



Zacharias John Williams Memorial School

Napaskiak, Alaska
Lower Kuskokwim School District

Heart of the Community

The Lower Kuskokwim School District (LKSD) has taken great strides to replace dilapidated, outdated, and undersized schools in Southwest Alaska. They have just under 30 schools in an area that covers 22,000 square miles. Many of the schools were built in the 1950s and were owned and managed by the Bureau of Indian Affairs until the State of Alaska took over ownership and management in the 1980s.

Like many of LKSD's older schools, the previous Napaskiak School was greatly overcrowded and infeasible of renovation or expansion. Funding was granted to replace the facility in 2011. Completed in 2016, the new K-12 facility has revitalized the community's connection to their school as both the educational and cultural heart of their village. As with most schools in rural Alaska, it serves many

functions—educational facility, gathering place for community events, chapel, and funeral parlor. The Napaskiak School also serves as a disaster preparedness facility and can operate indefinitely on a fuel-operated generator.

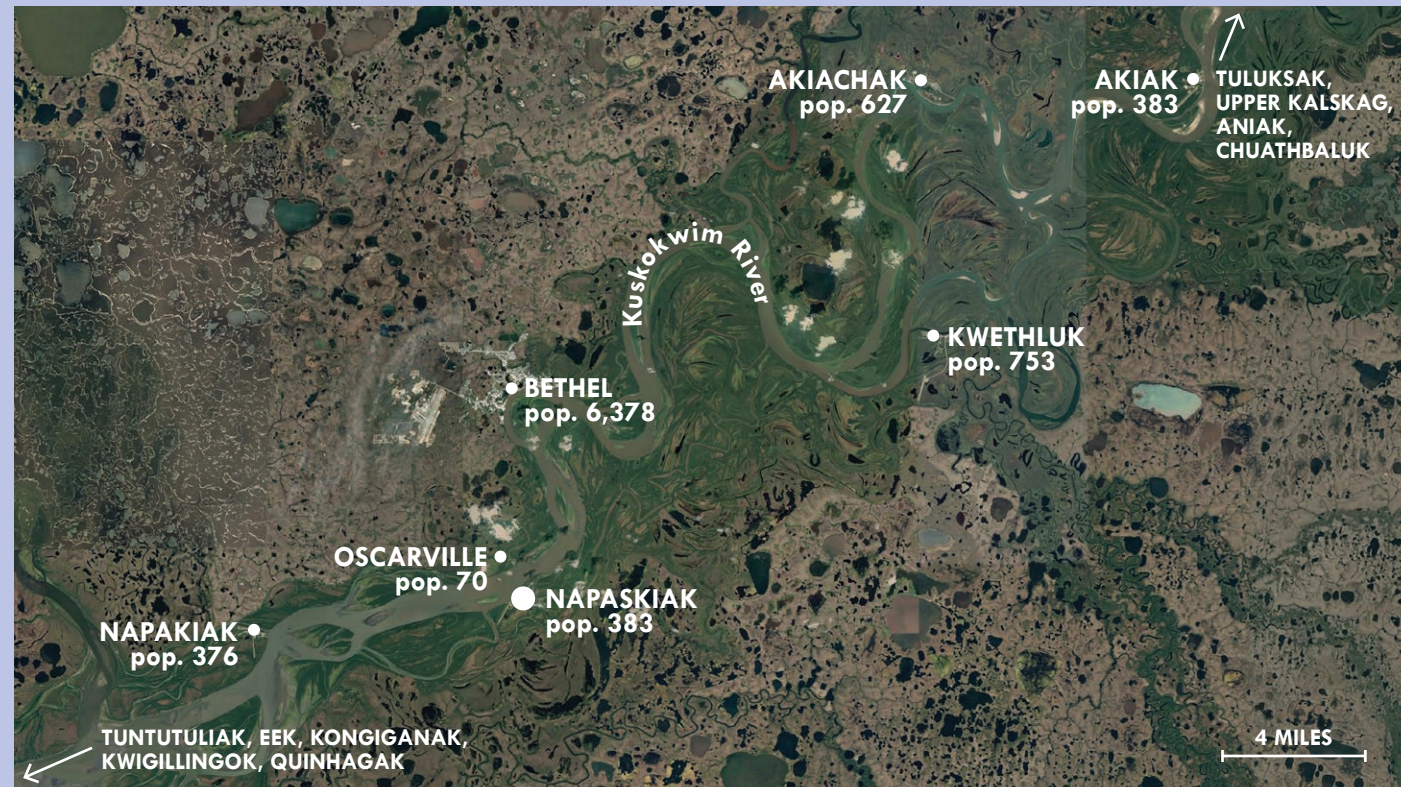
Heart of the School

The school design is a metaphoric “qasgiq,” a traditional Yup'ik men's house where elders taught male youth traditional boat building and subsistence skills. Often the largest building in a village, a person entered the qasgiq at a low point, where cold air was captured, and then rose into the communal space that surrounded a central fire pit and smoke hole. The Napaskiak School's “heart” is its centralized commons which emulates a qasgiq with peripheral benches and a large ceiling clerestory that symbolizes the

smoke hole. As one enters the school, they rise into the commons which unites the two educational wings of the school—elementary and high school.

Location Influenced Design

Although modern and sheathed in durable materials, the school is designed to blend into its horizontal landscape and village vernacular. This is done with a simple color palette that matches the naturally fading surrounding structures and with an attention to humanizing otherwise dominant features, such as roof cantilevers that bring the perceived building height down to a scale that mirrors the height of nearby buildings. Bright and reflective accent colors offset the simplicity of the structure.



November

2016

Substantial Completion

187

Student Capacity

41,036

Total Square Feet

12.66

Total Acres

40.9m

Total Project Cost

28.6m

Total Construction Cost



Community

Napaskiak is a Yup'ik village located on a slough of the Kuskokwim River in a remote region of Western Alaska. The population is approximately 432 and growing. Its location, 7 miles downstream of the city of Bethel (the regional hub), makes it easily accessible by boat in the summer and by snow machine in the winter. When the river is too frozen for boats, or not frozen enough for snow machines, air travel with small winged planes is the only option. The village lies within the greater Yukon-Kuskokwim Delta, approximately 50 miles from the Pacific Ocean and Bering Sea. The river is tidally-influenced so barge companies utilize tides to access village beaches at opportune times.

Jobs are scarce in the village. A few locals are employed by the school, post office, and air cargo services. The village also employs a few people to help with maintenance of their local utilities. Most everyone in the village has a boat, snow machine, and four-wheeler. The school has the only automobile that can, at times, be used to drive on the river ice. Subsistence is a way of life—locals hunt for moose and birds and fish for salmon. Housing in the village is grouped in two different eras of construction. The older housing is on the west side of the school site, extending along the slough from the school to the village air strip. The new housing to the east was built with HUD funding.

The original Napaskiak School was built in 1948 by the Bureau of Indian Affairs. The school site consisted of a single school building that included a classroom and a teacher's apartment. Additional small buildings were added to the school site over the years to accommodate its growing population. The first large-scale high school/gym building (9,000 SF) was constructed in 1980. This facility was expanded in 1986 to include an elementary school (9,000 SF). The expanded school building continued to serve as the K-12 facility until funding was gained to build a new school in 2011.





Stakeholders & Value of Process

Rural Alaskan schools have a wide range of stakeholders. First and foremost are the **STUDENTS**. This facility serves them throughout their formative years. It is where they learn to read and write in both English and Yup'ik. It is home to all of their indoor sports activities and the center of their early social lives.

TEACHERS are a close second in the ranks of rural school stakeholders. Most rural Alaskan teachers are from outside of the village and often from outside of Alaska. As newcomers, they are thrust into an unfamiliar environment and challenged to assimilate into the local community. They are housed in apartments provided by the school district and left on their own to bring in food or make due with supplies from the village store. The school environment is their gateway to reaching students and parents. They are always challenged with limited resources. Most are not

from environments with long, cold, and dark winters so a bright classroom environment that captures every second of daylight is a blessing.

The local **RURAL COMMUNITY** stakeholders utilize schools far more than their urban counterparts. In a rural Alaskan village, the school is the largest structure in town. It is their only library, their only large gathering space, and their only indoor sports facility. "City League" sports, which predominantly revolves around basketball, makes the gym a major crossroads for community members in the evenings. The career tech lab often serves as the community repair shop and indoor construction facility for wood and steel projects. The school and its cultural commons are used for potlatches, large weddings, funerals, and sometimes church services.

The Lower Kuskokwim **SCHOOL DISTRICT** stakeholders include the curriculum development leaders who depend on the facility as an important tool for the delivery of the District's academic and bicultural learning goals.

When disaster strikes, **EMERGENCY RESPONDERS** will depend on the Napaskiak School as a command post and shelter. The school was planned with emergency power generators capable of running the entire school when village power goes down. The school has the highest floor in the village and can house the entire community in a major flood event. Exterior decks have removable railing sections so four wheelers, boats, and snow machines can be lifted on the decks in a short amount of time. The school also houses the village weather station and has a VHS antenna for village-wide announcements.

Challenges

Seasonal Scheduling: The village of Napaskiak is built on the bank of a river slough within a vast arctic flood zone. The ground is soft, soupy tundra. If you step off of a village boardwalk in the summertime, you slowly sink into the ground until your boots are submerged. Building a large structure in these conditions is a complicated effort that requires project phase alignment with the seasons.

Barging & Driving Piles: The only economical way to transport construction supplies to a remote village is to barge them when rivers are free of ice, however this window of time is only four months. School design efforts were planned so the project could be bid and building materials fabricated and delivered to the site before the river froze in October of 2014. The first barge shipment was limited to building piles, steel superstructure, pile drivers and other heavy equipment. However, pile drivers cannot operate in soupy soils so piles and pile driving equipment remained on the banks of the river until the ground was frozen enough to mobilize at the site. After freeze

up, pile driving and earthmoving was underway but any setbacks in the weather would bring the operation to a halt. Immediately upon completion of the piles, the steel superstructure was raised into place. The goal was to have the steel frame fully erected and ready to receive the building envelope when the next barge was scheduled to arrive in the springtime. Additional barges arrived periodically through the summer with interior finish items, while other items were flown to the site when barge schedules could not accommodate.

Wastewater: At the outset of the project, it was known that the existing school sewage lagoon was greatly undersized and leaking. This lagoon posed many challenges during the construction as efforts were required to contain and isolate leaking sewage from the construction site. Additionally, the original and long abandoned lagoon required an effort to officially be sanitized, capped, and decommissioned. A new sewage lagoon was constructed as a fully compliant two-celled lagoon facility on the outskirts of the school site, roughly an acre in size. The

construction of the lagoon walls required a large amount of earthwork that was excavated from outside of the village. Seasonal challenges also drove this effort since soils can only be removed and transported when the ground is frozen. The winter during which this work was done was unseasonably warm. Operations stopped when vehicles were at risk of getting stuck in the tundra.

General Site Piping: Buried piping does not fare well in active tundra soils. It becomes subject to breaking and is difficult to reach and repair in the frozen winter months. Site piping is therefore routed aboveground. However, aboveground piping often conflicts with vehicle and pedestrian routes, resulting in a network of elevated crossings that are inconvenient and often not ADA compliant. To avoid this outcome, the design team analyzed existing and proposed boardwalks, board roads, and winter routes to determine pipe corridors that would have the least impact on site circulation.

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SCHOOL & COMMUNITY ENGAGEMENT

Site Hazardous Material Remediation:

Hazardous spills are common in rural Alaska. The Napaskiak School's original fuel storage tank farm had insufficient containment and was often overfilled. This history was known at the outset of the project. Prior tests had shown that diesel fuels were present in the ground up to a depth of 10' and extended out from the old tank site by approximately 50'. A hazmat team was hired to "landfarm" the contaminated area, exposing diesel-soaked soils to dissipate contaminants into the air and then permanently capping the site with filter fabric and 2' of non-contaminated soil. Final testing showed that diesel levels were reduced below the point that they would require capping, but the cap was still installed as an additional measure of containment.



When the river ice became too thin to support vehicles, supplies were pulled downriver by snow machine.



Assets

Existing Infrastructure: At the outset of the project there was a contingent of villagers that desired the school to be located on the east end of the village. This area is slightly higher in elevation, but the site had no large-scale utilities on or adjacent to it. The original school property had a functioning well and water treatment building. It also had direct electrical service and was in close proximity to the school's fuel tanks. By staying in the same location, these assets allowed the project to focus more resources on the building and less on infrastructure.

“I appreciate that we have enough space to provide a classroom for every grade in addition to all of the specialty rooms . . . It has alleviated the over-crowding we experienced in the other building and given us room to grow.”

**- Talbert “TJ” Bentley, Principal
ZJ Williams Memorial School**

Daylight/Site Orientation: The school site allowed for the design and construction of the new facility to be in a location that would not disrupt ongoing school operation. The new school footprint was extended with its primary classroom wings oriented east and west, so that clerestories and south facing classroom windows could maximize access to the southern daylight while north facing classroom windows could maximize views to the slough.



Winter sunshine entering corridor clerestories.



Custom display cases highlight student achievements.



Traditional dancing & drumming activities in the school gymnasium.

Educational Vision & Goals

The primary goals of the Napaskiak project were to embody a traditional community “qasgiq,” accommodate the District’s ed specs and community’s needs, and serve as the primary community center for generations to come.

Qasgiq: The heart of the school is the cultural commons which is inspired by a traditional Yup’ik “qasgiq” or “men’s house.” Qasgiqs were semi-subterranean structures where teenage boys were taught traditional subsistence ways from village elders. These structures were traditionally framed with driftwood timbers gathered from riverbanks. Timbers were corbeled upward to a central smoke hole and earth was piled over the entire structure for insulation. Entry to the qasgiq was done through a ground level tunnel in the summertime, and a subterranean

tunnel in wintertime that trapped drafts below the floor. Benches lined the periphery of the structure for sleeping, sitting, and storage. Qasgiqs were typically the largest structure in a Yup’ik village, so they served as the likely place for community events, including village-wide potlatches and dances.

Educational Facility: Schools in rural Alaska are typically K-12 facilities. Separation of age groups is key to successful rural school planning. The Napaskiak School has two wings that separate elementary from

secondary students. School functions only overlap at shared functions such as the gym, commons, and bicultural room.

Community at the Core: All of the school’s shared spaces are designed to be accessed from the central commons/qasgiq space. Both the library and the bicultural room were planned with wide door openings that enable the spaces to become an extension of the commons. The bicultural room is equipped with a teaching kitchen intended for the preparation of native foods and doubling as a potlatch serving line during community events. Directly adjacent to the gym, the commons also becomes a communal lobby for gym events. The classroom wings are designed so that they can be secured separately from communal spaces that may be in use after hours.

“This is how we genuinely live.”

- Napaskiak Village Elder



The remains of a qasgiq near the school site.



Traditional Yup’ik qasgiq ceremony, circa 1930s. National Museum of the American Indian, Smithsonian Institution (L02710). Photo by NMAI Photo Services.



Cultural commons in use for morning breakfast service.



EDUCATIONAL ENVIRONMENT

Varied Learning & Teaching Styles

The Napaskiak School environment is supportive of its curriculum in numerous ways. The design team created spaces that respond to the school's unique programs, thought was given to daily migration patterns, and emphasis is placed on creating a welcoming environment to support the open door classroom policy.

Choose Your Motivation: About one month before the building was completed, the school principal invited his staff into the school and allowed them to choose their classroom. Some opted for south light, while others opted for a view of the slough.

Capitalizing on Vertical Space: It is the design team's belief that if you heat an area of space, it should be experienced. All classrooms have ceilings that are fully exposed to the structure of the sloped roof deck. Teachers say they appreciate the openness and exposed structure.

Storage: There is no such thing as too much storage in a rural Alaskan school. Supplies are hard to come by and even harder to let go. Everything gets utilized or is stored until it can be used. This results in an insufficient amount of enclosed classroom storage and cluttered environments that inhibit learning. The design team doubled the amount of classroom storage in the school, resulting in environments where the immediate learning tools are the visual focus of the space.

Adaptability & Flexibility

Flexible Interior Spaces: The design team has performed numerous conditional surveys of rural Alaskan schools and has learned that room signs don't change, but room functions change often. We rarely find a function that matches the room sign placed there decades earlier. The design team recognized this need to adapt by using room signs with slip-in style signage that can be easily changed with a customized template with the school logo as the background.

Adaptable Building Systems: Rural schools do not generally have technical support staff or easy access to replacement parts. School systems and materials were selected for easy repair, maintenance, or replacement. In this environment, items that are manually operated are a better option than items that are motorized. The design team selected manual bleachers, manual coiling doors, manual shades, etc. Building controls were selected for their simplicity to operate, diagnose, and repair.

Flexible Furniture Systems: Many spaces in the school have multiple uses. The design team selected furniture systems that can quickly adapt to different space needs over the course of a day. The convertible bench/tables in the commons are set up as cafeteria tables during breakfast and lunch, can be reconfigured as benches for large gatherings, or wheeled out of the space entirely for events that require open floor space.



First grade classroom.



Library with locally-inspired wall text.

Environmental Attributes

The Yukon-Kuskokwim Delta is a treeless, spongy tundra and low brush environment that extends into the horizon in all directions. Boardwalks and board roads are the only routes of transportation besides the river in the summertime. These walkways link houses, a village store, post office, church, and the school. Flooding is a constant threat in this low-lying area and it is most threatening in April when the river breaks up and ice chunks can dam the river downstream of the village. Past floods have reached 3' above the almost flat landscape, submerging older housing. Additionally, the water-rich soils are extremely susceptible to frost. The ground moves up and down as much as 1' over the course of a year.





Facility within Context of the Community

The small, quaint scale of Alaska's rural village buildings does not overwhelm an otherwise endless view of low brush, tundra, and meandering waterways. For this reason, a longer single-story building is a better neighbor than an imposing two-story block. A gym that gently transitions back to classroom and house scale, although hard to accomplish, is more pleasing in a sparsely populated landscape.

Views of the Landscape: From the inside, long banks of windows are the best way to frame the horizontal views of the village and its surrounding landscape. Editing window views to a width slightly above and slightly below the horizon is the best way to celebrate views that often mimic watercolor paintings.

Respecting the Local Infrastructure: Local buildings are predominantly clad with wood, often T-111. Some are painted, but most eventually lose



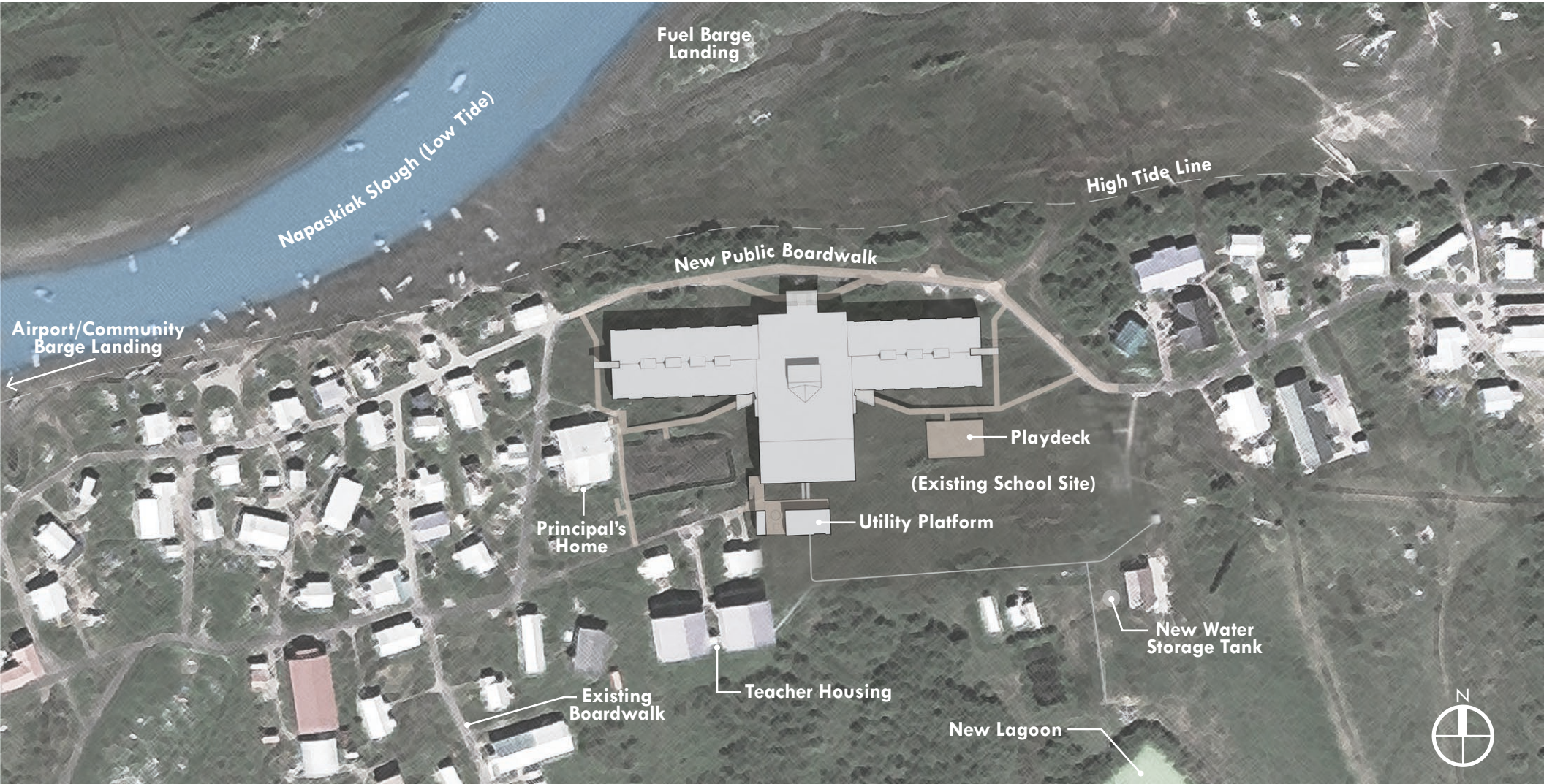
their pigment and fade to a weathered gray that blends well with local boardwalks and driftwood. The new school building's forms and materials try to capture the spirit of these smaller, often weathered buildings. To accomplish this, the design team utilized a band of sawn-faced wood siding at the base of the building that is stained gray; reminiscent of the weathered village wood and, if not maintained, will weather to match the local structures.

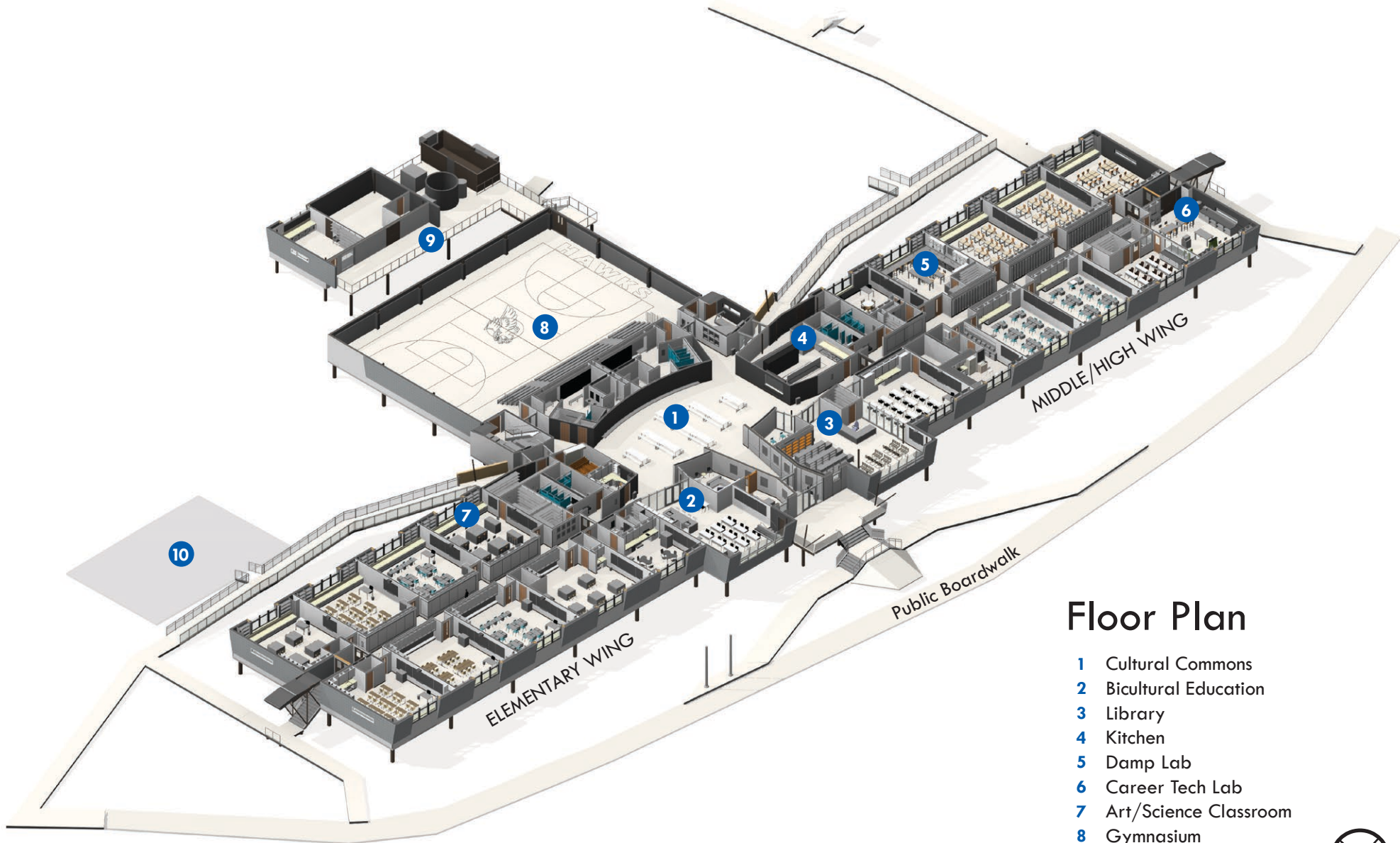
Horizontal corrugated metal siding was selected for the upper reaches of the building exterior. The corrugations activate a play of shade and shadow across the building during the low sun sunrises and sunsets.

Special effort was also made to step down the building scale at entryways. Each entrance is highlighted with bright and warm, welcoming colors. These accent colors become all-consuming as one approaches an entrance, filling your periphery with warmth, light, and a feeling of playful welcome.

Heart of the Community: The school is located in the center of the village, connecting walkways and roads, and bridging the old housing with the new. The central location unites villagers and brings everyone together for community events.

PHYSICAL ENVIRONMENT





Floor Plan

- 1 Cultural Commons
- 2 Bicultural Education
- 3 Library
- 4 Kitchen
- 5 Damp Lab
- 6 Career Tech Lab
- 7 Art/Science Classroom
- 8 Gymnasium
- 9 Utility Platform
- 10 Elevated Playdeck



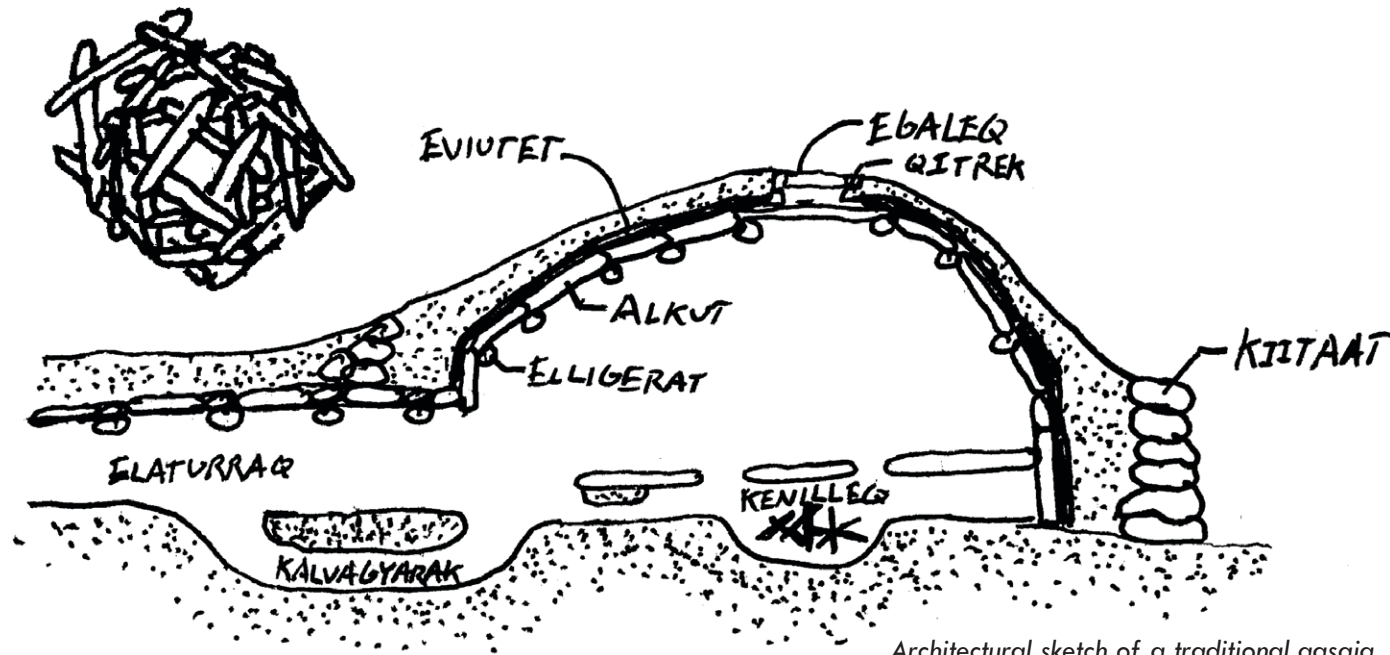
PHYSICAL ENVIRONMENT



View of the slough from the main entry.

Inspiration & Motivation

During the design team's first meeting with village elders, they said they wanted their school to be welcoming, not a "cold tin can like other village schools." They wanted the heart of the school to be reminiscent of a qasgiq where people of all ages would feel comfortable to gather. This was the singular most important aspect of the school design—our point of inspiration. The design team vowed to make the center space of the school into a new village qasgiq that would serve ongoing generations of Napaskiak residents. The challenge was to find the best way to capture the spirit of the qasgiq in function, feel, and lighting, without imitating or replicating a traditional structure. A qasgiq was typically limited to the size of the largest driftwood timbers that would float down river—20'-30'. The new school commons is more than four times that size.



Architectural sketch of a traditional qasgiq.

“My hope is that through these objects we gain new knowledge of who we are.”

- Napaskiak Village Elder

The entry to the school is designed to be symbolic of a qasgiq entry tunnel. The corridor between the arctic entry and the central commons space ramps upward, taking advantage of traditional methods of trapping ground cold away from higher interior spaces. The 'tunnel' is lined with display cases to show local handicrafts. As visitors enter the commons, they are greeted by a tall wooden ceiling with a clerestory shaft that pierces its center. Like a traditional smoke hole, the clerestory reflects the sky conditions throughout the day. Just like a traditional qasgiq, benches line the periphery of the elliptical space.



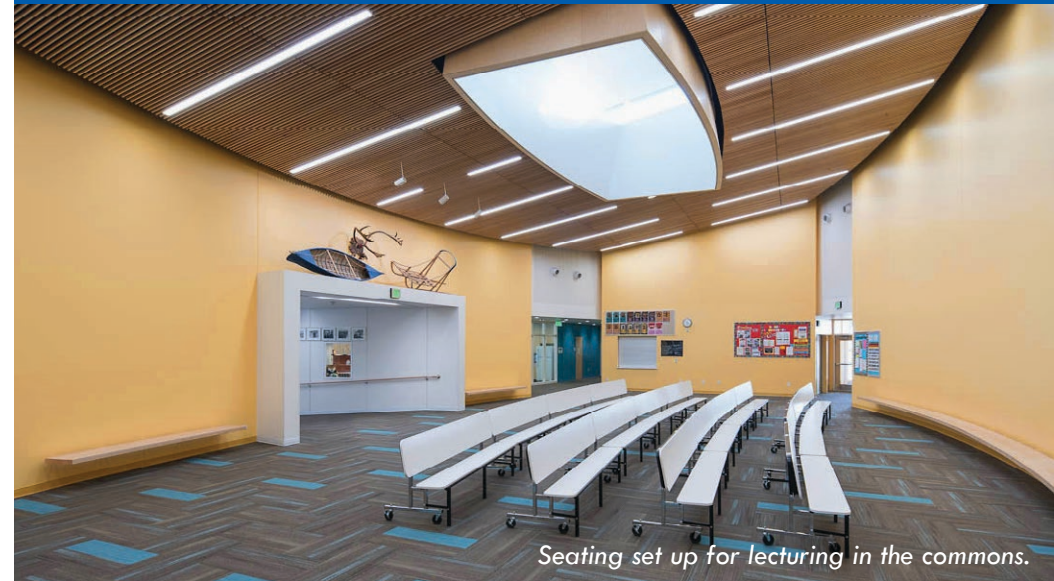
Entry tunnel as seen from the commons.



Clerestory in the commons.



Bicultural classroom & teaching kitchen.



Seating set up for lecturing in the commons.

School District & Educational Goals & Objectives

Bicultural Education: The Napaskiak School has a strong bicultural language program where students are educated in Yup'ik for half of their day and English for the other half. This requires student groups to be divided and shuffled throughout the day by age groups. The teachers say that the number of classrooms provided on each wing works well for the student groupings.

STEM Activities: LKSD models its robotics program closely to the Alaska Native Science and Engineering Program (ANSEP) delivery approach utilized at the University of Alaska Anchorage. ANSEP is a leading STEM education program that annually graduates 400 Alaska Native scientists and engineers. The school's new career tech laboratory and classroom were planned as STEM activity spaces aimed at preparing students for ANSEP and other higher education STEM programs. Students utilize the classroom space for instruction and "clean room" fabrication efforts. They use the lab/shop for more rudimentary steel and wood fabrication efforts. These

"I was impressed by the number, scale, and flexibility of classrooms that accommodate these student groups throughout the day."

*- Carlton Kuhns, Assistant Superintendent of Instruction
Lower Kuskokwim School District*

spaces are an invaluable resource to the students as well as the entire community as workshop spaces for all sorts of wood and steel projects and repairs.

Native Arts Education: The flexibility and durability of finishes and furniture systems in the art room accommodates a wide range of native arts that are taught to various age groups throughout the day.

Community Activities: The bicultural room has been well embraced by locals as a communal kitchen for preparing native foods for local events. Elders teach younger villagers the traditional methods of

skinning, butchering, and cooking in the kitchen area. They also can comfortably recline in the upholstered seating area and interact and observe from afar. The connectivity of community is vibrant when generations of villagers come together in this space.

Furniture Selection: The design team worked closely with the principal on selecting and designing FF&E items for the new school. Both the principal and faculty were focused on acquiring a desk system similar to one they had for grades 3-5 at the previous school. Contemporary versions of this system were not available, so the design team custom-designed a contemporary version of the system. Other more conventional contemporary desk systems were selected in consultation with the principal and faculty. FF&E items included even the smallest kitchen items for the bicultural teaching kitchen. All items were selected for durability and color compatibility with room interiors.

Community Goals

The qasgiq-inspired commons and bicultural spaces are already well used and appreciated by the community at large. The new commons is four times the size of a traditional qasgiq with plenty of room for all villagers to attend school and cultural events.

“... the kitchen facilities are an added bonus both for the community and our cooking classes.”

- Talbert “TJ” Bentley, Principal
ZJ Williams Memorial School

Interior Finishes: Carpet and sheet flooring colors were selected for compatibility with local silt colors. Carpet tiles are utilized for ease of replacement. An overage of finishes is stored in the school for future use. Lockers are provided as 15” wide units to accommodate large winter jackets and other bulky winter accessories.

Historic Village Photographs: The previous school had a wealth of black and white photographs of village life throughout the 20th century. The design team provided a series of wall niches throughout the new school to help organize, display, and highlight these photographs.

Wall Graphics: The design team appropriated two accent walls to receive custom vinyl wall text and then encouraged the faculty to select the narrative themselves. In the library they selected an E. E. Cummings quote: “*It takes courage to grow up and become who you really are.*” In the bicultural room they opted for a traditional Yup’ik saying: “*yuk cakviurraarpeknani camek unangengaituq,*” which translates to, “*you must work hard to amount to anything.*”



Custom niches in the corridors for displaying historic photographs.



ADA access to school entry & playdeck.



RESULTS OF THE PROCESS

Results & Achievements

Napaskiak's new school has now been in operation for two school years. When the design team returned to the village for photographs in April of 2018, they interviewed students, faculty, and community members to inquire about their experiences with the new building. *What do you like most? What do you like least?*

STUDENTS all point to the gym as their favorite space. They like how much bigger and brighter it is compared to their old gym. They love their school logo on both the gym floor and the wall above the bleachers. They especially like the fact that they have a full-size basketball court. They feel like the gym truly represents *them*.

TEACHERS really like their classrooms, especially the tall ceilings and exposed structure. They also like the sizes and flexibility of classrooms and they appreciate the specialized spaces such as the wet lab (science lab), career tech lab, and bicultural classroom.

**“Everything that is made
causes us to remember.”**

- Napaskiak Village Elder

COMMUNITY MEMBERS talk about the school with pride. They feel welcome there. They enjoy using the communal spaces for events. They tell us how much they appreciate the cultural inspiration within the commons; for them it is a respectful reference and thoughtfully executed. They have also taken initiative to evolve the school to better serve their children. Not long after the school opened, they took it upon themselves to build a bicycle parking area at the main entry—a feature that was omitted from the project due to fund limitations.

Additional results and achievements include:

Beacon on the Slough: It was the design team's intent to locate the main entry along the slough so that it would become a gateway to the village for people traveling up and down the river by boat in the summer and by snow machine in the winter. The light that emanates from the large clerestory of the central commons can be seen far up and down river and fortuitously has become a signal beacon to help orient travelers during the dark winter months.

Resilience: Like most rural Alaska villages, Napaskiak has limited fire response services—the building's sprinkler system and bucket-toting volunteers. Therefore, the design team separated the most likely sources of fire from the school's main building. The maintenance shop and main mechanical room

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RESULTS OF THE PROCESS

are situated 30' away from the main structure and linked by a non-combustible deck. The career tech lab (welding and wood shop) is located at the farthest point of the west wing and is fire separated from the roof to the bottom of the under building utilidor. Other fire mitigation efforts include limiting science lab equipment to electrical heating sources and fencing and fire protecting the bottom of the school with non-combustible cement board siding.

Access & Connections: ADA access to rural Alaskan facilities is always a challenge as they tend to be situated high above the ground. The Napaskiak School was designed with an 8' difference between the school floor and the surrounding boardwalks, resulting in ramps that extend long distances. The ramps are built with slip resistant, durable steel grading allowing kids to stomp off snow as they return from recess. Playdecks—also elevated structures—are located along these ramps so that ADA access is maintained for school functions both inside and out.

