

# BENSON POLYTECHNIC HIGH SCHOOL

Portland Public Schools | Portland, Oregon







*Benson's historic main entry was restored to original glory.*

# EXECUTIVE SUMMARY

## Historic Campus Transformed Into a Modern School

Benson Polytechnic High School, a cornerstone of Portland's educational landscape since 1917, has long stood as a hub for hands-on, real-world learning. As a district-wide school with a specialized focus on Career Technical Education (CTE), Benson attracts a diverse student body from across the city—students who actively choose to pursue rigorous academics alongside technical training. It is one of the most diverse high schools in the Pacific Northwest, with near-equal representation of white, Latino, African American, and Asian American students. This diversity, paired with a culture of mutual respect, reflects the city's rich social fabric and prepares students to thrive in a global society.

Accredited by the Northwest Accreditation Commission, Benson is Portland's only four-year, CTE-focused high school, offering eight student-selected major programs in automotive, building construction, computer science, digital media productions, electric, health occupations, manufacturing, and radio broadcasting. The school is a proud member of SkillsUSA and HOSA (Health Occupation Students of

America), further reinforcing its mission to equip students with the academic and professional skills needed to succeed in college and the highly skilled, highly paid 21st-century workforce.

The recent modernization and expansion reimagines the Benson campus for the future while preserving its historic legacy. The project restores and seismically upgrades four historically significant buildings—the 1917 main classroom building, 1925 gymnasium, 1929 auditorium, and 1917 foundry—while introducing new academic and CTE wings organized around vibrant, secure outdoor courtyards. At the heart of the design is a central commons, a unifying space that connects new and old, supports student life, and reinforces a sense of belonging and school spirit.

Every element of the project supports Benson's dual mission: to prepare students for both college and/or career. Academic classrooms are co-located with specialized CTE labs, creating cross-disciplinary opportunities and aligning education with real-world workflows. The educational specifications

envisioned a synthesis of overarching academic and specialized technical learning spaces capable of meeting today's teaching and learning demands while providing adaptability to support future educational needs. The modernization accommodates both a comprehensive high school educational specification and a tailored CTE program vision—designed not only for current needs but for the evolving landscape of technical education.

Benson's transformation advances not only educational excellence, but also historic preservation, deep community engagement, long-term adaptability, and sustainability—creating a forward-looking campus that honors its legacy while connecting school, community, and the built environment in service of future generations.

The result is a campus that honors its historic roots while serving as a future-forward model of equity, environmental stewardship, and educational innovation. More than a modernization, the project marks a cultural shift—one rooted in public investment, student agency, and community pride.

### SCOPE OF WORK AND BUDGET

Owner: Portland Public Schools

Location: Portland, Oregon

Project Description: Modernization and expansion of CTE-focused high school for 1,700 students

Building Area: 379,000 sf

Sustainability: Tracking LEED Gold

Cost: \$269m



# SCHOOL & COMMUNITY ENGAGEMENT

## A Multi-Faceted Approach

Benson Polytechnic High School has always been more than a school—it is a city-wide institution with deep roots in Portland’s educational, cultural, and workforce history. Established in 1917 as a premier vocational and technical school, Benson originally served as an all-boys institution focused on training students for industrial careers. It remained single-gender until 1973, when it officially became co-educational, gradually expanding programs and student opportunities over the following decades.

Today, Benson draws students from across the Portland Public Schools (PPS) district through a lottery-based admission process, intentionally serving a student body that reflects the full diversity of the city—not just in demographics, but in academic interests, lived experiences, and aspirations. With its specialized focus on Career Technical Education (CTE), Benson prepares students for both college and high-demand careers, making it a vital part of Portland’s educational and workforce development landscape. This unique structure created both an opportunity and an obligation to engage a broad and inclusive community in the planning and design of its transformation.

One of the key challenges uncovered early in planning was the old campus’s separation of academic and CTE spaces, which limited coordinated teaching and learning. As one English teacher noted during programming discussions, she hadn’t visited the CTE wings in years—underscoring the need for a more integrated and collaborative learning environment. Advocacy from alumni and the community for more integrated project-based learning (PBL) helped drive the design toward co-locating academic and technical programs, creating stronger connections between disciplines.

From the outset, PPS committed to a community-driven process that centered equity, transparency, and collaboration. The Design Advisory Group (DAG) was formed as a foundational element of this effort. Comprising students, teachers, alumni, parents, industry leaders, and community representatives, the DAG served as a guiding voice throughout the four-year planning process. Strong student interest in the DAG reflected how deeply students felt connected to their school and its future. Thirteen students were selected to ensure youth voices remained central to key decisions. In addition to DAG participation, students were engaged through

surveys and informal lunchtime chats—providing candid input that helped shape the vision, values, and design of the project.

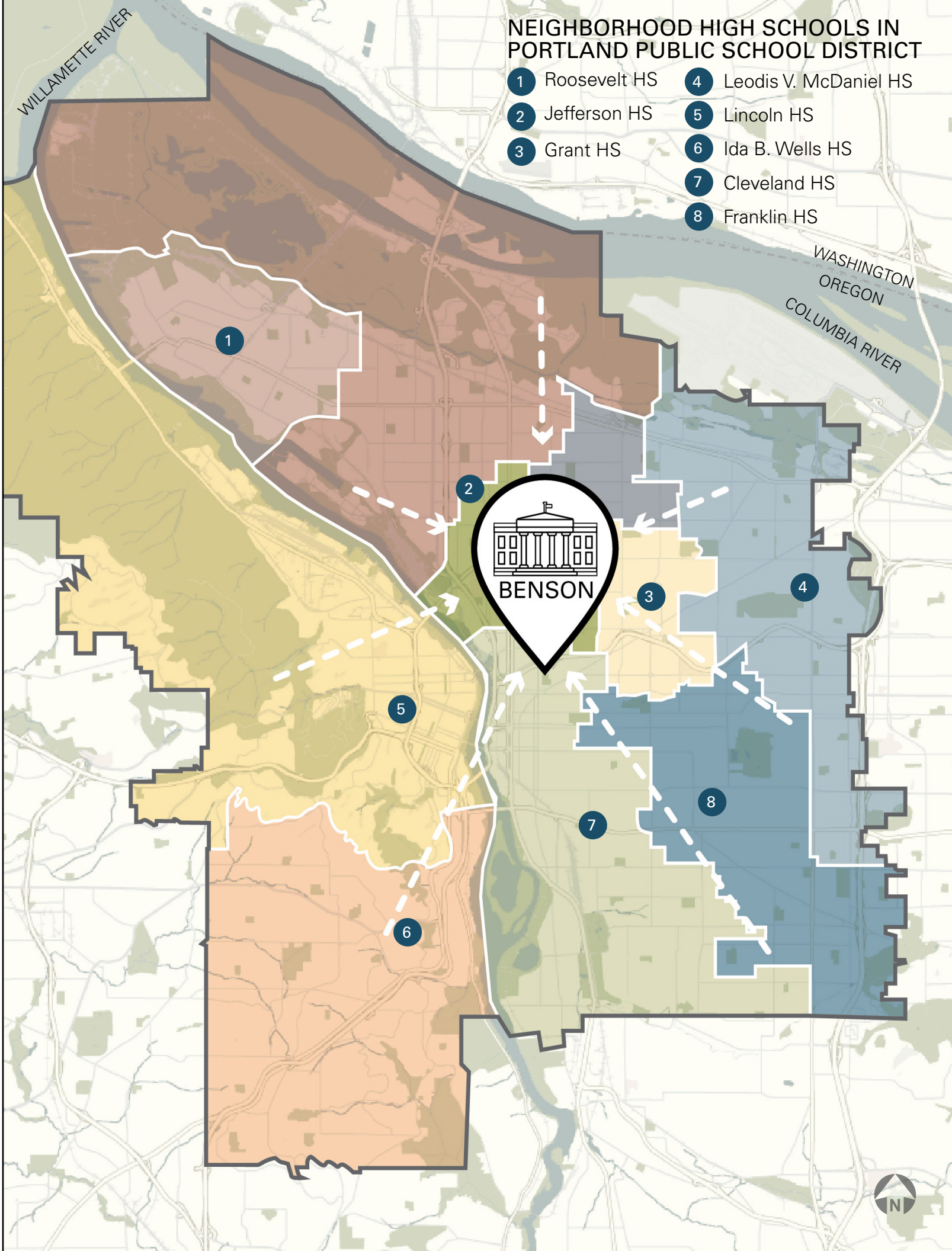
Beyond the DAG, outreach extended across the city. The design team regularly participated in the Benson Tech Show, a long-standing school tradition that became a vital touchpoint for engaging current families, alumni, community members, and prospective students. These events offered meaningful opportunities for feedback and allowed the design team to better understand Benson’s culture—from its deep alumni pride to the passion students have for their technical programs.

Benson’s CTE programs themselves served as a powerful foundation for engagement. The school’s partnerships with industry, post-secondary institutions, and community organizations were leveraged not just to inform space planning, but to strengthen programmatic alignment with evolving workforce needs. These relationships ensured that the school would not only be modernized for today, but also adaptable to the future of CTE—whatever it may bring.

Through this deeply collaborative process, the modernization became more than a renovation project. It became a shared vision for what public education can be: inclusive, aspirational, and deeply rooted in community. The result is a school that reflects the values of its many stakeholders, respects its historic identity, and provides students with the tools, spaces, and opportunities they need to thrive.

The engagement process itself left a lasting impact—empowering students, elevating community voice, and rebuilding a sense of shared ownership. Benson’s transformation represents the best of what happens when school districts, communities, and students work together with a common purpose: to create a learning environment that truly belongs to everyone.

*This diagram illustrates how Benson Tech—through its lottery-based, focus option model—equitably draws students from across the entire district. As a citywide CTE high school, Benson intentionally serves a diverse student body that reflects Portland’s many neighborhoods, cultures, and career interests.*





# A Robust Engagement Process

Portland Public Schools led an inclusive, multi-year engagement process that brought a wide range of voices into the planning and design of Benson’s modernization.

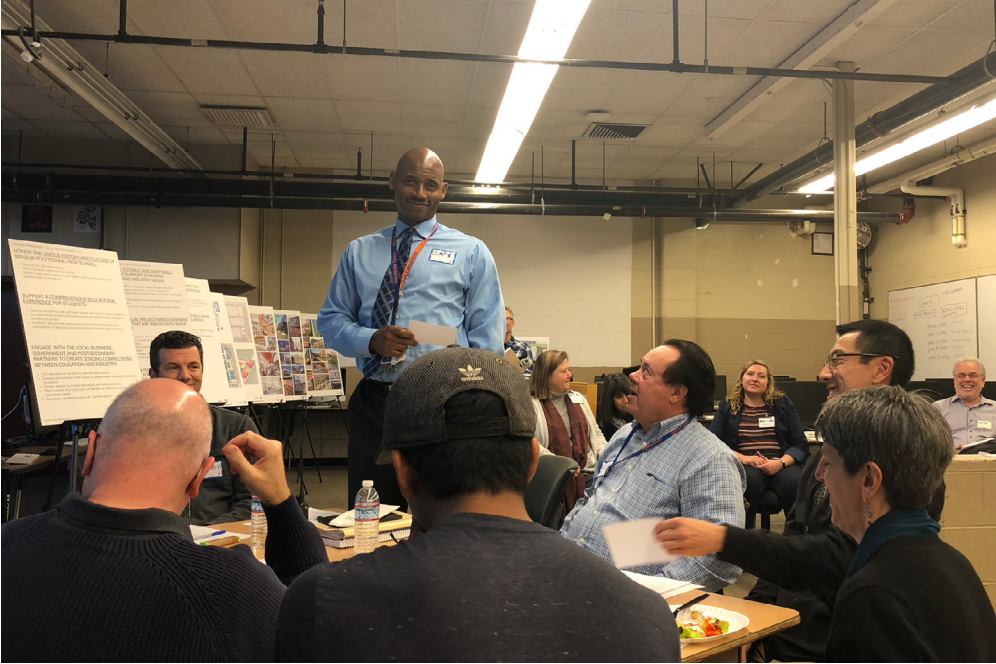
The process began with the Master Planning Committee (MPC), which convened for eight meetings between 2016 and 2018. This diverse group—including educators, students, alumni, community members, and School Board representation—helped evaluate and refine early concepts through more than a dozen design iterations. Their work established the foundation for the modernization, aligning program needs with long-term campus vision.

Building on that foundation, a District Leadership Steering Committee met 22 times between 2018 and 2021, providing high-level coordination and alignment across Portland Public Schools. As the project advanced into design, the Design Advisory Group (DAG)—made up of students, families, educators, alumni, and community leaders—held 12 meetings over four years. The DAG provided detailed feedback to the design team, represented broader stakeholder perspectives, and helped balance evolving educational goals with deeply held community values. Both the DAG and MPC included School Board participation, ensuring consistency and accountability across phases.

Outreach extended beyond formal committees. The design team engaged with the public at master planning workshops and annual Benson Tech Shows, which drew hundreds of students, families, and alumni. These events served as interactive open houses where attendees could explore evolving design concepts and provide real-time feedback. Verbal and written comments were documented and reflected in meeting notes, reinforcing a transparent and responsive process.

Beyond formal meetings, the design team also held hundreds of coordination meetings with teachers, administrators, custodians, district staff, and students to document program aspirations, room layouts, storage needs, and equipment requirements. This hands-on engagement ensured the final design addressed both big-picture goals and day-to-day operational needs.










Benson’s broader network of supporters—including a passionate alumni base and long-standing educational and industry collaborators—played a vital role in sustaining momentum and support. The project also incorporated the needs of Portland Evening & Summer Scholars, who use the campus year-round, ensuring the school would serve both daytime and extended-hour programming well into the future.





# Industry Outreach

Industry and post-secondary input played a critical role in shaping Benson’s CTE program design to align with emerging workforce needs and leading practices in modern technical education. The design team engaged with a wide range of organizations and institutions—including:

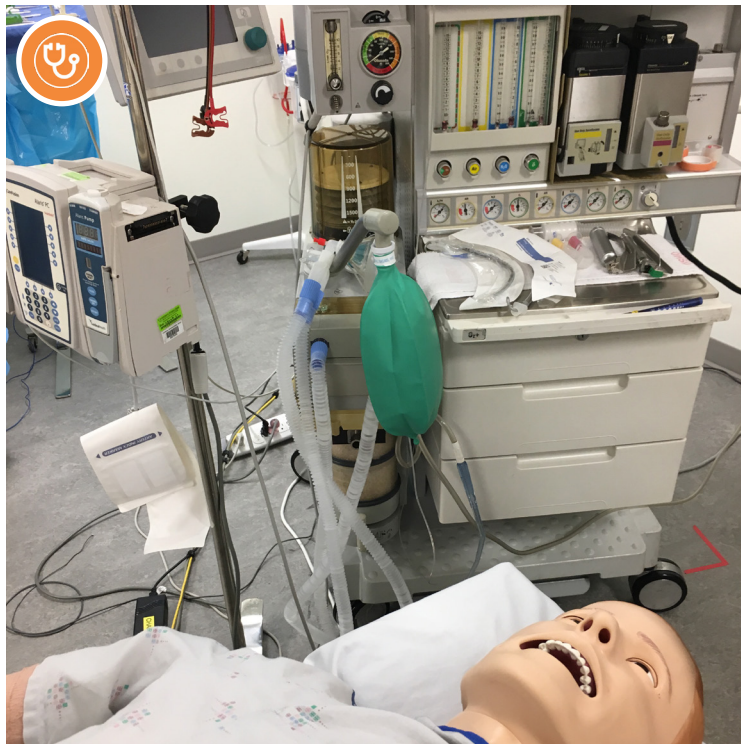
-  Portland Community College (PCC)
-  Mt. Hood Community College (MHCC)
-  Sabin-Schellenberg
-  OHSU Simulation Center
-  Career and Technical Education Center (CTEC), Salem, OR
-  Clark College
-  Portland State University (PSU)
-  Columbia Helicopters
-  DIRT
-  Nike
-  Oregon Institute of Technology (OIT)

These collaborations went beyond surface-level conversations. The team conducted in-depth tours of each partner’s facility to study equipment types, spatial layouts, and instructional environments firsthand. This research informed everything from utility infrastructure to shop adjacencies to future-proofing strategies. It also helped answer a critical question: how can Benson’s learning environments be designed to reflect the realities of local industries that may one day employ its graduates?

Many of these partners also contributed directly to the Design Advisory Group (DAG) or served as ongoing collaborators during the design process, providing insight into evolving technical fields and participating in conversations about curriculum alignment, student career pathways, and mentorship opportunities. Their involvement helped ensure that Benson’s modernization was not only educationally relevant, but regionally responsive—reinforcing the school’s role as a bridge between high school education and the broader, regional workforce ecosystem.

## BENSON MAJORS

-  AUTOMOTIVE
-  BUILDING CONSTRUCTION
-  COMPUTER SCIENCE
-  DIGITAL MEDIA PRODUCTIONS
-  ELECTRIC
-  HEALTH OCCUPATIONS
-  MANUFACTURING
-  RADIO BROADCASTING





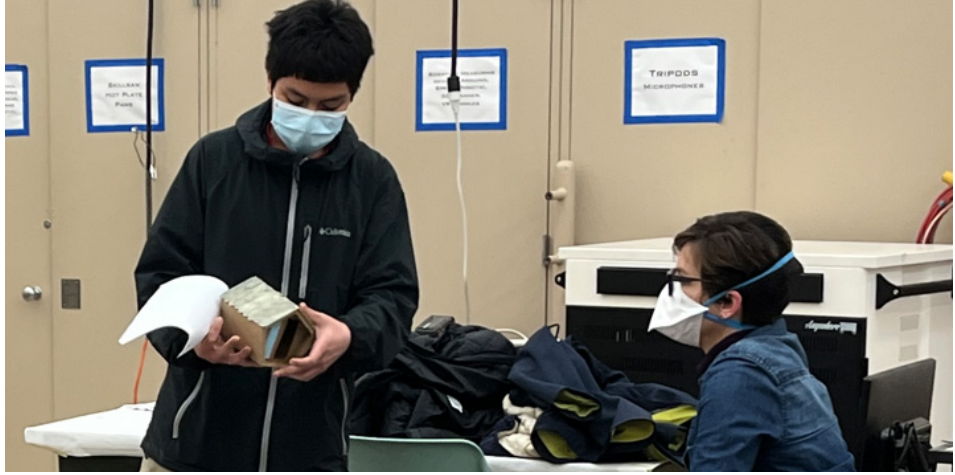
# Student Engagement

Student engagement was not a box to check—it was a central driver of the Benson Polytechnic project. From the earliest planning stages through design and construction, students were given meaningful, hands-on opportunities to shape their own learning environment.

**DESIGN ADVISORY GROUP PARTICIPATION**  
Student voice was embedded in the project from the start. Thirteen students served on the Design Advisory Group (DAG), joining educators, alumni, and community members in shaping the vision of the new school through a series of workshops and collaborative planning sessions. Their perspectives helped inform key design decisions, reinforcing Benson’s commitment to student-centered learning.

**TINY HOME PROJECT**  
One of the most immersive experiences came through the Tiny Home Project, which involved dozens of CTE students over the course of several school terms. Since the Benson Modernization required a construction mock-up, the aim was to engage with students through the design and construction of a tiny home that could serve as a “base” for the lightweight materials required by the project. The design and construction team mentored teams of Engineering students through a design process, within the material and size constraints of the project. Each team developed an original concept that they presented to a jury. Once one concept was selected, engineering students were mentored to work through how to build the substructure. The next term, Building Construction students built the frame and sheathed it. Electrical students then wired the interior outlets and fixtures. From there, the Contractor transported it to the site, adding the exterior materials as required for use as a construction mock-up. Once the mock-up served its purpose on-site, the tiny home was fitted out at the Contractor’s yard, before being donated to a local Tiny Home Village serving the un-housed.

**EXPERIENTIAL GRAPHICS PROJECT**  
The modernization envisioned the CTE courtyard as both a functional work area and a lively gathering space. To help activate it, the project included a series of banner locations designed as changeable



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I believe that my perspective as a current student (at the time, 2018-2021) was helpful in informing designs of common and outdoor spaces, specifically; understanding how students might use spaces and react to changes such as coverings, lighting, amount of greenery, etc. For example, I provided input on spaces such as the CTE courtyard and the smaller courtyard outside the commons.

Design Advisory Group (DAG) Member  
Benson Polytechnic High School Student



SCHOOL AND COMMUNITY ENGAGEMENT

canvases. For the first installation, our team mentored Digital Media students over a term as they developed graphic concepts inspired by Benson’s CTE pathways. Featuring original photography and graphics, the student-designed banners transformed the courtyard into a powerful expression of student identity and school pride—an inspiring example of placemaking through design.

INTERNSHIPS AND COLLABORATION

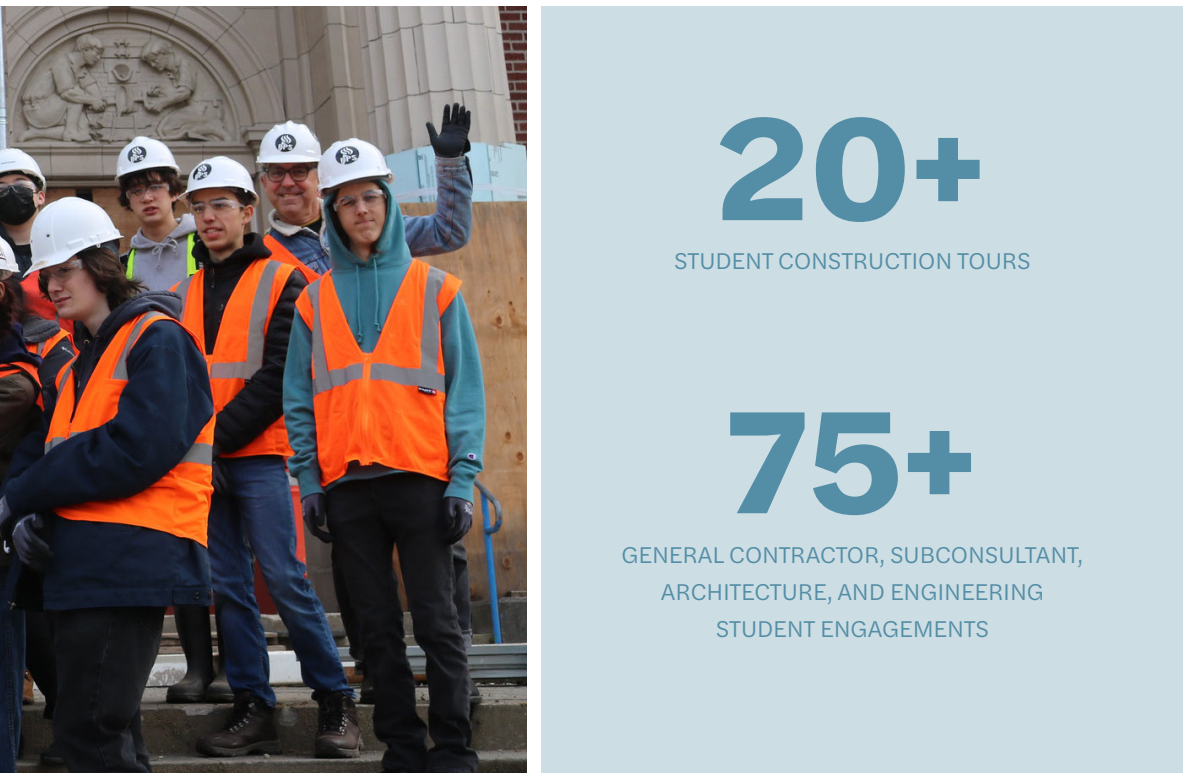
The design team worked directly with Benson’s architectural class, offering insight into the profession and providing internship opportunities for two students. The collaboration included a class visit to the design team’s office, giving students a behind-the-scenes look at professional practice, as well as multiple appearances by the team on career panels to share diverse pathways into architecture and design. These experiences exposed students to the real-world practice of architecture, deepening their understanding of design processes, sustainability, and collaboration.

CONSTRUCTION TOURS

From high schoolers studying electrical systems to third-graders dreaming about their future, the project was used as an educational platform across age levels. Engineering students toured the site alongside consultants, while younger students from one district elementary school visited the campus under construction—one of whom asked, “Do you think I could go to a school like this one day?” That moment underscored the project’s broader impact and its role in inspiring future learners.

Through inclusive initiatives, purposeful design integration, and authentic real-world engagement, Portland Public Schools created an environment where students weren’t just future users of the building—they were co-creators. The Benson Polytechnic High School project stands as a compelling model for how student voice, creativity, and ownership can elevate not just a school, but an entire community.

*Student tour groups explored the construction process firsthand—learning about the BIM model, participating in the contractor’s Pull Plan discussions, and posing for commemorative photos on the historic front steps. These site visits offered a powerful window into real-world applications of their education and a lasting connection to their school’s transformation.*



20+

STUDENT CONSTRUCTION TOURS

75+

GENERAL CONTRACTOR, SUBCONSULTANT,  
ARCHITECTURE, AND ENGINEERING  
STUDENT ENGAGEMENTS





PROGRAMMATIC FLOOR PLAN

NE IRVING STREET

NE 12<sup>TH</sup> AVENUE



# EDUCATIONAL ENVIRONMENT

## A Flexible Framework for Future-Ready Learning

Benson Polytechnic High School serves a unique dual role as both a district comprehensive high school and a district-wide Career Technical Education (CTE) focus option—bringing together rigorous academics and industry-aligned technical training. This dual mission became an opportunity to create a campus shaped by clearly defined Guiding Principles (GP), which informed every aspect of the design.

### GP #1: Honoring Benson's Unique History and Culture

The modernization preserves and celebrates Benson's century-old legacy as Portland's flagship technical school. Historic facades, interior features, and beloved campus elements—like the Benson Bubbler and class benches—were carefully restored and reintegrated. Artifacts from the school's technical programs, including a salvaged drone plane and propellers from the historic aviation program, were also preserved, providing tangible links to Benson's hands-on, career-focused heritage and reinforcing its identity for students, alumni, and the community.

### GP #2: Supporting a Comprehensive Educational Experience

The design bridges CTE and academic spaces, breaking down old silos and fostering interdisciplinary learning. Academic classrooms are co-located with technical labs, enabling students to move seamlessly between subjects and engage in a wide range of learning experiences.

### GP #3: Engaging Education and Industry

Close collaboration with industry and post-secondary partners shaped program alignment and physical spaces, ensuring students gain real-world exposure and hands-on experience across pathways like health sciences, advanced manufacturing, and digital media—preparing them for both college and careers.

### GP #4: Agility, Flexibility, and Adaptability

The campus is organized into adaptable "learning communities"—clusters of about 150 students that combine classrooms, labs, and collaboration spaces.





EDUCATIONAL ENVIRONMENT

Flexible infrastructure, including overhead utility distribution rather than fixed systems embedded in walls or slabs, allows spaces to be easily reconfigured over time. This supports a variety of instructional models—such as direct instruction, project-based learning, and small-group work—without requiring major renovation.

**GP #5: Providing Hands-on, Project-Based Learning**

Benson’s culture is rooted in project-based learning (PBL). Spaces were designed for flexibility and visibility, encouraging students to engage in hands-on, interdisciplinary work while exposing peers to other program areas. The CTE courtyard, maker spaces, and flexible labs all serve as hubs for active learning.

**GP #6: Positioning Benson as a National Model for STEAM and CTE**

With a curriculum spanning eight CTE majors—including automotive, building construction, computer science, digital media, electric, health occupations, manufacturing, and radio broadcasting—Benson is positioned as a forward-looking model that integrates STEAM and CTE in ways few schools nationwide can match.

**GP #7: Inspiring Creativity and Collaboration**

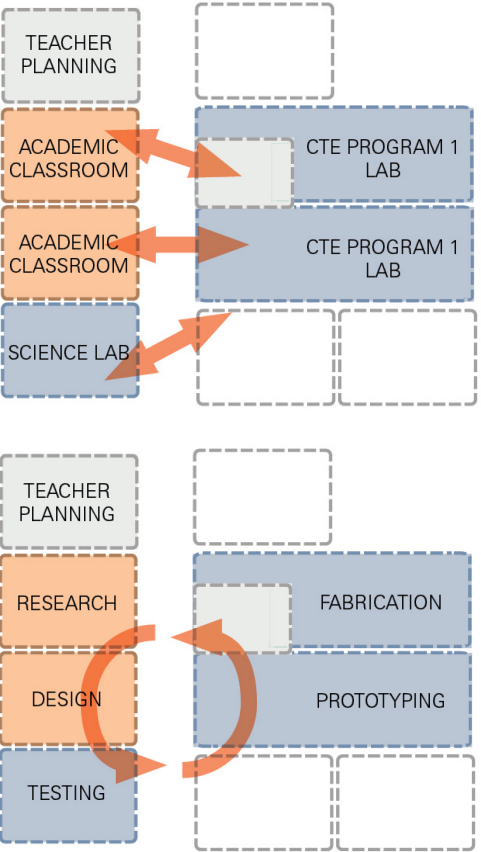
Light-filled, interconnected spaces—like the student commons, learning stairs, and outdoor courtyards—promote interaction, creativity, and teamwork, helping students develop the collaborative skills critical for today’s workforce.

FLEXIBLE AND INTEGRATED LEARNING ENVIRONMENTS

The graphic models at top right illustrate how spaces were planned in the tailored educational specification, while the image below shows a learning community as implemented in the final design. The building layout deliberately co-locates academic and CTE spaces—blurring the lines between “classroom” and “lab.” For example, construction and manufacturing labs are placed adjacent to math and technology classrooms to support integrated, real-world learning. These adjacencies encourage interdisciplinary collaboration and support a variety of teaching strategies, from direct instruction to project-based learning.

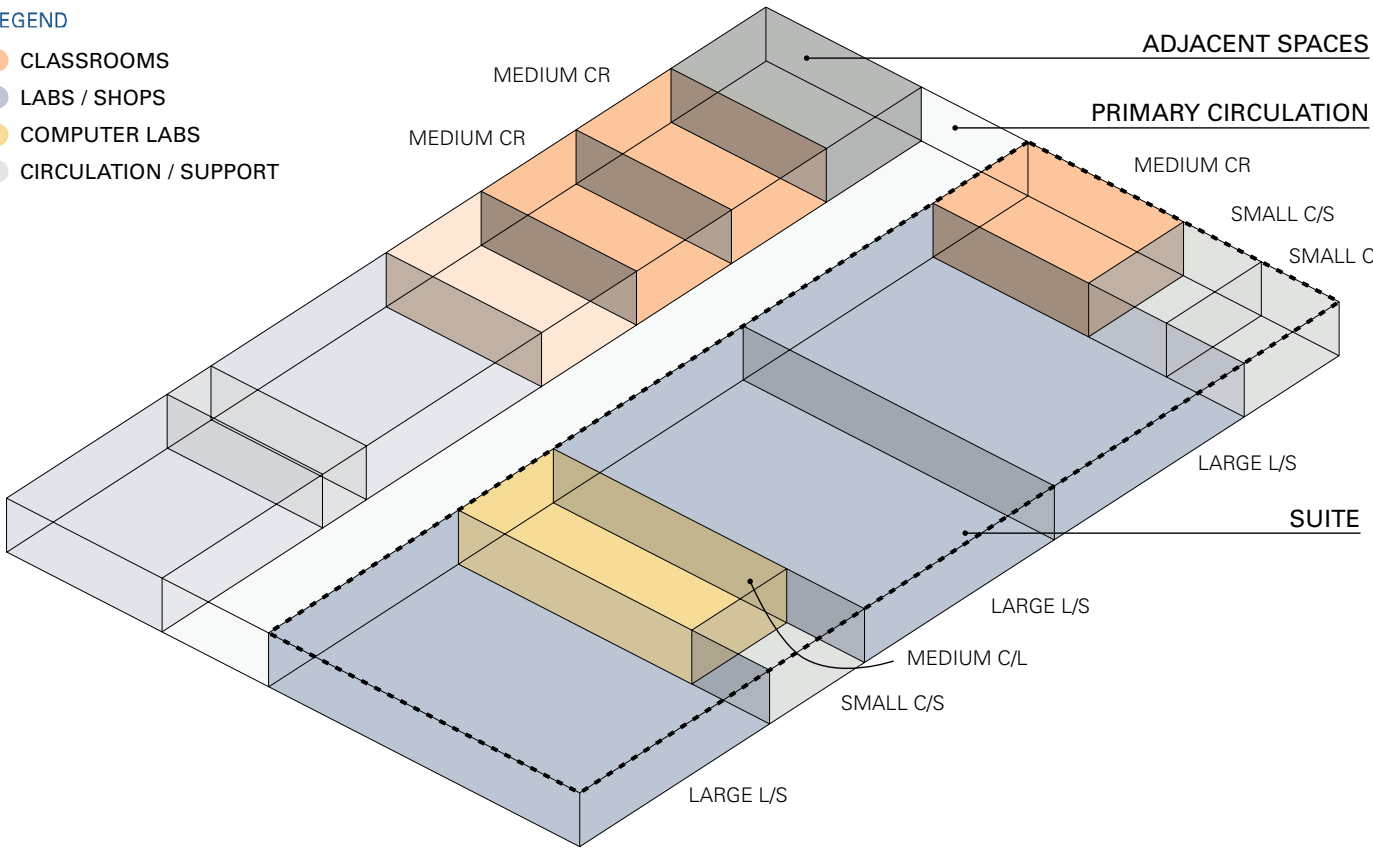
Flexible shared spaces—such as the digital café, career center, and open collaboration zones—are designed to adapt over time, accommodating evolving pedagogies, student needs, and new program models. This adaptability ensures that the building can continue to serve Benson’s educational mission well into the future.

ADAPTABLE PLANNING  
DIAGRAM FROM ED SPEC



LEGEND

- CLASSROOMS
- LABS / SHOPS
- COMPUTER LABS
- CIRCULATION / SUPPORT



CO-LOCATED LEARNING  
COMMUNITY

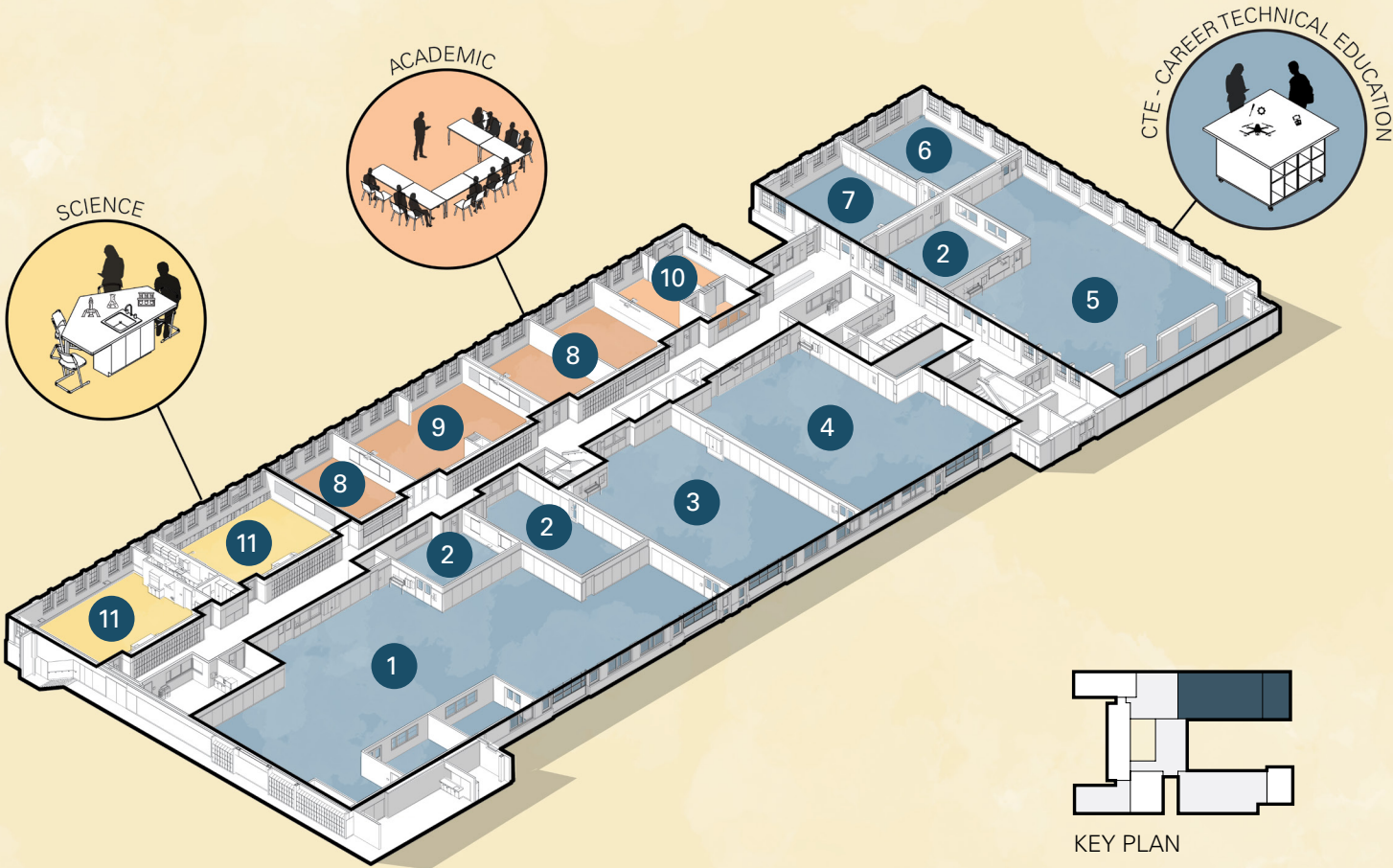
- Construction Shop
- CTE Classroom
- Tech Geometry Shop
- Fab & Welding Shop
- Senior Manufacturing Shop
- Foundry
- Pattern Making Shop

ACADEMIC

- Classroom
- Math Tech Classroom
- SPED

SCIENCE

- Chemistry Lab





## EDUCATIONAL ENVIRONMENT

### SUPPORTING DIVERSE TEACHING AND LEARNING STYLES

To meet the needs of a diverse student body, Benson offers a variety of space types: flexible classrooms, focused labs, technical shops, collaborative studios, small-group conference areas, breakout spaces, and open-air courtyards for outdoor learning. Abundant daylight, acoustic balance, and visual transparency support well-being and connectivity, while mobility and adaptability within each space allow for multiple instructional methods.

### PLANNING FOR FUTURE CHANGE

Recognizing that CTE fields evolve rapidly, the design anticipates future needs. Modular labs, exposed systems, and reconfigurable infrastructure allow spaces currently used for traditional trades to accommodate future programs like robotics, clean energy, or digital fabrication. A collaborative equipment planning process ensured that workflows, utilities, and adjacencies were optimized for long-term adaptability.

### A COHESIVE, FUTURE-READY ECOSYSTEM

The result is a seamless, resilient learning environment that integrates academic rigor and technical training. Every space at Benson supports its mission to prepare students with the knowledge and skills to thrive in a rapidly changing world—setting a powerful example of how comprehensive education and CTE can come together in a truly future-ready model.



Within an environment that fosters diversity, Benson’s mission is to integrate hands-on career technical education and core academics today for the innovations of tomorrow.

*- Benson Tech Mission Statement*

Benson Tech students and graduates will give back to, evolve with, and represent the local to global community in industry and higher levels of education. We achieve this by combining diverse, hands-on interdisciplinary learning environments with cutting-edge technology, while striving for excellence in polytechnics, academics, sports and arts programs.

*- Benson Tech Vision Statement*



*Top: Glazing along interior corridors offers visibility into CTE shops and classrooms, allowing students and visitors to observe learning in action and fostering a sense of transparency and connection.*

*Bottom Right: Health sciences students participate in hands-on dental training in a clinical simulation lab designed to mirror real-world environments.*

*Bottom Left: Students in the welding lab engage in real-world technical training within a purpose-built environment designed for safety, efficiency, and adaptability.*







SITE LEGEND

- 1

Historic West Courtyard
- 2

"Benson Bubbler" & Rose Garden
- 3

Social Courtyard
- 4

CTE Courtyard
- 5

Service / Receiving
- 6

Teaching Station / Bike Parking
- 7

Staff Parking
- 8

Tower Courtyard
- 9

Radio Tower
- 10

South Public Promenade
- 11

Accessible Route to Park
- 12

Wayfinding Pylon Sign

A

Main Entry

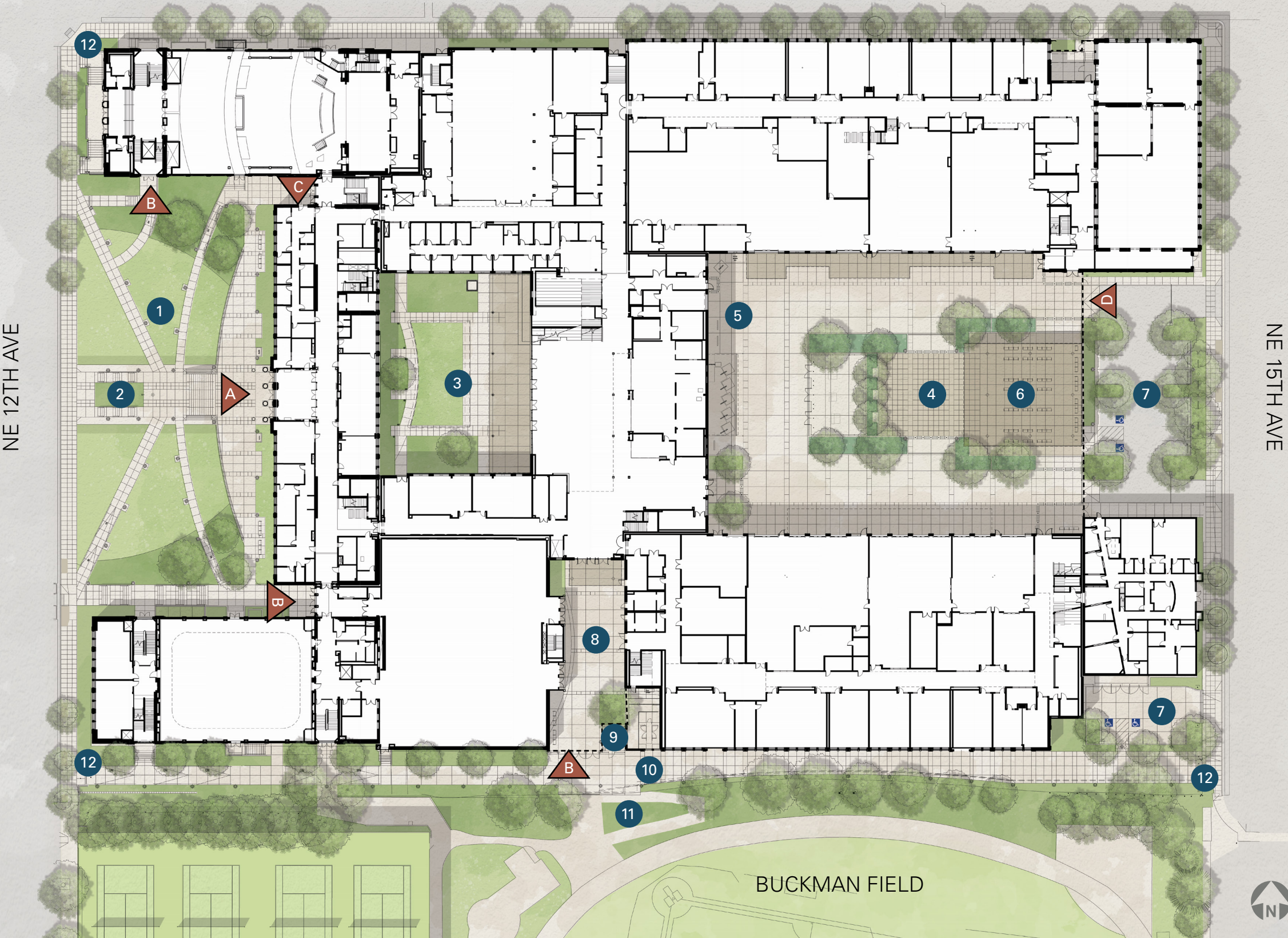
B

Accessible After-Hours Community Entry

C

Public Clinic Entry

D

Secured CTE Loading and Maintenance Access

PHYSICAL ENVIRONMENT

Legacy and Innovation

The Benson Polytechnic High School modernization redefines what a cohesive historic urban campus can be. Located in Portland's urban core, the 10-acre site was reorganized to improve circulation, safety, accessibility, and community engagement while maximizing efficiency. The updated design introduces secure outdoor learning spaces, clarifies the site's identity, and improves access for students traveling from across the city.

The transformation of the historic West Courtyard creates a universally accessible plaza with sloped walkways, providing an inclusive main entry for all visitors. Additional upgrades, including an accessible off-hours entrance for the auditorium, gymnasiums, and central commons, and a separate public entry for the on-site health clinic. This new approach to zoning the campus helped to enhance functionality, inclusivity, and campus security.

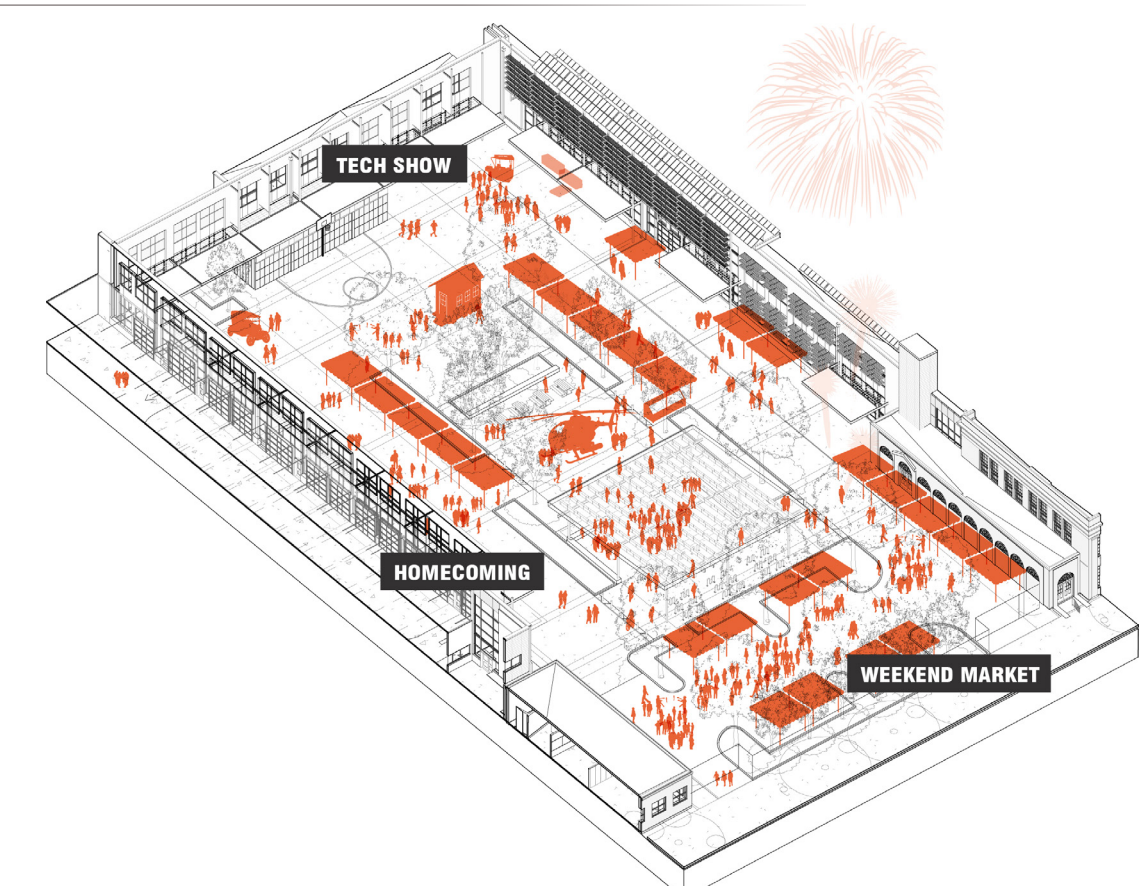
Sustainability and student-centered design are visible throughout. In the CTE Courtyard, an outdoor structure outfitted with glass solar panels provides secure bike parking, while showcasing renewable energy strategies to students. The campus also connects easily to transit, bike routes, and pedestrian networks, reflecting Benson's role as a citywide school supported by strong urban connections.



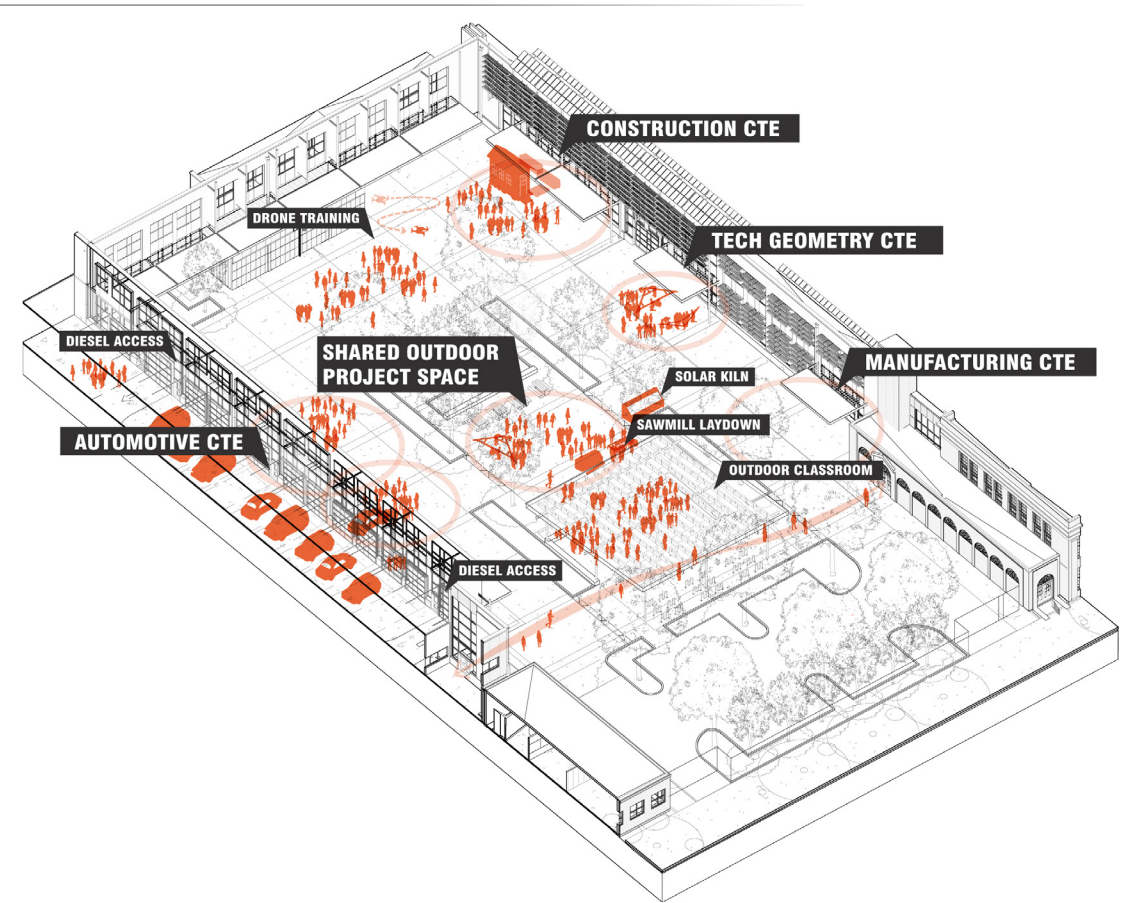
# MULTI-USE CTE COURTYARD

Given the constraints of a tight urban site, space was carefully designed to serve multiple purposes. It was essential to bring as much of the site as possible within the secure fence line to maximize indoor-outdoor connections. The CTE courtyard was intentionally planned as a multifunctional pedestrian plaza—providing gathering, teaching, and work areas while also accommodating service and access needs. Site elements were layered from the street inward to create a secure perimeter and shield views to service areas. The arrangement and treatment of the hardscape offers visual cues and discrete physical barriers to delineate areas for meant for pedestrian use versus vehicular traffic.

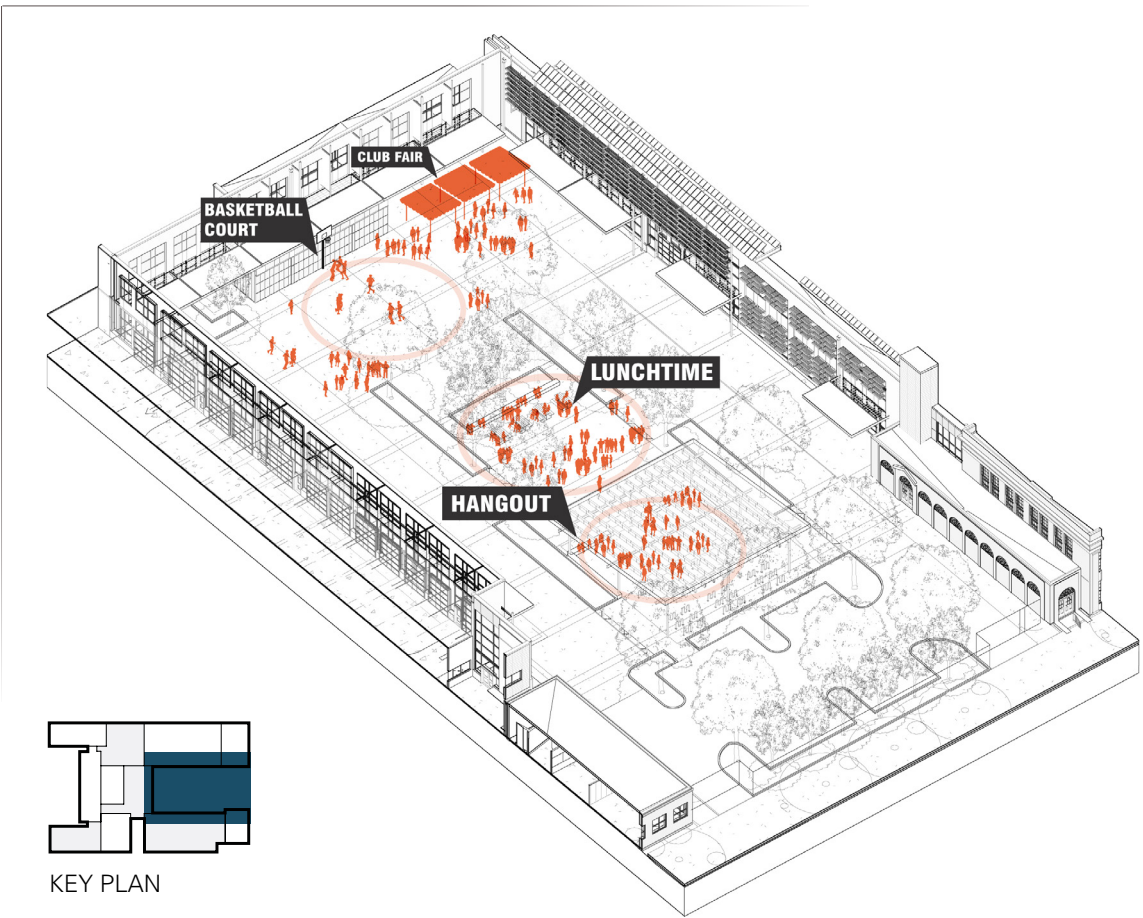
SCHOOL AND COMMUNITY EVENTS



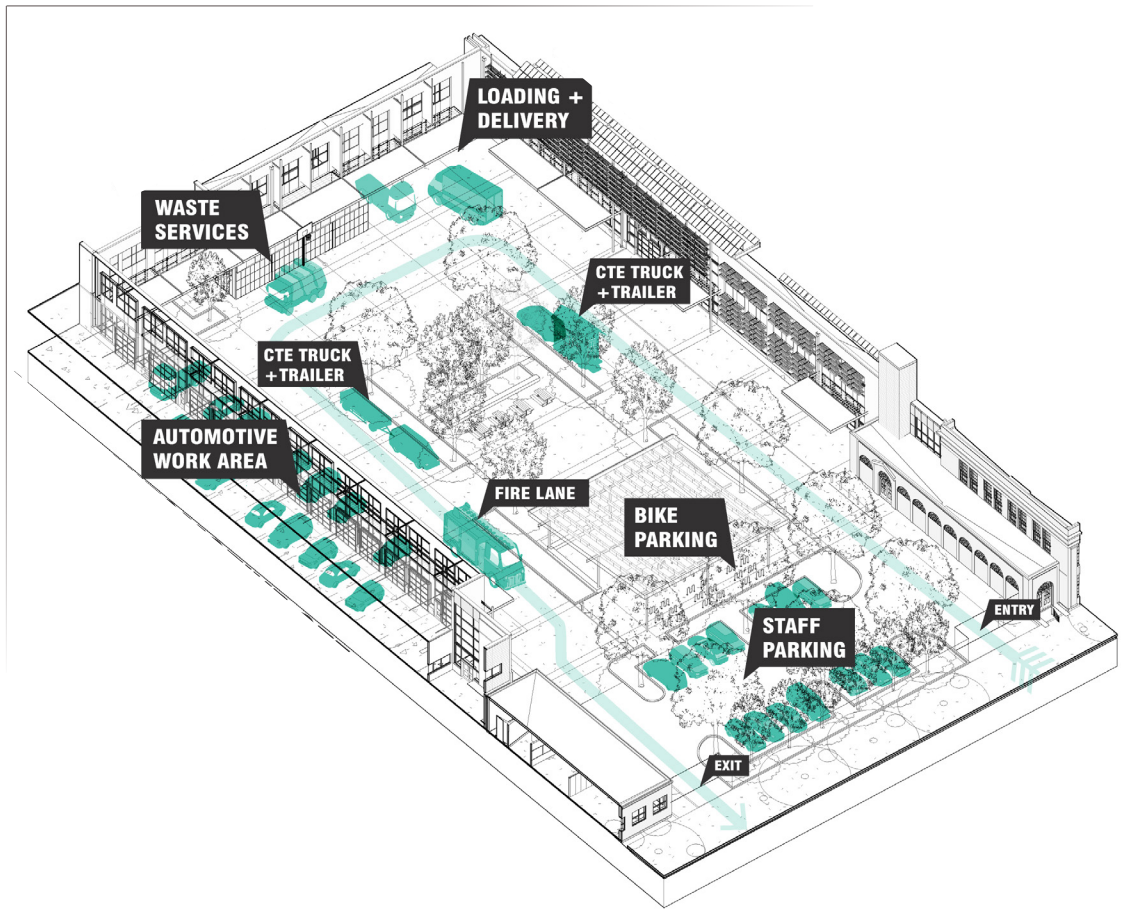
CTE WORKSPACE /TEACHING + LEARNING



SCHOOL SOCIALTIME



PARKING, SERVICE + EMERGENCY ACCESS







## Multi-Funtional CTE Courtyard

The CTE courtyard serves as a dynamic, multi-use space—supporting hands-on shop work, outdoor learning, informal gathering, and school events. Designed for flexibility, it fosters cross-disciplinary interaction while showcasing the creativity and craftsmanship of Benson’s students.



# Building Layout

The building layout reflects the Guiding Principles developed during the community engagement process, supporting Benson’s dual role as both a comprehensive high school and a regional CTE hub. Organized around a central commons, the design weaves together academic classrooms, CTE labs and shops, administration, student services, and shared social spaces to create a cohesive and future-ready campus.

A defining feature of the layout is the intentional co-location of academic classrooms and CTE shop wings, reinforcing Benson’s interdisciplinary and project-based learning approach (GP #5). This adjacency promotes collaborative teaching models, real-world learning, and fluid movement between academic instruction and technical application—mirroring the demands of contemporary workforce environments (GP #3).

Historic structures and facades were preserved, restored, and highlighted throughout the campus perimeter (GP #1), while the new academic and CTE wings frame a large CTE courtyard. This outdoor space offers excellent daylight, fresh air, engaging outdoor learning opportunities, service access, and chances for interdisciplinary interaction.

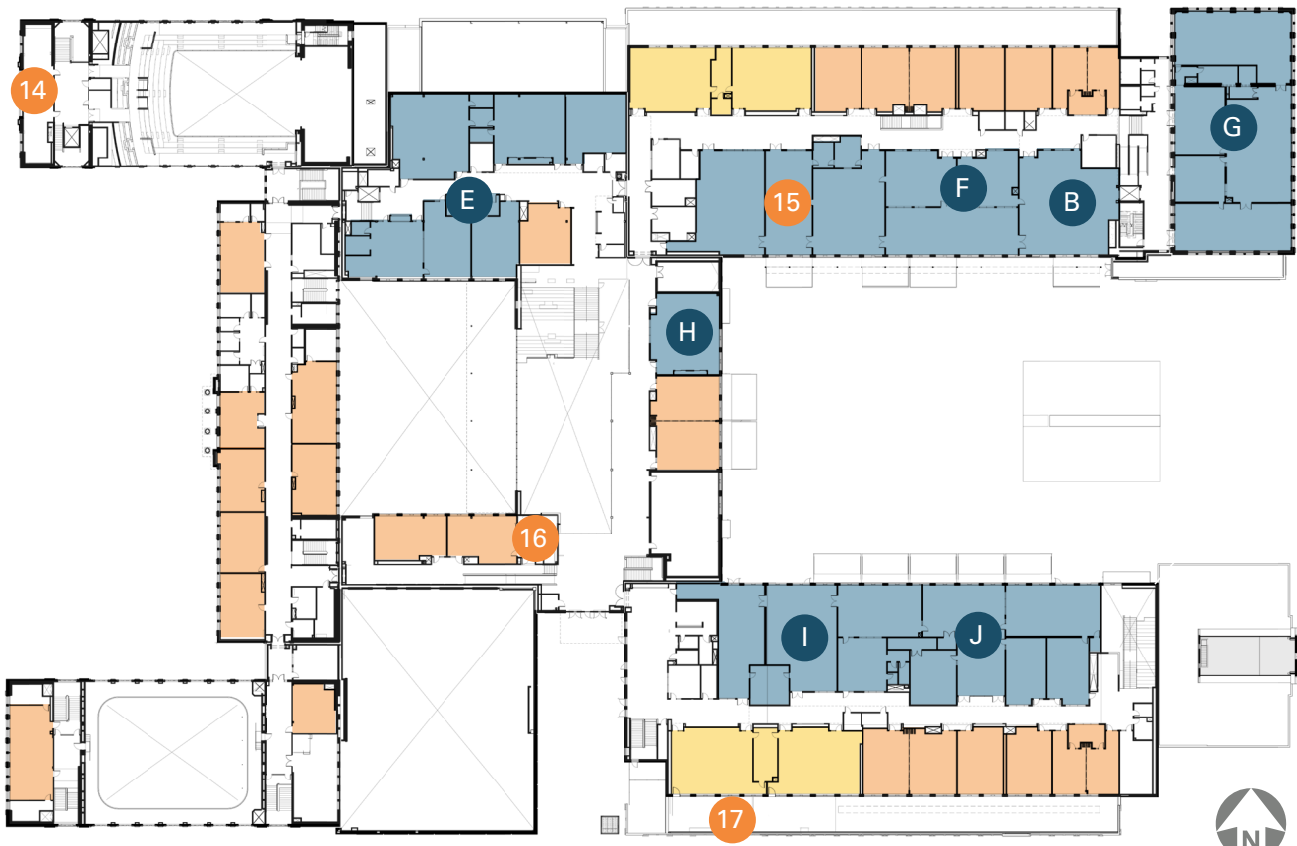
At the heart of the school, a two-story secure commons forms the social and academic core. This centralized space supports student services, food service, and social functions, while also providing intuitive access to the maker’s lab, robotics room, and adjacent historic spaces like the theater, gym, library, and administration (GP #2, GP #7). The adjacent social courtyard offers a safe, welcoming outdoor environment that extends learning, gathering, and exploration beyond the classroom walls.

The design also prioritizes agility and adaptability (GP #4). Learning spaces were planned to meet opening-day program demands while remaining flexible enough to evolve with changing educational and industry needs. Features like modular layouts, reconfigurable utilities, and right-sized “learning communities” allow the school to adjust to new pedagogies and programs over time.

Circulation across the campus was carefully choreographed to reflect actual student and teacher workflows. This thoughtful flow minimizes travel time, enhances programmatic synergy, and promotes student safety. The result is a seamless, high-functioning campus that fully integrates academics, technical education, and student life—fulfilling Benson’s mission and vision for decades to come.



FIRST FLOOR



SECOND FLOOR

FLOOR PLAN LEGEND		KEY
L1	Band Room	Career Technical Education (CTE)
L2	Multipurpose/Black Box	Academic Classroom
L3	Locker Rooms	Science Lab
L4	Weight/Activity Room	PE/Athletics

- 1 1929 Auditorium
- 2 Library/Media Center
- 3 1917 Foundry Building
- 4 1917 Lobby
- 5 Community Room
- 6 Wellness Clinic
- 7 Counseling
- 8 Career Center / Digital Cafe
- 9 Commons / Cafe
- 10 Student Store
- 11 Demonstration Kitchen
- 12 1925 Auxiliary Gym
- 13 1964 Main Gym
- 14 Alumni Room
- 15 Applied Arts (2D/3D)
- 16 Robotics (Club)
- 17 Roof Deck

## CAREER TECHNICAL EDUCATION

- A Building Construction
- B Manufacturing
- C Automotive
- D Radio Broadcasting
- E Health Occupations
- F Engineering
- G Electric
- H Makerspace
- I Computer Science
- J Digital Media



# Retaining Historic Significance

Four historic buildings—constructed between 1917 and 1929—were preserved and meticulously modernized as part of the Benson Polytechnic High School transformation: the main classroom building, gymnasium, auditorium, and foundry. Additionally, the street-facing facades of the original shop wings were retained and restored. These structures are central to Benson’s identity and its century-long legacy as Portland’s flagship technical high school.

As a designated historic landmark, Benson’s modernization required careful coordination with the City of Portland’s Historic Landmarks Commission and compliance with local preservation guidelines. The project team also worked closely with the State Historic Preservation Office (SHPO) to ensure key interior features were thoughtfully preserved and rehabilitated within the school’s updated learning environment.

Rather than replacing these structures, the design and construction teams committed to restoring and adapting them for modern use—honoring the past while investing in the school’s future. During construction, key portions of existing buildings and facades were carefully shored in place, allowing selective demolition to occur for extensive seismic upgrades. Historic wood and steel windows were removed and restored off-site, then reinstalled with low-profile interior storm panels, preserving their character while enhancing energy performance. Across the campus, restoration work included seismic reinforcement, terracotta and masonry repair, and upgrades to accessibility, life safety, and building systems.

Throughout the site, attention to detail extended beyond the buildings themselves. Salvaged elements—including the iconic drinking fountains, the “Benson Bubblers,” student “class” benches, historic plaques, a sundial, and rose plantings—were thoughtfully reintegrated into the landscape, reinforcing a tangible connection between Benson’s past, present, and future. These familiar features serve as everyday reminders of the school’s legacy and foster a deep sense of continuity for students, staff, alumni, and visitors alike.

Top: The restored main entry of the 1917 building features the addition of a secure vestibule thoughtfully integrated to preserve the historic architecture and original detailing.

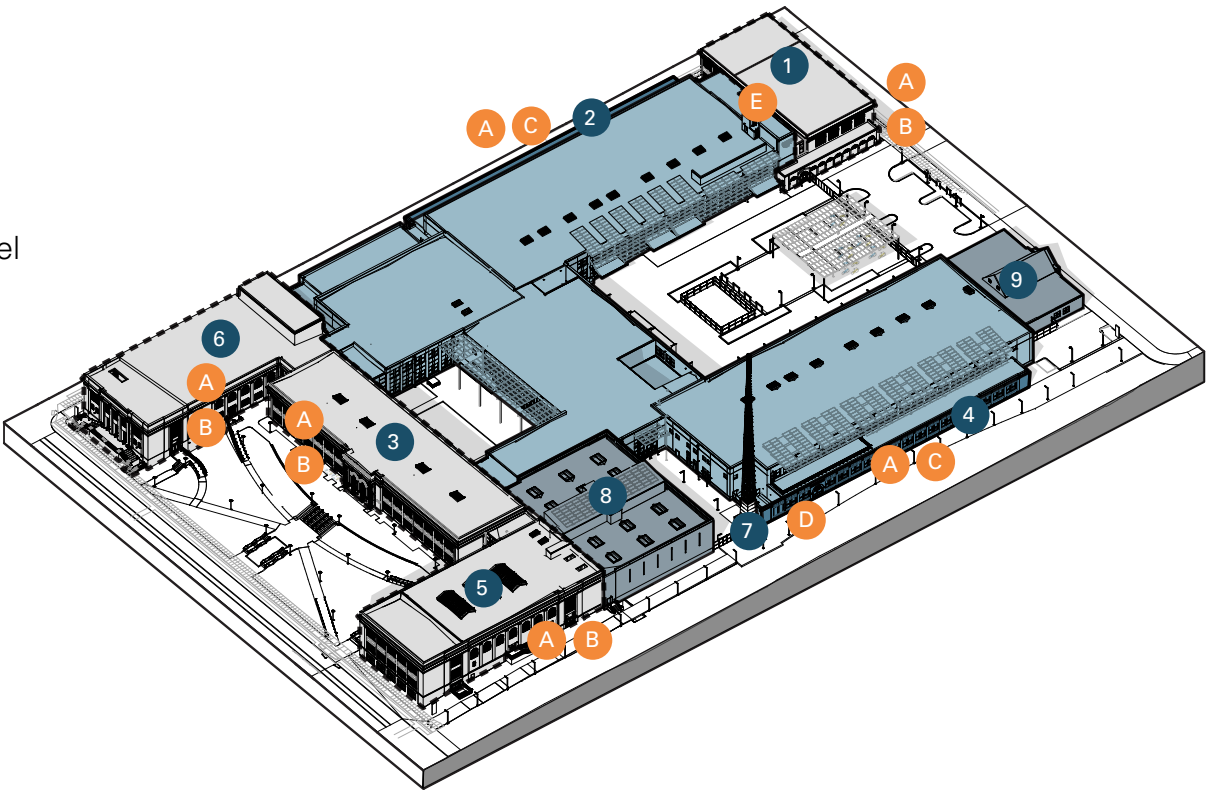
Bottom Left: The iconic “Benson Bubblers” fabricated in the school foundry and rose garden were carefully salvaged and reinstalled, celebrating the school’s legacy and reinforcing its connection to community and place.



## LEGEND

- A Historic Brick & Terracotta Facade Restoration
- B Historic Wood & Steel Window Restoration
- C Retained Historic Facades Tie-In with New Construction
- D Retained Historic Exterior Facade as Remnant Wall
- E Historic Exterior Facade Restored & Retained in Interior

- Historic to be Modernized
- Existing to be Renovated
- New Construction



- |                         |                         |                      |
|-------------------------|-------------------------|----------------------|
| 1 1917 Foundry          | 4 1918 South CTE Facade | 7 1950 Radio Tower   |
| 2 1917 North CTE Facade | 5 1925 Gymnasium        | 8 1964 Gymnasium     |
| 3 1917 Main Building    | 6 1929 Auditorium       | 9 1991 KBPS Building |



# Historic Theater Reimagined

The restored historic theater remains a vibrant centerpiece of campus life, hosting performances, assemblies, and community events. Original upper-tier seats were carefully salvaged and reinstalled, while new seating below honors Benson's legacy. Upgrades to acoustics, lighting, and accessibility ensure the theater will continue to serve both students and the broader community for generations to come.





## Harmonizing New Architecture with Historic Structures

The modernization of Benson Polytechnic High School celebrates the relationship between the historic and the new architecture. Five historic buildings were meticulously restored, while four new buildings were carefully designed to complement—but not replicate—the originals. Massing, scale, and rhythm were calibrated to maintain visual continuity across the campus, while material choices—such as brick cladding and proportioned window openings—echo the character of the original buildings in a distinctly modern expression.

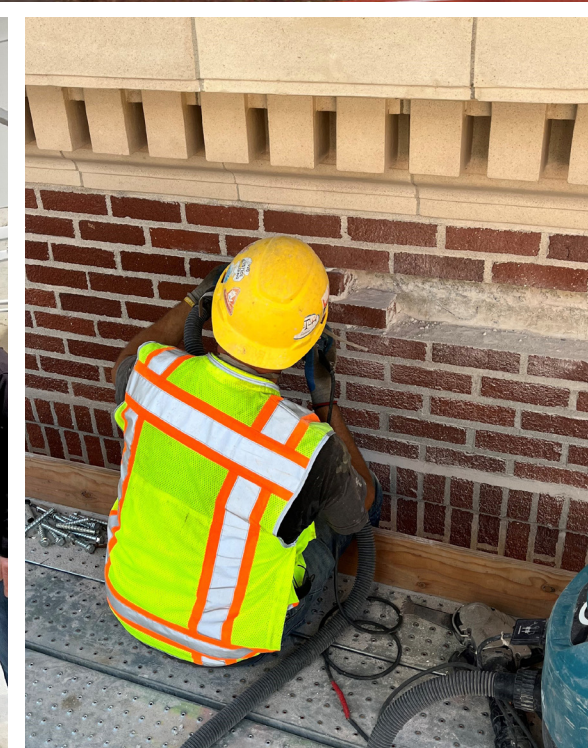
To preserve the historic identity of the campus, new construction was strategically set back from primary street-facing facades, maintaining the prominence of the landmark structures and complying with Portland’s historic district design guidelines. Where new meets old, glazed connectors or contrasting large-format masonry “gaskets” provide visual transitions—clearly distinguishing the two eras while supporting their seamless integration.

The architecture also embraces its role as a teaching tool. Exposed systems—including brace bays, seismic reinforcements, and mechanical infrastructure—allow students to understand how the building works. Visible solar array creates a striking contrast to the historic brick and terracotta facades, symbolizing Benson’s evolution from its industrial roots to a forward-looking, environmentally conscious institution.

Inside and out, these new additions demonstrate restraint, clarity, and respect. The result is a campus that is cohesive yet layered—honoring a century of Benson’s architectural legacy while empowering students to learn from the very building they occupy. History and innovation coexist here—physically, pedagogically, and symbolically.

*Top: The preserved 1918 façade highlights the careful restoration of historic brick and terracotta detailing. New construction is thoughtfully scaled and stepped back to ensure the historic architecture remains the visual focal point of the campus.*

*Bottom: Restoring Benson’s historic architecture required meticulous craftsmanship. Original windows were removed, refurbished, and reinstalled. Masonry and terracotta were cleaned, patched, and restored by hand, with damaged bricks replaced using salvaged materials from demolished buildings. Protective measures preserved iconic elements like the original columns, honoring the school’s legacy with care and precision.*







## A Seamless Connection

The social courtyard highlights the relationship between the restored rear of the 1917 main building and the new academic wing, which seamlessly connects to the central commons and supports student life.



# Specialized, Adaptable Spaces for Technical Learning

Supporting Benson’s diverse CTE programs—ranging from electrical and manufacturing to health sciences and radio broadcasting—required more than space; it demanded a coordinated network of flexible, purpose-built environments. The design team worked closely with instructors and industry partners to tailor each lab and shop to its specific functions while planning for seamless workflow, safety, visibility, and long-term adaptability.

Each suite was developed with differentiation in mind, providing the right space for the right activity. Loud and quiet programs, clean and messy workflows, and student-versus public-facing zones were carefully zoned to support instruction and minimize disruption. Spaces accommodate specialized equipment, group work, and individualized learning—all within a cohesive, adaptable layout.

In a co-location model like Benson’s, acoustics were critical to ensuring comfort and focus across programs. To mitigate sound transfer, the design incorporated kinetic slabs between floors, acoustic glazing and doors, and absorptive materials in heavy-use CTE areas. These strategies limit noise while maintaining visibility, allowing quiet academic work and high-noise technical training to happen side-by-side without compromise.

Transparency was a deliberate design tool. Interior windows, overhead doors, and open corridors showcase student work, enhance supervision, and promote cross-program visibility—fostering curiosity and interdisciplinary collaboration.

Flexibility was embedded at every level. Modular layouts, movable casework, exposed systems, and accessible utilities allow programs to evolve alongside emerging technologies. Labs serving traditional trades today can pivot to support robotics, digital fabrication, or clean energy tomorrow.

A key part of this effort was a detailed equipment inventory. Every item moved during construction was tagged, categorized, and tracked—informing room layouts, infrastructure, and adjacencies. Teachers worked closely with the design team to determine what would move, stay, be replaced, or return—ensuring long-term functionality and minimal disruption.



CTE Equipment Schedule

CTE Equipment Schedule				
Equipment ID	Equipment Name	Location	Status	Notes
M139-E (14)	Furnace -small	Neyra	REPLACE NOW - REPLACE FOR BENSON	
M140-E (38)	Vacuum sealer- CentraCaster	Vanin	KEEP FOR MARSHALL - THEN REMOVE	
M138-E (13)	Drill press-standalone	Power	KEEP FOR MARSHALL - REPLACE FOR BENSON	
M138-N	Drill Press Standalone	Jet	KEEP FOR MARSHALL - RETURN TO BENSON	
M137-E (10,11)	Buffer-small		ON TRUCK	
M145-E (19-26)	Wood Lathe		replaced already purchased, see M139-N in the green section	
M148-E (4)	Apex		replaced already purchased, see M140-N in the green section	
M141-E (1)	Apex		ON TRUCK	
M142-E (2)	Apex		ON TRUCK	
M143-E (3)	Apex		ON TRUCK	
M144-E (4)	Apex		ON TRUCK	
M146-E (5)	Apex		ON TRUCK	
M147-E (6)	Apex		ON TRUCK	
M149-E (7)	Apex		ON TRUCK	
M150-E (8)	Apex		ON TRUCK	
M151-E (9)	Apex		ON TRUCK	
M152-E (10)	Apex		ON TRUCK	
M153-E (11)	Apex		ON TRUCK	
M154-E (12)	Apex		ON TRUCK	
M155-E (13)	Apex		ON TRUCK	
M156-E (14)	Apex		ON TRUCK	
M157-E (15)	Apex		ON TRUCK	
M158-E (16)	Apex		ON TRUCK	
M159-E (17)	Apex		ON TRUCK	
M160-E (18)	Apex		ON TRUCK	
M161-E (19)	Apex		ON TRUCK	
M162-E (20)	Apex		ON TRUCK	
M163-E (21)	Apex		ON TRUCK	
M164-E (22)	Apex		ON TRUCK	
M165-E (23)	Apex		ON TRUCK	
M166-E (24)	Apex		ON TRUCK	
M167-E (25)	Apex		ON TRUCK	
M168-E (26)	Apex		ON TRUCK	
M169-E (27)	Apex		ON TRUCK	
M170-E (28)	Apex		ON TRUCK	
M171-E (29)	Apex		ON TRUCK	
M172-E (30)	Apex		ON TRUCK	
M173-E (31)	Apex		ON TRUCK	
M174-E (32)	Apex		ON TRUCK	
M175-E (33)	Apex		ON TRUCK	
M176-E (34)	Apex		ON TRUCK	
M177-E (35)	Apex		ON TRUCK	
M178-E (36)	Apex		ON TRUCK	
M179-E (37)	Apex		ON TRUCK	
M180-E (38)	Apex		ON TRUCK	
M181-E (39)	Apex		ON TRUCK	
M182-E (40)	Apex		ON TRUCK	
M183-E (41)	Apex		ON TRUCK	
M184-E (42)	Apex		ON TRUCK	
M185-E (43)	Apex		ON TRUCK	
M186-E (44)	Apex		ON TRUCK	
M187-E (45)	Apex		ON TRUCK	
M188-E (46)	Apex		ON TRUCK	
M189-E (47)	Apex		ON TRUCK	
M190-E (48)	Apex		ON TRUCK	
M191-E (49)	Apex		ON TRUCK	
M192-E (50)	Apex		ON TRUCK	
M193-E (51)	Apex		ON TRUCK	
M194-E (52)	Apex		ON TRUCK	
M195-E (53)	Apex		ON TRUCK	
M196-E (54)	Apex		ON TRUCK	
M197-E (55)	Apex		ON TRUCK	
M198-E (56)	Apex		ON TRUCK	
M199-E (57)	Apex		ON TRUCK	
M200-E (58)	Apex		ON TRUCK	
M201-E (59)	Apex		ON TRUCK	
M202-E (60)	Apex		ON TRUCK	
M203-E (61)	Apex		ON TRUCK	
M204-E (62)	Apex		ON TRUCK	
M205-E (63)	Apex		ON TRUCK	
M206-E (64)	Apex		ON TRUCK	
M207-E (65)	Apex		ON TRUCK	
M208-E (66)	Apex		ON TRUCK	
M209-E (67)	Apex		ON TRUCK	
M210-E (68)	Apex		ON TRUCK	
M211-E (69)	Apex		ON TRUCK	
M212-E (70)	Apex		ON TRUCK	
M213-E (71)	Apex		ON TRUCK	
M214-E (72)	Apex		ON TRUCK	
M215-E (73)	Apex		ON TRUCK	
M216-E (74)	Apex		ON TRUCK	
M217-E (75)	Apex		ON TRUCK	
M218-E (76)	Apex		ON TRUCK	
M219-E (77)	Apex		ON TRUCK	
M220-E (78)	Apex		ON TRUCK	
M221-E (79)	Apex		ON TRUCK	
M222-E (80)	Apex		ON TRUCK	
M223-E (81)	Apex		ON TRUCK	
M224-E (82)	Apex		ON TRUCK	
M225-E (83)	Apex		ON TRUCK	
M226-E (84)	Apex		ON TRUCK	
M227-E (85)	Apex		ON TRUCK	
M228-E (86)	Apex		ON TRUCK	
M229-E (87)	Apex		ON TRUCK	
M230-E (88)	Apex		ON TRUCK	
M231-E (89)	Apex		ON TRUCK	
M232-E (90)	Apex		ON TRUCK	
M233-E (91)	Apex		ON TRUCK	
M234-E (92)	Apex		ON TRUCK	
M235-E (93)	Apex		ON TRUCK	
M236-E (94)	Apex		ON TRUCK	
M237-E (95)	Apex		ON TRUCK	
M238-E (96)	Apex		ON TRUCK	
M239-E (97)	Apex		ON TRUCK	
M240-E (98)	Apex		ON TRUCK	
M241-E (99)	Apex		ON TRUCK	
M242-E (100)	Apex		ON TRUCK	





# Experiential Graphic Design

Experiential Graphic Design (EGD) was used throughout the Benson Polytechnic campus to foster identity, culture, and student ownership—turning corridors, courtyards, and gathering spaces into immersive storytelling environments. These graphics deepen the connection between students and their school by celebrating both Benson’s legacy and its forward-looking vision.

A standout example is the series of student-designed banners in the CTE courtyard, created in collaboration with Benson's digital media programs. These vibrant banners activate three courtyard-facing facades with graphics, photography, and messaging that showcase student work, amplify school spirit, and reinforce Benson's identity as a citywide CTE leader.

In corridors connecting the historic classroom building with the new commons, a custom-designed timeline graphic illustrates the school's evolution since its founding in 1917. Arranged in a "colonnade" that utilizes salvaged fan windows from the original shop buildings, this installation features archival photos from past yearbooks and significant milestones, capturing the people, programs, and pivotal moments that have shaped Benson's identity over the last century. This visual storytelling moment not only honors alumni and past achievements—it gives current students a tangible sense of belonging to a long and proud tradition.

Throughout the campus, wayfinding and interpretive signage echo this blend of history and modernity. Typography, color, and materials reflect both the school's heritage and its renewed mission, while informational graphics help students, visitors, and community members navigate the building with ease.



*Top: A student-designed banner created by the Digital Media program now hangs in the commons.*

*Second Row: Digital Media students collaborated with the design team's Experiential Graphic Design group to produce a series of banners that activate the CTE courtyard.*

*Bottom Left: A transparent graphic overlay of Portland adds context and place-based identity to the building, connecting Benson students to the city they collectively inhabit.*

*Bottom Right: The custom timeline graphic showcases more than a century of Benson's history, featuring archival photos and key milestones that honor the school's legacy.*





## Student-Designed Banners Enliven CTE Courtyard

The CTE courtyard is brought to life by vibrant banners designed by Benson’s digital media students, celebrating the creativity, identity, and pride of the school community.



# Sustainability and Wellness

Benson Polytechnic High School’s modernization proves that historic preservation and sustainability can go hand-in-hand. Originally targeting LEED Silver, the project is now on track for LEED Gold certification, reflecting a deep commitment to environmental performance, wellness, and long-term adaptability.

As a polytechnic facility with energy-intensive programs—including large fabrication spaces, a metal foundry, and a radio station—the project required innovative strategies to achieve energy efficiency. An early sustainability charrette established key goals: optimal daylighting, reduced energy and embodied carbon, healthy materials, and compliance with Oregon’s Green Energy Technology (GET) requirements.

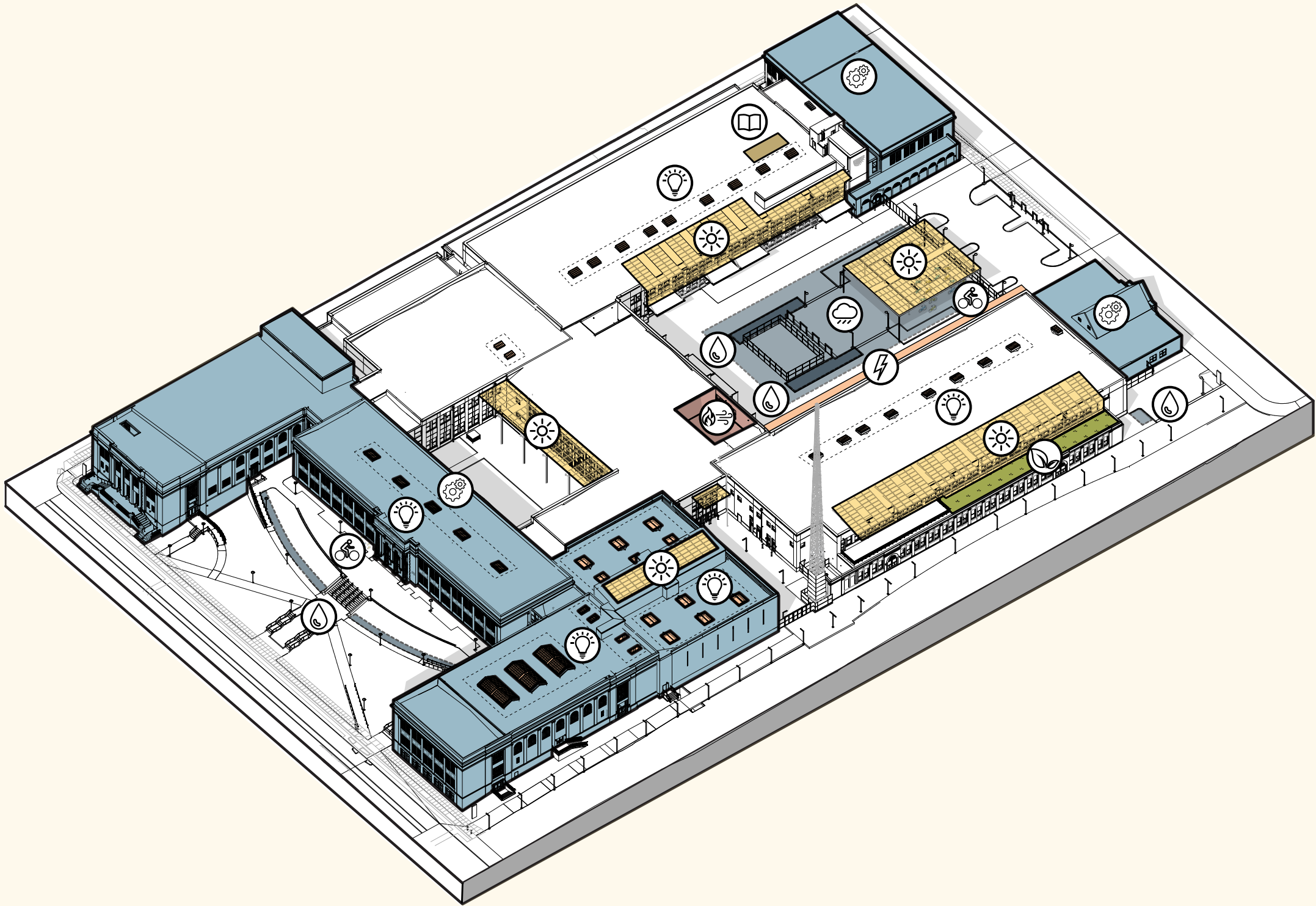
A major achievement was the development of a low-carbon concrete mix, reducing embodied carbon by 13% and encouraging local suppliers to adopt Type 1L cement. A Life Cycle Assessment evaluated savings across design phases, with historic building reuse further minimizing waste and preserving embodied energy.

The building incorporates photovoltaic panels integrated into shading systems, paired with energy recovery units and Direct Outside Air Systems (DOAS) to deliver 100% fresh air efficiently. Indoor air quality was addressed through high-efficiency filtration, low-emitting materials, separately ventilated rooms, and a construction-phase air quality plan to protect materials from dust and contaminants.

Daylighting and wellness were prioritized through iterative daylight studies, optimal glazing, and the creation of two secure outdoor courtyards that support open-air learning and social-emotional well-being. A green roof, reflective roofing, and strategic shading reduce heat island effects and promote comfort.

On-site sustainable transportation features covered bike parking, EV charging, and strong connections to nearby transit, bike lanes, and a pedestrian bridge. Dark-sky compliant lighting and native plantings further reduce the building’s environmental footprint.

From building systems to material selections, the project reflects equity-driven sustainability—shaped by robust community input and aligned with Energy Trust of Oregon (ETO) incentives. Benson now stands as a resilient, health-conscious, and environmentally responsible campus ready to serve future generations.



Renovating existing buildings helps to lower the carbon footprint.



240 kWh Photovoltaic Solar Array



Underground Stormwater Detention Facility



Green Roof



Student Learning PV Array



High-efficiency mechanical hydronic loop plant for heating and cooling



Skylights and windows designed to maximize natural daylight and enhance interior views



Stormwater Retention



Bicycle Parking



EV charging for Student Learning in Auto Shop





I appreciate the [Design] team's focus on keeping the 100+ year story of Benson Tech alive throughout the new building. Their preservation of the old within the beautiful new structure is impressive as was their creation of industry standard CTE spaces. Our students, teachers and community are thrilled with the outcome.

Dan Malone  
Vice Principal of Modernization  
Portland Public Schools



## RESULTS OF THE PROJECT

### ADVANCING EDUCATIONAL GOALS

The Benson Polytechnic High School modernization delivers a learning environment that fully supports the school's dual academic and CTE mission. By pairing academic spaces with purpose-built technical labs and shops, the design promotes interdisciplinary learning, hands-on application, and real-world readiness. Flexible classrooms, secure outdoor courtyards, and daylight-filled maker spaces support a wide range of teaching styles and student needs—ensuring that all learners are prepared for both college and careers. The campus is no longer a series of programmatic silos but a cohesive learning ecosystem, aligned with the demands of today's workforce and the curiosity of tomorrow's learners.

### ALIGNING WITH DISTRICT PRIORITIES

Portland Public Schools set ambitious goals around equity, sustainability, and long-term adaptability—goals the Benson project has not only met, but exceeded. Through an equity-driven engagement process, the school's design was shaped

by a diverse group of stakeholders, including students, teachers, alumni, and community members. Contracting also reflected this commitment, with a COBID utilization rate of 17.5%, far surpassing the district's 10% goal.

The school is on track to achieve LEED Gold certification, incorporating strategies such as low-carbon concrete, high-efficiency systems, on-site renewable energy, and daylighting optimization—all while retaining and seismically upgrading six existing historic buildings. The result is a high-performance, future-ready campus that meets both the district's goals and the realities of 21st-century technical education.

### MEETING COMMUNITY EXPECTATIONS

This project reflects the values and aspirations of the Benson community. A year-long master planning process, followed by extensive design-phase engagement, ensured that every decision was informed by those closest to the school. Voter-approved funding, sustained alumni involvement,

and participation from neighborhood and community stakeholders reinforced Benson's role as a civic anchor.

Historic preservation efforts—including restoration of terracotta, steel and wood windows, and integration of salvaged elements like the "Benson Bubbler," class benches, and rose plantings—affirm the cultural continuity of the campus. At the same time, strategic modernization ensures that Benson remains a hub for regional workforce development, with strong connections to industry and post-secondary partners.

### UNINTENDED WINS AND POSITIVE SURPRISES

Several aspects of the project yielded impact beyond their original scope. The Tiny Home Project, initially conceived as a construction mock-up, became a multidisciplinary, student-led design-build effort—blending architecture, construction tech, and engineering in a powerful real-world learning opportunity. Similarly, the project's low-carbon concrete mix helped shift local market practices by encouraging suppliers

to offer Type 1L cement, reducing embodied carbon and expanding access to sustainable materials.

Experiential Graphic Design allowed students to leave a lasting mark on campus through custom-designed banners—amplifying student voice, fostering pride and ownership, and bringing Benson's rich history to life for future generations.

### A MODEL FOR INNOVATION AND EQUITY

In the end, Benson's transformation goes far beyond a building. It demonstrates what's possible when community-driven planning, sustainable innovation, and student-centered design intersect. The project has become a model for how public schools—especially those with deep cultural roots and complex programming—can evolve to meet the needs of a rapidly changing world while honoring the legacy that brought them here.



## Community Hub

The heart of the campus features learning stairs, tall windows opening to the social courtyard, and warm wood tones accented by Benson's school colors—creating an inviting, light-filled environment for gathering, learning, and connection. Overhead, a salvaged drone plane from the former Aviation program hangs proudly in the commons, honoring Benson's technical legacy and sparking curiosity for generations to come.

