Endangered Species Act Section 7(a)(2) Programmatic Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Funding or Permitting of Routine Maintenance Activities on State Highways; Salmon River Basin, Clearwater River Basin, and Lower Snake-Asotin Subbasins; 170602, 170603, 17060103; Idaho.

NMFS Consultation Number: 2010/01122(FHWY) & 2010/06828(COE)

Action Agencies: Federal Highway Administration, U.S. Army Corps of Engineers

Affected Species and Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely To Jeopardize the Species?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Snake River steelhead (*Oncorhynchus mykiss*)	Threatened	Yes	No	No
Snake River fall Chinook (*O. tshawytscha*)	Threatened	Yes	No	No
Snake River spring/summer Chinook (*O. tshawytscha*)	Threatened	Yes	No	No
Snake River sockeye salmon (*O. nerka*)	Endangered	Yes	No	No

Fishery Management Plan That Describes EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes

Consultation Conducted by: National Marine Fisheries Service, Northwest Region

David Mcka
for

Issued by: _____

William W. Stelle, Jr.
Regional Administrator

Date: May 17, 2012

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS

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BLM	Bureau of Land Management
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CHART	Critical Habitat Analytical Review Team
CIR	Cold In-Place Recycle
COE	U.S. Army Corps of Engineers
CRABS	Cement Recycled Asphalt Base Stabilization
CWA	Clean Water Act
dB	Decibels
DNA	deoxyribonucleic acid
DPS	Distinct Population Segment
DQA	Data Quality Act
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FCRPS	Federal Columbia River Power System
FHWG	Fisheries Hydroacoustic Working Group
FHWY	Federal Highway Administration
HMWM	High Molecular Weight Methacrylate Seal
HUC	Hydrologic Unit Code
HUC5	fifth-field hydrologic unit code
ICTRT	Interior Columbia Technical Recovery Team
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDWR	Idaho Department of Water Resources
ITD	Idaho Transportation Department
LAA	Likely to Adversely Affect
MOU	Memorandum of Understanding
MPGs	Major Population Groups
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSE	Mechanically Stabilized Earth
NLAA	Not Likely to Adversely Affect
NMFS	National Marine Fisheries Service

Refer to NMFS No: P/NWR/2010/01122(FHWY)
& P/NWR/2010/06828(COE)

May 17, 2012

Mr. Peter J. Hartman
Federal Highway Administration
Idaho Division
3050 Lakeharbor Lane, No. 126
Boise, Idaho 83703

Lt. Col. David A. Caldwell
U.S. Army Corps of Engineers
Walla Walla District
201 North Third Avenue
Walla Walla, Washington 99362

Re: Endangered Species Act Section 7 Formal Programmatic Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Funding or Permitting of Routine Maintenance Activities on State Highways; Salmon River Basin, Clearwater River Basin, and Lower Snake-Asotin Subbasins; 170602, 170603, 17060103; Idaho.

Dear Mr. Hartman and Lt. Col. Caldwell:

The enclosed document contains a programmatic biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of the funding or permitting of routine maintenance activities on state highways. In this Opinion, NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Snake River sockeye salmon, Snake River fall Chinook salmon, Snake River spring/summer Chinook salmon, and Snake River Basin steelhead, or result in the destruction or adverse modification of designated critical habitat for Snake River sockeye salmon, Snake River fall Chinook salmon, Snake River spring/summer Chinook salmon, and Snake River Basin steelhead.

As required by section 7 of the ESA, NMFS provides an incidental take statement with the Opinion. The incidental take statement describes reasonable and prudent measures NMFS considers necessary or appropriate to minimize the impact of incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements, that the Federal agency and any person who performs the action must comply with to carry out the reasonable and prudent measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA take prohibition.

This document also includes the results of our analysis of the action's likely effects on Essential Fish Habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes four conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. These Conservation Recommendations are a non-identical set of the ESA Terms and Conditions. Section 305(h)(4)(B) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving these recommendations.

If the response is inconsistent with the EFH conservation recommendations, the Federal Highway Administration and U.S. Army Corps of Engineers must explain why the recommendations will not be followed, including the justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, in your statutory reply to the EFH portion of this consultation, we ask that you clearly identify the number of conservation recommendations accepted.

If you have questions regarding this consultation, please contact Ms. Sarah Fesenmyer at (208) 378-5660 or Ms. Nikki Leonard at (208) 378-5708.

Sincerely,

William W. Stelle, Jr.
Regional Administrator

Enclosure

cc: L. Phillips – COE
N. Braspennickx – COE
D. Mitchell - COE
S. Sullivan – ITD
T. Cramer - ITD
R. Holder - USFWS
Y. Tuell – SBT
Mike Lopez - NPT

bcc: F/NWR - CHRON File
ISHO - File copy, Read File, S. Fesenmyer, N. Leonard

Fesenmyer:Lind:ITD Maintenance Programmatic BO:blw:3/1/12:[P/NWR/2010/01122/P/NWR/2010/06828]

NMFS No.: P/NWR/2010/01122/P/NWR/2010/06828

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Endangered Species Act Section 7(a)(2) Programmatic Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Funding or Permitting of Routine Maintenance Activities on State Highways; Salmon River Basin, Clearwater River Basin, and Lower Snake-Asotin Subbasins; 170602, 170603, 17060103; Idaho.

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Fishery Management Plan That Describes EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
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Consultation Conducted by: National Marine Fisheries Service, Northwest Region

Issued by:

William W. Stelle, Jr.
Regional Administrator

Date: May 17, 2012

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

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MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSE	Mechanically Stabilized Earth
NLAA	Not Likely to Adversely Affect
NMFS	National Marine Fisheries Service

NTU	Nephelometric Turbidity Units
OHWM	Ordinary High Water Mark
Opinion	Programmatic Biological Opinion
PFMC	Pacific Fishery Management Council
RPA	Reasonable and Prudent Alternative
RPMs	Reasonable and Prudent Measures
SEL	Sound Exposure Level
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VSP	Viable Salmonid Populations

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3 below.

1.1. Background

The programmatic biological opinion (Opinion) was prepared by the National Marine Fisheries Service (NMFS) in accordance with section 7(h) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531, *et seq.*), and implementing regulations at 50 CFR 402.

NMFS also completed an Essential Fish Habitat (EFH) consultation. It was prepared in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801, *et seq.*) and implementing regulations at 50 CFR 600.

The Opinion and EFH Conservation Recommendations are both in compliance with section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-5444) ("Data Quality Act") and underwent pre-dissemination review. The administrative record for this consultation is on file at the Idaho State Habitat Office, Boise, Idaho.

1.2. Consultation History

This Opinion is based on information provided in the March 22, 2010, biological assessment (BA), prepared by the Idaho Transportation Department (ITD), and other sources of information. A complete record of this consultation is on file at the NMFS, Idaho State Habitat Office in Boise, Idaho, including a complete description of the consultation history. NMFS participated in numerous meeting and phone conservations with ITD—the Federal agent acting on behalf of the Federal Highway Administration (FHWA) for this consultation—to develop the proposed action starting in July 2008 continuing through January 26, 2012.

Because this action has the potential to affect tribal trust resources, copies of the draft Opinion were provided to the Nez Perce and Shoshone-Bannock Tribes on March 7, 2012. Comments were not received from the Tribes.

1.3. Proposed Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration.

For purposes of this consultation, the proposed action is a 10-year programmatic approach to section 7 consultation for highway maintenance projects conducted by the ITD. The projects covered under this Opinion will be those funded by the FHWA and/or permitted by the U.S. Army Corps of Engineers (COE), the Federal action agencies for this proposed action.

We found no actions that are interrelated to or interdependent with the proposed action. A more detailed description of the proposed action follows.

1.3.1. Program Procedures

The proposed Program consists of routine actions performed by the six ITD Districts in the State of Idaho and conducted via a Federal nexus with the FHWA and/or the COE. During the first year of implementation, only ITD Districts 2, 4, and 6 will use the Program on a test basis. If use of the Program by these three Districts is successful, ITD will extend the program to all six Department Districts for the remainder of the 10-year implementation period.

As referenced above, the Federal nexus for any of the possible future maintenance projects may arise either through Federal funding of the project through the FHWA or from a Federal permit action undertaken by the COE. As lead agency for Federal aid project actions involving highway projects, the FHWA is responsible for compliance with section 7 of the ESA. In accordance with implementing these regulations, including 50 CFR 402.08, the FHWA has delegated to the ITD the authority to prepare biological evaluations and BAs, and to conduct informal consultation with NMFS and the U.S. Fish and Wildlife Service (USFWS). This authority was delegated via a Memorandum of Understanding (MOU), "Procedures Relating to section 7 of the Endangered Species Act and Transportation Projects in Idaho," (February 28, 2003), agreed upon by the ITD, FHWA, NMFS, and the USFWS (see appendix of the BA).

The COE is responsible for ensuring compliance with section 7 of the ESA for projects that require a Clean Water Act (CWA) section 404 permit. The COE is the lead Federal agency for state-funded projects that require a CWA section 404 permit. The COE has also designated the ITD as a non-Federal representative for section 7 actions covered under this Program.

The process and procedures established under the 2003 MOU for formal and informal consultation remain in effect, and would continue to be implemented under the proposed Program. When there is no Federal nexus, this Program would not apply.

Program activities described in the BA would be carried out by state employees or Federal aid project contractors and subcontractors on a recurring basis. In most cases, what is described in the BA represents a typical sequence for conducting the action. Any project deviation with effects measurably different from those evaluated in this document would not be covered under the Program. Multiple types of projects may be approved as components of one proposed action. For example, a passing-lane construction project might also include bank stabilization and a culvert replacement. In these cases, the most restrictive best management practices (BMPs) from any one of the individual project types shall apply to the proposed action in its entirety.

1.3.1.1. Process

The ITD would follow this process while using the Program:

Confirm Listed Species. The ITD will confirm whether each action to be authorized or carried out under the Program would occur within the present or historical range of an ESA-listed species, designated or proposed critical habitat, or designated EFH.

ITD Review. The ITD will individually review each action to ensure that all effects on ESA-listed species and their proposed or designated critical habitats are within the range of effects considered in this Opinion. In addition, the ITD will determine if the action has a FHWA or COE Federal nexus; if so, the ITD will follow the process outlined in the BA.

NMFS/USFWS/COE/FHWA Review. The ITD will ensure that all actions described in the BA will be individually reviewed by NMFS/USFWS. NMFS/USFWS would then confirm that the actions meet Program requirements. In addition:

- The COE will receive project pre-notification forms for all actions requiring a 404 permit.

- The FHWA will receive project pre-notification forms for all Federal aid actions.

Notification.

a. The ITD will request that NMFS/USFWS review all "Not Likely to Adversely Affect" (NLAA) Program projects by submitting the Project Pre-Notification Form to NMFS and the USFWS with sufficient detail about the action design and construction to ensure the proposed action is consistent with all provisions of the program. NMFS/USFWS will notify the ITD within 30 calendar days that the action meets the provisions of the Program or is disqualified.

b. The FHWA or the COE will request that NMFS/USFWS review all "Likely to Adversely Affect" (LAA) projects by submitting the Project Pre-Notification Form to NMFS/USFWS with sufficient detail about the action design and construction to ensure the proposed action is consistent with all provisions of the program. NMFS/USFWS will notify FHWA/COE within 30 calendar days that the project meets the provisions of the Program or is disqualified.

Notifications may be made by electronic submission. The Project Pre-Notification Form shown in the BA is also included in this Opinion as Appendix A.

Site Access. The ITD will retain the right of access to sites on which authorized actions are implemented in order to monitor adherence to and effectiveness of permit conditions. NMFS/USFWS will be allowed access to project sites as requested.

Salvage Notice. If a sick, injured or dead specimen of a threatened or endangered species is found, the ITD must notify NMFS (208-321-2956). The finder must take care when handling sick or injured specimens to ensure their safety, and in handling dead specimens to preserve biological material in the best possible condition for later analysis (for cause of death, etc.). The finder also has the responsibility for carrying out instructions provided hy NMFS to ensure that evidence intrinsic to the specimen is not disturhed unnecessarily.

Project Monitoring Forms. Within 45 days of project completion, the ITD will send the appropriate post-project monitoring forms to NMFS/USFWS. The Construction Monitoring Form shown in the BA is included in this Opinion as Appendix B.

Annual Coordination Meeting. The ITD will coordinate and host an annual meeting to review the projects conducted under the Program during the previous year.

Failure to Provide Reporting May Trigger Reinitiation. If the ITD fails to provide notification of actions for NMFS/USFWS review, project monitoring reports, or fails to organize the annual coordination meeting, NMFS/USFWS may assume the action has been modified in a way that constitutes a modification of the proposed action in a manner and to an extent not previously considered, and may recommend reinitiation of this consultation.

Audits. The ITD, NMFS, USFWS, FHWA and the COE may periodically review or audit the the Program. As referenced above, the ITD shall allow NMFS, USFWS, FHWA, or the COE the opportunity to review any actions while in progress or after completion. The purpose of this review is to ensure clearance of appropriate project types and BMP effectiveness.

Training. The ITD Headquarter office will provide annual training opportunities for Districts that wish to use this Program.

Reinitiation. If the ITD chooses to continue programmatic coverage under this Program, the ITD will reinitiate consultation within 10 years of the date of this Opinion.

1.3.2. Program Actions

Table 1 shows the categories of maintenance actions the Program would cover. They are grouped by preliminary effects determinations on applicable ESA-listed species. In their BA, the ITD determined that all actions that require instream work and the issuance of COE, Idaho Department of Water Resources (IDWR), or Idaho Department of Environmental Quality (IDEQ) permits were likely to adversely affect ESA-listed species or their critical habitat. A detailed description of each category of action to be covered under this Program follows. Actions that NMFS has determined are "likely to adversely affect" ESA-listed species are addressed in Section 2.4 of this Opinion--*Effects of the Action on Species and Designated Critical Habitat,* Actions that NMFS has determined are "not likely to adversely affect" ESA-listed species are addressed in Section 2.11--*"Not Likely to Adversely Affect" Determinations.*

Table 1. Program activities grouped by preliminary effects determinations for ESA-listed species.

"Not Likely to Adversely Affect" Projects	"Likely to Adversely Affect" Projects
Seal Coats, Tack Coat, Prime Coat	Two-Lane Bridge Construction – (Over Water)
Plant Mix Overlay	Bank Stabilization (Riprap) – Stream Channel
Cement Recycled Asphalt Base Stabilization (CRABS)	Bank Stabilization (Gabion Basket) – Stream Channel
CIR (Cold In-Place Recycle)	Culvert Installation – Perennial Stream[1]
Bridge Deck Hydro-Demolition	Culvert Maintenance – Perennial Stream
Silica Fume and Latex Modified Concrete Overlay	Culvert Extension – Perennial Stream
High Molecular Weight Methacrylate Seal (HMWM)	Geotechnical Drilling
Concrete Waterproof Systems (Membrane Type A, B, C & D)	Small Structure Repair
Bridge Deck Epoxy Seal	Passing Lanes, Turnbays and Slow Moving Vehicle Turnouts (Wide Shoulder Notch) – Instream work
Two-Lane Bridge Construction (Upland)	Mechanically Stabilized Earth Embankment (MSE) Wall – Stream Channel
Excavation and Embankment for Roadway Construction (Earthwork)	
Rock Scaling	
Passing Lanes, Turnbays and Slow Moving Vehicle Turnouts (Wide Shoulder Notch) – Upland	
Pavement Widening (Sliver Shoulder Notch)	
Bank Stabilization (Riprap) – Upland	
Bank Stabilization (Gabion Basket) – Upland	
Mechanically Stabilized Earth Embankment (MSE) Wall – Upland	
Ditch Cleaning	
Culvert Installation – Seasonal Stream[2]	
Culvert Extension – Seasonal Stream	
Culvert Maintenance – Seasonal Stream	
Guardrail Installation	
Striping (methyl methacrylate or paint)	

[1] During development of the action, NMFS, USFWS, and ITD understood "perennial streams" to refer to fish-bearing streams, which could include some intermittent fish-bearing streams. Therefore, this Opinion assumes that the perennial streams referred to in the action include all fish-bearing streams.

[2] During development of the action, NMFS, USFWS, and ITD understood "seasonal streams" to refer to non-fish-bearing intermittent streams. Therefore, this Opinion assumes that seasonal streams referred to in the action are non-fish-bearing.

We first describe each category of activity, including conservation measures specific to the activity. We then provide a list of conservation measures required for all activities under the program.

1.3.2.1. Seal Coat, Tack Coat, and Prime Coat

Seal, Tack, and Prime Coat projects are used to seal moisture out of a roadway structure and to provide skid resistance to the roadway surface. Prior to placing these seal coats, potholes will be filled with cold mix patching material. Cracks will be filled and sealed with liquid asphalt. The process consists of spraying approximately 0.35 gallons of emulsified asphalt per square yard onto the roadway. Crushed rock chips, no larger than 1/2-inch in diameter, will be spread evenly over the asphalt at approximately 28 pounds per square yard. Bleeding of the asphalt can occur for a number of reasons, may happen immediately, and may occur for up to several months following construction. To correct potential bleeding, blotting sand with fines will be spread over the affected areas. This process will be repeated as necessary to correct the problem. The finished product will ideally produce a 0.5-inch thick layer to a width that falls within the fog lines or within the edge of oil.

A seal coat or prime coat is best laid down during the hottest weather of the year. Chips are usually produced, washed, and stockpiled off-site and are trucked onto the project during construction. Liquid asphalt will also he shipped by truck onto the project during construction. The asphalt will be applied by a distributer, and the chips will be spread by a chip spreader. The seal will then be rolled with a 10,000 pound minimum pneumatic tire roller. Traffic may use the roadway almost immediately at reduced speeds. All work will be contained within the existing roadway prism.

Best Management Practices. The following BMPs will be implemented during project activities to minimize the potential for impacts on ESA-listed species and their habitats.

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.
- While crossing bridges or culverts with installed drainage, all bridge drains and joints will be plugged to minimize the potential for introducing residual materials to the aquatic system.

1.3.2.2. Plant Mix Overlay

A plant mix overlay is the placement of one or more lifts of asphalt cement pavement over an existing roadway surface. An overlay is used to smooth a rough and/or cracked existing pavement and to add structural strength to the roadway. Prior to construction of a plant mix

overlay, potholes will be filled with asphalt patching material and cracks will be filled and sealed. The existing roadway surface may be ground to remove top-down cracks, existing hulk, or for smoothness. Grinding waste is collected, removed, and disposed of at an approved upland location. Occasionally transverse cracks will be ground out several feet wide to a specified depth and filled with plant mix. The roadway will receive a tack coat of emulsified asphalt to promote bonding between the surfaces of the existing road and the new plant mix. The plant mix may be produced at a staging area, or off-site and then trucked onto the project. The new plant mix will then be placed by dumping loose mix onto the roadway or into a paver. If the mix is dumped onto the roadway, a paver with an elevator/mixer will lift and spread the mix evenly across the roadway. A series of rollers will compact the mix at different temperatures. The new overlay is ready for traffic when the asphalt has cooled below 100°F internal temperature.

Best Management Practices. The following BMPs will be implemented during project activities to minimize the potential for impacts on ESA-listed species and their habitats.

- All work will be contained within the existing roadway prism. To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

- While crossing bridges or culverts with installed drainage, all bridge drains and joints will be plugged to minimize the potential for introducing residual materials to the aquatic system.

1.3.2.3. Cement Recycled Asphalt Base Stabilization

To construct a Cement Recycled Asphalt Base Stabilization (CRABS) project, a roadway grinding mill will grind and remove existing asphalt pavement at designated areas throughout the project. This action is required to remove excess material and maintain a finished thickness for the roadway. A CRABS machine will be utilized to pulverize, till, and mix approximately 10 inches of the roadway surface and underlying roadway base. A roadway grader is then utilized to blade the surface to a uniform thickness, and a construction pneumatic roller is used to smooth and prep the roadway.

Dry cement is applied in a uniform ribbon across the bladed surface at an average depth of 0.5 inches. Following the cement application, the CRABS machine will mix the surface again. At this point in the process, water will be applied to hydrate the dry cement that is mixed with the roadway base. This will bond the pulverized material into a homogeneous product. A roadway grader will immediately follow this action to blade the surface smooth and a vibratory roller will be utilized to prepare the surface for pavement overlay. After the CRABS process is complete, the roadway surface will be paved.

Best Management Practices. The following BMPs will be implemented during project activities to minimize the potential for impacts to ESA-listed species and their habitats.

- All work will be contained within the existing roadway prism.

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

- Erosion control BMPs shall be employed to control stormwater runoff.

- The CRABs applications shall not be performed during active rain events.

- Contractor will ensure that pulverized CRABS material does not enter any adjacent waterway.

1.3.2.4. Cold In-Place Recycle

To construct a Cold In-Place Recycle (CIR) project, the existing roadway will be milled to nearly full depth of the existing asphalt pavement. The millings will be further crushed and mixed with water, 1.5% cuthack asphalt, and 1.5% quick lime (CaO). This mixture will then be placed directly onto the milled surface with a paving machine. After allowing the water and the cutback to evaporate and cause the mixture to set, the new pavement will be rolled with pneumatic and steel drum rollers. A blotter may be needed before traffic may use the new surface. Five to seven days following the recycle, the surface will be re-rolled, and usually will be treated with an overlay or double sealcoat. All work will be contained within the existing roadway prism.

Best Management Practices

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

- While crossing bridges or culverts with installed drainage, all bridge drains and joints will be plugged to minimize the potential for introducing residual materials to the aquatic system.

- Contractor will ensure that CaO does not enter any adjacent waterways.

1.3.2.5. Bridge Deck Hydro-Demolition

This action consists of removal of bridge deck concrete or asphalt and is accomplished using a high-powered water jet system (i.e., hydro-demolition). To maintain traffic flow, the following steps will be completed for half of the bridge deck at a time. Once one side is completed, the steps will be repeated for the other half of the deck.

The existing 0.5 to 1.5 inches of the asphalt overlay of the bridge deck will be removed using mechanical methods or a high-powered waterjet system (i.e., hydro-demolition). The asphalt will be removed in such a way as to not damage the existing concrete deck or curbs. The deck surface will be cleaned by sandblasting, shot-blasting, sweeping, or mechanical abrasion to remove all surface dirt, grease, paint, rust, and other contaminants.

In order to minimize the potential for direct impacts to ESA-listed aquatic species, all work will be completed from the existing bridge; no equipment or heavy machinery will enter the river channel. All bridge drains and joints will be sealed prior to hydro-demolition. Cleaning will be performed prior to beginning demolition with a vacuum system capable of removing wet debris and water. Runoff water and residual material will be collected within the roadway and disposed of off-site. Only potable water will be used for hydro-demolition activities.

To minimize the potential for introducing bridge debris (e.g., dirt, concrete, etc.) to the aquatic system, measures will he taken to minimize the potential for debris to fall into the river channel while repairing tbe tops of piers. In order to minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to Project implementation. An ITD environmental monitor will visit the site at least weekly to examine the application and effectiveness of the effects-minimization measures.

Best Management Practices. The following BMPs will he implemented to minimize the potential for introducing runoff water and residual material to the aquatic system as a result of hydro-demolition.

- All bridge drains and joints will he sealed.
- Cleaning will be performed prior to beginning demolition with a vacuum system capable of removing wet debris and water.
- During demolition, the hydro-demolition system will include a vacuum system that will remove wet debris and water.
- Runoff water and residual material will be collected within tbe roadway and disposed of off-site in an approved upland location.
- Only potable water will be used for hydro demolition activities.
- To minimize tbe potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.
- All staging, fueling, and storage areas will be located away and adequately buffered from aquatic areas.

1.3.2.6. Silica Fume and Latex Modified Concrete Overlay

Silica fume and latex modified concrete overlays are concrete overlays usually constructed on bridge decks. The silica fume is a mineral filler. The latex modifier is chemical additive used to decrease the permeability of the concrete and provide a durable ride surface. Prior to construction, all bridge joints and deck drains will be plugged to keep debris on the surface where it may be removed by mechanical means. The deck may be prepared by removal of any asphalt surface and approximately 0.1 feet of the existing concrete surface. The newly exposed surface and rebar will be washed and sandblasted clean prior to application of the concrete overlay. Before paving, the surface will be covered by plastic sheeting to further keep the surface clean. Concrete trucks will be allowed onto the deck surface to place the concrete in front of a paving machine which runs on rails over the deck. The surface will then be grooved and cured by covering with wet burlap. Traffic will be kept off the new overlay for a minimum of 4 days and until 4,500 pounds per square inch compressive strength results. After curing, a multi-part methacrylate penetrant sealer will be applied to the new surface at about 1 gallon of methacrylate to 100 feet^2 of surface area. Sand will be used to cover the applied methacrylate to blot puddles and provide traction to the surface. A silica fume or latex modified concrete overlay will be about 3 inches in thickness; however, each project thickness may vary.

Best Management Practices

- To keep sand blasting materials out of the water and prevent methacrylate from entering the waterway, all bridge deck drains and joints will be sealed to prevent power wash or sand blasting debris from entering the adjacent environment.

- All water and construction debris generated during this action will be collected and removed to an approved upland location.

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

1.3.2.7. High Molecular Weight Methacrylate Seal

A HMWM is a membrane used to fill and seal cracks in concrete surfaces, especially bridge decks. Care will be given to plugging and sealing deck drains and joints. The liquid HMWM fills cracks by capillary action and will seek leaks in poorly sealed deck drains and joints. Repairs to the concrete deck and removal of any asphaltic surface must occur prior to HMWM application.

The application process is preceded by shot blasting and vacuuming the deck to clean and remove any loose material. The bulk of the HMWM is shipped in 55-gallon drums and boxes of jars containing catalyst and reactants. The HMWM is specified to be a two or more part chemical and shall be mixed on site. The HMWM is prepared in buckets, 5 gallons at a time, and is poured directly onto the deck surface. Workers push and scrub the liquid over the deck

with push brooms, working the HMWM into the cracks. Workers will take care to keep the HMWM out of joints and problem drains. Less commonly, the HMWM is sprayed directly onto the deck surface. Immediately after application, sand is evenly spread onto the HMWM to provide friction and blotter. No traffic will be allowed onto the treatment until the HMWM has set into a hard membrane. Time to set is temperature dependent, which may range from approximately 3 hours in 90° temperatures to 8 hours in 60° temperatures. The application will not be attempted when rain is predicted.

Best Management Practices

- The HMWM will only be applied when no rain is forecast for a period of 48 hours prior to the scheduled application time.
- The HMWM will not be applied if rain is likely within 4 hours following the application.
- Spray will only be applied when winds are less than 15 miles per hour and when temperatures are between 40° F and 100° F.
- No bridge rehabilitation activities will occur during wet weather conditions.
- In order to minimize the potential for direct impacts to ESA-listed fish, all work will be completed from the existing bridge; no equipment or heavy machinery will enter the river channel.
- In order to minimize the potential for introducing residual materials to the aquatic system as a result of this action, all bridge drains and joints will be sealed prior to application.
- In order to minimize the potential for introducing bridge debris (e.g., dirt, concrete, etc.) to the aquatic system, measures will be taken to minimize the potential for debris to fall into the river channel while repairing the tops of piers. Measures may include the construction of a platform below the top of the pier or the use of a barge anchored under the pier site.
- In order to minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.
- All staging, fueling, and storage areas will be located away and adequately buffered from aquatic areas.

1.3.2.8. Concrete Waterproofing Systems (Membrane Type A, B, C, and D)

This procedure is the application of one of four sealant types onto concrete surfaces to prevent water infiltration. Sealing is performed on both existing concrete and new concrete. There are four types of sealant proposed for use on concrete:

- Type A, hot-applied elastomeric liquid asphalt sealant
- Type B, fabric membrane sheet system
- Type C, penetrating water repellent
- Type D, precoated-preformed membrane sheet system

Type A. This type of seal consists of an emulsified asphalt prime coat membrane or a hot applied membrane layer covered by a layer of asphalt roll roofing. The concrete surface needs he clean, dry, fully cured, and finished. For rehabilitation of a structure, the concrete surface to receive the membrane will be cleaned and have sharp edges smoothed. The hot membrane material or emulsified asphalt prime coat will be evenly applied followed by a curing period from 1 to 3 hours, or depending on air temperatures, as recommended. Following the curing, the entire treated surface will be covered with asphalt roll roofing. A suitable mastic or cement shall be used at all lap joints and as needed to tack the roofing to the membrane surface. The roofing shall be bonded to curbs by applying a bead of the hot membrane the full length of the curb at the edge of the roofing.

Type B. This type of seal is a fabric membrane that consists of a prime coat with a layer of fabric embedded into it. The concrete surface needs be clean, dry, fully cured, and finished. For rehabilitation of a structure, the concrete surface will be cleaned and have sharp edges smoothed. Primer shall be uniformly applied over all surfaces receiving the fabric. The fabric shall be applied against curb and joint faces and shall consist of a continuous sheet when possible.

Type C. These are penetrating water repellent seals, consisting of a sealant (silane or siloxane) which penetrates the deck surface and forms a water-repellent layer within the concrete. The concrete will be sandblasted or hydroblasted clean prior to application. The surface moisture will be as recommended by the manufacturer of the water-repellent material. The repellent will be spray applied and used in accordance with the manufacturer's recommendation. The repellent will not be applied when temperatures are below 40°F or above 100°F, or when wind speeds exceed 15 miles per hour.

Type D. These pre-coated, pre-formed membranes consists of prefabricated sheets which may be self-adhesive or may require a separate bonding agent. The concrete surface needs be clean, dry, fully cured, and finished. For rehabilitation of a structure, the concrete surface to receive the membrane will be cleaned and have sharp edges smoothed. The work shall consist of applying pre-coated, pre-formed membrane sheets to the surface receiving the membrane. Application, surface preparation, and primer (if required) shall be in accordance with manufacturer's recommendations.

After sealing, only rubber-tired vehicles necessary for construction of overlays will be allowed on the completed membrane system. No public traffic will be allowed. During overlay work, a thin dusting coat of Portland cement may be placed by hand to prevent paver or truck tires from sticking to the membrane. If a base aggregate or borrow course is to be placed on the waterproof

membrane, a 1.2-inch layer of sand shall be uniformly placed over the membrane surface. Plant mix overlays will be constructed as soon as practicable after completion of the membrane. Rolling will be with steel wheel rollers with no vibration.

Best Management Practices

- The sealing penetrant will be applied and used in accordance with the manufacturer's recommendation, and will be applied during appropriate environmental conditions (i.e., weather, temperature, precipitation, etc.).

- Spray will only be applied when winds are less than 15 miles per hour and when temperatures are between 40° F and 100° F.

- No bridge rehabilitation activities will occur during wet weather conditions.

- If applicable, all deck drains will he plugged to prevent water or applied materials from leaving the work area.

- In order to minimize the potential for direct impacts to ESA-listed fish, all work will be completed from the existing bridge; no equipment or heavy machinery will enter the river channel.

- In order to minimize the potential for introducing bridge debris (e.g., dirt, concrete, etc) to the aquatic system, measures will be taken to minimize the potential for debris to fall into the river channel while repairing the tops of piers. Measures may include the construction of a platform below the top of the pier or the use of a barge anchored under the pier site.

- In order to minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

1.3.2.9. Bridge Deck Epoxy Chip Seal

This process is an epoxy and aggregate application procedure designed to place an anti-icing polymer overlay. Before work begins, the entire roadway surface (generally a concrete bridge deck or asphalt roadway) is thoroughly cleaned by steel shot blasting to ensure proper bonding between the epoxy and the concrete substrate. Shot blasting is meant to expose the coarse aggregate and remove asphalt material, oil, dirt, ruhber, curing compounds, paint carbonation, laitance, weak surface mortar, and other potentially detrimental material, which may interfere with the bonding or curing of the overlay. Loosely bonded patches will be removed and repaired. Asphalt surfaces may be sandblasted or planed and textured to a specified depth. Moisture- and oil-free compressed air or high-volume leaf blowers shall be used to remove all

dust and other loose material. Mechanical brooms, without water, may be used after a rain event to remove any residual dust that adheres to the prepared surface. The overlay will be placed as soon as possible after surface preparation is completed.

After surface preparation, the epoxy resin and hardening agent are mixed. Epoxy chip seal materials will not be applied when weather or surface conditions are such that the material cannot be properly handled, placed, and cured within the specified requirements for project sequencing or traffic control. They will also not be applied when rain is imminent. The prepared surface will be completely dry at the time of epoxy application. The temperature of the deck surface and all epoxy and aggregate components shall be a minimum of 55°F at the time of application. Epoxy shall not be applied if the gel time is less than 5 minutes or if pavement temperatures exceed 115°F.

An epoxy chip seal is applied using a double pass method. The double pass method calls for applying the epoxy and aggregate in two separate layers at the corresponding application rates. Total epoxy application rates will be no less than 10 gallons per 100 feet^2 and typically range from 10 to 11 gallons per 100 feet^2. Epoxy will be immediately and uniformly applied to the pavement surface. The aggregate shall be applied in such a manner as to cover the epoxy mixture while the epoxy is still fluid. Each course of epoxy overlay shall be cured before removing the excess un-bonded aggregate to prevent tearing or damaging of the surface. Oil- and moisture-free compressed air or high volume leaf blowers, vacuum, or mechanical brooms will be used to remove excess aggregate. When the second course is applied, aggregate is placed in such a manner as to cover the epoxy mixture before polymerization. Once the epoxy is cured, all loose aggregate will be removed from the roadway surface. After all loose aggregate is removed, and if there are any areas where the top surface of the stone has been coated with epoxy, the excess epoxy is removed using a light shot or sand blast.

Best Management Practices

- The epoxy seal will be applied and used in accordance with the manufacturer's recommendation, and will be applied during appropriate environmental conditions (i.e., weather, temperature, precipitation, etc.).

- No bridge rehabilitation activities will occur during wet weather conditions.

- In order to minimize the potential for introducing residual materials to the aquatic system as a result of this action, all bridge drains and joints will be sealed prior to application.

- To minimize the potential for direct impacts to ESA-listed fish, all work will be completed from the existing bridge; no equipment or heavy machinery will enter the river channel.

1.3.2.10. Two-lane Bridge Construction (a maximum of 200 cubic yards of fill below OHWM)

This action is to replace an existing two-lane bridge with a new single span structure. Existing structures are often supported by two piers and two abutments that are commonly located below the ordinary high water mark (OHWM) of the channel they span. This action allows for up to 200 cubic yards of riprap below the OHWM during bridge construction. If existing structures are removed during this action, all fill located above stream bottom elevations shall be removed along with the old structure.

To construct a new two-lane bridge, the following construction sequence will typically be used: (1) Traffic control for one lane of traffic will be set up on one-half of the existing bridge; (2) the flow of traffic through the construction area will be controlled by temporary traffic signals installed on both sides of the project area or by flaggers; (3) one-half of the existing bridge will be removed including rail, girder, and deck, which will be accomplished via saw cutting and lifting; (4) the partial or complete removal of piers (and walls between pier columns) will be accomplished down to natural stream bottom; (5) the use of handheld concrete saws or a stinger (i.e., excavator-mounted jackhammer) will often be required for pier removal; (6) after pier removal, one-half of the end beam abutment can he constructed; (7) rail, girder, and portions of the deck and end beam abutments will be removed as one piece if possible (portions to be removed would need to be cut free from the portion to remain); (8) pieces will be lifted and removed using large or multiple construction cranes; (9) temporary shoring may he installed to retain the existing embankment during the removal of one-half of the existing bridge, which will allow for one-way traffic to be maintained during the course of construction; (10) while the type and approximate limits of temporary shoring are not known ahead of time, all efforts will be taken to minimize intrusion into the active stream channel; and (11) construction of the first half of the new bridge will then begin, which includes the construction of half of hoth abutments, wing walls, pre-stressed concrete girders, half of the deck, the parapet, and half of the approach slabs on both ends of the bridge. Cranes are commonly used to set the new girders.

The new abutments will be located above and behind the OHWM elevation on the existing channel side slope. This elevation clearance is essential in order to construct the new abutments out of the existing river channel. Traffic control and temporary traffic signals are then reset for one lane of traffic crossing over half of the new bridge and the temporary shoring is removed. The remaining portion of the existing bridge will then be removed. Removal will be similar to that described above. The other half of new bridge will be constructed as described above. Rerouted utility lines will then be attached to the new bridge. The cast-in-place concrete closure pour strip in the deck, which connects both halves of the deck togetber, will then be constructed. Traffic control will then be removed. See Figure 1 for an illustration of a typical bridge deck replacement project.

Best Management Practices. In order to minimize the potential for introducing runoff water and residual material to the aquatic system as a result of bridge replacement, the following BMPs will be implemented.

- The Idaho Department of Fish and Game (IDFG) will be consulted for region- and species-specific windows of time when listed fish are generally not present. The fish

window will be identified as the limit to the construction timeframe laid out in the project pre-notification form. The construction schedule will conform to the fish windows established by IDFG, the ITD, and NMFS.

- De-watering may accompany this activity. Stream channels are generally de-watered using structures such as aqua-barriers, sandbags, concrete barriers or culverts placed in the active channel. These structures either divert water away from active construction, or dam the channel and completely de-water the work area, in which case all the water is passed through the work site in a culvert or by-pump. If de-watering is necessary, all in-stream structures will be temporary and shall be removed once construction is complete.

- If fish handling is required, it will he done by either electrofishing or hand-netting after de-watering has occurred. Fish handling will be conducted by the U.S. Forest Service (USFS), IDFG, Tribes, or other qualified personnel with appropriate training and experience.

- In order to attain proper hydrologic function at the site, all bridge improvements will be above OHWM and will be designed to retain natural gradient, bottom material, bank stability, and a near-natural channel width through the structure.

- If riprap is required to ensure proper bank stabilization, it will be placed in a manner that will not further constrict the stream channel and will be limited to 200 cubic yards or less of riprap below the OHWM.

- If shrub removal is required, it will be done in such a way that the root mass is left in place for stabilization purposes. An equivalent, or greater, amount of shrubs and riparian vegetation will be planted after project construction.

- All practicable measures will be taken to prevent bridge debris from entering the stream.

    - If a stinger is chosen to remove piers, a sandbag barrier, or similar barrier, would be placed between the pier and live water to catch any debris before it would potentially fall into live water.

    - If a wet-blade concrete saw is chosen, a catch basin would be constructed at the site to collect cutting water/slurry. A shop vacuum would be used to collect the slurry for off-site disposal.

    - If a dry-blade concrete saw is chosen, an enclosed containment structure would be constructed around the site to trap airhorne dust particles, and a shop vacuum or other device would he used to collect the dust for off-site disposal.

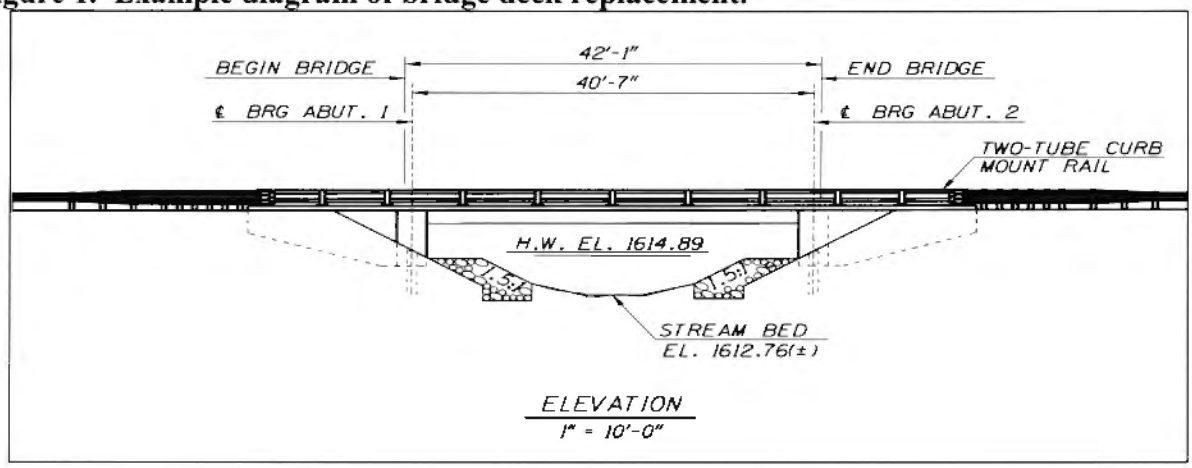
- To minimize the potential for introducing sediment to the aquatic system, sediment fences or other erosion control measures will he placed between ground disturhing activities and live water. Ground disturbance will not occur during wet conditions (i.e., during or immediately following rain events).

- No machinery or implements will enter the live stream and temporary cofferdams will be constructed, if necessary, to de-water existing pier sites during pier removal.

- To minimize the potential for introducing hazardous materials to the aquatic system, a spill prevention and contingency plan will be prepared by tbe construction contractor and approved by ITD prior to project implementation.

- All staging, fueling, and storage areas will be located away from and adequately buffered from aquatic areas.

Figure 1. Example diagram of bridge deck replacement.



1.3.2.11. Excavation and Embankment for Roadway Construction (Earthwork)

Excavation and embankment activities consist of stripping topsoil and vegetation from an area, and either removing earth or placing and compacting earth, for roadway prism construction or slope construction. The earth may be moved from or to another section on the same project, or it may come from or be wasted off site. Equipment used will include excavators, dozers, scrapers, dump trucks, and compaction equipment. Completed cut or fill prisms may then be covered by any number of treatments, rock base and pavement, rock stabilization and riprap or mulch and seeding. Pipe and utility work often accompany excavation and embankment.

Best Management Practices

- A 100,000 cubic yard limit will be placed on total earth movement for a project.

- No more than 300 feet of stream channel below the OHWM shall be affected by this action.

- Fiber wattles and/or silt fence will be placed adjacent to or below disturbance areas to prevent sediment transport into any waterway.

- Equipment shall not have damaged hoses, fittings, lines, or tanks that have the potential to release pollutants into any waterway.

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

- All staging, fueling and storage areas will be located away from and adequately buffered from aquatic areas.

1.3.2.12. Rock Scaling

Rock scaling is removing loose or floating rock from engineered or natural slopes prior to any surface cobbles and boulders becoming a falling rock hazard. For this activity, traffic below the slope is strictly controlled and may be protected by concrete barriers and fences. Laborers with safety harnesses will tie off from above the slope and, working downward, will pry loose rock with pry bars, hydraulic rams, jack hammers, or blasting equipment. The rock will fall to the toe of the slope to be collected and used elsewhere or wasted. The slope's soil and vegetation may be disturbed as the rock comes loose and rolls down the slope.

Best Management Practices

- Temporary rock fall barriers will be employed to prevent rock and debris from reaching adjacent waterways. Type and height of temporary rock fall barriers employed will be determined on a case-by-case basis due to rock type, height of fall, and slope angle.

- Power equipment used for rock scaling operations shall not have damaged hoses, fittings, lines, or tanks that have the potential to release pollutants into any waterway.

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

- All staging, fueling and storage areas associated with the operation will be located away from and adequately buffered from aquatic areas.

1.3.2.13. Passing Lanes, Turnbays, and Slow Moving Vehicle Turnouts (Wide Shoulder Notch)

The purpose of constructing passing lanes, slow moving vehicle turnouts, and turnbays, is to improve traffic flow and turning safety by widening the existing pavement. Traffic is maintained

on the existing roadway. All of the work performed is typically within the ITD right of way. When possible, highway widening will occur on the uphill side of the roadway. The work consists of constructing a road emhankment adjacent to the existing roadway. Construction crews will place dirt or rock (borrow material) into the bottom of the embankment.

Pipes within the fill sections must extend from under the road on each side. If culverts are to be extended or replaced, construction crews will place pipe extensions first. Most culverts range in size from 12- to 24-inches in width. The ITD will contact the IDFG and NMFS to determine if any streams for which a culvert is being extended are fish-bearing or not. If the stream is fish-bearing, ITD will replace the entire culvert with a structure (i.e., culvert, bottomless arch, or bridge) capable of fish passage. Once the extensions are in place, ITD will place granular material over the culverts.

The sub grade will be prepped by clearing and grubbing. The foundation will he compacted with a roller prior to placing borrow. Borrow material will be placed in layers and compacted uniformly to the desired elevation by making at least three passes with a roller on each layer. Construction crews will place hase or surfacing aggregate, process the aggregate (adding water so that the moisture content is uniform) and compact. The surface will then be leveled to conform to the standard of the adjoining highway. A plant mix surface will then be used to provide the finished surface. Ditches will be constructed or reconstructed to provide drainage from the roadway.

Grading will be accomplished by a patrol or motor grader. Dump trucks are used to haul materials to the site. A loader will pick up material and place it as needed on the ground or place excess material in dump trucks. Rollers and a water truck are used for compaction. A paver will he used to place the plant mix surface. See Figure 2 for an illustration of a typical passing lane project.

Best Management Practices

- Fiber wattles and/or silt fence will be placed adjacent to or below disturbance areas to prevent sediment transport into any waterway.

- Equipment shall not have damaged hoses, fittings, lines, or tanks that have the potential to release pollutants into any waterway.

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

- All staging, fueling, and storage areas will be located away and adequately buffered from aquatic areas.

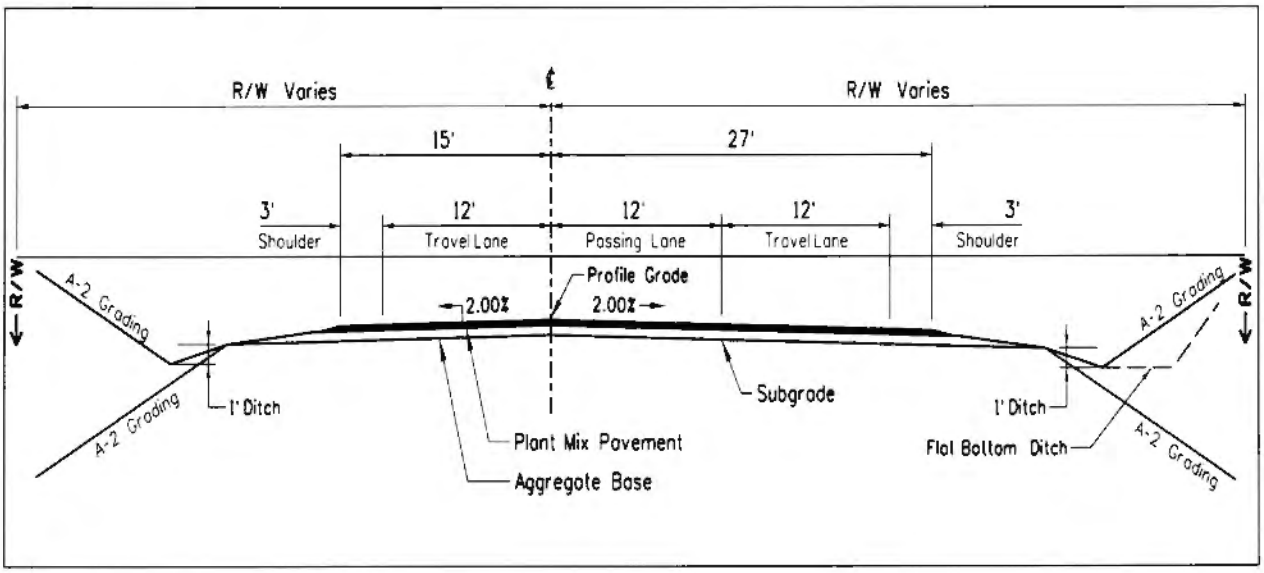
- De-watering may accompany this activity. De-watering of the stream channel is often accomplished using structures such as aqua-barriers, sandbags, concrete barriers or culverts placed within the active channel. These structures will either divert water to a

portion of the channel away from active construction, or dam the channel and completely de-water the work area in order to pass all the water through the work site in a culvert or by pump. All instream structures will be temporary and shall be removed once construction is complete.

- If fish handling is required, it will be done by either electrofishing or hand-netting after de-watering has occurred. Fish handling will be conducted by the USFS, IDFG, Tribes, or other qualified personnel with appropriate training and experience.

- NMFS water drafting criteria will be adhered to (NMFS 2008a).

Figure 2. Example diagram of a passing lane.



1.3.2.14. Pavement Widening (Sliver Shoulder Notch)

This work involves the excavation of material from beneath the existing pavement, at a given distance from the centerline of the roadway, and to a depth and for a distance necessary to provide a firm foundation for widening the existing roadway and shoulder. This process will not include work below the OHWM or any waterway. Once this notch is completed, the area is backfilled with an appropriate base material and paved over to match the existing pavement and, in most cases, overlaid for more pavement depth.

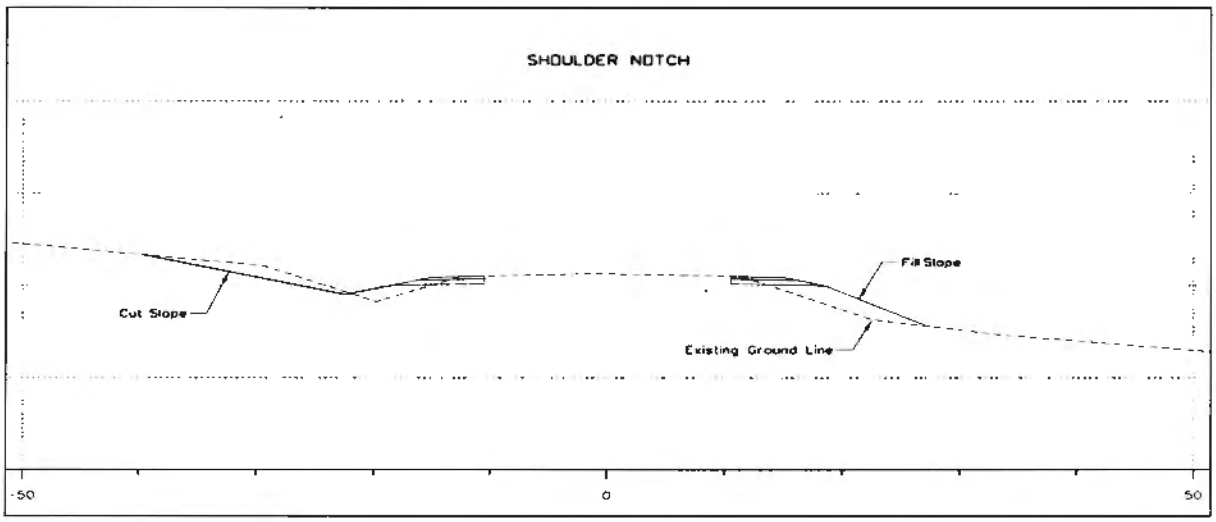
A wheel pavement saw is often used to cut through the asphalt perpendicularly to the existing surface. The base and subsurface is then excavated to the required width and depth. If the terrain permits and there are no sensitive areas immediately adjacent to the work, the excavation is done with a grader blade. When working in environmentally sensitive areas, an excavator is used to prevent material from entering the protected area. The excavated material is either used for fill material or disposed of in an approved area. Fiber wattles or silt fence will be used

between the area of disturbance and aquatic resources to minimize possibility of sediment delivery. See Figure 3 for an illustration of a typical shoulder notch project for pavement widening.

Best Management Practices

- Fiber wattles and/or silt fence will be placed adjacent to or below disturbance areas to prevent sediment transport into any waterway.
- Equipment shall not have damaged hoses, fittings, lines, or tanks that have the potential to release pollutants into any waterway.
- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.
- All staging, fueling, and storage areas will be located away and adequately buffered from aquatic areas.

Figure 3. Example diagram of shoulder notch for pavement widening.



1.3.2.15. Bank Stabilization (Riprap)

Bank stabilization actions will construct revetments to support a roadway embankment either in, or immediately above, a river or waterway. The length of the revetments will vary according to the project site, but will be no longer than 300 feet below OHWM. Construction of a hard armor riprap revetment is done to prevent further undercutting and loss of roadway or roadway shoulder. Excavation and in-channel work are typically required to install these treatments. Excavation is sometimes required below the OHWM to establish a foundation for the structure.

An excavator, with a thumb, working from the roadway shoulder, will be used for the excavation and placement of fill material and rock armoring. The excavator will create a toe trench along the washed areas. Filter fabric will be used to line the toe and slope. Clean riprap (2- to 3-foot diameter) will then be placed in the toe trench and used to armor the fill. Granular material (2- to 6-inch) will be used as fill behind the riprap and above the OHWM. This activity is used most often to replace or repair existing embankments that have been previously armored.

Due to the poor aquatic-habitat value of riprap, and the local and cumulative effects of riprap use on river morphology, non-vegetated riprap is only acceptable where necessary to prevent failure of a culvert, road, or bridge foundation. When this method is necessary, installation will be limited to the areas identified as most highly erodible, with highest shear stress, or at greatest risk of mass-failure. Compensatory mitigation will be provided. The greatest risk of mass-failure will usually be at the toe of the slope and will not extend above OHWM except in incised streams. Bank stabilization methods will include: (1) Development of an irregular toe and bank line to increase roughness and habitat value; and (2) use of large, irregular rocks, to create both large interstitial spaces for planting spaces and small alcoves as habitat to mitigate for flood-refuge impacts. Geotextile fabrics will not be used as filters behind riprap. If filters are necessary to prevent sapping, a graduated gravel filter will be used. See Figure 4 for an illustration of a typical riprap bank stabilization project.

Best Management Practices

- No more than two bank armoring projects per subbasin (4^{th} field hydrologic unit code [HUC]) shall be approved annually. This includes construction riprap, gabion wall or MSE wall placement below the OHWM.

- No more than 300 feet of stream channel below the OHWM shall be affected by any project authorized under this action.

- All materials and equipment will be staged adjacent to the project and situated as not to disturb any adjoining slopes or vegetation.

- Straw bales or other practicable sediment control measures will be used to minimize potential sediment delivery to the aquatic resource.

- All materials removed will be placed in an approved upland location.

- Placement of riprap armor will occur in a way that does not constrict the channel or restrict natural hydraulics.

- The project work will take place during low flow conditions.

- The IDFG will be consulted for species-specific windows of time when listed fish are generally not present. The fish window will be identified as the limit to the construction timeframe laid out in the project pre-notification form. The construction schedule will conform to the fish windows established by IDFG, the ITD, and NMFS.

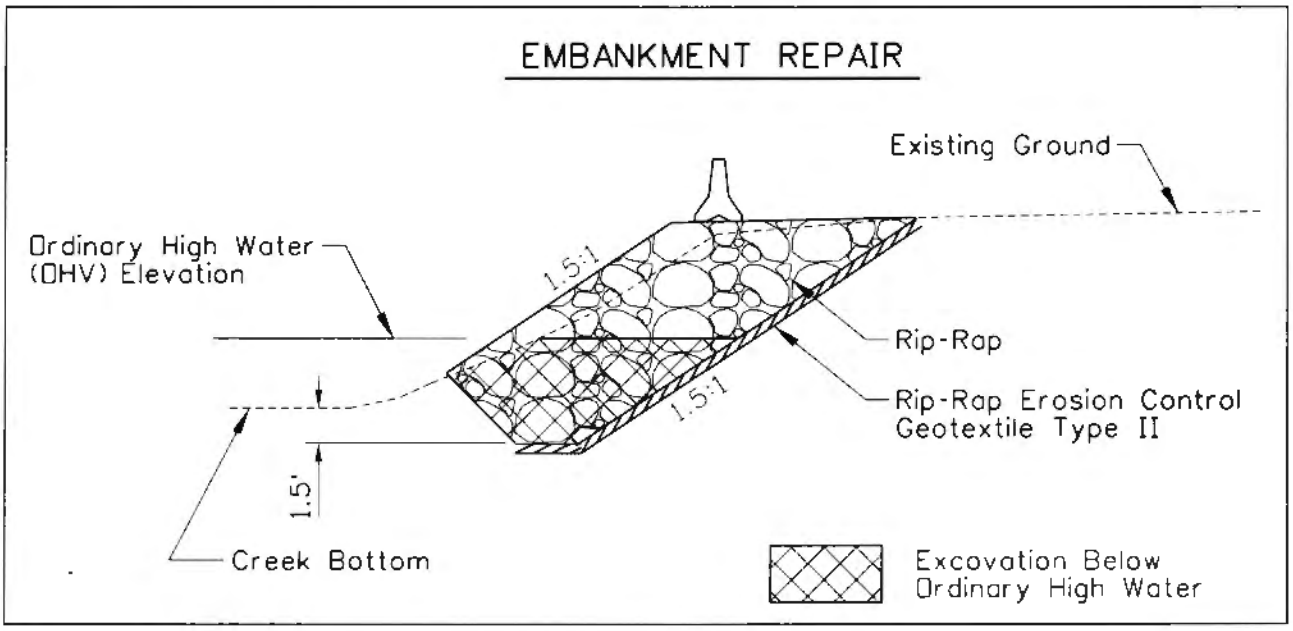
- De-watering may accompany this activity. De-watering of the stream channel is often accomplished using structures such as aqua-barriers, sandbags, concrete barriers, or culverts placed within the active channel. These structures will either divert water to a portion of the channel away from active construction, or dam the channel and completely de-water the work area in order to pass all the water through the work site in a culvert or by pump. All instream structures will be temporary and shall be removed once construction is complete.

- If fish handling is required, it will be done by either electrofishing or hand-netting after de-watering has occurred. Fish handling will be conducted by the USFS, IDFG, Tribes, or other qualified personnel with appropriate training and experience.

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

- All staging, fueling, and storage areas will he located away and adequately buffered from aquatic areas.

Figure 4. Example diagram of bank stabilization requiring riprap.



1.3.2.16. Bank Stabilization (Gabion Basket)

Bank stabilization may take the form of gabion baskets used as a retaining walls or as mattresses to line existing channels. The length of gabion basket will vary according to tbe project site, but

shall be no longer than 300 feet below OHWM. Gabions are rectangular wire baskets filled with stones, used as pervious, semi-flexible, building blocks to protect streambanks from the erosion while supporting a roadway. Rock-filled gabions can be used to armor the bed and/or banks of channels, divert flow away from eroding channel sections, or to support a roadway section to keep it from falling into a stream.

Materials for the gabions shall be fabricated in such a manner that the sides, ends, lid, and diaphragms can be assembled at the construction site into rectangular baskets of a specified size. Gabions may vary in size, however, generally they are 3 x 3 x 6 feet for wall construction. The type and gauge of wires will be determined based on its application. Rock material for wall construction will consist of a minimum of 4 inches to a maximum of 8 inches, both measured in the greatest dimension. Gabion mattress rock material is 3 to 5 inches. The rock shall be sound, durable, well-graded, and clean of all dirt and fines.

Installation of gabions requires excavation of the footprint of the structures, and preparation of the foundation material. When necessary, soft material will be excavated from below the footing elevation, backfilled with granular material, and compacted. Empty gabion baskets will be placed on the prepared foundation and carefully filled in lifts to allow fastening to connecting baskets and to avoid deformation of the basket. All exposed surfaces will have a neat and reasonably smooth appearance. No sharp stones will project through the wire mesh. Material resulting from the excavation will he utilized in backfilling the gabion walls if suitable, or disposed of at an approved site. Care will be taken during the excavation to avoid any introduction of material to adjacent waters unless permits have been obtained to allow this action. Work below the OHWM of a stream or in a wetland will require consultation with the COE, IDWR, and the IDEQ at a minimum. If work is required in flowing water, a diversion method may be required.

Best Management Practices

- No more than two bank armoring projects per subbasin (4^{th} field HUC) shall be approved annually. This determination includes construction riprap, gabion walls, or MSE wall placement below the OHWM.

- No more than 300 feet of stream channel below the OHWM shall be affected by this action.

- All materials and equipment will be staged adjacent to the project and situated as not to disturb any adjoining slopes or vegetation.

- Straw bales or other practicable sediment control measures will be used to minimize potential sediment delivery to the aquatic resource.

- All materials removed will be placed in an approved upland location.

- Placement of riprap armor at the toes of the gabion will occur in a way that does not constrict the channel or restrict natural hydraulics.

- The project work will take place during low-flow conditions.

- The IDFG will be consulted for species-specific windows of time when listed fish are generally not present. The fish window will be identified as the limit to the construction timeframe laid out in the project pre-notification form. The construction schedule will conform to the fish windows established by IDFG, the ITD, and NMFS.

- De-watering may accompany this activity. De-watering of the stream channel is often accomplished using structures such as aqua-barriers, sandbags, concrete barriers, or culverts placed within the active channel. These structures will either divert water to a portion of the channel away from active construction, or dam the channel and completely de-water the work area in order to pass all the water through the work site in a culvert or by pump. All instream structures will be temporary and shall be removed once construction is complete.

- If fish handling is required, it will be done by either electrofishing or hand-netting after de-watering has occurred. Fish handling will be conducted by the USFS, IDFG, Tribes, or other qualified personnel with appropriate training and experience.

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

- All staging, fueling, and storage areas will be located away and adequately buffered from aquatic areas.

1.3.2.17. Mechanically Stabilized Earth Embankment (MSE) Wall

The MSEs may be used as retaining walls, roadway embankments, or as a mattress to line an existing channel. The length and height of an MSE wall will vary according to the project site. The MSE structures consist of alternating rock or soil layers separated by wire, fabric, or metal strips, holding the fill in place. At times, the face of the MSE wall will be lined or covered with fascia of concrete or rock. Rock-filled MSE walls can be used to armor the bed and/or banks of channels, divert flow away from eroding channel sections, or support a roadway section to avoid or minimize filling into a stream.

Installation of MSE walls will require excavation of the footprint of the structures and preparation of the foundation material. When necessary, soft material will be excavated from below the footing elevation, backfilled with granular material, and compacted. The MSE layers will be placed on the prepared foundation, and carefully filled in to allow for uniformity and to avoid deformation. All exposed surfaces will have a neat and reasonably smooth appearance. No sharp stones will project beyond the face. If suitable, excess material resulting from the excavation may be utilized in backfilling the wall or it will be disposed of at an approved site. Care will be taken during the excavation to avoid any introduction of material to adjacent waters

unless permits have been obtained to allow this action. If work is required in flowing water, a diversion method may be required. Figure 5 is an example of a diagram demonstrating bank stabilization with a MSE wall.

Best Management Practices

- No more than two bank armoring projects per subbasin (4th field HUC) shall be approved annually. This determination includes construction riprap, gabion wall, or MSE wall placement below the OHWM.

- No more than 300 feet of stream channel below the OHWM shall be affected by this action.

- All materials and equipment will be staged adjacent to the project and situated as not to disturb any adjoining slopes or vegetation.

- Straw bales or other practicable sediment control measures will be used to minimize potential sediment delivery to the aquatic resource.

- All materials removed will be placed in an approved upland location.

- Placement of riprap armor at the toes of the gabion will occur in a way that does not constrict the channel or restrict natural hydraulics.

- The IDFG will be consulted for region- and species-specific fish windows. The fish window will be documented under the Construction Timeframe identified on the Project Pre-notification Form. Fish windows established by IDFG and/or NMFS will be utilized during project construction.

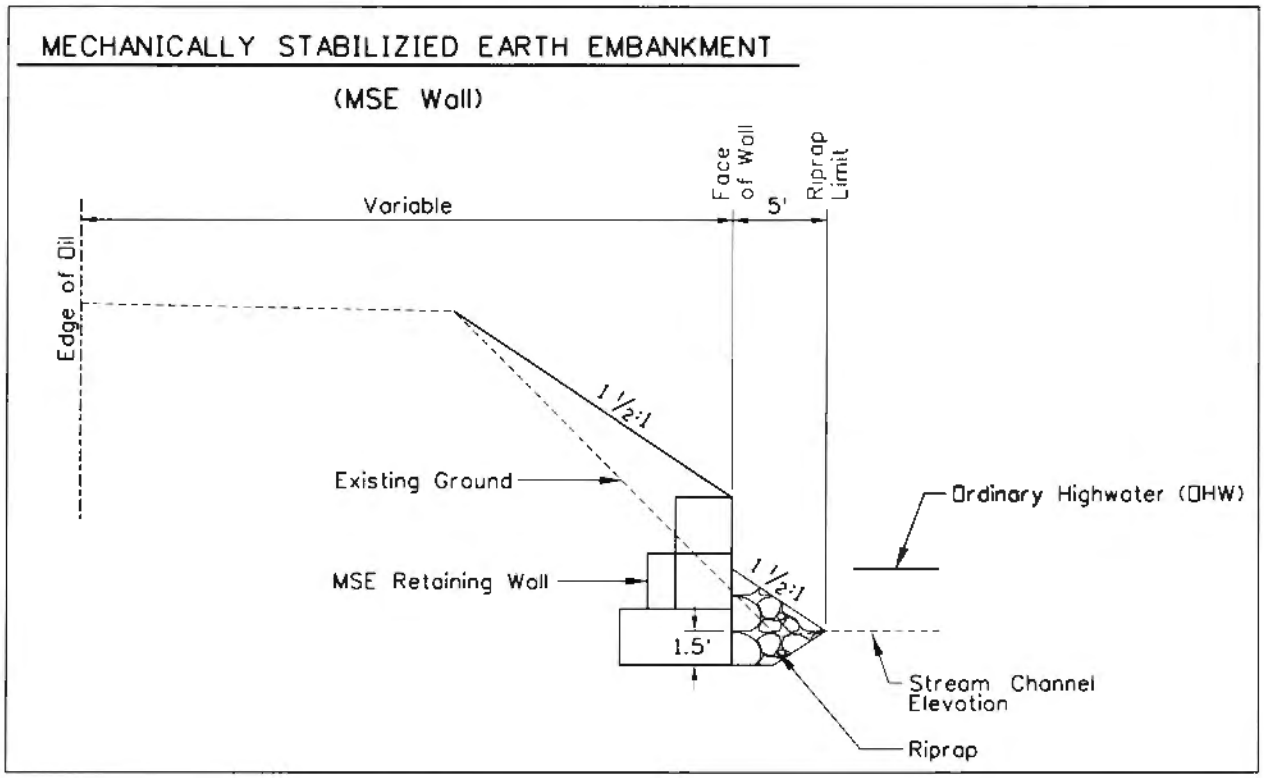
- De-watering may accompany this activity. De-watering of the stream channel is often accomplished using structures such as aqua-barriers, sandbags, concrete barriers, or culverts placed within the active channel. These structures will either divert water to a portion of the channel away from active construction, or dam the channel and completely de-water the work area in order to pass all the water through the work site in a culvert or by pump. All instream structures will be temporary and shall he removed once construction is complete.

- If fish handling is required, it will be done by either electrofishing or band-netting after de-watering has occurred. Fish handling will be conducted by the USFS, IDFG, Tribes, or other qualified personnel with appropriate training and experience.

- To minimize the potential for introducing hazardous material to the aquatic system, a spill prevention and control countermeasures plan will be prepared by the construction contractor and approved by ITD prior to project implementation.

- All staging, fueling, and storage areas will be located away and adequately buffered from aquatic areas

Figure 5. Example diagram of bank stabilization with a MSE wall.



1.3.2.18. Ditch Cleaning

The purpose of this activity is to restore the interceptor ditches that are located adjacent to the highway and control drainage from the highway. Ditches protect highways from drainage in order to prevent failure. The work consists of removing material from the roadside ditch that has been deposited over time hy erosion of adjacent slopes and rock-fall. Traffic is generally maintained on the existing roadway and the activity is generally accomplished by state employees.

Highway ditches are generally small. Precautions will be made to avoid nicking the toe of the adjacent slope. Excavation and haul is required to provide the area to create a ditch to carry drainage. After ditching, the foundation will be carefully prepared and embankment properly compacted to prevent future settlement and washouts of the ditch. In some soils, it may be necessary to line the ditch witb coarse gravel or other material to prevent erosion. Low spots or pockets in the flow line will be avoided or drained when possible. Special treatments, such as rock check dams may be necessary to prevent excessive erosion. Equipment that is common to this activity includes loaders, excavators, and dump trucks.

Best Management Practices

- Ditching will only occur in the dry and will not involve excavation in live water.
- Fiber wattles or rock check dams will he used in areas of excessive grade to allow for deposition of sediments prior to entry into adjacent aquatic resources.
- All excavated materials will be deposited in an approved upland location where they may not reenter aquatic habitats.

1.3.2.19. Small Structure Repair

Water conveyance structures such as bridges, box culverts, stiff leg culverts, and multi-plate culverts, commonly require maintenance work to repair scour or debris damage to foundation or structure footings. High flows can cause water to undermine structures. Even normal flows commonly wash debris into structure foundations, causing a whirlpool action that can undermine the structure. The ITD commonly works to repair, protect, and apply preventative maintenance to these structures when this occurs.

To repair small structures, construction or maintenance crews will excavate loose material from around the undermined area. A form will then he constructed around the undermined area with wood and rock; then concrete or grout will be pumped into the void to completely fill the area. Scour repairs are commonly armored with riprap. At times, structures may have debris, such a logs or snags, catch on their piers or abutments. These snags are removed to prevent future damage.

Best Management Practices. In order to minimize the potential for introducing runoff water and residual material to the aquatic system as a result of bridge replacement, the following BMPs will be implemented.

- The IDFG will be consulted for species-specific fish windows. The fish window will be documented under the construction timeframe identified on the project pre-notification form. Fish windows established by IDFG and/or NMFS will be utilized during project construction.
- De-watering may accompany this activity. De-watering of the stream channel is often accomplished using structures such as aqua-barriers, sandbags, concrete barriers, or culverts placed within the active channel. These structures will either divert water to a portion of the channel away from active construction, or dam the channel and completely de-water the work area in order to pass all the water through the work site in a culvert or by pump. All instream structures will be temporary and shall be removed once construction is complete.