



A4LE ALASKA CHAPTER
2016 LEN MACKLER AWARD
DENA'INA ELEMENTARY SCHOOL
PROJECT NARRATIVE

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Design Narrative Executive Summary

DENA'INA ELEMENTARY SCHOOL



Overall goals and outcomes of the project

The Knik community, ten miles from the nearest town, is one of the fastest growing areas in the nation. Set in a beautiful, boreal birch forest and drawing from the color and natural materials of its raw surroundings, Dena'ina Elementary is aptly named for the indigenous Athabascan people of nearby Cook Inlet. In conjunction with its new neighboring middle/high school, Dena'ina Elementary creates a learning campus that accommodates the student population spike and provides an important community gathering center in this remote area.



Functionally, Dena'ina Elementary improved an existing school prototype. A series of intensive workshops and listening sessions with the school district, maintenance staff, and community produced a collection of renewed typologies resulting in a 21st Century learning environment. Guiding design goals included: simplifying exterior massing, zoning for community uses and operational hours, maintaining a dynamic central gathering area, introducing natural light into all educational settings, establishing a secure and safe entry sequence, enhancing passive site observation, and creating a high-performance, energy-conscious school.



The school is organized into three primary zones: a classroom zone with southern exposure, a shared program zone bordering the northern edge, and a multi-use social gathering zone in between. Flexibility is built into every room – doing more with less space, maximizing the budget, and making the space work harder. Common areas allow for customized learning and community gatherings.

Detailed elements are kid-friendly and offer extensive exploration of scale, natural light, color, and transparency. The simple primary color palette carries through from the playground equipment to the windows, carpet, furniture, collaborative learning nooks, and artwork. The colored glass and clerestory windows activate the interior, adding brightness and fun for students, even during the dark winter days.

By meeting the community's needs, upgrading the prototypical learning environment for contemporary Alaska schools, and integrating building and site into a seamless community campus, Dena'ina Elementary advances Alaskans and Alaska design.

Dena'ina Elementary Guiding Principles

Healthy Learning Environment

Safety and Security

Community

Efficient and Maintainable

The Environment

The Future

Effective, Sustainable Design

Core Programming Concepts: *Maximize Learning Opportunities + Embrace the Community + Create quality environments + Accommodate future changes & sites + Promote Health and Wellness + Enhance safety and supervision + Be welcoming to students, staff & visitors + Be flexible and adaptable + Support current directions in elementary education + Student-centered learning + Multi-sensory stimulation + Multimedia program delivery + Collaborative working/learning environment + Project-based learning + Active/exploratory curriculum + Authentic, real-world context*

Scope of Work and Budget

Project parameters and challenges

Dena'ina Elementary School is a prototype elementary school, intended to provide a flexible elementary school format that can be implemented on additional school sites, as the school district meets the growing population of the surrounding area.

The concept is based on the latest elementary school in the school district. The intent has been to learn from the prototype, reinforcing the elements that have been successful, and providing improvements to create a warm, welcoming school that works hard and is flexible, adaptable, and efficient.

**Ribbon-cutting ceremony: https://www.youtube.com/watch?v=t_QIA22Dz3s*



Prototype 2.0

*"Take what's good, make it better."
This was the directive to the design and planning team for Dena'ina Elementary School. Dena'ina re imagined a prototype school as a series of proto-parts to implement on future school sites. The proto-parts couple the core programming concepts of a 21st Century school with a school design that responds to its unique Alaska environment, its site, and specific community identity and goals.*

One size does not fit all: The intent was to create a school that could be adapted to unique sites throughout a district that spans nearly 25,000 square miles of diverse sub-arctic micro-environments. **The Challenge:** Dena'ina Elementary is about 80% smaller than the original prototype, based on State of Alaska Department of Education & Early Development funding allocations. The Educational Specification, developed in collaboration with the design concept, focused on creating a highly functional learning environment to support young learners, while targeting three primary targets for area reductions: classrooms (smaller student population), gross area, and a general tightening. **The Result:** Through creative collaboration with the educational planners and designers, engineers, and School District, Dena'ina created a new scalable model for district elementary schools. The final cost of \$16,000,000 was 13% below the \$18,400,000 construction budget.

PROTOTYPE	AREA	CAPACITY
MACHENTANZ	53,000 SF	534 STUDENTS
DENA'INA	44,000 SF	400 STUDENTS

AREA DIFFERENCE

GROSS REDUCTION	+/- 2,000 SF
CAPACITY REDUCTIONS	+/- 5,000 SF
GENERAL REDUCTIONS	+/- 2,000 SF

Community and Stakeholder Engagement:

Planning and design response: Creating a sense of ownership

In 2010, the voters in the Matanuska-Susitna Borough approved a \$214,000,000 bond to fund schools and invest in its future. To maintain transparency and a connection with voters, stakeholder interests were represented in a series of inclusive planning workshops, and the design team presented concepts for open discussion at both Assembly and School Board stakeholder meetings. Detailed renderings were shared freely with the community to give them a sense of ownership in their investment. The design now allows the school to serve members of the community as well as its student population year round for maximum value.

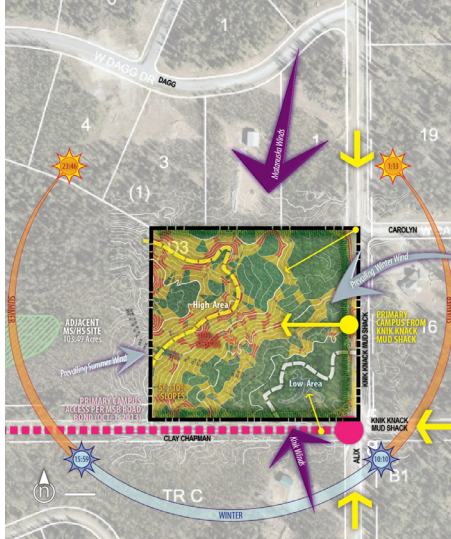
Planning and design response: Using community and school system assets

Before proposals were submitted, the School District held an open dialogue and informational session with the teachers, principal, and staff to provide invaluable feedback on what worked and what could be improved on the existing prototype. Along with a thorough analysis and capture of the desired existing prototype elements and a series of design-team-led tours of existing schools, the team used this information to create the priorities, guiding principles, and key design elements for the programming and design response.

Planning and design response: Fostering Community, Connections, & Local Workforce

Ten miles from town, Dena'ina and its neighboring middle/high school provide an important community center for the newly developing, remote Knik community. The school's heart is an open, bright community-hall gathering spaces, a flexible multi-purpose media center, a flexible gymnasium and performance stage, and inclusive playground and outdoor gathering spaces. In a community where homes are spread across miles, the school creates a much-needed place for neighbors to connect. The design response also allows for warm natural light and color in every room, further enhancing the welcoming, community-building nature of the facility and inviting families and residents in to use the asset.

An adaptable floor plan, flexible rooms, and re configurable furnishings allow for collaborative teaching, individualized education, and project-based programming that will allow young learners the opportunity to explore new subjects and keep an excitement for learning. The School District has invested heavily in Alaska-specific workforce education facilities for higher grade levels, and Dena'ina is intended to help nurture younger students to create the next generation of Alaska's workforce.



"I have been involved in building over 6 schools in the Valley during my tenure, and the experience and connected dialogue with Bettisworth North has been exceptional."

Dr. Deena Paramo, Former Superintendent, Matanuska Susitna Borough School District

Planning and design response: Celebrating the Knik Community

The site planning and design began before the proposal was submitted. In-house landscape architects used 4D digital modeling to analyze climate, weather, wind, solar, vegetation and site condition data, so the building would respond to its conditions and perform well. On a macro level, the site team studied economic planning diagrams, growth trends, Dena'ina culture, flora and fauna, and local natural and sociological history to capture important community culture in the materials, colors, forms, and art.

Planning Process: A Road Map

Guiding the learning and physical environment

Planning was led by a team of Alaska designers, international school specialty designers, and 21st Century School planners. Borough project managers, superintendent's building committee, student advisory board, operations and maintenance staff, prototype school staff, school district energy manager, design team, programming team, engineers, and Borough planning staff participated in a 4-day workshop at kickoff. Visioning and goal setting, with collaborative design sessions, allowed the team to leave with a developed conceptual plan and program that informed and guided the entire educational specification, design, and construction process.

The Planning & Review Team

Matanuska-Susitna Borough School District: Dr. Deena M. Paramo, (former) Superintendent | **School Board:** Susan Pougher, President, Ray Michaelson, Ole Larson, Vice President, Dr. Donna Dearman, Sarah Welton, Clerk, Tiffany Scott, Deborah Retherford, Carly Williams, **Student Advisory Board** | **Matanuska-Susitna Borough School District Office of Instruction:** Luke Fulp, Assistant Superintendent of Business Operations, Mike Vrvilo, Executive Director, Dr. Monica Goyette, Executive Director of Instruction, Fran Jacobson, Professional Development Coordinator | **Machetanz Elementary School (original prototype):** Jennifer Dowd, Principal, Tom Lytle, former Principal | **Operations and Maintenance:** Dave Anderton, Director, Don Carney, Facilities Coordinator, Alan Morgan, Maintenance Supervisor, John Phillips, Maintenance Foreman | **Information Technology Department:** Justin Michaud, Chief Information Officer, Deb Griffin, Customer Support Supervisor, Bill Stannard, Network Supervisor | **Pupil Transportation Department:** Chris Remick, Supervisor | **Matanuska-Susitna Borough:** Dave Steadman, Project Manager

The Timeline

Voters approved funding, 2010 | Proposals and contract award, fall 2013 | Project Kickoff and Energy Charrettes with stakeholders and engineering team, November 2013 | Machetanz Prototype Tours with stakeholders, December 2013 | Planning Workshops & Design Charrette, December 2013 | Campus coordination with Joe Redington Middle/High design team, December 2013 | Educational Specification, January 2014 | Ground-breaking, Summer 2015 | Committee Progress Reviews, Throughout | School Board/Borough Assembly Presentations, Throughout | School opens, August 2016 | Energy data collection begins, January 2017 | Post-Occupancy Survey, October 2017

Aligning the Design and Plan: Educational criteria + Vision + Planning + Environment

The educational planning team was integrated into the design team from the proposal phase, helping develop the design, and the educational specification was developed alongside the design. These team members led the first workshops together and reviewed during every phase of design, so all stakeholders, planners, designers, and participants were working from the same goals and principals listed above. The team worked closely with Operations and Maintenance Staff as well as educators to align systems goals with educational goals and costs. Building systems and durable finishes work with the artistic aesthetic and student-centered design to achieve all of the guiding principals.

As the school begins its first year, the project manager, design architects, and educational planner are on call to the Borough and school maintenance staff, working with the contractor to continue fine tuning school features and collect feedback from the users via periodic emails and comment cards. In January, the team's energy programs manager will begin collecting utility bills to ensure the building is performing to meet energy goals. After one year, the design and planning team will walk through the school with maintenance and the principal with a customized post-occupancy evaluation to record feedback for future enhancements and prototype refinements for future schools.



Positive Results + Key Design Innovations

Community center, media center, and performance stage for flexible community use

Child-scaled design of spaces

Passive security throughout

Easily closed-off areas for after-hours use and student safety

Natural light in every space

Colored glass to create light play and visual interest

Art installations reflecting Dena'ina Athabascan culture

Flex classrooms for small-group learning and meeting space

Learning nooks for collaboration

Adaptable furnishings and flexible storage for multiple classroom configurations

Inclusive playground for all abilities, with equipment to meet specific development outcomes

Energy and site modeling, collaboration with maintenance, and sustainable systems

Native re-vegetation, tree retention, and site integration

Green Infrastructure

Learning & Physical Environment:

Celebrating the site and community context: Inspiring, motivating, and community building

The site features, views, native birch forest, and boreal forest floor were preserved and celebrated. Students can explore the flowers and berries native to the area, and the native re-vegetation creates a natural butterfly garden at the front entry. Access to windows from every space allows northern sun and birch forest views to fill the space, aiding in student and staff well-being, especially during dark winter months. 1% for art features emphasize Dena'ina Native Alaska heritage, animals, and nature through applied photographic displays and tactile sculptural elements. The school celebrates an identity for this budding, yet ancient, community.

Window colors inspired by the waters, birch forests, and natural history of the area create a playful quality and carry throughout in the classroom wayfinding, carpeting, playground colors, and accent elements, complemented by warm, durable materials to create a welcoming, calming environment for focused learning. Exterior light bollards guide students to the entrance, and indoor light through the front stair and clerestory serve as a warm, welcoming beacon during dark winter months. Inside, playful but subtle pendant lighting mimics the changing Aurora Borealis to add wonder and inspiration.

Systems & Materials: Sustainability + energy conservation + Long-Term Operations

Building systems and envelope design and materials focused on providing an exemplary learning environment, enhancing indoor air quality, reducing energy costs, and reducing sick days for students and staff. Systems innovations included displacement ventilation systems, distributed CO2 sensors, heat recovery on ventilation systems, high-efficiency condensing boilers and water heaters, lighting controls and LED lighting, and mechanical cooling. The design reduced systems devices required by 30%, and the school operates on outside air to reduce energy use and improve air quality.

Alaska Department of Education guidelines also require that mechanical rooms, penthouses, and mezzanines count towards the overall square footage cap for schools. Because this square footage counts against classrooms and much-needed storage space, mechanical spaces often add to operational costs. The architecture and engineering team worked together to research unique solutions and used easily maintained roof-top units to allow the team to add 1,500 additional square feet (the equivalent to a classroom and a half) to the program space.

Student-Centered Design Inside and Out: "Learn anytime, anywhere"

High, open, light-filled common spaces combine with warm, intimate classrooms, small nooks, flex classrooms to complement traditional classes, whiteboard and display surfaces throughout the school, flexible furnishings, and thoughtful connections to the outdoor spaces allow students to explore, collaborate, and innovate in a safe space. The playground design was guided by Parks for All, a local initiative bringing inclusive play to Alaska children of all abilities. Surfacing is 100% barrier-free for access and ease of maintenance, and equipment and features were planned to incorporate all senses for learners of all abilities. Its location allows for community access in a remote neighborhood with no other programmed park spaces, making it truly inclusive and community building.

Enabling all learners to be successful: Flexible design for changing educational needs

Inclusion continues inside, with thoughtful consideration of access, a variety of learning spaces in and outside the classroom, adjoining classrooms for collaborative teaching, and safe places for learners who need one-on-one assistance while still being included. Flexible open space and flexible, moveable furnishings allow for re imagining future teaching models and project-based learning. Thoughtful design of administrative functions, conference, and work areas allow for teacher, staff, and family collaboration and efficiency. The building form, systems, and site were also designed with expansion in mind for one of the fastest growing areas in the nation, and to adapt the prototype to future sites with varying student populations.

"There is a 'wow factor' when you step into Dena'ina, and no shortage of people who comment on how open and airy it feels. We've truly enjoyed that form meets function. Each month our commons area holds all of our students, staff and some parents for a pep rally. Traditionally, students would have to trek to the gym for this where they sit in rows and struggle to see if they're not in the front. But at Dena'ina, we get to sit in a great circle under dancing lights, looking at natural light playing on a wall of photographic art. The same space that at 9:15 fed students breakfast and at 12:00 was a passageway to recess, lunch or specials all at once feels like a family gathering for 400 at 3:20."

-Andrea Everett, Dena'ina Elementary School Principal