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The American Society of Civil Engineers

Civil Engineering Alaska

The Quarterly Newsletter of the American Society of Civil Engineers Alaska Section

ASCE ALASKA SECTION

Quarterly Highlights

Recognizing Contributions of our Members

While visiting ASCE headquarters last fall I had the opportunity to learn more about the history of ASCE. Touring the office at 1800 Alexander Bell Dr. in Reston, Virginia gave me a glimpse into a rich history dating back to 1852. Flipping through the pages of the early membership log books dating back to the early 1900's I was reminded that Civil Engineers have turned to ASCE to be a part of an organization that provides value for their professional advancement, advocates for all stages of infrastructure development, and protects the health, safety, and welfare of the public and environment for over 168 years. Reading the names of those early members and their member grades, I was also reminded that ASCE's outstanding reputation as a leading infrastructure organization is made possible only by the contributions of our members.

During my visit at ASCE in Reston one of the meeting sessions I attended was *Leadership in the Age of Distraction* which was presented by Gerry Galloway, Ph.D., P.E., Dist.M.ASCE. The presentation focused on the key attributes of effective leadership and the best practices recommended by some of the most engaging leaders in modern U.S. history. Gerry himself served as a Brigadier General in the U.S. Army before retiring after 38 years and moving on to a career with the USACE and taking on an Associate Professorship at the University of Maryland School of Public Policy. One of the key portions from his presentation that resonated with me was when he spoke about his friend, General Colin Powell's 13 Rules of Leadership. Rule #9 asserts that people need recognition and a sense of worth as much as they need food and water.

Rule #9: Share Credit

Although I think the assertion may be a physiological stretch, I do believe that sharing and recognizing the outstanding contributions made by our members will lead to a more vibrant, healthy, and successful organization. This first edition of the ASCE Alaska Section's quarterly newsletter, and many more to come, is meant to do exactly that. **Share Credit.**

Cheers,

David Gamez, P.E., M.ASCE
President—ASCE Alaska Section ('19-'20)

Port of Juneau Cruise Ship Berths—See Page 2

Photo: PND Engineers, Inc., circa. 2017

Infrastructure Spotlight

Port of Juneau Cruise Ship Berths

Photo: PND Engineers, Inc., circa. 2017

The City and Borough of Juneau Docks and Harbors Department (CBJ) contracted with PND Engineers, Inc. (PND) to design two new cruise ship berths to accommodate the post Panamax cruise ships projected to berth in Juneau. PND provided planning, public involvement, surveying, geotechnical investigations, permitting, final design, bid phase support, contract administration and construction inspection services for this multi-phased waterfront project in Juneau.

With the introduction of larger cruise ships into the worldwide market, ports have responded by expanding their port facilities. Southeast Alaska is no different. This rugged region is on a popular itinerary for the cruise industry and Alaska's capital city, Juneau, is the central port-of-call for the Alaska cruise itinerary. To accommodate the frequency of larger ships, Juneau developed and constructed the largest cruise ship berth project in Alaska state history.

Juneau is located in a steep mountainous region in Alaska's inside passage. The remote and awe-inspiring scenery which attracts visitors from around the world also presents challenges for design and construction of marine transportation facilities. PND worked closely with CBJ to develop creative and viable project alternatives to accommodate the unique site conditions of the downtown Juneau waterfront area. The selected concept consisted of two independent, floating concrete pontoons that accommodate passenger transfers from the vessels through the 25 foot tide cycle. The south pontoon measured 300 feet long by 50 foot wide and the north 400 feet by 50 foot wide. The combined length of both berths is 2,100 feet and support two ships with overall lengths of 1,063 feet and a gross tonnage of 144,000 tons each.

The cruise ship berths serve as the marine gateway to the downtown core of Juneau

PND worked closely with the CBJ and the cruise industry to develop several design project alternatives. The preferred alternative incorporated two floating concrete pontoons as the centerpiece of each berth. The final site location provided unique and difficult structural design challenges since all access, mooring, and breasting structures were located in deep water with shallow overburden and steeply sloping bedrock conditions. The location was chosen to minimize impacts to the existing adjacent waterfront operations including a fish processor, seaplane base and transient vessel moorage. Pile foundations were determined to be the most economical method for restraining the floating berths in the sloping bedrock and shallow overburden conditions at the berth locations.

PND developed a design using 179 steel pipe piles which were incorporated into twenty-four independent and unique structures to support the two facilities. The two berths each include a 10,000 square foot timber and steel approach dock, a 160 feet long steel vehicle and pedestrian access bridge, a concrete pontoon and a string of mooring and breasting dolphins. Larger pile diameters were required to accommodate the long piles, with unbraced lengths of over 100 feet in some locations, under high tension and compressive forces.

Since all access, mooring, and breasting structures are located in deep water; a pile supported solution was the most economical method for design and construction of the floating berths. PND developed this design using various diameter pipe piles in unique structures to support the two cruise ship berths. Pile sizes ranged from 24" x ½-inch wall to 48" x ¾" wall pipe piles and pile lengths varied from 100' to 240' long. A variety of pile tips were incorporated to optimize project costs and adapt the driven pipe piles to specific site conditions. SPIN FIN® pile tips were used on piles with high tension loads and moderate overburden depths. Where there was insufficient overburden, pre-tensioned rock anchors were used through the center of the driven piles. Where a full-moment connection was required in shallow overburden, rock-socketed pipe piles with rock anchors were used to support the deeper water structures. The water depth at the face of the berth ranges from -60' to -100' (MLLW).

The project team understood the existing, waterfront usage and strove to protect these areas for continued, future use. Using steel pipe piles to position the cruise ship berths offshore of the existing waterfront pierhead line; small vessels including work boats, pocket cruise vessels, fishing boats, and float planes still maintain access to the existing waterfront and waterfront businesses operating near downtown Juneau. The existing working waterfront compliments the new cruise ship berths which have added value to the entire downtown corridor.


Photo: PND Engineers, Inc., circa. 2017

TEAMWORK

Construction Year

2017

Owner

City & Borough of Juneau Docks and Harbors Department

Designer

PND Engineers, Inc.—Juneau

General Contractor

Manson Construction

Recognition

2018 ASCE Outstanding Civil Engineering Project Award

Life Member Spotlight

Remembering Dale Nelson, P.E., F. ASCE

Growing up in Washington, Dale worked at his parents' logging and sawmill business as well as at his grandparents' cattle ranch. Completing his degree in Civil Engineering, Dale realigned his dream and moved to Alaska, where he worked for the U.S. Army Corps of Engineers at Fort Richardson. Soon after, Dale married Elaine, and they were blessed with two children: Garth Nelson, a registered civil engineer, and Lesa Zimnawoda, an environmental scientist.

Committed to strong family values, Dale was a strong role model for Anchorage youth, teaching positive work ethic, compassion, and community involvement, and a stalwart proponent of young engineering professionals, providing powerful mentorship and advocacy. He distinguished himself as an active and influential member of ASCE, assuming leadership responsibility within ASCE beginning in 1971, serving all positions within the Board of Directors of the Anchorage Branch and the Alaska Section, and as a Regional Governor and Director. In October 1999, Dale was elevated to the ASCE Fellow status and he became a life member in 2009. Throughout his career, Dale was admired and well respected by the engineering community he so passionately served.

Deliver value to our members, advance civil engineering, and protect the public health, safety, and welfare.

Dale Nelson Memorial Civil Engineering Scholarship Fund

In his honor and memory, Dale's family established the Dale Nelson Civil Engineering Memorial Scholarship, which is currently gathering funds through the University of Alaska Foundation in a holding account. Current funding has reached $22,000, and it is hoped that the $25,000 level needed for an endowed scholarship will be reached soon.

Your Financial Support

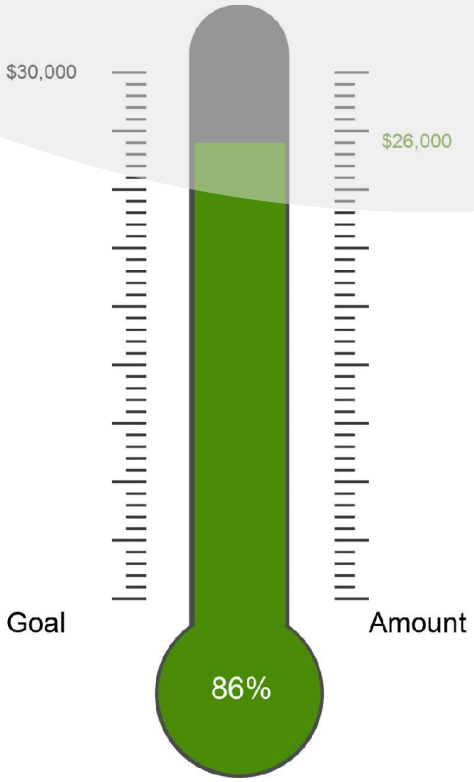
If you are able to contribute, you may do so online (https://engage.alaska.edu/), select "Other" as designation, and write "Dale Nelson Memorial Scholarship Fund" in the comment section), by check (checks payable to "University of Alaska Foundation" and write "Dale Nelson Memorial Scholarship Fund" in the memo section), or by wire transfer (contact the University of Alaska Foundation at 907-450-8030 or foundation@alaska.edu for details). Checks may be mailed to:

University of Alaska Foundation
2025 Yukon Drive 1815 Bragaw St., Ste. 203
Fairbanks, AK 99775

Or

University of Alaska Foundation
PO Box 755080
Anchorage, AK 99508

Dale Nelson Memorial Civil Engineering Scholarship Fund Endowment



SUSTAINING SUPPORTERS

Opportunity to become a sustaining support of the ASCE Alaska Section will be open after the release of this 1st edition of Civil Engineer Alaska. Your support will help advance the following activities:

- **Dale Nelson Memorial Civil Engineering Scholarship**
- **Alaska Infrastructure Report Card**
- **Recognizing Civil Engineering Projects of Historical Significance**
- **Dream Big—Engineering Our World K-12 Outreach Efforts**
- **Annual Legislative Fly-In**

Your company logo and job opportunities with your company will be featured in this newsletter, which will be shared with our statewide membership, industry leadership, and our partner organizations via digital and social media.

Interested in supporting State-Wide ASCE efforts?
Email AlaskaASCE@gmail.com for more Infomation

Student Member Spotlight

Future Civil Engineer from the University of Alaska—Anchorage

Name: Jhon Landicho

Age: 29

Grade: Senior Civil Engineering student at UAA

Hometown: Batangas, Philippines

Year you became a member of ASCE: 2018

Describe why you joined ASCE: I wanted to be able to connect with individuals in the engineering field and I believe the best way to do that is by being a part of ASCE. Also, enhancing the resume doesn't hurt either.

Describe a little bit about yourself and why you chose Civil Engineering as a major: I really enjoy mathematics and liked how civil engineering applies concepts from it and physics to real world problems. In 2012, I attended the University of Alaska Anchorage (UAA) as a civil engineering student but had to stop two years into the program because my wife, Colleen, and I had our first child, Elizabeth (Elle). Two and a half year later, we decided that I would continue my education and now I am on track to graduate in spring 2021. Throughout my second stint at UAA, I got involved with AISC Student Steel Bridge Competition and am leading this year's bridge as Captain.

Describe your involvement in the community: I have volunteered at UAA STEM Day and UAA Halloween Fun Night with ASCE UAA. I also volunteer with my church; we hold clothing drives and do different outreach events for individuals in need.

My favorite community/ASCE project was: the AISC Student Steel Bridge Competition, for the following reason: for the challenging, structural aspects that the competition provides students. This competition helps me think about real-life applications of structural modeling, project management, fabrication, and working on a team to produce a finished project.

I have set the following goals for myself for the next

1 year: Having my wife and my's official church marriage in the Philippines, win the 2020 AISC Steel Bridge Competition in the Pacific Northwest Region, and pass my fundamental of engineering (FE) exam.

5 years: To get my Master's in Structural Engineering and have my 3rd child (wife says two is enough).

My parents (or other individual) have inspired me to: My children inspire me to do better every day. I believe that if you educate yourself, you educate your whole family. I want my children to not just follow my footsteps but make them bigger; attend college, be an active church member, and do better.

My favorite civil engineering course is, or has been: Structural Analysis has been my favorite CE course because of the complex concepts that were covered. This course uses concepts I have learned in previous courses and coupled with my steel bridge involvement, I can now see the correlation of classwork to real-world situations. Structural Analysis was also the turning point of why I wanted to focus on structural engineering.

My favorite extra-curricular activity is, or has been: Spending time with my wife and children. I have a three-year-old daughter named Elizabeth (Elle) and a seven-month-old boy named Dominic. They have been my motivation and my energy to move forward.

The most challenging thing I have ever experienced is: Juggling school work and taking care of my family. There was a large learning curve with my first child, and I took off time from school to focus on family. Now, with my second child, I learned a few tricks on finding a work-life balance but I'm always open to more suggestions.

My greatest accomplishment to date has been: Having a family and being there for my children. I want to be the very best dad I can be and am so proud of my children and family already; I wouldn't trade it for the world.

My ideal 1st Job in Civil Engineering will be: To focus on structural engineering and continue to expand my knowledge base. I am very interested with the structure of buildings and bridges, especially when I live in a seismic prone area such as Alaska. My ideal work environment would allow me to be onsite and see projects develop firsthand, with a mix of design work. My hope is to never stop learning and challenging myself as I further on my career as a civil engineer.

Members Activities

Anchorage Branch Annual Golf Tournament and Fundraiser

Each year, the Anchorage Branch provides several exciting events designed to bring ASCE members and non-members together. One event the Anchorage Branch is particularly proud of and is thrilled to showcase to members across the state is our Annual Golf Tournament and Fundraiser. This event offers a great networking opportunity for individuals, groups, business or corporate sponsors to support an important cause.

JOB OPPORTUNITIES

Anchorage

HDR (2525 C St. Suite 500)

- **Roadway Designer/EIT**
- **Transportation/Environmental Planner**
- **Senior Civil Construction Inspector**

Apply at: https://www.hdrinc.com/careers

The 2020 event will mark the 24th year the Anchorage Branch has hosted the tournament. Each year being highly successful and well-attended, and we trust enjoyable for all the golfers. Our motto is, "A day on the links for a good cause - what's not to love?"

This past year 52 golfers (or 13 teams) took to the greens to test their skills against the challenging conditions of the Creek Couse at the Moose Run Golf Club; located in beautiful Arctic Valley, just north of downtown Anchorage. Each team competes for the lowest team score for 18 holes in a best ball scramble format. After a morning of golf, everyone was treated to a delicious marinated chicken teriyaki and rice lunch. This past year, our caterer Eli's Island Kine Grind, LLC once again did not disappoint. The luncheon also includes the awards ceremony, announcement of the day's contest winners, and raffle giveaways.

The proceeds raised from the tournament go towards scholarships for graduating high school seniors in the Anchorage area. The scholarships are intended to reward students who are interested in pursuing a career in engineering and have shown excellence in their academics, extracurricular activities and community involvement. This past year the golf tournament raised more than $3,700 from our benevolent corporate and individual sponsors.

It is the vision of the Golf Committee to host this annual event for our members and guests in a pleasant, comfortable, and semi-competitive environment. Feedback we've received indicates this vision is a reality each year. Please contact Doug Simon, P.E., M.ASCE, at dsimon@hdlalaska.com for additional information or how to register for our 24th Annual Golf Tournament and Fundraiser on Tuesday, July 14, 2020.

UAF Student Chapter

The UAF Student ASCE Chapter wrapped up a busy semester. It kicked off the school year collecting pallets for the annual Starvation Gulch bonfires. Chapter Vice-President Samuel Mitchell headed up the effort and with the assistance of fellow students gathered wooden spools, shipping crates, and hundreds of pallets. The final design, a larger-than-life D11 bulldozer, was a crowd pleaser and easily won the best designed bonfire, as well as giving the highest flame award.

In October, a handful of members assisted at the Boys and Girls Club Halloween Party. Additionally, the chapter helped with various school tours of the engineering facility. The Steel Bridge team opened their shop up to give the young students the opportunity to assemble a past year's bridge and the Concrete Canoe members demonstrated concrete compressive tests used in designing this year's concrete canoe mix.

A highlight of the chapter's semester was the annual Ice Arch Competition. We were excited to see multiple designs submitted, something that has not occurred for the past few years. The winner, selected by a panel of structural engineers from the community, was Juliana Rivera, a mechanical engineering sophomore who is also very active with Steel Bridge. We look forward to seeing her design of a helical-style ice block arch in front of the Duckering building next semester.

At the end of the semester the ASCE and Associated General Contractors (AGC) student chapters teamed up with the local AGC branch to bring the 2nd annual AGC Meet-and-Greet to campus. The event hosted around a dozen engineering and contracting companies from the community for a session of mingling and speed interviewing. We received positive feedback from both the industry as well as the students and hope to continue this event annually in the future.

UAA Student Chapter

UAA had a busy fall 2019 semester. On top of civil engineering classes, we hosted booths at a variety of STEM and K-12 outreach events around Anchorage, showcased a 'spooky' steel bridge at UAA Halloween Fun Night, and designed a new steel bridge for this year's AISC Student Steel Bridge Competition.

At UAA's 2019 STEM Day, held annually in October, in the ConocoPhillips Integrated Science Building (CPISB) on UAA campus, ASCE UAA hosted a cantilever beam booth. K-12 students were tasked with designing and constructing the longest cantilever beam and holding various weights on the end of it. However, the beam could only be made out of 2x4 LEGO bricks with beam height and weight design constraints. Many creative designs were constructed and tested (and in some cases, retested!). Layering bricks in a perpendicular pattern seemed to work well for many of the young, future engineers. One student even turned their beam 90 degrees (so the studs were on the side) and achieved a good deflection without rupturing the beam. Over 1000 visitors stop by the event and no LEGO bricks were harmed in the process.

UPCOMING ACTIVITIES

Anchorage

- **ASCE Anchorage Branch Luncheon (pres: Eielson AFB South Loop F-35 Operational Beddown)**
  1/21—Anchorage Moose Lodge (11:30am-1pm)
- **YMF/UAA AutoCAD Civil 3D Crash Course**
  1/28—UAA EIB 401 (5:45pm-8pm)
  RSVP at http://uaa.campuslabs.com/engage/event/5359676
- **2021 Alaska Infrastructure Report Card Kick-Off**
  1/30—Lounsbury (5300 A St.) (11am-1pm)
  Email: d.gamez@lounsburyinc.com
- **E-Week Discover Engineering! (K-12 Event)**
  2/22—Loussac Library (10am-3am)
  Email: anceweekstudentcomps@gmail.com
- **ASCE Anchorage Branch Annual Recognition Luncheon**
  4/24—UAA (Room TBD) (11:30am-1pm)

Juneau

- **ASCE Juneau Branch Luncheon (pres: ASCE Infrastructure Report Card)**
  2/5—Ramada Hotel TK-McGuires (11:30am-1pm)
- **APDC Legislative Fly-In Lunch & Learn**
  2/6– Capitol Building Education Committee Room (12pm-1pm)

Matsu

- **ASCE Matsu Branch Luncheon (pres: Lake Louis Boat Launch)**
  2/12—Matsu College Rm JBK 128 (12pm-1:15pm)
- **E-Week Classroom Presentations (K-12 Event)**
  2/17-2/21—Matsu locations TBD (Presenters Needed)
  Email: mcoburn@hdlalaska.com
- **ASCE Matsu Branch Luncheon (pres: 404 Permit Consultation)**
  3/1—Matsu College Rm JBK 128 (12pm-1:15pm)