

Icosa Magazine

First-Ever International Competition Develops Innovative & Cost-Effective Design Solutions for Safe Passage of Wildlife Over Superhighways

July-September, 2011

Jennifer Cook

Since World War II, roads and highways have spread across our landscape to connect urban and rural communities, drive the economy and fuel an ever-growing population's transportation needs. Yet when it comes to locating and designing these byways, little attention has been paid to the effects on wildlife movement and the integrity of ecosystems.

Now two major trends are increasingly being recognized as experts analyze the effectiveness of North America's roadway systems. The first is that collisions between wildlife and vehicles have doubled in the past 15 years and are a growing threat to both human safety and wildlife, costing Americans \$8 billion annually. The second is that climate change is creating a need for wildlife to move across landscapes, unimpeded, as they seek more normal temperatures, water and other resources being compromised in current habitats.

As a result, both transportation and natural resource agencies are looking at ways to make North American highways safer for drivers and wildlife alike. In response to this emerging priority, the ARC International Wildlife Crossing Design Competition—a Canada-U.S. collaboration including more than 25 government, academic and environmental organizations—was formed in early 2010.

“Our goal for this initiative was to engage interdisciplinary design teams and challenge them to come up with cost-effective solutions that would enable humans and wildlife to better co-exist through innovative engineering and architecture,” explained Nina-Marie Lister, ARC's professional competition advisor and associate professor of urban & regional planning at Ryerson University in Toronto, Ontario. “Through the ARC competition, we hope to usher in the next generation of wildlife crossings, taking what we've learned through existing infrastructure and use new methods, materials and thinking to reduce structural costs, and increase adaptability and ecological function.”

ARC's creators and sponsors chose West Vail Pass on Colorado's Interstate 70 as the design case study for the competition from numerous nominated sites throughout North America. Since the heavily traveled stretch of highway bisects a critical wildlife habitat linkage for a wide range of species—including black bears, cougars, bobcats, lynx, coyote, elk, deer and marten—the site presented competition participants with real and serious problems of animal movement.

Out of 36 submissions, ARC partners short-listed five teams comprised of landscape architects, architects, engineers and ecologists to develop concept designs for a crossing structure that provides safe passage for wildlife across the busy I-70 corridor. On December 1, 2010, the five top teams unveiled their architectural models during the Western Governors Wildlife Committee Meeting in Denver.

The five ARC finalists include: Balmori Associates from New York City; The Olin Studio from Philadelphia; Janet Rosenberg & Associates from Toronto; Michael Van Valkenburgh & Associates with HNTB Engineering from New York City; and Swartz & Jantsma Architects from Amsterdam.

The museum-quality architectural models then went on display at the U.S. Capitol in Washington D.C., where the winning team was announced on January 23, 2011, during the National Academies' Transportation Research Board's Annual Conference. HNTB+MVVA, a New York City design firm, was unanimously chosen by a jury of five leading experts for their use of ordinary materials, such as concrete and other structural materials easy to procure close to any given area. The exhibit finally returned home to Colorado last April for the 2011 Vail Film Festival, where community leaders had the opportunity to learn about the need for Wildlife Crossings in their own backyard.

“The international competition both establishes and inspires a new category of public infrastructure that is both

responsive and responsible to environmental concerns,” said Jared Polis (D-CO), Colorado congressman. “The ARC competition addresses a global problem with a Colorado-based solution that will demonstrate the importance of international cooperation.”

Growing scientific research—including the seminal work in road ecology initiated by Parks Canada—shows the importance of wildlife crossings and their effectiveness at reducing wildlife-vehicle collisions. In 1981, Banff National Park began to upgrade an 83-km (51.6-mile) section of the Trans-Canada Highway in response to growing traffic volumes, collisions and wildlife road-kill. Now there are over 24 wildlife underpasses and four wildlife overpasses from Banff National Park’s east entrance to the border of British Columbia.

The crossings, along with fencing, have reduced wildlife-vehicle collisions by more than 80 percent. As a result, 11 species of large mammals—including wolf, grizzly bear, elk, lynx, mountain lion and moose—have made nearly 250,000 safe crossings (and counting) across these paths. More such projects are underway, including an international public-private partnership established by Parks Canada to monitor wildlife mitigation measures and improve efficacy of these types of projects around the world.

“The work that Parks Canada started nearly 30 years ago has put Banff on the map as a leader in wildlife crossings and will continue to provide opportunities for technology transfer for ARC and other similar initiatives,” said Carol Markham, consul for political/economic relations at the Consulate General of Canada in Denver. She further states, “The ARC competition clearly demonstrates the strong relationship between Canada and the United States and is a wonderful opportunity to underscore the Canada-U.S. partnership as joint stewards of our shared environment.”

Now that the ARC competition is complete, Nina-Marie Lister is still hard at work preparing for the next incarnation of the project, ARC Solutions. While the competition focused on the West Vail Pass area, the applications developed can also be applied to other locations in need of wildlife crossings, explained Lister, adding that ARC’s new phase will strive to implement the design concepts already created through the competition. The website www.ARC-Solutions.org is scheduled to launch late September 2011.

“By installing wildlife crossing structures, whether you’re building new bridges or retrofitting old ones, we are able to preserve the integrity of the whole landscape,” said Harvey Locke, co-founder of the Yellowstone to Yukon (Y2Y) initiative based in Calgary, Alberta, and vice president for Conservation Strategy at the WILD Foundation in Boulder, Colorado. “ARC is about how to do something we know how to do and do it in a more beautiful and cost-effective way.”

For more information regarding the ARC International Wildlife Crossing Design Competition, visit www.arc-competition.com, and for ARC Solutions, visit www.arc-solutions.org. To learn more about the Consulate General of Canada in Denver or the Canada-U.S. partnership in environmental stewardship, please contact Jennifer Cook, Communications & Cultural Affairs Officer for the Consulate General of Canada at (303) 626-0672 or jennifer.cook@international.gc.ca.

<http://www.theicosamagazine.com/wildlife-bridges>