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A Message from the American Concrete Pipe Association

Bulletin No. 122

World's Largest Corrugated Steel Arch Collapses on Alaska Highway

In the summer of 1998 a corrugated steel arch structure was installed on the Alaska Highway to replace an old narrow bridge at Irons Creek, just south of the British Columbia-Yukon border. The corrugated steel arch had a span of 23.3 meters (76.4 feet), a rise of 8.2 meters (27 feet) and was 35.3 meters (116 feet) long. It was touted at the time as the largest structure of its kind in the world. It came with an eighty year warranty. Less than three years later, the culvert collapsed leaving a gaping hole about 30 meters (100 feet) across the road or as reported by the *Edmonton Journal*, "The mother of all potholes".



Whitehorse Star (Vince Fedoroff)

"The mother of all potholes"

The construction of the culvert was part of a design-build project tendered by the Department of Public Works of the Government of Canada. The successful contractor included in his bid a proposal from a corrugated steel pipe company for the design and supply of material for the creek crossing. The contract was completed in the fall of 1998. The collapse of the structure started at around 7:30 a.m. on the morning of the fifth of June. The bolts popped off, the road surface sloughed in and the culvert buckled. The start of the collapse was first noticed when some vehicles almost lost control as they drove over the depression in the road surface. One of the last vehicles to drive over the culvert was a truck pulling a horse trailer. According to

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The Whitehorse Star, an eyewitness reported that when the truck and trailer hit the depression it triggered somewhat of a bronco ride causing the driver to hit the brakes and skid for some distance. Shortly afterwards the highway was closed as the implosion of the culvert progressed.

The highway remained closed until a one lane Bailey bridge was shipped to the site and installed at the location of the old bridge. However, this meant a return to sharper curves leading to the approaches on both sides as well as steeper grades coming off the bridge going north and south. The Alaska Highway was closed for a period of 53 hours. During the duration of the closure, tourists, public transport, residents and truckers were stranded on both sides of the failed corrugated steel culvert. One estimate by a local lodge owner, as noted in *The Whitehorse Star*, put the number of RV's waiting to go north to Yukon and Alaska at 500. Local businesses, especially hotels, motels and restaurants were adversely impacted.

There were no injuries as a result of this failure. However, local residents have speculated that had the failure occurred just hours earlier in the twilight of a northern June night motorists could have easily driven into the hole, one by one, with tragic results.

The one lane Bailey bridge remains in place as of the summer of 2002. The flow of traffic over the bridge is controlled by traffic lights at both ends. This bottleneck continues to cause traffic congestion and delays. A tender of \$1.88 million for a new bridge to replace the collapsed corrugated steel arch was accepted in August of 2002. Residents of the area hope that this bridge will be completed before winter arrives as there are ongoing safety concerns with the temporary Bailey bridge.

In the meantime, the travelling public and especially the residents of Alaska and Yukon, continue to be inconvenienced by the failure of the corrugated steel arch culvert.