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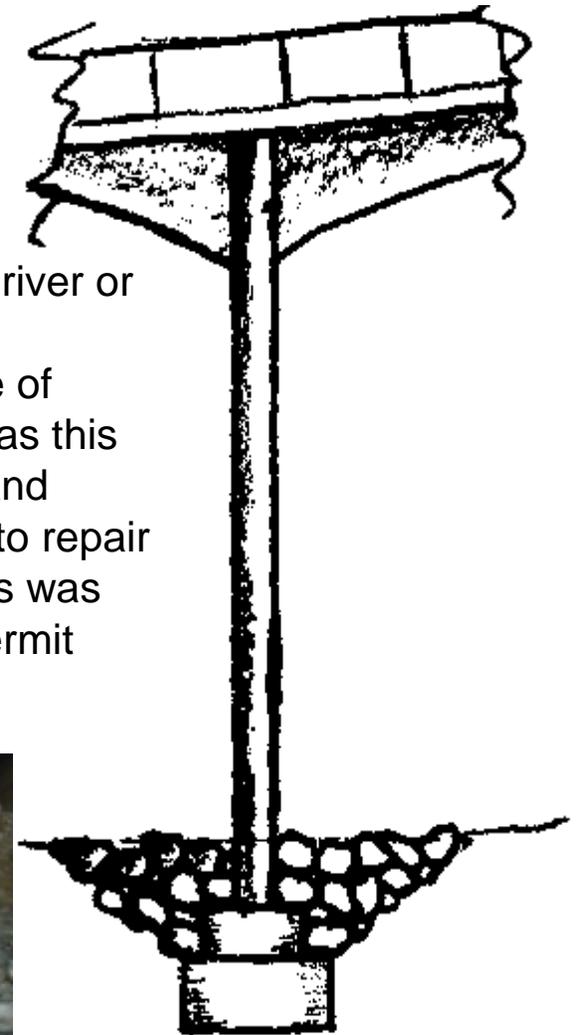
To this...

US 2/20/153 Emergency Bridge Scour Repair

This project repaired scour on seven existing bridges in rural areas of North Central Washington. These repairs included placing heavy, loose rip rap (rocks) in environmentally sensitive areas. The total project cost was \$278,000.

US 2/20/153 Emergency Bridge Scour Repair

Bridge scour is the erosion around a bridge pier caused by the river or stream. If this type of damage is not repaired, it could cause catastrophic failure to the bridge. The typical repair for this type of damage is to place large rocks around the pier. Projects such as this are difficult to permit because they involve placing equipment and materials in environmentally sensitive areas. This project was to repair seven bridges in North Central Washington. One of the bridges was excluded from the contract by a change order resulting from permit issues with King county. It was completed two years later by a maintenance contract.



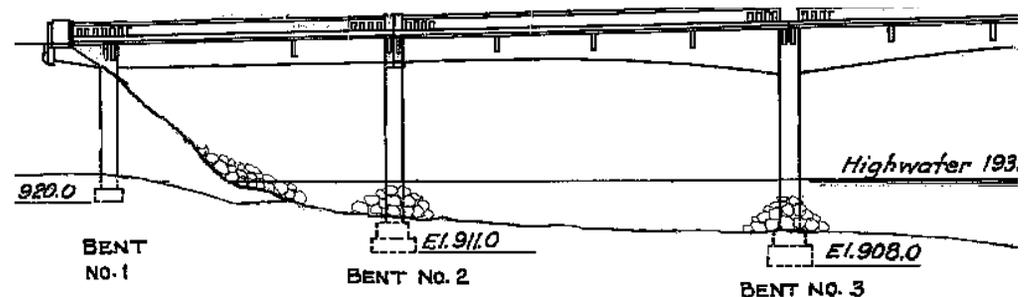
US 2/20/153

Emergency Bridge Scour Repair

We had to build temporary rock work pads in the stream for the equipment used to place the material around the bridge columns. To mitigate for this, we restored the streambed and revegetated the stream banks. The total mitigation cost for permits, design, and construction was \$54,500, or 20% of the total project cost.



Placing Special Heavy Loose Rip Rap



ELEVATION

US 2/20/153 Emergency Bridge Scour Repair Mitigation Costs

Phase Costs	
Preliminary Engineering	\$0.059M
Right of Way	0
Construction	\$0.220M
Total	\$0.278M



Mitigation Costs			
Mitigation Elements	Const. Cost ⁽¹⁾	All-in Cost ^(*)	% of Total Project Cost
Stream restoration, permits, and conditions	\$0.019M	\$0.055M	20.0%
All other items	\$0.201M	\$0.223M	
Total	\$0.220M	\$0.278M	
(1) Construction cost includes mobilization, sales tax, and construction engineering.			
(*) All-in cost includes allocation of preliminary engineering and permits added to construction cost and the maintenance contract.			

