

Nicholls Kovich Engineering

A small firm fosters client relationships and focuses on real-world concrete bridge designs in the Pacific Northwest.

by Monica Schultes

Located in Spokane Valley, Wash., Nicholls Kovich Engineering is a small consulting firm that focuses on bridge design in the Pacific Northwest, with most of their work being performed in eastern Washington state and northern Idaho. The firm primarily works with cities and counties on local bridge infrastructure projects, but it also consults with precast concrete manufacturers and private entities. In addition to bridge design, Nicholls Kovich Engineering provides bridge inspection services, load ratings, and bridge rehabilitation designs. Although the firm occasionally provides subconsulting services on complex bridge projects, most of its projects involve small or medium-sized structures.

Client Relationships

The Nicholls Kovich design philosophy emphasizes efficient and streamlined bridge solutions, with a commitment to

The Hedlund Bridge over the Kettle River in Stevens County, Wash., has 95-in.-deep single-span, prestressed, post-tensioned concrete girders. The bridge spans 330 ft and is 28 ft wide. Maintaining the sag vertical curve and reusing the previous bridge's center pier were particularly challenging aspects of this project. All Photos: Nicholls Kovich Engineering.

personalized, responsive service for each client. "Our biggest challenge is that we have to wear so many different hats as a small business," says Susan Kovich, owner and principal at Nicholls Kovich Engineering. "On any given day, we might conduct a design review, design a bridge girder, develop a project scope, prepare a cost estimate, or answer construction questions. It is a balancing act, but we have a talented team, and we face those challenges together."

The firm's work with local agencies tends to be 20% inspection, 60% design, and 20% rehabilitation and maintenance projects. Nicholls Kovich Engineering provides bridge inspection and evaluation services for several counties in Washington, including Adams County, Pend Oreille County, and Ferry County. The firm also consults with small municipal entities, often reviewing the jurisdiction's entire

inventory of bridges. "That is valuable because we not only evaluate and monitor structures; we can also support agencies in securing funding for repair or replacement," says Kovich.

The firm understands that clients want to maximize their investments in all types of projects, and that all feasible options should therefore be explored. "When clients are looking for a 75-year minimum service life with limited funding, we really must look at bridge rehabilitation in different ways," says Kovich. "We look at replacement and rehabilitation options out in the field. The perspective of the entire structure is different from the underside of the bridge," she adds.

Background in Prestressed Concrete

Many of the structures designed and monitored by Nicholls Kovich Engineering are constructed with precast, prestressed concrete. Susan Kovich started her career as an engineer working for a PCI-certified producer. Thinking back on her earlier career, Kovich recalls, "I knew little about prestressed concrete and wondered why I didn't learn more in college!" Despite the initial learning curve, she embraced prestressed concrete and gravitated to the concrete bridge industry.

Kovich met Jerry Nicholls on a prestressed concrete girder project and decided to pivot to consulting work in 2002. Today, Nicholls Kovich Engineering maintains a connection with the precast concrete industry, with an estimated 70% of their consulting work involving precast concrete bridge replacements, inspections, and load ratings. In 2025, about 10% of the firm's work involved design and drafting services for local precast concrete producers.





This structure over the Little Pend Oreille River has a 45-degree skew. Nicholls Kovich Engineering provided structural design, hydraulic analysis, and construction management.

"We really understand the prestressed concrete side of things," says Kovich. "It provides valuable perspective to understand the fabrication process, identify potential production issues, maximize efficiencies, and move products efficiently from the casting bed to the jobsite. This inside knowledge leads to more practical designs."

Early in her career, Kovich grappled with the unique geometry of skewed, decked-girder bridges. The layout of the structure—skew, cross slope, and longitudinal slope—and the camber of the prestressed concrete girders could result in vertical misalignment of top-flange edges of adjacent decked girders in the field (also known as the "sawtooth" effect). To resolve this issue, the firm developed a simplified method to calculate bearing elevations of individual girders on a skewed bridge that takes into consideration camber, and cross and longitudinal slopes. In the Spring 2018 issue of *ASPIRE*®, Nicholls and Kovich described this method in an article titled "Practical Solution for Skewed Geometry on Decked-Girder Bridges," which is still relevant today.

Selected Projects

A favorite project in the firm's history was the conversion of an old Union Pacific Railroad bed into the Trail of the Coeur d'Alenes, a paved recreational trail that traverses 73 miles in scenic northern Idaho. The trail includes 36 pedestrian bridges, one of which is

the Chatcolet Bridge, a 3100-ft-long elevated timber trestle structure that spans Chatcolet Lake at the south end of Lake Coeur d'Alene. The firm was tasked with designing the numerous approach spans of the rails-to-trails pathway, which was accomplished using precast concrete slabs at 8% grade to meet challenging safety and accessibility requirements.

Lessons learned in the field on projects like the Trail of the Coeur d'Alenes have bolstered the firm's expertise. "It's so valuable to see how these bridges are actually performing in service," says Kovich. "We can see where deterioration is occurring and anticipate challenges that maintenance crews will face. We bring those lessons into

Nicholls Kovich Engineering designed a new precast concrete panel deck system supported by new precast concrete beams for the rehabilitation of the open-spandrel concrete arch Hatch Road Bridge in Spokane, Wash.



History of Nicholls Kovich Engineering

Jerry Nicholls started his career with the Washington Department of Transportation and then served as the bridge engineer for Spokane County. In 1992, he started his own firm, Nicholls Engineering, to provide bridge design services for local agencies in Washington state.

Susan Kovich joined the firm in 2002, and in 2014 the firm became Nicholls Kovich Engineering, with Kovich taking the reins as principal engineer. Nicholls retired in 2022, and Kovich is now principal and owner. The firm has retained the same four engineers since 2014, and those engineers have more than 85 years of combined experience in the bridge industry. "We are small but mighty," says Kovich. "It may sound cliché that we work well as a team, but it is true," she adds. "Our small business size works well. We get to decide which projects to pursue and focus on our passion for bridge design. I am honored to continue designing bridges, building on the knowledge and mentorship I received from Jerry Nicholls."

our design. For example, by inspecting expansion joints over time in the field, we can create details that will perform better over the long term."

In another notable project, Nicholls Kovich Engineering provided the design of the precast concrete bridge deck for the City of Spokane's Iron Bridge,

a 1911 steel latticed railroad truss that had been abandoned for nearly 40 years. Precast concrete hollow-core slabs spanning between the existing steel floor beams were selected to provide a durable, low-maintenance decking solution. The Iron Bridge is now a pedestrian bridge that crosses the Spokane River and connects to the popular 40-mile-long Centennial Trail.

Some projects have involved emergency situations. For example, in 2023, Grant County, Wash., administrators asked Nicholls Kovich Engineering to inspect large cracks in the abutment of Bridge 202, a 130-ft-long precast concrete I-girder bridge that was constructed in 1989. Kovich describes the findings: "One of the girders was suspended in the air, and we determined that severe scour had removed the spread footing support underneath." To preserve the superstructure, crews jacked up the existing girders and reconstructed the damaged abutment. The county expects the structure to last another 30 years. For more information on this project, see the Concrete Bridge Stewardship article on p. 31 in this issue of *ASPIRE*.

Nicholls Kovich Engineering worked with the Stevens County, Wash., Public Works Department on the Arden Bridge no. 253 replacement project in 2024. The firm provided civil and structural engineering design for the project from initial inspection of failed bearings on a steel bridge to construction of a new concrete bridge designed to a 45-degree skew. The replacement structure is a 109-ft-long single span that incorporates wide-flange

The rehabilitated Hatch Road Bridge concrete arch structure is designed to accommodate higher volumes of traffic and improve long-term durability.



prestressed concrete deck girders that are 39-in. deep. Ultra-high-performance concrete (UHPC) joints were field cast, delivering a durable solution capable of supporting traffic from agricultural and forestry activities.

The firm also led the design efforts for another Stevens County bridge replacement, the Hedlund Bridge over the Kettle River. The post-tensioned concrete bridge replaced a 60-year-old steel-truss bridge. This project featured spliced, precast post-tensioned concrete girders. One challenge involved maintaining the alignment along a sag vertical curve; its resolution required careful coordination of geometry and structural performance. A 200-ft-long post-tensioned concrete girder system was selected to retain the existing center pier. There were five total segments for the two-span bridge. Span 1 is 134-ft long and consists of two segments. Span 2 is 200-ft long and consists of three segments. The segments were spliced together with intentional negative offsets from the tangent span line to form the sag curve. Nicholls Kovich Engineering designed a solution with the spliced bridge girders on different vertical alignments to create the vertical sag curve. The bridge begins at a -10% grade and ends at a +2.7% grade. The low point is within the 200-ft-long span.

Nicholls Kovich Engineering served as the engineer of record for the Hatch Road Bridge project in the city of Spokane, Wash., which addressed deficiencies in an open-spandrel concrete arch structure built in 1919. The project replaced the aging metal

deck with new precast concrete floor beams, 7-in.-thick, full-depth concrete deck panels with UHPC joints, and a modified concrete overlay. The new design improves safety, durability, and traffic flow of this major arterial, which connects the south side of Spokane to U.S. Route 195 and carries more than 8000 vehicles daily. The precast concrete deck elements were designed to minimize weight on the existing structure and support present-day design loads. The bridge was closed for three months and reopened ahead of schedule in July 2022.

Looking Forward

Like many professionals, Kovich is cautiously optimistic about the future of artificial intelligence (AI) in the bridge design and construction industry. "As engineers, we need to use new tools and embrace innovation, but we also need to stay focused on the fundamentals of engineering," she says. "We need to pass that knowledge on to the next generation because those fundamentals are the basis for good decisions."

Kovich believes that the use of three-dimensional models to store quantities, materials, maintenance logs, and other information could transform the bridge construction industry. "I think the exciting part is being able to have a comprehensive record of a structure. We can review not only the design but also materials, methods, and the complete construction documents. It would be helpful to know what type of concrete was used and reference mixture proportions when problem-solving. That would be so beneficial," she says.

The future of Nicholls Kovich Engineering looks promising. "We are going to continue the work that that we have been doing. I am excited for the future and look forward to seeing local agencies awarded additional funding for bridges," Kovich says. The firm has a vested interest in maintaining the relationships with clients that they have nurtured for more than 25 years. Long-standing clients have ready access to the firm's engineers, and they do not plan to change the formula that has worked so well. **A**