

WESTERN PLACER USD

TWELVE BRIDGES HIGH SCHOOL



**ECOSYSTEM.
INNOVATION.
COMMUNITY.**



EXECUTIVE SUMMARY

The comprehensive high school for 1,200 students utilizes an environmentally sensitive and cost-effective design to deliver an innovative solution to a unique site and community. Using the site's natural topography and adjacent nature preserve as driving design elements, the campus nests into a hillside and splits open to allow the nearby grasslands to spill into campus. The school's programs are strategically condensed into an inviting student-centric design that promotes collaboration, inclusivity, and contextual awareness.

SCOPE OF WORK AND BUDGET

Built on approximately 56 acres the project features two two-story classroom buildings, a single-story science building, an administration building, an athletic stadium and fields, space for performing arts, and staff and student parking.

District:

Western Placer Unified School District

Location:

2360 Fieldstone Drive, Lincoln, CA 95648

Project Type:

Public School/Education

Grade Level:

High School

Project Size:

Site 32.2 Acres and Buildings 126,650 SF

Construction Cost:

\$417.80/SF

SCHOOL AND COMMUNITY ENGAGEMENT

The Community

A few years ago, the sudden suburban growth in the City of Lincoln, North-west of Sacramento, left Lincoln High school bursting at the seams. This led to the development of the new Twelve Bridges High School. However, funding fell through as the recession hit the community hard in 2004. Scott Leaman, former superintendent of WPUSD led the community to the successful passage of Measure A in 2014, which paved the way to the new design and construction of Twelve Bridges High School.





IDENTIFY STAKEHOLDERS

When developing the second high school in their community, the district and Lincoln High School's staff decided it was imperative to create unique programs between the two schools, including biotech, digital video and media arts (DVMA), and information and communication technologies (ICT). To fully develop these pathways, the district worked with industry professionals in the Sacramento region to guide and develop these programs, leading to Career Technical Education (CTE) grants through the California Department of Education. With a focus on safety and security, we also reached out to local law enforcement, allowing them to identify areas of concern through a virtual walk-through.



MAIN CHALLENGES

The largest challenge was designing a completely new high school on the site of a campus that had begun construction 14 years earlier. The original campus was comprised of over 20 buildings that spread out over a hillside graded with an upper and lower plateau with 15 feet of elevation. However, as the district's educational priorities changed and adjusted to current material and labor costs, the design shifted from over 20 buildings to five. Luckily, our team managed to utilize the existing building pads and utility infrastructure.

AVAILABLE ASSETS

The city intended for Twelve Bridges High School to be a part of a joint-use campus with Twelve Bridges Community Library and Sierra Community College. The library was constructed just before the recession in 2007, and it became a vital asset to the community. Knowing its significance, the design team worked on programmatically and aesthetically integrating the library into the campus. The other available asset was the site. Our design integrated seamlessly into the existing work and paid special attention to preserving the existing utility infrastructure.

VALUE OF PROCESS AND PROJECT TO COMMUNITY AT LARGE

The new Twelve Bridges High School is a beacon of community pride. The whole story is one of perseverance and resilience, spanning 20 years.

Working with the district administration and Lincoln HS staff, we created exceptional future-focused learning spaces that connect to the diverse surrounding ecosystem. Incorporating business and industry partners, we developed spaces that support career technical education. Linking the school programs with the existing city library, we reinforced the connection between the students and staff and the community who use the library each day. The intentional engagement between the district and all interested stakeholders will set up the next generation of students in Lincoln for tremendous success.



EDUCATIONAL ENVIRONMENT

Vision and Goal

Mission: Excellence in education with purpose, commitment, and perseverance.

Vision: Create the opportunities to support each member of its community to learn, grow, and become the people they aspire to be.

How Design Supports the Curriculum

Twelve Bridges High School houses dedicated spaces for learning pathways in arts, technology, science, and special education, including art studios with outdoor access, band, music, and dance classrooms, and an indoor and outdoor performing arts center that cascades down the natural topography. Extra care was given to the placement of the special education classrooms. The design weaved science classrooms into the natural landscape through the open space preserve to offer hands-on biology and environmental studies opportunities.





LEARNING AND TEACHING

The protected riparian habitat, to the south of the campus, is a unique and beautiful feature of Twelve Bridges High School. The team ensured every classroom had a view and or direct connection to this outdoor learning space. Condensing several programs into one student union building not only creates a more cost-effective and energy-efficient building, but also promotes a community-focused student body and provides opportunities for collaboration and campus culture.

The campus is located next to a community joint-use library and riparian open space preserve on a site that was previously partially developed.



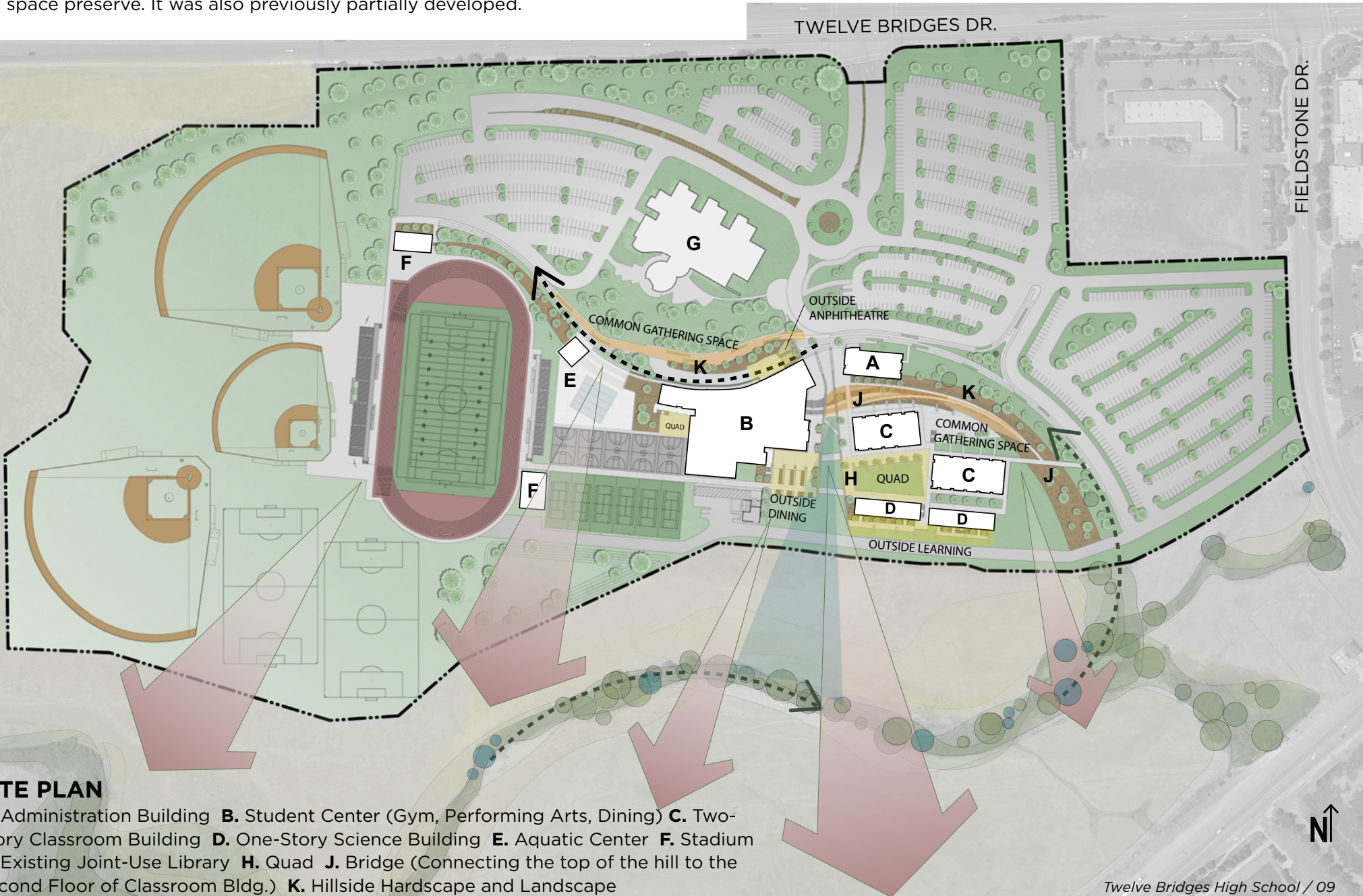
ADAPTABILITY AND FLEXIBILITY

To remove the potential exclusivity from a multi-story campus for students and staff with mobility needs, the designers sculpted accessible ramps into the natural hillsides along its landscape. Students can use this ramp to access the special education classroom on the top floor, elevators, or lifts. The main entry and administration building are also connected through the elevated walkways.



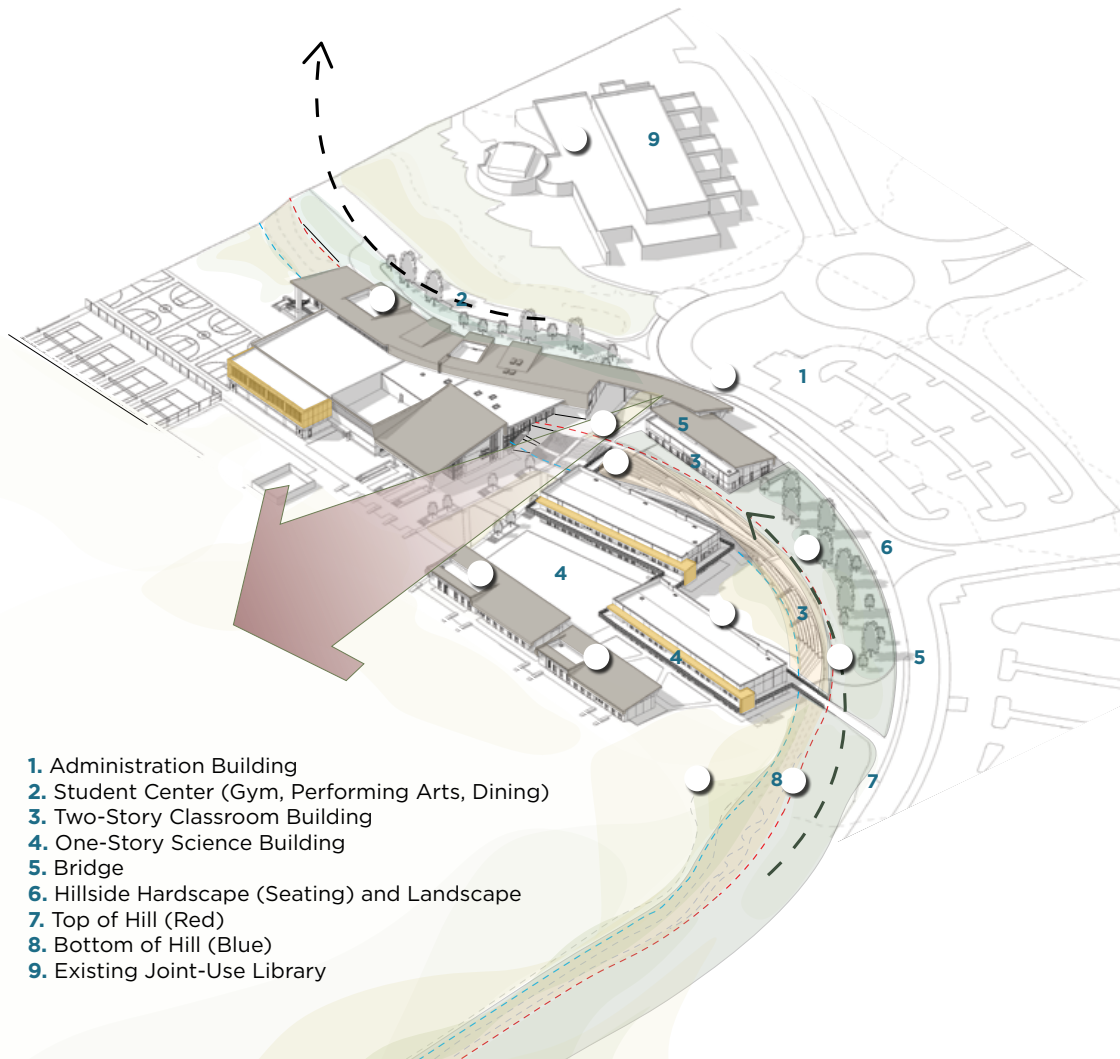
PHYSICAL ENVIRONMENT

The campus is located next to the community joint-use library and riparian open space preserve. It was also previously partially developed.



THE LARGER CONTEXT

The design of Twelve Bridges High School responds to the existing topography. A 15-foot elevation drop created an opportunity to physically separate the public zones atop the hill from the student zones and the core of the campus below. This physical barrier also allowed for opportunities to use the hill for intimate outdoor learning spaces. The landscaping within the campus mimics the types of vegetation in the riparian zone to the south, blending the natural edge with the campus core. The design team also shared virtual reality (VR) with local first responders to study security and safety vulnerabilities. The School Resource Officer (SRO) provided recommendations for sightlines and considerations for access to the multi-level site.



1. Administration Building
2. Student Center (Gym, Performing Arts, Dining)
3. Two-Story Classroom Building
4. One-Story Science Building
5. Bridge
6. Hillside Hardscape (Seating) and Landscape
7. Top of Hill (Red)
8. Bottom of Hill (Blue)
9. Existing Joint-Use Library

How Twelve Bridges High School Motivates and Inspires Its Students and Staff

The Twelve Bridges community has been patiently awaiting the development of their new high school for nearly 15 years. The final design motivates and inspires a new generation of students and staff through connections to the outdoors, views of nature, and sticky spaces.

The team takes advantage of the hills each building was placed on by developing landscape spaces, stepped amphitheater seating, and stairs for outdoor learning and socialization. Additionally, several classrooms are open to the outdoors through roll-up doors.

The new Twelve Bridges High School site sits just north of an environmentally protected waterway. View corridors were developed to allow students and staff to experience nature throughout the campus. All science classrooms are adjacent to the waterway extending the learning outdoors.

The student center building houses the auditorium, gymnasium, and dining commons under one roof. Each space connects through nooks of “sticky spaces,” promoting collaboration, socialization, and independent learning. This bright and colorful space is flooded with natural light and anchors the social life of the student and staff. Additionally, the mascot is proudly displayed throughout the campus (designed by our team), further promoting campus pride.



SUSTAINABILITY AND WELLNESS

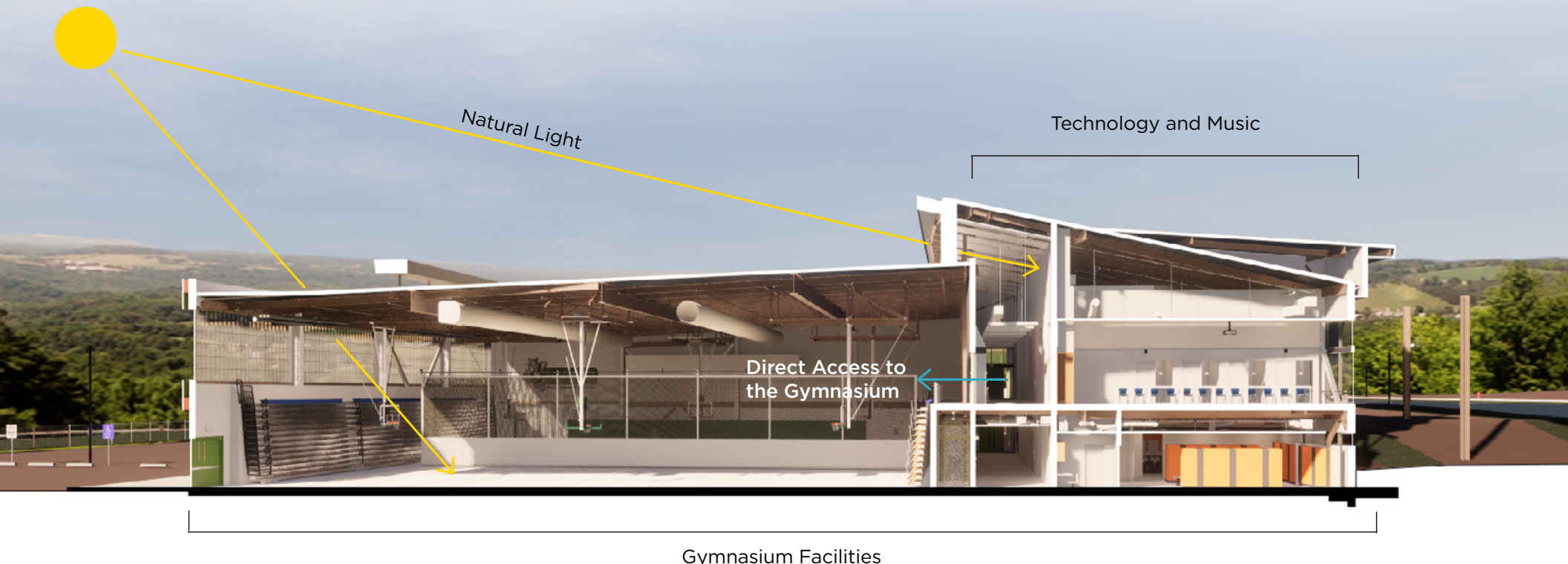
To attain energy efficiency on a tight budget, the team used passive natural measures, such as east-west building orientation. Working with a lease-leaseback contractor, the team created a modular approach to the construction of the classroom buildings that reduced waste and reduced the schedule. A series of prefabricated exterior modular wall panels allows ample light to the interior spaces while providing a high-performance thermal envelope. All wall panels were manufactured within two miles of the site. The team also reused the materials (mehrten rock) found on-site for site features, crushed for building base materials and used as aggregate.

From selecting drought-tolerant plant materials to using fiber cement panels for their excellent resistance to fading, chipping, cracking, and wear, the team selected and used green and durable materials to support future maintenance. Other materials used are

Alaskan yellow cedar for the outdoor covered areas, single ply PTA, and luxury vinyl tile flooring.

The team emphasized using green materials that meet or exceed CALGreen requirements and the pollutant emission limits. Additionally, carpets are certified as Green Label Plus. This means that 80 percent of the floor area receiving resilient flooring shall be compliant with CHPD criteria as certified under the Greenguard Children's and Schools Programs.

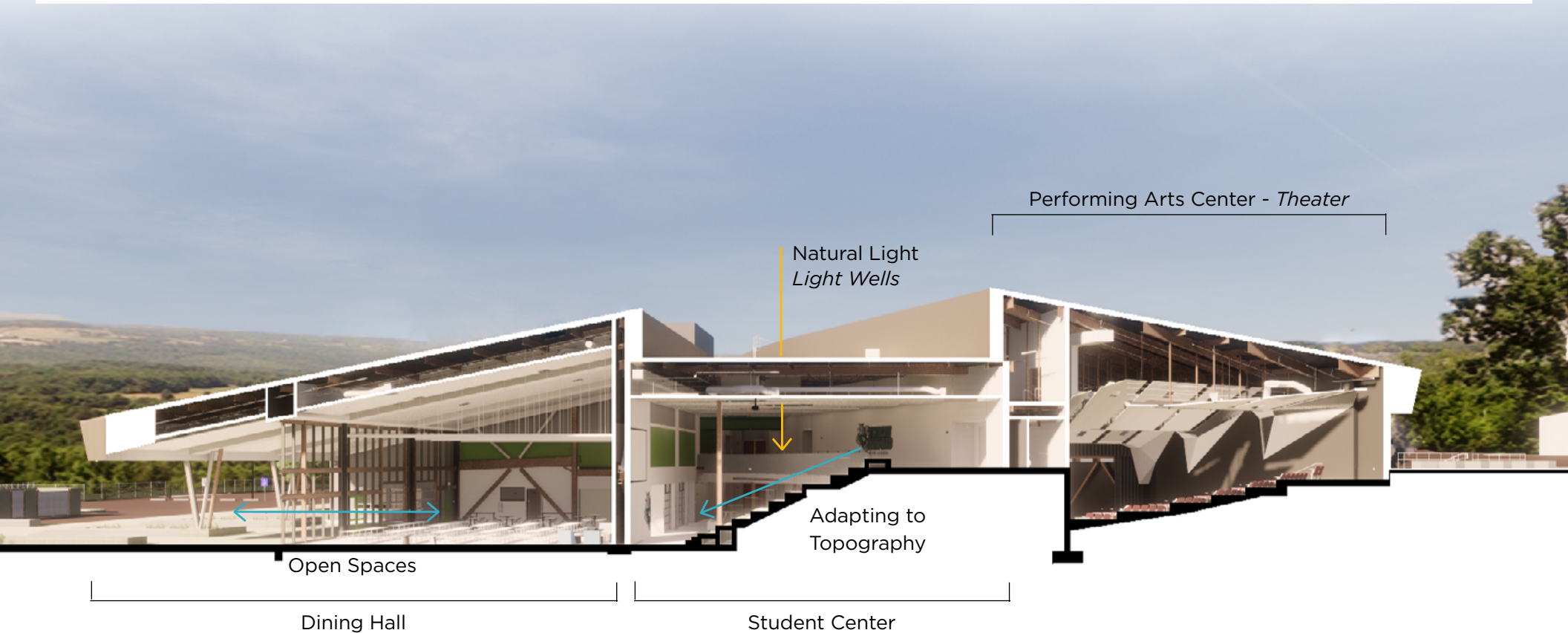
In building a healthy environment for the students and staff, the team prioritized zero use of chlorofluorocarbon (CFC)-based refrigerants. To provide quality indoor air, the team also ensured ventilation meets or exceeds the requirement of Title 24 and ASHRAE 62.1.





Dining Hall

Additionally, the team worked closely with the lease-lease back contractor to create a modular approach to construction of the classroom buildings that reduces waste and reduced the schedule. A series of prefabricated exterior modular wall panels were designed to allow ample light to the interior spaces while providing a high-performance thermal envelope. All wall panels were manufactured within two miles of the site. These strategies enabled the team to save the district eight weeks off the schedule and \$1 million in total savings when considering building and schedule/general conditions savings.



Modularize; All repeating building elements are designed to be modularized and fabricated off site with a focus on simple, efficient site installation.



Panelized Wall Construction; The building is designed in 4'x8' increments to increase production speed, reduce waste, simplify construction, and improve quality. Panel transportation is minimal; the fabricator is located within two miles of the project site.





RESULT OF THE PROCESS AND PROJECT

ACHIEVES EDUCATIONAL GOALS

The Western Placer USD sets global district goals to develop programs that challenge students to reach their fullest potential. They focus on building safe, caring, and attractive spaces through effective engagement with the community, local government and business and service organizations. The Twelve Bridges High School project embodied these goals. The spaces supporting education, inside and out, have generated tremendous excitement in the student body, and are leading to success in the classroom and in competition. **The school's career and technical education focus is evident in the spaces, developed in partnership with the business community and the City of Lincoln.**

ACHIEVES COMMUNITY GOALS

WPUSD's vision is rooted in community connections. The schools are to be desirable places with a strong emphasis on the **environment, technology, and the arts**. Education is also structured in partnership with the parents. As we assess the success of the project through the lens of the community goals, the facility exceeds in every category.

Environment: The high school has been delicately placed into the surrounding environment with established connections to nature and the outdoors.

Technology: Is infused throughout the campus in all indoor and outdoor spaces.

The Arts: Are a foundational element to the student union building. The theater provides a great setting for gathering and performance, and the visual arts spaces flood natural light in through north facing glazing.

THROUGH COUNTLESS HOURS OF PROGRAMMING, DESIGN MEETINGS, VALUE ENGINEERING EXERCISES, AND MAKING HARD DECISIONS TO GET TO THE FINAL DESIGN, THE TEAM PROVIDED A FANTASTIC HIGH SCHOOL DESIGN THAT HAS GARNERED A LOT OF ATTENTION AND PRAISE FROM OUR LINCOLN COMMUNITY, AS WELL AS SURROUNDING VISITING COMMUNITIES, AND GENERATED A NEW SENSE OF PRIDE IN THE DISTRICT.” – *Michael Adell, Director of Facilities*

