

WYOMING DEPARTMENT OF TRANSPORTATION

FEASIBILITY OF SNOWSHEDS ON TETON PASS

Wilson - Idaho State Line
Teton Pass Section
Teton County

OBJECTIVE: Determine the feasibility of installing snowsheds on WY 22 over Teton Pass to cover known and potential avalanche paths that exist between Wilson and the Idaho State line.

HISTORY: Wyoming State Highway 22 crosses the Southern end of the Teton range at Teton Pass, elevation 8,431 on it's way from Wilson, WY to Victor, ID. This steep mountain highway passes through the paths of 10 distinct avalanche paths as well as many other small bank slides that may affect traffic on this road. Efforts to minimize this threat to the traveling public over the years include: shutting down the pass over the winter, which incited a small riot in 1940, the design and partial installation of the Crater Lake Bridge, which was destroyed in 1970 by an avalanche, and most recently, mitigation measures which are designed to alleviate the threat by releasing the suspended snow in a controlled manner using a GAZ-EX system along with hand charges, Doppylmyer Avalanche Guards and a 105mm Howitzer.

PROJECT DESCRIPTION: In June of 1989, a report was issued by avalanche control engineer Arthur Mears, PE describing in detail the specific threats to the highway posed by avalanches. In his report, he recommended the construction of two snow sheds, one at Glory Bowl and one at Lower Twin Slide, along with an improved avalanche mitigation program that would employ full time avalanche technicians to monitor the danger. A snow shed was designed for Glory Bowl in 1992, but not installed. Based on that design, a current day cost has been estimated to install that structure and a cost comparison has been performed versus the ongoing yearly costs of avalanche mitigation.

DATA: The cost to install the snow shed design from 1992 has been estimated at \$13,745,241 which breaks down to \$33,525 per foot of roadway covered by the shed. In order to gain benefit from this project, snow sheds would have to be installed to cover both the Glory and Twin Slides slide paths. The total build cost for these two installations is estimated to be \$19,444,488 with a user cost of 450

hours at \$4,200/hour (user cost calculated by Andy Long) equating to \$1,890,000. Based on discussions with CDOT, these structures are also estimated to incur a maintenance cost of \$10,000 per year.

It has been estimated that covering both of these slide paths would reduce the cost of avalanche mitigation by approximately \$72,000 per year. Approximately 7 hours of user costs at \$4,200/hour would also be saved each year because the pass would not have to be shut down for control operations on these slide paths. The design life of highway 22 has been estimated at 25 years, so the costs of each option has been estimated over that period. An increase of 5% per year has been assumed for all costs incurred yearly.

AVALANCHE MITIGATION COSTS		
		COST OVER 25 YEARS
YEARLY BUDGET	\$147,000.00	\$7,015,869.00
YEARLY USER COSTS	\$34,692.00	\$1,655,745.08
		\$8,671,614.08

TOTAL

SNOWSHED COSTS		
ORIGINAL CONSTRUCTION COST	\$19,444,487.75	\$19,444,487.75
USER COST OF CONSTRUCTION	\$2,230,200.00	\$2,230,200.00
YEARLY MAINTENANCE COST	\$11,800.00	\$477,271.00
		\$22,151,958.75

TOTAL

