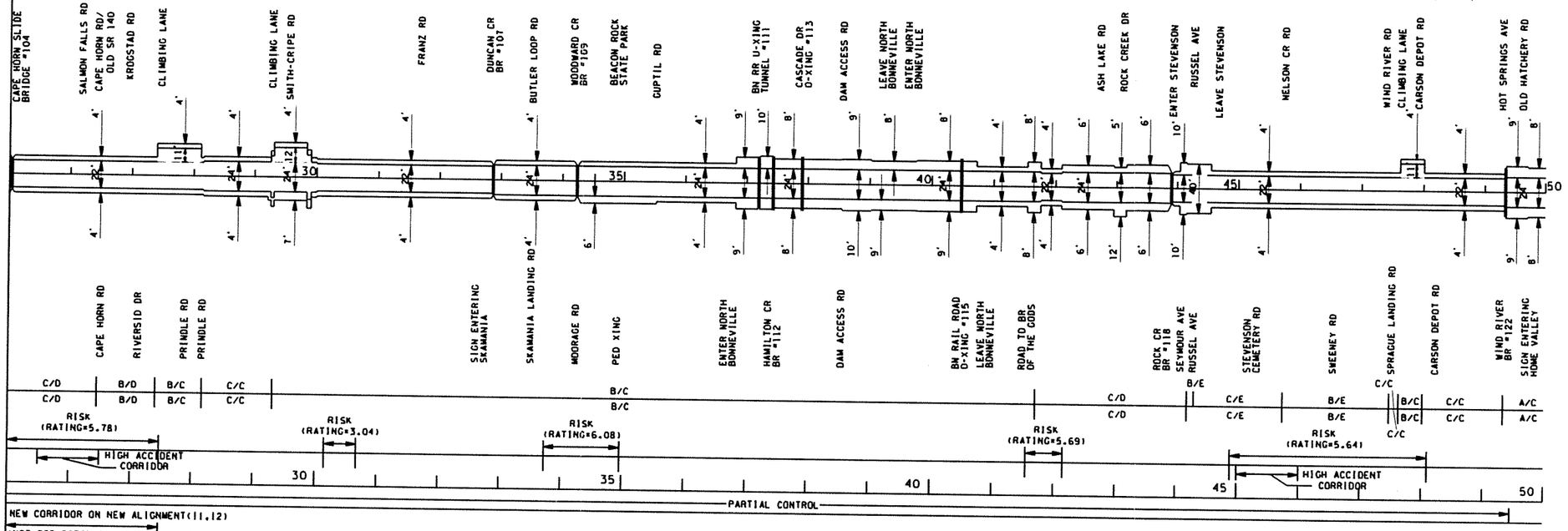
(5) 1994 ACC. RATE (MULTI YEAR): 3.7 (3.8); 1.6 (1.8); 1.4 (1.5); 1.6 (1.7); 1.0 (2.4); 1.7 (2.0)

(6) COMPOSITE GRADES

WB: 3.76%; 4.64%; 5.20%; 0% (LEVEL); 5.08; 0%; 2.55%; 0%; 1.24%; 3.7; 0% (LEVEL); 3.38%; 0% (LEVEL); 5.05; 0% (LEVEL); 2.24; 0% (LEVEL); 4.89%; 0%; 2.92; 0%

EB: 0% (LEVEL); 2.00; 2.40%; 0%; 4.88; 0% (LEVEL); 1.09%; 4.54%; 0% (LEVEL); 1.91%; 0% (LEVEL); 2.12%; 3.78%; 2.46%; 0%; 2.12%; 0% (LEVEL)

(7) PRESENT GEOMETRIC DETAIL




(8) 1994/2020 LEVEL OF SERVICE

SB: C/D; B/D; B/C; C/C; B/C; C/D; C/E; B/E; C/C; B/C; C/C; A/C
WB: C/D; B/D; B/C; C/C; B/C; C/D; C/E; B/E; C/C; B/C; C/C; A/C
EB: C/D; B/D; B/C; C/C; B/C; C/D; C/E; B/E; C/C; B/C; C/C; A/C
NB: C/D; C/E; B/E; C/C; B/C; C/C; A/C

(9) SAFETY DEFICIENCY TYPE

RISK (RATING=5.78); HIGH ACCIDENT CORRIDOR; RISK (RATING=3.04); RISK (RATING=6.08); RISK (RATING=5.69); RISK (RATING=5.64); HIGH ACCIDENT CORRIDOR

MILEPOST: 30; 35; 40; 45; 50

(10) PROPOSED ACCESS CONTROL: PARTIAL CONTROL

(11) PROPOSED PROJECTS

NEW CORRIDOR ON NEW ALIGNMENT(11,12)
(NOT REFLECTED IN FUTURE GEOMETRIC DETAIL)
EXTEND WB CLIMBING LANE(11)
REALIGNMENT(12)
BRIDGE REPLACEMENT(P2)
REALIGNMENT(12)
BRIDGE REPLACEMENT(P2)
BRIDGE REPLACEMENT OR REHABILITATION(P2)
REALIGNMENT(12)
BRIDGE WIDENING(P2)
WIDEN SHOULDERS (12)
TWO-WAY COUPLET(11)**
WIDEN SHOULDERS(12)
REC. PARKING (13)

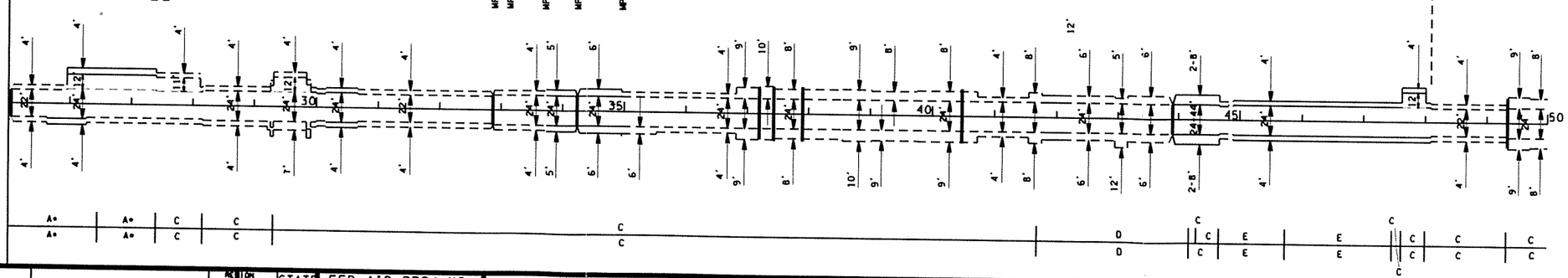
| | |
|---|---|
| MOBILITY IMPROVEMENT | PROGRAM I1 |
| SAFETY IMPROVEMENT | PROGRAM I2 |
| ECONOMIC INITIATIVE | PROGRAM I3 |
| PRESERVATION (STRUCT.) | PROGRAM P2 |

LEGEND:
** WSDOT PROGRAMMED PROJECT
WIDEN SHOULDER TO 4' MIN. FOR BICYCLE TOURING ROUTE

MP 25.04; MP 25.62; MP 25.95; MP 26.27; MP 27.40; MP 27.47; MP 30.15; MP 30.67; MP 32.88; MP 33.14; MP 33.73; MP 34.24; MP 34.96; MP 41.55; MP 42.15; MP 43.90; MP 43.99; MP 44.67; MP 44.89; MP 48.09; MP 49.00; MP 49.50

## FUTURE ROADWAY DATA

(12) FUTURE GEOMETRIC DETAIL




(13) 2020 LEVEL OF SERVICE WITH IMPROVEMENTS
* LOS WITH NEW CORRIDOR ON NEW ALIGNMENT

SB: A*; A*; C; C; C; D; C; E; E; C; C; C
WB: A*; A*; C; C; C; D; C; E; E; C; C; C
EB: A*; A*; C; C; C; D; C; E; E; C; C; C
NB: C; D; C; E; E; C; C; C

PLOT2

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED BY J.A. ABUYAN | | | REGION NO. 10 | STATE WASH | FED.AID PROJ.NO. |
| ENTERED BY J.A. ABUYAN | | | JOB NUMBER | | |
| CHECKED BY G.R WESTBY | | | CONTRACT NO. | | |
| PROJ. ENGR. M. LEGRY | | | | | |
| REG. ADM. G.E SMITH | DATE | DATE / REVISION / BY | | | |

PROGRAM DEVELOPMENT DIVISION

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ROUTE DEVELOPMENT PLAN

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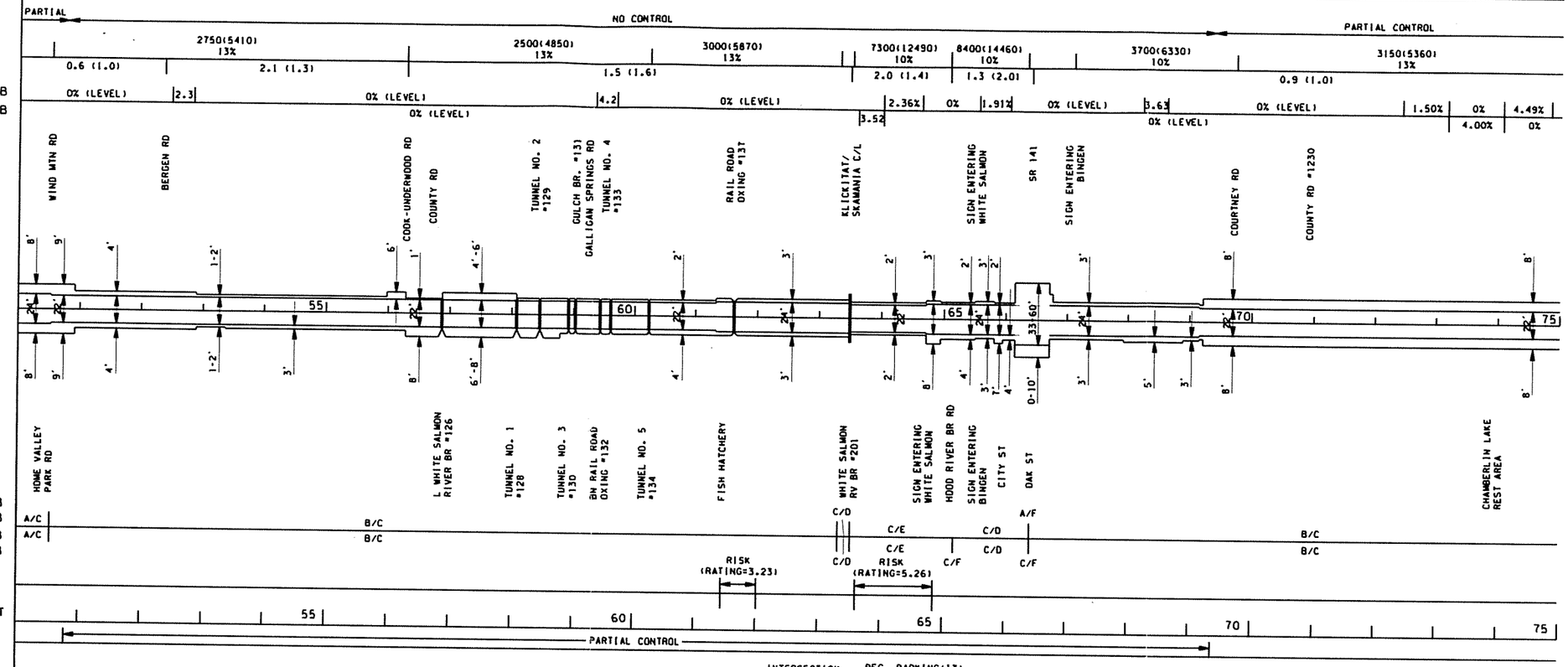
PLOT3

## PRESENT ROADWAY DATA

1. FUNCTIONAL CLASSIFICATION — RURAL MINOR ARTERIAL
2. DESIGN LEVEL (FOR IMPROVEMENTS) — FULL DESIGN LEVEL
3. ACCESS CONTROL — PARTIAL: NO CONTROL; PARTIAL CONTROL
4. 1994 (2020) ADT AND TRUCK %
5. 1994 ACC. RATE (MULTI YEAR)
6. COMPOSITE GRADES



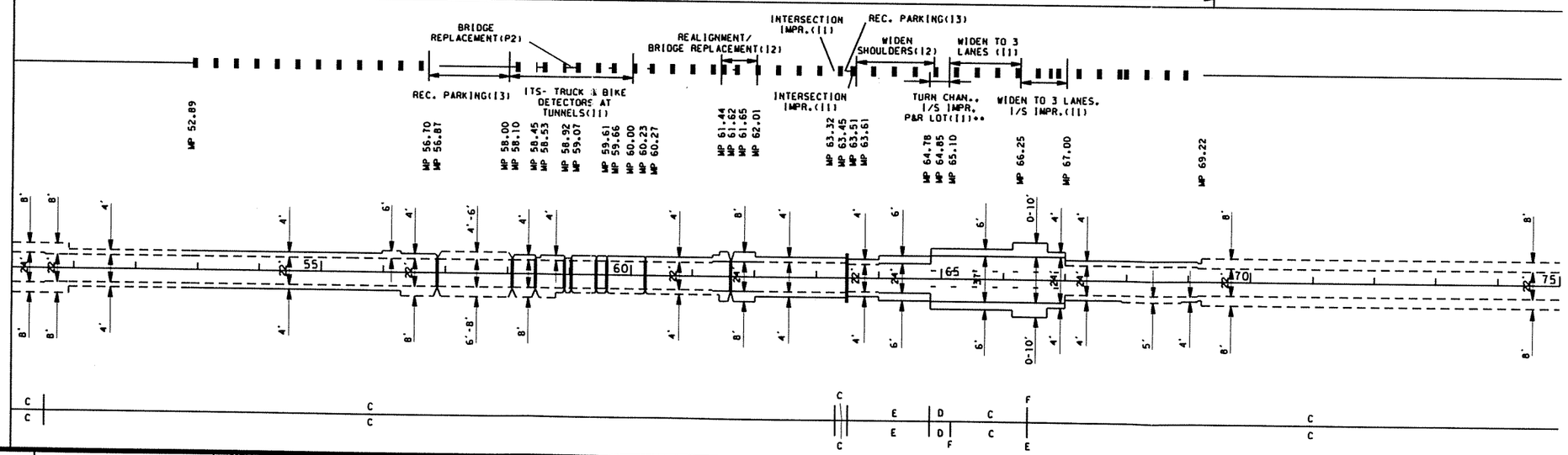

7. PRESENT GEOMETRIC DETAIL
8. 1994/2020 LEVEL OF SERVICE — SB, WB, EB, NB
9. SAFETY DEFICIENCY TYPE — RISK (RATING=3.23); RISK (RATING=5.26)
10. PROPOSED ACCESS CONTROL — PARTIAL CONTROL

## FUTURE ROADWAY DATA

11. PROPOSED PROJECTS

| | |
|---|---|
| MOBILITY IMPROVEMENT | PROGRAM I1 |
| SAFETY IMPROVEMENT | PROGRAM I2 |
| ECONOMIC INITIATIVE | PROGRAM I3 |
| PRESERVATION (STRUCT.) | PROGRAM P2 |

LEGEND:
** WSDOT PROGRAMMED PROJECT
WIDEN SHOULDER TO 4' MIN. FOR BICYCLE TOURING ROUTE




12. FUTURE GEOMETRIC DETAIL
13. 2020 LEVEL OF SERVICE WITH IMPROVEMENTS — SB, WB, EB, NB

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DESIGNED BY J.A. ABUYAN | | | | REGION NO. | STATE | FED.AID PROJ.NO. | PROGRAM DEVELOPMENT DIVISION |
| ENTERED BY J.A. ABUYAN | | | | 10 | WASH | | |
| CHECKED BY G.R WESTBY | | | | JOB NUMBER | | | |
| PROJ. ENGR. M. LEGRY | | | | | | | |
| REG. ADM. G.E. SMITH | DATE | DATE | REVISION | BY | CONTRACT NO. | | |

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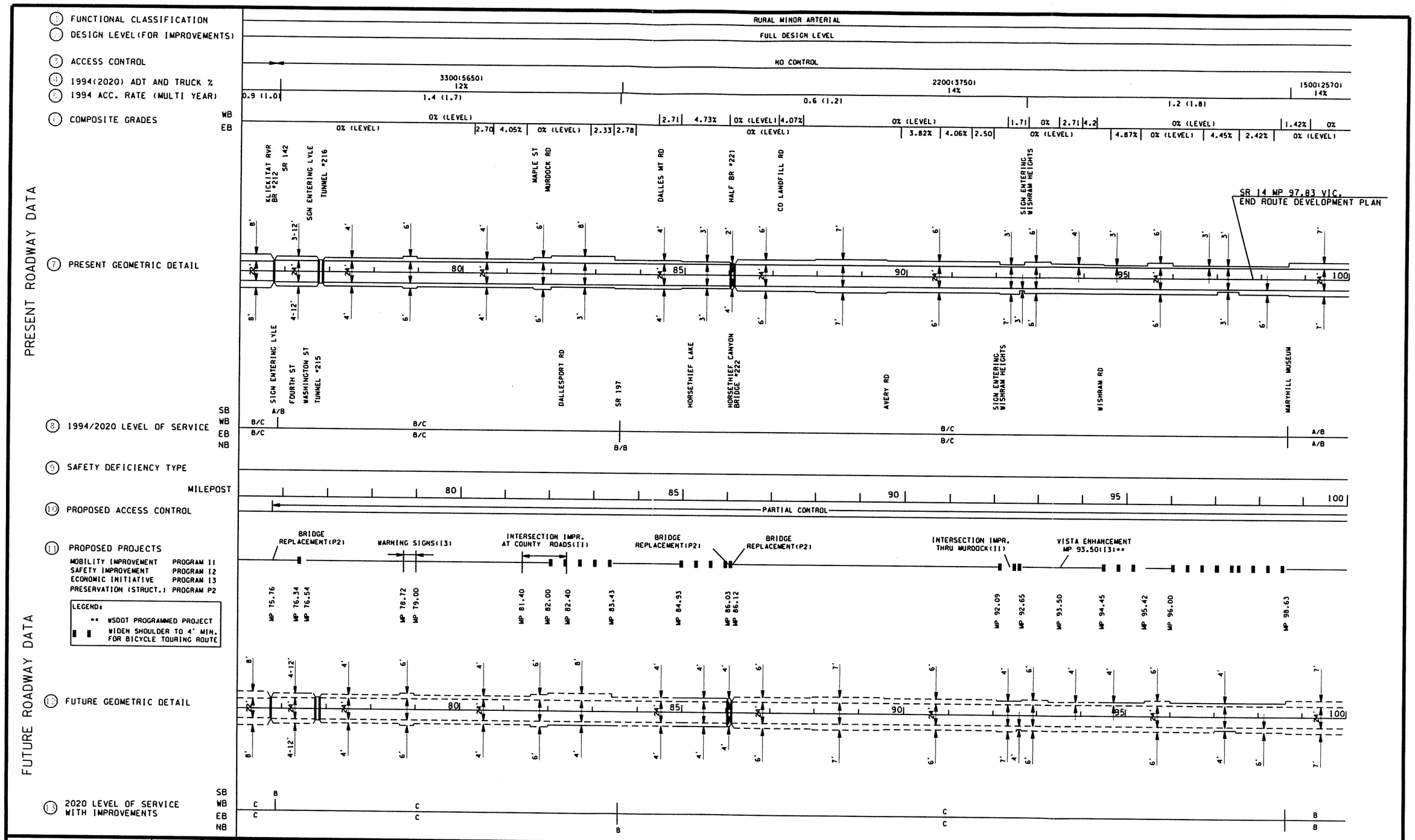


PLOT4

| | | | |
|---|---|---|---|
| DESIGNED BY | J.A. ABUYAN | | |
| ENTERED BY | J.A. ABUYAN | | |
| CHECKED BY | G.R WESTBY | | |
| PROJ. ENGR. | M. LEGRY | | |
| REG. ADM. | G.E. SMITH | | |

DATE | DATE | REVISION | BY

| REGION NO. | STATE | FED.AID PROJ.NO. |
|---|---|---|
| 10 | WASH | |
| JOB NUMBER | | |
| CONTRACT NO. | | |

PROGRAM DEVELOPMENT DIVISION

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# APPENDIX C

# TRUCK MOVEMENT REPORT

# SR 14 CORRIDOR MANAGEMENT PLAN

# TRUCK MOVEMENT REPORT

**MP 18.00 Vic. to 97.83 Vic.**

*Prepared for*

**Washington State Department of Transportation**
**Southwest Region**

*Prepared by*

**David Evans and Associates, Inc.**
**2828 SW Corbett Avenue**
**Portland, OR 97201-4830**

**July 1997**

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## APPENDIX

Appendix T-1: Public Meeting Comments

# SR 14 TRUCK MOVEMENT REPORT

## BACKGROUND

Community meetings were held in White Salmon and Stevenson, Washington, on November 6, 1996, to obtain input for the SR 14 Corridor Study. During the meetings, many comments were received pertaining to truck operations on SR 14. A list of all the public comments that relate to trucks is included in **Appendix T1**. There was considerable concern about trucks using SR 14 on the Washington side of the Columbia River instead of I-84 on the Oregon side in order to avoid the weight mile tax in Oregon.

Truck safety on SR 14 was also of primary concern to meeting participants. Several specific locations and problems were mentioned, including trucks moving over the highway centerline in the area's seven tunnels, truck speeds, trucks passing in oncoming lanes, out-of-state trucks (unfamiliar drivers), and winter weather related problems.

## REASONS FOR EVASION

Two recent studies were conducted in Oregon with information relating to truck evasion. These studies were the "Oregon Diesel Tax Non-Compliance" study dated March 1996 by R. D. Mingo and Associates, Chastain Economic Consulting, and K.T. Analytics, Inc., and the "Oregon Weigh-Mile Tax" study dated February 20, 1996, by Cambridge Systematics, Inc., SYDEC, Inc., and Pacific Rim Resources, Inc. These two studies estimated non-compliance with Oregon's weight mile taxes at approximately five percent and two to six percent, respectively. The actual percentage of evasion is probably at the high end of the range. In the "Oregon Diesel Tax Non-Compliance" study, a model that closely predicts western states non-compliance was used to estimate the evasion. The five percent estimate is close to other previous estimates in Oregon. It was also estimated that the non-compliance rates for the Washington diesel fuel tax are approximately 30 percent. A major source of evasion is the failure by distributors to accurately report fuel taxes, so this is not just a truck, driver, and route issue.

The truck transportation user fees in Oregon and Washington are quite different and somewhat complex in both states. Washington has a combination of user fees for trucks including a 23-cent-per-gallon diesel tax, excise tax(es), a clean air fee, and license fees based on the weight and type of truck. Oregon's weight mile tax is based on the weights and distances traveled. Any vehicle with a declared weight in excess of 26,000 pounds must pay the weight mile tax in Oregon. Light trucks (trucks that are 26,000 pounds or less) are subject to a diesel or gasoline tax of 24 cents per gallon. Vehicles over the 26,000-pound weight that pay weight mile taxes are not subject to the diesel tax in Oregon. **Table 1** shows a comparison of some typical fees for an 80,000 pound truck. (The numbers are not exact because of the way the actual fees are reported and paid based on different truck configurations, loads, and mileage.)

**Table 1: Approximate Typical Tax Fees for an 80,000 Pound Truck Assuming an Annual Mileage of 50,000 Miles 1995 Tax Rates**

| State | Diesel Tax* | License Fee | Excise Tax** | Weight Mile Tax | Typical Annual Fees |
|---|---|---|---|---|---|
| Washington | $0.23 | $1,518 | $990 | 0 | $4,425 |
| Oregon | 0 | $320 | 0 | $0.15 | $7,595 |

*The total diesel tax is based on 50,000 miles annually at 6 miles per gallon.

**Assumes a 3-year-old truck valued at $45,000.

**Figure 1** shows a graph of Washington and Oregon truck fees for an 80,000 pound truck. An annual mileage of 20,000 is typical for a truck operating in one state and on shorter trips, while the annual mileage of approximately 80,000 miles is typical of an interstate truck which in most cases would have a considerable amount of the mileage out of state. Although the longer haul trucks would not drive 80,000 miles in Oregon, the table illustrates a worst-case scenario for Oregon truck taxes with all of the mileage in Oregon. In this worst-case scenario the Oregon truck fees are over twice as much as the Washington truck fees. However, when the annual mileage is low (20,000) the truck fees in both states are approximately the same for an 80,000 pound truck.

In addition to avoiding the Oregon weight mile tax, there are several other possible reasons to evade the weigh station operations. Some of these reasons are:

- An over weight violation.
- An over dimension load.
- An equipment safety violation.
- To avoid the delay at a weigh station.

## TRUCK MOVEMENT SURVEY

As a result of the comments received at the community meetings in White Salmon and Stevenson, the Washington State Department of Transportation (WSDOT) commissioned a truck survey to identify the volume of trucks avoiding the weigh stations on I-84. The survey area included the section of SR 14 in Washington from the Bonneville Dam to US 97. Truck traffic on the three interstate bridges was surveyed, including the Bridge of the Gods, Hood River Bridge, and The Dalles Bridge. Weigh stations and truck inspection facilities in the parallel section on I-84 in Oregon include the Port of Entry (POE) for eastbound trucks at Cascade Locks and a westbound scale site at Wyeth. Average daily truck traffic volumes for 1995 in the survey area are shown on **Figure 2**. These volumes were based on information from the survey, WSDOT, the Oregon Department of Transportation (ODOT), the Port of Cascade Locks, and the Port of Hood River. Scale locations are shown in **Figure 3**.

# Approximate Typical Tax Fees for an 80,000 Pound Truck Washington and Oregon

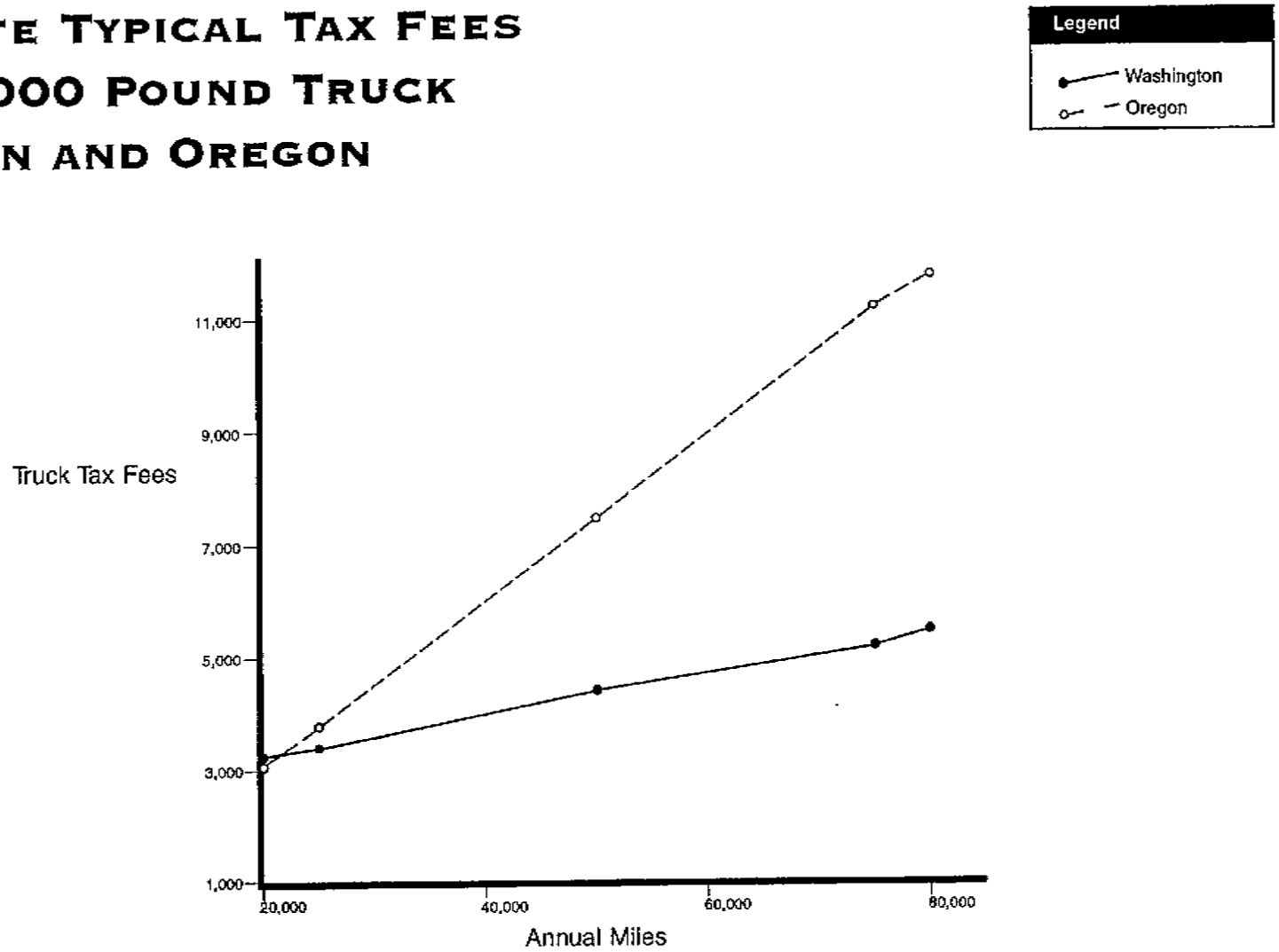


Figure 1

BCM INC.

# SR14

# Columbia River Gorge Truck Survey Locations

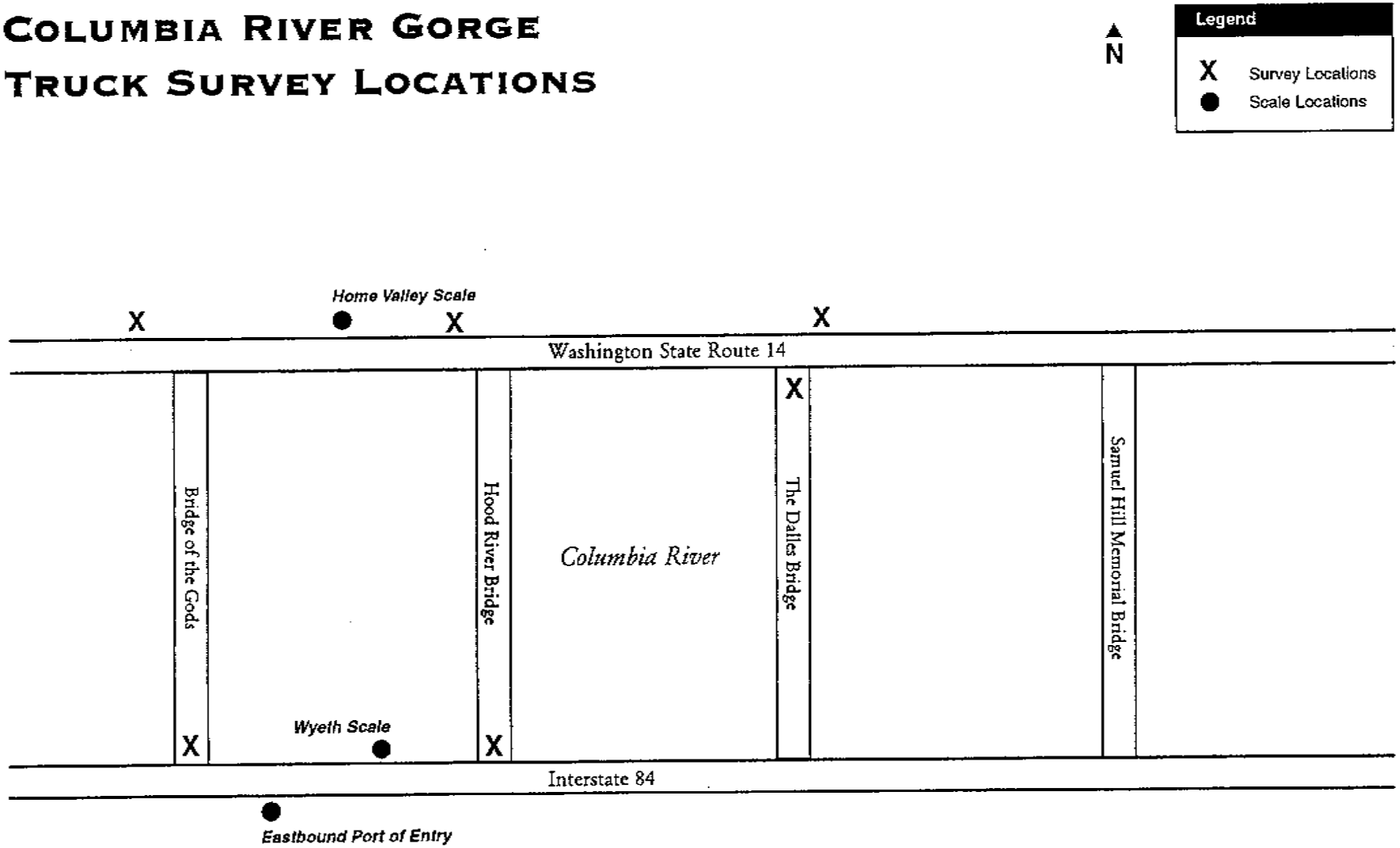


Figure 3

SR14

# COLUMBIA RIVER GORGE TRUCK VOLUMES

1995 ADT

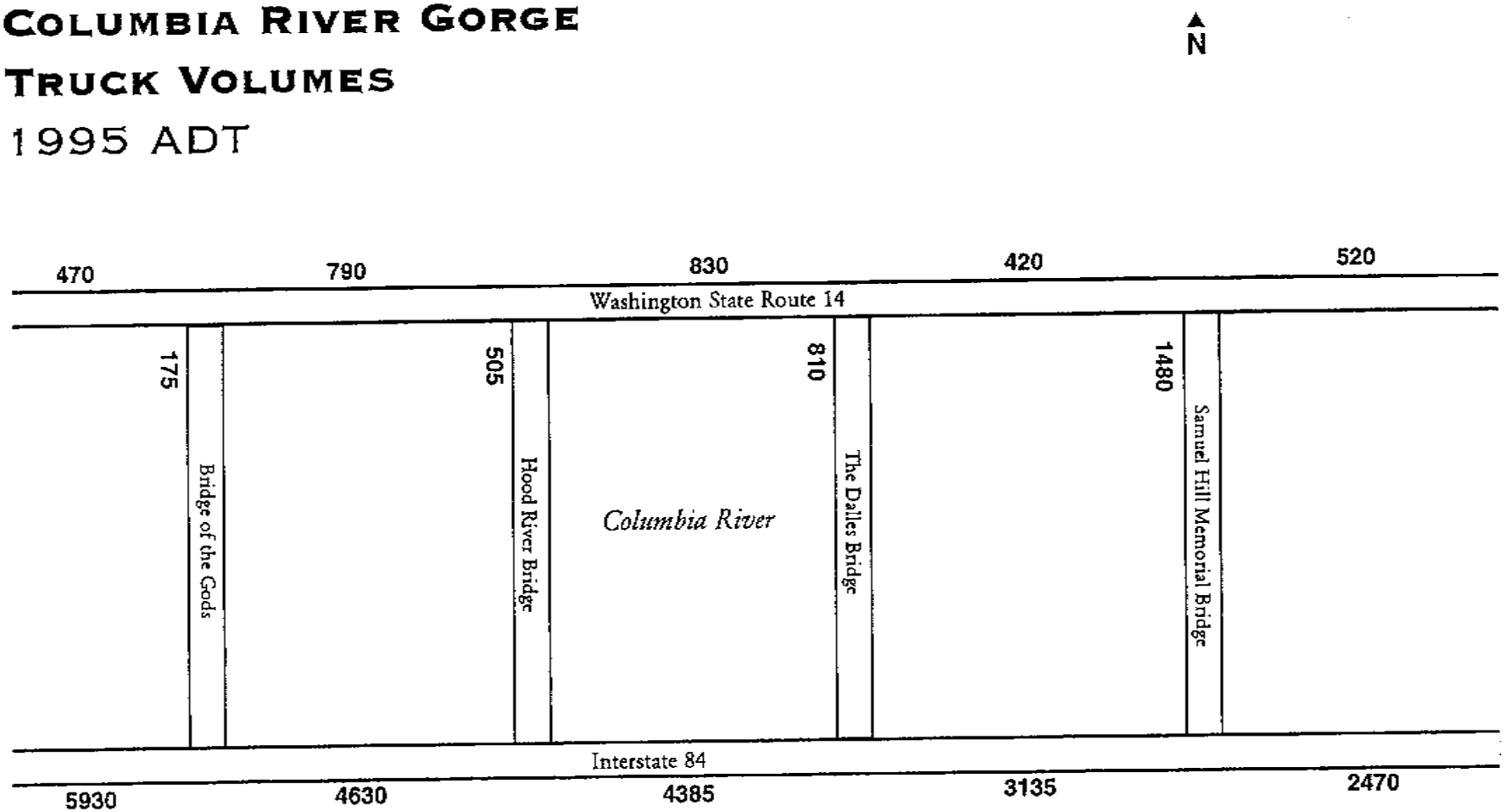


Figure 2

DCM INC.

The POE is a full-time operation and, according to comments received, may be the primary station that trucks evade in order to avoid the Oregon weight mile tax. By using SR 14 eastbound, the only weigh station facility in the survey area that trucks encounter is at Home Valley, which is only open part-time like the Wyeth scale location in Oregon. Based on the comments and research, it appeared that the most probable type of evasion would be trucks avoiding the eastbound POE on I-84 in Oregon. The survey focused on truck evasion at this POE. Previous studies, truck accident data, and truck volumes were also reviewed.

Although enforcement resources are very limited in both Washington and Oregon, both states were cooperative. John Cryderman, Commercial Vehicle Enforcement Officer 3 from the Washington State Patrol and Dick Carter, Manager for the Cascade Locks POE from the Oregon Department of Transportation provided information and resources to coordinate truck weighing operations with the survey. The impacts of truck enforcement on truck traffic flows are discussed later in this report.

**Data Collection**

A truck movement survey was conducted on April 29 and 30, 1997. It was determined from conversations with officials at weighing operations, public input, and a review of truck data that truck volumes are higher in the spring and that the highest truck volumes fall between 10:00 a.m. and 7:00 p.m. during the week.

On the first day of the survey (April 29), only the Oregon POE was open for weighing trucks eastbound on I-84. On the second day of the survey (April 30), all three of the truck weighing stations in the Stevenson/White Salmon survey area were open.

Figure 3 shows the weigh stations and the six locations used for the field survey. On April 29 and 30, truck license plates were recorded at the six truck survey locations eastbound on SR 14, northbound on the Bridge of the Gods and southbound on the Hood River and The Dalles Bridges. Total truck volumes were also recorded for both directions. It was difficult to record more than the truck license plates and impractical to record hazardous material placards. Hazardous material placard information would have required an additional person to record placards at each survey location. To identify local and out-of-state trucks, Washington and Oregon licensed trucks were recorded separately while licenses from other states were aggregated. The license plate numbers were manually recorded in the field and then input for computer matching to determine truck trip routes.

## SURVEY RESULTS

### Truck Volumes

The results of the truck traffic counts on April 29 and April 30, 1997, are shown on **Figure 4**. Truck volumes entering and leaving the study area on SR 14 were approximately the same both days with a difference of about 20 fewer trucks on April 30. However, there were substantial changes in truck volumes entering and leaving the study area on the three bridges. Truck volumes entering and leaving SR 14 across the Hood River and The Dalles Bridges increased by approximately 390 trucks on April 30 while the truck volume on the Bridge of the Gods decreased by approximately 95 trucks. This shows that with all of the weigh scales operating, the internal trips were higher back-and-forth across the Columbia River. The other substantial change was a decrease of approximately 240 trucks on SR 14 in the section with the Home Valley scale west of the Bingen/White Salmon area. Most of this decrease was for eastbound trucks (approximately 200). From these changes it appears that local truck traffic may have avoided going through the Home Valley scale on SR 14.

Dick Carter from the POE provided information on truck activity at the POE and the Wyeth westbound scales on I-84. The number of trucks through the weigh-in-motion equipment, the number actually weighed, and the number of citations issued were approximately the same for both survey days at the eastbound POE. The Wyeth westbound scale had approximately 290 more trucks on April 30 as compared to April 17 (the most recent day when the Wyeth station was open and the Home Valley one was not), and 15 citations were issued on April 30 as compared to only six on April 17. The Wyeth scale information covered two work shifts on April 17 and April 30, 1997.

This information would also seem to indicate that local truck traffic may have been avoiding the Home Valley scale on SR 14 but the directional truck volume does not confirm this. A large decrease in volume occurred eastbound on SR 14 and an increase occurred on I-84 westbound at the Wyeth scale location.

### Truck Movement

Truck license plate numbers were recorded at the six survey locations shown on Figure 3 to determine truck trip routes and identify evasion of the eastbound POE in Oregon on I-84. As previously mentioned, the license plate numbers were recorded for northbound traffic on the Bridge of the Gods, for southbound traffic on the Hood River and The Dalles Bridges, and for eastbound traffic on SR 14. The results are shown in **Figures 5a** and **5b**.

As a result of matching recorded license plate numbers, it was found that most of the truck traffic trips from the west (Bonneville Dam) on SR 14 and from the Bridge of the Gods either start or end (including turning around) in the survey area. Approximately 83 percent of the truck trips from the Bonneville Dam on SR 14 and 95 percent of the north to east truck trips from the Bridge of the Gods started or ended in the survey area. The percentage of through trips did not change much on the two survey days. Through trips from Bonneville Dam were approximately 17 percent with most of the through trips (approximately 13 percent) leaving the study area southbound on The Dalles Bridge. Approximately five percent of the truck trips from the Bridge of the Gods were through trips.

# SR14
# Columbia River Gorge
# Truck Volumes Survey
## April 29 & 30, 1997 Survey

**Legend**

| | |
|---|---|
| *100* | April 29 |
| 100 | April 30 |
| +100 | Difference |

N

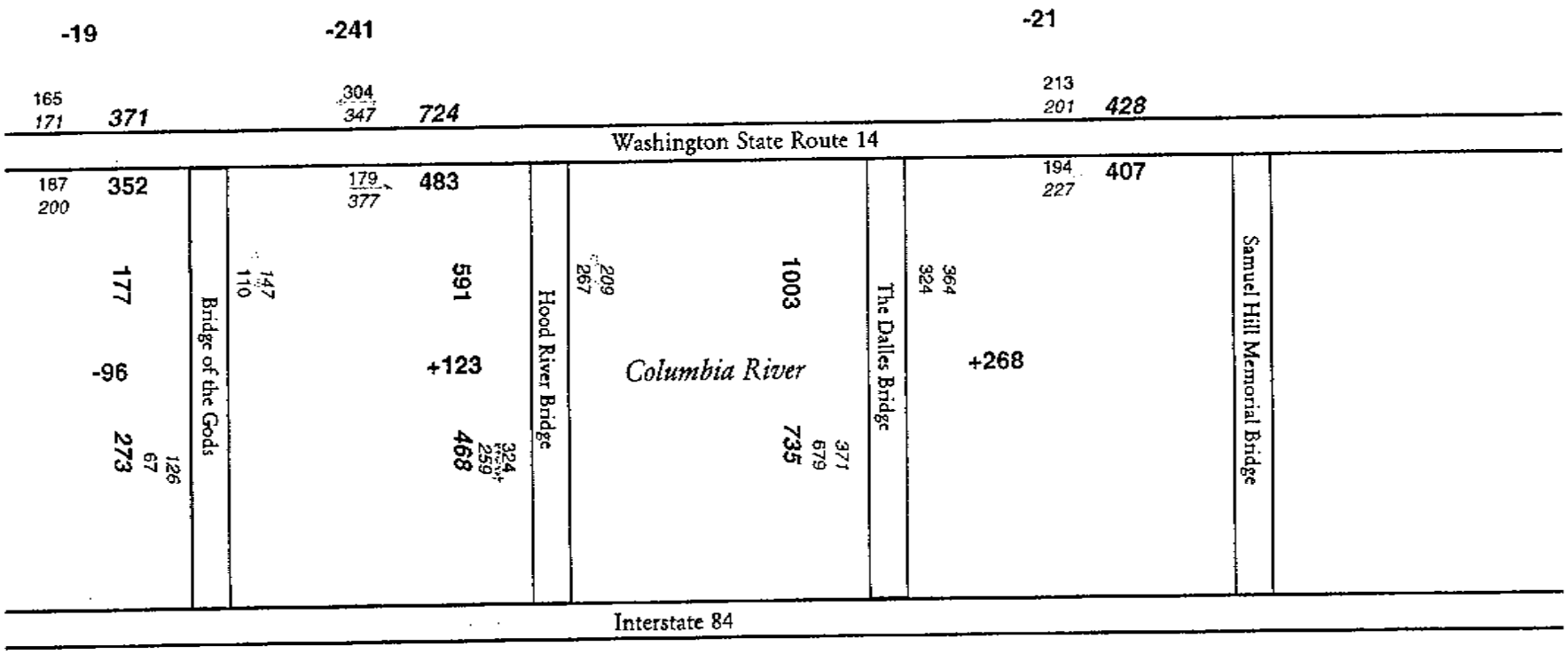


Figure 4

DCM INC.

SR14

# Columbia River Gorge

## Truck Movement from Bonneville Dam

## April 29 & 30 Truck License Plate Survey

N

**Legend**

X% April 29

(X%) April 30

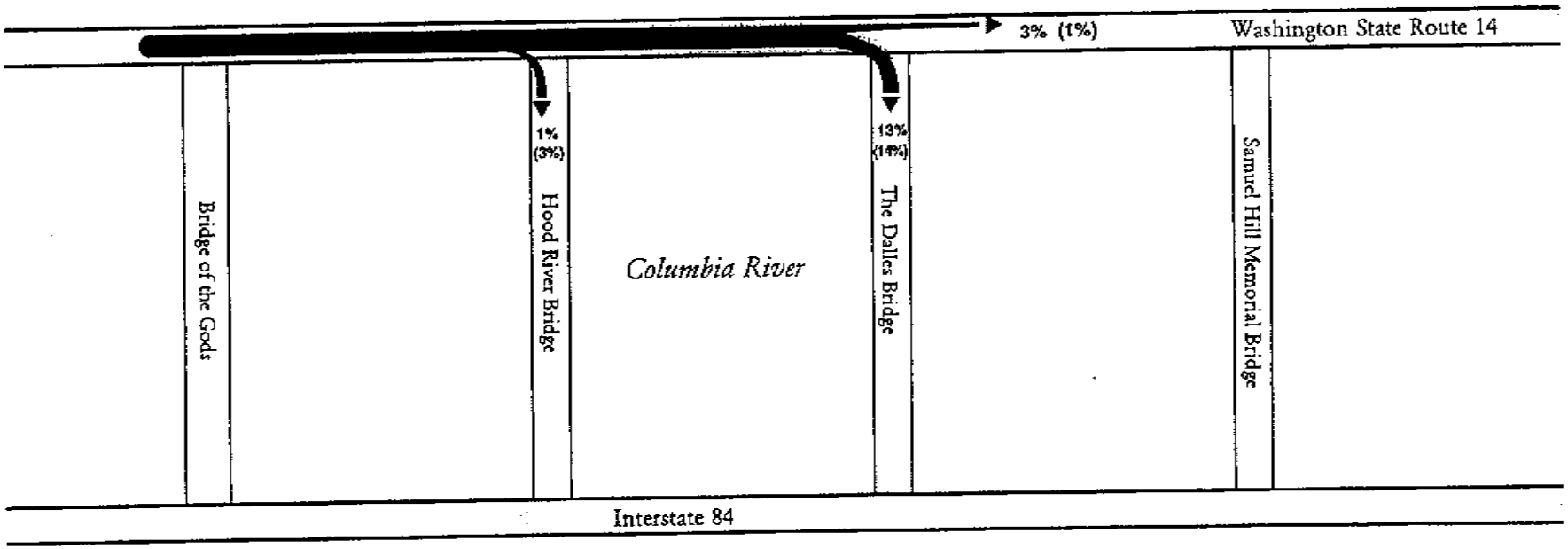


Figure 5a

DEA INC.

SR14

# Columbia River Gorge

## Truck Movement from Bridge of the Gods

April 29 & 30 Truck License Plate Survey

N

**Legend**

X% April 29

(X%) April 30

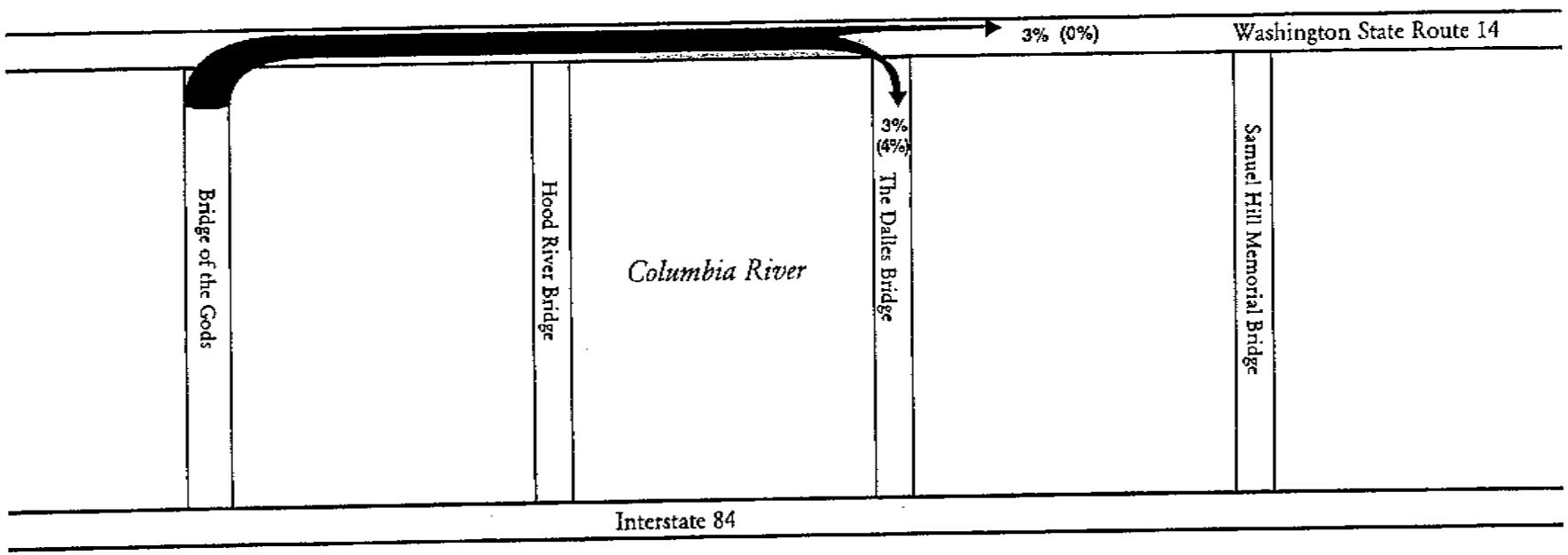


Figure 5b

DCM INC.

Figures 5a and 5b show that on the second day of the survey, when all three of the truck scale locations were open, the southbound truck trip percentages across the Columbia River were only slightly higher than on the first day of the survey with only the POE operating. However, on the second day of the survey all of the through truck trips from the Bridge of the Gods were crossing back across the Columbia River southbound on The Dalles Bridge. It is estimated from this survey that approximately three or four percent of the truck traffic may be avoiding the Oregon POE by crossing the river northbound on the Bridge of the Gods and then crossing back over the river southbound at The Dalles Bridge. These results are consistent with other weight mile evasion studies conducted in Oregon.

It is estimated that there would be negligible POE evasion truck traffic on SR 14 from west of the study area. The Oregon weight mile cost for an 80,000 pound truck from I-205 to The Dalles Bridge would be approximately $10. Travel time on SR 14 from I-205 to The Dalles Bridge would average 15 to 25 minutes more than a similar trip on I-84. Using an average value of $60 per hour for delay to the truck and driver[1], the delay cost would be $15 to $25 more than the weight mile cost for even the largest trucks. The costs are less for smaller trucks, and it is expected that most all of the through truck traffic from the west on SR 14 using The Dalles Bridge is not POE evasion traffic.

## TRUCK ACCIDENTS

During a three year period from January 1, 1993, to December 31, 1995, there were 719 accidents reported on SR 14 from I-205 to SR 97. Trucks were involved in 66 of these accidents or approximately nine percent. Truck traffic is typically more than 10 percent of the total traffic on SR 14. The data indicates that truck accidents are proportional to truck volumes. The most common collision type was "vehicle hit fixed object." Locations of concern for truck safety appear to be best identified as those that were mentioned at the public meetings on November 6, 1996. Projects have been included in the corridor plan to address most of the concerns expressed.

## SUMMARY

- The highest truck volumes on SR 14 are in the White Salmon/Bingen area (over 800 trucks per day).
- The Port of Entry and weigh station operations influence truck volumes and trips.

    a. The total truck volumes on the Hood River and The Dalles Bridges increased by a total of approximately 390 trucks on April 30th with all weigh stations operating.
    b. It appears that most of the increase on the two bridges is internal truck trips with the truck volume dropping by approximately 240 trucks in the Home Valley scale section and staying about the same to the west and east.

[1] WSDOT, Minutes of the March 29, 1994, meeting of the Mobility Program Technical Advisory Committee.

c. The Wyeth scale for westbound traffic on I-84 had approximately 190 more trucks weighed, with nine more citations than for a comparable time period without the Home Valley scale operating.
d. The number of trucks weighed and issued citations at the Port of Entry on I-84 were approximately the same on both days of the truck survey.

- A major portion of the truck traffic trips start and end in the section of SR 14 between the Bridge of the Gods and The Dalles Bridge (83 percent of the eastbound trips on SR 14 from the Bonneville Dam and 95 percent of the east bound truck trips from the Bridge of the Gods).
- Based on the license plate survey, the amount of truck evasion of the I-84 Oregon Port of Entry appears to be small for the eastbound traffic (approximately three to four percent).
- In the license plate survey, 35 percent of the plates were from within Washington. Most of the trucks were from out of state; 59 percent from Oregon and six percent from other states.

## SR 14 CORRIDOR MANAGEMENT PLAN STRATEGIES

A list of highway improvement projects is included in the corridor study to address safety concerns. Special signing and height detector projects are shown for the tunnels. In addition to the highway improvement engineering projects, two other methods addressing truck problems are enforcement and education. Traffic patrol at selected times and locations would also have a positive impact on truck safety and operations.

Education for truck drivers could be initiated through the media. Information regarding problems to be expected on SR 14 particularly during inclement weather could be provided at truck stops and key ports of entry. This information should also note the tunnels and road alignment (vertical and horizontal) so that through truck traffic would be encouraged to use I-84 as an alternate route.

Traveler information including weather and road conditions for truck drivers is to be provided at truck stops along I-84 as part of the Portland to Boise Intelligent Transportation Systems (ITS) corridor project. A combination of highway improvements, enforcement, and education activities would have a positive impact on safety for the highway users on SR 14.

s:\trans\project\wdot0110\reports\finalrpt\truckrpt.doc

# APPENDIX T-1

# PUBLIC MEETING COMMENTS

**SR 14 CORRIDOR PLAN COMMUNITY MEETING**
**White Salmon, Washington**
**November 6, 1996**
**5:00-6:30 p.m.**

**PUBLIC COMMENTS**

1. Problem is the out-of-state trucks
   Locals know the route such as at the tunnels

2. Person has heard trucks talk about evasion - they do it
   They also avoid the Home Valley weigh station when it is open

3. Mayor of Bingen wants bridge counts

4. Thinks fuel tax is a reason to go on 14 instead of 84

5. Put a counter between 141 alternate and Hood River bridge

   Scary to drive there after dark/in rain
   Also, rocks are there
   Feels it may have highest truck volumes in Gorge
   Spring is prime time for maximum trucks here
   From orchards to packing plants
   Narrow but potential to hang out over the edge and put a pedestrian/bike path

7. The tunnels are very scary - trucks over the line, near misses in the tunnels

8. Possible detectors to do siren for truck if it is too low/high

9. Should require chains on Cape Horn and Sweeny curves

**SR 14 CORRIDOR PLAN COMMUNITY MEETING**
**Stevenson, Washington**
**November 6, 1996**
**7:00-8:30 p.m.**

## PUBLIC COMMENTS

1. Nelson Creek project - lights needed for safety
2. Wind River project created ice problem.
3. Enforcement on SR 14
4. Concern about stopping trucks for survey
5. Lack of truck turnouts - stopping in lane
6. Enforce limit of five vehicles or more behind slow vehicles
7. Identify turnouts

**Issues Identification**

- Large/heavy recreational vehicles - slow moving
- Money/implementation concerns
- Professional drivers - not following regulations - causing aggravation; safety concerns
- Information for unfamiliar drivers
- Truck climbing speeds
- Speed limit enforcement
- Cargo - hazardous material through Gorge
- Demarcation/design of pullouts
- Recognize truck capabilities - speed and acceleration
- Design standards for truck turnouts
- Eastbound turnout at mile post 24 at top of hill westbound - good job!
- Trucks in middle of tunnel
- Traffic lights - policy
- Rutting and water reaccumulation at Clark County line
- Lawton Creek - trucks pulling out on top of cars
- Flag 30 mph curve
- Mile post 26 - flat curve and truck crossing centerline
- More lights, signing at tunnels for unfamiliar drivers
- Eastbound passing lanes needed
- Mile post 26 bad turn
- Bell Center Road ice (superelevation)

- Mile post 25.2 bottleneck at viewpoint - east/west excitement - need no parking sign
- Mile post 24.5 truck flip over wall
- Mile post 22.6 Miller Service Station
- Winds/ice at Cape Horn sign for ice
- Prindall Road intersection, westbound passing/crossing problem
- Drano Lake boat parking
- Windsurfer parking - mile post 60.5 Lyle
- Time of survey - Sunday afternoon - recreational
- p.m. eastbound
- 5:30 a.m. commuter traffic

**Changes in Truck Traffic**

- Construction related
- Weight restriction on Bridge of the Gods and Hood River Bridge keeps trucks on SR 14 through Cape Horn
- Scenic drivers need viewpoints
- More police patrol
- Include bicycles in turnout planning, passing lanes, etc.
- Solutions for bicycle where space is limited
- More diversity in users and resulting conflicts
- Local truck traffic is down
- Truck convoys
- Straighten curve at service station and rock pit
- Straighten corner at mile post 24.5 - eliminates truck flipping
- Truck safety for unfamiliar drivers
- Identify tunnel height clearly
- Bridge design factors - what will be valued? - justification

  *Narrow Bridges*
  Wooder Creek
  Nelson
  Bottom of dip

- Unfamiliar drivers - visitors
- History of mills, recognize all elements of community
- Mile post 26 eastbound at Salmon Falls Road, head-on collision with passing cars when cars pull out from Salmon Falls westbound

# APPENDIX D

# HISTORIC FEATURES SURVEY

# HISTORIC FEATURES SURVEY

**SR 14 IN THE COLUMBIA RIVER GORGE NATIONAL SCENIC AREA**

**SUBMITTED TO**
**WASHINGTON STATE DEPARTMENT OF TRANSPORTATION**
**SOUTHWEST REGION 4200 MAIN STREET**
**P.O. BOX 1709**
**VANCOUVER, WASHINGTON 98668-1709**

**SUBMITTED BY**
**DAVID EVANS AND ASSOCIATES, INC.**

**PREPARED BY**
**ANN FULTON, Ph.D.**
**CULTURAL RESOURCES MANAGEMENT**
**1540 SW DAVENPORT STREET**
**PORTLAND, OREGON 97201-2230**

**FEBRUARY 14, 1997**

**CULTURAL RESOURCES MANAGEMENT REPORT NO. 101596**

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# ABSTRACT

This report is an Historic Features Survey of Washington State Road 14 through the Columbia River Gorge National Scenic Area. It includes interviews, document research, and an historic survey report. This study is based on a survey and research conducted between 10/23/96 and 12/15/96 by Ann Fulton, Ph.D.; Cultural Resources Management; Portland, Oregon.

Nine interviews of Gorge stakeholders knowledgeable of historic elements were conducted. The purpose of the interviews was to research past efforts to survey and document features, to add to the consultant data base, and to assist with the definition and characterization of the SR 14 corridor. A summary of the interviews is included.

The document research was conducted to identify existing historic inventories, reports, or registration of historic features within 100 feet of the right-of-way.

The historic survey was conducted to identify locally significant historic roadway features and features adjacent or near the highway right-of-way that define and characterize SR 14. The information gathered will be used to support development of design guidelines for the highway. The historic survey report includes an inventory of historically significant features by milepost and an historic context statement.

# PREFACE

Preparation of this document was carried out under the terms of the contract for the SR 14 Corridor Management Plan between the Washington State Department of Transportation and David Evans and Associates, Inc. Ann Fulton, Ph.D., Cultural Resources Management, was the historical consultant for David Evans and Associates, Inc. Fulton prepared this report.

Ann Fulton is currently an Adjunct Professor of History at Portland State University. Fulton received her M.A. and Ph.D. from the University of Wisconsin-Madison. Fulton prepared the Historic American Buildings Survey for Timberline Lodge and the National Register nomination for Zigzag Ranger District for the U.S. Forest Service. Previous studies include *Banks, A Darn Good Little Town*, an historical study of Banks, Oregon. Fulton is currently preparing a history of Vernonia, Oregon for the Oregon Community Foundation.

A number of resource people and organizations were contacted in the course of this project. They are listed as follows:

Carolyn Bajema, Local Historian for Skamania County
Sverre Bakke, Klickitat County Commissioner
Mary Ann Duncan Cole, Stevenson City Clerk
Michael Boynton, United States Forest Service Heritage Resource Program Manager
Greg Griffith, Washington State Office of Archaeology and Historic Preservation Planner
Mary Legry, Washington State Department of Transportation Regional Planning Manager
Johnson Meininick, Yakima Tribe Cultural Resources Manager
Bill Pierce, Washington State Department of Transportation Regional Engineer
Melissa Carlson Price, Skamania County Commissioner
Elizabeth Robbins, Washington State Department of Transportation Planner
Dale Robins, Regional Transportation Council Planner
Curt Skaar, retired Skamania County Road Engineer
Sharon Tiffany, Columbia Gorge Interpretive Center Director
Homer Townsend, Local Historian for Klickitat County

## SUMMARY OF INTERVIEWS

This summary is based on interviews with the nine people identified as interviewees by the Washington State Department of Transportation. The following themes emerged in the interviews:

Although many of SR 14's features were not built at the same time, the Washington State Department of Transportation can develop the drive through the Columbia River Gorge National Scenic Area as a unified driving experience with historical sites and structures.

1. Historic properties need to be managed so that their historic, cultural, and scenic values remain and the interests of safety and rapid transportation also are met.
2. The historic features of SR 14 need to be evaluated in a unified manner within the framework of the overall significance of the highway.
3. More identification and interpretive material for historic sites and structures is needed.
4. Even though government and state inventories require properties to be only fifty years old to be historic, some interviewees did not think SR 14 was old enough to be "truly an historic highway."
5. Several interviewees worried about placing bridges and tunnels on a register or list that would prevent their modification or removal.

# STAKEHOLDER INTERVIEWS

## CAROLYN BAJEMA, SKAMANIA COUNTY LOCAL HISTORIAN

### Existing Information

Columbia River Gorge Interpretive Center archives

### Resources

None mentioned

### Definition and Character

SR 14 has been an important corridor for transportation since human habitation. Special consideration needs to be given to identifying sites and structures that no longer retain much of their early appearance. Travelers on SR 14 would benefit from having more information provided on the highway's historical significance.

## SVERRE BAKKE, KLICKITAT COUNTY COMMISSIONER

### Exiting Information

None Mentioned

### Resources

Walter Greer, former District Road Supervisor. 509-493-2516

### Definition and Character

SR 14 is not old enough to be truly an "historic highway." It is, of course, an extremely important route, as it is the only highway traversing the north bank. It is a route of primary importance to all the communities along it and collects traffic from every direction.

The most interesting features along it are the tunnels west of White Salmon. Community members have discussed the tunnels in positive and negative terms; some people like to drive through them, others think they are too narrow.

Mr. Bakke would not like to see the tunnels removed. He cannot think of any other Washington highway where drivers can have the same the experience of driving through so many tunnels.

## MICHAEL BOYNTON, UNITED STATES FOREST SERVICE HERITAGE RESOURCE PROGRAM MANAGER

### Existing Information

Robbins, Elizabeth. Historic Bridges Survey.

Beckham, Stephen Dow et al. Prehistory and History of the Columbia River Gorge National Scenic Area, Oregon and Washington. Three Volumes. Heritage Research Associates Report No. 75.

**Resources**

Elizabeth Robbins, Washington State Department of Transportation Planner

Francine Havercroft, Maryhill Museum; information on Sam Hill and Good Roads" movement. 509-773-2230

Greg Griffith, Washington Office of Archaeology and Historic Preservation Planner. 360-753-9116

Steve Lehl, Corbett resident; has exhaustive postcard, photograph and stereograph collection of the Gorge and SR14 as well). A must-see source. 509-695-5238.

**Definition and Character**

The corridor needs to be studied as a single entity; so far features have been studied separately.

Relevant research topics include:

- Origin of the north bank corridor concept, which led up to the Evergreen Highway.
- History of the North Bank Highway in a segment by segment chronology.
- Design and execution of a comprehensive inventory of all structures along the corridor for the following:
- current inventory of extant structures (bridges, half-bridges, retaining wall, etc.) as compared to original numbers and locations.
- Strategy for evaluation of all extant highway structures, abandoned or current, in a unified framework.
- Significance evaluations and cultural resources management plan for eligible structures. The management plan will make it possible to manage the remaining structures in a comprehensive fashion.
- Development of interpretive information for the public for places such as Maryhill Museum and Skamania Lodge.
- Challenge for the future: how to manage "unsafe" or "inadequate" tunnels, bridges and viaducts so the interests of continually revised safety and travel requirements do not doom the scenic and cultural aspects of the highway.

## JOHNSON MENINICK, CULTURAL RESOURCES MANAGER, YAKIMA TRIBE

**Existing Information**

None mentioned

### Resources

Meninick would be willing to go into the field and identify sites that might otherwise be missed.

### Definition and Character

Indian sites along the corridor have been harmed by rerouting. In the future it is important to identify tribal sites so that they are not disturbed. If effective laws could be passed to fine people for disturbing sites, Meninick would be in favor of placing historical markers at sites. Tribal goals are to disturb sites as little as possible.

## MELISSA CARLSON PRICE, SKAMANIA COUNTY COMMISSIONER

### Existing Information

Contact the following resource people.

### Resources

Sharon Tiffany, Director of the Columbia Gorge Interpretive Center. 509-427-8211

Carolyn Bajema, Local Historian. 360-837-3273

Louis Pitt, Columbia River Gorge Commission Director and Warm Springs Tribal Member. (wk.) 541-553-1678; (hm.) 541-553-3212

Curt Skaar, former County Road Engineer. 509-427-8156

Mary Ann Duncan Cole, City Clerk, City of Stevenson. 509-427-5970

May Hadley, member of the Franz family (historic Franz Lake and Franz Road). 509-427-8412

### Definition and Character

The management plan needs to consider the safety of historic bridges and tunnels. Some of them do not provide good visibility. Severe weather and faster driving make some historic bridges and tunnels unsafe. Duncan Creek Bridge and Woodward Creek Bridge, for example, should not be put on an inventory that makes them unmodifiable. Some features may possibly be modified and be safe.

## ELIZABETH ROBBINS, WASHINGTON DEPARTMENT OF TRANSPORTATION PLANNER

### Existing Information

Robbins, Elizabeth. Historic Bridges Survey.

**Resources**

Johnson Meninick, Cultural Resources Manager of the Yakima Tribe. 509-865-5121; FAX: 865-4664; P.O. Box 151, Toppenish WA 98948

Louis Pitt, Warm Springs Tribe. 541-553-3214

Jeff Van Pelt, Umatilla. 541-2765-3165

Andrew Taylor, Nez Perce. 208-843-2253

Linda Freidenburg, Archaeological and Historical Services; has information on old section of road near Wind Mountain and bridges. 206-696-6121

Greg Griffith, Washington State Office of Archaeology and Historic Preservation Planner. 360-753-9116

Washington State Department of Transportation Library- biennial reports of the agency are useful for tracing old highways

**Definition and Character**

The Washington side of the Columbia River Gorge National Scenic Area never developed like the Oregon side. Highway 14 was not built in the planned manner that the Columbia River Highway was. Many of Highway 14's features were not built at the same time; they are an eclectic group of features so the Washington Department of Transportation really does not need to worry about destroying an existing ensemble of features. On the other hand, it can develop the drive through this scenic area as a more unified driving experience and use the many existing features to enhance that experience.

## DALE ROBINS, SOUTHWESTERN WASHINGTON REGIONAL TRANSPORTATION COUNCIL PLANNER

**Existing Information**

None mentioned

**Resources**

None mentioned

**Definition and Character**

The highway has no extremely old historic features, as most of it was built in the 1920s and 1930s. Many people appreciate the beauty of the bridges with columns, the rock retaining walls, and the bridge at Lyle. Perhaps some of the architectural characteristics of these features could be incorporated into new designs to preserve the character of SR 14. This would preserve architectural characteristics while providing a more safe and modern highway.

## HAROLD TOWNSEND, KLICKITAT COUNTY LOCAL HISTORIAN

### Existing Information

Townsend, Harold. History of Skamania County, 1989.

### Resources

None mentioned

### Definition and Characterization

SR 14 is not so historically important that it can not be altered. Many towns and areas would benefit if the road were widened. There are, however, many sites and structures along the way that need to be noted as historically significant.

Particular concerns include the Lyle tunnels and Cape Horn. These tunnels were not made to accommodate heavy traffic and bicycles. Any changes to Cape Horn should continue to provide travelers with a vantage point for this spectacular place.

## MARY VASSE, COLUMBIA RIVER GORGE COMMISSION PLANNER

### Existing Information

National Register of Historic Places Inventory-- Nomination Form for Historic Bridges in Washington State

Inventory of SR 14 Historic Bridges, 1995.

Washington State Inventory of Historic Places-- Inventory Form for Wind Mountain Wagon Road, 1974 and "Golden Spike Site," 1974.

Historic American Engineering Record/ Washington State Bridge Inventory-Inventory Forms for SR 14 Bridges, 1979-80.

### Resources

Elizabeth Robbins, Washington State Department of Transportation Planner

### Definition and Character

The Columbia River Gorge Commission wants a synthetic historical evaluation of SR 14. SR 14 is a scenic highway. It is not of as much historical significance as the Columbia River Highway but it is still significant and beautiful to drive. The historical evaluation needs to consider its character, how it was built to fit the contours of the landscape, its width and its features, such as rock retaining walls.

## EXISTING INVENTORIES AND REPORTS

Document research for this study includes a list of existing historic inventories and reports.


***Beckham, Stephen Dow***

1984 "This Place is Romantic and Wild": An Historical Overview of the Cascades Area, Fort Cascades, and the Cascades Townsite, Washington Territory. Heritage Research Associates Report 27.

***Beckham, Stephen Dow and Baxter, Paul W.***

1988 Cultural Resource Survey of Selected Tracts in the Bonneville Dam Reservoir Area, Oregon and Washington. Heritage Research Associates Report73.

***Beckham, Steven Dow et al***

1988 Prehistory and History of the Columbia River Gorge National Scenic Area, Oregon and Washington. Three volumes. Heritage Research Associates Report No. 75.

***Bonneville Power Administration***

1986 Bonneville Power Administration South Bank Substation, Historic American Engineering Record Documentation. Typescript, Bonneville Power Administration, Portland, Oregon.

1987 Bonneville Power Administration Master Grid Discontiguous District, National Register Nomination. Typescript, Bonneville Power Administration, Portland, Oregon.

***Derby, George H.***

1856 The Portage, Cascades, W.T.: U.S. Military Road from The Dalles to Columbia Barracks. Map W-29, RG 77: Record of the Office of The Chief of Engineers, National Archives, Washington, D.C.

***Derby, George H. and Robert E. K. Whiting***

1855 Office of the Chief of Engineers. The Portage, Cascades, W.T.: U.S. Military Road from the Dalles to Columbia Barracks, Map W-29, RG 77. National Archives, Washington, D.C.: 1855.

***Donaldson, Ivan***

n.d.a Fishwheels on the Columbia River, Bonneville-Cascade Locks Area. MS notes on U.S. Army Corps of Engineers Charts of the Columbia River, Drawer 12, Folder 6, Oregon Historical Society, Portland, Oregon.

***Garrett, Harold R.***

1993 "Clark County Highway History, 1905-1977." MS on file, Washington State Department of Transportation, Olympia, Washington.

***Lentz, Florence K.***

1995 An Inventory and Evaluation of Historic Properties Associated with Transportation in Washington State. Eastern Washington University Reports in Archaeology and History 100-90.

***Lockley, Fred***

1928 History of the Columbia River Valley from The Dalles to the Sea, Vol. I. S.J. Clarke Publishing Co., Chicago.

***Minor, Rick and Beckham, Steven Dow***

1987 Historical Investigations of Early Railroad Developments at Bonneville, Oregon: 1852-1882. Heritage Research Associates Report 57.

***Office of Archaeology and Historic Preservation***

n.d. Skamania County Historic Inventory. Olympia, Washington. 1996 Washington Listings in the National Register.

***Office of the State Highway Engineer***

1924- Tenth-Eighteenth Biennial Report of the State Highway Engineer.

1940 Jay Thomas, Public Printer, Olympia, Washington.

***Parsons, Mark E.***

1982a The Evergreen Highway: 75 Years of Change. Landmarks: Magazine of Northwest History and Preservation, Summer, pp.2-4.

1982b Across Rushing Waters: A History of the Washougal River and Cape Horn. Camas, Washington.

*Soderberg, Lisa*

1979 Historic American Engineering Record/Washington State Bridge Inventory. Office of Archaeology and Historic Preservation, Olympia.

*U.S. Army Corps of Engineers*

1957 Final Report on Relocation of Indian Burial Grounds, The Dalles Dam, Columbia River, Washington and Oregon. Portland District, Real Estate Division, Portland, Oregon.

## REGISTRATION OF HISTORIC FEATURES

Historic features within 100 feet of the right-of-way are listed below.

Historic Features on the National Register of Historic Places: None.

Historic Features on State and County Inventories and Surveys:

The majority of features listed in this report are on either a state or county inventory or survey. Previous listings in inventories and surveys are cited in the Milepost Survey.

Historic features on the National Register of Historic Places in the vicinity of SR 14 but more than 100 feet from the right-of-way:

| | |
|---|---|
| Clark County: | None |
| Skamania County: | Bonneville Lock and Dam Historic District--National Historic Landmark(7/21/87)<br>North Bonneville Archaeological District-- may include historic features (2/2/87) |
| Klickitat County: | Klickitat River Railroad Bridge (3/13/81)<br>Horsethief Lake State Park /Wishram Indian Village Site (3/16/72)<br>Celilo Bridge (3/13/81) |

**Table 1: Key to Abbreviations for Registers, inventories, and Historical Reports**

| ABBREVIATION | DATE | REPORT |
|---|---|---|
| BECKHAM | 1984 | "This Place is Romantic and Wild": An Historical Overview of the Cascades Area, Fort Cascades, and the Cascades Townsite, Washington Territory. Heritage Research Associates Report 27. |
| BECKHAM AND BAXTER | 1988 | Cultural Resource Survey of Selected Tracts in the Bonneville Dam Reservoir Area, Oregon and Washington. Heritage Research Associates Report 73. |
| HAER/WSBI | 1979 | HAER/Washington State Bridge Inventory. Office of Archaeology and 1980 Historic Preservation, Olympia. |
| HRA | 1988 | Prehistory and History of the Columbia River Gorge National Scenic Area, Oregon and Washington, Vol. II: Site Inventory. Heritage Research Associates Report No. 75 (2). |
| MINOR AND BECKHAM | 1984 | Archaeological Testing at Fort Cascades and the Cascades Townsite (45SA9). Heritage Research Associates Report 28. |
| NR/NR DISTRICT | | National Register for Historic Places/National Register District. |
| OAHP | n.d. | Skamania County Historic Inventory. Office of Archaeology and Historic Preservation, Olympia. |
| SWINDELL | 1942 | Report on Source, Nature and Extent of the Fishing, Hunting and Miscellaneous Related Rights of Certain Indian Tribes in Washington and Oregon. Office of Indian Affairs, Division of Forestry and Grazing, Los Angeles. |
| WILKE ET AL | 1983 | Cultural Resource Overview and Survey of Selected Parcels in The Dalles Reservoir, Oregon and Washington. Report of Geo-Recon International to the Portland District, U.S. Army Corps of Engineers. |
| WSU | 1974 | Washington State Preservation Inventory Project. MS Photocopy, Office of Archaeology and Historic Preservation, Olympia. |

# HISTORIC SURVEY

The historic survey was conducted by Ann Fulton between 10/23/96 and 12/15/96. Fulton documented historic sites and structures between MP 18 and MP 97 on SR 14, including roadway features and locally significant features within 100 feet of the right-of-way. Methodology included inventorying features and on-the-ground examination of specific historic sites and structures.

Fulton identified features by milepost and photographed important features. Following the fieldwork, Fulton researched features at or received historical materials from the Washington State Department of Transportation, the Washington State Office of Historic Preservation and Archaeology, the Columbia River Gorge Interpretive Center, Eastern Washington University--Archaeological and Historical Services, the Oregon Historical Society, the Multnomah Public Library, and the Portland State University Library.

## MILEPOST INVENTORY

The Historic Features Survey lists SR 14 roadway features, adjacent historic sites and structures, and historical markers. Historic features that are near but not adjacent to the right-of-way that are significant to the history of the SR 14 corridor also have been included. Listings on federal, state, and county registers and inventories are noted. A key to abbreviations for registers, inventories, and historical reports is located on pages 19-20.

***MP 18 - "The First Explorers, 1792" Historical Marker***
Site where Lt. William R. Broughton claimed the Columbia River for Great Britain and named Mt. Hood. Broughton was a member of the first party of white men to explore the river above its mouth. With an Indian chief, they toasted King George III after planting the British flag.

***MP 20 - Lawton Creek Bridge, # 14/138***
43.5-foot concrete slab, two 20-foot spans, built 1925. Lawton Creek Bridge was part of the first unit of the new route of State Road No. 8 between Washougal and Prindle, Federal Aid Project No. 144-A. HAER/WSBI-- Category II.

***MP 23 - Mt. Pleasant Grange***
Two-story wood frame building with gable roof. Mt. Pleasant Grange was organized in 1889; members held meetings in homes until the hall was built in 1892. The fourth oldest continuously occupied grange hall in Washington. OAHP, WSU 1974, HRA 1988.

Mt. Pleasant gas station, store, and restaurant. Island has pump spaces at east and west ends and an attendant's station in the center, built ca.1925. The one-story wood frame commercial building has been remodeled into a residence. The Miller family owned the original station, store, and restaurant.

Mt. Pleasant School. Two-story wood frame building. The school is barely visible from SR14 but it is part of the Mt. Pleasant community. OAHP.

***MP 24 Half Bridge, #14/103***
75-foot concrete T-beam bridge, built 1930

HAER/WSBI-- Category II.

Cape Horn Slide Bridge, #14/104. Historic name: "Shed Bridge." 479-foot concrete T-beam bridge, built 1930. Original bridge had wood shed roof to protect cars from rocks. The bridge marked the completion of Washington's first all-year highway through the Cascades. OAHP, HAER/WSBI-- Category II, HRA 1988.

***MP 24 - Stevenson Ranch***
Established in 1855 by Illinois farmer John W. Stevenson and still owned by the Stevenson family. Its fields form an important part of the scenic landscape visible from Cape Horn Bridge.

***MP 27 - Prindle School***
One-story wood frame building with shed roof and hipped gable at north end, built 1912. OAHP, HRA 1988.

Prindle Landing. Site of steamboat landing. Not visible from SR 14.

***MP 28 - Prindle House.***
Two-story residence with hipped roof ; later addition of attached garage with shed dormer, built ca.1900. Home of town founder Robert Prindle and family. Prindle operated a general merchandise store and gas station on the site from ca.1915-1945.

Skamania County Road District-- Prindle Shop. Shop site pre-dates 1945; existing buildings built ca.1960.

***MP 29 - St. Cloud Historic Site***
No existing buildings. Established by Paul and Florence Vial after 1910, St. Cloud Ranch had an orchard and beautiful gardens. A popular stop for early automobile tourists who asked to tour the grounds.

***MP 30 -Peterson House***
One-story random rubble cottage-style residence with dome roof, built ca.1932 by Skamania residents Hugo and Mildred Peterson. Integrity compromised by later additions.

***MP 32 - Duncan Creek Bridge, #14/107***
40-foot concrete girder with a 5-foot columned sidewalk on north side, built 1926. HAER/WSBI-- Category II.

***MP 33 Cape Horn Grange.***
One-story wood frame building with gable roof, built in 1884. The third oldest continuously operating grange in Washington. OAHP.

Skamania General Store. One-story wood frame commercial building with falsefront, built in 1915 by town founder William Butler; later addition of second story railing.

Site of Skamania Depot. Concrete foundation visible, built ca.1908.

***MP 34 - Woodward Creek Bridge, #14/109***
130-foot concrete T-beam bridge, one 50-foot and two 40-foot spans, built 1928. HAER/WSBI--Category II.

***MP 34 - Site of Civilian Conservation Corps (CCC) camp***
Camp where workers lived while building Beacon Rock State Park in 1937.

Beacon Rock State Park Headquarters. One-story cut stone broken course building with gable roof and one-story cut stone broken course garage with gable roof, built by the CCC in 1937.

Beacon Rock State Park Comfort Station, one-story log and cut stone broken course building with gable roof, built by the CCC in 1937.

***MP 37 - Hamilton Creek Bridge, #14/112***
170-foot through riveted span with concrete approaches, built 1924. Special feature is heavy toe wall and thin apron spilling through short concrete approaches in place of very high abutments; toe wall is built integral with the piers. Located on an old section of State Road No. 8 that parallels SR 14 and is now an access road to North Bonneville Substation. HAER/WSBI--Category II.

SP&S (BN) Steel Truss Railroad Bridge No. 47. OAHP, WSBI, HRA 1988.

***MP 38 - Fort Cascades Historic Site***
U.S. Army built Fort Cascades in 1856. After the Army vacated the fort at the beginning of the Civil War, the buildings became part of the community of Cascades, which survived until the flood of 1894. OAHP, WSU 1974, MINOR and BECKHAM 1984, HRA 1988, NR DISTRICT.

***MP 39 - Bonneville Lock and Dam Historic District.***
Bonneville Lock and Dam was the first of eight federal locks and dams on the Columbia and Snake rivers, built in 1937. OAHP, WSU 1974, HRA 1988, National Historic Landmark.

***MP 40 - "Golden Spike Ceremony" Historical Marker***
Site where the Spokane, Portland & Seattle Railway's mainline between Pasco and Vancouver was completed on March 11, 1908. The line, first called the "North Bank Road," played an important role in developing Skamania County. OAHP, WSU 1974, HRA 1988.

"Fort Rains" Historical Marker. Site of Fort Rains, a blockhouse east of this location that overlooked the Cascade Rapids. Fort Rains protected military supplies and pioneer cargo over the portage road from the upper landing to the river boat landing. Indians attacked the fort in 1856 to protest the encroachment of white settlers. Later this site was known as Sheridan's Point. OAHP, WSU 1974, BECKHAM 1984.

***MP 41 - Bridge of the Gods/ Bridge of the Gods Historical Marker***
Steel through truss cantilever bridge, built in 1926 by the Wauna Toll Bridge Company. The bridge, the third oldest highway bridge spanning the Columbia River, is located at the site of the Cascade Rapids which are now submerged under the pool behind Bonneville Dam.

***MP 42 - "Upper Cascades" Historical Marker***
Site of the town of Upper Cascades, where pioneers reorganized their wagons after rafting down the river. When the Upper Chinooks and Sahaptins attacked the town in 1856 to protest white settlement, Fort Lugenbeel was built to protect it. Upper Cascades also was a transportation center. All traffic and freight between Portland, the gold mines, and the interior transferred from portage railway to steamboat here. OAHP, WSU 1974, BECKHAM AND BAXTER 1988.

Bradford's Portage Tramway/Cascades Portage. Site of first portage from Upper Cascades to Lower Cascades. Built by Bradford and other partners in 1850. OAHP, WSU 1974.

***MP 43 - Rock Creek Bridge, #14/118***
200-foot concrete T-beam, built 1938. HAER/WSBI-- Category II.

Steel Truss Railroad Bridge, HAER/WSBI-- Category II.

***MP 44 - The Avary Building***
A two and a half-story stucco building with gabled dormers on the north side, located on the south side of SR 14 in Stevenson. Dr. Thomas Carr Avary arrived in Stevenson from Georgia in 1903 with letters of recommendation from the governor of Georgia. Dr. Avary constructed this building in 1914 to be used as a hospital. The second story contained his living quarters.

***MP 45 - Stevenson IOOF Cemetery***
Established 1904.

***MP 48 -Site of railroad construction camp, established ca.1906-1908***
This camp site has rock ovens and tent platforms and is typical of others found along the tracks.

***MP 49 - Site of Wind River Bridge, #14/122***
Standard 280-foot steel through span with concrete approaches; length of bridge 381.27 feet; 1 standard 280-foot steel through span and 2 reinforced span and 2 reinforced concrete T-beam approaches and concrete deck, built 1928; replaced by Senator Al Henry Bridge. OAHP, HAER/WSBI-- Category II.

***MP 49 - Wind River Railroad Bridge***
Steel Truss Bridge, built ca.1908. OAHP, HAER/WSBI-- Category II.

***MP 51 - Visible Segment of North Bank Highway***

***MP54***
Turnout with low rubble wall, rubble steps, and rubble pedestal for water fountain fed by creek; water fountain non-operative, built ca.1933.

***MP 54***
Squared rubble castellated wall on south side of SR 14, built by CCC ca.1933.

***MP 55***
Squared rubble "castellated wall on south side of SR 14, built by CCC ca.1933.

Site of Little White Salmon River Bridge, #14/126. 471-foot steel truss concrete T-beam bridge, built 1937. OAHP, HRA 1988, HAER/WSBI-- Category II, BECKHAM 1988. Replaced.

***MP 57 "Broughton Flume" Historical Marker***
Remains of the Broughton flume on the hillside on the north side of SR 14. The flume carried roughhewn lumber nine miles from the Broughton Lumber Company's mill at Willard to its resaw and planing mill adjacent to the railroad. OAHP, WSU 1974, BECKHAM 1988.

***MP 58 - Highway Tunnel #1, 14/128***
130-foot concrete tunnel with arched openings, built 1937. OAHP, HAER/ WSBI-- Category II, BECKHAM 1988.

SP&S (BN) Railroad Tunnel No. 7, #82-8. Tunnel, built ca.1908. OAHP, HAER/WSBI-- Category II, BECKHAM, 1988.

Tunnel #2, #14/129. 408-foot concrete tunnel with arched openings, built 1937. OAHP, HAER/WSBI-- Category II, BECKHAM 1988.

SP&S (BN) Railroad Tunnel No.8, #83-1. Concrete tunnel with arched opening, built ca.1908. OAHP, HAER/WSBI-- Category II, BECKHAM 1988.

Tunnel #3, #14/130. 257-foot concrete tunnel with arched openings, built 1937. OAHP, HAER/WSBI-- Category II, BECKHAM 1988.

Gulch Bridge, #14/131. 215-foot concrete slab with columns, built 1936. OAHP, HAER/WSBI-- Category II.

***MP 60 - SP&S (BN) Railroad Overcrossing, #14/132***
126-foot concrete T-beam overcrossing, built 1936. OAHP, HAER/WSBI-- Category II.

Turnout with low squared rubble wall on south side of SR 14.

Tunnel #4, #14/133. 261-foot concrete tunnel, built 1937. OAHP, HAER/ WSBI-- Category II, BECKHAM 1988.

Tunnel #5, #14/134. 212-foot concrete tunnel, built 1937. OAHP, HAER/WSBI--Category II, BECKHAM 1988.

***MP 61 - SP&S Overcrossing #14/137***
158-foot concrete T-beam, built 1934. OAHP, HAER/WSBI-- Category II, BECKHAM 1988.

Broughton Lumber Company. One-story and two-story wood frame buildings with gable roofs, built ca.1920.

***MP 64 - Arnold Gas Station, Store, and House***
One-story wood frame building with flat roof, built ca.1925. Grocery, gas station, and home of the Arnold family. Purchased from Everett and Calvin Arnold by WSDOT.

***MP 65 - Hood River Bridge***
262-foot through steel truss built in 1924 by the Oregon-Washington Bridge Company in 1924. Integrity impaired by extensive modification in 1939 to accommodate the construction of Bonneville Dam.

House. Two-story wood frame building with gable roof, built ca.1900. Purchased by Mary Settler ca.1975 and now owned by WSDOT.

Bingen Tunnel, removed in 1971.

Bingen Farmers' Cooperative. Two-story wood frame commercial building with gable roof, built ca.1890. Building where farmers stored and packed produce.

***MP 66 - The Joslyn House, now called the Bingen Haus***
Two and one-half story wood frame building with two towers on the north and south sides. The original house, which has been expanded and remodeled, was built in 1860. Erastus Joslyn established his donation land claim here in 1852. Later he donated land for a road so farmers could get their produce to the railroad.

Commercial building. One-story concrete building with a flat roof, built ca.1910.

Bingen Church, now the Gorge Heritage Museum. Two-story building with a gable roof and tower on the west end, built 1911.

***MP 69***
Visible segment of North Bank Highway.

***MP 75 - Klickitat River Bridge, #14/212***

265-foot concrete arch and slab bridge, built 1933. OAHP, HAER/WSBI-- Category II, BECKHAM 1988.

Klickitat River Railroad Bridge. Steel Truss bridge, built ca.1908. OAHP, HAER/WSBI-- Category I, NR.

***MP 76***
Lyle Caste-Stone Commercial Building, built ca.1900

Tunnel, #14/215; 389-foot rock cut tunnel, built 1933. HAER/WSBI-- Category II

SP&S (BN) Railroad Tunnel No. 9, #83-3. Tunnel, built 1908. OAHP, HAER/WSBI-- Category II, BECKHAM 1988.

Visible section of North Bank Highway on north side of SR 14 between the tunnels.

Lyle Tunnel #7, # 14/216. Timber tunnel, built 1933. HAER/WSBI-- Category II.

***MP 84***
Dalles Mountain Road. Built ca.1860 by settlers.

Mohr Portage Railroad Bed. Built ca.1900 by civil engineer Paul Mohr to avoid Celilo Falls. A lien was filed against Mohr for debts on material and labor and the railroad was never used.

Military road. Followed an Indian trail and built by soldiers in the mid-1850s during a period of warfare between Indians and settlers. Road was built to haul supplies from Ft. Dalles to Ft. Wallah Wallah.

Stagecoach road. Built by soldiers during the Yakima Indian Wars of 1855-1856. Also used by cattle king Ben Snipes to drive cattle to market.

***MP 85***
Jensen Springhouse. Built ca.1870 by Captain Lomar Peter Jensen, a Danish sailor who operated a ferry at Rockland and a dairy. Remnants of the rock cellar walls are visible.

Rock corral walls. Peter Jensen hired a local tribal member John Klawanas to build corrals for Jensen's milk cows ca.1870.

Rock walls paralleling highway were part of the Dalles-Wallah Wallah Military Road.

Horsethief Lake State Park/Wishram Indian Village Site. NR.

***MP 86 - "Spearfish" Historical Marker***
"Spearfish Village" was a heavily used location for fishing on the Columbia River. The 1805 Lewis and Clark Expedition found several hundred Indians at Spearfish Village. WILKE ET AL 1983, SWINDELL, BECKHAM 1988.

***MP 92 "Celilo Falls" Historical Marker.***
Site of waterfall, fishing ground, and gathering point for Indians throughout the area. Celilo Falls also was an obstruction to water travel that was buried beneath the Dalles Dam in 1957. Below the falls was the railroad town originally called Fall-Bridge and later named Wishram for the Wish-Ham Indians living here. WILKE ET AL 1983, SWINDELL, BECKHAM 1988.

***MP 97***
McNary House; historic name: Rockland. Stone farmhouse built by Lawrence McNary ca.1925. At the turn of the century many people came to the Gorge seeking a vacation from city life. Lawrence McNary, a railroad attorney, decided to build a house near his parents' former homestead. McNary purchased 40 acres and hired stonemason Joe Studenecker to build a 12' x 16' rock house. Studenecker carved "Rockland" into a stone marker on the road leading to the house. OAHP, WSU 1974, BECKHAM 1988.

Horsethief Canyon Bridge, #14/222. 92-foot concrete slab, concrete arch bridge, built 1931. WSU 1974, OAHP, HAER/WSBI-- Category II.

# HISTORIC CONTEXT STATEMENT

This historic context statement focuses on one resource type and explores its history, character-defining features, and historically significant features. Roadway features, features near the highway right-of-way, and abandoned sections of the original North Bank Highway are included. The subject area is SR 14 in the Columbia River Gorge National Scenic Area. The geographical boundaries of the study are SR 14 Milepost (MP) 18.0 through MP 97.0.

This historic context statement focuses on the period that begins with the Exploration and Fur Trading Era and ends with the Motor Age. The study includes a brief discussion of the Prehistoric Era and the development of a transportation corridor on the north bank of the Columbia River.

## SUMMARY

The section of SR 14 that passes through the Columbia River Gorge National Scenic Area is located on an overland transportation corridor that started to develop in the prehistoric era. From the prehistoric era to the twentieth century, this overland route was closely tied to the primary water transportation corridor that the Columbia River provided through the Cascade Range. Because of falls and rapids on the river, early passage through the Gorge required the use of both overland and water transportation.

Expanding engineering expertise during the first three decades of the twentieth century produced an overland transportation corridor that traveled the full length of the Gorge. Both a highway and railroad used that corridor. The North Bank Highway, one of SR 14's early predecessors, was designed for horse-drawn vehicles but became the first road used by cars and trucks. Built as a farm-to-market road between 1907 and 1916, the North Bank Highway was improved and rerouted in the following decades. The function of the original road was to connect Vancouver with the rich agricultural land near Pasco.

Beginning in 1920, the Highway Department started modernizing the North Bank Highway with the goal of producing the best all-weather route over the Cascades in the Pacific Northwest. Another key departmental goal was to build a scenic highway that would attract tourists to southwestern Washington. The new highway, renamed the Evergreen Highway in 1929, followed the path of the North Bank Highway for much of its route. Betterment projects included building concrete bridges, rerouting, eliminating curves, and decreasing grades from 10% to a maximum of 5%. The completion of the Evergreen Highway through the Columbia River Gorge National Scenic Area by 1937 modernized and increased use of this overland transportation corridor.

The Evergreen Highway was renamed SR 14 in 1955. SR 14 has been an important source of transportation, commercial and agricultural development, and scenic value for southwestern Washington throughout its existence. Each year it has attracted an increasing number of tourists who travel the route to reach recreational spots along the river and enjoy the beauty of the Gorge.

SR 14 is the most modern road to be added to an overland transportation corridor that developed during the Prehistoric Era and that has included trails, waterways, railways, wagon roads, and automobile highways.

## PREHISTORIC ERA

***Native groups developed trails along the north bank of the Columbia River and were the first to use it as a transportation corridor.***

The Columbia River Gorge is located on the boundary between the Northwest Coast and the Columbia Plateau ethnographic culture areas. The Upper Chinookans and the Sahaptins are members of these culture areas. The Upper Chinookans occupied the Gorge from the mouths of the Sandy and Washougal rivers east to the Deschutes River. Upper Chinookan bands on the north bank of the river included the Wishram, White Salmon, and Cascades (Spier and Sapir, 1930: 160).

For the Upper Chinookans, the Columbia River provided transportation and food. They traveled frequently between excellent fishing spots created by rapids and falls along the river. During the spring and fall Upper Chinookan women and children harvested wild celery and other plants. They went up the slopes of the Cascade Range and along streams to pick huckleberries. The men formed hunting parties that followed inland trails. They moved to villages farther inland in the winter months.

The Sahaptins occupied land east of the Deschutes River on the south bank and areas along the Klickitat, White Salmon, and Little White Salmon rivers on the north bank. Bands included the Yakima and the Klickitat. Like the Upper Chinookans, the Sahaptins' subsistence patterns were based on riverine foodstuffs and additional inland resources. From November to March they also moved inland to winter villages (Beckham 1988: 101-126).

Although the Columbia River was the main source of transportation, the Upper Chinookans and Sahaptins developed the first trails along the north bank as they hunted, gathered food, and moved between camps. They needed trails along the north bank to avoid the falls and to make communication and food gathering easier (Harvey 1989: 3).

## EUROPEAN AND AMERICAN EXPLORATION AND FUR TRADING ERA

***In the Exploration and Fur Trading Era, the north bank's function as a transportation corridor contributed to the economic development of the area.***

English and American exploration and trade in the Columbia River Gorge developed rapidly after Lieutenant William R. Broughton claimed the Columbia River for Great Britain. Broughton and his crew were the first white men to explore the river above its mouth. Broughton was from the crew of the H.M.S. Chatham; the Chatham accompanied Captain Vancouver's H. M.S. Discovery on its voyage to the Pacific Northwest in 1792.

Captain George Vancouver reached the bar of the Columbia River in 1792 and sent Broughton to survey the river; Broughton traveled upriver to Vancouver Point. His trip encouraged the development of the British fur trade, which became a lucrative business in the early nineteenth century.

American interest in the Pacific Northwest and land west of the Rockies prompted the Lewis and Clark Expedition of 1805-1806. That expedition marked the beginning of the second stage in the north bank's history as a transportation corridor; now explorers, fur traders, and trappers traveled along this route.

The Lewis and Clark Expedition arrived at the Long Narrows (Fivemile Rapids) on October 22, 1805. From October 22 to November 3 the expedition traveled through the Gorge. Following an Indian trail, the group portaged along the north shore to get around the Cascade Rapids. Later SR 14 would travel near that portage.

When the Lewis and Clark Expedition returned the following spring, it went even greater distances on the north bank route after acquiring horses from Indian bands. The expedition passed through the Gorge between April 4 and April 21, 1806. Awed by Beacon Rock, Meriwether Lewis wrote in his journal: "it rises to a very sharp point and is visible for 20 miles below on the river" (Thwaites, 1905 [4]: 247, 249).

With its exploration of the interior, the Lewis and Clark Expedition brought greater awareness of the wealth that awaited fur traders when they moved inland. The expedition increased the number of trappers and traders who would use north bank portages as the fur trade expanded dramatically after 1810. The Upper Chinookans controlled the portages at the Cascades, the Long Narrows, Little Narrows (Tenmile Rapids), and the Great Falls (Celilo Falls). From 1811 to 1814 the native bands demanded more and more goods from traders and trappers for the right to use the portages.

Members of the Cascades bands challenged a North West Company fur trading party traveling west through the territory of the Cascades in 1814. That confrontation initiated the trading companies' effort to gain control of the Cascades portage. The fur companies fought to secure the Cascades portage for themselves that year but failed.

The companies' effort did produce a working relationship with the Indians. They were allowed to use the portage if they paid suitable tribute in the form of trading goods. After the British Parliament merged the North West Company with the Hudson's Bay Company in 1821, fur traders' and trappers' travel over Indian territory on the north bank caused even fewer problems.

During the Exploration and Fur Trading Era, the main use of the north bank was for portages around difficult rapids. Explorers, traders, and trappers improved the portages to speed their journeys and increase their profits. The north bank's function as a transportation corridor began to grow as a key component in the development of commercial activity in the Gorge.

## EARLY OVERLAND MIGRATION AND SETTLEMENT

***Early migration and settlement increased the use of the north bank as a transportation corridor and brought a portage railroad to Upper Cascades.***

Beginning in the 1840s, hundreds of settlers came to the Pacific Northwest over the Oregon Trail. Approximately 900 settlers made the journey in 1843 and by 1849 approximately 9000 arrived. Efforts made in 1843 to create Oregon Territory, survey a military road to the Columbia River's mouth, and establish military posts encouraged settlers. Free land and a temperate climate were other inducements.

When the settlers reached The Dalles, they faced the daunting task of floating down the river. There were some alternatives, including hiring Indian guides with canoes or Hudson's Bay Company employees and their bateaux, taking the Barlow Road after 1845, or steamboats after 1851. Many settlers, however, descended the river on their own.

They took their wagons apart and floated them on rafts from The Dalles to the Upper Landing at the Cascades, below the settlement of Stevenson. The settlers drove their livestock over trails along the shore. At the settlement called Upper Cascades the emigrants reassembled their wagons and followed a portage wagon road to the Lower Cascades. That portage crossed the ancient landslide that dammed the Columbia River. Elizabeth Smith Dixon Geer traveled this portage in 1847. She remembered the five-mile route as "the worst road that a team could possibly travel" (Geer, 1908: 170).

Settlers who released their rafts at the Upper Cascades reclaimed them along the shore at the Lower Cascades. Here they took their wagons apart again and piled everything on the rafts for a final float down the river. They landed near the mouth of the Sandy River or floated all the way to Fort Vancouver.

The treaties and legislation of the 1840s and 1850s prompted an ever-increasing number of settlers to come to the Pacific Northwest. The Oregon Treaty of 1846 established the United States' sovereignty over land south of the 49th Parallel. The Organic Act in 1848 created Oregon's territorial government and federal services, including courts, military roads and posts, post offices, and Indian agents.

The legislation that had the greatest impact on settlement was the Donation Land Act of 1850. This act provided that male and female U.S. citizens, as well as those seeking naturalization and those of half-Indian descent, were entitled to 320 acres of free land within the public domain. In 1853 the Donation Land Act was amended and the law was extended, with some limitations, to December 1, 1855.

The Donation Land Act brought many settlers to the Columbia River's north bank. Between 1850 and 1855 seventeen people claimed land between the Washougal and Wind rivers in what later became Skamania County. John and Sarah Stevenson settled on bottom land below Cape

Horn and their homestead remained in the Stevenson family. Like the Stevensons, other settlers also chose the tillable soil along the river's edge.

Soon these settlers built a twenty-seven mile wagon road that followed a nearly level bench of high land. This road connected to "The Portage" at the Lower Landing, but above that point it dwindled to a trail to Wind Mountain. At Wind Mountain people crossed the river to get to The Dalles; once on the south bank they traveled a difficult path to reach their destination.

Settlements developed along the north bank in the 1850s at the Cascades. George Johnson, who staked a claim at the Lower Landing, joined with others to plat the townsite of Cascades and open a public house for travelers, trading store, and bakery.

A tiny community developed at the Middle Landing and a larger one at the Upper Landing (Beckham 1988: 155).

These communities grew as a result of the need to get around the rapids. Some settlers were quick to capitalize on the geography of the Gorge. Francis Chenoweth, brothers

Daniel and Putnam Bradford, and other investors built the first portage railroad in 1851 at the Upper Landing. Their one and a quarter-mile long, three-foot wide wooden tramway was the first railroad designed to speed the movement of goods along the portages.

This portage railway consisted of a mule-driven car that carried goods but no passengers. The end of the railroad was at the Middle Landing and here the goods descended 150 feet to the river. From that point they went by boat to the steamboat landing at the Lower Landing three miles away (Adams 1905: 329). The owners charged high rates to everyone who used their railway. This portage road later connected with the Vancouver-Dalles Military Road.

## THE STEAMBOAT ERA

***The steamboats brought more settlers who pressured the Washington Territorial Government and the federal government to develop roads.***

The rise of the Steamboat Era in the 1850s also contributed to the development of the north bank. The steamboats lowered transportation costs for cash exports, provided more reliable service, and moved goods more quickly than wagons and rafts. Steamboats also expanded the economic development of the Gorge and the Inland Empire where settlers raised wheat, wool, and cattle. The steamboats played a key role in bringing more settlers.

The Steamboat Era on the lower Columbia River below The Dalles began in 1850 when the "Columbia" and the "Lot Whitcomb" started to ply the river. The "James P. Flint" navigated the river between the head of the Cascade Rapids and The Dalles in 1851, followed by the "Colonel Wright," the first steamboat to navigate above The Dalles in 1858. After 1865 the Oregon Steam Navigation Company operated barges, schooners, and steamboats on the lower and mid-Columbia.

The discovery of gold, reduced transportation costs, and success in growing wheat brought many people to the Inland Empire and to the shores of the Columbia. Towns sprouted up as shipping points on the north bank. The settlers increased their demand for wagon roads and railroads after Washington Territory was organized in 1853. Isaac Stevens, Washington's first Territorial Governor, supported these demands. Stevens led a surveying party through the Columbia Gorge in the early 1850s that selected the north bank as the best route. The establishment of Washington Territory also prompted the federal government to construct military roads. Two military roads between U.S. Army forts were predecessors of SR 14.

The Thirty-Third Congress in 1854-1855 appropriated $25,000 to build a military road between Columbia City Barracks, usually called Fort Vancouver or Vancouver, and Fort

Dalles (Jackson 1949: 11). Due to increasing hostilities between Indian bands and encroaching white settlers, the Army wanted a direct and swift route between the military forts at The Dalles and Vancouver; Fort Dalles was a key outpost in the area occupied by hostile bands and Vancouver depended on it for supplies. The War Department supervised the construction of the military road and assigned Lieutenant George H. Derby of the Topographical Engineers to survey it. Later SR 14 would follow its path.

The usual method of traveling between Vancouver and The Dalles, Lieutenant Derby noted in his 1855 survey, was to take a steamboat from Vancouver forty-six miles to the Lower Landing at the settlement called Cascades. Here the rapids made the river unnavigable. "The Portage" extending from the Lower to the Upper Landing allowed people to get around the rapids. From the Upper Landing travelers boarded a steamboat to get to The Dalles.

Lieutenant Derby remarked that, except for the privately owned railway, the rest of the portage was "in very bad condition: cut up by gullies and canons, passing over steep acclivities and in many places broken away entirely by land slides, it is difficult of travel at the best season of the year..." (Derby 1855: 3). The railway made it easier to transport goods around the rapids, but the company held a monopoly and charged high rates. Derby reported that "the usual charge for transportation over it is 5 cents per lb. but much higher rates are not infrequently demanded" (Derby 1855: 3).

Derby noted the settlers' wagon road from Vancouver to a point west of Cascades. He decided that a road that traveled all the way from Vancouver to Wind Mountain would be extremely expensive to build. Derby determined that it would be better to follow the usual route by steamboat from Vancouver to Cascades, over the portage road to the Upper Landing, and then by steamer to The Dalles (Abert, 1856: ii-iii). Derby thought the War Department funds should be spent to improve the portage road. Betterment would make it possible for soldiers and settlers to get around the rapids without having to pay high rates to the railroad company.

Indian bands, threatened by the rapid increase of settlers, attacked the settlement of Cascades and the Fort Rains blockhouse in 1856 before construction of the military road started. Soldiers from Company H, 4th U.S. Infantry defended Fort Rains, aided by the arrival of Colonel E.J.

Steptoe from The Dalles and Lieutenant Phil Sheridan from Fort Vancouver (later the site became known as Sheridan's Point).

The attack sparked Lieutenant Derby to ask for guards for Camp Bache at Cascades (now near North Bonneville) where the crew hired to build the military road established their camp. An officer and twenty men were detailed to guard Camp Bache; some of the soldiers worked on the road.

Road construction began in the spring of 1856. Chief Topographical Engineer J.J. Abert reported that "a road wide enough for two wagons to pass has been nearly opened and properly graded between the upper and lower landings. Because of conflicts with the Indians, the army could not get enough labor or supplies to carry out its intention to plank the entire route to make it more passable (Abert 1856: iii).

When the road was finished the Quartermaster Department established a permanent staff to maintain it. Houses as well as a blacksmith shop and stables were adjacent to Fort Cascades at the Lower Landing. Although heavy rains produced many landslides that had to be repaired, J.J. Abert reported in 1857 that the military road furnished an excellent summer route. Government trains and settlers used it frequently.

Soldiers also built another military road at the east end of the Gorge during the 1850s. After the Whitman Massacre in 1847 the U.S. Army feared other conflicts between Indians and encroaching settlers. It hastened to construct roads to move troops and supplies. The military road at the east end moved soldiers and supplies from Fort Wallah Wallah to Fort Dalles. Later a section of SR 14 would follow part of its route.

The need for military roads expanded as the economic development that the steamboats encouraged brought more people. Settlements sprouted up where steamboats stopped at river landings to collect goods and passengers. A group of entrepreneurs incorporated the Oregon Steam Navigation Company in 1860 to capitalize on the opportunities. Soon the company monopolized the transportation systems, including the portages, in the Gorge.

## THE RAILROAD ERA

***Railroads quickly dominated the transportation network on the north shore and created an economic boom in the 1880s.***

When gold mining expanded in Oregon and Idaho in the 1880s, more people came through the Gorge to reach the mines and the transportation business boomed. The Oregon Steam Navigation Company decided to add a steam locomotive to its transportation network. At first the railroads were used only at portages and were secondary to the steamboats; soon the efficiency of railroads became clear. By moving more goods and people faster than the water-going vessels, they helped bring an end to the Steamboat Era.

The first steam locomotive in the Gorge was the "Oregon Pony," which went into service on the Oregon side of the Columbia River. By using a locomotive on the south shore, the Oregon Steam Navigation Company hoped to stave off the threat of a rival north bank railroad. The company brought the "Vulcan" to the north side of the river to establish its own shortline railroad between the Upper and Lower Landings by 1862.

Railroad entrepreneur Henry Villard bought the Oregon Steam Navigation Company in 1878 and started construction of a standard gauge line on the south bank of the Columbia River. After Villard's Oregon Railway and Navigation Company won control of the Northern Pacific Railroad, the first transcontinental connection to the Pacific Northwest was established through the Gorge in 1883. Villard built a railroad along the north shore to Wallula that ultimately connected with the Northern Pacific in Montana (Mills, 1946: 243-293). By 1884 Villard lost his railroad empire to the Union Pacific Railroad.

Railroads brought an economic boom to the Columbia plateau and the Gorge (Meinig, 1968: 261-266). Beginning in the 1880s, the Northern Pacific Railroad promoted settlement while feeder lines brought wheat out of the interior. More railroad building occurred between 1897 and 1908 on the north side of the river. The Columbia River and Northern Railroad linked Lyle to Goldendale in 1902 and the Spokane, Portland & Seattle Railway (SP&S) was built along the north bank of the river by 1908. It traveled from Spokane across the plateau before heading south towards Portland.

The SP&S was James Hill's effort to dominate all the lines from the Great Lakes to the Pacific. His challenger, Edward Harriman, controlled the Central Pacific, Southern Pacific, and Union Pacific railroads by 1901. Hill wanted a direct route between Spokane and Pacific outlets that would take business away from Harriman's Union Pacific, which came into Portland on the Columbia River's south shore.

Beginning in 1900, Hill secretly bought right-of-way along the north bank and a large piece of property for terminals in Portland. Harriman tried to block Hill's construction of a north bank railroad in court, but lost the battle in 1906. When the SP&S was completed it established a direct route from Spokane to Portland. The entry of railroads into the transportation network greatly increased the commercial and economic development of land in the Gorge. The lower cost of transporting goods by rail raised the value of land and brought more settlers to the north side of the river to farm. These newcomers added to the earlier settlers' demand for roads.

The establishment of Washington's Territorial Government in 1853 initiated the first sustained governmental response to the settlers' needs. When the Legislative Assembly met at Olympia in 1854, it produced comprehensive laws regarding roads that affected the north bank corridor. A Board of County Commissioners was established to supervise all county roads. Territorial roads were established by legislative act, to be built and maintained by the counties through which they passed. The width of territorial roads was fixed at sixty feet and county commissioners decided where bridges would be constructed. In 1855 the Legislative Assembly made provisions for a

road from Vancouver to The Dalles. The Legislative Assembly declared the military roads territorial roads in 1858.

When Washington became a state in 1889, the legislature again recognized the need for good roads. The first legislature allowed counties to issue bonds for the construction or improvement of roads and bridges. The bonds were restricted to 5% of the taxable property in the county. The legislature acted quickly because so many of the existing roads were almost impassable.

The Legislature passed an act establishing the office of State Highway Commissioner and a State Highway Board in 1905. The commissioner would be responsible for the survey, establishment, and repair of state highways. The newly created Department of Highways was given $131, 881.23 for road building (Garrett 1993: 1). There were twelve state roads in different stages of construction. These roads were originally wagon roads bluntly described as "somewhat improved trails over which the pioneers had journeyed forty or sixty years before..." (Pollard, 1937: 178). Under the State Aid law of 1907 the state bore one-half of the cost of engineering and construction of state roads and the counties were responsible for maintenance. These 1905 and 1907 acts supported the construction of the North Bank Highway in 1907.

The Good Roads movement and the leadership of Sam Hill, the father of the Good Roads movement in Washington and Oregon, also played a role in building that highway. Hill, a wealthy railroad attorney, founded the Washington Good Roads Association in 1907 and served as its president for ten years. The national Good Roads movement that developed at the turn of the century originally was intended to promote bicycling interests. Soon granges, and automobile and freighting companies controlled the movement. These groups were instrumental in getting the necessary legislation to build better roads (Schwartz, 1963: 70). Before 1907 Sam Hill sought state funding for a beautiful, modern, and expensive highway through the Gorge. Hill envisioned the road stretching from Washougal to Goldendale and helped forge a bill to fund this highway. Governor Lister vetoed it when many Washington counties protested that Portland would benefit from the road more than they would. Unable to find backing in Washington, Hill found support in Oregon. His vision resulted in the Columbia River Highway. Although Hill did not realize his dream in Washington, his efforts highlighted the need for a highway on the north bank.

Planning for this highway started in 1906. It was given the descriptive name of "North Bank Highway" and the administrative name of "State Road No. 8." Many of the local people who lived along it continued to call it the North Bank Highway, while others used its new name. The influx of homesteaders to Washington, pressure from the farmers' granges, and commercial interests provided additional momentum for the project.

Joseph M. Snow, the first highway commissioner, reported the original plan for the road in the Department of Highway's Second Biennial Report to the Governor. A survey starting at Washougal and ending at Goldendale was completed over 112.18 miles (Garrett 1993: 1). The Highway Department had a very clear plan to make the road "an artery to the Inland Empire." It would provide a much needed farm-to-market road.

Commissioner Snow pointed out that the North Bank Highway would be the state's most important transmountain road. He expected that it would be open for travel throughout the year because its highest segment over the Cascade Range was only 500 feet. The route would follow, in part, the military roads at the west and east ends of the Gorge. The existing routes between the military roads were primarily logging roads or short roads running north and south between the steamboat landings and the communities above them. Steamboats were the main form of transportation through the Gorge before the highway and the Seattle, Spokane & Portland Railroad were completed.

The character-defining features of the original North Bank Highway reflected its period of construction. Built before the Automobile Age that began with World War I, it was made for horse-drawn carriages rather than cars and trucks; only a few people owned cars in 1907. The roadbed and bridges were very narrow; the maximum width was fourteen feet. When a wagon met another going in the opposite direction, one wagon had to pull over to let the other pass. There were no guard rails on the original road and, of course, no lights. The North Bank Highway had steel truss and timber bridges. Men built masonry and rip-rap retaining walls to protect the slopes along the river's edge.

The destination of the road also reflected the era in which it was built. Planners decided not to follow the path of the military road at the east end all the way to Walla Walla. Soldiers built that road to carry supplies and soldiers between forts, but the objective of the new road was to reach Pasco (Parsons, 1982: 2).

Construction began by dividing the road into segments. Each county was responsible for building the segments within its boundaries and it put local men to work with their teams of horses. Many of them lived along the right-of-way and could pay their poll taxes by building roads.

The 1907 legislature also provided for the employment of both county prisoners and convicts on the new highway. They excavated rock along the bluffs of the river and earned a daily wage of $1.87. The 1909 legislature allocated funds for quarries and rock-crushing plants that employed prisoners and convicts. Prisoners of Honor Camp No. 1 moved to Camp No. 3 in Skamania County to work on State Road No. 8 in 1914. Each prisoner had to sign a pledge of honor to work on the roads. Most had minimum terms that expired while they were in camp (Garrett 1993: 2-3).

Spurred on by the desire for a market road, the local people worked quickly to complete a substantial part of the original roadbed by 1907; later sections were completed by 1916. They hacked through hillsides, removed trees and stumps, and filled ravines with rocks carried on horse-drawn skids. Scrapers, drawn by as many as six horses, completed the final step by smoothing the roadbed.

Plants in Vancouver and Portland made the bridges in sections. Steamboats shipped them to their sites and men used steam-powered winches and wooden cranes to put them in place. One of the bridges was a steel truss bridge over the Washougal River (outside the Columbia River

Gorge National Scenic Area). When it was removed in 1981 it was the oldest of the original North Bank Highway bridges (Parsons 1982: 2-3).

By 1907 the North Bank Highway was open for travel from the east end of Vancouver to Carson. Although workers scraped the roadbed, it remained very rocky. Mud was a major problem in both winter and summer; cars had to chain up after heavy rain, no matter what the season.

The first automobile to travel a long distance on the new North Bank Highway set out in June 1908. Ned Youman of the Youman-Simpson Lumber Company in Carson drove his new car from Vancouver to Stevenson. Because the logging roads in the area often merged with the new highway, Youman became lost near Cape Horn and navigated by the stars. Many other drivers experienced the same difficulty.

## THE AUTOMOBILE ERA

***The rise of the Automobile Era produced a state and federally supported effort to improve and reroute the North Bank Highway to accommodate automobiles and trucks.***

The original North Bank Highway was outdated almost as soon as construction started. More people bought automobiles after 1907 and more trucks were used to ship goods. There were 763 automobiles, trucks, and motor stages in Washington in 1906 and 195,074 by 1921 (Pollard 1937: 179). This vast increase in the number of cars and wider, heavier vehicles made delicate and narrow roadbeds, such as the one on the North Bank Highway, unsatisfactory. Pressure to improve the highway resulted in its first gravel surface by 1910.

The Permanent Highway Law of 1911 established guidelines that required the modernization of the North Bank Highway. Highways along a main line of travel had to be uniformly graded to a width of not less than sixteen feet and surfaced with macadam, stone, gravel, or another durable material. They needed modern bridges, drains, and culverts. Grades were not to exceed five per cent wherever possible and should never exceed 10%. Where possible, the North Bank Highway's inland route over steep grades would be changed to a water-grade route in the following years.

Construction of the highway and betterment projects continued through the 1910s. Highway Commissioner W. J. Roberts reported in the Fourth Biennial Report that a total of $105,330.44 had been spent on the North Bank Highway. That route was in use as far as Lyle by 1912 (Garrett 1993: 5). A new link along the south face of Wind Mountain connected Home Valley to Lyle by 1916. An earlier route with steep grades crossed the north side of Wind Mountain.

The Federal Aid Road Act of 1916 also produced a new segment. That act provided federal money to build postal service roads, farm-to-market roads, and forest roads. The state of Washington received $25,000 to complete a portion of the North Bank Highway through the Columbia National Forest between Collins and Cooks. The U.S. Bureau of Public Roads built this section.

Roadwork slowed down during America's participation in World War I. Projects were restricted to those essential to the war effort. World War I brought new sign boards and guide posts to the public highways, including the North Bank Highway. These signs guided military vehicles.

After the war was over, construction and planning for the highway resumed. The segment from Vancouver to Fishers Section (outside the Columbia River Gorge National Scenic Area) was paved by 1920. The total length of the road was now 178.3 miles. The Washington legislature established the Office of State Highway Engineer and reclassified the highways in 1923. During this year the Highway Department planned to continue to upgrade and modernize the highway. The road would still end at Goldendale where it would connect with State Road No. 3 near Buena in Yakima County (Allen, 1924: 1, 74). The goal was to reach the Yakima Valley and provide a permanent water-grade route through the Columbia Gorge. People, services, and agricultural products from the interior could flow quickly and cheaply over this route.

The completion of the Columbia River Highway on the Oregon side and the rapid increase of motor tourism after 1920 encouraged the Washington Highway Department to add scenic attractions to the North Bank Highway. Work continued from 1920 through 1937.

Highway planners added turnouts and vantage points where motorists could view the beauty of the Gorge. The highway became known as a scenic highway that offered access to such major attractions as the Cape Horn promontory. The *Vancouver Evening Columbian* described the highway in 1930 as a "scenic paradise for motorists."

People were eager to travel Washington's new scenic highway through the Gorge. Local historian Fred Lockley waxed poetic when he chronicled his 1928 trip. He noted the "splendid loop grades" and the falls on the Oregon side. "Every turn of the right-of-way," said Lockley "raises the curtain on a view always different and inspiring, rich in texts for the poet and artist" (Lockley 1928: 868). Typical stopping places included the Cape Horn Bridge, the Bridge of the Gods, "where a charming view of the lower Cascade Rapids is obtained," and a short distance later, the Cascade Locks, where tourists saw "several salmon fish wheels, as well as a charming gorge view...from Scenic Point" (Lockley 1928: 868).

Lockley documented the route carefully. He observed that after Stevenson the road turned back into the hills to Carson. From there vacationers could take another road to Government Mineral Springs Resort or stay at a Forest Service auto camp. Lockley pointed out that they also could visit the nearby Wind River Nursery where the Forest Service grew trees to plant on cut-over land. The highway intersected roads leading to two other hot springs resorts.

Fred Lockley noted that he drove away from the Columbia River and went over the west side of the Little White Salmon River Gorge after the little town of Cooks. He reached the Little White Salmon River Bridge, traveled over the east grade of the Little White Salmon River Valley, and arrived at a wonderful vantage point at an elevation of 1200 feet called "Panoramic Crest." From that vista the Hood River Valley was a beautiful sight. Lockley drove on through a highly developed orchard section and over a series of scenic loops until he ended his trip at Underwood.

He calculated that his round trip from Vancouver to Underwood was 160 miles and remarked that he had enjoyed a "wonderful day" of driving (Lockley 1928: 869).

A controversy over changing the name of the North Bank Highway to the Evergreen Highway in 1929 reflected the rise in the highway's importance as a magnet for tourists. Many people with tourist-related businesses eagerly supported the new name. They felt that "Evergreen Highway" would more people. The new name, they believed, drew attention to the fact that the old North Bank Highway had been improved and now was a road over which tourists could travel quickly and comfortably.

Interested parties discussed the pros and cons of the new name at a public meeting at Fort Rains on August 13, 1929. One participant argued that "North Bank" was a drab and colorless name, while "Evergreen" was one that would appeal to tourists. Another person thought that a strong new name would make the highway as well known as the Columbia River, Redwood or Roosevelt highways. Opponents pointed out that the money they spent on advertising would be wasted if the name changed; they wanted one that described the road's location.

Everyone at the 1929 meeting stressed the significance of the highway as a tourist attraction. Business people urged the Highway Department and county commissioners to do everything they could to develop parks and scenic vistas along the highway. They also wanted money to be spent on oiling and surfacing the road to make it more attractive to tourists. These Washington residents pointed out that owners of resorts and other businesses on the Oregon side were spreading rumors that the Washington highway was a dusty, detour-laden route (TVEC 14 December 1929).

Many projects improved the highway during the 1920s. A few of the larger ones included building and graveling the section from Rands to Greenleaf in 1924 and graveling the section from Camas to Wind River. The Highway Department also added the Duncan Creek, Woodward, and Wind River bridges in the 1920s.

The biggest and most memorable highway project during this decade was the attempt to cut a roadbed across Cape Horn in 1927. The construction company Hazard and Sturgill used 1000 tons of dynamite to remove part of Cape Horn for the road. The explosion, called by local newspapers the greatest blast in the history of southwestern Washington, destroyed far more than it should have. When the dust settled, not only was the rock above the proposed roadbed gone, the whole cliff was blown away. Henry J. Biddle, the prominent geologist and naturalist who once owned Beacon Rock, tried to avoid this consequence some years earlier. He persuaded the SP&S Railroad to tunnel through Cape Horn rather than alter the huge rock formation by cutting a right-of-way into its face (Olmsted, 1992: 2).

The results of the 1927 Cape Horn blast included the bankruptcy of the construction company, a lawsuit, and the Cape Horn Bridge. When rock from the blast blocked the SP&S right-of-way, the railroad successfully sued the state. Because the blast destroyed the proposed roadbed, the Highway Department had to build the Cape Horn Bridge.

The Great Depression brought more modernization and rerouting to the original North Bank Highway, now called the Evergreen Highway. The Highway Department pursued its mission of making this highway the best passage through the Cascade Range. Engineers wanted to make the Evergreen Highway the first highway in the Gorge to be on a permanent water-grade route with easy grades and a minimum of curves. The Highway Department's goals included improving the road for commerce and safety and creating scenic features to showcase the beauty of the Gorge.

Four expensive and difficult construction projects remained in the 1930s. These projects were planned in the 1920s, but there was no money to carry them out. They included construction of the Cape Horn segment from Wing Creek to Prindle, the Lyle to Skadat segment, the Cooks to Underwood segment, and straightening the Maryhill loops. In addition, the Highway Department planned to oil the highway to improve its surface by making it dust-free and much more durable.

The section from Wing Creek to Prindle included the expensive construction of the Cape Horn Bridge. The cost was approximately $500,000. The new segment shortened the old route more than two miles, eliminated the old winding road that followed the Washougal River, and broke the long grade of the old route over Mt. Pleasant (TVEC 12 December 1930). It added the Cape Horn Bridge and a promontory on the west end of the bridge for scenic viewing.

The Union Bridge Company completed Cape Horn Bridge on December 16, 1930. More like a trestle than a bridge, the structure spanned 400 feet. The promontory on the west end offered a panoramic view of the Gorge that enchanted tourists. A reporter for the *Vancouver Evening Columbian* reported "Not many cities anywhere can boast a hundred-mile round trip of such scenic excellence and such engineering perfection as Vancouver now enjoys through the opening of the Cape Horn sector" (TVEC 17 December 1930). The Cape Horn segment was expected to greatly increase the number of tourists who would take a loop trip through the Gorge.

Community leaders celebrated this segment of the highway with a large dedication ceremony at Stevenson. The guest speaker was Frank Terrace, a representative of Sam Hill and a leader in the Good Roads movement. Terrace described the fight that Hill made for a highway on the north bank many years ago. He was delighted with the highway and felt that it would benefit farmers by keeping freight costs low.

The next project was the 4.23 mile stretch from Lyle to Skadat. The *Vancouver Evening Columbian* described it as the most important relief project that winter in southwestern Washington (TVEC 13 December 1932). The job included hewing the roadbed into the cliffs, cutting two tunnels, and moving more than two miles of the SP&S railroad. The estimated cost was between $400,000 and $500,000.

The new Lyle to Skadat stretch would place the road at water-grade and eliminate the fifteen-mile Lyle hill. That hill climbed from an elevation of 100 feet at Lyle to 2100 feet at Warwick. This part of the North Bank Highway also included 214 curves, narrow stretches, and many 10% grades. The new route would have approximately ten gentle curves and no grade over 5%.

The job was complicated by the railroad. The highway could not be built above the railroad because of the cliffs. Special fills were made from the rock removed for the roadbed; two stretches of track totaling approximately two miles were moved an average of thirty-one feet closer to the river so the highway could occupy the old railroad bed. The difficulty of the location brought the two modes of transportation very close together.

The Cooks-Underwood project started in 1936. With the exception of the Maryhill loops (outside the Columbia River Gorge National Scenic Area), this was the last link to be completed in the plan to modernize the old North Bank Highway. The new Cooks-Underwood segment shortened the route more than eight miles and eliminated the curvy climb over Underwood Heights. Only the elimination of the Maryhill Loops was needed to complete the Evergreen Highway's modern, all-weather route. Later the highway was rerouted around the loops and renamed SR 14 in 1955.

The character-defining features built into the Evergreen Highway during the 1920s and 1930s included a wider two-way road that was wider, many concrete bridges to replace steel and timber bridges, wood guard rails, and rock retaining walls. The Highway Department added promontories and turnouts with rock walls to attract tourists to the route. All these features reflected the Highway Department's goals of offering a route for efficient transportation with scenic values.

From its beginning in the prehistoric era through its development in the twentieth century, the north bank of the Columbia River provided an essential overland transportation corridor. Native groups created the first north bank portages. Soon explorers, fur traders, trappers, and settlers traveled the portages, too. The settlers brought further development of wagon roads on the north bank and the federal government built military roads.

During the early twentieth century the new Washington Department of Highways built the North Bank Highway to provide a more efficient means of transportation. Soon the North Bank Highway, originally designed for horse-drawn vehicles, was modernized, rerouted, and renamed the Evergreen Highway; later it was renamed SR 14. Throughout its history SR 14 has contributed to the economic development of the river's north bank and provided an efficient means of transportation and scenic enjoyment to its travelers.

## MAIN THEMES OF THE HISTORIC CONTEXT STATEMENT

SR 14 and the overland transportation corridor of which it is a part have played a leading role in the development of the towns and rural areas on the north bank of the Gorge. SR 14 is the most recent route for travel on the Columbia River's historic north bank overland transportation corridor. It follows in part the route of predecessors that include prehistoric trails, later trails made by Indian tribes, and wagon roads. SR 14 also follows in many places two earlier highways built in the first half of the 20th century-- the North Bank Highway and the Evergreen Highway.

The history of native groups is closely linked to the history of this north bank corridor and SR 14. Upper Chinookans, Sahaptins, and other tribal groups traveled the north bank extensively as they lived and traded in the Gorge. This overland route is tied to the conflicts between fur traders, settlers, and tribal members. Part of SR 14 follows the path of military roads built by the U.S. Army to move soldiers and supplies during these hostilities.

SR 14 is linked to early white settlers' demands for farm-to-market roads. SR 14 is the most modern road built to serve people's needs on the north bank. After Washington Territory was formed in 1853, one of the settlers' first demands was for roads. Those requests continued until a substantial portion of the North Bank Highway was completed by 1907; the rest of the road was finished by 1916. Local people with their teams of horses worked hard to finish this highway quickly. Their incentives included paying poll taxes by working on the road and completing a route that increased their commerce and communication.

Through its predecessor the North Bank Highway, SR 14 is connected to the national movement that developed after 1900 to expand America's roads. This movement initially was for roads from farms to railroads, but as commerce and automobile use increased, the desire for all roads expanded. The North Bank Highway was one result of that demand. The highway also was the indirect product of the national Good Roads movement, an organization spawned by the general drive for roads. As the leader of the Washington Good Roads movement, Samuel Hill suggested a north bank route but could not get the funds to build it. The completion and success of Oregon's Columbia River Highway encouraged support for the Evergreen Highway, the North Bank Highway's successor.

A national campaign beginning in 1920 to build and improve roads also encouraged the construction of the Evergreen Highway. This movement rose in response to the dramatic

increase in automobile and truck use during the decade. Rubber tires quickly wore out older roads and higher speeds encouraged people to demand faster routes. Construction of the Evergreen Highway started in 1920. The Washington Highway Department built it with the specific intent of fulfilling two goals-- providing the best all-weather commercial route through the Gorge and creating scenic attractions. The Highway Department achieved its goals when it completed the section of the Evergreen Highway that traveled through the Gorge by 1937.

SR 14 has contributed to the economic well-being of the region. From the earliest trails to SR 14, all the routes played a key role in the economic prosperity of the area. Tribal members and fur traders used the first trails for trade; early settlers established portages where settlements sprouted. The North Bank Highway provided a market connection between larger cities such as Portland and Vancouver and the small towns and agricultural and timber-producing areas along the highway. The Washington Highway Department also added scenic attractions such as promontories and turnouts to the Evergreen Highway to encourage tourism.

SR 14 continues the north bank overland route's historic role of promoting trade and communication and providing scenic attractions and historic sites and structures of interest to the traveler.

## HISTORIC CHARACTER-DEFINING FEATURES

The historic character-defining features of the section of SR 14 that travels through the Columbia River Gorge National Scenic Area include roadway features, the physical relation of the highway to its environment, and the features of the surrounding area that contribute to SR 14's character.

Historic character-defining roadway features include structures such as bridges, tunnels, retaining walls, promontories, turnouts, and construction materials. The section of SR 14 that travels through the Columbia River Gorge National Scenic Area has many historic bridges. Bridge types include post-tensioned concrete beam, concrete T-beam, concrete girder, concrete slab, and concrete arch. The oldest existing historic highway bridge was built in 1925; other bridges were built between 1925 and 1937.

These bridges were identified and evaluated in 1979 and 1980 by Lisa Soderberg as part of an inventory of Washington bridges conducted by the Historic American Engineering Record (HAER) Division of the National Park Service and the Washington State Office of Archaeology and Historic Preservation. This study became known as the Washington State Bridge Inventory. For purposes of noting its affiliation with HAER, it is cited in this report as the Historic American Engineering Record/Washington State Bridge Inventory (HAER/WSBI).

Upon concluding the fieldwork, historical research, and evaluation process, Soderberg nominated selected bridges to the National Register of Historic Places. Based on the findings of the HAER/WSBI, a ranking system was devised. Bridges eligible for National Register nomination were ranked as "Category I" bridges; "Category II" bridges were of historical and engineering interest but not considered eligible for the National Register and "Category III" included all other bridges constructed during or before 1940, greater than fifty feet in length, and not of such quality as to be included in Category I or II.

The highway bridges located on the section of SR 14 that passes through the Columbia River Gorge National Scenic Area were ranked as Category II bridges. They contribute to the historic character of SR 14 as a series of bridges built in the 1920s and 1930s that share architectural characteristics and historic construction materials.

Seven tunnels contribute to the historic character of SR 14. These tunnels were ranked as "Category II" in the HAER/WSBI. The five tunnels (Tunnels #1-#5) located between Stevenson and Bingen (between MP 58 and 60) are simple, rectangular concrete tunnels with arched openings, built in 1937. The micro-environments above Tunnel #2 (14/129) and #5 (14/134) are very significant because native plants and grasses have grown undisturbed there for many years.

The "Lyle Tunnels" are located east of Lyle (between MP 76 and 77). The first Lyle tunnel (14/215), like some of the railroad tunnels near SR 14, is a rock cut tunnel. The visibility of the marks from the dynamite blasts and cuts through the basalt lends a beautiful "primitive" quality to the architecture of this tunnel. The second Lyle tunnel (14/216), which is less than 100 feet

from the first, is timber-lined. The Lyle tunnels make a significant contribution to the historic character of SR 14 because of their style and the material used in their construction. They add a unique driving experience to this section of SR 14.

Two historic retaining walls built by the Civilian Conservation Corps in approximately 1933 are located east of Wind River (between MP 54 and MP 55). The walls, located on the south side of the highway, separate the railroad bed from the highway. The tops of these retaining walls are castellated, squared rubble; the rest of the walls are composed of random rubble.

A turnout also built by the Civilian Conservation Corps in approximately 1933 is located east of Wind River (MP 54). The turnout has a low, squared rubble wall, a water fountain with a stone pedestal, and stone steps leading to a trail. A promontory east of the Gulch Bridge (MP 60) has a low, squared rubble wall. These promontories and turnouts reflect the Highway Department's original goal of adding scenic values to the road.

Existing historic building materials for the features of the North Bank and Evergreen highways included asphaltic concrete for the roadway, concrete, random and squared rubble, and wood.

The width of SR 14 and its physical relationship to its surrounding environment are very important characteristics of the route. Because SR 14 is a narrow two-lane road it gives the traveler the feeling of being close to the environment through which it passes. That feeling is enhanced because SR 14 closely follows the geographic contours of the landscape. SR 14's proximity to the landscape allows travelers immediate access to the natural beauty of the Gorge simply by getting out of their cars. SR 14 is a highway with great scenic characteristics. From SR 14 the traveler has magnificent views of both the Washington and the Oregon side of the Gorge.

Driving over SR 14 in the Columbia River Gorge National Scenic Area provides the traveler with the experience of a dramatically changing environment and landscape. At the west end the climate is temperate; evergreen and deciduous forests dominate the landscape. At the east end the traveler enters a semi-arid climate. Travelers also have immediate access to the small towns, historic sites and structures, and recreational activities that are located along the highway's route.

The rural, commercial, historical, and recreational features of the surrounding environment make important contributions to SR 14's character. There are farms and grazing land along the route as well as sawmills, packing plants, and other forms of commercial enterprise. The continuous presence of logging trucks and trucks carrying agricultural products on SR 14 reminds the traveler of the rural and commercial character of the area. The towns along the route of SR 14 contribute to its commercial character. The traveler along SR 14 experiences the opportunity to drive through small towns and enjoy their main streets and businesses.

The many historical markers and historic sites and structures adjacent to SR 14 contribute to the character of the highway. They provide the traveler with an understanding of the area's historical significance. The markers, sites, and structures relate tribal history and the history of the Exploration, Fur Trading, and Early Settlement Eras.

They also tell the important history of the north bank and the Columbia River as a transportation corridor. Transportation to and from many of the towns along SR 14 was originally dominated by steamboats. Signs along the highway such as "Prindle Landing" and "Carson Landing" remind travelers of the Steamboat Era origin of many towns. The railroad's proximity to SR 14 also reminds people of the north bank's significance as a transportation corridor.

Visible sections of the original North Bank Highway adjacent to SR 14 and the historic features of the Evergreen Highway underscore the importance of this transportation corridor. The highway construction that connected these towns by overland routes represented an important step toward faster, more efficient transportation.

The many recreational sites along SR 14 also contribute to its character. The highway is used as a route to windsurfing, rock climbing, hiking, camping, and fishing. Travelers pursuing these activities are frequent uses of SR 14.

# RECOMMENDATIONS

## BRIDGES

The bridges have been evaluated in the Historic American Engineering Record/Washington State Bridge Inventory (HAER/WSBI). They were ranked as Category II bridges-- not eligible for inclusion in the National Register. These bridges, with the exception of Cape Horn Bridge, are not historically significant individually, but as a series of bridges built between 1925 and 1937 that share architectural similarities, they contribute to the highway's historic character. Careful consideration should be given before altering them or removing them.

All bridge work should be done in sympathy with the original design and historic materials. The size and shape of columns, arches, and the width between them should be repeated. Many of these cast-in-place concrete bridges, such as the Woodward Creek Bridge, have guardrails consisting of a series of evenly spaced columns separated by semi-circular arched openings. The Duncan Creek Bridge has a sidewalk (with a guardrail with columns) that is separated from the roadway by a solid concrete guardrail. Other bridges, such as the Lawton Creek Bridge, have solid concrete guardrails. Bridges are stamped with the construction date. Cape Horn Bridge, significant in local history for its cause and construction, should be preserved.

## TUNNELS

The tunnels were evaluated in the HAER/WSBI. Although they were ranked as Category II tunnels, they do contribute to the historic character of SR 14. The Lyle tunnels should be preserved. All work on these tunnels should be done in sympathy with their original design and historic materials. Additional lighting and other safety features should be considered, as well as the possibility of rerouting.

The micro-environments above Tunnels #2 (14/129) and #5 (14/134) are significant for the native vegetation that has grown undisturbed there for many years. If work is done on these tunnels, these micro-environments should be disturbed as little as possible.

## RETAINING WALLS

The castellated rubble retaining walls between MP 54 and MP 55 should be preserved. Any work on these walls should be done in sympathy with their original design and historic materials.

## PROMONTORIES AND LOOKOUTS

The promontories and lookouts at MP 54 and MP 60 should be preserved. All work on the promontories and lookouts should be done in sympathy with their original design and historic materials.

## DESIGN AND CONSTRUCTION MATERIALS

The architectural design and construction materials for roadway features should be in sympathy with the historic architectural design and construction materials. The design of arches, columns, and the width between columns should be repeated wherever possible. The historic materials such as asphaltic concrete, concrete, rubble, cut stone, and wood should be used wherever possible or materials in sympathy with historic materials should be used.