

K-12 DESIGN & CONSTRUCTION



Trauma-informed design in schools

School ventilation strategies for a pandemic

How progressive design-build is changing the future

PROVIDING FOR DIVERSITY IN K-12 SCHOOLS

Part of building a school is inspiring the future of a diverse set of students.

In the construction industry, we often talk about how the schools we're building today are designed for the students of tomorrow. We talk about how these massive, complex facilities



BY BRIAN URBAN
SKANSKA USA
BUILDING

must function in ways where education is paramount, and how project teams must focus intently on providing high-performing learning environments.

We also talk about how these schools are often the hub of their respective communities and the place where students' career dreams for the future are first formulated. That's why, when it comes to K-12 education projects that Skanska is involved with, we also take an interest in how we can contribute to the community and

The new Central Kitsap High School is built for the students of tomorrow.



IMAGES COURTESY OF SKANSKA USA BUILDING

depth of education taking place in the existing schools while we're on the jobsite (often next door) building the new ones.

Whether it's in elementary,

middle or high school, today's student population is more diverse than ever before, and in more ways than ever before. Beyond the obvious, this diver-

sity includes a wide range of socioeconomic backgrounds that afford students within the same school an assortment of life experiences and opportuni-

ties that may shape who they are and how they view the world. Like each of us who came

PROVIDING FOR DIVERSITY — PAGE 4

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STRATEGIC ENERGY PLANNING FOR EQUITY AND RESILIENCE

Imagine a school campus free of diesel emissions from buses, limiting harmful exposure to air pollutants and strengthening students' academic performance.

While K-12 schools account for less than 1% of the nation's greenhouse gas emissions, they present a transformational role in advancing the clean energy economy, through direct investments in electrification, renewable energy and education.



BY JACK NEWMAN
SAZAN ENVIRONMENTAL SERVICES

Developing a strategic energy plan can guide K-12 schools through implementation strategies for energy-efficiency measures and renewable energy, while responding to goals identified by key stakeholders and the broader community. Based on early engagement with facilities maintenance staff, utility representatives, teachers and students, paired with a thorough review of school policies and board resolutions, a clean energy strategy can also serve as an implementation framework for valuable new funding resources, energy grants and incentives.

STAKEHOLDER ENGAGEMENT

Imagine a school campus free of diesel emissions from buses, limiting harmful exposure to air

pollutants and strengthening students' academic performance. Bus electrification is just one of the many upcoming changes anticipated for K-12 schools across the country aimed at reducing reliance on combustion-based engines for the nation's 500,000 school buses.

Will this opportunity for electromobility take precedent over heating system conversion, lighting retrofits, or solar photovoltaic (PV) installations with energy monitoring dashboards for student education? A strategic energy plan driven by key stakeholders' vision statement, developed in support of established performance metrics and goals, can be the roadmap for prioritizing energy upgrades.

The Washington State Energy Strategy convened a task force of industry experts with targeted outreach to traditionally underserved communities and vulnerable populations, resulting in aggressive replacement goals of short-haul vehicle classes (like school buses) with electric vehicles. This intentional engagement at the outset of the strategic planning process enabled a more-diverse set of evaluation metrics to determine "what success looks like" for everyone in our growing communities. With equity, social and environmental justice outcomes informed by an engagement process designed to reduce implicit

bias of decision-makers, a strategic energy plan can help "the transition to an equitable clean energy future," as described by Washington state's new strategy.

As new approaches for community engagement garner more inclusive results, K-12 schools are well underway with clean energy implementation. As of April, 7,332 K-12 schools in America use solar power, with 5.3 million students attending schools with a solar PV installation. In Seattle, approximately 800 kilowatts of solar PV capacity is installed across Seattle Public Schools, providing energy cost savings and opportunities for student education.

CLEAN ENERGY LABORATORY

The strategic energy planning process also builds relationships with potential partners, such as Bonneville Environmental Foundation's Clean Energy Bright Futures Program, the Sustainability Ambassadors, and existing student coalitions. Including educational outcomes in energy plans can accelerate connec-



K-12 students have had internship roles at leading solar contractors and other clean energy industry firms.

IMAGE COURTESY OF SAZAN ENVIRONMENTAL SERVICES

tions between demonstration projects and opportunities for career-connected learning. Student participation in project planning, implementation, measurement and evaluation

can provide technical skills and important insight into potential career pathways after graduation.

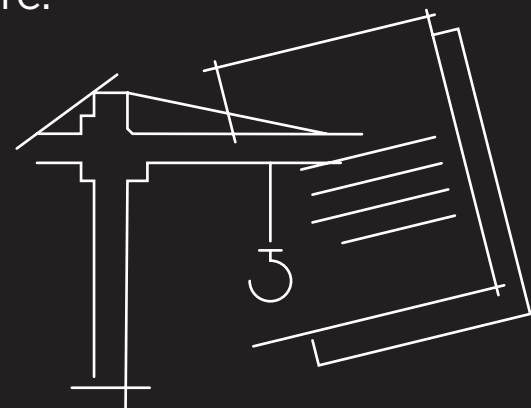
ENERGY PLANNING — PAGE 7

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INSIDE

- Providing for diversity in K-12 schools 2
- Strategic energy planning for equity and resilience..... 3
- Trauma-informed design in schools 6
- Nature and nurture in Cascade/Benson Hill neighborhood 9
- Progressive design-build is changing the future of K-12..... 10
- Exploring the benefits of mass timber 12
- School ventilation strategies for a pandemic..... 14
- How schools and designers can manage crises 16
- Effective learning design in the state-of-the-art middle school..... 18

ON THE COVER

The learning stair at Truman Elementary School has refuge spaces for children needing a place to retreat from traumatic stress. Turn to page 6 to learn more about trauma-informed school design.

PHOTO BY BENJAMIN BENSCHNEIDER

2021 K-12 SCHOOL CONSTRUCTION TEAM

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PROVIDING FOR DIVERSITY

CONTINUED FROM PAGE 2

before them, today's students have their own interests, passions and ambitions both outside the classroom and within. Recognizing, celebrating and helping encourage those curiosities and aspirations is something we strongly support, to the delight of our education clients.

When working with school districts and administrators, we hear how great it would be if we were able to help show students the wide range of careers available in our industry, as many students have no idea the breadth of roles available. Many assume that the construction industry is populated primarily by folks who excelled in the industrial arts (aka "the shop class kids").

They have no idea that today companies like Skanska employ civil engineers, geologists, environmental engineers, hydrologists, BIM (building information modeling) technicians, environmental health and safety officers, estimators, quality control professionals, superintendents, project managers, financial managers, marketers, human resources professionals, labor relations specialists, training directors, apprenticeship coordinators, and, yes, tradespeople

— carpenters, plumbers, electricians, HVAC specialists and dozens more roles. Building a building is complex and takes a lot of smart people working together using what they do best.

The other thing we hear from school districts and administrators is that they would appreciate us sharing information on the varying ways people enter the construction industry, as there is no one-size-fits-all path, especially given the diversity of roles available across the broader AEC industry.

While many roles do require a college education, just as many begin with a high school diploma, a willingness to learn, and hard work. Many senior-level folks in our company and industry began their career in the construction trade as a carpenter apprentice, before becoming a journeyman (who has apprentices working under them) and then earning a master's license.

Apprenticeships, on-the-job training, and other learning and career growth opportunities continue to afford the more than 7 million men and women in the construction industry — people of every race, creed, and national origin and an increasing

number of women every year — a well-paying future with good benefits.

Post-high school career-path discussions are easy to have at career fairs, and we do have them there, but we've found it more rewarding for our teams and for the students when we can take it a step further into the classroom. It's more fun and engaging for everyone when we can show students how the things they're learning in class are the very same things we're putting into practice right outside their windows in the big piles of dirt where we're building their new school.

For example, when we were building Central Kitsap High School, we found a real-life scenario that we thought would make a good "teachable moment" for the kids, so we worked with the school's math teachers to come into the classroom and turn it into an assignment for the geometry classes. Before giving them the assignment, we briefed them on the overall project and what we were doing, showed them an aerial flyover of the jobsite, and that helped get them really excited about the new school we were building.

Once we provided the inspiration, we laid out the task. The assignment was to use what they had been learning in class and apply it to what we were doing to excavate a large amount of soil in one part of the jobsite. We broke the class into four "companies" who worked as a team to solve both the geometry problem and a word problem that went with it. The soil was in a fairly complex shape, so they learned to break it down into parts to help figure out the total volume of soil we'd need to remove and how many trucks we'd need to haul it away. Then, based on parameters we'd given them for how much a truck driver was paid hourly, how many trucks they could have at any one time, how long it would take to dispose of a load of dirt and return to the site, we had each company provide a "bid" for the project before a specified time.

You would have thought it was the state championship basketball game happening in that classroom; that's how competitive and excited these kids were. At least for the moment math was fun, and they could see that what they were learning had real-world applications ... literally right outside their classroom

window. Once the bids were in, we reviewed them together and discussed the project, the answers and showed them the construction industry applications for high school math.

Being involved in the classrooms and school communities where we have active projects has always been a hallmark of our K-12 design and construction philosophy. To us, building schools is more than just building educational facilities; it's about building communities and the diverse workforce of tomorrow.

The kids going through the schools we build today are not only going to be the doctors, lawyers and community organizers of tomorrow, but also, they will be the teachers who will one day teach there, the architects who will design the next evolution of what's new in school design, and the construction workers who will one day build a new school they will send their own kids to. And if we work hard to inspire them today, there's no telling what they can accomplish.

Brian Urban is a project executive with Skanska USA Building.

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Completed in 2019, Sehome High School in Bellingham, WA is a beautiful building housing 1,200+ students. Workpointe provided 90% of the furniture packages which consisted of 50 classrooms, admin spaces, library and common spaces. It was important to capture the integrity of the school, named for Chief Sehome of the Samish tribe. We provided custom color matching to the Sehome High School logo throughout the furniture selection. These colors were essential to convey the brand and message of the Sehome HS spirit. Utilizing Momentum and Pallas fabrics, we captured the school's design vision of a bright and open space connected to the sweeping views of Mt. Baker and the Northern Cascade Mountains. Despite a short window for installation, we completed this installation in three weeks, on time and on budget.



TRAUMA-INFORMED DESIGN IN SCHOOLS

Bassetti's inspiration for trauma-informed design grew out of its work with the Truman Elementary School project.

Supporting traumatized children is a critical issue facing our schools. Mid-pandemic, 90% of our children have experienced toxic stress.



BY LORNE
MCCONACHIE
BASSETTI
ARCHITECTS

Over 60% of our kids have experienced trauma.

The trauma can range from substance abuse, violence and homelessness to poverty, racism and the pandemic. Trauma alters brain function. Critical thinking skills are overwhelmed by a focus on hypervigilance and survival. Triggering causes difficulty regulating emotions and

trouble with attention, memory and learning. Our most vulnerable children from marginalized communities are the worst hit.

While a caring adult and supportive school culture are the first lines of defense, the built environment can play a crucial role. In response to the challenges, Bassetti Architects has been compiling "best practices" of trauma-informed design (TID) as a tool to assist designers and educators to think creatively about shaping supportive learning environments. They developed a TID checklist compiled of research and lessons learned from trauma-informed care practitioners and educators.

Truman Elementary School in Vancouver incorporates many ideas in the TID checklist. The replacement school was planned for 600 students of

The learning stair provides a space for large presentations, small group activity and individual study, as well as refuge for children needing a place to retreat from traumatic stress.



PHOTOS BY BENJAMIN BENSCHNEIDER

diverse backgrounds including: 60% eligible for free and reduced lunch, 20% English-as-

second-language learners, and a transient population of 20%. This diversity led school staff to emphasize equal opportunity for all students regardless of economic, transience or language barriers.

The inspiration for trauma-informed design grew out of our work with the gifted Truman faculty. Principal Theresa Davis-Turner summed up the dedication:

"At Truman we say all students are my students. We share the responsibility for the education and well-being of all Truman students. This is evident in our intentional design to provide flexible shared open spaces (learning studios and learning stairs) that classrooms can extend into. The design process was incredible. Truman teachers described our work while Bassetti staff listened and then designed a structure to support the work we described. This collaboration produced a building that provides multi-tiered supports for academic and social/emotional learning."

Davis-Turner's summary centers on educating the "whole child" — encompassing the academic, social, emotional and physical needs of each student. The subsequent design provides a learning environment that supports academic success coupled with the social/emotional needs of students.

Truman is organized around a central entry with quieter learning studios to the south and energized movement/gathering spaces to the north. Traditional school spaces — classrooms, library, cafeteria — are augmented with safe spaces where counselors, therapists and psychologists can work directly with students.

The welcoming entry enhances the involvement of the broader community in student success. Arrival occurs at a highly visible

drop-off/gathering area. This visibility is critically important for students dealing with trauma who can be hyper-vigilant as to "who's coming and going." Adjacent to the entry is the Family-Community Resource Center dedicated to family-focused uses. It serves as an essential nexus of communication between parents, volunteers, school staff and caregivers providing services to children facing trauma.

The south wing of the school contains six learning studios surrounding a centralized library, art lab, maker lab, and multi-use learning stair uniting the two stories. Both learning studios and centralized shared spaces were designed with an eye to academic excellence and TID.

The learning studios house layers of spaces with perimeter classrooms, shared co-op spaces, small group areas and project-based learning studios. The spaces support personalized and differentiated learning pathways for each student. The flexible, open concept with ample acoustic attenuation adapts to one-on-one, group, or hands-on learning while enhancing vital collaboration among teachers.

The variety and scales of spaces are also important in supporting traumatized children. Kids dealing with acute stress often need help from counselors and/or a place of refuge to rebalance. Individual or small group learning can be critical for re-engagement. Project-based learning studios and flexible co-op spaces support all children in their natural urge to explore, tinker and create. Exploratory projects can also help traumatized students refocus.

Additionally, Truman houses four specific layers of support for children struggling with emotional balance. First, each classroom offers a light-filled bay

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Outdoor areas beneath a grove of mature evergreens provide choices for individual, small group or large group play.



window with a comfortable bean bag to help children gather themselves, nap or just cool down. The importance of emotional recognition and self-regulation without removal from class is critical.

The second layer, within the shared co-op space, is a graphic sensory circuit that helps students, needing to move or fidget, reset themselves. Third, an adult-supervised motor support circuit designed for children working through deeper emotional challenges. The final layer is a safe room with soft finishes where children who are terrified, angry or out of control can let out their rage under the watchful eye of a caring adult. The dreadful impacts of trauma can vary from a need for quiet withdrawal to screaming anger.

Centralized spaces in the learning studios provide vital shared resources for all students and places of refuge within eyesight of caring adults for children dealing with trauma. These spaces support large and small group learning. Flexible furniture, cozy corners, niches, nests and thoughtful transparency offer children a variety of places that can be transformed to meet their needs. Whether a student is retreating from bustling daily activities, observing others but not ready to participate, or engaging with classmates in collaborative exploration, learning areas at Truman provide spatial options to support both academic and social/emotional needs.

The school's more active north wing houses movement, dance, music, physical education, performance, dining and gathering spaces. A "fitnasium," in lieu of a gymnasium, encourages movement in all forms both indoors

and out. The multi-use commons is a large flexible space used for daily lunch and whole school gatherings. A raised platform supports presentations and benches provide students a safe perch along the edge of the busy space.

The commons opens to a playground and grove of mature trees where biophilic connections invite play and stress reduction. Structured and unstructured play provides children with choices in the type of activities in which they engage. All children, particularly those experiencing trauma, can choose between individual, small or large group activities. A courtyard connecting the north and south wings provides secure enclosure, a place for reflection, or cloistered outdoor learning.

From its inception, Truman Elementary School sought overarching design characteristics supporting academic excellence and social/emotional well-being. As our schools emerge from the damaging impacts of the pandemic, we must take account of the debilitating effects of traumatic stress our children have experienced. Whether a simple remodel funded by the American Recovery Act or new construction, the thoughtful inclusion of trauma-informed design ideas can help shape educational environments for healthy, engaged learners.

Lorne McConachie is a principal of Seattle- and Portland-based Bassetti Architects, where he has cultivated a 36-year career of creating personalized, collaborative spaces that support differentiated learning, engaged communities and sustainable connections to place.

ENERGY PLANNING

CONTINUED FROM PAGE 3

Using peer-to-peer education tactics demonstrated by the Sustainability Ambassadors program, K-12 students have been successful in obtaining internship roles at leading solar contractors and other clean energy industry firms. This strategy is of particular interest for Washington-based clean energy firm Sphere Solar Energy, whose mission to engage BIPOC students to accelerate career connections in the energy industry has been recognized by the Seattle Office of Economic Development (OED). As a recipient of the Seattle OED Career Connected Learning grant, Sphere developed a clean energy program plan in partnership with educators, students and industry professionals.

The strategic energy planning process also aligns with important grant funding requirements, such as the Washington Department of Commerce Clean Energy Fund grants, to verify energy performance for a set period after grants are awarded and equipment is installed. Using the Department of Energy's Strategic Energy Planning process is a proven framework for aligning goals with projects and funding streams for implementation.

A coordinated asset management approach for strategic clean energy investments can also prioritize efficiency, conservation, renewables and resiliency measures to meet new requirements, such as the Clean Buildings Act in Washington. Utility engagement on Clean Buildings Act compliance ties into Early Adaptor Incentives, as well as alignment with

current and future energy performance targets under the new Washington State Energy Code (2018) and Clean Energy Transformation Act. Developing a clean energy task force is an important strategy to prepare and finalize strategic plans, resolutions, and cyclical renewal schedules for critical school infrastructure.

At the nexus of climate adaptation and COVID-19 response, a new wave of funding resources is anticipated to achieve healthy building powered by clean energy. Training students and the broader K-12 community to participate as co-leaders in this process can help shape a more equitable clean energy industry. Demonstration projects, like Snohomish County PUD's Arlington Microgrid, shed light on the potential for battery electric buses to power the grid during an earthquake. A recent series of grant awards for Grid Modernization projects includes several school districts on similar electric bus initiatives.

Through careful and engaged strategic energy plan development, K-12 schools can achieve measurable success on clean energy investments while advancing goals that strengthen community resilience and career-connected learning opportunities for students.

Jack Newman is director of Clean Energy Solutions at Sazan Environmental Services and serves as board president at Solar Washington, a nonprofit organization committed to advancing Washington's solar industry.

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NATURE AND NURTURE IN RENTON'S CASCADE/BENSON HILL NEIGHBORHOOD

COVID-19 has affected the social and emotional well-being of youth and families in Renton.

Doug Baldwin wants to give kids a chance to be kids — to experience what he calls “a real childhood.” That’s the vision behind his Family First Community Center, which is expected to break ground later this year on land donated by the Renton School District, adjacent to Cascade Elementary School.



BY MEREDITH EVERIST

BAYLIS ARCHITECTS

It is a simple wish in a complicated world. “A lot of children nowadays are not growing up in situations where they can experience that,” the former Seahawk wide receiver explains. “Their parents are fighting for survival in a number of different ways and the children are forced to be in situations where they

can’t really have a childhood.”

POWER OF BELONGING

Baldwin speaks with heart about the years he experienced at the community center where he grew up near Pensacola, Florida — about the center’s empathic approach, the sense of belonging and accountability he felt, and the powerful effect it had on his formation as a man, and a citizen. “It created this safe space for me to be me; to be a child, to kind of find myself, and also to some degree to lose myself.”

It’s what every kid deserves, and what too many, especially those who are poor, or not white, have too little access to. The Family First Community Center (FFCC) aims to change that. Conceived as a multi-faceted community hub, it is designed to celebrate and support residents’ potential to thrive, by helping families in Renton’s Cascade/Benson Hill



The Family First Community Center supports city goals of enhancing social equity and resiliency and fostering safe, healthy and cohesive neighborhoods.

PHOTO COURTESY OF BAYLIS ARCHITECTS

area achieve goals in education, fitness and overall health. Half the area’s 23,000 residents are people of color, 20% are 14 or younger and nearly 12% live below the poverty line.

FFCC is a project of love that addresses neighborhood wellness on a holistic level, brought to life by four partners: Baldwin’s

Family First Community Center Foundation; the city of Renton; the Renton School District, with plans for complementary educational and recreational programming; and HealthPoint, which will have a full-service primary care clinic on site.

FFCC could not come at a better time — unless that time

was before the pandemic, which was the original plan. A New York Times article published in June reports that nationally, the number of young people, including children under 13, who need urgent mental health care has been on the rise for years and

NATURE AND NURTURE — PAGE 19

Architects West is committed to the principles of stewardship, community engagement, and pursuit of excellence. Our reputation is built upon being authentic and approachable, creating contextual and responsive places where users flourish and achieve, imparting lasting value, and enhancing quality of life within the communities we serve.

Prosser High School



Grandview High School



Greenacres Elementary School



Coeur d’Alene, ID and Spokane, WA
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PROGRESSIVE DESIGN-BUILD IS CHANGING THE FUTURE OF K-12 CONSTRUCTION

Firms are seeing more public school districts adopt PDB in Washington state.

Construction of K-12 schools is no small feat — from meeting a tight schedule, to strategically investing funds, to delivering a high-quality facility that will serve students and faculty for years to come. K-12 project teams are tasked with building impactful, long-lasting buildings with a set budget and a tight timeline.



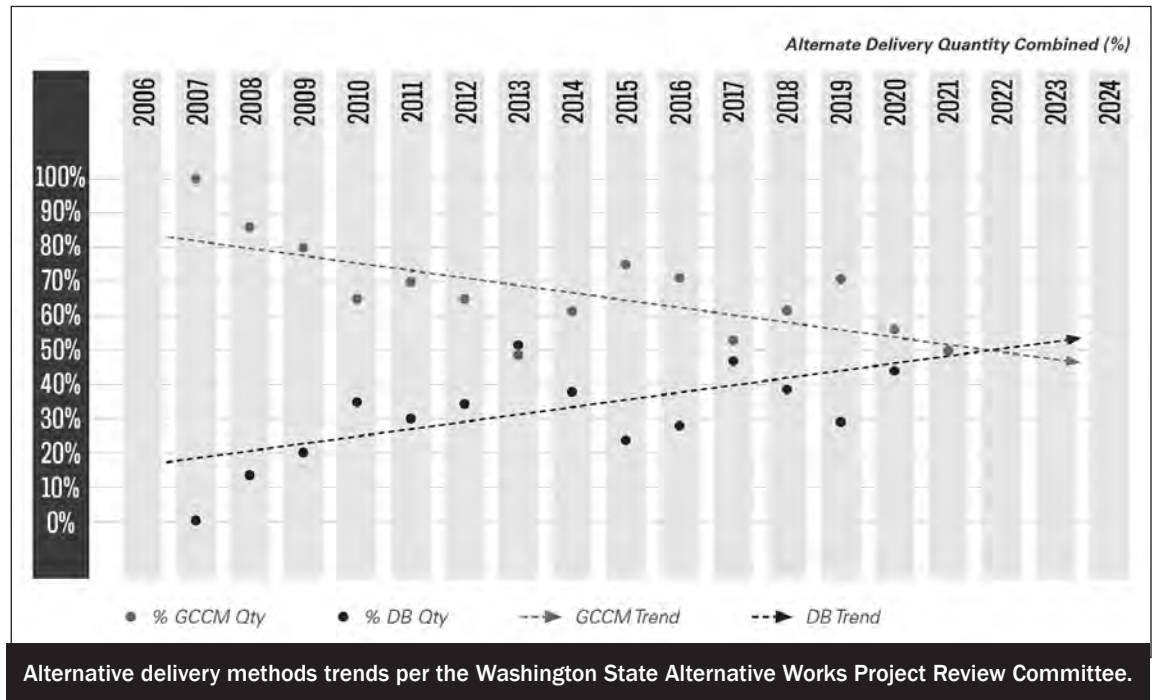
BY CASEY MOORE
LEASE CRUTCHER
LEWIS

But the landscape of K-12 construction is changing. There has been a clear trend of increased utilization of progressive design-build (PDB) for education projects since 2013 when the Washington state Legislature first

allowed the delivery method for public agencies.

We are seeing more and more public school districts adopt PDB in Washington state, according to data from the state Alternative Works Project Review Committee. Earlier this year, Tacoma Public Schools was the first school district in the state to receive blanket approval to utilize design-build for all its capital projects. Other school districts currently utilizing design-build include Issaquah, Central Kitsap Schools, Bremeron and Mount Vernon.

I have devoted a significant portion of my career to serving the needs of K-12 capital projects, acting as architect, owner and builder. The integration of design and construction services is a natural progression of the industry's desire to capitalize on collaboration, reduce waste in the process, and integrate design and construction services.



Alternative delivery methods trends per the Washington State Alternative Works Project Review Committee.

The PDB approach balances the needs of the owner, designer and builder team — commonly referred to as a “three-legged

stool” — so design and construction can be fully integrated from the start. This aligns the team around a single set of goals and eliminates rework and handoffs.

“The PDB approach creates a shared team vision and avoids siloed thinking, which drives success on the district’s terms,” said Heather Hocklander, principal with BCRA.

DELIVERING A COMPLEX BUILDING

Public K-12 schools are complex by nature. Having to provide for numerous and sometimes opposing operational programs, complex multi-use spaces like gymnasiums, cafeterias and auditoriums, advanced safety and security requirements to protect students and staff, intensive IT infrastructure that will adapt throughout the life of the building, complex mechanical systems, and long-term operational efficiency and maintainability considerations.

Schools also involve a large array of stakeholders with diverse and sometimes competing interests, limited funding, and schedule constraints commonly involving phased construction on occupied campuses. A successful project will reflect the needs of the district, which will fundamentally be determined by the students, parents, staff and general public’s perception of the process and the completed project. These stakeholders expect close collaboration of the owner and design-build team and confidence that they are receiving the best value for their funds and that their voices

IMAGE COURTESY OF LEASE CRUTCHER LEWIS

are heard.

“To be successful, appropriate planning, scoping and budgeting needs to be done in advance with key project team members; designers, builders and select specialty trade partners, before starting design,” said Morris Aldridge, executive director of planning and construction for Tacoma Public Schools.

THE SYNERGY OF COLLABORATION

Progressive design-build puts owners in the driver’s seat and allows them to identify what “best value” means to their stakeholders — rather than awarding projects purely on the lowest bid. In my experience, best value can include getting the most building area, performance and quality for their dollar, delivering the building under a shortened schedule, and meeting DEI goals. The design-build team can align around the district’s definition of success — working to enhance the scope, maximize the budget and optimize the schedule.

Designers have also achieved a higher level of design excellence by having direct access and commitment from the expertise that will fabricate and install their visions.

“Working collaboratively the owner, builder and design team identify risks and ranked priorities before design begins. As design and construction progress — and more is known — the PDB team can convert risks to rewards, oriented toward delivering more of the owner’s priorities

PROGRESSIVE DESIGN-BUILD — PAGE 19

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In recent years, the process of evaluating mass timber has changed. What once began with individual advocates pitching mass timber as a project-specific option is now beginning with clients and owners. More focused on environmentally responsible builds, and more familiar with available materials, it's exciting to see entire project teams seeking out mass timber.



BY JASON WHITNEY
COUGHLIN PORTER
LUNDEEN

district, has a goal of “creating schools that encourage a culture of conservation and environmentally responsible behaviors by combining learning with sustainability.”

The vote and the prescribed goals are encouraging evidence of the direction the built environment is headed, especially in the education market.

This vision is evident at the university level, too. Teams are pursuing sustainable builds, evaluating alternative materials, construction practices, and environmental impacts. And mass timber is showing up in more and more of the region's campus designs.



Van Asselt School addition, which bids in late October.

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REGIONAL VISION

Seattle Public Schools is one such client. In February, the board of directors voted unanimously to transition the district to 100% clean and renewable energy by 2040. The district, which is known for its ongoing campaign to reduce waste, water and energy use across the

MAKING MT WORK

Good intentions and a vision for mass timber aren't enough. The challenge clients and design teams face now is how do we make mass timber stick? What does it take to make mass timber succeed on a project — especially one in the education market, where roadblocks of budgets, schedules and public

sector complications threaten its inclusion?

The Coughlin Porter Lundeen portfolio includes extensive mass timber experience in the education market with projects like Kellogg Middle School, WWU Kaiser Borsari Hall and WSU Paccar Environmental Technology Building. The firm also partnered with Walsh Construction

Co. and Mahlum on a state pilot program, creating new, sustainability-focused learning environments for Jefferson Elementary in Sequim and Maple Elementary in Seattle.

So often, mass timber is dropped from a project in the early phases. We're proud of our mass timber execution rate, our success at making mass timber not only something talked about in a project's conceptual phase, but something alive in projects all over the region.

We've shared keys to successful mass timber projects — things like ensuring the entire team is on board, getting stakeholders to the table as early as possible, choosing the right contractor and communicating well — but beyond these basics, what else does it take to not only get mass timber into a project, but keep it?

We've developed three keys to making it work:

- Think beyond code compliance.
- Understand the material.
- Design for efficiency.

To exemplify what these recommendations look like in the implementation of a project, we've pulled two case studies: Van Asselt School addition and new Renton Elementary School No. 16.

Both projects feature mass timber prominently. And both are code alternates — requiring exceptional agility, creativity and know-how from the teams. Each provided wonderful learning opportunities for the whole team and revealed keys to getting mass timber across the finish line.

BEYOND CODE COMPLIANCE

The right team will not only be able to think outside the box to create unique designs, but will guide the code-alternate pro-

cess, working with everyone from the design team to stakeholders, district officials and city officials.

The Van Asselt School addition includes a new two-story building to house 26 classrooms and a gymnasium, supporting the school's more than 1,000 students. Working in mass timber's favor, the entire Van Asselt team was fully committed to using the material and complementing Seattle Public School District's vision for a cleaner, sustainable future.

The groundwork for mass timber was laid, but the largest departure from code and standard practices was utilizing the floor and roof cross-laminated timber (CLT) as the seismic diaphragm. This unique system demanded proprietary connectors which are concealed and specifically engineered for mass timber projects. Through a pre-application meeting with the Seattle Department of Construction & Inspections, we permitted these systems and components successfully into the project.

At Renton Elementary School No. 16, we were breaking new ground. Our team took on the role of educators and mass timber advocates, gaining the trust of the jurisdiction and sharing presentations, success stories and data.

Establishing this collaborative relationship between city and design team made mass timber a possibility for the new school and we were able to ensure equivalency with the minimum standards of the building code.

UNDERSTAND THE MATERIAL

A true understanding of the material (and its manufacturers) makes all the difference. It's a prerequisite to navigating the bid process, guiding the team, and ultimately, creating efficient

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(and on-budget!) mass timber designs.

The Van Asselt School addition is a success story and example of optimization. With the full team at the table from the very beginning, we were able to look at conceptual designs, timelines, framing options and building form, ultimately designing a mass timber structure that was not only beautiful, but highly efficient. A best-case scenario for mass timber design, the material (CLT panels and glulam beam spans) came first, and the building form followed.

Understanding the material is synonymous with understanding the manufacturer. In the case of mass timber, it's important to know which panels are standard (meaning they can be bid to multiple manufacturers) and allow for competitive pricing. Exceptionally familiar with the local industry and CLT manufacturers, the team selected the right manufacturing partners and products for the project to be competitively and accurately bid.

Renton Elementary School No. 16's design is full of dramatic roof slopes, complexities and changing levels, so we created options that supported the architectural vision and allowed mass timber to be integrated to the greatest extent possible. This meant thoughtfully selecting locations for exposed mass timber, remaining respectful of

the budget and building complexities.

Acoustic dowel-laminated timber supported by glulam beams was chosen for large, busy spaces like the gym, commons and library. Classroom wings feature CLT and post-and-beam construction, achieving the warm, wood tones desired by the design team.

Additionally, instead of designing for a custom panel, costs were kept under control by selecting a "universal" panel size and working within its confines. Leveraging a network of trusted mass timber manufacturers yields competitive, accurate bids.

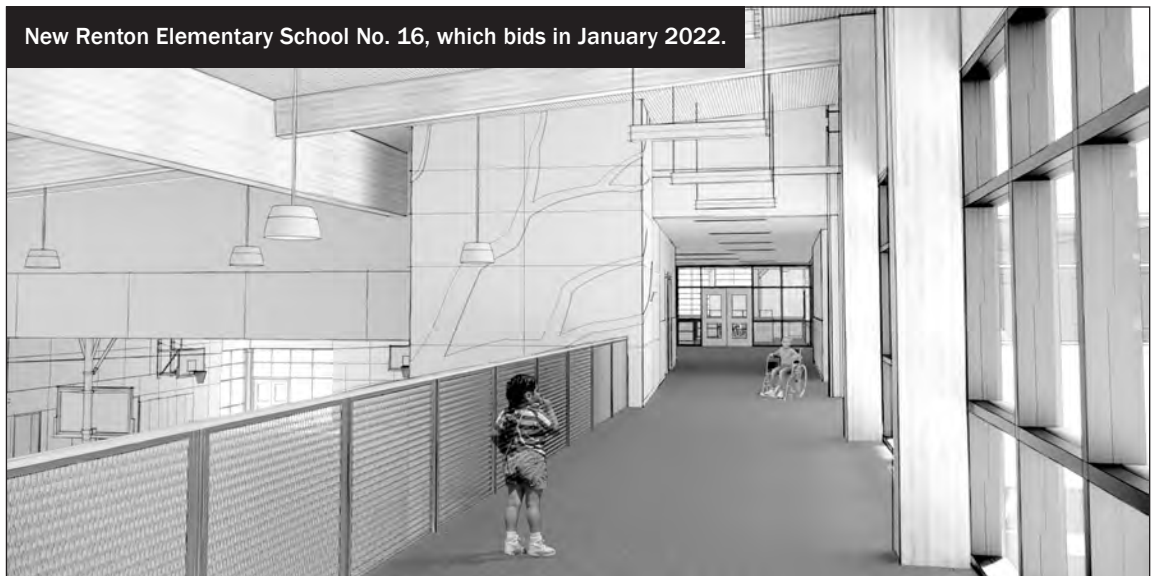
DESIGN FOR EFFICIENCY

Creating an efficient mass timber design means optimizing the material.

Van Asselt Elementary School finds ultimate efficiency in the floor plan. The building form, influenced by the panels, was designed with the material top-of-mind. This is how we always hope mass timber designs will take shape!

One of the top reasons mass timber regularly gets dropped is because of price. The school's structural designs leverage Coughlin Porter Lundeen's mass timber expertise, utilizing products at their full efficiency. The preselected universal products are used

New Renton Elementary School No. 16, which bids in January 2022.



COURTESY OF HUTTEBALL + OREMUS ARCHITECTURE

in strategic ways and panels are maximized at full spans, resulting in less overall materials, customizations and cost.

In contrast, the final design of Renton Elementary School No. 16 proves that teams can achieve an efficient mass timber system in a building that wasn't necessarily designed for mass timber and panel efficiency. Since the program was resolved and the layout was approved before Coughlin Porter Lundeen joined the team, we had to be creative in our engineering and carefully evaluate if mass timber

could fit into the set budget and layout.

The structural floor system is an impressive project standout and exemplifies efficient structural design. The final layout ditches the normal positioning of columns and beams thanks to the classrooms' unique framing layout. As a traditional layout with its corresponding seven-ply panels would have priced mass timber out of the project, the team opted for a plan that cut down the panel span and utilizes the more universal five-ply panel. These decks and their cantilevered panels resulted in

a thinner floor system, reduced spans and economized use of CLT panels.

It's an exciting time for mass timber. And an exciting time for us as its stewards. We look forward to seeing projects continue to leverage this material, witness the social and environmental impacts, and be a part of this new category of builds in the education sector and beyond.

Jason Whitney is a structural project manager at Coughlin Porter Lundeen and proponent of mass timber.

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SCHOOL VENTILATION STRATEGIES FOR A PANDEMIC

NAC Architecture and Hargis Engineers pioneered the design of displacement ventilation in schools in Washington in 2003.

At Stevens Creek Elementary School in Lake Stevens, white displacement ventilation grilles are visible under the bench seating in the open library.



IMAGES COURTESY OF NAC ARCHITECTURE



BY PHILIP RIEDEL & BRIAN HAUGK
SPECIAL TO THE JOURNAL

How could future schools be designed so they are safer during a pandemic? By planning ahead, strategically selecting proven systems, and implementing best practices, it is possible to construct new schools with reduced potential for viruses to spread.

One of the most effective defenses against airborne pathogens is ventilation. Teachers and students spend most of the day in classrooms with upwards of 30 other people, giving communicable illnesses significant potential. Some factors that affect the spread of an airborne virus

in classrooms (other than viral load), include how much outside air is delivered, how the air is mixed in the room, how much air is returned, and how well the air is treated before being returned to the classroom. When creating a new school, we have an opportunity to provide a healthier indoor environment.

Traditional ventilation systems provide airflow at the ceiling, relying on mixing for controlling temperature within the space. By contrast, thermal displacement ventilation introduces air low in a room and at low velocity so that it does not mix. The body temperature of each occupant heats the air around them, creating an individual thermal plume that rises toward the ceiling. This warmer air is then returned at the ceiling level to an air handling unit to be partially exhausted, filtered, and then partially recirculated. By not mixing the air, when a student breathes or coughs there is less chance for the potentially contaminated air to be inhaled by other students. School districts with these systems have confirmed through testing and data

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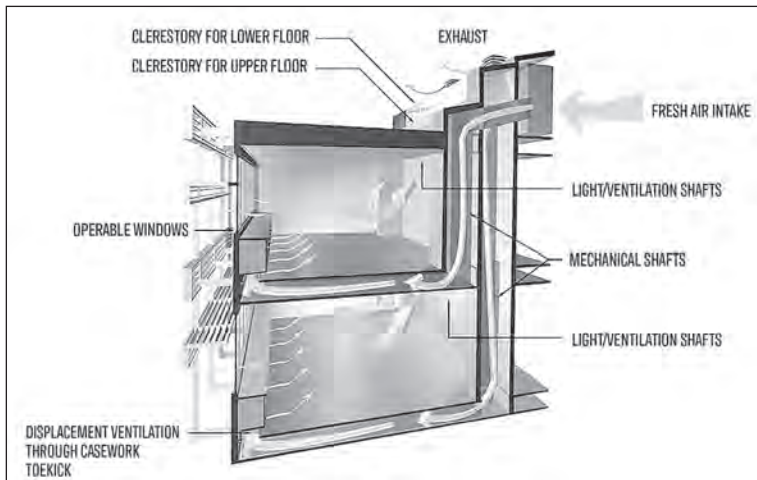
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The displacement ventilation system at Silas High School is integrated into the building design, using toe kick grilles at the perimeter casework to supply air and the open daylight shafts to return it for heat exchange before exhausting to the outside.

collection that absenteeism prior to the pandemic dropped by 4-8%. You can see a simulation of the effectiveness of displacement here: <https://tinyurl.com/ykahjh59>

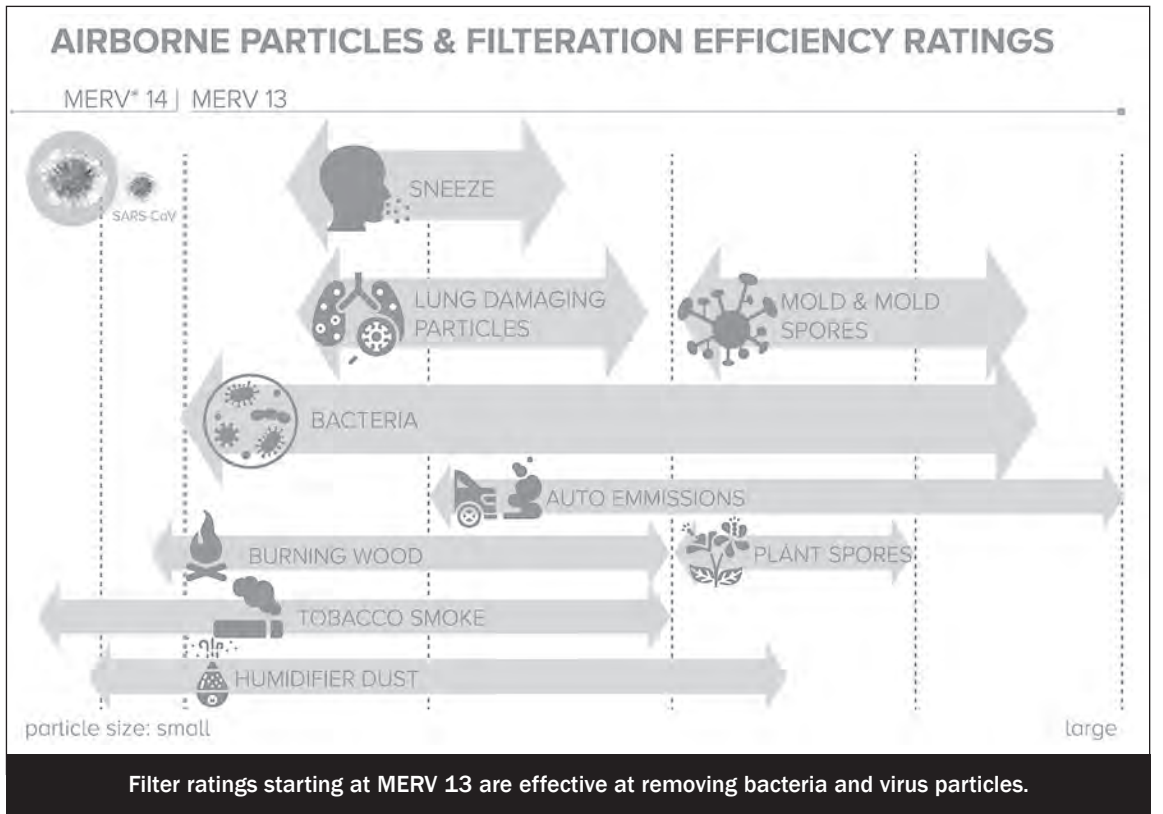
NAC Architecture and Hargis Engineers pioneered the design of displacement ventilation in schools in Washington in 2003, with the Phase 1 project at Silas High School in Tacoma and at Little Cedars Elementary School in Snohomish. To avoid potential maintenance issues with floor vents, the toe kick of the classrooms' perimeter casework are used as a supply air plenum. The skylight shafts in each classroom are used to bring air back to the mechanical penthouse, where it passes through a heat exchanger before being exhausted to the outside. In occupied mode, this is a 100% outside air system, further increasing ventilation effectiveness by not returning any air back to the classroom during occupied periods.

Knowledge of these systems has positioned our state ahead of the curve. In subsequent years, both displacement ventilation and heat recovery have become fairly commonplace in new Washington state schools, with a variety of iterations on the specific designs. Because COVID-19

has increased awareness of the disruptive potential of viruses, we anticipate this air delivery method will become even more common. The heat recovery portion allows for 100% outside and exhaust air while capturing heat to avoid wasting energy.

In addition to indoor air quality benefits, the slow movement of air helps lower mechanical noise in classrooms, creating a better learning environment. The effectiveness of displacement ventilation also reduces fan energy, as less air is needed to heat or cool the space.

While planning a school with displacement ventilation, it is important to accommodate the shafts early in the design process to ensure they do not pose issues for classroom layout. Note that the lower velocity air requires increased duct sizes. While these factors typically make it difficult to accommodate displacement ventilation in a limited remodel, there are numerous local examples of successfully incorporating them in school designs. With the increased benefits of displacement ventilation, manufacturers of grilles have a variety of options to work within any space. Some are available to install at the



ceiling level or within a wall cavity that provide the same effectiveness.

There are other options to consider for improving air quality in schools, either in addition to displacement or with traditional mixing systems. These include improved air filtration (MERV 13+) for central air-hand-

dling equipment, humidification, modified control sequences, and air disinfection devices like UV lights, ionizers and electrostatic precipitators. Proper filtration can effectively capture many airborne viruses. Be sure to consult with your architect and mechanical engineer for current knowledge regarding the safety

and effectiveness of these components.

Philip Riedel is a principal and PK-12 practice leader at NAC Architecture, as well as the Pacific Northwest director for the International Board of A4LE. Brian Haugk is a mechanical engineer and principal at Hargis Engineers.



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Bainbridge Island High School Building 100
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HOW SCHOOLS AND DESIGNERS CAN MANAGE CRISES

Remote, hybrid or outdoor: which instruction style did it best during the pandemic?

Catalyst is a tuition-free, nonprofit charter school in Bremerton, open to all students regardless of ability, need or zip code. Rice Fergus Miller completed a full renovation of the 20,000-square-foot building in 2019, including 12 classrooms plus a cafeteria, meeting rooms and faculty space.



IMAGES COURTESY OF RICE FERGUS MILLER

Crisis demands fast and effective solutions in an ever-changing playing field. When schools began closing rapidly in early 2020, no one could have predicted how they would adapt, or how students would succeed amid unprecedented challenges.



BY TRAVIS HAUAN
RICE FERGUS
MILLER

The three commonly seen methods of instruction that bubbled to the surface were:

fully remote distance learning, a hybrid between remote and limited in-class learning and outdoor in-person learning. We interviewed three schools that each approached education differently during the first year of the pandemic: Catalyst Public School in Bremerton, Silverwood School in Poulsbo and Lincoln Park Elementary School in Douglass Park, Oregon. Each school, regardless of the teaching method, succeeded in main-

taining safety, fostering student success and boosting enrollment the following year by employing timeless management and instruction techniques.

ENGAGE THE COMMUNITY

The cornerstone to success for every school interviewed was community engagement. Creating early standards for communication and procedures for teachers, families, students, as well as getting buy-in from each, was paramount to success. This included everything from how and when students would return to the classroom, how assignments would transfer back and forth and even how families maintained safety protocols at home. While each school approached this differently, the same objective emerged: clear and regular communication between teachers, and families allowing for deft adaptability as needed.

► Remote

Apart from video conferencing platforms, many schools and districts adopted communication apps to bridge communication delay and develop a network of accountability between faculty, students and parents.

Catalyst is a community charter school located in Bremerton. It quickly selected an app called EdLight as an educational platform to facilitate communication. This app allows the school to publish critical class-wide or school-wide messages from the school to parents on a secure connection. Additionally, it connects students and teachers to send and receive assignments and feedback immediately.

► Hybrid

When moving to hybrid learning, Catalyst continued to use EdLight to maintain an assignment collection and as the standard communication platform. The app allows students to take photographs of their assignments and upload them immediately to the platform. The instructor can digitally review and comment on assignments that are immediately accessible to students. As classes split between in-person and digital learning, a tool for seamless connection with students became invaluable.

► In-person

Silverwood School is an independent outdoor school, located in Poulsbo. It was dedicated to maintaining in-person learning throughout the pandemic. Limited by technology, it employed a different approach to engage its community. Silverwood hired a 0.5 FTE liaison that assisted each teacher and staff to regu-

larly check in with families and ensure students and families had the resources they needed. The liaison provided much needed support and would even deliver or pick up supplies if needed. According to Lisa Heaman, the head of school at Silverwood, "Hiring the liaison early on was one of the best decisions we made. It made everything run much smoother." For the 2021-22 school year, Silverwood has adopted a digital communication platform, much like Catalyst, for faculty to family engagement.

MODIFY YOUR SPACE

Have you ever draped a blanket over a window to reduce glare, or opened a door with your elbow because your hands were full? Modifying your physical environment based on immediate need provides valuable information to inform how a space may not be meeting its potential. During the pandemic, examining how schools modified their physical space to meet safety protocol has provided critical feedback for how to better design instructional spaces for future use.

► Remote

Digital engagement can have just as much of a physical impact on students, families and faculty as a school building. For remote learners, all three schools issued tablet devices that were consistent, and all connected to the same video-conferencing platform. For Catalyst, much of the digital space arrangement came from the video conferencing platform and working with students to set up their dedicated space at home. During student orientation, Catalyst and Douglass Park gave each student and family a packet of manipulatives (depending on the grade) that the student was responsible for and could use during remote classes.

► Hybrid

When students came back, each school used the guidelines for social distancing, sanitization, mask wearing and ventilation upgrades, where possible. For Catalyst, it had recently moved into a new building and had enough space to have all students at school but keep reduced class sizes to maintain 6 feet of separation.

For Catalyst, two things it would do differently: Install operable windows in the classrooms for natural ventilation; and provide more covered outdoor space (tents in the parking lot don't last long in the rain).

► In-person

With the outdoors as your classroom, air quality isn't usually an



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issue, unless it is during forest fire season. Silverwood students spend most of their time outside, but when they were inside, social distancing and safety precautions were paramount. As Heaman stated, “Early on, our mantra was, ‘everyone’s health and safety (is) our priority.’” Early on, Silverwood installed air filtration systems in every room in the school.

Additionally, it modified its classroom spaces to offer the greatest amount of flexibility. This meant that much of the furniture had to be removed so that 6 feet of social distancing could be maintained. Some teachers had students use their own yoga mats and work off the floor and on trays, other teachers used “surfboards,” a floor-seated desk students can pick up and move easily inside or outside. When they weren’t using either, a soft seat on the grass or tree stumps worked just as well.

MAINTAIN ACCOUNTABILITY

Accountability sustained each school to stick to its safety procedures, ensure academic rigor and foster student success. Creating a culture of accountability among staff, students and families resulted in zero COVID-19 cases at each school.

► Remote

For remote learning, the challenge of fostering regular participation from students became one of the biggest struggles. Amanda Gardner from Catalyst said, “I noticed that students who had done an academic year before became much more passive during remote learning. Luckily that went away when (the students) returned this year and they were very excited to start school again.” During full remote learning, one positive way schools ensured they were staying on track was by inviting other school instructors to sit in on virtual classes and offer feedback.

Teachers used different ice-breakers and digital techniques to get students to keep their cameras on and stay engaged during live teaching sessions. Both schools that offered remote learning stated live teaching sessions were much more successful in engaging the student than assignments sent back and forth with no or limited teaching sessions.

For remote learners, success relied heavily on the instructor and families to stay on top of communication to ensure students remained engaged.

► Hybrid

Hybrid split-class learning brought the benefit of smaller

Classroom windows maximize natural light and add views of Sinclair Inlet.



class sizes but with the challenge of contact tracing and remote learning. The accountability for hybrid learning combined the physical challenges of safety and sanitation with the pedagogical accountability of remote learning.

► In-person

Heaman described how creating a culture of accountability among the faculty helped maintain the rigor of the school even when everyone felt fatigued. For Silverwood, creating a culture

of accountability early on for the facility, families and students is what sustained them throughout the year with no COVID-19 cases on campus.

In developing the safety plan for Silverwood, Heaman thought through in detail every step a student would take through their day at school. From that they limited the amount of material that would pass from teacher to student, making it simpler to trace who touched what.

VALUABLE INSIGHT

Three different learning methods offer valuable insight to how schools adapted to maintain safety and academic success during the first year of the pandemic. Each school successfully engaged families, students and faculty to create a community united to keep everyone safe and help students succeed. Each school modified its physi-

MANAGING CRISES — PAGE 19



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EFFECTIVE LEARNING DESIGN IN THE STATE-OF-THE-ART HONOULIULI MIDDLE SCHOOL

Miller Hull designs a 21-century educational facility conducive to student success.

When the Hawaii Department of Education set out to create a 21st century educational facility that would be economical to construct, provide superior learning environments, and be cost-effective to operate and maintain, it selected The Miller Hull Partnership and Ferraro Choi Architects to collaborate in the design. Phase one of the Honouliuli Middle School, located on an 18-acre parcel in Honolulu, was completed and occupied in 2021, with two additional construction phases planned to complete the campus serving 1,050 students.



BY KATIE POPOLOW
THE MILLER HULL
PARTNERSHIP

Miller Hull was charged to lead the planning process, design the shell and core, and provide expertise on 21st century learning environments. The local firm, Ferraro Choi, led the project team and was responsible for the design of the interior environments. The two architecture firms worked in a collaborative manner resulting in an integrated design.

Throughout the design process, Miller Hull presented progress reflecting the client's overarching goals: budget, thermal comfort, long-term maintenance, and safety and security. At the same time, the firm needed to design effective learning environments that set students up for success as adults.

The first phase of the middle school included administration functions, a library, cafeteria and kitchen, music program, an outdoor covered basketball court and adjacent tennis courts, and one of three classroom buildings. Site work included the main exterior plaza, a centrally located grassy outdoor commons, parking, loading dock and storm-water infrastructure. Phase two and three are currently under construction, with phase two including the second of the three classroom buildings and the soccer field, and phase three including the last of the classroom buildings and a baseball field.

COMMUNITY PROCESS

The Department of Education desired a cohesive, integrative,

collaborative and highly successful design process that could serve as an example for future DOE projects. Miller Hull crafted an initial and unique charrette process that was facilitated by an impartial third party and included a series of three intensive on-site workshops between the design team, the client group, and a larger stakeholder group including students, parents, teachers, school administrators, staff, community and business representatives. The goal was to, together, define an early common vision and vested interest in the project. Information was collected via meetings, presentations, feedback sessions, surveys, and other exercises to create a comprehensive list of expectations and opportunities specific to the project.

DESIGNING FOR SUCCESS

The school's main entry plaza welcomes students, faculty and community members through a single-entry point to the campus. The shaded covered walkway leads into the heart of campus, reinforcing the concept of one front door and strengthening the identity of place through a shared sense of belonging.

The campus is made up of a collection of separate buildings organized around a central outdoor common area. This organizational strategy recognizes that middle schoolers' network of influence shifts from family to friends and the importance of having space that they can treat as their own in this important stage of development. By focusing communal programs around the outdoor commons, these shared spaces thrive at the heart of campus and promote the sharing of resources and ideas building off each other.

Architectural elements throughout campus are designed to perform multiple functions as a strategy to reduce cost and maintenance. For example, the large shutters primarily operate to shade the classroom windows throughout the school day. After hours, the shutters are closed to provide security in front of the jalousie windows, which remain open for night flush cooling.

More of these examples can be seen throughout the project. Exterior materials were selected to provide high visibility, provide solar control, limit heat gain, and be durable with low-maintenance needs. Exposing the

structure to view as the finish material eliminates the need for secondary materials. A large, motor-operated bi-fold door at the cafeteria and adjacent operable windows naturally ventilate the large cafeteria, allowing for the extension of the cafeteria to the commons for an indoor/outdoor connection while providing a flexible venue to accommodate a range of event sizes.

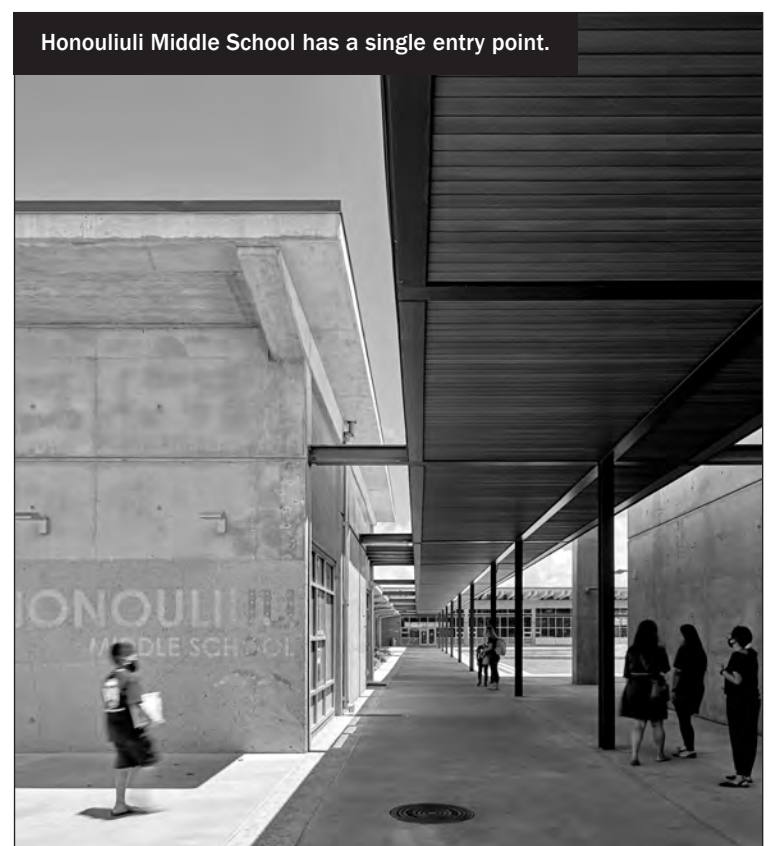
The climate in Kapolei, Hawaii, is very hot and dry with 18 inches of rainfall per year. There is a consistent northeast trade wind that offers an important natural opportunity to assist with cooling. Hawaii's schools have historically been known for hot and uncomfortable classrooms during much of the school year — contributing to poor academic performance.

The campus was planned to situate high-use spaces suitable for natural ventilation on the windward side of buildings — oriented perpendicular to the trade winds for optimal cross ventilation and comfort under the ASHRAE Standard 55 Adaptive Thermal Comfort Model. This allows for a mixed-mode approach that relies on natural ventilation for all but four months of the year when air-conditioning is required. During warm weather, multiple low-maintenance VRF air-conditioning systems provide cooling. CFD wind analysis software assisted in confirming optimal locations for buildings relative to one another, location and quantity of operable windows, and the impact of air velocity on occupants.

Roof overhangs shade 100% of glazed areas, and large operable shutters allow the program to flow from interior to exterior seamlessly. Sun studies in Revit were used to confirm these goals were met. Covered walkways and vertical sunscreen slats provide shade to students and faculty as they gather at outdoor learning lanais and move throughout the exterior spaces on campus.

MATERIAL USE

Availability of construction materials is challenging in Hawaii, as is finding materials that are resistant to the harsh marine environment and termites. The design team worked with local suppliers to develop a simple material palette of locally available and robust materials:



Honouliuli Middle School has a single entry point.



NATURE AND NURTURE

CONTINUED FROM PAGE 9

spiked during the pandemic. King County is no exception. The Renton School District Health Profile and the Healthy Youth Survey (2018) show that 20% of Renton students considered suicide and 30% of students experienced frequent depressive feelings in the past 12 months. Both of these indicators are significantly higher than the county average and were reported prior to the COVID-19 pandemic.

Between March 2020 and June 2021, the county saw a nearly 19% increase in calls to the behavioral health crisis line (King County COVID Dashboard).

Renton youth are experiencing stress, anxiety, uncertainty and isolation caused by prolonged social distancing, school closures and changes to their daily lives. COVID-19 has affected the social and emotional well-being of youth and families in Renton and has heightened the disparities in resources and services for many youth and families who were already vulnerable.

Places like FFCC eliminate barriers to meeting mental and physical health needs and provide support and preventative measures that help keep emotional and behavioral health challenges from escalating.

ARCHITECTURE OF EMPATHY

Healthy bodies, minds and spirits guided the program, uses and relationships in the building, and inspired a kid-friendly, welcoming design informed by biophilic concepts. From a design perspective, the defining challenge of FFCC was twofold: synthesizing the programmatic goals of four major

stakeholders and implementing them within a \$10.8 million construction budget. Close review of all spaces with each stakeholder helped whittle the space to its most essential functions, keeping the footprint as economical as possible.

With its two-story gallery flanked by one-story, metal-clad volumes topped with green roofs, the building establishes a strong, inviting presence and neighborhood scale compatible with the nearby elementary school. Prominent sustainable elements, including the green roof, sunshades, community garden, solar panels and daylighting combine with nature-inspired patterns in the building's siding and fenestration to celebrate nature as an essential nurturing element.

Accommodating the services of each partner formed the programmatic requirements of the 21,000-square-foot building. The central axis of the building, the Gallery, is the spine connecting each partner to the whole. This wide linear space acts as the central nervous system not just to the building but to the community, providing a space for incidental connections.

Branching off the Gallery are many elements that support a thriving life — a welcoming lobby where friends can gather, classrooms/maker-spaces that feed young minds and build new skills, a multipurpose space with a demonstration kitchen to support community initiatives, administrative spaces that support the center's leadership, a neighborhood medical and dental clinic, drop-in childcare for visitors to the center, a dance

studio and a fitness room. The Gallery culminates in the facility anchor, the gymnasium.

SEE AND BE SEEN

Easy and visible access to each part of the center is part of providing "a space where people can feel safe and welcome and seen," which, says Baldwin, is the central purpose of the Family First Community Center.

Renton is an example of a city that urgently needs services the FFCC plans to offer, Baldwin says, citing services built around the individual, such as financial literacy and healthy cooking classes.

"We're trying to be as thoughtful and empathic as possible to the general population in this area so we can create a bigger return — not for the bottom line but for the health and wellness of the community," says Baldwin. "If we can prove that concept here, then this center can be a model for other cities across not only the state but the country."

Meredith Everist is a principal at Baylis Architects. She is passionate about sustainable design, industry diversity and inclusion and childhood success.

PROGRESSIVE DESIGN-BUILD

CONTINUED FROM PAGE 10

in the final project," said Michael McGavock, principal at McGranahan Architects.

Students, teachers and faculty must have access to a complete and functional facility on a predictable schedule that coincides with district and school year milestones, so there is no room for schedule creep or unforeseen delays. The PDB process significantly reduces schedule risks by engaging the right project partners from the start, shortening construction time and providing project schedule predictability.

Inclusivity of diverse businesses and workforce individuals is also a clear expectation of many of our communities, and progressive design-build empowers districts to incorporate DEI goals into their overall project goals. The proof is in the results at Tacoma Public Schools.

"We have well exceeded the stipulated participation goals on all projects, and the cost per square foot of the projects has been less than other delivery methods," said Aldridge.

The alternative delivery method sets the team up for success by harnessing each team's collective expertise to accomplish a district's distinctive project goals.

"The PDB process provides the greatest opportunity to achieve

true design excellence," said Kris Stamon, architect and project manager at McGranahan Architects.

The process focuses on solutions that provide the overall best value defined by the district and its stakeholders. The entire team can focus on meeting community and stakeholder goals, not leaving this as just the burden of the district.

Progressive design-build continues to enable architects, contractors and school districts to provide high-quality learning spaces for students, faculty and the communities they serve. While Tacoma Public Schools was the first to receive universal approval for design-build use, many more districts are discovering the tangible value that the PDB method brings to their stakeholders. I anticipate that many more students across the state will be learning in spaces specifically designed and built to serve their unique needs delivered by this method.

Casey Moore is a project executive at Lease Crutcher Lewis and is also versed in the owner's role, recently serving as the director of capital programs for Federal Way Public Schools and as director of school facilities organization for the Office of the Superintendent of Public Instruction.

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EFFECTIVE LEARNING DESIGN

CONTINUED FROM PAGE 18

precast concrete, masonry, stucco, and aluminum bi-fold shutters. Shipping materials to Hawaii is costly and time-consuming and buying local puts public construction funds to work in the local community.

Concrete was selected as the primary building material for its local availability and serves to unify the collection of buildings

on campus. The expressed structure doubles as a low-maintenance exterior finish and the material's thermal mass contribute to the success of a simple passive solar cooling system.

Katie Popolow joined Miller Hull in 2000 and serves as the managing principal of the San Diego studio.

MANAGING CRISES

CONTINUED FROM PAGE 17

cal and digital space in various ways as it quickly adapted to new scientific research and emerging data.

Fostering a culture of accountability was vital in maintaining academic rigor and health safety. As we move forward into more unknown territory for education, the lessons learned during this

last year of school will aid in planning for the future of education for years to come.

Travis Hauan is an architectural designer and associate at Rice Fergus Miller. He works in the firm's housing, community and education studios.

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