

SKELTON CREW

A BUILDING'S STRUCTURAL INTEGRITY DEPENDS ON A STRONG SKELETON AND FOUNDATION SYSTEM. THAT'S WHY CLIENTS RELY ON NORTHLAND CONSULTING ENGINEERS EXPERTISE.



From left: Jon Aamodt, principal partner and founder; Adam Zwak, partner and civil engineer; David Bolf, partner and civil project engineer; Mark Udd, partner and structural project engineer; Tom Rines, partner and structural project engineer.

BY PATRICK LAPINSKI

Over the past two decades, Northland Consulting Engineers has left an indelible footprint on Duluth. As a firm of structural, civil and forensic engineers serving the Twin Ports area, Upper Midwest and even beyond, its expertise is called upon by a wide spectrum of clientele – from architects, construction contractors, municipalities and highway departments to individual homeowners.

The firm's project portfolio is equally diverse. Its engineers have been crucial to numerous projects all over the Northland – hotels and historic restorations, hockey arenas, skywalks and parking ramps, health-care clinics and apartment complexes, police and fire departments,

schools and colleges, underground stormwater tanks, solar installations and energy company pumping stations.

And that's just a partial list.

EXPERIENCE BRINGS SLOW AND STEADY GROWTH

Northland Consulting Engineers has grown slowly and steadily into one of the region's leading engineering firms, and the company's business model is based on the strengths of the five partners who lead it. Northland has 19 employees including five structural engineers and four civil engineers, along with a team of technicians and specialists in 3D modeling and design.



Jon Aamodt, who founded the firm in 1997, is the owner and principal partner. "Decisions are collective," he explained. "We meet as partners. We discuss what we want to do with strategic planning, just like any other business – what our goals are and how we're going to get there as a group." He noted that at the end of the day, the company is really a marriage of people and styles: "For better or worse, you have to get along, and you have to work it out."

These relationships counterbalance individual needs with the company's overall needs, he added, and that's why the firm's operating philosophy is effective. "We need each other, and it's fun. It works out well," said Aamodt. "We're very methodical in our growth – how we've gotten to where we are today and where we're going tomorrow. This business is all about trust and experience."

As structural engineers, Northland Consulting Engineers' work usually occurs in the early stages of a project and is completed long before walls go up and the facades and design become apparent. "That skeleton – and the foundation system and the how-to – is our responsibility," Aamodt explained. "It's a team effort, but our responsibility on a new building or renovation or repair is the skeleton."

THE FAMILY INFLUENCE

Aamodt grew up in Duluth's Piedmont Heights neighborhood, where he attended Lincoln Park Elementary and graduated from Denfeld High School. His dad owns Arrowhead Supply, a kitchen and bath construction supply company in Lincoln Park, and Anderson Furniture as well – which is right across the street from Northland Consulting's Lincoln Park office. As he looks out the window to his father's store, Aamodt reminisced about his younger self. "I used to work with countertops and cabinets, worked in his shop as a kid and decided I wanted to go into construction," he said.

He went to Michigan Technological University in Houghton, Michigan, to study civil engineering with a construction and structural emphasis and then landed a job in Detroit. His career path seemed to have found a trajectory, except for one glitch. "I hated it," laughed Aamodt. Neither the job, nor Detroit, for that matter, appealed to him.

So he returned to Duluth, determined to focus on the design side of engineering. Becoming a licensed engineer requires a minimum of four years' training and experience under a licensed engineer, akin to an apprenticeship. Aamodt began

his practical training with two well-known and respected Duluth engineers: David Krech and Rich Ojard of Krech Ojard & Associates. "David Krech trained me," he said.

Once licensed, Aamodt decided to launch Northland Consulting Engineers LLC, bringing John Woodworth, a fellow Krech Ojard colleague, along for the venture (Woodworth is recently semi-retired). "I was there [at Krech Ojard & Associates] four years and then I went on my own, basically taking on consulting work for smaller architects," Aamodt said. "We started in a little office here in Lincoln Park in 1997, and we've grown roughly a person per year over that time. We owe all of our growth and success to the success of our clients and their projects."

John Gerzina, managing principal at DSGW Architects, says his firm has been working with Aamodt and Northland Consulting Engineers for almost 25 years. "He's kind of been our go-to structural engineer," said



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– PRINCIPAL PARTNER AND FOUNDER JON AAMODT

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– MANAGING PRINCIPAL JOHN GERZINA – DSGW ARCHITECTS

Gerzina. “First off, he’s a very talented engineer. He comes up with some really good, innovative, yet cost-effective solutions and just has very good common sense, which is what we enjoy when working with an engineer. Plus, he’s very personable, very approachable.”

Every architectural firm approaches a project differently and has proprietary ways of going about it, says Gerzina. Being able to adapt to meet the needs of whomever they’re working with, the Northland Consulting Engineers staff can switch gears quickly to effectively serve clients, he noted – which makes them highly successful.

“Jon is very attuned to what everyone in town is doing, but he keeps his information confidential,” Gerzina said, adding that this is a trait that’s earned Aamodt the respect of his clients. “My dad was a cop,” Gerzina added, “and whenever he was asked what was going on, he’d say, ‘It’s not your business.’ And Jon’s the same way. I don’t ask him what my competition is up to, nor does he tell me. I know he does that when other people press him about what’s going

on with DSGW. That’s what we appreciate about Jon.”

ONCE IN A LIFETIME PROJECTS

Partner Mark Udd, the company’s longest tenured structural engineer, came on board in the fall of 1997. His grandfather, an engineer in the forest service for the U.S. Department of Agriculture in his day, regaled Udd with stories of his adventures as he was growing up. “He actually surveyed and laid out the Echo Lake Trail, up near Orr,” said Udd. “He and another guy went through the woods with a tent and a backpack and surveying equipment and laid out the whole trail, staying out in the woods while they’re doing it.”

In addition to his grandfather’s tales, Udd’s interest in engineering grew under the watchful eye of his father, a woodshop teacher and land surveyor for the City of Duluth. “He was always doing building projects around our house or at our campground. That got me interested in learning how to build things and how everything went together,” he said. The combined family influence led Udd to the Twin Cities, where he earned a bachelor of science degree in civil engineering at the University of Minnesota before returning to Duluth.

“I do a lot of educational facilities, schools,” said Udd, who recently completed work on three school

projects in Grand Rapids, including two new elementary schools. He was also involved in remodeling a school in Cohasset that just opened. “They were very excited and very pleased with the final product. It was kind of cool to see them go from buildings that were old, older or not functional to these brand-new, open air, very functional school buildings,” he said.

Living in a city with a significant number of historical buildings can lead to once in a lifetime projects that become career highlights. For Udd, rehabilitating the stately NorShor Theatre and restoring it to its former grandeur was a perfect combination of forensic and structural engineering resulting in a stellar outcome.

“It was challenging, because the original NorShor building was at one time – back in the 1940s – completely rotated 180 degrees for the theater seating,” Udd noted in explaining how the stage, originally facing east, was changed to face west. “A lot of existing conditions were encountered while they were doing the demolition of the building that we had to sort through to make it work for this new seating arrangement, and for revised and re-sloped balcony seating.”

Bringing the structure up to modern accessibility standards included installing two passenger elevators. And engineering the elevator shafts posed an extreme challenge. “We had to cut those through the whole building all the way into the basement; it’s all bedrock underneath there,” Udd said. “They blasted it out to make the original foundation of the building.”

The shafts had to be four feet lower than the basement slab, so after the slab was removed, they had to hydraulically hammer out bedrock in order to get the shaft deep enough. “They spent weeks trying to chip that out of there to

“For me to go through and watch it [NorShor Theatre] be rehabbed back to another beautiful spot for people to use for the Duluth Playhouse was kind of cool to see.”

– PARTNER AND STRUCTURAL PROJECT ENGINEER MARK UDD



get the pit depth we needed," Udd said. "We were literally cutting the shaft right into the middle of the existing building, so there was no way you could [just] blast it out of there."

Udd is proud of his work on the NorShor and this project's legacy: restoring a landmark within the city's HART (Historic Arts and Theatre) District. "In Duluth, that was like the palace of the movie theaters back when my parents were growing up," he recalled with an air of nostalgia. "Then, for me to go through and watch it be rehabbed back to another beautiful spot for people to use for the Duluth Playhouse was kind of cool to see."

"The beloved NorShor Theatre is regaining its rightful place as the Northland's beacon of arts, entertainment and world-class performances," the theatre's website proudly proclaims. And people enjoying the NorShor's opulent elegance – as they attend concerts, classic films, special events and tours or Duluth Playhouse performances – most definitely agree.

TIMBER GURU

Like his colleagues, Tom Rines, a firm partner and structural engineer, is originally from Minnesota and grew up west of the Twin Cities before moving to the big city to work construction right after high school. In 1989, he moved to Seattle and earned his bachelor's degree in civil engineering, with an emphasis on structural design, at the University of Washington. By the time Rines left Seattle two decades later, he was a senior associate for MKA (Magnusson Klemencic Associates), the city's largest structural firm. "The architect decides what the building's going to look like, and we decide how to build it," is how he describes his work.

During his time on the West Coast, Rines engineered a steady progression of projects involving the forest industry – a mainstay of the Pacific Coast economy – and the use of heavy timber in his designs. "I used to be a heavy timber guru out on the West Coast. I did a lot of destination resorts and things all up and down the mountain states. That was kind of my thing when I was at MKA," said Rines. So shortly after he started at

PROJECT PHOTOS COURTESY OF NORTHLAND CONSULTING ENGINEERS.



St. Luke's Sports & Event Center in Proctor.



Denfeld High School in Duluth.

Northland Consulting Engineers, it was right up his alley to design the new U.S. Forest Service headquarters in International Falls. "It was fun, because we did a lot of big, heavy exposed timber and connections and flying beams," he said.

Cross-laminate timber (CLT) use is more prevalent in Europe, which is ahead of the curve when it comes to wood design, Rines added. These prefabricated, large-scale, solid-engineered wood panels are very strong, yet lightweight. Since CLT is fast and easy to install, it also provides design flexibility while resulting in a lower environmental impact and less on-site waste. It's a growing trend that he would like to bring to Duluth for Northland Consulting Engineers' clientele.

Rines is constantly evaluating industry trends to stay current. He noted that structural engineering is unique in that materials like steel are the same here as in they are in California or Europe. "Even though we're in Duluth, which a lot of people



Northland Country Club in Duluth.



53 Business Center in Duluth.



“Even though we’re in Duluth, which a lot of people consider a small town in northern Minnesota, with our capabilities and technology, we could be working on projects anywhere in the world.”

– PARTNER AND STRUCTURAL PROJECT ENGINEER TOM RINES

consider a small town in northern Minnesota,” Rines said, “with our capabilities and technology, we could be working on projects anywhere in the world.”

THE “PUBLIC OFFICIAL HAT”

David Bolf, firm partner and lead civil engineer, manages a staff of seven engineers and technicians. Originally from Duluth, he received his civil engineering degree

from North Dakota State University. He started his career at the Becker County Highway Department in Detroit Lakes, designing and inspecting county highways. In 1997, he moved back to Duluth and worked under David Salo at Salo Engineering for 15 years. There he learned the duties and role of a city engineer and municipal engineering. The big differences between what Bolf does in the civil department and



“This pipeline is like an artery to the city. It collects all the sewer from neighborhoods and businesses and conveys it down directly to WLSSD.”

– PARTNER AND CIVIL PROJECT ENGINEER DAVID BOLF



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the structural department is that he frequently wears the "public official hat." That's because a large part of his role is dealing with the public – municipal entities such as city councils, planning commissions and utility commissions, where he spends a lot of his time navigating the complex environment of policies, procedures and regulations as they relate to, and affect, design standards.

On the civil engineering side of the business, Northland Consulting Engineers has an array of services that focus on water mains, sanitary and storm sewers as well as anything to do with roads and ditches. "Our clients fall into a few different categories; one would be governmental," Bolf explained. "We've worked for the City of Hermantown, various townships, the City of Duluth, City of Superior, MN DOT [Minnesota Department of Transportation], St. Louis County and Lake County." The firm supports architects with site development and grading plans for new projects, be it a gas station, hotel, bank, clinic or grocery store. Additionally, it works directly for developers and industrial customers in the mining and pipeline sectors.

Bolf, under contract to provide engineering consultation to the City of Hermantown, is particularly proud of his involvement on the Hermantown Trunk Sewer Spur project, a sanitary sewer that



Sherwin-Williams Paint Store in Duluth.



Voyageurs National Park Headquarters in International Falls.



Underground stormwater treatment chamber at Capstone Apartments in Duluth.



Mora Elementary & Wellness Center.



Essentia Duluth Heritage Center.

runs through the heart of Hermantown. "This pipeline is like an artery to the city," he said. "It collects all the sewer from neighborhoods and businesses and conveys it down directly to WLSSD [Western Lake

Superior Sanitary District]. The system provides sewer service to existing residential neighborhoods that were previously on septic systems, increasing the growth of residential developments in Hermantown."



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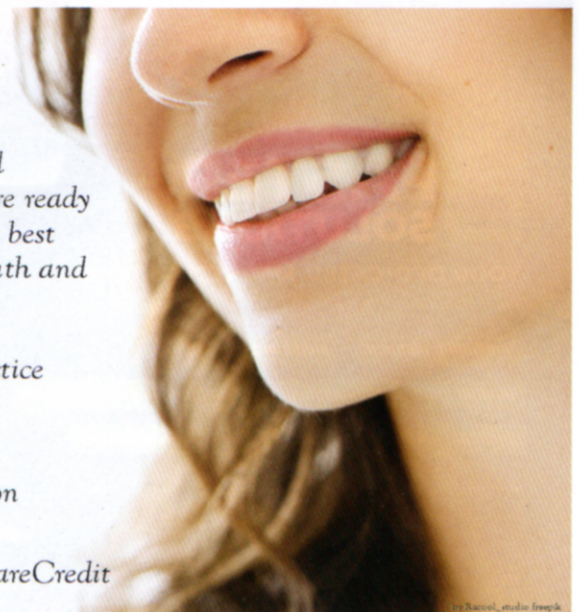
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“My favorite type of project is definitely utility and municipal work – doing roads and utilities.”

– ADAM ZWAK – PARTNER AND CIVIL ENGINEER

UTILITY AND MUNICIPAL WORK

Adam Zwak has always had an interest in the convenance of water. “You know – when you’re a kid playing around the water and sand, and stuff moving around,” laughed Zwak, “That always kind of interested me.”

Zwak grew up in the Lakeside neighborhood. Not looking to stray too far from family and the city he calls home, he enrolled in the civil engineering program at the University of Minnesota Duluth. As he neared completion of his academic training, Zwak began an internship with Northland Consulting Engineers, and upon graduation in 2013, he was added to the company’s roster of civil engineers. So that childhood interest in water and sand evolved, naturally, into his profession. “My favorite projects are definitely utility and municipal work – designing roads and utilities,” said Zwak.



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“They’re very responsive, whether it be an emergency situation ... or if we need to do some critical thinking with design considerations.”

– PRESIDENT SHANE JOHNSON – JOHNSON WILSON CONSTRUCTORS

As a Duluth native, he understands the inherent construction challenges in this area, especially due to its pervasive bedrock. But he enjoys the fact that a new project is oftentimes completely different from the previous job. “You can go five feet in one direction, and ledge rock can be 20 feet deep. And the next five feet over, it’s just below the surface, a sheer cliff,” he explained. “It’s challenging when you’re burying new

utilities or exposing existing utilities.”

Last year, Zwak became a partner – a testament to his abilities in a company that sets a high bar for performance.

“VERY RESPONSIVE”

President Shane Johnson of Johnson Wilson Constructors, says his firm has maintained a mutually collaborative relationship with this firm from the beginning. “It

seems like they’re always available if we have any questions or anything comes up,” Johnson said. “They’re very responsive, whether it be an emergency situation where we need some structural help, or if we need to do some critical thinking with design considerations for value engineering. They’ve always been there, and they’re always willing to listen and work with people.”

“I think what’s important about us as a little company – and I mean this sincerely – is that everybody here really cares deeply about what they do and really loves it,” said Aamodt. “We do it for relationships with our customers – not just the partners, but the whole staff.” **D**

Patrick Lapinski is a freelance writer who grew up in Superior.

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