

American School & University®

JANUARY/FEBRUARY 2023
asumag.com | schooldesigns.com

SHAPING FACILITIES AND BUSINESS DECISIONS

Construction Conundrum

Schools and universities want to upgrade facilities, but supply chain backlogs and higher costs have made it difficult to complete construction projects on time and on budget.

14

ALSO
INSIDE:

HVAC &
MAINTENANCE

24

PLANNING &
DESIGN

28

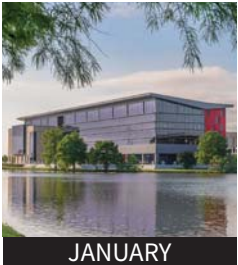


2023
EDUCATIONAL
INTERIORS
SHOWCASE

ENTRY FORMS DUE MARCH 10

Visit [SchoolDesigns.com](https://www.schooldesigns.com)

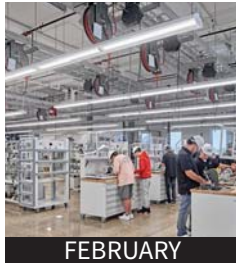
COLLEGE OF THE
MAINLAND, STEAM/
ALLIED HEALTH BUILDING



JANUARY



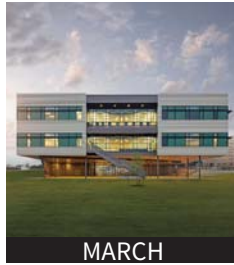
HOBBS CTECH



FEBRUARY



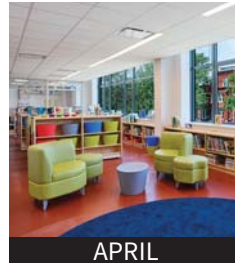
BLUE RIDGE ISD,
BLUE RIDGE
ELEMENTARY SCHOOL



MARCH



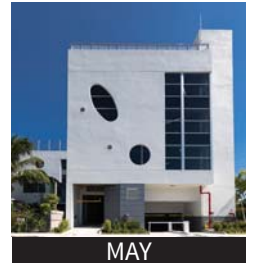
GARRISON
ELEMENTARY SCHOOL



APRIL



KLA ACADEMY



MAY



TEMPLETON
ELEMENTARY SCHOOL



JUNE



IBI GROUP

Click, Print, Plan.

2023 Industry Events Calendar Free at SchoolDesigns.com.

Visit [SchoolDesigns.com](https://www.schooldesigns.com) today to print your complimentary copy of the 2023 *American School & University/SchoolDesigns.com* Calendar of Industry Events. Includes a detailed list of 2023 live and virtual conference and event dates. Plus a comprehensive directory of industry organizations with complete contact information. Each month showcases an outstanding school or university project.

Visit [SchoolDesigns.com](https://www.schooldesigns.com) to get your copy today!

KETTERING UNIVERSITY
LEARNING COMMONS



JULY



AMERICAN SCHOOL
FOUNDATION OF
GUADALAJARA



AUGUST



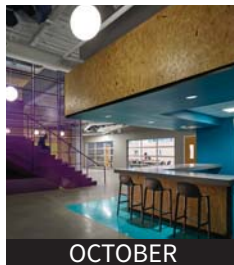
DELAWARE CITY
SCHOOLS, DEMPSEY
MIDDLE SCHOOL



SEPTEMBER



AFTER SCHOOL MATTERS
WING OF GATELY PARK



OCTOBER



IVAN G. SMITH
ELEMENTARY SCHOOL



NOVEMBER



ECHO EDUCATIONAL
ENRICHMENT
CENTER & DR. DEBRA
PARRISH-HOOKS
ADMINISTRATIVE CENTER



DECEMBER



American School & University SchoolDesigns



Cordless. Efficient. Fast.

The ProTeam® GoFree® Flex Pro II —
increase productivity and efficiency
with the freedom to move.



CONTENTS

VOLUME 95 • ISSUE 4 • JANUARY/FEBRUARY 2023



COVER STORY

14 Construction Conundrum

Schools and universities want to upgrade facilities, but supply chain backlogs and higher costs have made it difficult to complete construction projects on time and on budget.

FEATURES

HVAC & Maintenance

24 Putting the Healthy in HVAC

A new report from two environmental groups calls for schools to install all-electric high-performance HVAC systems.

Planning & Design

28 A Good Fit

Meeting the challenge of designing and building on tight sites.

DEPARTMENTS

8 Inside

Sustainable Solutions

10 Knowledge Center

Computer Workstations

12 Construction Zone

Cafeterias & Dining Facilities

34 Profiles

People, Places and Goings-ons

VIEWPOINTS

22 Facility Planning

Planning for Construction
Cost Inflation

ALSO IN EVERY ISSUE ...

6 EDITOR'S FOCUS

7 ON THE WEB

32 PRODUCT SOLUTIONS

33 MARKET PLACE

33 AD INDEX

American School & University (USPS Permit 023-180, ISSN 0003-0945 print, ISSN 2161-7791 online) is published 7x a year (Jan/Feb, Mar/Apr, May/June, July, August, Sep/Oct, Nov/Dec) by Endeavor Business Media, LLC, 1233 Janesville Ave., Fort Atkinson, WI 53538. Periodical postage paid at Fort Atkinson, WI, and additional mailing offices. POSTMASTER: Send address changes to American School & University, PO Box 3257, Northbrook, IL 60065-3257. SUBSCRIPTIONS: Publisher reserves the right to reject non-qualified subscriptions. Subscription prices: U.S. (\$ 123.75); Canada/Mexico (\$ 98.75); All other countries (\$ 123.75). All subscriptions are payable in U.S. funds. Send subscription inquiries to American School & University, PO Box 3257, Northbrook, IL 60065-3257. Customer service can be reached toll-free at 877-382-9187 or at americanschool@omeda.com for magazine subscription assistance or questions.

Printed in the USA. Copyright 2023 Endeavor Business Media, LLC. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopies, recordings, or any information storage or retrieval system without permission from the publisher. Endeavor Business Media, LLC does not assume and hereby disclaims any liability to any person or company for any loss or damage caused by errors or omissions in the material herein, regardless of whether such errors result from negligence, accident, or any other cause whatsoever. The views and opinions in the articles herein are not to be taken as official expressions of the publishers, unless so stated. The publishers do not warrant either expressly or by implication, the factual accuracy of the articles herein, nor do they so warrant any views or opinions by the authors of said articles.

EQUALLY ADMIRERD
BY ARCHITECTS,
DESIGNERS AND
GIANT PANDAS.

fiberon[®]
Composite Cladding



Introducing Bamboo, the newest colorway in our nature-inspired Wildwood™ composite cladding collection. Naturally sustainable, uniquely beautiful, unbelievably durable and built to last. Distinctive gradients showcase the dynamic shading of Bamboo, while our advanced design technology protects your building and our planet. Wildwood Bamboo brings the best of natural aesthetics and superior technology. fiberoncladding.com/future



LET IT SNOW

By Mike Kennedy

EDITORIAL
ADVISORY BOARD

Bruce Mather

Executive Director of
Facilities Management
Elmhurst College, IL

Martin Montaña

Capital Projects Administrator,
Rio Rancho Public Schools
Rio Rancho, NM

James E. Rydeen

FAIA, Armstrong Torseth
Skold and Rydeen, Inc.
Minneapolis, MN

It's an occupational hazard, but as I report and write about the latest events affecting schools and universities, I can't help recalling my own days as a student and comparing the present with the past.

And in January and February, those memories often involve snow days. Back in the day, we didn't have them very often—nearly every student at my elementary school lived within walking distance so it took a sizable snowfall to shut things down. But when the occasional blizzard hit and word spread through the neighborhood that classes were canceled, we headed outside in our boots and parkas, grateful for the surprise gift falling from the sky.

Of course, that was a child's perspective. Adults were likely to view a snow day more as an unwelcome distraction than a gift. The ones who called the shots on cancellation had to worry about whether an instructional day would have to be rescheduled or if the snow day would affect school funding. The adults of those celebrating children often found themselves having to scramble for childcare at the last minute.

Now, in 2023, snow days are becoming a relic of the past for some school districts.

Schools have learned through hard experience that they can continue to conduct classes even when students are unable to

gather in a classroom. Dealing with the shutdown of facilities brought on by the Covid-19 pandemic, school administrators pivoted to online instruction as a way for teachers to keep providing lessons to students.

Remote instruction may not be considered a wise long-term strategy for educating students—critics have raised concerns about the isolation some students feel and whether access to technology is equitable.

But for one day, many schools see online lessons as a more productive use of time than canceling classes altogether.

So some school systems—most notably the nation's largest, New York City, have declared an end to snow days.

The adult in me sees that as a wise decision.

But the child in me yearns for a day of sledding and snowball fights instead of staring at a computer screen. ■

(Editor's Note: Because of an error in the November-December 2022 issue, the Architectural Portfolio pages for the Echo Educational Enrichment Center & Dr. Debra Parrish-Hooks Administrative Center in South Holland, Ill., contained some incorrect photographs. The corrected entry appears on pages 20-21.)

Enter Educational Interiors Showcase 2023

This spring, *American School & University* magazine will assemble a panel of education and architectural professionals to judge the 33rd annual Educational Interiors Showcase, the industry's premier awards program for excellence in education facilities interiors. Selected projects will be published in the August 2023 Educational Interiors Showcase issue.

Visit schooldesigns.com/educational-interiors-showcase to enter or for more information. Entry forms due March 10. Submission materials are due April 26.



33rd ANNUAL
Educational Interiors Showcase

2023 CALL FOR ENTRIES

ENTRY FORMS DUE: MARCH 10, 2023
PORTFOLIO DUE: APRIL 26, 2023

EARLY-BIRD OFFER!

Send your entry form by January 13, 2023 to qualify for a special 1-page rate of \$1,750
SEE INSIDE FOR A FREE PRINT-READY PDF OPTION

American
SchoolsUniversity

Chapman University will convert Anaheim, Calif., apartment building to student housing

Chapman University in Orange, Calif., has bought the Anavia apartment complex in Anaheim for more campus housing.

The new residence hall will be called Chapman Court, the university says. The university is paying \$160 million for the apartment complex, the Orange County Register reports.

The apartments will be converted into living space for about 800 students. The acquisition



Credit: Chapman University

comes five years after Chapman acquired another Anaheim apartment building. The school bought the Katella Grand in 2017 and converted it to the Chapman Grand residence hall, which houses 900 students. School officials say the additional housing units will enable Chapman to maintain its goal of providing living space for 50% of its undergraduate students on campus.

www.asumag.com/21255406

Ripon College plans on-campus stadium

Ripon College in Ripon, Wis., is moving forward with a \$35 million infrastructure plan that will pay for a new on-campus stadium and the renovation and expansion of a 61-year-old science facility.



Credit: Ripon College

The college says in a news release that the plan's first phase calls for a \$24.5 million investment in the science center and an \$8.5 million investment in the campus stadium, both of which are projected to break ground in spring 2023.

Construction of a 157,000-square-foot stadium will provide an on-campus home for the Ripon College football and men's and women's soccer teams. The facility will have a 2,000-seat grandstand and press box, and lighting for evening programming. College officials say Ripon is the only school in the Midwest Conference without its own campus stadium.

www.asumag.com/21255875

\$128 million renovation planned for Hempfield Area (Pa.) district high school

The Hempfield Area (Pa.) school board has approved a \$128 million project to renovate its high school.

The Pittsburgh Tribune-Review reports that the cost of renovating Hempfield Area High School in Greensburg has surged because of inflation and increased square footage.

The cost, initially pegged at \$97 million to \$110 million, now has a \$128 million price tag. Construction crews are on track to break ground in June.

The district has decided to gut the 66-year-old high school and replace everything. Major changes include moving the high school entrance, creating a new athletic wing, upgrading the exterior, relocating the science wing and adding more space to the cafeteria and arts wing. ■

www.asumag.com/21258122

New York City wants to open high school on the site of a shuttered Catholic campus in Queens

The New York City School Construction Authority plans to open a 659-student high school on the site of a former Catholic school in the Queens borough.

The Flushing Post reports that the Construction Authority plans to acquire the site in the College Point neighborhood where St. Agnes Academic High School operated. The school closed last year because of financial difficulties.

The city intends for the new school to open in 2026 to alleviate crowding in northeast Queens high schools. The plan must be approved by the city council.

www.asumag.com/21256257



Credit: Google



Credit: Google

www.asumag.com
www.schoolsdesigns.com

CONTENT DIRECTOR/ASSOCIATE PUBLISHER
Joe Agron · jagron@endeavorb2b.com

SENIOR EDITOR
Mike Kennedy · mkenedy@asumag.com

ART DIRECTOR
Timothy Driver · tdriver@endeavorb2b.com

AWARD PROGRAM MANAGER
Heather Buzzard · hbuzzard@endeavorb2b.com

EDITORIAL CONTRIBUTORS · Stephen Ashkin;
Paul Erickson; American Institute of Architects
Committee on Architecture for Education

VICE PRESIDENT, BUILDINGS
& CONSTRUCTION GROUP
Mike Hellmann · mhellmann@endeavorb2b.com

GROUP EDITORIAL DIRECTOR -
BUILDINGS & CONSTRUCTION GROUP
Mike Eby · meby@endeavorb2b.com

SENIOR PRODUCTION OPERATIONS MANAGER
Greg Araujo · garaujo@endeavorb2b.com

PRODUCTION MANAGER
Brenda Wiley · bwiley@endeavorb2b.com



ENDEAVOR BUSINESS MEDIA, LLC

CEO | Chris Ferrell

President | June Griffin

CFO | Mark Zadell

COO | Patrick Rains

CRO | Reggie Lawrence

Chief Administrative and Legal Officer
Tracy Kane

EVP, Buildings, Lighting, &
Digital Infrastructure
Lester Craft

SUBSCRIPTION CUSTOMER SERVICE:
(847) 559-7598
americanschool@omeda.com

CORPORATE OFFICE:
Endeavor Business Media
30 Burton Hills Blvd., Ste 185
Nashville, TN 37215
(800) 547-7377
endeavorbusinessmedia.com

Career center at University of Denver gets LEED Platinum rating

The Burwell Center for Career Achievement at the University of Denver has received LEED Platinum certification from the U.S. Green Building Council.



The Burwell Center for Career Achievement at the University of Denver.
Credit: University of Denver

Green Ideas Building Science Consultants says in a news release that the facility is the first LEED Platinum building on the Denver campus.

The 22,904-square-foot three-story building was designed to provide extensive daylighting with views to the surrounding campus, superior energy efficiency, and ergonomic workspaces for computer users.

Some of the sustainable strategies incorporated into the design and construction: low-emitting materials that reduce the harmful effect of VOCs; capture of 100% of stormwater onsite to replicate natural hydrology; cool roof strategies to reduce the urban heat island effect; and native and adaptive landscaping to reduce the amount of potable water needed for irrigation.

The facility, completed in 2020, provides undergraduate and graduate students with career counseling and resources.

The architects are Lake | Flato Architects, and SAR+.

Chula Vista (Calif.) district completes \$32 million solar installation

The Chula Vista (Calif.) Elementary School District has completed a \$32 million project that installed more than 18,000 solar panels at 46 schools.

The district says the photovoltaic panels are projected to save the district \$70 million in energy costs over the next 25 years.

“By the end of this project, we think we will be able to generate about 90% of the district’s overall energy demands,” says Deputy Superintendent Oscar Esquivel. “That is a tremendous amount of energy—and savings for our district.”

Chula Vista schools now have 8.1 megawatts of solar installed across 48 sites—46 schools, the district’s transportation yard, and the Education Service and Support Center.



Credit: Chula Vista Elementary School District

The district partnered with ENGIE North America to install the solar panels.

Funding for the project came from a bond issue approved by voters in 2020.

EPA awards \$1 billion to school districts for electric and low-emission buses

The U.S. Environmental Protection Agency’s Clean School Bus Program has awarded nearly \$1 billion to 389 school districts to help them purchase over 2,400 clean school buses that will accelerate the transition to zero-emission vehicles.



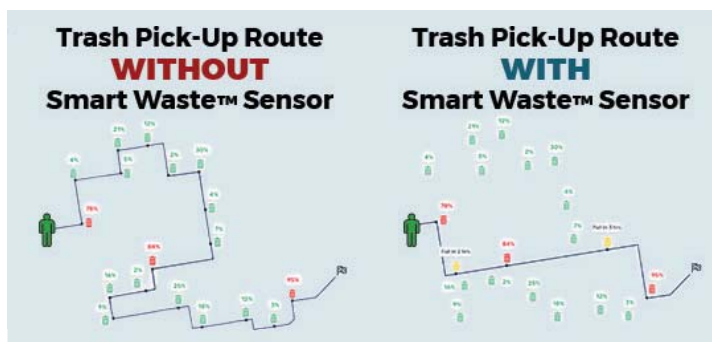
The EPA says phasing out buses with diesel engines will ensure cleaner air for students, bus drivers, and school staff working near the bus loading areas, and the communities through which the buses drive each day.

EPA Administrator Michael S. Regan says the electric and low-emission vehicles will reduce greenhouse gas emissions, save schools money, and better protect children’s health.

Noting that some 25 million children ride buses to school each day, Regan says, “This is just the beginning of our work to build a healthier future, reduce climate pollution, and ensure the clean, breathable air that all our children deserve.”

The infrastructure law passed by Congress in 2021 includes \$5 billion over the next five years for the Clean School Bus Program. ■

Revolutionize Waste Management on Your Campus



Meet the Trash Sensor That Reduces Your Carbon Footprint

Going on a trash collection run only to find that the bins don't need to be emptied is a waste of resources. Thankfully **Landmark Studio & Design's Smart Waste™ trash sensors** are designed to eliminate that problem—and reduce your carbon footprint, too.

Easily installed in your current bins and dumpsters, or in new bins from Landmark, Smart Waste sensors help you better

understand waste patterns across campus by measuring how full your trash is in real time. Its intelligent routing will help you reduce unnecessary collection trips and schedule pickups only when your bins need it. And with fewer trips comes fewer carbon emissions too—which means you can feel good about keeping your campus clean.



Contact your Landmark rep to see how you can streamline your waste management today.



LANDMARK
STUDIO & DESIGN



1-888-839-3853
LandmarkStudio.com

COMPUTER WORKSTATIONS

By Mike Kennedy

Whether in a classroom or at home, students have come to rely heavily on computers to complete their assignments and keep up with their studies. That dependence grew even greater in the response to the Covid-19 pandemic as remote and hybrid instruction methods required many hours in front of a computer screen. As students work their way through elementary and secondary school and onto higher education, the hours perched in front of those screens will accumulate.

So it's important for the workstations where students will be spending those hours are safe and comfortable. The U.S. Occupational Safety and Health Administration (OSHA) has a checklist to help set up ergonomic workstations properly.



Choosing the proper components of a workstation will help students perform more efficiently and work comfortably.

Photo 9292191 / Technology © Pavel Losevsky | Dreamstime.com

“To understand the best way to set up a computer workstation, it is helpful to understand the concept of neutral body positioning,” the OSHA guide says. “This is a comfortable working posture in which your joints are naturally aligned. Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system and reduces your risk of developing a musculoskeletal disorder.”

To maintain neutral body postures at a workstation, OSHA says that

- Hands, wrists, and forearms should be straight, in-line and roughly parallel to the floor.
- Head should be level, forward facing, and balanced.
- Shoulders should be relaxed and upper arms should hang normally at the side of the body.
- Elbows should stay in close to the body and are bent between 90 and 120 degrees.
- Feet should be fully supported by the floor or a footrest may be used if the desk height is not adjustable.
- The back should be fully supported with appropriate lumbar support when sitting vertical or leaning back slightly.
- Thighs and hips should be supported and generally parallel to the floor.
- Knees should be about the same height as the hips with the feet slightly forward.

Workplace components

Choosing the proper components of a workstation will help a user perform more efficiently and work comfortably.

Those include:

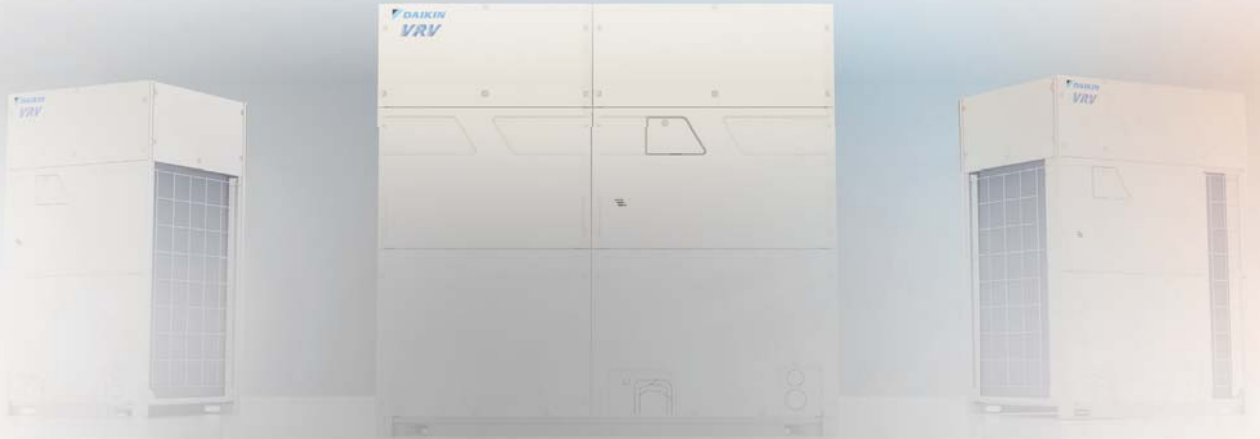
- **Chairs.** “A chair that is well-designed and appropriately adjusted is an essential element of a safe and productive computer workstation,” OSHA says. “A good chair provides necessary support to the back, legs, buttocks, and arms, while reducing exposures to awkward postures, contact stress, and forceful exertions.” Seat height should be adjustable and allow for proper alignment with the work surface.
- **Desks.** “A well-designed and appropriately adjusted desk will provide adequate clearance for your legs, allow proper placement of computer components and accessories, and minimize awkward postures and exertions,” the guide says.
- **Monitors.** “Choosing a suitable monitor and placing it in an appropriate position helps reduce exposure to forceful exertions, awkward postures, and overhead glare,” the guide says. “This helps prevent possible health effects such as excessive fatigue, eye strain, and neck and back pain.” The monitor should be adjusted so that the top of the screen is at or below eye level so users can read it without bending their head or neck.
- **Keyboards.** “Proper selection and arrangement of the computer keyboard helps reduce exposure to awkward postures, repetition, and contact stress.” The keyboard platform should be adjusted so that the hands are positioned over the keyboard with elbows near the torso at an angle of 90 to 100 degrees.
- **Pointer/mouse.** “Selection and placement of a pointer/mouse is an important factor in creating a safe computer workstation.”
- **Wrist/palm supports:** “Wrist or palm rests can also increase your comfort. Proper use has been shown to reduce muscle activity and to facilitate neutral wrist angles.”

Laptop computers are regularly used away from a workstation or outside a classroom. Users of those devices should change their posture frequently to improve neck and wrist posture, and time spent on a laptop should be minimized.

Users also should pay attention to lighting a workstation. “Appropriately placing lighting and selecting the right level of illumination can enhance your ability to see monitor images,” OSHA says. “For example, if lighting is excessive or causes glare on the monitor screen, you may develop eyestrain or headaches, and may have to work in awkward postures to view the screen.

OSHA also cautions that people should not work in the same posture for prolonged periods. Users should:

- Make small adjustments to their chairs or backrests.
- Stretch their fingers, hands, arms, and torso.
- Stand up and walk around for a few minutes periodically.
- Perform some tasks while standing: computing, reading, phone calls, or meetings. ■



SIMPLE. SUSTAINABLE. CONNECTED.

From the world's #1 air conditioning company, discover the cloud connected benefits of *VRV EMERION* provided by Daikin's *HERO* Cloud Services.



New dining space opens at George Washington University

George Washington University in Washington, D.C., has opened new dining space in Shenkman Hall after supply chain problems pushed back its reopening for months.

The GW Hatchet reports that the new space will have a breakfast station with cereals, bagels, self-serve waffles and other options that can be accessed throughout



Credit: George Washington University

the day, as well as an allergy-free Pure Eats station, Teaching Kitchen, Carvery/Innovate, Grill, Sweet shop and a salad bar.

Officials originally planned to open the Shenkman dining hall in the fall but delayed the reopening because of “global supply chain issues.”

“Thank you for your patience and understanding as we transitioned these past couple of months through construction delays toward a full on-campus dining program,” said Douglas Frazier, executive director of dining services. “We are excited that this spring that you will be able to experience a daily variety of healthy,

convenient and, most importantly, affordable meal choices.”

The dining hall can seat 450 students and serve 1,350 people per meal period via a variety of table sizes.

The university says the new dining space is a part of its transformation from a full retail model to a community-focused residential model of dining. George Washington is offering six different meal plans for the 2022-23 academic year. That includes three unlimited meal plans where the swipe of a card enables students to eat whatever and whenever they feel like in the dining halls.

Proposed high school overhaul in Mundelein, Ill., would modernize cafeteria and kitchen

The Mundelein (Ill.) High School District is asking voters to approve a \$175 million bond proposal that would pay for an extensive renovation and expansion of Mundelein High School, including replacement of a cramped cafeteria and outdated kitchen.

The school district says that because of space and design limitations in the cafeteria, the school must schedule four lunch periods—from 10:15 a.m. to 1:40 p.m.—to accommodate the 2,200 students.

The school was built in 1958, and the original cafeteria is the same space the school now uses. The kitchen also is outdated and does not meet student needs.

The proposed renovation would provide expanded cafeteria space and enable Mundelein to reduce the number of lunch pe-

riods to three (750 students per period).

The new cafeteria also would provide more serving stations and give the food services program more flexibility.

The proposed campus upgrade also would expand performing arts spaces, physical education and athletic spaces and career training spaces.

Voters will decide the fate of the expansion proposal on April 4.



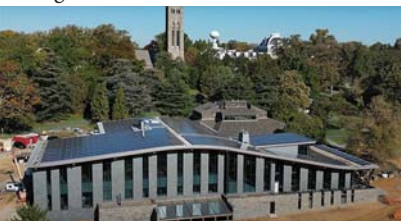
Mundelein High School's cafeteria, seen here in 1962, needs renovation and expansion.

Credit: Mundelein (Ill.) High School District

New facility at Swarthmore College reimagines the dining experience

Swarthmore College has opened a new dining facility on the Swarthmore, Pa., campus.

The Dining Center offers students a greater diversity of options in seating and eating: Tables include two-, four-, six-, and



Solar panels line the roof of the newly built Dining Center at Swarthmore College.

Credit: Swarthmore College

eight-top varieties on both floors along, and outdoor seating is available on the lower level. Nine food stations serve an array of fresh and local dining choices.

The college says the Dining Center provides a re-imagined dining experience that emphasizes community, inclusivity, and sustainability.

The design creates a greater feeling of openness that facilitates more interaction between diners and staff.

“The setup of the different stations really highlights the food and the staff, providing a way for all of them to interact with our students in ways they could not

before,” says Associate Vice President for Campus Services Anthony Coschignano.

Solar panels that cover the entire roof will meet roughly 40% of the building's eventual power needs. The basement will eventually house a geoexchange plant that is central to the college's energy plan.

Additional sustainable features include a mass timber structural system that is significantly greener than steel alternatives, an all-electric kitchen, long-lasting terrazzo floors, stormwater management and recapture, and a trayless policy that is estimated to save about 22,000 gallons of water a year.

New dining facility opens at Catholic University of America

Catholic University of America has opened Garvey Hall, a new dining facility on the Washington, D.C., campus.

The university says the 35,000-square-foot dining hall was built on the former site of Magner Hall, a residence hall torn down in 2019.

Garvey Hall is double the size of the previous dining space on campus—the Eatery in the Edward J. Pryzbyla Center. In addition to having more space, the dining hall has new cooking equipment, and offers fresher food made in front of guests.

Many of the food stations will be similar to those in the Eatery, but there are additional options: an espresso machine, hard-packed ice cream; omelets served through lunchtime; fresh baked goods; a significantly larger vegan/vegetarian station; fresh herbs



Garvey Hall is the new dining facility at the Catholic University of America.
Credit: Catholic University of America

grown on site and used in cooking; and built-in water fountains with hot, cold, or sparkling water.

The former Eatery will be converted to a student lounge, performance area, and student offices.

The facility is named for former Catholic University President John Garvey and his wife, Jeanne Garvey. The construction was made possible through an anonymous \$8 million donation.

Proposed school expansion in Bristol, Maine, would add space for cafeteria



Rendering of planned expansion of Bristol Consolidated School.

Credit: Bristol School Committee

A proposed \$6.4 million renovation at Bristol Consolidated School in Bristol, Maine, would provide space for a kitchen and a cafeteria that will double as a multipurpose community room.

Officials say the dining space now available in the school accommodates student lunch periods and physical edu-

cation classes but is too small to handle both. School leaders also envision the new cafeteria space as a location that is secure from the rest of the school, with a separate entrance, where community events can be held.

In addition to the cafeteria, the renovation will provide a dedicated art room, spaces for occupational and physical ther-

apy, and a 1,061-square-foot technology space for STEAM-related activities, The Lincoln County News reports.

The Bristol School Committee has chosen Optimum Construction Co. as contractor for the project.

Voters will decide on March 20 whether to approve an \$8 million bond proposal to pay for the upgrade.

Dining hall at Texas A&M certified as a Green Restaurant

Sbisa Dining Hall at Texas A&M University is the first university dining hall to become a 3-Star Certified Green Restaurant in the state of Texas, the university says.



Sbisa Dining Hall has been named a 3-Star Certified Green Restaurant.

Credit: Texas A&M University

Aggie Dining at Texas A&M partnered with the Green Restaurant Association to carry out 39 steps that focus on reducing energy consumption, water usage, waste and use of chemicals. Sbisa also has a full-scale recycling and composting program, and it recycles its used cooking oil for biodiesel.

As the largest dining facility at Texas A&M, Sbisa Hall feeds thousands of students and campus visitors every day.

Sustainability and the environment are very important to Texas A&M, says David Riddle, regional vice president of Aggie Dining.

“Thanks to the hard work of our staff at Sbisa, we have been able to make a big impact in our dining hall,” he said. “Becoming a 3-Star Certified Green Restaurant keeps our focus on continuing to help reduce our waste and consumption.” ■

CONSTRUCTION CONUNDRUM

Schools and universities want to upgrade facilities, but supply chain backlogs and higher costs have made it difficult to complete construction projects on time and on budget.

By Mike Kennedy

Many planned school construction projects were put on hold and ongoing projects halted when Covid-19 brought the economy to a standstill.

Credit: Katherine Judd

In the coming weeks, Minnechaug Regional High School in Wilbraham, Mass., hopes to be able to turn off the lights in its building. That's something they haven't been able to do since August 2021.

That's when the software controlling the lighting system in school failed, and for more than a year, the 7,000 or so lights in the building have remained on 24 hours a day.

Officials in the Hampden-Wilbraham Regional School District began working immediately to unravel the complications that led to their costly and embarrassing problem. But that has proven to be a herculean task. The company that installed the system has changed hands several times, and company now in charge found it difficult to find someone familiar enough with the system to fix it.

Soon, replacement parts were ordered, and repairs were planned, but weeks turned into months as the Covid-19 pandemic caused supply chain delays in receiving the needed equipment from factories in China.

The good news is that the supply chain bottleneck has loosened, and district officials say the parts and people will be in place in February to install a properly functioning lighting system after 18 months of excess illumination.

The lighting snafu at Minnechaug High is a uniquely odd situation—not every school facility glitch catches the attention of the joke writers on Saturday Night Live—but supply chain problems for school projects are not an outlier.

Delays have become more commonplace as education institutions try to keep their construction and renovation projects on schedule and on budget. Schools and universities around the nation are postponing or altering projects as they confront those realities.

For example:

- Even though voters have approved funding, the Kearney (Mo.) district has decided to forgo construction of the district's fifth elementary school because of unfavorable economic conditions. Kearney "needs to rethink plans for a new elementary school due to some serious challenges," the district announced. "Supply chain shortages persist, inflation is soaring, and a recession looms."

- Construction of the new Candlewood Lake Elementary School in Brookfield, Conn., was supposed to be finished by December so students could move in after the winter break, but delays in receiving supplies such as flooring and roofing materials have prompted district officials to postpone the opening until the beginning of the 2023-24 school year.

- West Prairie (Ill.) Community School District 103 had planned to complete renovations and additions of West Prairie Junior-Senior High School in Colchester by December, but it also fell victim to supply chain problems. "There have been significant delays in material availability, ranging from various petroleum-based products to heating and ventilation equipment," the district said. The





A key to anticipating potential construction delays and cost increases is to gather information early in the planning process.

Credit: Greg Premru

school board has put off opening the upgraded facility until fall semester 2023.

Education facility projects always have been susceptible to delays and cost overruns when unexpected conditions blow up carefully crafted budgets and timelines, but a combination of factors—the lingering effects of the pandemic, the war in Ukraine and spiking inflation—continue to throw many school construction schedules and budgets into disarray.

“It all started with the pandemic,” says Chris Powers, vice president of Colantonio Inc., a construction firm in Holliston, Mass. “Between the pandemic, the war in Ukraine, PVC petroleum plans freezing over in the South, labor shortages—it just seemed to be one thing after the next.”

Many planned projects were put on hold and ongoing projects halted when Covid-19 brought the economy to a standstill. When it became safe to get projects back on track, there were more of them than the industry could handle.

“You had so much demand that we’re still catching up,” says Powers. “That’s why you’re continuing to see some of these lead time issues.”

Little things and big delays

Construction projects have a lot of moving parts, and a problem in one area can have ripple effects that jeopardize a schedule.

“Schools...with the high level of energy efficiency they’re looking for, they need thick insulation on the roof,” Powers says. “To install this thick insulation, you need these long screws—8- to 12-inch screws. At one point, those were actually holding up projects because nobody could get the screws. That shows how granular this problem becomes.”

As of the beginning of 2023, pricing and availability fluctuations for some items have settled down. “For a long time, there seemed to be issues with insulation, rock wall, lumber—that type of pricing seems to be stabilizing,” Powers says. “There is still stuff we’re seeing increases or long lead times on—electrically related items like switchgear, transformers. Windows are still a long lead item. We’re still wrestling with that.”

Embracing teamwork

To navigate the conditions that can throw a school construction project off course, all of the key players—school leadership, design team, contractor and subcontractors—should develop a level of trust and cooperation so that the new or renovated facility is ready for students and staff when it is needed.

“Living and dying by the contract isn’t going to get your project built,” says Powers. “You’ve got to have some level of flexibility as a team. You don’t want a subcontractor to get hurt so bad on a job that he can’t perform.”

Each situation should be evaluated on a case-by-case basis.

“When you talk about supply chain delays and cost increases associated with that, who’s responsible?” Power says. “In most cases, it’s reasonable to assume that the subcontractors included some type of reasonable escalation within their original bids. But what’s unreasonable is when there’s a piece of equipment they’re providing, and there’s a component of that piece of equipment that the manufacturer can’t get, so the subcontractor has to go to a different manufacturer and there’s a price increase. That’s something that the team as a whole has to look at, and the [school] has to be willing to pay that escalation cost in order to get the project built.”

Early planning

With supply chain issues cropping up more frequently, one key to anticipating potential construction snags and cost increases is to gather information early, Powers asserts.

“Our operations teams spend so much more time now worrying about lead times, getting materials on site, making sure they’re doing their due diligence with the subcontractors, then going deeper and getting backup from manufacturers on lead times,” Powers says. “You can no longer take the subcontractor or even the suppliers at face value. You have to go up one layer and hear it from the manufacturer.”



LOTS OF HANDS. LOTS OF SURFACES. LOTS OF GERMS.

Upgrade to hygienic surfaces and cleaner water using your ESSER funds today.

Keep health risks low and school attendance high by upgrading your drinking water and restroom solutions. With Zurn Elkay's complete, sustainable package, you can provide hygienic surfaces and healthier hydration overnight. Purchase these essentials using your ESSER funds — before they expire.



Improve your schools at elkay.com/k12



by **ZURN ELKAY**



Disruptions brought on by the Covid-19 pandemic have made it more difficult for school construction projects to be completed on time.
Credit: Alex MacLean

From a contractor's perspective, Powers says, the best way to accomplish this is for an education institution to use a Construction Manager at Risk project delivery method rather than a hard bid (design-bid-build).

"With CM at Risk, you're bringing the construction manager on board early—it could be eight to 12 months before the project is getting built," Powers says. "The construction manager can be investigating things like lead times and escalation, and mitigating them along the way, looking for alternative products or alternative procurement methods."

Powers says that some may perceive CM at Risk as a more expensive delivery method, but he disputes that.

"It's a misconception," he says. "The missteps you can have with a hard bid—there's much more risk associated with that. CM at Risk reduces the opportunity for change orders dramatically."

The CM at Risk method also enables a contractor to put out bid packages in advance of the entire project going out for bid.

"If you know metal windows have a long lead time, the design team could put extra attention on detailing the windows early on in the design, and we can go out for bid far in advance just on the metal window package," says Powers. "If you wait until there's 100% construction documents, then you run the risk of not having the product on site when you need it."

CM at Risk is especially valuable in facility renovations, which typically have a tighter schedule, Powers says. With new construction,



Supply chain delays have become more commonplace as education institutions try to keep their construction and renovation projects on schedule and on budget.

Credit: Greg Premru

the contractor is likely to devote several months on site work, concrete foundations and structural steel, and finished materials don't need to be delivered for six months or more.

"But on renovations, you may have only a month of demolition before you need to start putting it all back together, so you are going need materials right away," Powers says. "The design team and the [school] need to figure for the procurement timeframe and really dissect their schedule."

Conditions improving

It may take a while for school construction timelines and costs to return to a sense of normalcy, even when rampant supply chain backlogs are no longer an impediment.

"We have to go through a period of time—I'd say a year—of stable pricing, because subcontractors have taken a hit on a lot of these jobs," Powers says. "You've got all this escalation—some of it they've been able to recoup, and some it they've been held to whatever their contract was. So they're extremely cautious. Until they see prices stabilizing, they're really not going to want to take much of a risk." ■

FACILITIES
ARE SPOTLESS



EXPECT
PROFITS
TO SOAR

rethink
WHAT CLEAN MEANS
RETHINKCLEAN.ORG

Cleanliness has gone from plus-up to must-have. Boosting your cleaning standards will help to boost your bottom line.

ISSA
Advancing Clean.
Driving Innovation.





ECHO EDUCATIONAL ENRICHMENT CENTER & DR. DEBRA PARRISH-HOOKS ADMINISTRATIVE CENTER

SOUTH HOLLAND, ILLINOIS



“We recognized the importance of providing stability for our students and staff. This facility establishes a future for the special needs children in our area.”

— DR. SANDRA THOMAS, SUPERINTENDENT, ECHO JOINT AGREEMENT

The ECHO (Exceptional Children Have Opportunities) Educational Enrichment Center & Dr. Debra Parrish-Hooks Administrative Center is a specialty educational facility that serves special needs individuals from kindergarten through 21 years of age. The facility is run by the ECHO Joint Agreement, a cooperative of 17 school districts in the South Cook County region of Illinois.

The facility houses six specialty programs:

- (ABLE) Adaptive Behavioral Learning Environment Program: serves students who have needs related to autism spectrum disorder and intellectual disabilities or who are experiencing issues with verbal and nonverbal communication, social interactions, sensory processing/regulation and academic progress.
- (CD) Communication Development: serves children who have speech or language deficits that interfere with their

educational achievement in a general education setting.

- (DHH) Deaf and Hard of Hearing: serves students who have mild to profound hearing loss.
- (EASE) ECHO Academic Skills Education Program: serves students who have multiple complex disabilities, including cognitive, language, physical, health or vision needs.
- (FEP) Family Enrichment Program: serves at-risk expecting parents and families by providing early, continuous, intensive, and comprehensive



child development and family support services focusing on increasing self-esteem and academic achievement.

- (PACE) Providing Alternatives For Continuing Education: serves students with varied behavioral, emotional, and academic needs by providing a therapeutic, emotionally safe environment geared toward increasing self-esteem,

reinforcing socially appropriate behaviors, and achieving academic success.

Each of these programs had been housed at various schools





throughout the districts and had to change locations about every three years. With a goal of creating stability and continuity, the challenge was to bring six independently functioning programs, with strict

requirements, into one building. JMA worked with each program team to develop an overall building program. The design goals:

- Providing educational space that maintained each pro-

gram's autonomy and functionality while taking advantage of the efficiencies and synergies of a central facility.

- Designing flexible space arrangements that would provide safe and effective edu-

cational environments for the diverse student population.

- Using land owned by the cooperative to situate the new facility near the existing ECHO School.

The result is a two-story facility that provides each program area with a "school within a school." Common areas, such as cafeteria, gymnasium, and media center, are used by each program, and specialists unique to each program have dedicated space within that program's block. Flexible conference and small group areas are available for all to use. The team can bring all students together or maintain their individuality. The result is the forming of a cohesive community that provides the desired safety, stability, and continuity. ■

JMA Architects

Associated firms:
Millies Engineering Group; McCluskey Engineering; WT Engineering

Design Team

Jim Maciejewski (Principal Architect); Wayne Babiak (Architect); Edvin Mertdogan (Architect)

Client

ECHO Joint Agreement

Area

99,735 sq. ft.

Total cost

\$19,859,878

Capacity

400

Cost/square foot

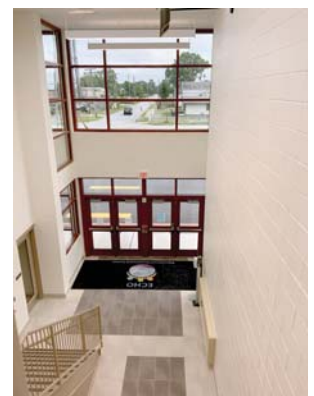
\$199

Completion

March 2022

Images

Felipe Cajigas; Jim Maciejewski





Planning for Construction **COST INFLATION**

By Paul Erickson

Construction cost inflation is a reality everyone is trying to manage. The year-over-year inflation that occurred in 2021-22 has slowed slightly in recent months, but elevated inflation is an issue school planners must account for.

History

To document cost trends, the construction industry compiles data on material and labor costs. National publications, cost data entities, and construction firms generate cost indices for tracking inflation. From data prior to 2021, U.S. historical annual construction cost inflation has averaged 3% to 4% for 10-plus years. Historically, the design and construction industry has used those reliable ranges in forecasting costs.

Forecasting Example

As an example of cost forecasting, a school district in metropolitan Minneapolis received bids October 2015 to construct a high school. Dividing the “bid” amount by building square feet results in a cost per square foot (e.g., \$26,000,000 / 130,000 sq. ft.) of \$200. Now, fast-forward to August 2017 – another Minneapolis-area district seek bids for a similar school. With 7.34% construction inflation over the two-year period (about 3.6% per year), the bid for August 2017 would be revised to \$214.68/sq. ft. Forecasting out to an August 2019 bid, apply 4% annual inflation to arrive at \$232.20/sq. ft.

Future inflation is an unknown, but historical numbers have provided estimates with relative accuracy. That wasn’t the case in 2021 and 2022; the construction industry experienced extreme year-over-year inflation. If districts sought high school construction bids in 2022 using the historical inflation percentages cited above, bids would have exceeded estimates by a double-digit percentage. Many school districts have experienced this scenario.

2021-2024

The years 2021 and 2022 are anomalies – in most U.S. cities, annual construction inflation rate exceeded 10% for months. For example, the Engineering News Record Index lists the Minneapolis metro area annual inflation for 2022 at 12.4% through October. During March through May, contractors were receiving weekly price increases. The month-to-month inflation during that time exceeded 1%, which made it especially difficult to estimate costs in the design phase. Recently, the annual construction inflation rate in Minneapolis for August through November 2022 has dropped to between 7% and 9%. Going forward, forecasting inflation for construction costs in 2023 and 2024 will continue to be challenging.

Strategies for the Future

For school districts, a large construction project typically goes through many stages: district-wide facilities planning, community engagement, bond referendum passage, design/construction documents preparation, and contractor bidding. These activities can easily take several years. An estimator frequently must forecast project costs two to three years into the future.

To deal with higher inflation, potential cost fluctuations, longer delivery lead times, and labor shortages, design and construction professionals must devise strategies to manage these conditions. Strategies include: 1) using higher inflation percentages in forecasting; 2) modifying designs and systems to accommodate market conditions; 3) introducing alternate materials and methods into projects to address cost fluctuations; 4) obtaining separate bids on selected “big-ticket” components; 5) requesting options for extending completion dates.

Planners may choose to incorporate a higher annual inflation instead of historical 4% annual inflation when calculating cost estimates. They may seek to incorporate systems and products that are readily available and resistant to inflation. They should help school clients evaluate needs versus wants so they can seek more affordable base bids with alternates as add-ons. They also can propose bid alternates for extending completion dates (e.g., considering long-lead orders and unforeseen shipping delays).

With higher construction cost inflation, it is essential that strategic planning, effective management, and accurate cost forecasting be in place to get school projects designed and built. ■

Paul W. Erickson, AIA/NCARB/REFP, executive officer & partner, is past president of ATSR Planners/Architects/Engineers. He has 45 years of experience in school planning, design, and construction. Erickson can be reached at perickson@atsr.com



American School & University®

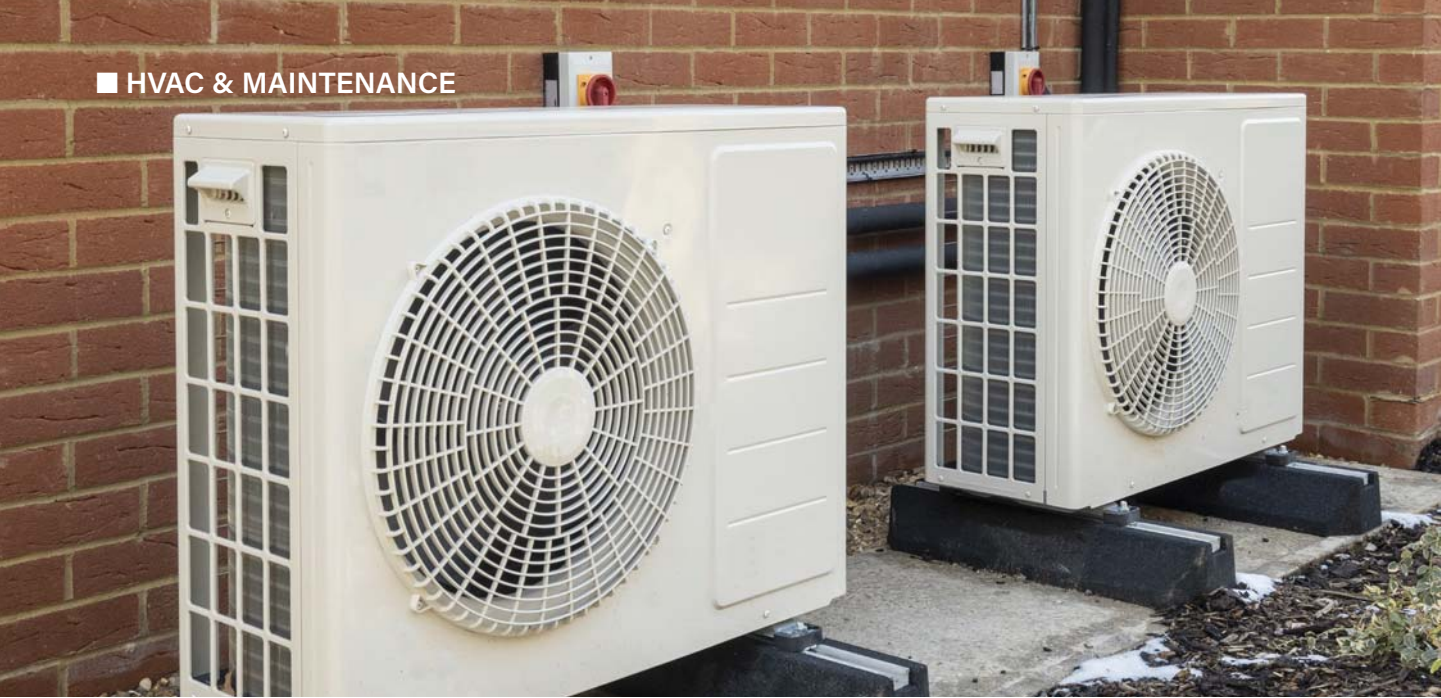
Need to update your magazine subscription contact information?

If so, please enter www.asumag.com/Update into your browser then type in your account number (see your mailing label) and last name to access your information.

Don't like updating online?

Please feel free to contact customer service at **847-559-7598**.

If you would like to subscribe to *American School & University* magazine, please enter www.asumag.com/NewSub into your browser and sign up today.



PUTTING THE HEALTHY IN HVAC

All-electric, high-performance HVAC systems like heat pumps provide heating efficiently and seamlessly introduce cooling in schools.

Credit: Photo
210135901
© NimurLtd
Dreamstime.com

A new report from two environmental groups calls for schools to install all-electric high-performance HVAC systems.

By Mike Kennedy

In the nearly three years since Covid-19 called into question the healthfulness and safety of the nation's education facilities, schools and universities have been forced to examine whether the heating, ventilation and air conditioning systems that distribute air through classrooms and other school spaces are part of the problem.

When it was determined that Covid-19 was an airborne disease, the focus became even more intense on the performance of HVAC systems, and many schools earmarked federal Covid relief funds to upgrade or replace inadequate HVAC systems.

But school administrators did not need the shock of a worldwide pandemic to be aware of the less-than-ideal conditions of school HVAC systems and the health problems that the resulting poor indoor air quality could cause for students and staff.

A well-publicized report from the U.S. Government Accounting Office—based on information gathered in 2019, before anyone had heard of Covid-19—found that about 41% of school districts needed to replace or upgrade HVAC systems in at least half of their schools. That equates to about 36,000 schools nationwide.

The Rocky Mountain Institute and Undaunted K12, two not-for-profit groups advocating more sustainable energy practices, are the latest to sound the call for an overhaul of the HVAC systems in American schools.

“What has become abundantly clear is schools need modern HVAC solutions that heat and cool spaces reliably and efficiently, achieve ventilation goals cost-effectively, promote healthy indoor and outdoor air, and comply with the evolving regulatory environment,” the organizations say in “HVAC Choices for Student Learning,” a January 2023 report.

The organizations' recommendation is “to adopt all-electric high-performance HVAC systems in new and existing schools to achieve positive health and learning outcomes, lower utility costs and minimize climate pollution.”

Improvements needed

The Rocky Mountain Institute and Undaunted K12 reached the same conclusion as the 2020 GAO report. School HVAC systems may be hazardous to the health and safety of students and staff.

“Many schools still rely on old and inefficient HVAC systems or have none at all,” the report states. “In addition to undermining student health and learning, these legacy systems contribute to school energy usage and waste, costs, and air pollution. New technology paired with new financial resources warrants that district leaders reevaluate the opportunity to embrace modern HVAC systems in new construction and existing buildings.”

The report points to evidence that links student health and learning to temperature, humidity and air quality inside a school facility.

SAVE THE DATE!

Educational Interiors Showcase 2023

Plan now to include your best projects in *American School & University's* 2023 Educational Interiors Showcase.

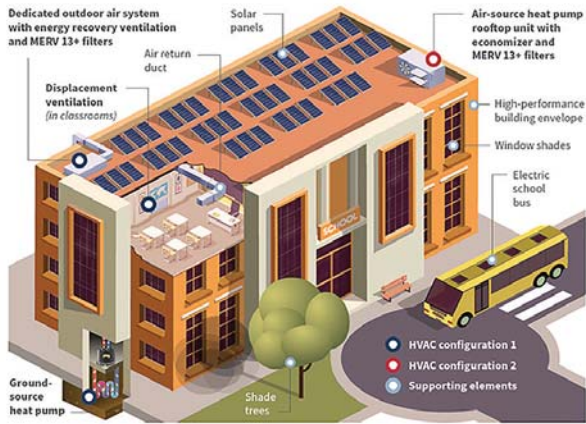
Contact Heather Buzzard at hbuzzard@endeavorb2b.com or visit SchoolDesigns.com for entry information and deadlines.

Entry forms due March 10.

**FOR MORE INFORMATION
VISIT SCHOOLDESIGNS.COM**

**American
School & University.**

www.ASUMag.com • www.SchoolDesigns.com



Visualizing an all-electric, high-performance HVAC system.

Credit: Rocky Mountain Institute/Undaunted K12

“Aggravated asthma, absenteeism, poor academic performance and lost learning time are all real-world consequences when HVAC systems fail,” the report states.

The HVAC systems in most schools consume large quantities of energy while generating significant amounts of pollution.

“HVAC systems are responsible for an estimated 56% of all energy use at schools,” the report says. “With over 70% of K-12 school floor space nationwide using on-site fossil fuel combustion for heating, HVAC systems are significant sources of pollution.”

A modern HVAC system of the type advocated by Rocky Mountain Institute and K12 Undaunted would meet these criteria: “It heats and cools spaces reliably and efficiently; delivers healthy levels of ventilation while also mitigating energy costs; promotes healthy indoor and outdoor air; and positions schools to comply with current and foreseeable regulation.”

Electric benefits

The report identifies several benefits that a school might gain from choosing an all-electric HVAC system:

- Adapts to new cooling needs. “All-electric, high-performance HVAC systems like heat pumps not only provide heating efficiently, they also seamlessly introduce cooling in schools, a strategy for adapting to a changing climate,” the report says.
- Improves air quality and eliminates combustion pollution. “All-electric HVAC systems prevent combustion pollution and eliminate the need to mitigate the negative health consequences of burning fossil fuels on site,” the report states.
- Enhances efficiency. “Whether schools are replacing one system, conducting deep energy retrofits, or constructing new buildings, one high-impact approach to improving efficiency will be selecting all-electric, high-performance HVAC equipment,” the report says.
- Minimizes health and safety concerns. School decision makers have a clear opportunity to minimize the risks associated with carbon monoxide and other gas leaks by choosing all-electric systems instead of fossil fuel burning equipment, the report says.

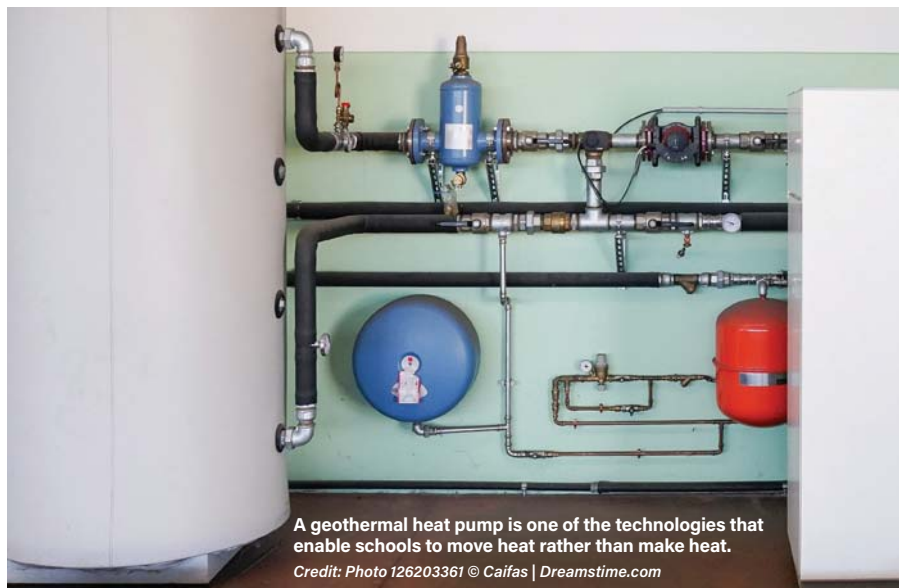
- Builds energy resilience. “Electrification of school HVAC systems can serve as a first step toward building energy resilience, especially when heat pumps are paired with...weatherization and microgrids,” the report says.

- Mitigates climate change. “Combustion-free heat pumps position schools as climate champions rather than contributors to the carbon and air pollution problem,” the report says.

Big ideas

The report lists what it calls “six big ideas” that schools should keep in mind as they explore HVAC technology:

- Advances in technology enable schools to move heat rather than make heat. Rather than handling heating and cooling separately, and burning fossil fuels to make heat, modern HVAC systems enable schools to use a single technology that moves heat for efficient heating and cooling. Those technologies include different types of heat pumps (air source, ground source and variable refrigerant flow) and geothermal systems.
- Schools that use high-performance filters are better positioned to remove contaminants. “Schools that do not have modern HVAC systems often cannot use the filters needed to reduce threats to human health, so they default to less-effective, short-term strategies like opening windows, or invest in additional equipment such as portable air cleaners,” the report says.
- Schools in every climate can select cost-effective ventilation strategies. “Many equipment types can effectively provide healthy levels of ventilation when properly sized and operated for their climate, but only some are especially well equipped to



A geothermal heat pump is one of the technologies that enable schools to move heat rather than make heat.

Credit: Photo 126203361 © Caifas | Dreamstime.com

minimize energy use and costs,” the report says.

- All HVAC systems require ongoing monitoring and adjustment. “Given their mechanical complexity and environmental variability, HVAC systems need regular checkups, replacement of parts, and adjustments to operate optimally,” the report says.
- Good HVAC system decisions are sensitive to context. “HVAC systems are selected, sized, operated, and maintained considering many factors, including building size, building orientation, climate conditions, where the building is located, and the quality of the building envelope,” the report says. “Decision-making around HVAC systems should seek out the full context and make explicit the connections and trade-offs at play.”
- HVAC systems account for the majority of school energy use, utility costs and greenhouse gas emissions. “Based on schools’ energy use, we estimate the HVAC systems operational in schools today produce an estimated 23.5 million tons of carbon dioxide equivalent nationwide, roughly the amount emitted by more than 5 million gas cars driven for a year,” the report says.

The report calls on superintendents and other school leaders to develop an understanding of the importance of HVAC systems on student health and learning. They should assess HVAC systems in all buildings to identify which can accommodate all-electric, high-performance HVAC systems; the remaining lifespan for all systems; and upcoming replacement opportunities, including existing central air conditioning units.

The report says school systems should update their design standards to require all-electric, high-performance HVAC systems and learn about funding opportunities from federal, state, and local sources, including those laid out in the Inflation Reduction Act of 2022. ■



H₂O-To-Go!®

Touchless Drinking Fountains & Bottle Fillers Designed with you in mind!

Fill Up. Cool Down. Get Going.
Our indoor sensor-operated filling stations provide unlimited fresh water for any application.

NEW



Ask about our custom colors, logos, and designs!



EZREACH™ COMPACT SURFACE MOUNTED CHILLED BOTTLE FILLER
MODEL NO. BFEZ168-BCD

170 years
Murdock
—EST. 1853—

www.murdockmfg.com


MORRIS GROUP
INTERNATIONAL

**INTERESTED?
LET'S TALK.**

TO PLACE AN ORDER, CONTACT US BY PHONE AT (800) 591-9081,
OR EMAIL US AT SALES@MURDOCKMFG.COM

A GOOD FIT

Meeting the challenge of designing and building on tight sites.

By Laura Morillo

Schools of all sizes, especially colleges and universities, constantly evolve to meet new pedagogical standards and student demands. Campuses are in a constant state of flux as facilities are updated and new buildings added.

The challenge of adding facilities to campuses that are landlocked or significantly developed has been a major challenge for education and facilities professionals. Whether plans call for adding a building, removing and replacing an older facility, or renovating and expanding an existing building, site constraints are an increasingly common obstacle.

Working within a tight site, especially if that site is adjacent to existing facilities, adds many layers of complexity to a project. Fortunately, school leaders and a project's design-build team, including the architects, general contractors and engineers, can turn to a number of strategies that address potential challenges early and deliver a successful project.

The recently opened Creativity and Innovation District Residence Hall at Virginia Tech in Blacksburg, Va., offers insights into building a new facility in a crowded part of an established campus and integrating the building on campus effectively. The 230,896-square-foot facility is a six-story residence hall that houses about 600 students and includes graduate teaching assistant apartments and a resident faculty apartment. The residence hall also has academic support spaces, such as classrooms, an auditorium, library, art studios, laundry facilities, rooftop green spaces, and metal, wood, and welding shops.

Built on the site of the former University Club, the residence hall is adjacent to the school's Graduate Life Center and situated in an established part of campus. This location required the university and its design-build team to take some creative approaches because of the site constraints on the four-acre parcel.

Three challenges and the corresponding strategies offer important lessons for other education institutions that are considering new facilities on tight sites.

Understanding the site

As with any development and construction project, a thorough understanding of the site is critical. Development projects in established areas of campus are comparable to infill projects in urban areas. The site for the Creativity and Innovation District Residence Hall had many challenging features, including its proximity to other buildings, a steep slope, underground utilities that

connect much of the campus, and an existing box culvert that carries the central branch of a creek underneath the site.

Identifying all potential site challenges at the beginning of the planning process is crucial. Additional time spent on site review will provide the design-build team with the information they need to properly prepare for a project. This research early in the process helps to reduce the likelihood of unexpected surprises and significant change orders during construction. The Virginia Tech team identified site challenges in bridging documents and schematic plans it created before engaging with an architect, general contractor, and site engineer. For example, the steep site conditions meant that grading around the building would directly affect the building's layout and drive early design considerations.

The box culvert was another site characteristic that affected the building's design. Knowing the alignment, elevations, size, and composition of the culvert was critical to the site and the building design, and the final decision for the building was to bridge the existing culvert rather than relocating the culvert. Identifying the culvert's location during the planning stage ensured proper design and avoided what could have become a significant – and costly – headache if it weren't discovered until construction.

Floodplain factors

Another component of understanding a site is considering potential floodplain implications, especially as long-term weather trends change. The occurrence of severe storms and other extreme weather has increased in recent years, and

The Creativity and Innovation District Residence Hall at Virginia Tech was built in a crowded part of the campus.

Credit: TRC Companies



these trends may continue or accelerate. New development on campus should take these changes into account, specifically related to stormwater flow and potential flooding. When a school adds facilities, especially in a developed area of campus, additional pressure is put on the campus environment. New buildings could begin to encroach on floodplains. For example, the Creativity and Innovation District Residence Hall was built within a FEMA floodplain and the Town of Blacksburg's Floodplain Overlay District.

The design-build team developed a hydrologic (HEC-HMS) model to determine the tributary flow rates and a hydraulic (HEC-RAS) model to establish the existing base flood elevation. Using the existing model as the base, the team and Virginia Tech's Office of University Planning collaborated to meet the floodplain requirements, while also responding the university's equally important goals of universal access and "visual openness, intentional pedestrian connections, and a variety of landscape spaces."

Recognizing the implications of having the site in the floodplain meant that floodplain considerations were a key factor in the building's initial design. Anticipating extreme weather will result in a better building design as well. When calculating the base flood elevation, consider how that should affect the lowest finished floor elevation. Should the lowest finished floor be raised even farther above the base flood plain to avoid potential flooding in severe storms?

Identifying all potential site challenges at the beginning of the planning process is crucial.



The site for the Creativity and Innovation District Residence Hall had many challenging features, including its proximity to other buildings, a steep slope, underground utilities and an existing box culvert.

Credit: TRC Companies



Early collaboration between a school and its design-build team can make all the difference in successfully constructing a building on a tight site in an established area on campus. *Credit: W.M. Jordan*



An extensive network of utilities and other infrastructure that powers a college and university campus is often hidden beneath green spaces, walkways, and roads. *Credit: W.M. Jordan*



Identifying all potential site challenges at the beginning of the planning process is crucial in carrying out a successful construction project on campus. *Credit: W.M. Jordan*

Finally, take a holistic approach to stormwater and floodplain management. Many colleges and universities, including Virginia Tech, have a stormwater master plan for their campuses. Ensure those plans are updated frequently and maintained. Campus floodplain master plans are a great tool to have as well.

Utilities and infrastructure

As many facilities professionals know, what lies beneath the ground on campus is as important as what is visible above the ground. An extensive network of utilities and other infrastructure that powers a modern college and university campus is often hidden beneath expansive green spaces, walkways, and roads. When adding buildings to a campus, especially in an established and developed area of campus, utility considerations cannot be overlooked.

New buildings are likely to require the rerouting of existing utilities and create the need for new utilities. Coordination and

early planning are paramount to ensure that utilities are adequately addressed and that existing services aren't interrupted during construction. Proper utility planning is crucial to avoid mistakes during construction, such as accidentally knocking out power or telecommunications to a wide swath of campus.

Prior to construction, several utilities serving a major portion of the Virginia Tech campus and the Town of Blacksburg crossed the site for the Creativity and Innovation Residence Hall — a sanitary sewer, a water main, a communications duct bank, and an electrical duct bank. These utilities needed to be rerouted around the building site, while adhering to separation requirements and considering new utilities for the building, such as chilled water and high-pressure steam lines. As with all tight sites, space was a challenge when rerouting existing utilities and designing new utility plans. Today, the sanitary sewer, chilled water lines, telephone lines, and storm sewer, are now situated under an adjacent street, and an electrical duct bank and storm sewer lie under another road.

Coordination of both the horizontal and vertical locations of these utilities was a critical component of the design. The design-build team used software to profile each utility and determine potential conflicts during design. The team coordinated with other consultants to eliminate the conflicts.

Lessons for the Future

Campus projects come in all shapes, sizes, and environments. As colleges, universities, and other schools look for creative ways to add facilities to their campuses, new challenges arise. Site complexity and limits will remain a key factor that most education and facilities professionals need to consider when planning for new buildings on campus.

Virginia Tech's Creativity and Innovation Residence Hall demonstrates that education institutions can deliver an exceptional new building on a tight site in an established and developed area on campus. Early collaboration between a school and its design-build team can make all the difference in the success of a project. Likewise, it's paramount that the team remain nimble. Unseen challenges will arise, but planning and coordination will empower the design-build team to address those issues. ■

Laura Morillo (LMorillo@trccompanies.com) is a senior project manager at TRC Companies in Blacksburg, Va. She has worked extensively on site development and infrastructure projects.

ISIMET HELPS PROTECT PEOPLE AND PROPERTY...

BY INSTANTLY DISABLING GAS, WATER AND ELECTRIC UTILITIES.

ISIMET utility controllers control access to utilities in school science labs, drug testing labs, commercial kitchens, fire stations, etc. ISIMET manufactures products to detect gas leaks, help prevent vandalism and unauthorized use, and help keep people and property safe.

- Heavy-duty steel construction, fire-rated, vandal-resistant
- UL listed

#1 Utility Controllers in U.S.

ISIMET
Safe. Utility. Control. 903.781.6994 • isimet.com

Reprints

Contact reprints@endeavorb2b.com to purchase custom reprints or e-prints of articles appearing in this publication.

Archives & Microform

This magazine is available for research and retrieval of selected archived articles from leading electronic databases and online search services, including Factiva, Lexis-Nexis and Proquest.

Privacy Policy

Your privacy is a priority to us. For a detailed policy statement about privacy and information dissemination practices related to Endeavor Business Media products, please visit our website at endeavorbusinessmedia.com.



Joe Agron

Director of Sales
Buildings & Construction Group
941-200-4778
jagron@asumag.com

Brian Sack

Account Manager
East & Northeast
732-629-1949
bsack@endeavorb2b.com

Randy Jeter

Account Manager
South & West
512-263-7280
rjeter@endeavorb2b.com

Bill Boyadjis

Account Manager
Midwest
973-829-0648
bboyadjis@endeavorb2b.com

Steve Suarez

Account Manager
816-588-7372
ssuarez@endeavorb2b.com

■ PRODUCT SOLUTIONS

Wildwood Composite Cladding

Designed with commercial cladding applications in mind, Wildwood features an open-joint profile and is available in a variety of board lengths and widths, providing the unrivaled beauty and warmth of wood combined with the durability of high-performance, low-maintenance materials. Free of any toxic chemicals and made with 94% pre- and post-consumer recycled content, Wildwood is a highly sustainable alternative to traditional wood cladding. It has several performance characteristics that make it an ideal solution for rainscreen applications, being hydrophobic and resistant to rotting, cracking, insects and decay.



www.fiberoncladding.com/pages/wildwood-composite-cladding



Sustainable Solutions Simplified

The Armstrong® Sustain® portfolio makes it easy to specify for sustainability by offering the largest collection of healthy and sustainable ceiling and wall products with both verified material transparency and low embodied carbon.

www.armstrongceilings.com/commercial/en/performance/sustainable-building-design/sustain-ceiling-systems.html

Configurable Condenser Fan

Greenheck's new AER direct drive configurable condenser fan can help regulate temperature and provide proper ventilation for your equipment, even in the most demanding applications where elevated water and temperature protection is required.



www.greenheck.com/products/air-movement/fans/condenser-fans



Education Flooring

Tarkett has launched a new collection with designer Jhane Barnes. The Connectivity collection features three designs—Celestial, Celtic Knots and PM Square—all ideal for education environments.

www.tarkett.com

Daikin Fit - Air Intelligent Systems

Engineered with Daikin One+ smart thermostat, matching condenser, gas furnace and evaporator coil. Fit side discharge cabinets, with inverter compressors, are smaller, lighter, and quieter than traditional unitary systems. Available in 1.5 to 5-ton.

www.daikincomfort.com/go/daikinfit/



Fill Up, Cool Down, & Get Going with H2O-To-Go!

Help students hydrate the safe way with Murdock's H2O-To-Go!® bottle fillers. Our touch-free bottle filler is made with easy-to-clean stainless steel and an antimicrobial backsplash to cut down on germs and provide a safer, more hygienic environment.

www.murdockmfg.com/water-bottle-filling-station

Think Inside The Box



Model SQ



Greenheck SQ direct drive inline fans with mixed flow wheel technology in a square housing design provide a unique combination of **High Efficiency, Low Sound & Easy Installation.**

Boost performance with Greenheck square inline mixed flow fans.

Specify with Confidence. Specify Greenheck.



LEARN MORE

©2023 Greenheck



H₂O-To-Go!

Touchless Drinking Fountains & Bottle Fillers Designed with you in mind!



Fill Up. Cool Down. Get Going.

Our indoor sensor-operated filling stations provide unlimited fresh water for any application.



Ask about our custom colors, logos, and designs!

EZREACH™ COMPACT SURFACE MOUNTED CHILLED BOTTLE FILLER
MODEL NO. BFEZ168-BCD

170 years
Murdock
—EST. 1853—



INTERESTED? LET'S TALK.

TO PLACE AN ORDER, CONTACT US BY PHONE AT (800) 591-9081, OR EMAIL US AT SALES@MURDOCKMFG.COM

AD INDEX

ADVERTISER	PAGE	WEBSITE
2023 Industry Events Calendar	1FC	www.SchoolDesigns.com
American School & University	23	www.asumag.com/NewSub
Daikin Comfort Technologies	11	www.daikincomfort.com
Educational Interiors Showcase 2023	25	www.SchoolDesigns.com
Elkay	17	www.elkay.com/k12
Facilities Expo	IBC	www.facilitiesexpo.com
Fiberon Composite Cladding	5	www.fiberoncladding.com/future
Greenheck	33, BC	www.greenheck.com
ISIMET	31	www.isimet.com
ISSA	19	www.rethinkclean.org
JMA Architects	20-21	www.jmaarchitects.com
Landmark Studio Design	9	www.LandmarkStudio.com
Morris Group International	27, 33	www.murdockmfg.com
National Grid Co.	0a-d	www.ngrid.com/business-asu
ProTeam, Inc.	3	www.proteam.emerson.com/gocordless

This index is a service to our reader. Every effort is made to maintain accuracy, but American School & University cannot assume responsible for errors or omissions.

Seattle district sues social media companies over youth mental health crisis



The Seattle school district has sued several social media entities in an effort to “hold social media companies accountable for the harm they have wreaked on the social, emotional, and mental health of students.

The district announced in January that it has filed a complaint in U.S. District Court against the companies operating TikTok, Instagram, Facebook, SnapChat, and YouTube.

The evidence is clear, the lawsuit asserts, that social media companies “have designed their platforms to maximize the time youth spend using them and addict youth to their platforms.”

More than 90% of youth use social media, the district says, and most primarily use five platforms: YouTube, TikTok, Snapchat, Instagram, and Facebook.

“It has become increasingly clear that many children are burdened by mental health challenges,” says Superintendent Brent Jones. “Our students – and young people everywhere – face unprecedented, learning and life struggles that are amplified

by the negative impacts of increased screen time, unfiltered content, and potentially addictive properties of social media. We are confident and hopeful that this complaint is the first step toward reversing this trend for our students, children throughout Washington state, and the entire country.”

The lawsuit aims to hold social media companies accountable for their actions and set youth mental health trends back on the right trajectory.

“Our first and greatest priority is the health and well-being of our students,” Seattle School Board President Brandon Hersey says. “Clearly, this includes the social and emotional harm that they suffer because of the negative impacts of social media. By taking aim at the social media companies, we are sending a clear message that it is time for them to prioritize the health of children over the revenues they make from advertising.”

New York state tells schools to stop using Native American references in team names, logos and mascots



The New York State Department of Education has ordered all public schools in the state to stop using Native American references in team names, logos and mascots by the end of the 2022-23 school year.

The state’s directive to districts characterized the use of Native American-themed imagery in schools as discriminatory.

“School districts that continue to utilize Native American team names, logos, and/or imagery without current approval

from a recognized tribe must immediately come into compliance,” Senior Deputy Education Commissioner James Baldwin said in a memo.

Consequences for violating the directive include “the removal of school officers and the withholding of state aid,” the memo read.

The only circumstances in which schools will be allowed to continue using Native imagery is if they get permission from the affected tribe, the state says.

Indictment follows ouster of Loudoun County (Va.) superintendent

The former superintendent of the Loudoun County (Va.) district has been indicted by a grand jury investigating how the school system handled sexual assaults.

The Washington Post reports that Scott Ziegler is facing misdemeanor counts of false publication, using his position to retaliate or threaten to retaliate against an employee and falsely firing the same employee.

Ziegler was fired in December after the grand jury issued a damning report about the district’s handling of two sexual assaults.

Ziegler vowed to fight the charges against him.

“I am disappointed that an Attorney General-controlled, secret,

and one-sided process — which never once sought my testimony — has made such false and irresponsible accusations,” Ziegler said.

The 91-page grand jury report labeled Loudoun officials as incompetent and called the ex-superintendent a liar. The jury investigated a pair of sexual assaults committed by a male student in May and October 2021 at Stone Bridge and Broad Run high schools. The second assault occurred after the student was transferred to the new high school.



Former Loudoun County School Superintendent Scott Ziegler. Credit: Loudoun County Public Schools

Oakland (Calif.) board rescinds plan to close five elementary schools

After months of protest by parents, teachers and students, the Oakland (Calif.) school board has voted to reverse a decision to close or consolidate several schools.

The Oaklandside reports that the district will keep open five elementary schools that had been slated for closure this year.

Brookfield Elementary, Carl B. Munck Elementary, Grass Valley Elementary, Horace Mann Elementary, and Korematsu Discovery Academy will stay open, and Hillcrest K-8, which would have lost its middle school grades, will remain intact.

The board vote does not change the fate of either of the schools that were closed last year, Parker K-8 and Community Day School, or a third school, La Escuelita, which had its middle school shuttered.

The board’s decision last year to close schools sparked an immense backlash that included protests, walkouts and a one-day teachers’ strike. ■



Grass Valley Elementary School is one of the Oakland schools that has been spared from closing. Credit: Google

FACILITIES EXPO

including  MANAGING GREEN BUILDINGS

WHERE FACILITY CHALLENGES FIND SOLUTIONS

CENTRAL VALLEY

March 15-16, 2023
Modesto, CA

SOUTHERN CALIFORNIA

April 5-6, 2023
Anaheim, CA

NORTHWEST

May 10-11, 2023
Portland, OR

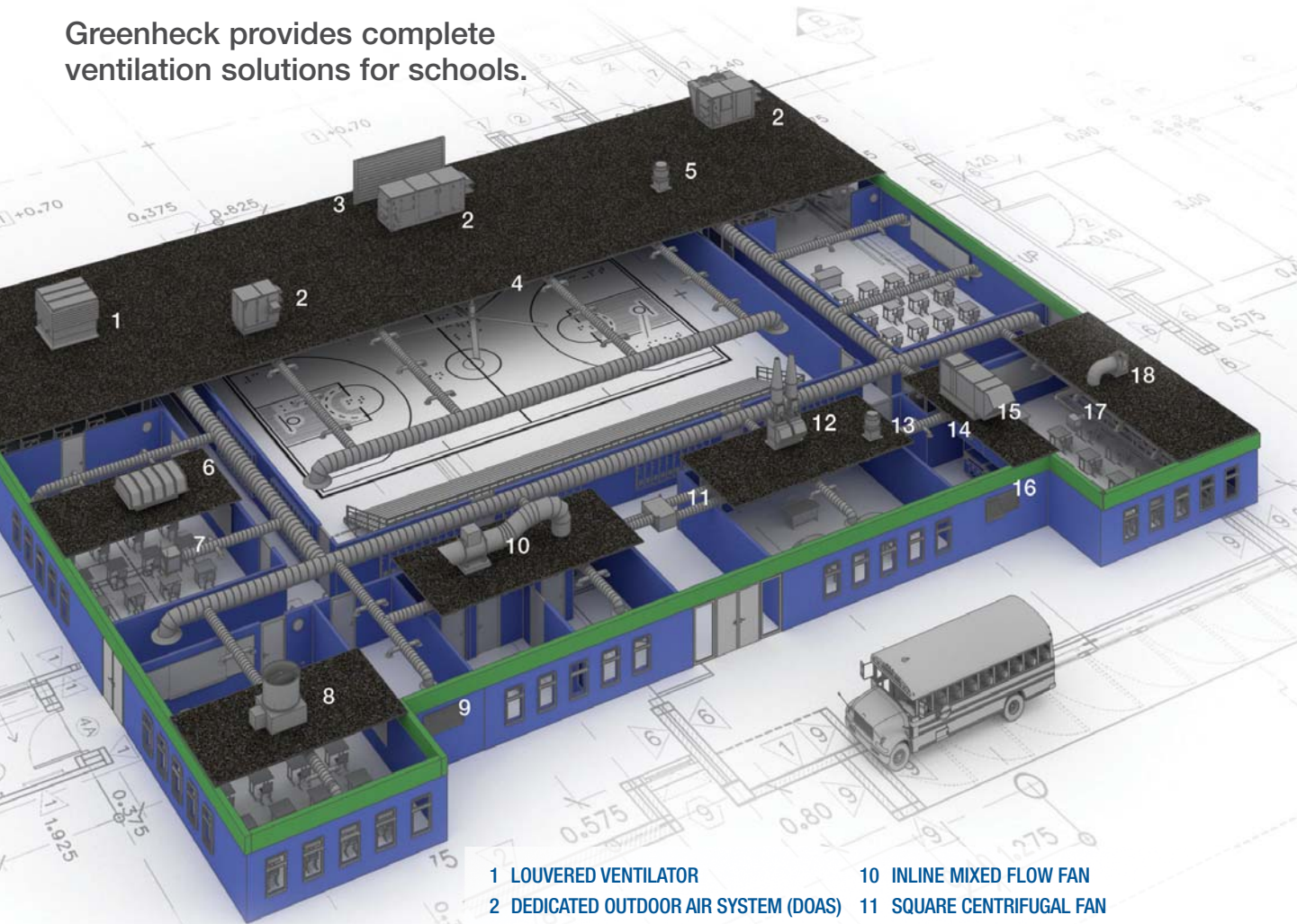
register for free:
facilitiesexpo.com

OWNED & PRODUCED BY:



Healthier Indoor Air is the Answer

Greenheck provides complete ventilation solutions for schools.



- | | |
|---------------------------------------|---------------------------------------|
| 1 LOUVERED VENTILATOR | 10 INLINE MIXED FLOW FAN |
| 2 DEDICATED OUTDOOR AIR SYSTEM (DOAS) | 11 SQUARE CENTRIFUGAL FAN |
| 3 EQUIPMENT SCREEN | 12 VEKTOR® LABORATORY EXHAUST FAN |
| 4 AMPLIFY™ HVLS FAN | 13 CENTRIFUGAL UPBLAST GREASE EXHAUST |
| 5 CENTRIFUGAL UPBLAST EXHAUST FAN | 14 KITCHEN EXHAUST HOOD |
| 6 HOODED GRAVITY VENTILATOR | 15 MAKE-UP AIR UNIT |
| 7 SQUARE MIXED FLOW FAN | 16 DAMPER |
| 8 AXIAL UPBLAST EXHAUST FAN | 17 CEILING EXHAUST FAN |
| 9 LOUVER | 18 UTILITY FAN |

Greenheck offers a complete line of ventilation products for educational facilities that create a safe, comfortable, and productive environment for students and staff while keeping operating and installation costs low. Let Greenheck do the homework on your next school ventilation project.



SCAN HERE TO LEARN MORE ABOUT
IMPROVING VENTILATION SYSTEMS FOR
HEALTHIER AIR AND HEALTHIER STUDENTS.

©2023 Greenheck

 **GREENHECK**
Building Value in Air.