Excellence in Action Awards
Iowa State Association of Counties

ISAC Excellence in Action Award Nomination Form

CoSTAR Promoting Possibilities

The ISAC Excellence in Action Award program is a competitive awards program that seeks to identify and recognize innovative county government employees, programs, and ISAC affiliates. Please encourage all county departments to apply.

CRITERIA

- Programs nominated must be **innovative** and do one or more of the following:
  - Offer a new service to county residents, fill gaps in the availability of existing services, or tap new revenue sources.
  - Improve the administration or enhance the cost effectiveness of an existing county government program.
  - Upgrade the working conditions or level of training for county employees.
  - Enhance the level of citizen participation in, or the understanding of, government programs.
  - Provide information that facilitates effective public policy making.
  - Promote intergovernmental cooperation and coordination in addressing shared problems.
  - Provide a model from which other counties or affiliates may learn.
- Nominated individual must demonstrate exemplary service to citizens, staff or stakeholders.

JUDGING

CoSTAR will rate each application based on the following attributes: creativity, innovation, cost savings, replication, leadership, increased efficiency, cooperation with others, and perseverance.

GUIDELINES

- Nominated programs must have become operational after January 1, 2015.
- Individual nominations should reflect the individual actions of the last 24 months.
- Nominations should be made using the application form below.
- A narrative of the county program or individual's actions must be included. Please limit to three pages.

AWARD PRESENTATION

Awards will be presented at the 2016 ISAC Fall School of Instruction held on November 30 – December 2, in Des Moines. Winners will receive a special ribbon to be worn on their name badge. Winners will be recognized on the ISAC website and in a news release sent to statewide media. When appropriate, an ISAC staff member will also attend the board of supervisors meeting to present the award.

QUESTIONS

Contact Robin Harlow, ISAC's Innovation and Research Manager at 515.369.7006 or rharlow@iowacounties.org.

NOMINATION FORM

- Attach a narrative of the county improvement/project/program/individual (three-page limit).
- Return all nominations by **July 1, 2016 (postmarked date)** to:
  Iowa State Association of Counties
  Attn: Robin Harlow
  5500 Westown Parkway, Suite 190
  West Des Moines, IA 50266.
- OR email your application form (containing all the information on the form below) to Robin Harlow.

Please fill out each field completely.

Please indicate nomination type: Individual ___ Program X

Name of individual/program: BRIDGE PROGRAM County or affiliate: BUCHANAN

Name of nominator: Ellen Gaffney, Gary Gissel, Brian Keierleber Title: Board of Supervisors & County Engineer

Nominator's phone: 319-334-3578 Nominator's email: egaffney@co.buchanan.ia.us

ISAC
Iowa State Association of Counties

ISAC Excellence in Action Nomination

Buchanan County Bridge Program

Abstract
Buchanan County is responsible for 259 Federally Classified Bridges on the Secondary Road System. One "average" bridge can almost be replaced per year through federal funding. Realizing federal funds received does not begin to cover the bridge replacement needs, nontraditional solutions have been sought. A program of public, private, and industry partnerships has been developed to replace many of the bridges maintained by Buchanan County. Previously, Buchanan County had been utilizing innovative methods such as Railcar Bridges and Geosynthetic Reinforced Soil (GRS) abutments but this has been taken one step further. A partnership between government, industry and the private sectors was formed to develop more economical methods of repairing and replacing bridges. Three bridge industries including steel, concrete, and timber, have all been represented in developing more economical bridge replacement processes in which novel methods were implemented. Utilizing our greatest assets, Buchanan County developed a process of economically replacing bridges with the existing Buchanan County Secondary Roads Crews. Due to this process, Buchanan County has made significant progress in replacing deficient bridges within our County.

The Need
The efficient movement of goods and services are essential for a sound economy. It is also essential for the safety and security of a community. Bridges are a key component of that system. A Study of the Economic Impact of Closing Low-Volume Rural Bridges, sponsored by the Kansas Department of Transportation, has shown the average bridge cannot be economically permanently closed if it has an Average Annual Daily Traffic (AADT) count over 10 vehicles per day. All Buchanan County bridges now realize traffic over this limit. The dilemma Buchanan County faces is how to fund bridge replacements when the funding does not exist within the current budget. Many counties across the nation are faced with this same dilemma.

The Program
The Buchanan County Bridge Program was initiated to increase partnering opportunities, enabling bridge replacements at a lower cost. Partnering began with the Short Span Steel Bridge Alliance for the Jesup South Bridge. The e-span 140 computerized design system developed at West Virginia University and the University of Wyoming was implemented on this project. A 65 x 40 ft. galvanized steel beam bridge was designed and then built by Buchanan County Secondary Roads Crews on the busiest County road with an AADT of 4360 vehicles. Numerous R-19A (100 year design life) concepts were incorporated, including galvanized beams and rebar, and integral abutments. Additionally, a "bolt-on" galvanized metal barrier rail system was put in place that meets requirements of crash level 3 standards. Construction was completed by County Crews in a very short period of time despite inclement weather conditions. Monitoring and testing has been underway by West Virginia University and Iowa State University to determine the bridge's performance.

Additional partnerships have been created. The Iowa Department of Transportation, the Federal Highway Administration (FHWA) and Buchanan County partnership resulted in the Slattery Bridge construction, utilizing internal curing concrete on "cast on site slabs" that were placed on fabric (GRS) abutments without the aid of a crane. The precast units were maneuvered in place with two hydraulic excavators. Even though this project was contracted due to Federal involvement, it was preceded in design and construction by the Gerstenberger Bridge built with Buchanan County Secondary Road crews. GRS abutments with roller compacted concrete facing on the GRS were utilized in addition to the internal curing concrete and "cast on site slabs."

The Slattery Bridge project made way for a partnership with The Gruen –Wald Company of Tea, South Dakota. The company provided materials to construct a Glue Laminated Timber Bridge near the Frank Lloyd Wright House, called Cedar Rock. This construction demonstrated the use of glue laminated members in composite action with a laminated timber deck. The deck was surfaced with an epoxy surface course and flint aggregates which provide a seal from the moisture and limited friction for the motorist. Buchanan County Secondary Roads Crews constructed this bridge.

Preceding projects success led to additional partnerships, including the Korean Institute of Construction Technology, allowing their new Ultra High Performance Concrete (UHPC) product to be introduced into the US market. In collaboration with the engineers from Korea (who remained here throughout the construction), engineers from the Iowa Department of Transportation, the University of Iowa, Iowa State University, the Federal Highway Administration, and assistance from the Iowa Highway Research Board, a design was developed. Buchanan County built the cement beams and the Hawkeye Bridge, as it is known, was constructed by the County Crews.

These opportunities created scheduling issues for our 3 person bridge crew. Construction was supplemented by contracting with local contractors to do the concrete work and miscellaneous tasks on the railcar bridges. Three railcar bridges were constructed last year using this approach. Additionally, two buried soil structure bridges were constructed. One of these utilized the existing timber piling below the waterline where no decay exists for a dramatic reduction in costs. Recently we partnered with The FHWA, Iowa Department of Transportation, Iowa State University, Iowa Highway Research Board and LaFarge Corporation to complete the first bridge deck overlay in the Western Hemisphere using UHPC. Engineers from France came to assist on the project. In theory, it may take 200 years for salt to penetrate 1 inch of the material while a 1960's vintage concrete slab bridge was strengthened. Buchanan County brought in a local concrete crew to assist in placing the overlay because sufficient county employees were not available. This was due to a current partnership with the US Forest Products Laboratory based in Madison, Wisconsin who funded the materials up to $165,000.00. The construction of a Glue Laminated Timber Bridge on fabric (GRS) abutments is currently being done by the County bridge crew.

Use of Technology
The bridge program is utilizing the entire range of technologies from the repurposing of railroad flatcars to using new products such as ultra-high performance concrete for deck overlays. As technology develops, Buchanan County must be prepared to adapt to it. New, less expensive materials are being developed that can perform better.

Costs
This program has led to many partnerships of entities developing a method to construct more economical bridges. The partnerships continue work on a design using high performance concrete and high tensile steel in which bridge costs may be lower than railroad flat cars. It appears the superstructure and deck costs will be down to $28.00 per square foot of deck area on a 62 foot structure. This allows us to construct a bridge at a cost of $50.00 per square foot which is far less than the current $150.00 per square foot for standard bridges. The railcar bridges alone have saved Buchanan County millions of dollars over the years. Without searching for innovative methods, Buchanan County would not be able to do as many bridge repairs or replacements as have been completed in the past two years. Projects like these develop a more focused work force by having a clear goal with a visible finished product to bring pride to the finished product. Beginning a program of constructing a bridge with local crews today would not be addressed the same as in the past. The costs vary based on the purchasing of new or used equipment while the substructure is often the largest challenge. Historically, a crane is utilized to drive piling. Recent observations showed a hydraulic excavator with a vibratory attachment driving H-piling. We see that as the most practical approach for a county crew such as Buchanan County's. The program has found GRS abutment designs are very simple to construct and will work for some other counties along with being the most economical answer with the equipment requirement being minimal. A backhoe and a hand compactor can be sufficient to construct a GRS abutment. If Buchanan County was to begin a Bridge Program today, equipment needed would include: Excavator (20 metric tons) $175,000; Vibratory Driver Attachment $110,000; Tool Trailer $4,000; Welder/generator $5,000; Plywood Forms $ 3,000; Miscellaneous hand tools /safety equipment $5,000.

Worthiness of Award
This approach has allowed the Buchanan County Bridge Program to complete 11 bridges last year and on track to complete 6 more bridges this year. Any slowdown is due to limited funding. At this rate we anticipate repairing or replacing all Buchanan County bridges with sufficiency ratings below 50 in about the next 5 years. The designs and process has been a popular subject and presentations have been made to County Engineers across the entire country with requests to return and speak again. Buchanan County has increased the safety to its citizens and those who visit, enabling safe passage through the Bridge Program and willingly share lessons learned to others.