



Project Update

Truck-tested, truck-approved

In September 2019, the Alaska Department of Transportation & Public Facilities opened the new Danby-Wembley Roundabout in Fairbanks. About 17,000 vehicles use the roundabout daily, including large commercial trucks heading to Aurora Drive via Wembley Avenue.

PHOTO COURTESY OF R&M CONSULTANTS INC.

By RACHAEL KVAPIL

The truck trial that tested an early design of the Danby-Wembley roundabout in Fairbanks could be likened to an adult-sized Hot Wheels playset.

The Alaska Department of Transportation & Public Facilities (DOT&PF) recreated the roundabout dimensions, and several major trucking companies brought their biggest rigs to the course. In addition to testing the preliminary design, the truck trial was also meant to put an end to doubts that the largest commercial vehicles could haul through a high-traffic roundabout alongside smaller vehicles.

Designing the roundabout was not a straightforward process. Carl Heim, engineering manager for DOT&PF, said the Danby-Wembley two-way stop-controlled intersection was identified as a problem in 2012 and qualified for funding under the federal Highway Safety Improvement Program. On paper, the preliminary design successfully addressed the right-angle crashes that led to significant injury and loss of property. However, it did not initially provide enough space or proper geometry necessary for the large commercial vehicles that make up a significant amount of the traffic.

"The whole location is tricky," Heim said. "We knew that whatever the design, we were going to need the buy-in from the trucking industry to make it happen."

After revising the initial design, DOT&PF in 2016 brought in R&M Consultants Inc. to assist with that buy-in. No stranger to the modern

roundabout, R&M understood the trucking industry's need for assurance that the Danby-Wembley solution would work for them. To do that, they decided to create a full-scale replica and invite truckers to drive it. The trucking industry supported the idea and dispatched a wide variety of tractor-trailer combinations to the truck trial, including some of the longest combinations used on Alaska's highways.



PHOTO COURTESY R&M CONSULTANTS INC.

To assure the trucking industry that the roundabout could handle commercial vehicles of all sizes, R&M Consultants organized a truck trial and invited truckers to drive a full-sized mockup of the proposed design.

Industry collaboration leads to better design of Danby-Wembley roundabout

"It's rare to take this kind of approach to a project," said Marc Frutiger, senior project engineer in R&M's Surface Transportation Group. "Normally, it's just some drawings or renderings with some color, and then it's built. So, this project is unique in that we needed to see how the design performed ahead of time."

R&M teamed with Kittleson & Associates and Roundabouts & Traffic Engineering to assemble a 1:1 mock-up at the City of Fairbanks Snow Disposal Site. Since the city didn't want them to use paint to outline the route, R&M used field chalk since it was easy to apply and was resilient to wheel tracking. They also partnered with Great Northwest Inc. and placed approximately 250 candlesticks to represent curbs. The team knew documenting the truck trial would be pertinent to respond to future design questions.

R&M understood the value of aerial coverage using Unmanned Aerial Vehicles (UAV) and hired a local Fairbanks company, Aquilo, to document this event.

The truck trial was held Aug. 11, 2016. Trucks showed up around noon and, one by one, drove the course. The UAV recorded each pass, along with several stationary cameras. Frutiger said the highlight was a 150-foot long tractor/trailer, composed of an 85-ton capacity Aspen trailer with a steerable rear dolly brought by Alaska West Express. The largest vehicle of the day to drive the course managed to make it through without a problem. That's when everyone knew this design was a winner.

"The stars aligned on that day," Frutiger said. "And after the truck trial, any concerns people had about trucks going through

the roundabout were quickly resolved by showing them the UAV videos."

Construction of the actual roundabout started in April 2019. Charlie Bohart, DOT&PF's construction engineer, anticipated traffic would be a challenge, given that 10,000 vehicles traveled Danby Road daily with another 7,000 filtering in through Wembley Avenue. He said flaggers did their best to keep traffic flowing through the entire process.

"We knew the problem would be resolved once the roundabout structure was in place," Bohart said. "We also scheduled paving and striping and work on the Johansen Expressway at night so we wouldn't have to close the intersection or turn off the signal lights."

The roundabout was completed in mid-September, and so far, no one has heard any



BUILDING ALASKA

FOR MORE THAN *39 years*

Experts in Resource Development
and Heavy Civil Construction



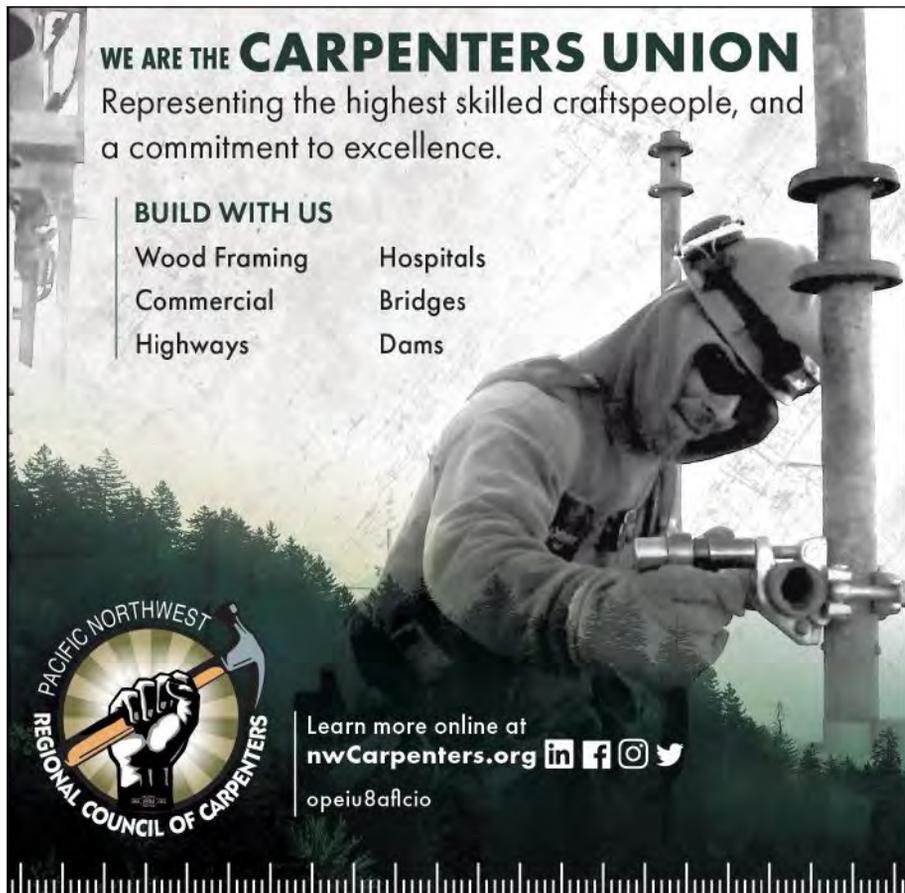
Cruz Construction | Alaska Aggregate Products

negative feedback. Heim said this is a good sign since many Fairbanks drivers are not fans of roundabouts, partially due to misconceptions that they are unsafe. Yet, the Federal Highway Administration claims that roundabouts reduce fatalities by more than 90% with a 76% reduction in injuries, and a 35% reduction in all crashes. When collisions do occur, there are fewer injuries and less property damage because they happen at low speeds and are either rear end collisions or side impacts.

“Roundabouts are about slowing down and politeness,” Heim said “They are about yielding to your fellow road user.”

From a trucking perspective, Jeremy Miller, vice president of trucking operations for Carlile Transportation, said his drivers have had no issues with the roundabout yet. He said there is some concern about the timing of snow removal, now that it’s winter, but they are waiting to see how the process pans out before considering it an issue. 🧢

Rachael Kvapil is a freelance writer living in Fairbanks.



WE ARE THE CARPENTERS UNION
Representing the highest skilled craftspeople, and a commitment to excellence.

BUILD WITH US

| | |
|--------------|-----------|
| Wood Framing | Hospitals |
| Commercial | Bridges |
| Highways | Dams |

Learn more online at nwCarpenters.org    

#opeiu8a1c1o

PACIFIC NORTHWEST REGIONAL COUNCIL OF CARPENTERS



The Code of Excellence

The NECA/IBEW Code of Excellence is our commitment to perform the highest quality and quantity of work in the electrical industry.

It’s who we are.
It’s what we believe in.



NECA/IBEW. MANAGEMENT. LABOR. UNITED.