ISTEA 1% set aside is available for bridges

Procuring funding is probably the most difficult part of any road and bridge project. What’s worse is if the money is available and doesn’t get used. To secure the funding you have to be aware of the programs available. Baraga County in Michigan discovered this recently.

The Intermodal Surface Transportation Efficiency Act (ISTEA) requires every state to set aside 1% of its transportation funds each year for a Bridge Replacement and Rehabilitation Fund for Indian reservations. This fund is to be used for bridges on or serving reservations.

Baraga County is able to replace two bridges with funding the Keweenaw Bay Band of Lake Superior Chippewa received for bridge projects under this program. Baraga County Engineer Doug Mills only recently learned that this money was available. “This is a new program under ISTEA and it just took someone to approach us with it.” Mills said the Bureau of Indian Affairs (BIA) and the Keweenaw Bay tribe met with him earlier this year “and from there, the project is under way.”

Although the county owns both bridges, one is on the Keweenaw Bay Reservation and the other is on a highly traveled road that serves the reservation. Tim Shanahan, Roads Planner for the Keweenaw Bay tribe, says, “they’ll have the contract to do it on our behalf.”

The project is being funded with 80% federal funds from the ISTEA set aside and 20% local and Indian Reservation Road (IRR) funds. The county road commission is responsible for all design and construction engineering above the 20%. The design engineering has been contracted to a consultant and the county will do all of the construction engineering with their own forces. The engineering adds $40,000 to the actual construction costs at the local level. The tribe is assisting with administration and working with the BIA. According to Mills, “They’re involved and assisting with the project every step of the way.”

For a bridge to be approved for the ISTEA funding, it has to meet the tribe’s priority criteria and qualify as a bridge (greater than 20 foot span). After a bridge is approved it can be considered for ISTEA funding.

One of the bridges that will be replaced in Baraga County has not been approved for critical bridge selection in Michigan. This year the bridge was submitted for replacement with the ISTEA 1% set aside funds and has been approved. The project funding for these particular bridges makes replacing them much easier. According to Doug Mills, “Without this program we had very little chance of replacing the bridge. It rated high on the county critical list, but did not rate sufficient points to qualify for state replacement funds.”

The bridges to be replaced were both built in the 1920s. One of the bridges is over the Silver River on Arvon Road on the Keweenaw Bay Reservation. It will cost approximately $420,000 to replace this one lane, timber decked railroad bridge. The

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Transportation Technology Transfer Center
Michigan Technological University
When installed properly flatcars can provide an economical solution for low volume bridges.

Railcar bridges offer economical solution

During the past decade, hundreds of railcars have been installed throughout the nation as both temporary and permanent solutions to bridging a gap.

Practical Solution

Railcars can provide an easy and economical solution to hazardous bridges, either temporarily or permanently. A temporary railcar bridge was installed on the Colville Reservation in Washington after a wooden bridge collapsed under the weight of logging equipment. Waiting for available funding to replace the collapsed bridge was not an option in this case. The primary reason for installing the railcar bridge was fire suppression, but the bridge is also used by fish and wildlife people who check the quality of the stream, wood haulers, and recreational vehicles.

Two railcars were welded together side by side and set on wooden timbers level with the road. The railcars themselves are 18 inches high and are met with a small embankment on either side.

The bridge is one lane and logs were used for tire bumpers along the edges. Wayne Krensler, of the Colville Agency, helped install the new railcar bridge. The railcar was chosen "because of the way the structure [of the railcar] was built and the carrying load stenciled on it." He says that although this particular railcar is for temporary purposes, "we do have other cars that could be for permanent use."

Past Inadequacies

At one point, railcars used as bridges was hailed by some but considered poor engineering by others. The reason for the poor engineering rating was the fact that there was very little technical data available to engineers for use in establishing load capacity ratings for railcars used as bridges. This lac

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Railcar bridges continued

...data was a serious drawback when attempting compliance with the National Bridge Inspection Program, which requires load ratings for all bridges in the public highway system, including roads with low traffic volume.

Drawbacks Eliminated

However, research providing new insights on technical data and the availability of high-grade railcars have combined to eliminate many of the drawbacks, thereby increasing railcar benefits.

A report released in 1991 from Arkansas State University studied the present and future usage of railcar bridges in that state and established a database of technical literature, member sizes, section properties, and material strengths, along with the development of a load rating software program for railcar bridges (see Railcar Bridge Report this page).

The Modern Flatcar

Today, agencies wishing to make use of this innovative idea can acquire modern railroad “flatcars” that are released for nonstructural reasons. These flatcars are constructed entirely of welded steel plate and girders. According to Skip Gibbs, a distributor of flatcars out of Redwood Valley, California, many people are not aware that modern steel cars are being used. “There are definite discrepancies in the views of the type of flatcars we use. Our flatcars are modern steel structures, not old wooden cars,” Gibbs says. “We constantly have to overcome the reputation that old wooden flatcar bridges have left behind.”

Gibbs has been marketing flatcars for 10 years and has supplied them to a wide variety of federal, state, county, municipal and private agencies for an equally wide variety of uses. Gibbs says that savings of 30 to 70 percent are typical compared to traditional bridge designs because of several factors:

- installation speed
- length of span
- ease of design
- long life
- low maintenance
- low initial cost

Proven Engineering

New studies have shown that flatcar girders exhibit high torsional strength, bending strength, and stiffness. The light weight of the railcar superstructure allows significantly lower gravity and lateral loading to substructures than many other bridge technologies.

Flatcar bridges have been designed to perform in soils ranging from swamp muck to 17,000 psi laterite and have been used for structures as long as 400 feet and as wide as 100 feet.

According to Gibbs, engineering analysis has shown that two flatcars, properly placed side by side at a design span of 66 feet, can provide AASHTO HS-20 capability, and with slight modification, HS-20 at longer spans is possible and practical.

Many side by side installations handle repeated loadings of 90 tons or more. For example, in Davis County, Utah, a heavy haul road bridge handled 6700 loads at 200,000+ pounds gross for a loading of 700,000 tons and an ore haul road for the Olivine Corporation has handled 11,760 loads at 140,000 pounds gross for a loading of 800,000 tons to date.

Worthwhile Benefits

Connection to any properly designed support structure is simple, effective and allows eccentric loadings similar to those experienced by most practical bridges. The flatcars can be finished off with suitable guardrails, the addition of long-life surface coating, and a wear surface to make a practical, economical permanent structure.

When used for temporary purposes, a flatcar can be easily moved and reused on a future project, thereby increasing its economy.

It is important to note that sometimes a temporary structure’s life is extended indefinitely. If the railcar bridge does not meet AASHTO standards the potential for liability may outweigh the benefits of the solution. Making sure the bridge meets AASHTO standards is the only way to ensure the railcar solution is the best one.
The Skanee Road bridge, located in Baraga County, Michigan over the Slate River, will also be replaced this spring using 1% set aside funding under ISTEA.

**ISTEA 1% set aside**

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other bridge is located on Skanee Road over the Slate River and is one of the most heavily traveled roads in Baraga County and provides access for the Keweenaw Bay Reservation as well. The approximate replacement cost of the steel stringer with a concrete deck is $395,000. The money is allocated for fiscal year '94 and construction is expected to begin in the spring.

Becoming aware of available funding has helped this tribe and county make needed projects become a reality. Cooperation between the two entities has also made the process smoother. Doug Mills acknowledges, "They [Keweenaw Bay Tribe] were a lot of help. Without their cooperation these projects would not happen."

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**TTAP Regional Tribes**

Arapahoe Band of Shoshone Indians
Bad River Band of Lake Superior Chippewa Indians
Bay Mills Indian Community
Box Elder Band of Sioux Indians
Cayuga Nation of Indians
Chehalis Native Indian Community
Chehaw Nation of Indians
Eastern Band of Cherokee Indians
Fond du Lac Reservation Tribal Council
Forest County Potawatomi Community
Grand Portage Reservation Tribal Council
Grand Traverse Band
Haudenosaunee Indian Community
Huron Band of Maliseet Indians
Keweenaw Band of Lake Superior Chippewa
Lac Courte Oreilles Band
Lac du Flambeau Band
Lac Vieux Desert Band of Lake Superior Chippewa
Leech Lake Reservation Tribal Council
Lower Sioux Indian Community
Mashantucket Pequot Indian Tribe
Menominee Indian Tribe
Minnishkeek Indian Tribe
Milwaukee Reservation Tribal Council
Mohican Tribe of Wisconsin
Mississippi Band of Choctaw Indians
Nakoda Nation of Indians
Oneida Tribe of Indians
Onondaga Nation of Indians
Passamaquoddy Tribe Indian Township Reservation
Penobscot Nation of Indians
Prairie Band of Creek Indians
Prairie Island Indian Community
Red Lake Band of Lake Superior Chippewa Indians
Sac and Fox Nation
Sagamok Ojibwe Tribe
Seneca Nation of Indian Community
Seminole Nation of Oklahoma
Sokokis Band of Lake Superior Chippewa Indians
Tahltan Nation of British Columbia
Tarahumara Nation of Mexico
Tecumseh Nation of Indiana
Tewa Nation of New Mexico
Upper Delaware Indian Tribe
Wasco Village Indian Community
White Earth Reservation Tribal Council
Wisconsin Winnebago Tribe

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Tribal Technical Assistance Program
Transportation Technology Transfer Center
Michigan Technological University
1400 Townsend Drive
Houghton, MI 49931-1295
(906) 487-3164

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