

A Gateway to the Future

Dudley Hall and Lambertus Hall
Purdue University



BSA



A Gateway to the Future

Dudley Hall and Lambertus Hall, Purdue University

Purdue University came to BSA Lifestructures in search of a gateway in a number of ways. With its engineering and polytechnic programs expanding at a remarkable pace, the university needed space that could be a gateway to student success, enabling the future of engineering and polytechnic education, with an emphasis on to-scale experiential learning and real-world engagement in labs that are able to flex and pivot along with evolving marketplace needs and demands. Additionally, the university wanted a building that could serve as a new gateway for the campus, welcoming people as they arrive from the east, complementing the campus' natural flow and serving as the first of a cluster of buildings in a newly defined campus district.



◀ TOP | The exterior space will be bounded by the new engineering buildings and the Wilmeth Active Learning Center. Campus connections will be established from the Student Union to the Purdue Mall. The new quadrangle will serve as a significant campus outdoor gathering space and center of the engineering district.

Dudley Hall and Lambertus Hall at a Glance

The first facility in what will be Purdue University’s new Engineering and Polytechnic Gateway Complex, Dudley Hall and Lambertus Hall is one of the largest complexes on campus. The 251,191-square-foot space will house interdisciplinary instructional space, design studios for senior and capstone projects, collaborative space supporting active learning and administrative office space. Built for flexibility, the building will include massive lab spaces that can support to-scale learning experiences ranging from manufacturing production lines to home and commercial construction projects, and from powertrain technology development to human integration processes.

KEY FEATURES

- New entry point to the campus, serving as a fitting anchor to the recently established 3rd Street Student Success Corridor
- Massive lab spaces to accommodate to-scale manufacturing, engineering and construction experiences
- Specialized interdisciplinary hubs (project based teaching labs, instructional labs, research labs, and virtual labs)
- Replacement for buildings on confined site, increasing usable space on site by 2.3 times

PROJECT DETAILS

SIZE 251,191 SF
COST \$114.7 M
DATE November 2022

SERVICES PROVIDED

Planning, Architecture, MEP Engineering, Interior Design

TEAM MEMBERS

Ennead (Design Partner); Fink Roberts & Petrie (Structural Engineer); Schneider Geomatics (Civil Engineer); Rundell Ernstberger (Landscape Architect); Shiel Sexton (Construction Manager as Constructor)



The fundamental division of the program divides the building into three distinctive zones. These zones are predominantly organized within the building based upon function and site orientation. The lab and support functions are positioned along the northern side of the building with a more direct connection to the building’s service access. The office functions are organized along the southern side of the building and promote natural light infiltration deep into the building. The mixed/shared functions, which encompass student collaboration and meeting spaces will be positioned along the central spine of the building.

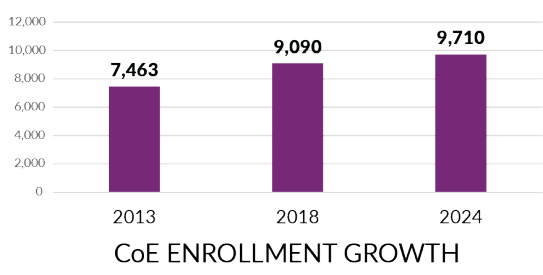
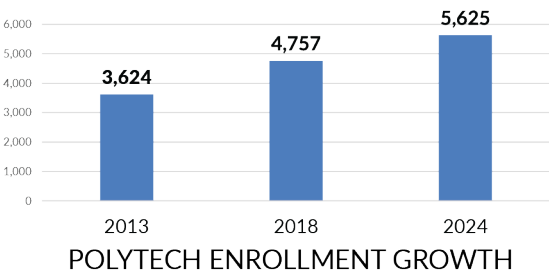


An Optimized Opportunity

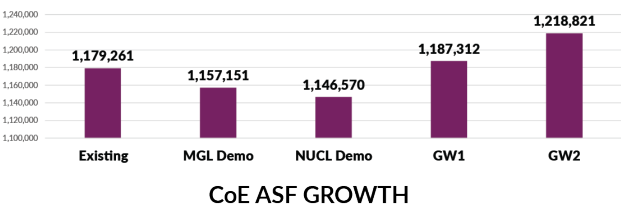
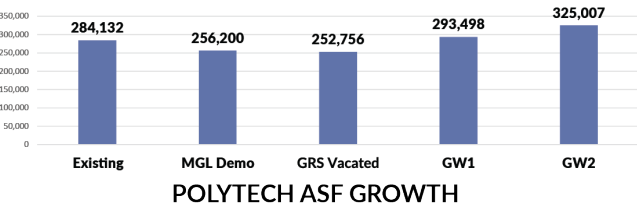
When Purdue University asked BSA to help it address rapid growth in its engineering and polytechnic programs while also providing more experiential-learning spaces, BSA identified an opportunity to maximize the space previously occupied by a pair of outdated campus buildings. By demolishing those buildings and erecting a new facility in their place, BSA more than doubled the usable space on the site and further increased efficiencies by bringing educational labs for both programs into the same building. To ensure the programs and their students wouldn't lose ground during the construction process, BSA identified temporary on-campus spaces for the programs and helped plan the use of those spaces. To execute both the design of the new space and temporary relocation of the programs, BSA leveraged the power of data analysis and modeling, working to reduce disruptions to the engineering and polytechnic programs and to programs already operating in the buildings where they took temporary residence.

PROGRAMMATIC NEEDS

The Purdue Polytechnic Institute and the Purdue College of Engineering have experienced significant growth over the past 5 years. Polytech has grown by over 1,000 students and CoE has grown by over 1,600 students. These numbers are projected to continue to increase over the next years, Polytech by nearly 850 and CoE by over 600.

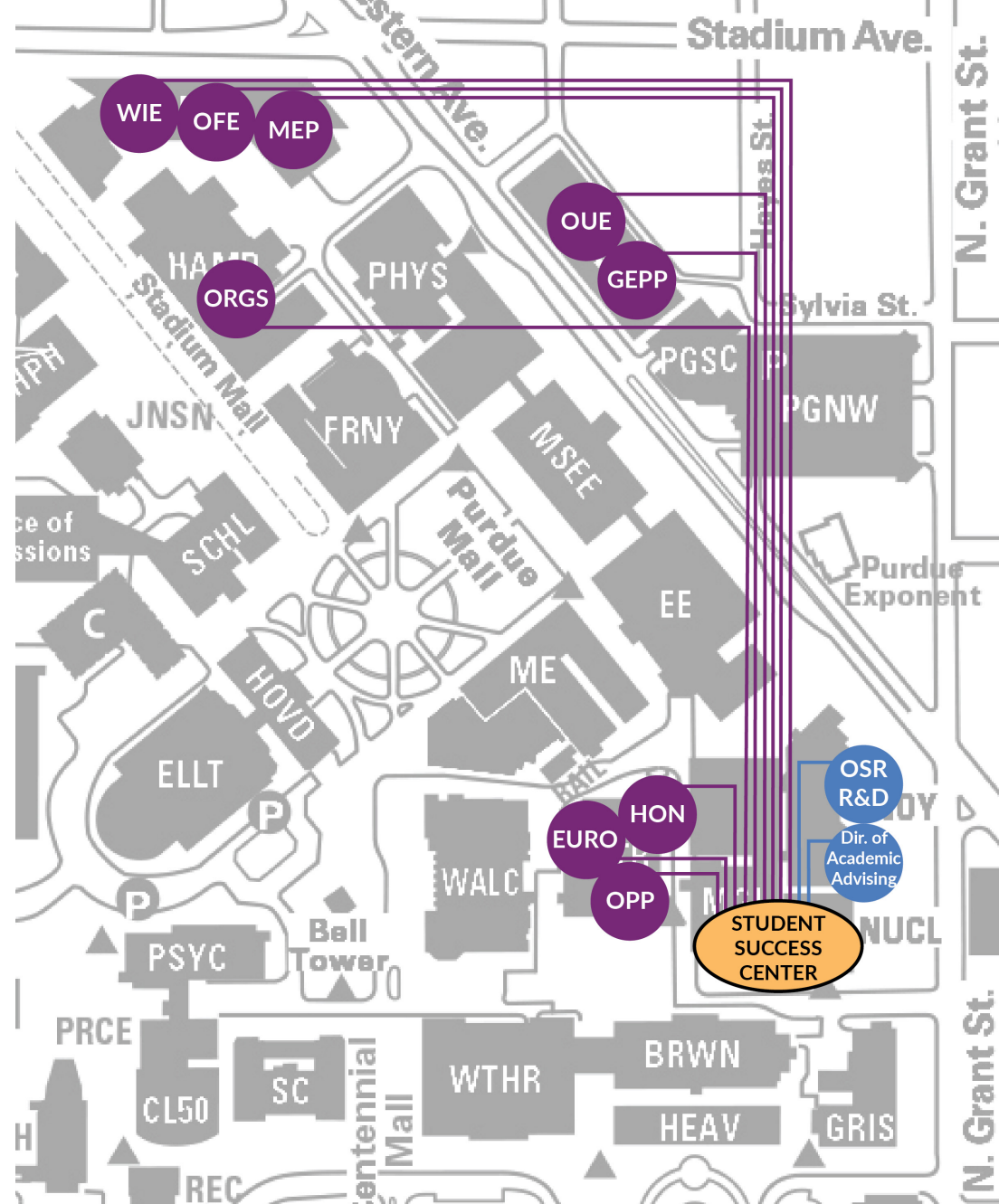


The space identified in these buildings will replace existing space from buildings that will be demolished to transform the Gateway District. Gateway Building 1 provides incremental growth in ASF, while Gateway Building 2 provides growth that begins to address the needs generated by enrollment growth.

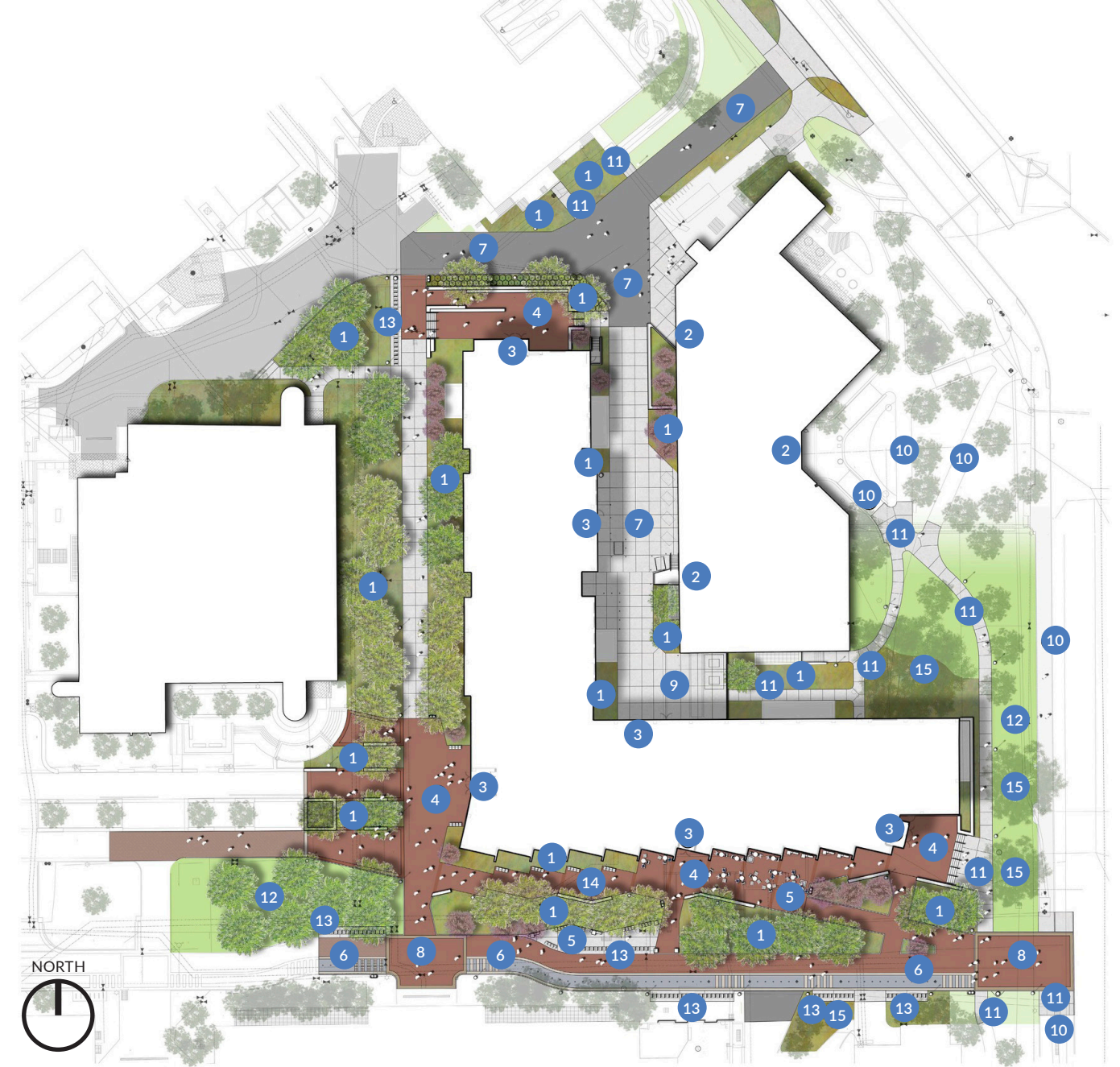


Existing Gateway District Buildings

- | | | |
|----------------------------------|---|----------------------------------|
| 1 Electrical Engineering | 6 Potter Courtyard | 11 Brown Laboratory of Chemistry |
| 2 Mechanical Engineering | 7 Wetherill Laboratory of Chemistry | 12 Heavilon Hall |
| 3 American Railway Building | 8 Knoy Hall | 13 Grissom Hall |
| 4 Potter Engineering Center | 9 Michael Golden Engineering Laboratories | |
| 5 Wilmeth Active Learning Center | 10 Nuclear Engineering | |
- Demolished to erect the new building in their place.



Dubbed the Student Success Corridor, this area pulls into close proximity organizations that previously were dispersed across a number of buildings.



A Gateway Project

In many ways, Dudley Hall and Lambertus Hall will indeed serve as a gateway: onto the Purdue University campus from the east; to bigger engineering and polytechnic schools; to cutting-edge experiential learning; and also to a more contemporary take on Purdue's established architectural style. To achieve that last objective, BSA collaborated with Ennead, our design partner, to envision the five-story Dudley Hall and Lambertus Hall with a façade complementary to the campus' prevailing brick construction, but

accented it with contemporary stone and metal elements. Large glass walls add to the building's fresh look and also increase interior natural lighting and invite passers-by into the building. The building was designed and sited to be mindful of campus pedestrian and vehicular flow, allowing it to create a new entry point to the campus, serve as a fitting anchor to the recently established 3rd Street Student Success Corridor, and help define and complement a new outdoor quad space (shown above right).

- | | |
|--------------------------|------------------------|
| 1 PLANTING AREA | 9 OUTDOOR WORKING AREA |
| 2 KNOY ACCESS | 10 EXISTING SIDEWALK |
| 3 BUILDING ENTRANCE | 11 PROPOSED SIDEWALK |
| 4 BUILDING ENTRY PLAZA | 12 LAWN |
| 5 SEATING AREA | 13 BIKE PARKING |
| 6 BIKE/PED/SERVICE DRIVE | 14 PROMENADE |
| 7 SERVICE AREA | 15 EXISTING TREE |
| 8 INTERSECTION PLAZA | |

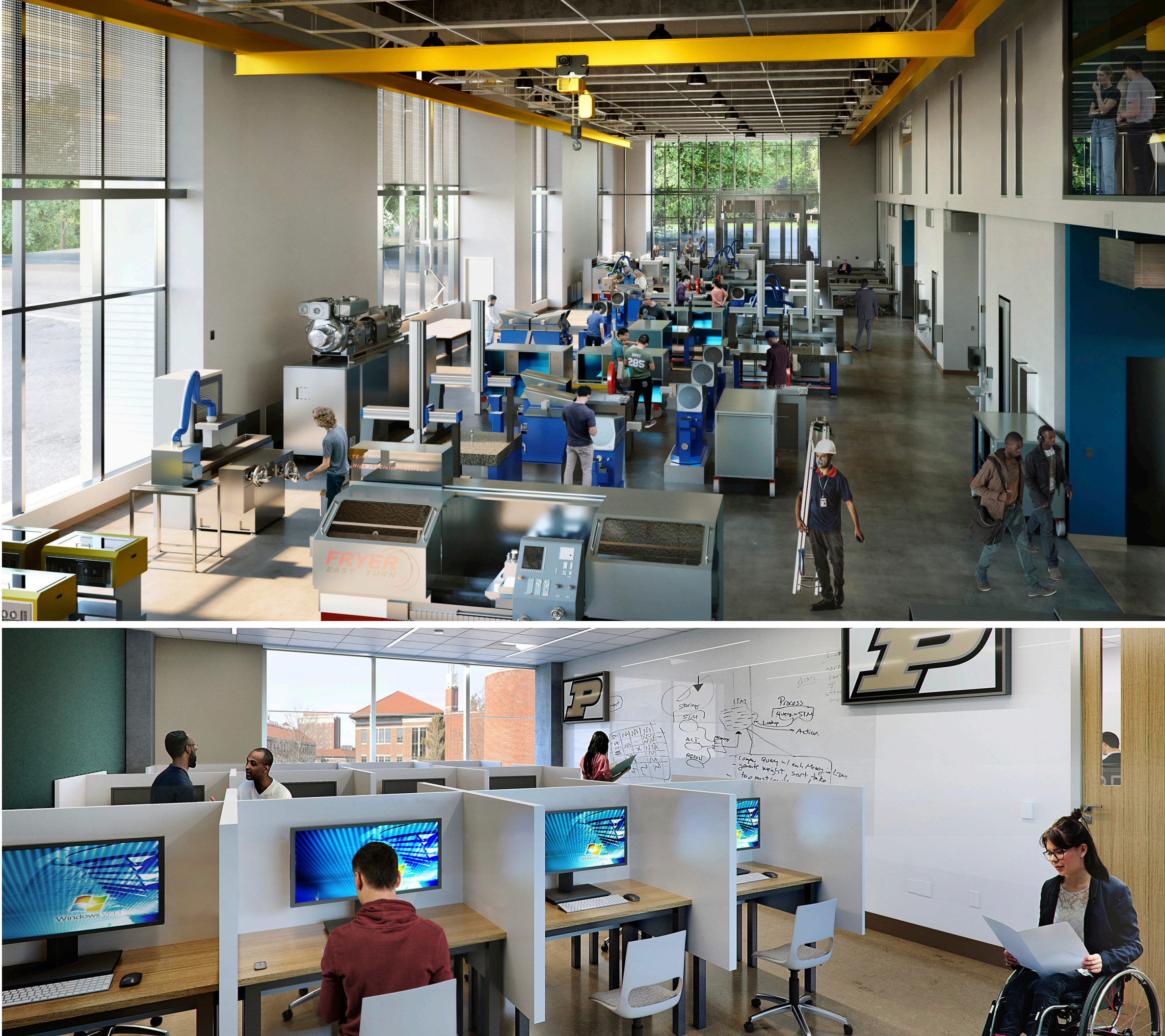


In the Build @ Scale Lab, students will be able to build, analyze, and improve full-scale industrial systems.

Labs to Scale

The labs designed within Dudley Hall and Lambertus Hall are not designed to accommodate a single research team or even a section of students focused on a single aspect of a challenge. They are designed to integrate students across an entire enterprise to allow them to see and experience the full range of challenges that are part of a larger global challenge. Many of the spaces are massive and allow students to experience to-scale real-world activities. For example, the Construction Management Lab is a 4,800-square-foot, two-story space that will allow students to plan, and manage the construction of multiple wood frame houses and steel structures with integrated systems simultaneously. The Build @ Scale Lab will allow students to experience full-scale industrial activities, designing products and production facilities and then seeing them through to fruition. Other labs will focus on the intersection of manufacturing and information and operational technologies, human integration modeling, nuclear materials and more. While each lab is highly specialized, all are built to flex and adapt as needs and expectations change, and all are designed to accommodate even bigger enrollments in the future.

TOP | The size of the Construction Management Lab allows for the structures to stay up for an entire semester. BOTTOM | The Nuclear Security Lab will significantly enhance students' learning on topics related to nuclear security, which is emerging as one of the most important issues to be addressed in nuclear energy.





Transparency of Purpose

Everything about the interior design of Dudley Hall and Lambertus Hall focused on supporting and promoting the work that takes place there. To support the experiential intent of the instruction and lab spaces, designers emphasized an industrial feel, employing concrete columns, polished concrete floors, natural woods and visible building infrastructure. Recognizing that one of the greatest ways to recruit students, partners and supporters is by putting exciting work on display, the design team for Dudley Hall and Lambertus Hall employed lots of glass walls and windows and placed key labs in strategic locations to put their work on display.

Student-focused Solutions

Throughout Dudley Hall and Lambertus Hall, the design accommodates students' hands-on experiences that directly complement and connect to classroom instruction with the most practical and cutting-edge experiences possible. Students will take projects from challenges on paper to tangible solutions, giving them single-site experiences that used to require off-site visitations. To further support student success, BSA included space within Dudley Hall and Lambertus Hall for a variety of support programs for first-year engineering students, minority and women engineering students, and more. Dubbed the Student Success Corridor, this area pulls into close proximity organizations that previously were dispersed across a number of buildings.

◀ With increased enrollment in both colleges, the facility is meant to provide more space for students with house project-based instructional labs, design studios and collaborative spaces.



- OFFICE
- COLLABORATION / OPEN STUDY
- CONFERENCE
- SUPPORT SPACE
- LAB SPACES
- COMPUTATIONAL
- CORRIDOR
- SERVICE / BUILDING
- FOOD SERVICE

DUDLEY HALL & LAMBERTUS HALL LABORATORIES

- SMART FOUNDRY 1
- NUCLEAR FUSION AND PLASMA LAB 2
- NUCLEAR MATERIALS LAB 3
- POWERTRAIN TECHNOLOGY LAB 4
- BUILD @ SCALE LAB 5
- CONSTRUCTION LAB 6
- ADVANCED GRAPHICS LAB 7
- SURVEY LAB 8



- OFFICE
- COLLABORATION / OPEN STUDY
- CONFERENCE
- HONORS
- LAB SPACES
- COMPUTATIONAL
- CORRIDOR
- SERVICE / BUILDING

DUDLEY HALL & LAMBERTUS HALL LABORATORIES

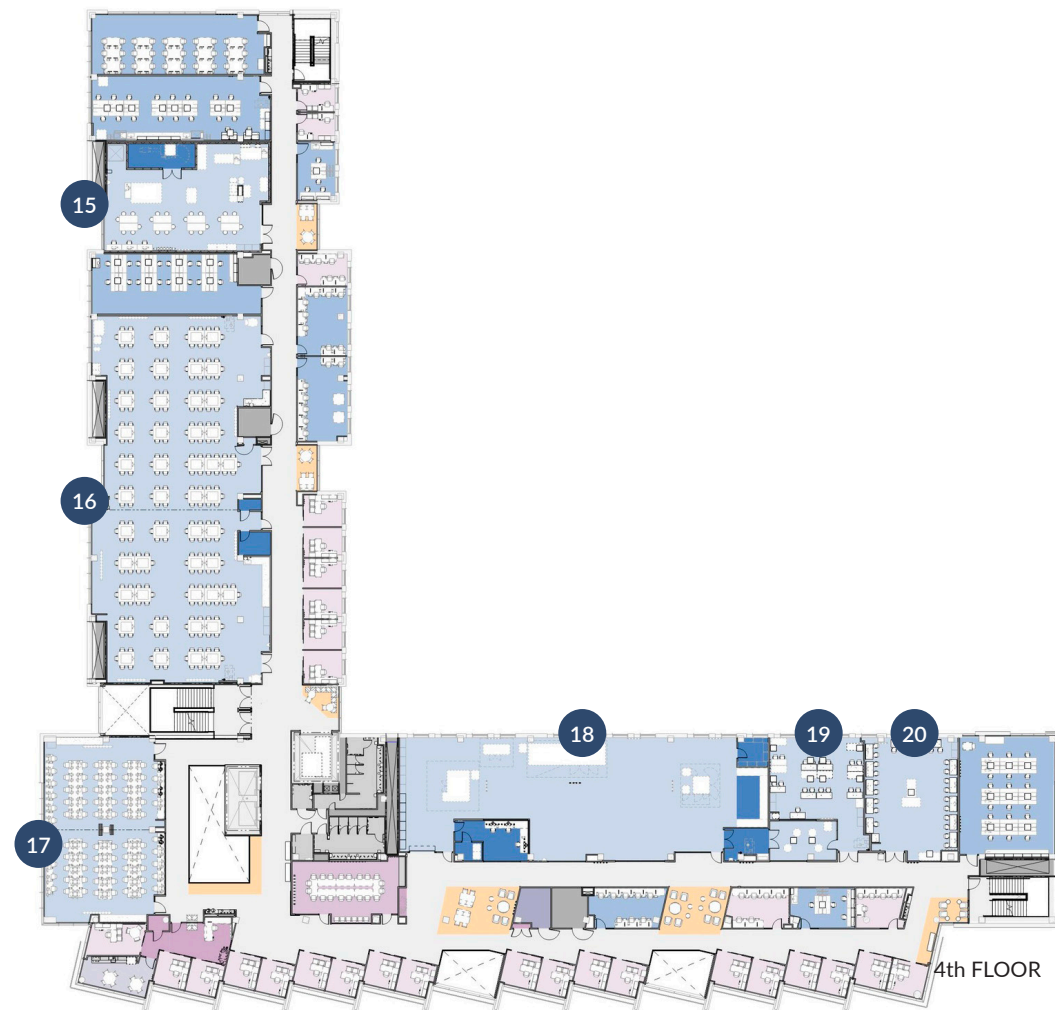
- CORE LEARNING LAB 9
- HUMAN INTEGRATION LAB 10
- CYBER-PHYSICAL SYSTEMS LAB 11
- IDEA, ANALYSIS AND SYNTHESIS STUDIO 12
- SERVICES AND PLATFORM INNOVATION LAB 13
- METROLOGY AND PRECISION DEVELOPMENT LAB 14



- OFFICE
- COLLABORATION / OPEN STUDY
- CONFERENCE
- SUPPORT SPACE
- LAB SPACES
- COMPUTATIONAL
- CORRIDOR
- SERVICE / BUILDING

DUDLEY HALL & LAMBERTUS HALL LABORATORIES

- WOOD FABRICATION LAB 15
- SENIOR CAPSTONE LAB 16
- BIDDING/ESTIMATING AND PROJECT MANAGEMENT LAB 17
- LEARNING FACTORY 18
- INTELLIGENT PROCESS LAB 19
- FURNAS FOUNDATION CONTROLS LAB 20
- NUCLEAR CODES AND NUCLEAR SECURITY 21
- HONORS WET LAB 22
- CORE LEARNING LAB 9
- ELECTRICAL ENGINEERING TECHNOLOGY PROJECTS LAB 23
- CYBER SECURITY AND NETWORKING 24
- ELECTRONICS LAB 25



Performance-focused Design

Of course, no building succeeds in its purpose if it cannot function smoothly or if it serves as a disruption to the campus. Having designed a massive facility for a defined footprint, BSA's design team had to be particularly aware of the building's functions and its impact on its surroundings. As one of the tallest and biggest buildings on campus, it is located in such a spot that it really doesn't have a "back side," and it had to be sited in order to allow access to surrounding buildings' loading docks and utilities, and it had to complement and fit into the campus' natural pedestrian and vehicular flow. The designers used the opportunity to reroute significant utilities to accommodate not only this project but also future development, and they redesigned Central Drive, a main campus artery, to extend a pedestrian mall and reduce conflicts between pedestrians and vehicles.

Conclusion

The size, design and location of Dudley Hall and Lambertus Hall are certain to make it a visual anchor on Purdue University's campus, and the labs and the activities that take place within will make the facility an anchor of campus vitality as well. Designed to provide a Gateway in a variety of ways, it also will function as an invitation, and as a new connection between Purdue's engineering and polytechnic schools and the rest of the world.



Materials include the traditional Purdue brick blend as "foundational backbone." Glass, metal and stone enliven the east, south and west faces and are a modern interpretation of the Purdue vernacular architecture.

FRONT COVER | *An exterior colonnade, along the buildings southern edge, will also encourage connectivity opportunities for the building users and the surrounding exterior environment.*

BSA

BSA LifeStructures is an integrated design firm creating inspired solutions that improve lives through architecture, engineering, interior design, and planning services. With national expertise and regional leadership, BSA designs LifeStructures – innovative and inviting spaces that not only house the activities of healing, learning, and discovery but actually contribute to them – in order to make a difference for our clients and communities. As such, a LifeStructure is purposeful, a LifeStructure inspires, a LifeStructure delights and a LifeStructure improves lives.

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