Portola High School Irvine Unified School District

CREATING A NEW CAMPUS WHERE LEARNING HAPPENS EVERYWHERE



EXECUTIVE SUMMARY

Irvine Unified School District challenged the team to design a new high school campus as a dynamic learning environment for this growing neighborhood. Before we placed pen to paper, we knew that a successful project would only be possible by creating a clear list of goals and strategies. Here are the list of project goals:

GOALS

- To create a campus where learning happens everywhere
- Take advantage of local landmarks to inform the big site moves and architectural response
- Allow for spaces that encourage student and staff collaboration
- Provide an area on campus that puts a focus on the arts
- Classroom designs should allow for a flexible, multi-disciplinary approach that can adapt over time
- Create a campus center that feels like a college level student union
- Provide a safe and secure campus pick-up and drop-off experience
- Create a clear and secure single point of entry
- Look for opportunities to create showcases for sustainability on campus



STRATEGIES

- We created various spaces indoors and out to allow learning to happen everywhere
- Campus organization is influenced by the arroyo, and by the landmarks to the east and west
- Student and staff collaboration zones are located at each classroom wing
- We located the Arts Plaza in the active quad near the music and arts wing
- Classroom wings built with non-load-bearing partitions allow for change over time
- The Campus Center building is located in the heart of the campus and is home to various functions
- Parking for students, staff, and visitors was considered carefully including parent and bus drop-off
- The administration building serves as a highly visible glass portal that frames the view of the corridor
- We created several opportunities to showcase sustainability including:
 - Dual Plenum Green Roof: at the Campus Center
 - Electro-chromic (auto-dimming) Glazing: in key public spaces
 - Photo-voltaic Arrays: in the parking lot to reduce heat island effect
 - Bioswales and Detention Basins: located throughout campus

OUTCOMES

Surrounded by regional history and inspired by local geography, Portola High School in Irvine, California, is a future focused school where learning happens everywhere. With flexible open spaces, collaboration zones, and science and innovation labs, it looks and feels more like a college campus than a high school. The site rests on the edge of a new planned development surrounding the Great Park, formerly the El Toro Marine Corps Air Station. The new campus connects to the adjacent Agua Chinon Arroyo, a recently restored riverbed and a wildlife corridor connecting the Cleveland National Forest and the Laguna Coast wilderness area.

The campus architecture draws inspiration from the surrounding beautiful natural environment and resulted in a flowing and organic campus plan. Buildings clustered around collaborative zones create mini enclaves on campus that surrounded two distinct quads. One of the classroom clusters feels more contemplative, and the other more active near dining and performing arts. As a counterpoint to this flowing plan, we created a linear pedestrian promenade that starts at the main campus entry, extends all the way through the middle of campus, continues past the fields, and ends at the stadium. This path creates a view corridor that frames views to the east of Santiago Peak, the highest peak in Orange County, and the orange "Great Balloon" which is a local landmark for the community.



EXECUTIVE SUMMARY

The building's tri-colored concrete block walls appear to emerge from the earth like layers of sedimentary rock found in the area and are separated by windows that provide daylighting and framed views out to the beautiful hills that surround the site. The buildings express themselves in layers, planting beds of native landscaping, extended covered walkways, and earthen wall slabs creates a natural layered effect. In contrast, aviation inspired metallic flying roof lines slope up towards the north and east to capitalize on views to the mountains, while deck edges extend to create shade and break down the scale of the campus to be compatible with the new residential neighborhood. Curious what the students and staff think about the campus? See the quotes from our post occupancy evaluation throughout this document:





SCOPE OF WORK AND BUDGET

SCOPE:

Ni

Site Area: 50 Acres Building Area: 244,000 SF

COST:

Buildings: \$124,271,000 \$509 per SF Site: \$9,229,000 Total Cost: \$133,500,000

ENERGY:

EUI: 61.5 kBtu/sf Baseline EUI: 160 kBtu/SF Reduction: 62%

> Views to Great Park and Balloon

ua Chinon Arri

18

03

19

01

19

18

13

04

05

06

🗋 06 🛤

06

07

03

12

08

14

09

10000



- **01** Administration
- 02 Dining
- **03** Performing Arts
- 04 Electives
- 05 Campus Center
- 06 Classrooms
- 07 Science
- **08** Gymnasium
- 09 Lockers
- **10** Aquatic Center
- **11** Restrooms & Concessions
- **12** Varsity Softball
- **13** Varsity Baseball
- **14** Multi-Use Fields
- 15 Stadium

57

15

150

300

- **16** Tennis Courts
- **17** Student Parking
- **18** Staff/Arts/Sports Parking
- **19** Visitor Parking
- 20 Photo-voltaic Array



SCHOOL AND COMMUNITY ENGAGMENT

COMMUNITY:

Surrounded by regional history and inspired by local geography, the site rests on the edge of a new housing development surrounding the Great Park, formerly the El Toro Marine Corps Air Station. The new campus connects to the adjacent Agua Chinon Arroyo, a recently restored riverbed and a wildlife corridor connecting the Cleveland National Forest and the Laguna Coast wilderness area.

STAKEHOLDERS:

A project's success is proportional to the level of involvement from stakeholders. Working with the district's leadership team, we created a structured, two-tiered planning committee to help steer the design through the planning process. The Steering Committee included the superintendent, assistant superintendent, chief business officer, director of facilities and their leadership team, the future principal of the school, and the director of maintenance/ operations. The larger Design Committee was comprised of stakeholders representing key disciplines and included new and seasoned teachers, the school's future leadership team, community members, two students from neighboring campuses, and all members of the steering committee. When consensus could not be reached, it was understood by all that the steering committee would make the final decision. With a strong focus on guiding principles, the team held several "big room meetings" at strategic times in the planning



SCHOOL AND COMMUNITY ENGAGMENT

and design process to vet the project program, explore adjacencies, and refine the campus plan and athletic field layouts. It was critical to have all stakeholders in the same room for these meetings to make sure everyone would have the same understanding of project potential, expectations, and budget. This upfront effort was time consuming, but it allowed the design team to gather all critical data early on and made the design process very efficient. It also led to a new high school that everyone is proud of.

CHALLENGES:

The master plan that was developed for the high school needed to be reduced by 30 percent to meet budget. This was our first and largest challenge, and we collaborated with the key stakeholders to come up with the classroom reduction strategy outlined in the executive summary above. This was a difficult item to navigate, but we were able to get concessions from all stakeholders for the good of the whole, and we were able to find multiple uses for key spaces that led to the reductions needed while still providing collaborative spaces for students and staff at each of the learning wings. The other key challenge was getting utilities to the site 18 months before the surrounding homes were expected to start construction. This involved several coordination meetings with the developer, including temporary power, stormwater management, and sanitation accommodations.



SCHOOL AND COMMUNITY ENGAGMENT

ASSETS:

The district allowed our team to schedule several half-day big room meetings with all the stakeholders on several different community spaces in the district. This allowed us to build consensus on key issues to move the project forward with confidence that all of the project goals were being honored.

VALUE OF THE PROCESS AND THE PROJECT TO THE COMMUNITY:

The campus has proven to be a tremendous success to the community, the students, and then staff. The proof is in the post occupancy evaluation that we completed two years after opening. The feedback that we received was incredible. Quotes from the students and staff are throughout this document and in the "Results of the Process and Project" section at the end of this document.



Campus Circulation & Flow

THE EDUCATIONAL **ENVIRONMENT**

The design strategy reinvents the conventional high school configuration, providing students with learning environments that inspire interaction outside the traditional classroom setting. To encourage collaborative moments, student common rooms (blue spaces) are located between wings, acting as flexible spaces to facilitate different learning styles, including work-sharing, one-on-one instruction, multi-class presentations, and small-group instruction. The teacher collaboration spaces (yellow spaces) sit strategically between the classroom wings for easy access and supervision.

TINA MURPHY, TEACHER:

"The staff collaboration spaces work great since we decided to have a interdisciplinary model for the classroom layouts (not by department). This decision has changed not only where we teach and where our offices are; but positively affected how we work together as a team. These spaces have helped us learn more about true interdisciplinary collaboration than any of us thought it would when we first arrived on campus. So we are learning from each other, we are learning from the students, and we continue to learn from the space itself."



³ Teacher Collaboration Suite

THE EDUCATIONAL **ENVIRONMENT**

3 Student Collaboration Suite

"I would say that we really do learn everywhere on campus. We use the tables outside to study for tests or for collaborating on our projects. The collaboration spaces are highly used because there are whiteboards everywhere, including the tops of the tables that can roll around the room. I like how you can change that area to suit our needs as students. It's great to be able to brainstorm ideas and work as a team in a space that is so easy to change."

STUDENT:

"I like the spaces outside the best. I use the tables under the canopies outside almost every day. Those are nice spaces because they have shade and are just the right size for a lot of different activities. My friends and I like to gather there right before a test so we can *quiz each other. That is a fun space to do that because* you are outside in the fresh air but still have shade and Wi-Fi access."

2 Maker Spa

Staff Spaces (Technology and Athletic Directors) Student Store Support Spaces A 4 3 (2) 1 THE CAMPUS \bigcirc

Learning Spaces (Maker Space and ASB)

Library & Student Union

CENTER

The centrally located Campus Center addresses the collaboration and technology goals of the district by integrating several strategies. A large dual-glazed sliding glass wall connects the Student Union space to the Library which allows those spaces to flex over time to accommodate various uses. These spaces are flanked by the Maker Space and ASB spaces to promote their access and use. Battery powered tables on casters allow wireless charging of devices throughout the school day and allow this space to be a flexible and dynamic extension of the learning studio spaces. Above ASB sits a one of a kind, dynamic dual-plenum green roof system that passively cools the south side of the building. This, along with electro-chromic (auto-dimming) glazing, puts sustainability on display and becomes an interwoven part of the campus experience.

A

A Section

STUDENT:

"This is our school; we can use it however we want. Sometimes we do our work in the classroom, but if we can go to the collaboration space or the campus center, we'll sit on the couch, where we can feel comfortable. In many ways this does not feel like a stereotypical school. This is our zone, we get to sit and learn how it works best for us, we get to feel comfortable and be productive at the same time."

ANNA AND

 \mathbf{n}

a1

LIVING ROOF

GREEN ROOF OVERVIEW OF BENEFITS

Free Cooling is provided by the green roof as outside air is drawn in across the underside of the system and then pulled into the interior spaces. This reduces the demand on mechanical cooling, and thereby saves energy. Still air combined with insulation improves U-value and thermal performance in the winter.

(q1

The green roof deflects solar radiation thereby reducing heat gains through the roof membrane.

Carbon dioxide and other contaminents are reduced, as green roof vegetation filters the air.

m

Green roof system provides additional layers of sound attenuation, thereby providing enhanced indoor acoustic quality.

The vegetated features create a focal point at the center of campus, drawings students and the community to the student center and creating a sense of identity for the school.

E

ENERGY

AIR QUALITY

а

MAINTENANCE

IDENTITY

When outdoor dry bulb temperature is > 55°F and < 70°F and indoor dry bulb temperature is $> 65^{\circ}F$

FUER FUER FUER FUER (3) 3 (2) 1 (4)

THE DUAL-PLENUM GREEN ROOF SYSTEM

GREEN ROOF: SUMMER OUTDOOR AIR COOLING

HOW IT WORKS

- 1 The HVAC is shut off using an interlock control system
- **2** Air enters the plenum via openings in the roof soffit
- **3** A small fan draws air through the plenum which moves across the cooling green roof mass
- **4** "Free cooling" is increased, reducing demand on the HVAC system

THE DUAL-PLENUM GREEN ROOF SYSTEM

GREEN ROOF: WINTER HEATING

Heating mode turns on when indoor dry bulb temperature is <68°F

HOW IT WORKS

- Dampers are closed to prevent warm air from escaping the plenum
- 2 Fans are turned off
- **3** Green roof provides added insulation
- 4 Heating mode supplies warm air to the space

VARIOUS SUSTAINABLE STRATEGIES

ELECTRO-CHROMIC GLAZING

PERFORMING ARTS

This 700-seat performing arts complex is located proud to the most public facing corner of the campus, and is set up to hold various community presentations and functions. Designed to be a learning lab for performing arts, this building is run by the students (with oversight) who learn how to control stage lighting, design and build stage sets, operate rigging, and control sound and video production. This building is a living laboratory as much as it is a great place to watch a show. The lobby image above shows the electro-chromic (auto-dimming) glazing at work to allow ample ambient light while reducing glare.

RESULTS OF THE PROCESS AND PROJECT:

The only true way of understanding whether or not this project achieved the district's educational goals and objectives is to do a **post occupancy evaluation**, so our team set up interview sessions with students and staff two years after occupancy to see how things were going on campus. The findings were both reassuring and surprising. We began by setting up **three focus groups** where we separately interviewed the students, the staff, and the administrators.

We asked the students if the learning spaces were comfortable, flexible and if they supported their learning styles/needs. We also asked how they define flexibility, and if the collaborative learning spaces were well utilized. The students talked a lot about their "coveted collab spaces" and how they really enjoy working in them in different ways. The staff admitted that they were hesitant to allow use of those spaces initially, because they weren't sure how the students would conduct themselves. What the staff came to realize was that these collaborative spaces were fairly easy to supervise from their learning suites, offered the students a sense of autonomy for study, and that they became an incentive tool to encourage appropriate behavior throughout the learning studio enclaves. The students talked a lot about how much they loved the flexible and comfortable furniture and how much they used the markerboard walls and tables with markable tops for collaborating on group projects.

RESULTS OF THE PROCESS AND PROJECT:

We asked about the outdoor dining/learning/ hangout spaces, and they shared stories about how those spaces are used before and after school as homework zones, and how it was great to have Wi-Fi access everywhere on campus. The Campus Center was the most popular space on campus, and the Library was the number one chosen hang out spot. This was surprising to our team as we assumed the Student Union would be the hot spot, but because the Library had the most soft seating options, it became the most popular. This was one of the big take aways for our team. On the next school, provide more soft seating options that allow students to feel more comfortable throughout the school day.

We asked the staff about their teacher collaboration spaces to see how they were functioning. They were quick to say that they are well used, but wished that they were larger to accommodate all the different ways they are being used throughout the school year. The principal who was on our planning committee admitted that initially he was unsure how many teachers would actually use these spaces. Now that he sees how they are being used for collaboration and training, he would have asked that they be around 1800 SF—twice their current size.

RESULTS OF THE PROCESS AND PROJECT:

There were two main questions that we needed answers to:

1. Did the planning process provide valid goals, criteria and strategies?

2. Did the design team implement these strategies effectively to create a campus that fulfills the district's vision?

The unanimous answer to both of these questions is a resounding YES.

Those involved in these planning meetings acknowledged that it took a lot of time and effort, involving a group of dedicated stakeholders to get to this successful conclusion. The planning process was key to clarifying the goals, coming up with strategies to accomplish those goals, and backing up our strategies with evidence to ensure the end result would function as intended.

There are no shortcuts in this process, but the investment of time and energy is well worth the countless years of service that this campus will bring to the community and it's future leaders.

Improving the communities we serve is what drives us, and we are proud to submit this project to this A4LE awards program for your consideration.

