

MOUNT SI HIGH SCHOOL

Snoqualmie, WA

MacConnell Award, A4LE 2021

MOUNT SI CHALLENGE: ELEVATE THE CAMPUS

PHYSICALLY EDUCATIONALLY EXPERIENTIALLY



EXECUTIVE SUMMARY: CHALLENGES AND OPPORTUNITIES

Located in the Snoqualmie River valley, prone to flooding, Mount Si High School presents a harbinger of resilience. The physically elevated campus creates a rare wealth of opportunities—educationally and experientially—in a progressive interpretation of future-oriented learning. The District employed an exceptionally thoughtful two-phased planning process with large committees including several students. The primary goal to create a student-centered environment was achieved through organizing the campus into Small Learning Communities (SLCs). Defined as seven connected buildings, this large-scale facility integrates biophilic design principles and connections to nature to weave welcoming human scale spaces throughout the whole campus.

(EXTRAORDINARY) CHALLENGES

- Providing resilience to climate change and environmental disasters
- Mitigating the impact of the building's large scale
- Phasing and building on an occupied site
- Honoring a highly aspirational educational vision

(EXCITING) OPPORTUNITIES

- Expressing the school community's vision for a student-centered environment
- Elevating the experiential quality of the campus
- Converting the challenge of mitigating the building's large scale into an opportunity
- Converting the challenge of providing resilience into an opportunity to enhance the daily experience of students and teachers
- Designing a campus where users can always relate to nature from near and far



SCOPE OF WORK AND BUDGET: KEY PROJECT STATISTICS

Design Capacity: **2,300 students**
Future Addition can accommodate
500 more students

Building Area: **358,000 sf**
Previous building was 225,000 sf

Below Building
Covered Parking: **190,338 sf**

Total Project Cost: **\$208 Million**

Construction Cost: **\$172 Million** (3 contracts)



The Snoqualmie River is very idyllic, but the river floods.

The design team began working with the school district in late 2012, engaging with the community and reviewing master plan concepts to evaluate options for addressing growth in the region. The district is one of the geographically largest in the state, covering over 400 square miles located within a long, relatively narrow valley. The client had previously explored adding a second high school elsewhere in the district, but the existing high school was located right in the middle of the district and worked well to serve all the students. After approximately two years of reviewing options and many community discussions (both online and in person), the district decided to put a bond measure on the February 2015 ballot that would fund construction. Support from voters was very high, with a 68% approval rate.

In late 2014, immediately prior to passage of the bond, the design team worked with the district, key stakeholders, staff, and students to explore ideas for a progressive high school that would serve them well immediately and for the long term. The vision became creating a student-centered environment to address their physical, emotional, and educational needs.

Design work began in the spring of 2015. Construction was separated into three projects: early site/grading, stone column ground reinforcement, and main building construction and sitework. Early site preparation/grading began in mid-2016, the stone column ground reinforcement began in the late fall of 2016, and the main building construction began in the spring of 2017. The primary building phase (majority of the building) opened for students in the fall of 2019. The final phase of the project—performing arts wing and remaining parking areas—opened in the spring of 2021.



SCHOOL COMMUNITY ENGAGEMENT: PLANNING PROCESS

PRE-BOND PLANNING AND POST-BOND PLANNING

STRONG COMMITMENT TO THE HIGHEST QUALITY OUTCOME

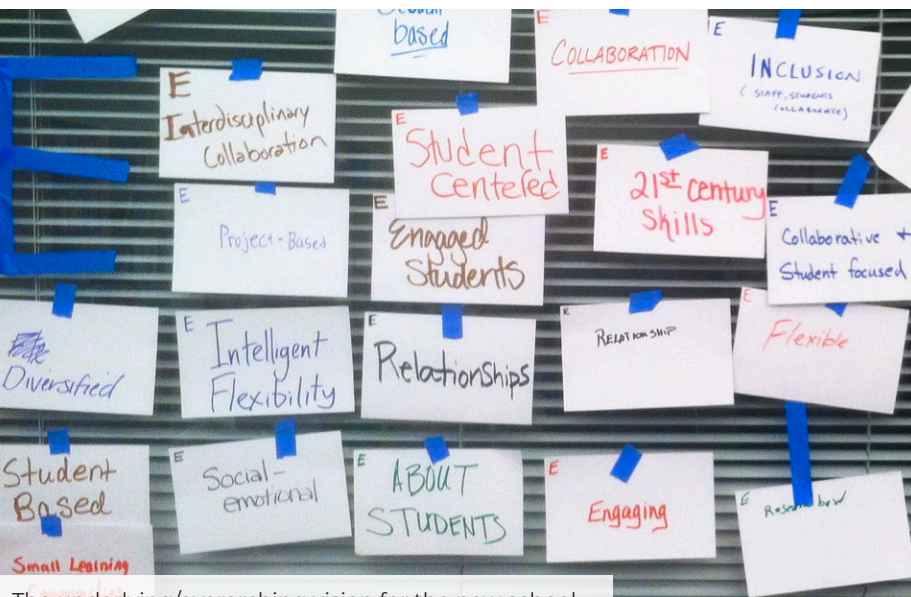
- Mobilizing the community with a vision
- Giving justice to planning a major community project
- Willingness and readiness to tackle challenges and think big

TWO LARGE COMMITTEES (40 PEOPLE EACH)

- Frequent meetings over many months
- Honest evaluations and high aspirations
- Inclusive school community representation:
6-8 students in each committee

Mount Si High School is a replacement project on the site of the existing high school, located on the historic eastern edge of downtown Snoqualmie. Due both to the existing building's constraints and pedagogical reasons, the freshman class was housed in a former middle school located a couple of blocks away. The goal was to have the freshman class on the same site as the high school while retaining some autonomy.

As a very large and significant public project involving the local communities of North Bend, Snoqualmie, and Fall City, the District focused on making smart, long-term, and future-forward decisions. A series of visioning sessions took place with a large planning committee, the entire school staff, and the community prior to voter approval of the bond measure to fund the project. Following passage of the bond, another large committee convened to further develop the vision and design for the new school.



The underlying/overarching vision for the new school



Second planning committee – building planning and design

SCHOOL COMMUNITY ENGAGEMENT: PRE-BOND PLANNING PROCESS

SETTING THE VISION – EDUCATIONALLY AND EXPERIENTIALLY

GOALS OF THE PROCESS

- Evaluate the current pedagogy and adaptability of the existing facility
- Explore future pedagogies and the facility's expectations to support them
- Create broad support with the students, staff and entire community around the potential inherent in a new high school

VISIONARY RESULTS OF THE PROCESS

Small Learning Communities were determined to be the best approach to meet many different goals, including increasing interdisciplinary learning.

A large student population made it even more important to support student relationships. Peer to peer and student to staff were crucial to success.

The entire environment needed to feel as though it were centered around students and their needs, not the needs of adults.

After 18+ months of master planning, numerous workshops with the school board, online survey forums, and in-person community meetings, the District decided to put the plans for a new high school to voters.

In advance of the community's vote of support, a planning committee of about 40 students, staff and parents convened to imagine the possibilities for a high school far into the future. This group, led by the design / planning

team, began by evaluating the kinds of teaching and learning practices they wanted to emphasize.

Additionally, the group assessed how their current facility helped or hurt their ability to achieve their goals and how to plan a new facility without those roadblocks.

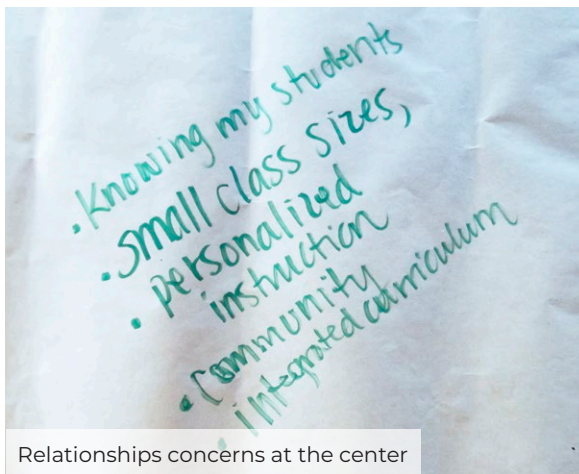
They also engaged the entire high school staff on two occasions both to share their current analysis and vision and to solicit additional ideas, feedback, and goals from the entire staff.

As the new building would accommodate about 40% more students than the current high school, there were concerns about making sure students did not fall through the cracks. Out of this awareness came a keen desire to help foster student relationships — peer to peer and student to staff.

The committee envisioned an open and inclusive environment with opportunities for informal interaction in every part of the building to enhance social, emotional, and academic growth.



High level of committee's engagement



Relationships concerns at the center

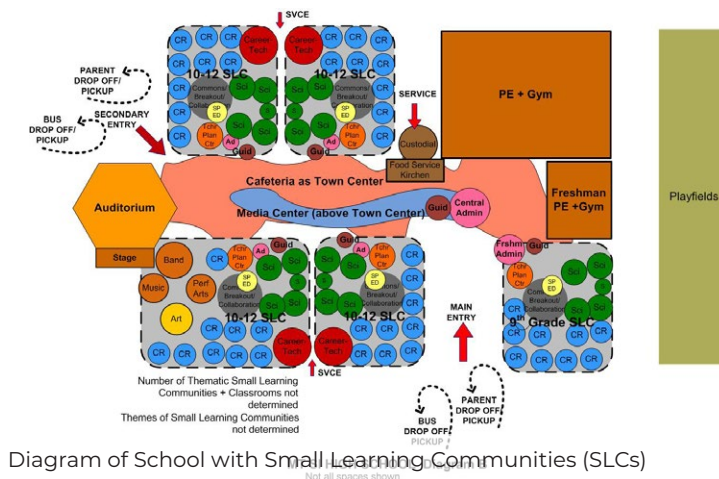


Diagram of School with Small Learning Communities (SLCs)

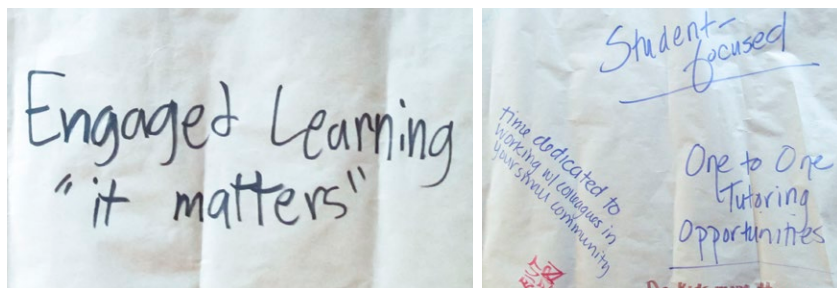
SCHOOL COMMUNITY ENGAGEMENT: POST-BOND PLANNING PROCESS

BUILD ON THE BROADLY DEFINED VISION – DEVELOP THE EDUCATIONAL SPECIFICATIONS

RESULTS OF THE POST-BOND PLANNING

- Provide a student-centered environment
- Stimulate interdisciplinary learning
- Design spaces that support future pedagogies
- Mitigate the large increase in building size (50% increase)

The (post-bond) design committee of students, staff, and community took the previously developed vision and expanded it to create a comprehensive framework for the design of the new school. This framework set applied the vision of a student-centered environment in the context of a large student population. Mitigating the large scale, in physical and educational terms, became an over-arching goal.



"We wanted flexible spaces that would adjust over the next 100 years of education, increased student collaboration to move outside of a classroom, to have something that was truly learner-centered and not just adult focused, to try interdisciplinary approaches, and to really meet the social and emotional needs of our students."

— Mount Si Principal

EDUCATIONAL SPECIFICATION HIGHLIGHTS

**Interdisciplinary Learning ** The planning committee wanted to break down barriers between departments and foster interdisciplinary collaboration and the ability for groups of teachers to have strong connections with a cohort of students. This resulted in organizing each Small Learning Community as a multi-disciplinary academy.

**Library as a Synergistic Research Hub ** The library was re-imagined as a hub for research in a broad sense — research through reading and research through doing. It should be a destination for many purposes both during the school day and after regular school hours. It should be linked to other programs and spaces that have "common cause" in creating a hub.

**Career Technical Education as a Collaborative Showcase ** The core Career and Technical Education (CTE) spaces were to accommodate new and changing programs and be developed so they were seen as desirable and engaging programs. Linking multiple spaces together to create interdisciplinary connections was desired.

**Cafeteria Space Inclusive and Scaled for All **

With meal times being a key social time for the school community, developing cafeteria or commons spaces that are comfortable, engaging, and still easily supervised was crucial. Having one gigantic cafeteria was seen as anathema to the idea of social spaces that can serve all students needs. Therefore, three cafeterias, each with balcony seating and a variety of other seating options, were developed to support extroverts and introverts, individuals, and groups of many sizes.

PLANNING / DESIGN PROCESS: CAREER TECHNOLOGY PLANNING

EDUCATIONAL SPECIFICATION HIGHLIGHT: BUILD A COLLABORATIVE CTE SUITE

GOALS

- Provide a collaborative Student-Centered environment
- Incorporate the best STEM education practices
- Use a creative planning approach – **engage “The Future”**

As part of a summer internship program sponsored and guided by the design team, a group of current and former students from Michael Wierusz's class at Inglemoor High School dubbed “The Future” spent the summer collaborating on design ideas for the new high school's CTE area.

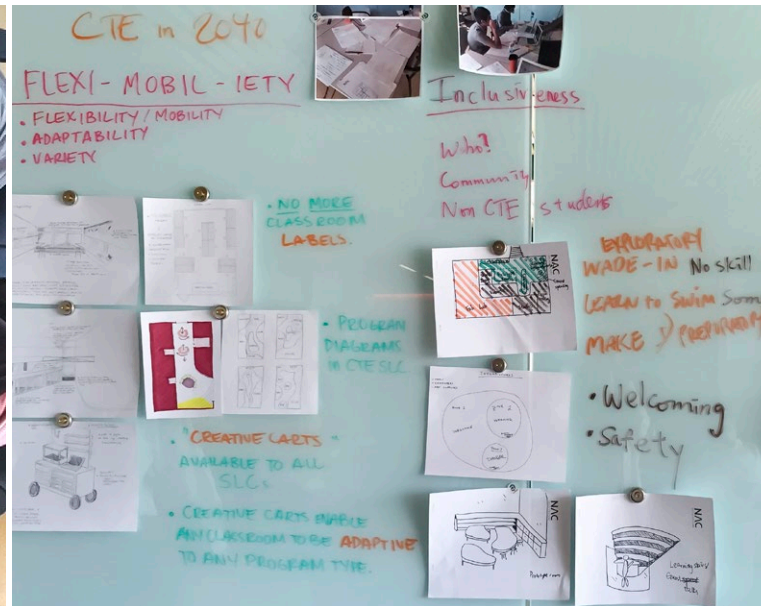
The District knew they wanted to rethink their approach to CTE education. Utilizing the students' hands on knowledge, all with experience in CTE classes, added depth and authenticity to the process. This group helped the design team and the District imagine new spaces that could accommodate a variety of programs with the kinds of opportunities they wished they had had. The concepts developed by this group were presented to the District and design team and became foundational to the next step of design development. Many concepts explored by this group with assistance from the design team became the basis for the final design.

This unusual visioning process was inspiring and much more student centered in both process and results.

Students in the office work area

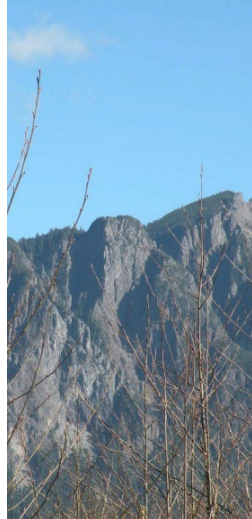


Ideas flourished across the work area



Design concept that was incorporated





Mount Si texture

PHYSICAL ENVIRONMENT: MACRO SITE CONTEXT

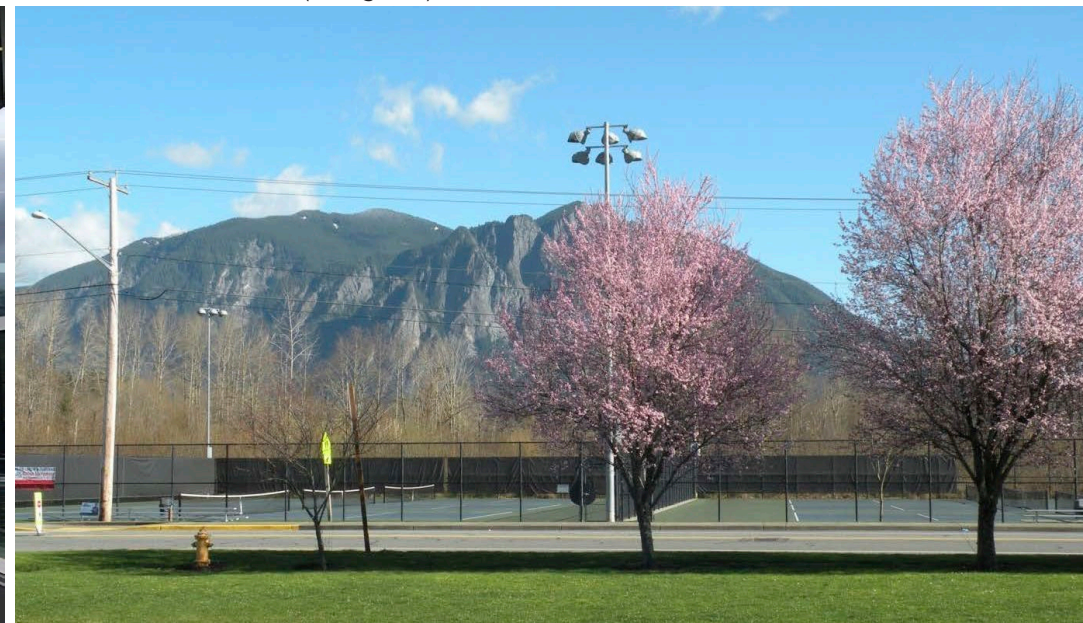
RELATIONSHIP TO MOUNT SI AND RATTLESNAKE RIDGE

Located at the east edge of the town of Snoqualmie WA, the school campus is the third large scale element in Snoqualmie Valley, facing Mount Si to the east and Rattlesnake Ridge to the south. Bordered by the Snoqualmie River on the north, the valley is at risk of flooding.

View from library terrace to Rattlesnake Ridge (facing south)



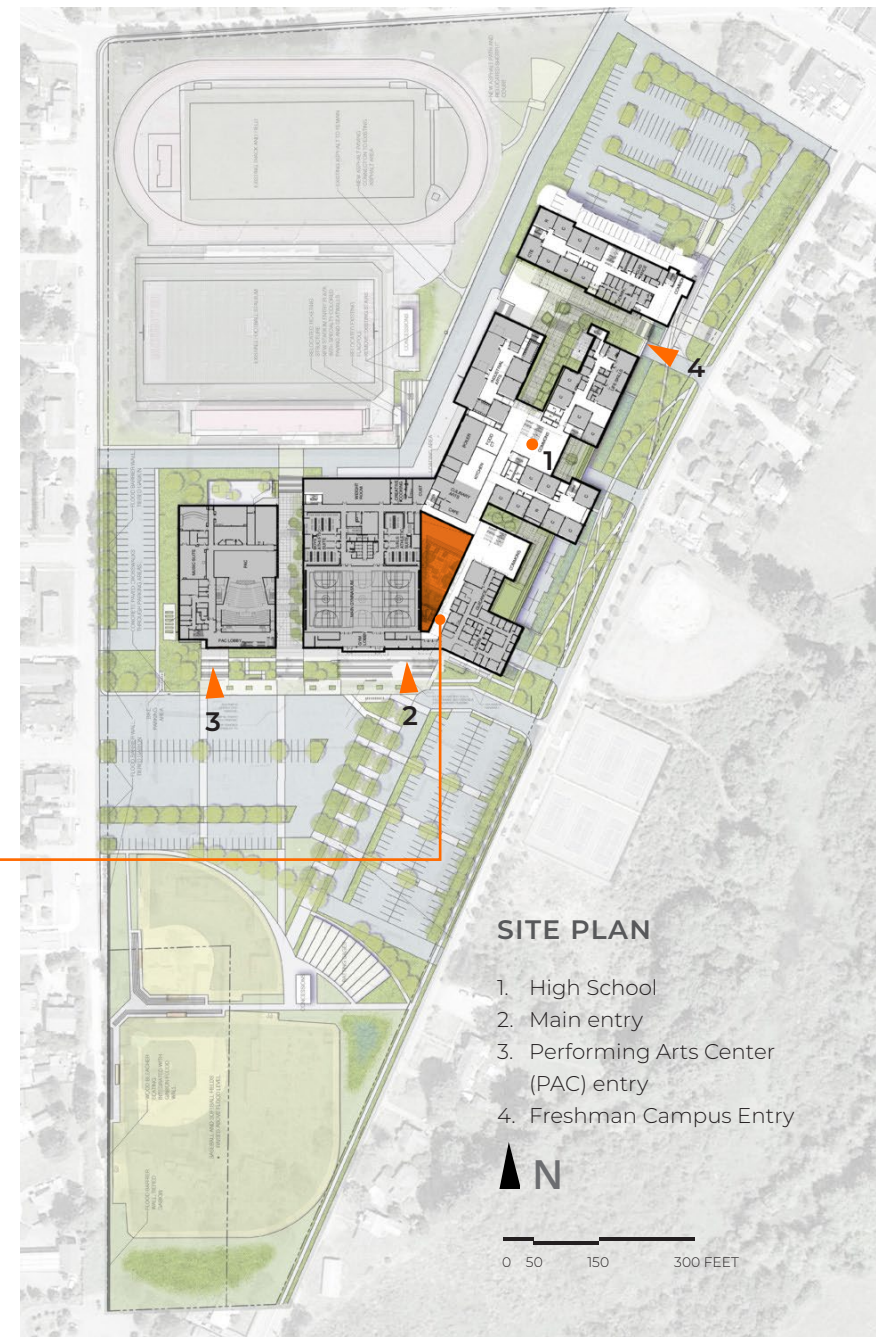
View from site to Mount Si (facing east)





Lunch area extends inside and outside.

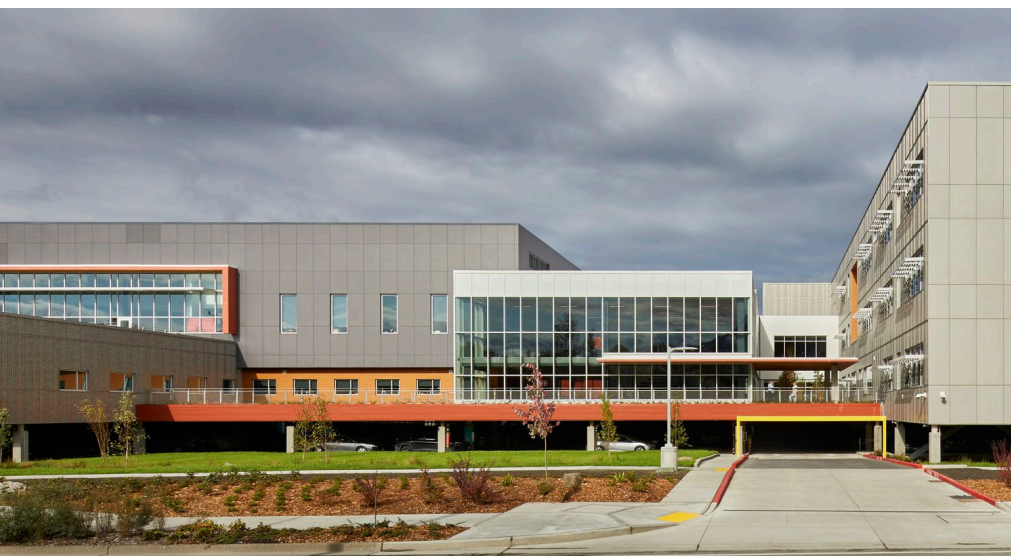
PHYSICAL ENVIRONMENT: SITE PLAN



Second level plan (above the parking). The triangular courtyard is the only space inside the building perimeter where the ground plane connects with the platform.

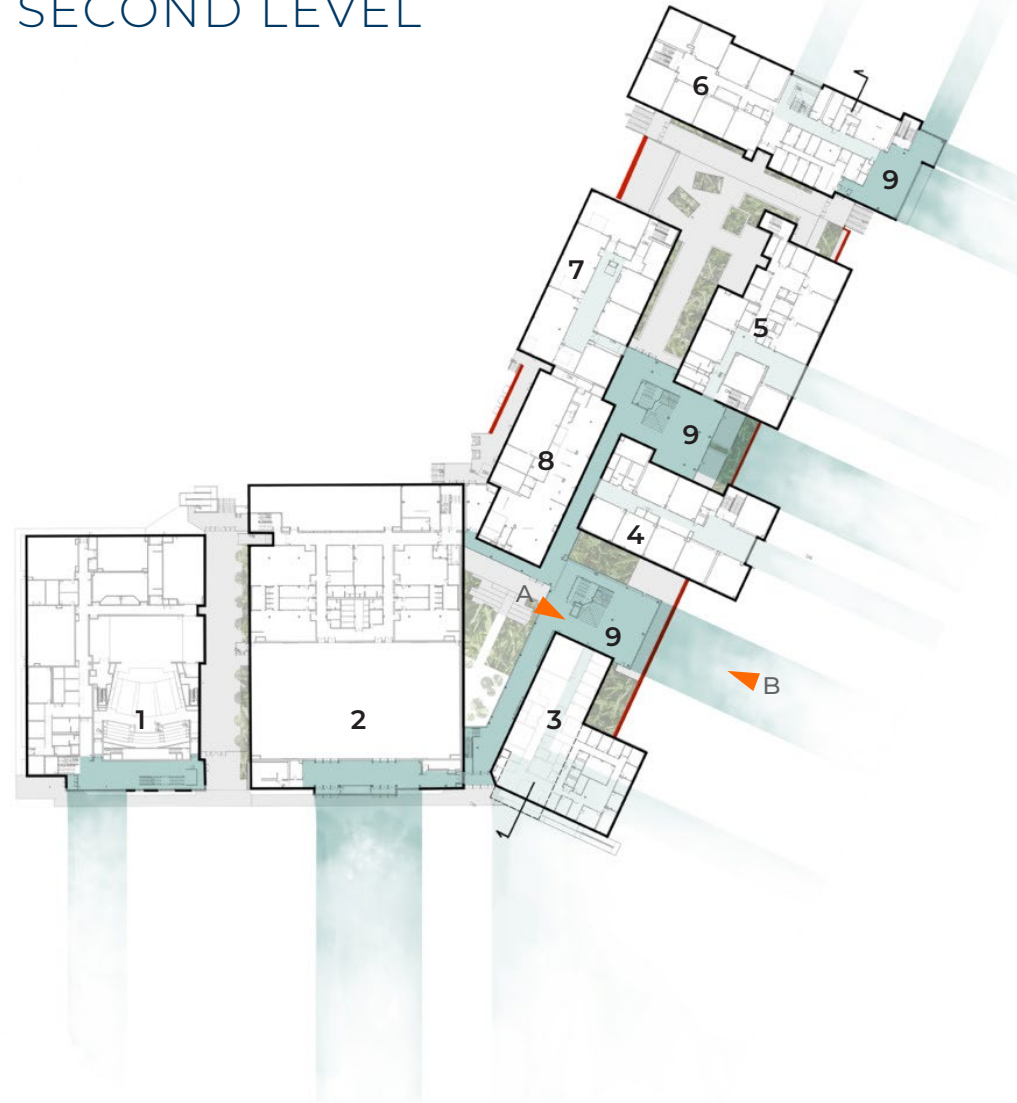


A



B

PHYSICAL ENVIRONMENT: SECOND LEVEL



SECOND LEVEL = ELEVATED PLATFORM = FIRST FLOOR PLAN

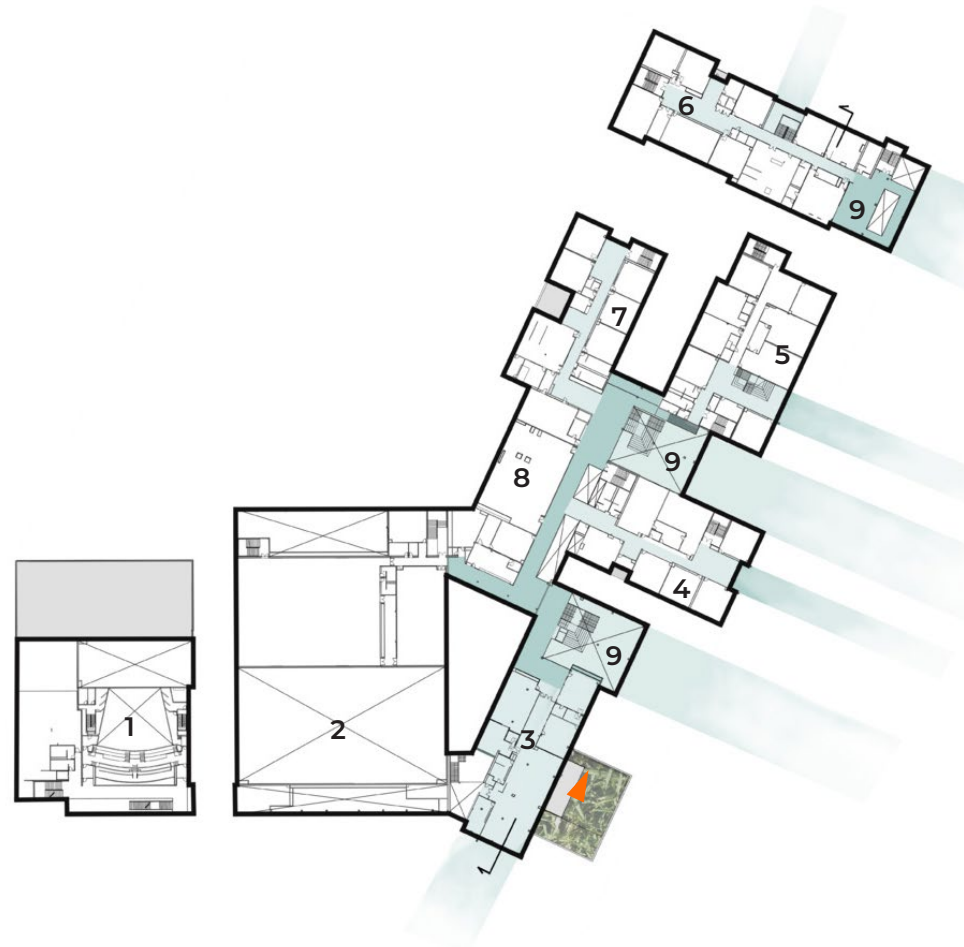
- | | |
|---------------------------------|---|
| 1. Performing Arts Center (PAC) | 6. Freshman Campus |
| 2. Sports Building | 7. Career Technical Education (CTE) Suite |
| 3. Administration | 8. Kitchen / Cafes / Services |
| 4. Academy / SLC | 9. Distributed Cafeteria |
| 5. Academy / Special Education | |



0 85 170 340 FEET



PHYSICAL ENVIRONMENT: THIRD LEVEL



THIRD LEVEL = SECOND FLOOR PLAN

- | | |
|---------------------------------|-------------------------------|
| 1. Performing Arts Center (PAC) | 5. Academy / SLC |
| 2. Sports Building | 6. Freshman Campus |
| 3. Library Suite | 7. Art SLC |
| Maker Space, Digital Lab, | 8. Kitchen / Cafes / Services |
| Film Studio | 9. Distributed Cafeteria |
| 4. Academy / SLC | |



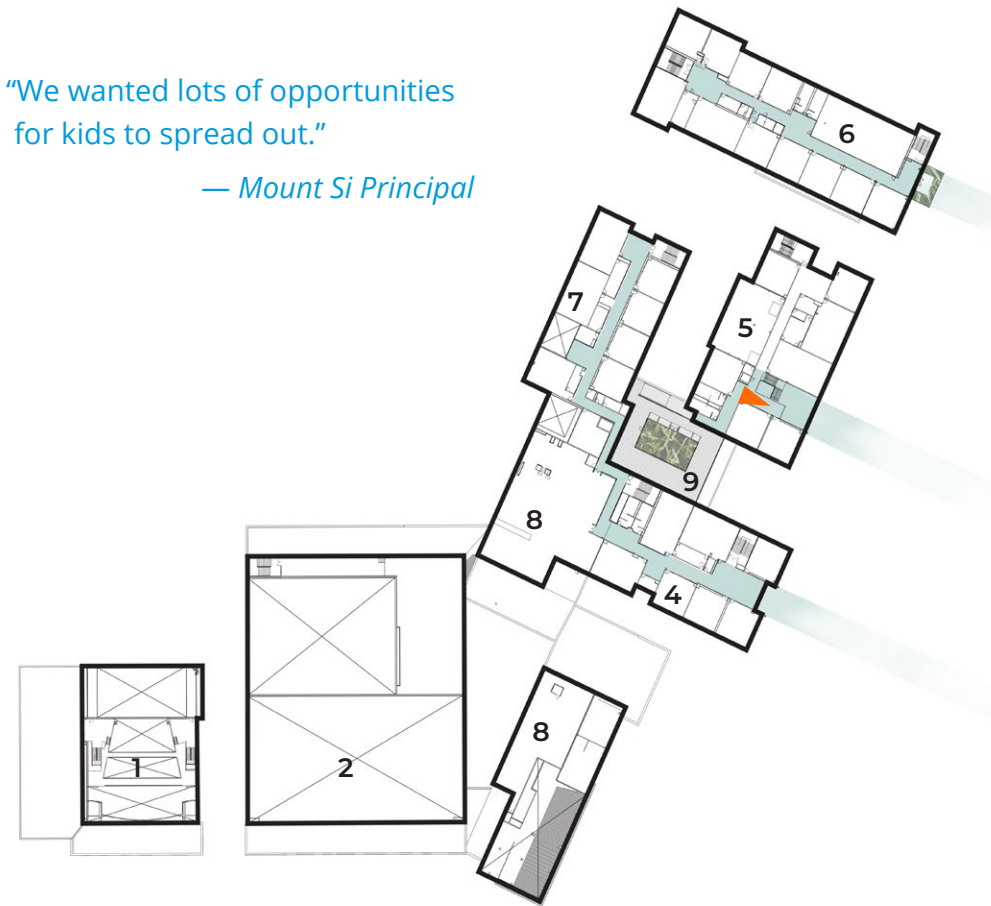
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PHYSICAL ENVIRONMENT: FOURTH LEVEL

"We wanted lots of opportunities
for kids to spread out."

— Mount Si Principal



FOURTH LEVEL = THIRD FLOOR PLAN

- | | |
|---------------------------------|---|
| 1. Performing Arts Center (PAC) | 6. Freshman Campus |
| 2. Sports Building | 7. Career Technical Education (CTE) / Art Academy |
| 3. Administration | 8. Mechanical |
| 4. Academy / SLC | 9. Greenhouse Terrace |
| 5. Academy / SLC | |





PHYSICAL ENVIRONMENT: SOCIAL EMOTIONAL WELL BEING

In neuroscientist Matthew Lieberman's book, *Social: Why Our Brains Are Wired to Connect*, he writes, "**Being socially connected is our brain's lifelong passion.**" This philosophy is woven through the entire school design.

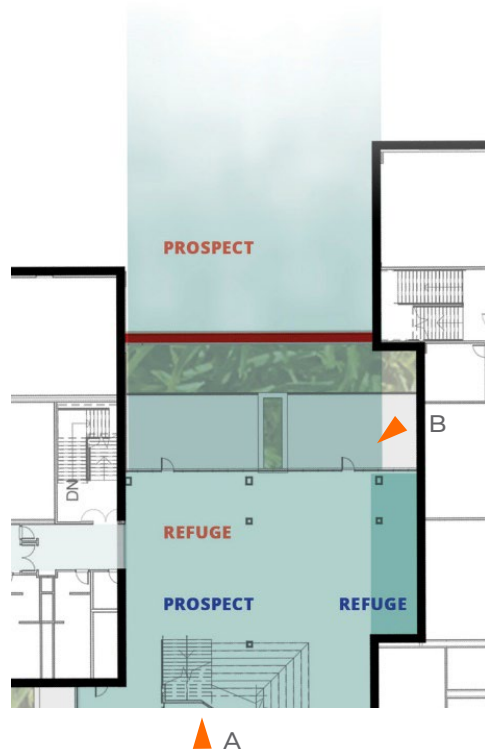


The planning committee challenged the architectural team to design spaces fostering student relationships. In response, the design reflects an understanding of how to support student psychology, particularly the needs of adolescents. Attention was paid to spaces that engage extroverts and introverts alike and are easily accessible to all. Enhancing these considerations, the biophilic principle of prospect and refuge is woven throughout the campus, creating a large variety of spaces of different scales and character, indoors and outdoors. The outdoor courtyards, gardens, terraces, and spaces "in between" heighten the choices that help teens feel safe and welcome.

PHYSICAL ENVIRONMENT: SUPPORT FOR SOCIAL BRAIN

BIOPHILIC DESIGN

PROSPECT AND REFUGE



In order to enhance the experiential quality of the campus and foster students' relationships, the biophilic principle of prospect and refuge is woven into the spatial fabric of the campus, inside and out.

Prospect and refuge spaces alternate in scale and character, enhancing the dynamic perception of distance.



A



B

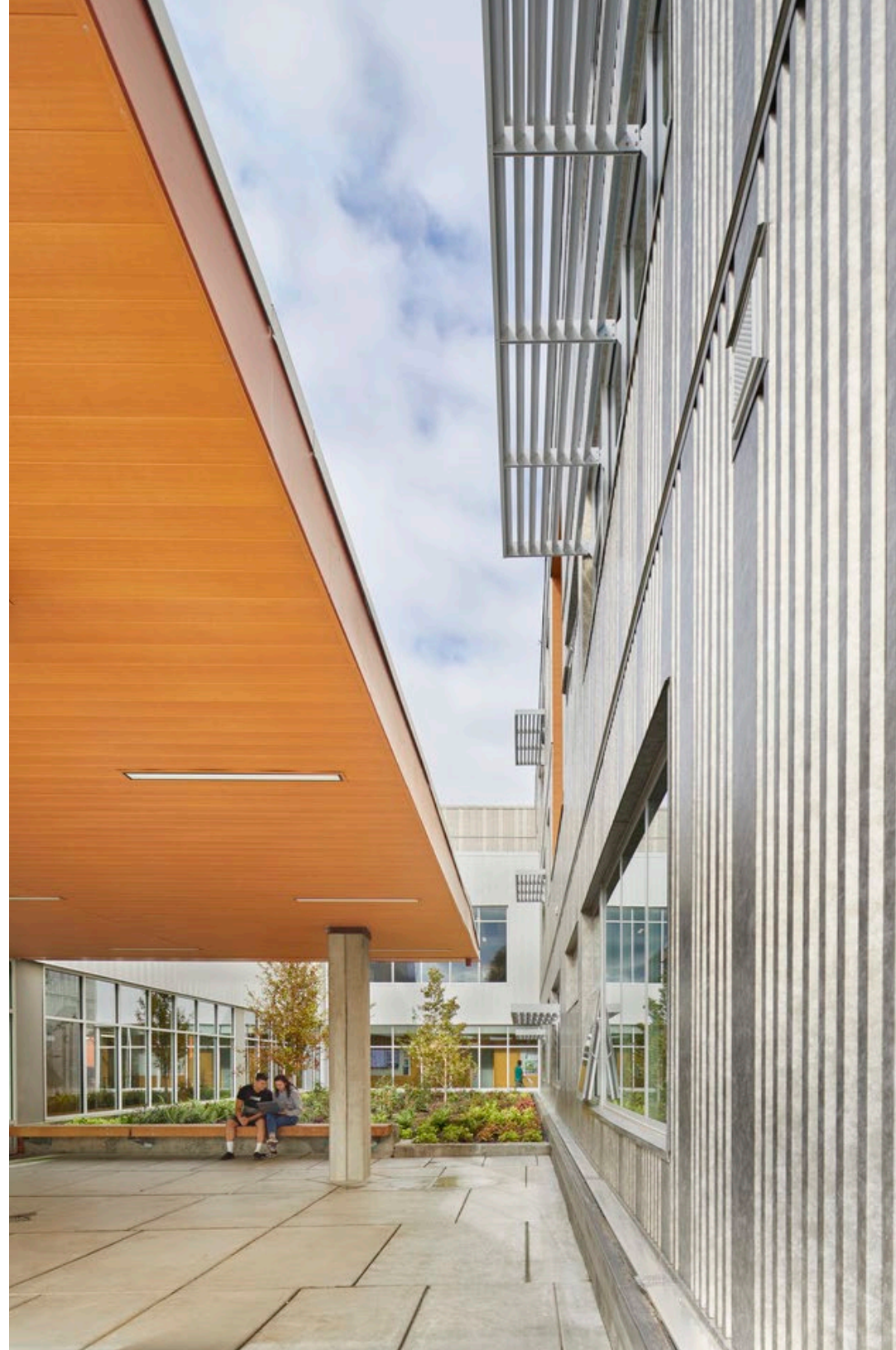
PHYSICAL ENVIRONMENT: RESTORATIVE LANDSCAPE

EXPERIENTIALLY: PRESENCE OF NATURE FROM NEAR AND FAR

The design of outdoor spaces and landscaping played a critical role in humanizing the very large 358,000 sf campus, providing many options for students to relax and socialize.



No matter how deep into the campus, there is always a view to the landscape, either close-up or off in the distance.





Freshman campus cafeteria



Students relaxing next to Deli located under the stairs.

PHYSICAL ENVIRONMENT: MITIGATING THE LARGE BUILDING SCALE – SPATIAL CHOICES THAT HELP STUDENTS FORM RELATIONSHIPS

EDUCATIONAL SPECIFICATION HIGHLIGHT: DISTRIBUTED CAFETERIAS AND FOOD SERVICE

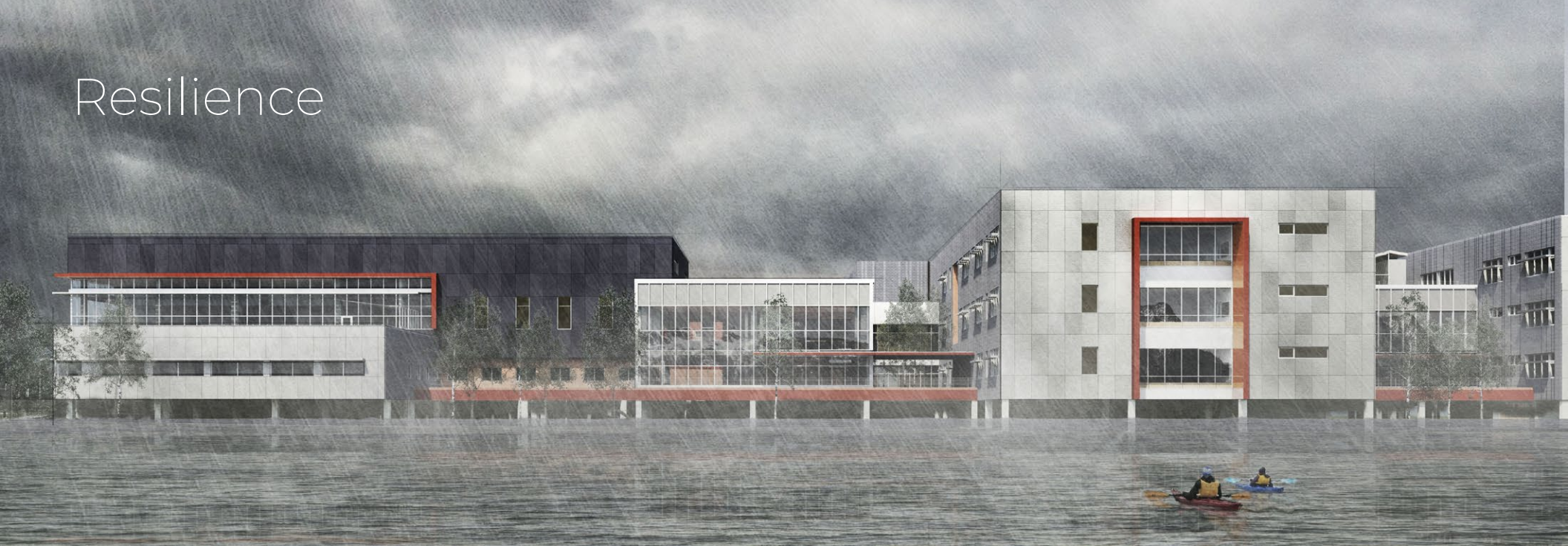
RECHARGE AREAS, SPACES FOR INTROVERTS, LEARNING OPPORTUNITIES

The school's planning committee understood that one extra-large cafeteria and kitchen for a high school of this scale was not conducive to its key goal of fostering student interaction. Conventional operations had to be questioned and reevaluated. The design solution not only divides the cafeteria into three separate spaces with plenty of extended informal areas for eating inside and outside, but also introduces additional food service locations to reduce the waiting time. In total, there are five food service spots, ranging from a full kitchen to grab-and-go kiosks. Additionally, the culinary arts program is connected to the main kitchen. As part of their coursework, students work with the kitchen staff to prepare and serve the food.



- Food distribution choices
- Dedicated indoor eating areas

Resilience



PHYSICAL ENVIRONMENT: RESILIENCY TO NATURAL DISASTERS – RESTORATIVE LANDSCAPE FOR FLOOD MITIGATION

SUSTAINABILITY – RESILIENCE IN A FLOOD ZONE

The site is located within a floodway. Instead of only meeting the code minimum of elevating the floor 3 feet above the 100 year flood plain, the design team raised the building approximately 6 feet above to create usable space below and more resiliency to climate change. That useable space became a 400-car parking garage, making more efficient use of the site and reducing the impervious area.

The floodway requires a “0-rise” design to prevent flood waters from having a greater impact on the campus or adjacent developments. The parking garage under the platform raised on plinths was designed as a “flow-through” system. The new softball and baseball fields have culverts beneath them to allow flood waters to flow through the site in the same way as before the school’s construction. Flood walls at the “downstream” end of the flow path mimics the same flow characteristics as the existing conditions.

After re-development, the site requires the same quantity of flood storage as before the development. Any new infrastructure below the floodplain elevation that reduced the total storage volume was offset by removing existing infrastructure at the corresponding elevation.





Abundant seating, a covered area for special education therapy, and naturalistic plantings make the “platform” an important space within the campus.

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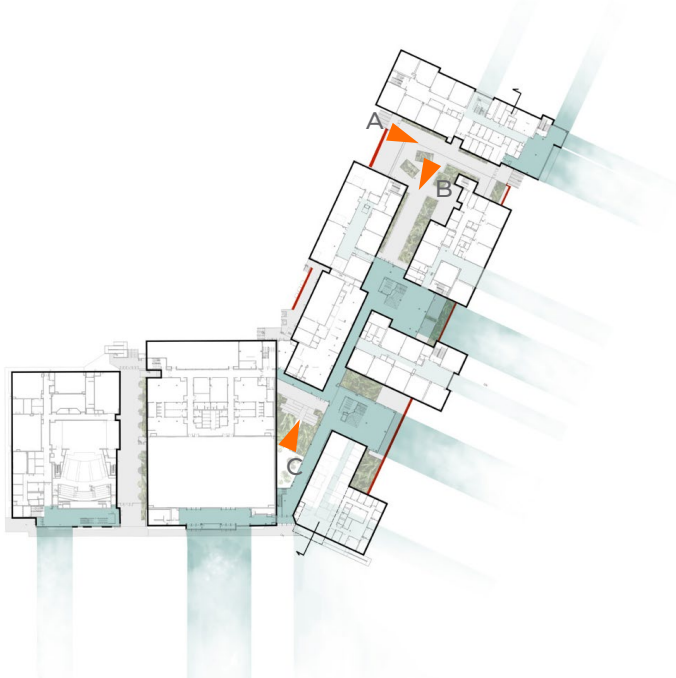


The platform above the parking area connects the freshman campus building to the remainder of the school.

B

PHYSICAL ENVIRONMENT: COLLEGE FEEL

The colleges are engaging not just for their buildings, but for how the buildings shape and activate the spaces in between them. This approach to creating active, usable, and inviting spaces was applied throughout the campus.



C

Tiered seating in the triangle courtyard created an extended lunchroom and a secure connection to the parking garage below.



The theater is a large regional amenity housing 700 people.



PHYSICAL ENVIRONMENT: SCHOOL AS A CENTER OF COMMUNITY – THEATER AS A LARGE REGIONAL VENUE

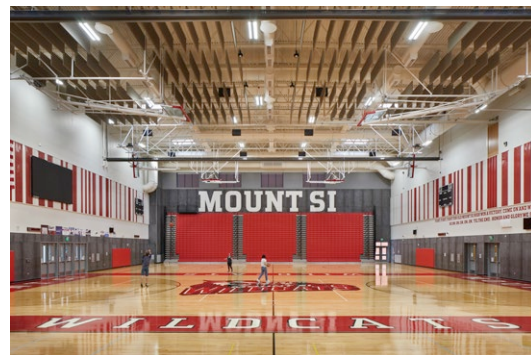
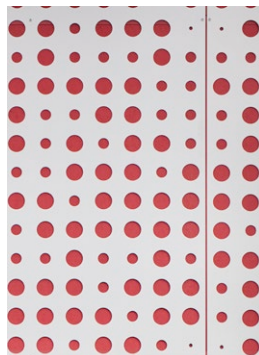
As the largest capacity theater in the area, the District planned for this Performing Arts Center to be an asset for the school and the broader community. They have hired a theater director to run this sophisticated facility to facilitate regular use by the entire region.





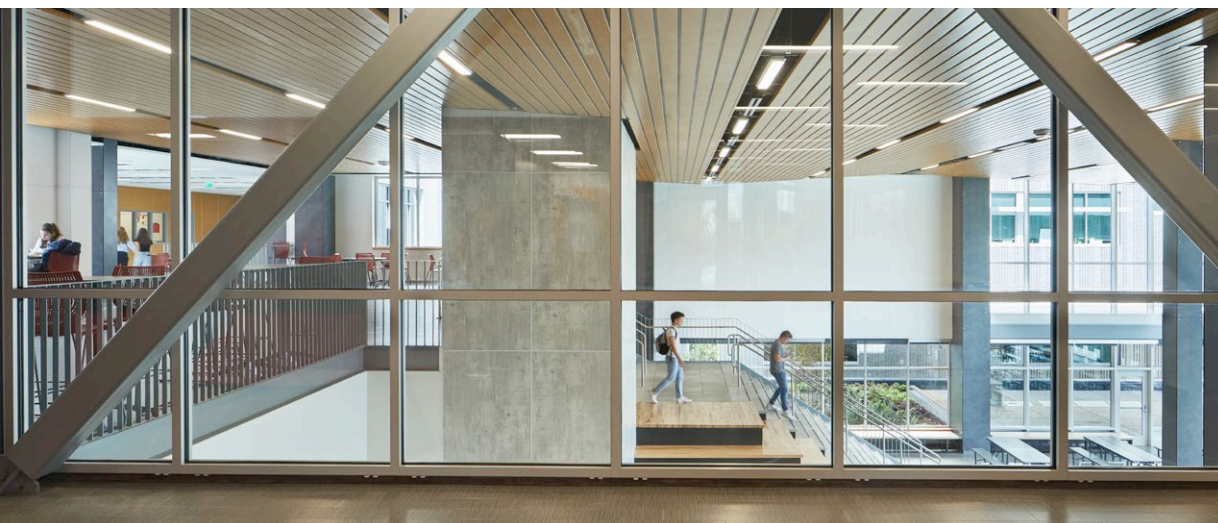
PHYSICAL ENVIRONMENT: SCHOOL AS A CENTER OF COMMUNITY – GYM AS A LARGE REGIONAL VENUE

The large wall space in the gym lobby presented an opportunity for celebrating the area and the school. Through the use of a 3D modeling software, a photograph of Mount Si was converted into five different sizes of holes so it could be fabricated into wall panels. A CNC (Computer Numerical Control) router was used to punch holes before each panel was numbered and installed “by number” onsite to recreate the mountain image. Acoustical panels in red behind these holes absorb reverberating sounds.



EDUCATIONAL ENVIRONMENT: COLLABORATIVE LEARNING

TRANSPARENCY AND CONNECTEDNESS PERVADES THE CAMPUS



Informal learnings spaces are successful when they are connected physically and visually to formal learning spaces. The entire school organization is based on this knowledge which also allows people moving through the school to constantly see, experience, and participate in the activeness of the place.



Sliding glass doors allow the leadership classroom to connect with the library foyer and the second floor seating adjacent the Commons.



The career center is fully transparent and located at the main intersection of the campus to enhance student support.



Large glass walls connect the classroom, shop, and collaborative spaces within the CTE suite.

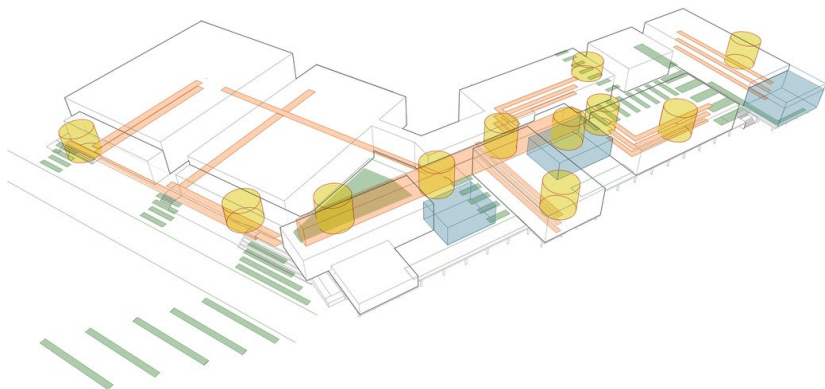


Teachers trust students to do their assignments and other project based or individual tasks across the campus. This art class is utilizing the extended cafeteria space to complete their drawing tasks. Extended cafeterias serve as quiet work areas during non-lunch periods.

EDUCATIONAL ENVIRONMENT: MITIGATING THE LARGE SCALE – SLCS

SPACES THAT HELP STUDENTS FORM RELATIONSHIPS

The flow of spaces throughout the building blurs the lines between dedicated and informal spaces, stimulating socialization and learning throughout the campus.



- Distributing informal spaces throughout the Small Learning Communities (SLCs) and campus
- Supporting the social brain
- Blurring the lines between socializing and learning
- Extended commons is an informal learning area



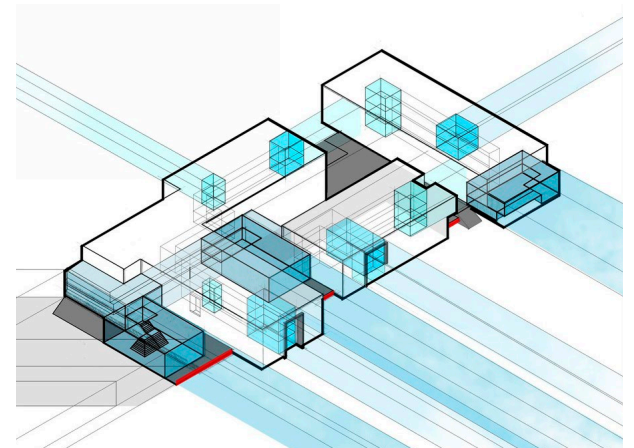
EDUCATIONAL ENVIRONMENT: MITIGATING THE LARGE SCALE

DISTRIBUTION OF INFORMAL SHARED SPACES THROUGHOUT SMALL LEARNING COMMUNITIES / ACADEMIES

Informal shared spaces vary in scale and character and are distributed and integrated throughout all Small Learning Communities.

The importance and design of such spaces reflects the school's desire to provide student-centered environments, thus helping to maximize learning through strong peer-to-peer relationships.

The school community's goal to foster student relationships is expressed through the facility's overall organization which establishes several Small Learning Communities. This student-centered environment is experienced throughout the campus, as socializing and informal learning spaces are purposely blurred to enable teachers and students to find ideal learning places for specific curriculum tasks. Shared breakout spaces are distributed throughout all the academies, varying in scale and character, with some connecting vertically across multiple floors.



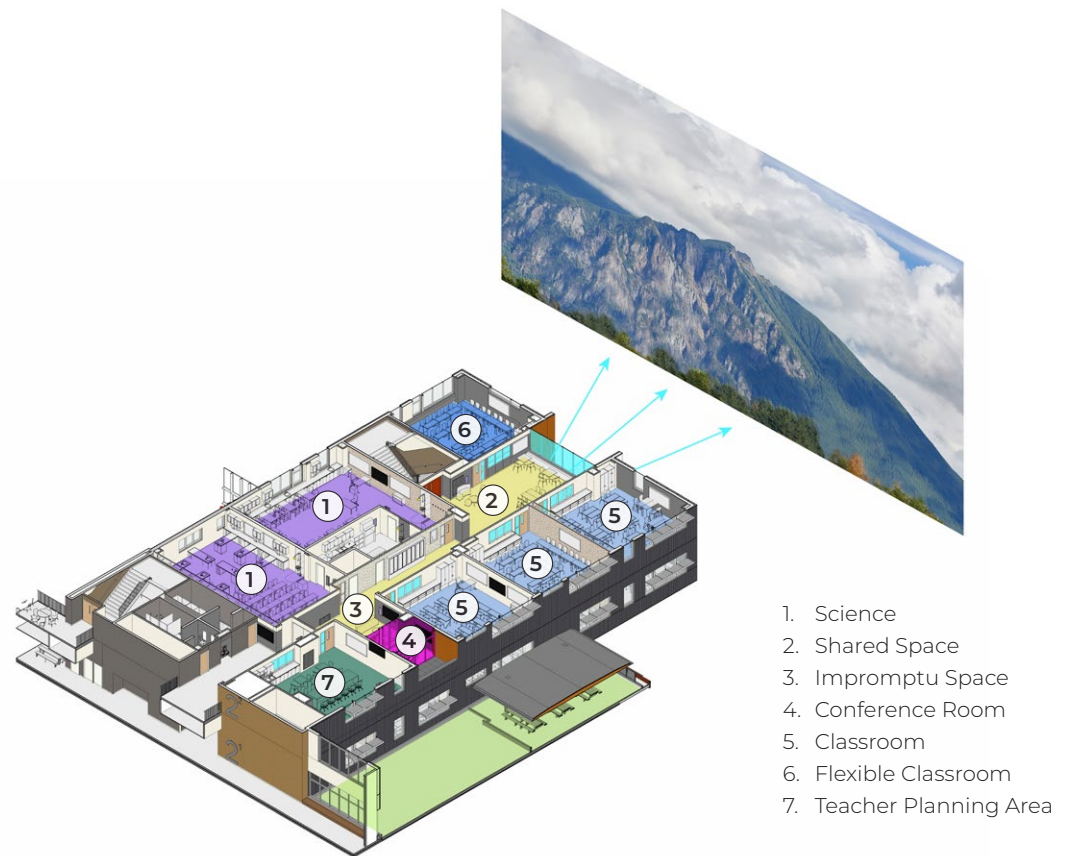


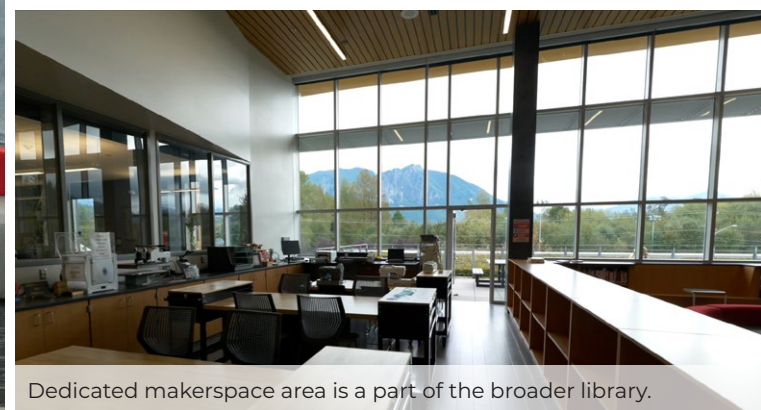
EDUCATIONAL ENVIRONMENT: INTERDISCIPLINARY LEARNING

SMALL LEARNING COMMUNITIES: INTERDISCIPLINARY ACADEMIES

Interdisciplinary Small Learning Communities make it possible for students to spend a larger portion of their day in one part of the school, increasing opportunities for building relationships.

Each 3-story Small Learning Community has humanity classrooms, multiple pairs of science classrooms, open flexible space, small meeting rooms, and a teacher collaboration space.



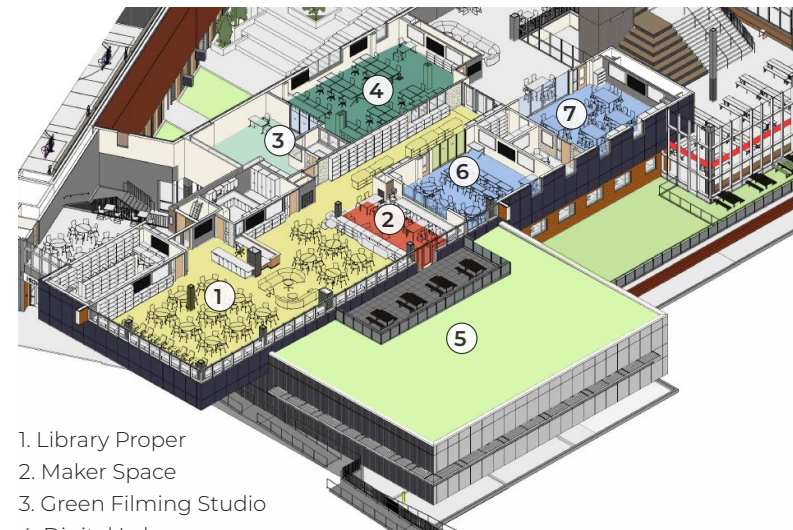


Dedicated makerspace area is a part of the broader library.

EDUCATIONAL ENVIRONMENT: LIBRARY AS A SYNERGETIC RESEARCH CENTER

EDUCATIONAL SPECIFICATION HIGHLIGHT: REIMAGINING THE LIBRARY

Seeking a more interactive and interdisciplinary role for this future-forward library, the whole library suite is conceived as a research center with multiple synergistic programs. Maker space, video lab and green screen film room, and the distance learning classroom are all part of the unit. This research center serves as an all-day place to research, work and create, including after school hours.



1. Library Proper
2. Maker Space
3. Green Filming Studio
4. Digital Lab
5. Outdoor Terrace
6. Flexible Classroom
7. ASB Classroom



EDUCATIONAL ENVIRONMENT: CAREER TECHNOLOGY AS A COLLABORATIVE HUB

EDUCATIONAL SPECIFICATION HIGHLIGHT: SHOWCASING CAREER TECHNOLOGY EDUCATION

The campus as a whole is intended to have a college feel. Special attention was paid to make the CTE area an attractive, engaging, and highly functional space to encourage students to participate in the programs it can offer. Shops and robotics classrooms are designed as a collaborative suite with large collaboration and presentation shared space for all.



1. Woodworking Shop
2. Metal Shop
3. Welding
4. Collaboration Space
5. Robotics Classrooms
6. Presentation Area

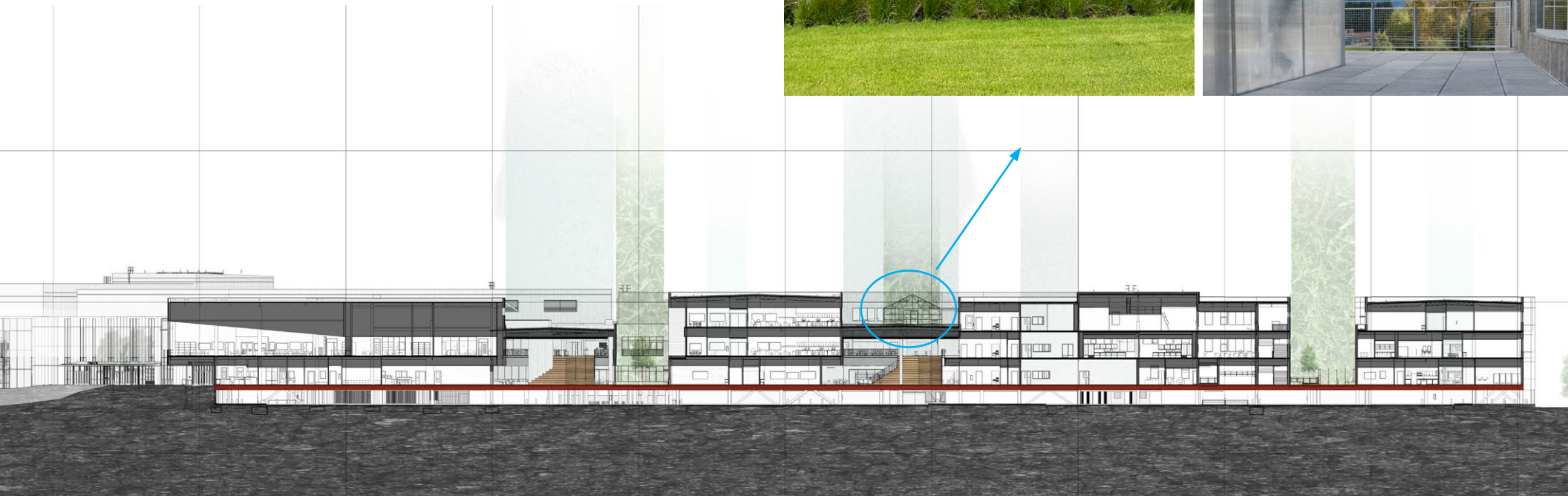


The concept model from "The Future" internship group laid the groundwork for the final design of the CTE suite.

EDUCATIONAL ENVIRONMENT: MAKE THE MOST OF EVERY POSSIBLE AREA

ON AN ELEVATED CAMPUS, EVERY TERRACE IS AN EDUCATIONAL OPPORTUNITY

In a floodway, creative approaches to land use are required, such as locating the greenhouse on the second floor roof so that it can be accessed from the third floor. Across the hall from the greenhouse is the horticulture lab.



RESULTS: A STUDENT-CENTERED ENVIRONMENT

MOUNT SI CHALLENGE: ELEVATE THE CAMPUS

PHYSICALLY EDUCATIONALLY EXPERIENTIALLY





RESULTS: AN ELEVATED CAMPUS - PHYSICALLY

SAFETY AND SECURITY - LIMITED ENTRY POINTS

The freshman campus is a semi-autonomous building with its own administration. Its parent drop-off shown here is at the opposite end of the main campus entry.

RESULTS:

"We wanted flexible spaces that would adjust over the next 100 years of education, increased student collaboration to move outside of a classroom, to have something that was truly learner-centered and not just adult focused, to try interdisciplinary approaches, and to really meet the social and emotional needs of our students."

— Mount Si Principal



"We wanted lots of opportunities for kids to spread out."

— Mount Si Principal