

Community Colleges

THE PRACTICE OF BNIM

bnim

ABOUT BNIM

BNIM is an innovative leader in designing high performance environments. BNIM's instrumental development of the USGBC, LEED, and the Living Building concept, combined with projects, methods, and research, shaped the direction of the sustainable movement. Through this involvement, the firm has redefined design excellence to elevate human experience together with aesthetics and building performance. In practice, this multifaceted approach to design excellence has yielded national acclaim, including the AIA National Architecture Firm Award, and consistent design recognition nationally and internationally. BNIM is **Building Positive**, a notion that describes how our practice leverages its collective capacity for design thinking to solve issues at every scale in a way that is focused on building the positive attributes of community and the built environment. Through an integrated process of collaborative discovery, BNIM creates transformative, living designs that lead to vital and healthy organizations and communities.

Community Colleges

THE PRACTICE OF BNIM

The Next Frontier in Innovative Experiential Learning

Student loan debt continues to explode. The technological advances now available has rapidly changed the manner in which education is delivered, and many of our nation's universities simply can't keep up. As Quartz recently pointed out, "the sluggishness owes to the fact that a university is made up of hundreds of stubborn, rooted parts. It is beholden to countless traditions and generations of students served in the past. And so disruption comes slowly..."

Interestingly, it is often community colleges— unfairly perceived by many as the stepchildren of higher education—that are very much at the forefront of innovative, experiential learning, and in many ways are well-equipped to position students for the transition already underway in today's dynamic global economy.

Consider:

- By 2020, an estimated 35 percent of job openings will require at least a bachelor's degree, and 30 percent will require some college or an associate's degree.
- Forty percent of college students are enrolled at one of America's more than 1,100 community colleges, which offer students affordable tuition, open admission policies, and convenient locations. They are particularly important for students who are older, working, need remedial classes, or can only take classes part-time. For many students, they offer an affordable route to a four-year college degree.
- Community colleges are also uniquely positioned to partner with employers to create tailored training programs that meet economic needs within their communities, such as nursing, health information technology, and advanced manufacturing.





The following are just some of the characteristics that position community colleges to be places of dynamic, transformative preparation and learning for years to come:

Doing More with Less

Traditionally underfunded compared to their higher education counterparts, many community colleges have developed a culture of responsible resource stewardship across their respective campuses. This often leads to a natural and strong commitment to high-performing environments. The Tarrant County College Center of Excellence for Energy Technology (CEET) in Fort Worth, Texas has achieved LEED Platinum certification with goals of net zero energy, and it has become quite literally a living teaching and learning laboratory. Like CEET, the new Career and Technical Education (CTE) facility at Johnson County Community College (JCCC) in Overland Park, Kansas is designed as a pedagogical tool, also allowing occupants to observe its inner workings and mechanics. Both facilities feature plumbing, electrical, mechanical, and structural components that are openly visible in strategic locations, giving students and visitors alike the opportunity to learn from the buildings' systems on a daily basis. The CTE building will demonstrate the college's strong commitment to technology and innovation, and will serve as a dynamic academic setting for the programs housed within, including HVAC, electrical, automation, automotive, and continuing education. Finally, the Palomar Community College District Operations and Maintenance Complex in San Marcos, California will serve house the district's facilities personnel for buildings, grounds, and maintenance, as well as providing conference space, staff offices, and shop spaces at Palomar College and other satellite campuses. Innovative design strategies and the building's unique passive design system decreased the required mechanical infrastructure, allowing the team to reallocate the budget towards design instead of building system. This building is designed to achieve LEED Platinum certification and become the first Living Building Petal certified community college in the world, demonstrating the affordability of sustainable design, even within confined budgets.

Experiential Learning

So much of the appeal of community colleges is the notion of “learning by doing” and the facilitation of customized or tailored offerings to meet people where they are in their lives. As an innovation hub where the “making of things” through prototyping, design and production can spur innovation and entrepreneurship, the Center for Advanced and Emerging Technology (*previous page*) at Metropolitan Community College in Omaha, Nebraska is designed around a variety of learning environments to facilitate experiential learning. The building provides collaborative office and conferencing facilities; active learning classrooms rich with analogue and digital technology; hands-on design and fabrication labs; emerging labs; and a high-bay innovation space. The equipment and technology were informed by the expertise of industry partners, mirroring the set-ups that students will utilize after graduation.





Long Life, Loose Fit

Central to the long-term success of many community college environments is the concept of “long life, loose fit” — that the ability to address future, unanticipated needs is something that can in fact be designed. In her excellent piece, Vanessa Quirk states that “many community colleges—by virtue of their being driven by fiscal responsibility—have been ahead of the curve in flexible design for decades. Without the resources to create single-use buildings for gyms, libraries, classrooms, etc., many community colleges have embraced the collaborative, hybrid spaces we are now seeing pop up in universities around the globe.” The new Fine Arts + Design Studios building (*above*) at Johnson County Community College (JCCC) in Overland Park, Kansas is no exception, and it will bring students and faculty together from graphic design, sculpture, ceramics, metals, painting, drawing, photography, and filmmaking programs. By placing them under one roof, the building and its spaces will be functional, flexible, have plentiful daylight, and will provide a framework for new synergies and enhanced collaboration across disciplines that are currently dispersed across campus.

Community colleges will continue to provide tremendous value in part because they are simply more nimble compared to most alternatives, offer a well-balanced, highly customizable and personalized suite of useful offerings, and are open and accessible to everyone. It is the community colleges’ unique blend of resourcefulness, pragmatism, and innovation that is needed now more than ever.

Center for Advanced and Emerging Technology

METROPOLITAN COMMUNITY COLLEGE
OMAHA, NEBRASKA

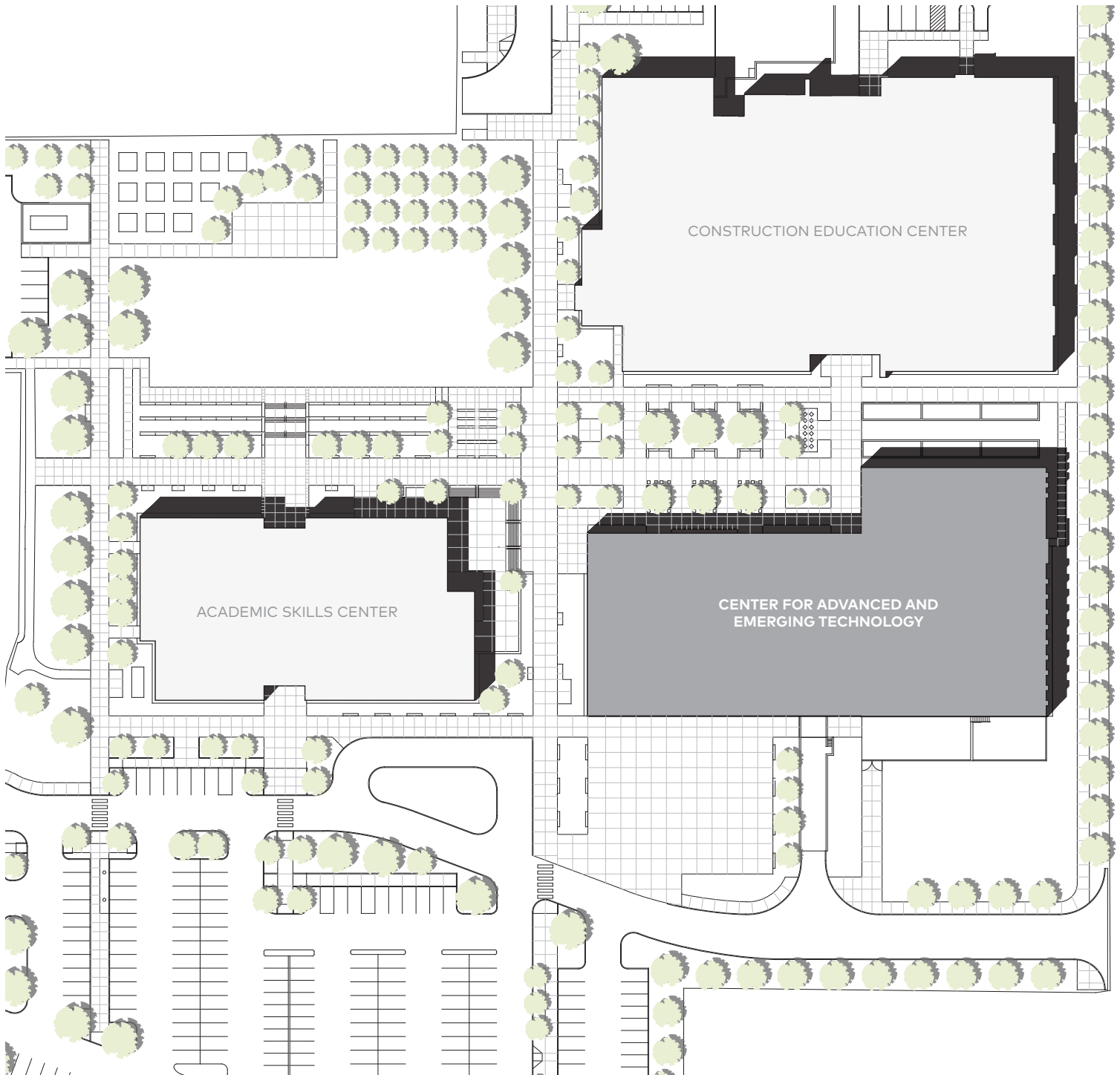


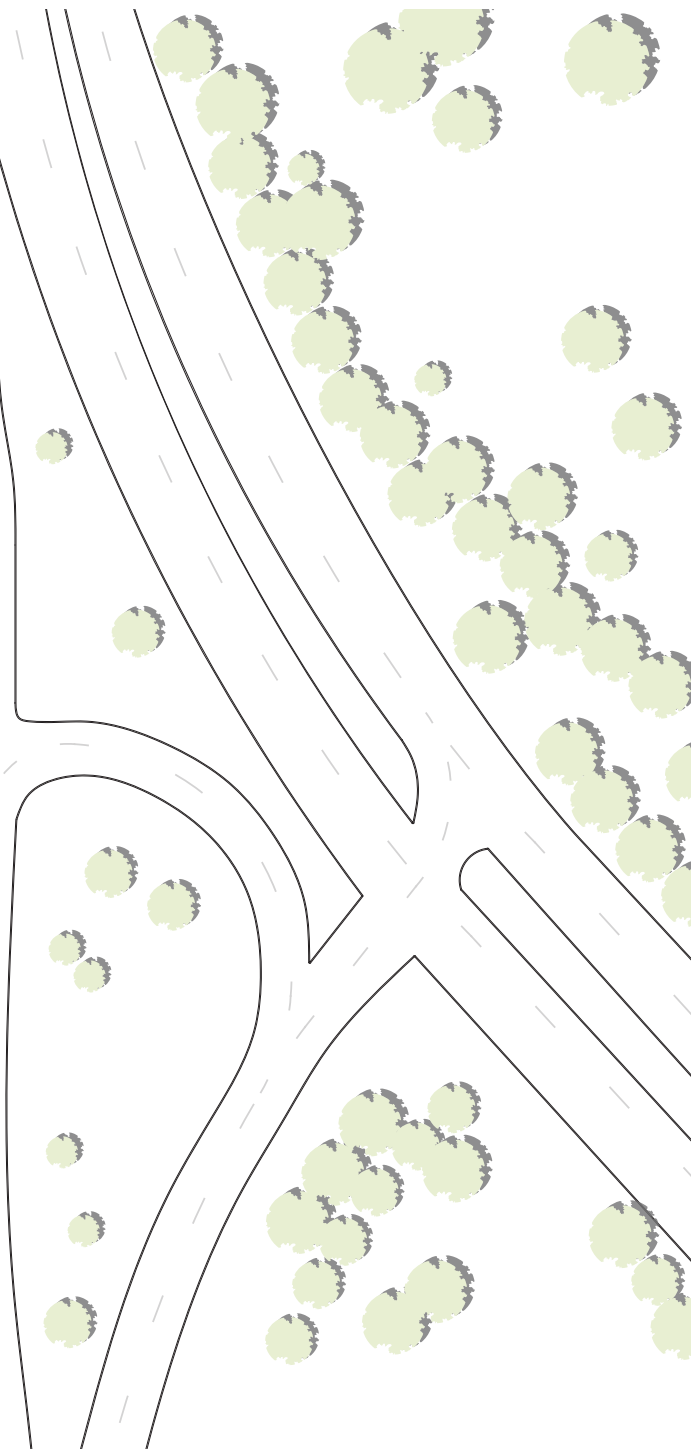


The Center for Advanced and Emerging Technology (CAET) encourages the making of things, where prototyping, design, and production spur innovation and entrepreneurship — filling a niche for makerspace that did not exist in Omaha. Students, faculty, and industry partners are provided ample space for training, fabrication, and collaboration, in addition to necessary support spaces such as multi-modal work areas, private offices, and an outdoor terrace with a green roof. CAET's layers of transparency progress from a two-story open volume off of the main corridor, called Innovation Central, to enclosed, focused space for administrative functions. Intentionally flexible, Innovation Central can house large research and development equipment, facilitate learning, accommodate presentations, or serve as an exhibit hall. The second-floor offices are perched with views into Innovation Central, quite literally putting knowledge on display. A low, red-brick box opposite Innovation Central comprises the fabrication laboratory, industrial spaces, and emerging labs for industry partnerships.

Executive Architect: Holland Basham
Design Architect / Architect of Record: BNIM

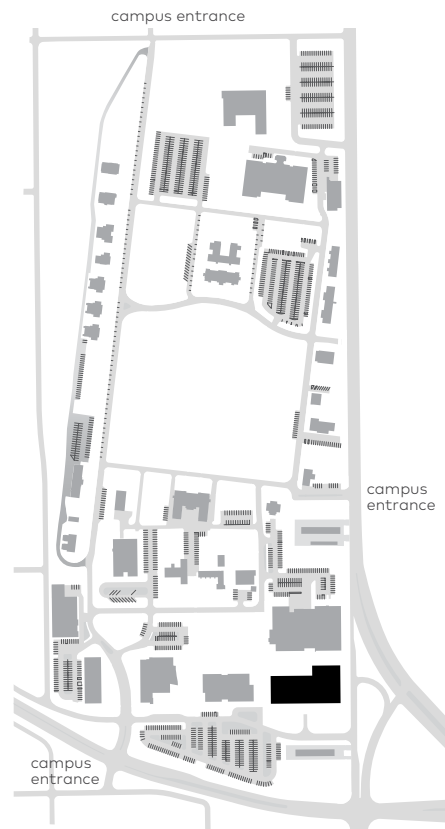
65,000 SF
LEED Gold
Completion in 2017





0 64'

Site Plan



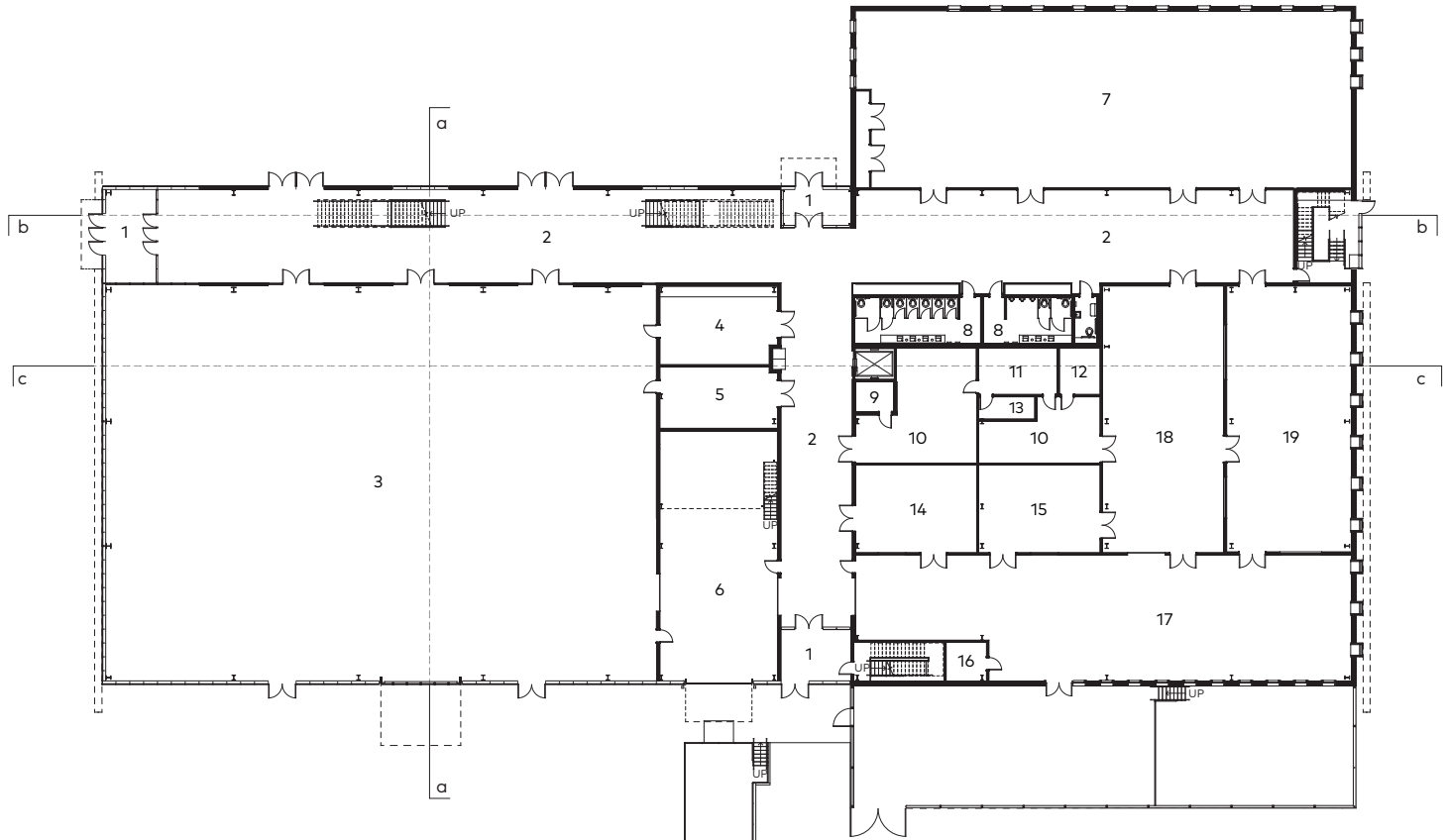
CAET is sited at the southeast corner of a community college campus that occupies an historic (1868) United States Army fort. The facility was designed concurrently with two other campus facilities, created by other architects, that share a common, pedestrian-focused site development. This common site was conceived as part of a much needed urban redevelopment project for the neighborhood. All three buildings share red brick "bones" with the historic buildings on campus, but look to the future and surrounding community context through the blending of modern materials, such as metal and precast concrete.

CAET's core purpose is to develop innovative academic programming that targets industry-specific advanced and emerging technologies. Emerging technologies are largely undefined and constantly evolving; therefore, the building was designed as a vessel of various scales and space typologies, embedded with flexible infrastructure to allow for invention and pilot-scale application between students, faculty, and industry partners. CAET includes an ecosystem of design and fabrication labs, flexible emerging labs, a large innovation high-bay space with exterior plaza, technology-rich training spaces, and a spectrum of office and collaboration spaces.





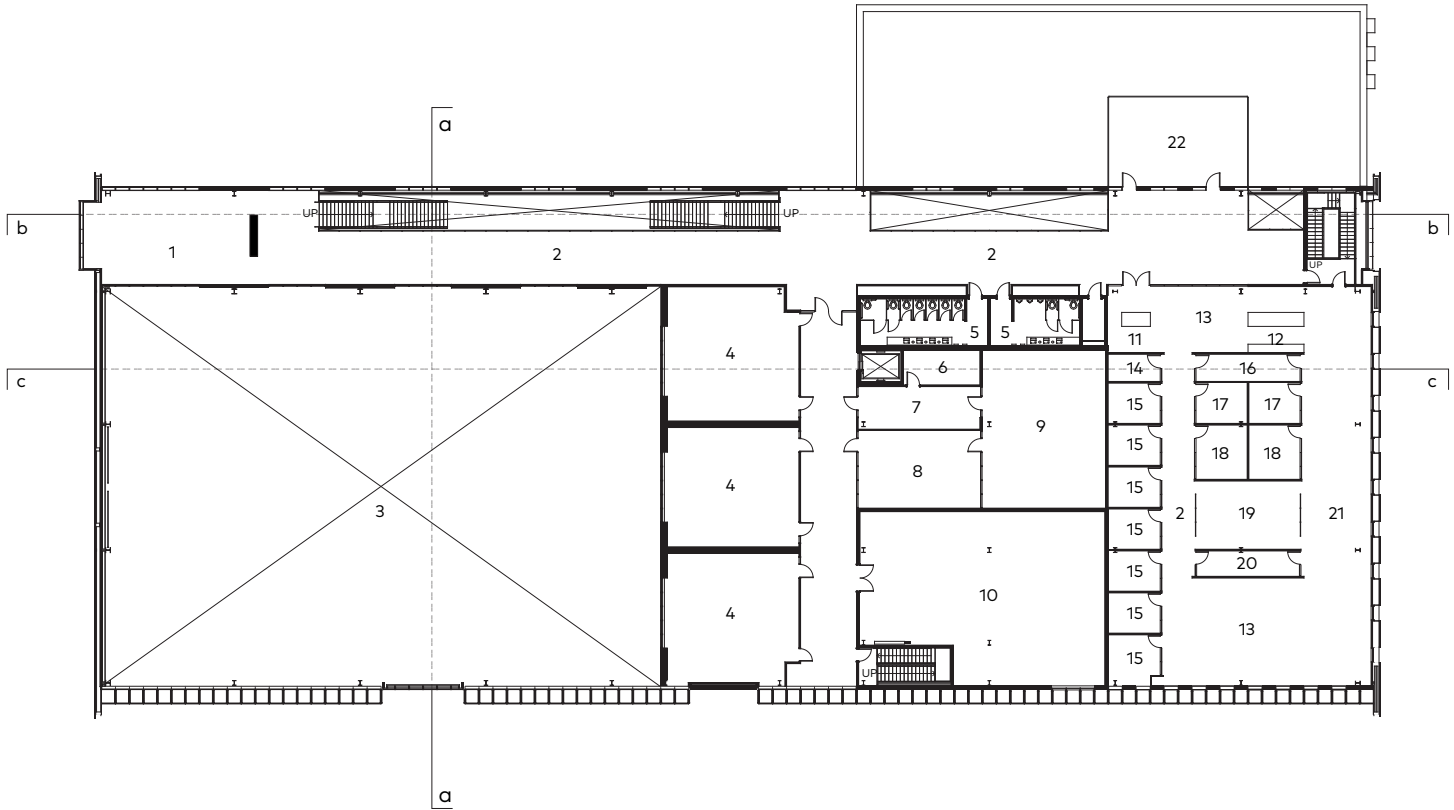
- | | |
|-----------------------------|-------------------------|
| 1 Vestibule | 10 Storage |
| 2 Corridor | 11 Electrical |
| 3 Innovation Central | 12 Data |
| 4 Kitchen | 13 Electrical Emergency |
| 5 Custodial | 14 Electronic |
| 6 Loading/Receiving/Storage | 15 Fit & Finish |
| 7 Emerging Labs | 16 Utility Entry |
| 8 Restroom | 17 Metal Prototyping |
| 9 Elevator Room | 18 Wood Prototyping |
| | 19 Design Room |



0 16

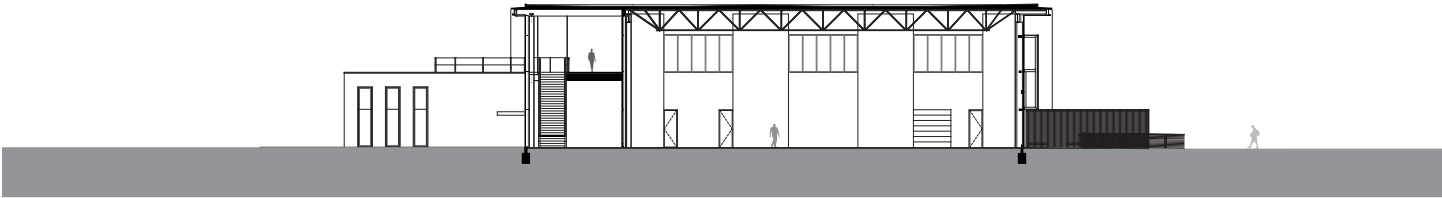
First Floor Plan

- | | |
|-----------------------------|------------------|
| 1 Collaboration Space | 12 Kitchenette |
| 2 Corridor Social Commons | 13 Work Area |
| 3 High Bay Space | 14 Phone |
| 4 Training Room | 15 Office |
| 5 Restroom | 16 Storage |
| 6 Data | 17 Flex Space |
| 7 Data Build | 18 Small Meeting |
| 8 Data War | 19 Work Room |
| 9 Academic Data | 20 Resource Room |
| 10 Mechanical | 21 Hoteling |
| 11 Reception | 22 Roof Terrace |

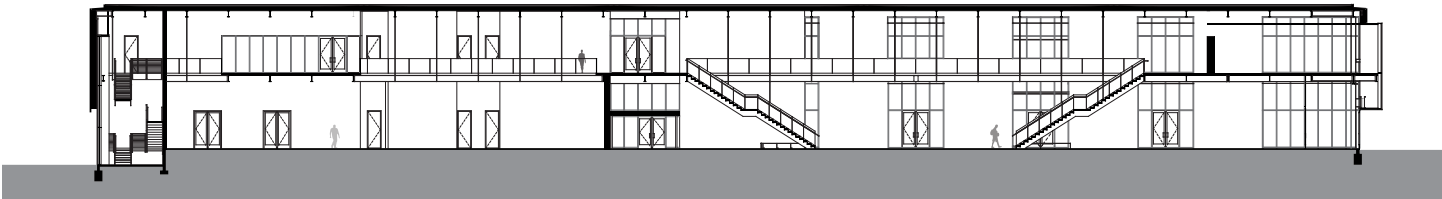


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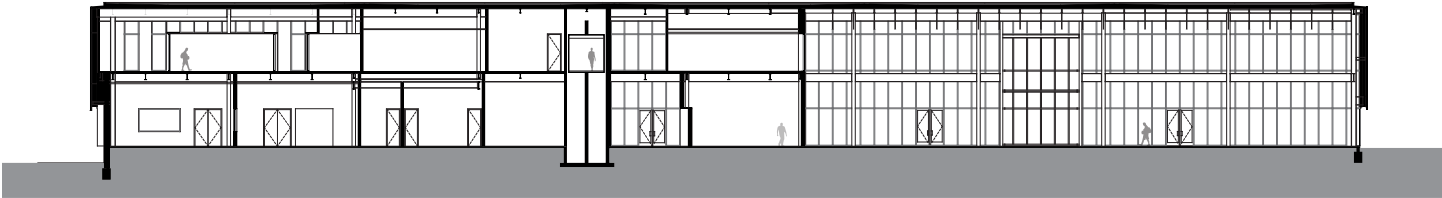
Second Floor Plan



Section a-a



Section b-b



Section c-c

0 16

Building Sections



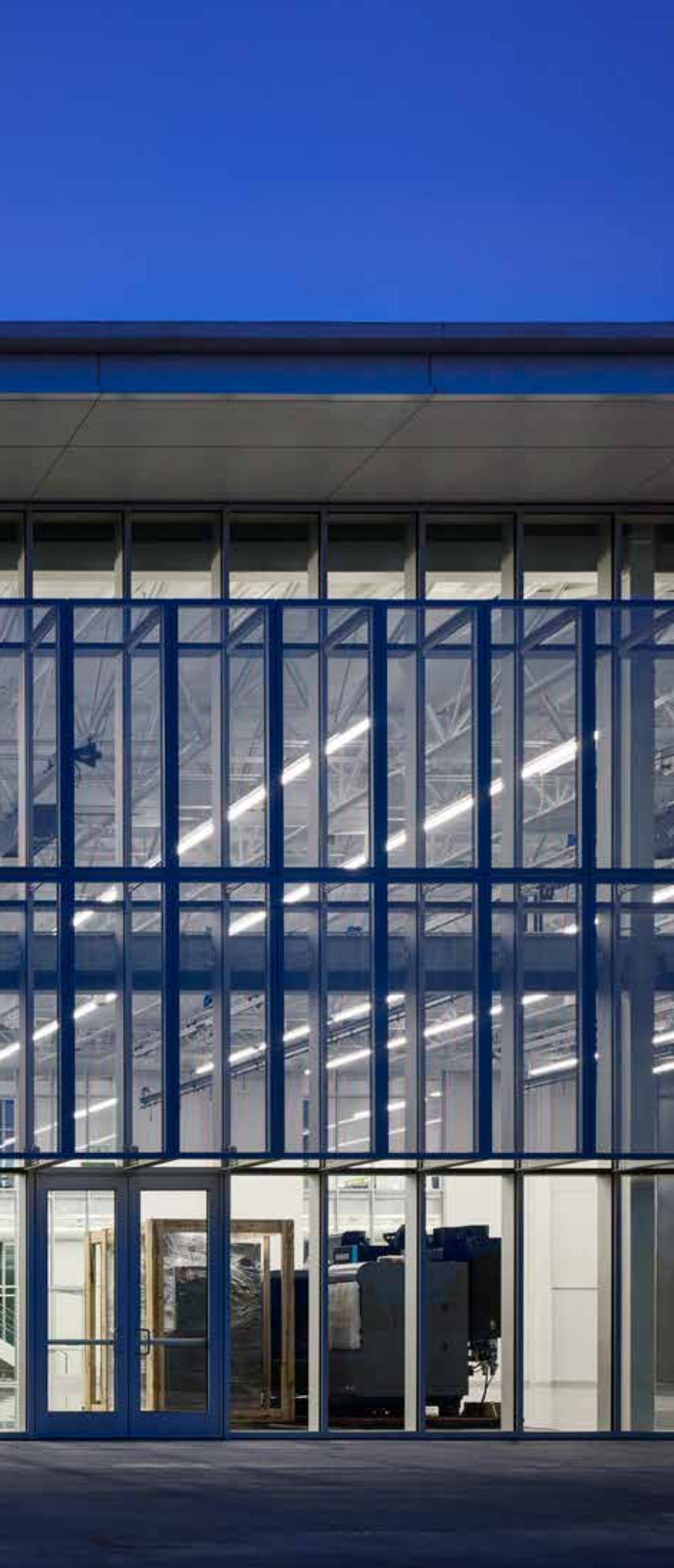
Innovation Central





CAET serves as a new educational front door to the community with high transparency between the building and passersby. Extensive transparency in the Midwest climate presents challenges with heat gain and glare; thus, the design strategically organizes space and glass to respond to function and orientation. Extensive exterior glass walls organize the high-bay innovation space, and provide daylight and views deeper into interior training rooms, reducing glare. Smaller daylighting glass panels organize office and fabrication spaces. A perforated metal veil limits solar gain and becomes transparent in the evening.





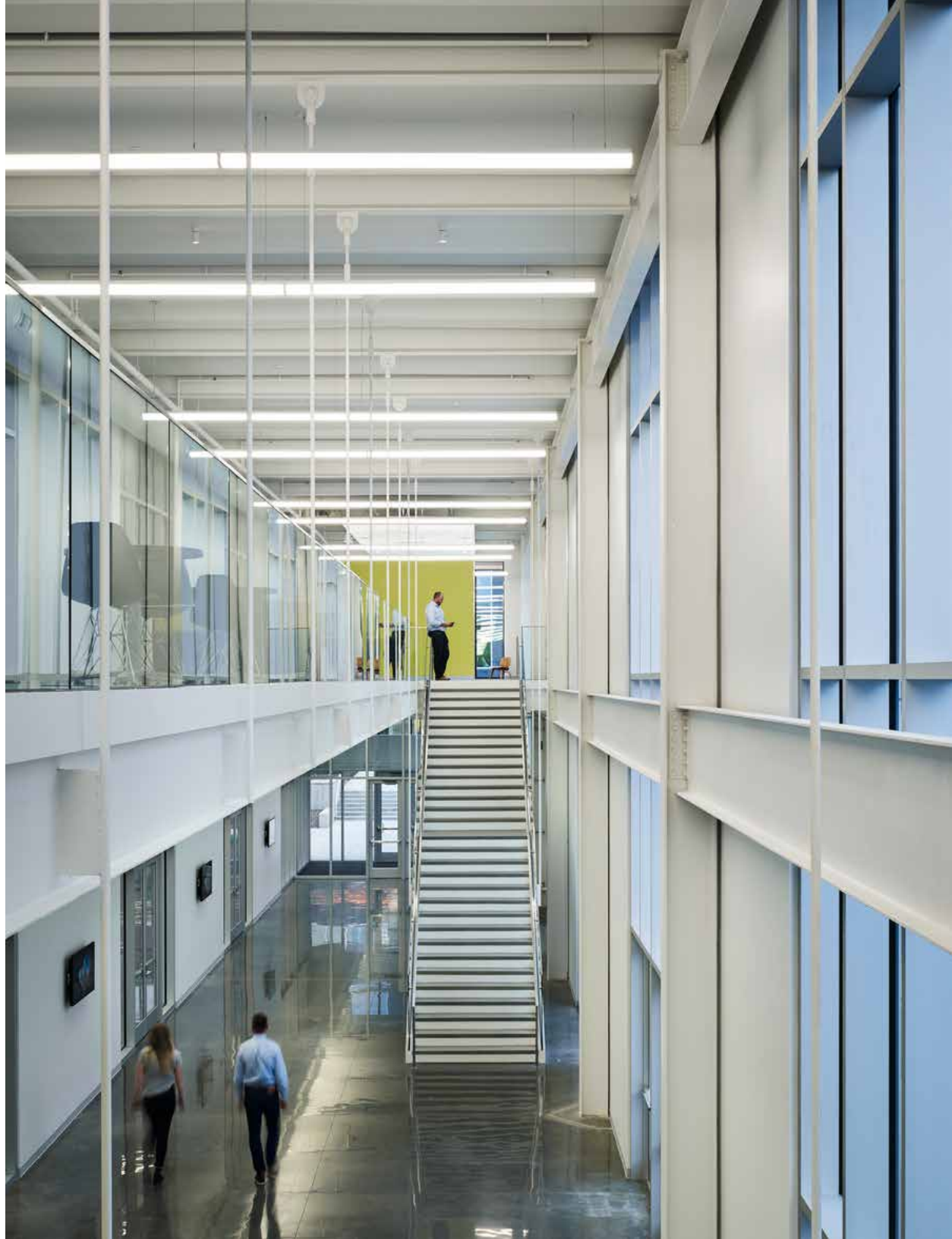


Upper Social Commons - looking west

CAET industry partners began their involvement with the programming and design process, now serve as a committee to identify future jobs training needs in the surrounding region, and will continue to contribute as collaborative partners in the design, making, and testing of "things" utilizing the emerging laboratories and design and fabrication labs. In addition, Metropolitan Community College (MCC) and the Construction Manager held presentation receptions throughout MCC's service region, particularly for small businesses and trades interested in involvement in the project's construction to help grow the area's economy.







Office Suite - looking south





Collaboration Space
Emerging Labs (clad in brick) beyond









View from northwest

CAET established and achieved strong sustainable goals, fulfilled a commitment to LEED Certification, and utilized a highly integrated design process. The project redeveloped an existing urban site, improved stormwater management for the surrounding urban area, and created pedestrian and public transportation connections to the neighborhood. The building design holistically incorporated recycled content materials, diverted waste from the landfill, and created a highly productive and energy efficient interior environment through integrated water, HVAC, and lighting systems. CAET was optimized for daylighting and lighting controls and received a LEED Gold Certification in December 2017.



Green Roof over Emerging Labs - view from northeast (top)
Emerging Labs (clad in brick) - view from northeast (right)



Maintenance and Operations Complex

PALOMAR COMMUNITY COLLEGE DISTRICT
SAN MARCOS, CALIFORNIA





The Palomar College Operations and Maintenance Complex will serve buildings and grounds at Palomar College and other satellite campuses. It will house the district's facilities personnel for buildings, grounds, and maintenance as well as providing conference space, staff offices, and shop spaces. The project consists of a large shop building and small office building that are linked through a series of outdoor paths and spaces on an irregularly shaped site. While campus operations facilities are often relegated to secondary locations, the project is located on what was an existing surface lot at a highly visible campus gateway. The design team has used site topography and the strategic placement of the building to screen vehicular uses and to create a series of memorable indoor and outdoor spaces that are visible from pedestrian and vehicular entries to the campus. The team worked with Palomar staff to map the many vehicular and maintenance circulation patterns in order to optimize the performance of the facility while reducing the overall vehicular footprint.

28,000 SF
Completion in 2018
Designed to achieve Net Zero

2/3rds

THAT FUNCTIONS AS A
WORKSHOP AREA,
HAS NO MECHANICAL
SYSTEM





An aerial architectural rendering of a modern commercial building. The building features a large, flat roof covered in blue solar panels. The exterior walls are a mix of orange-brown horizontal siding and large glass windows. A parking lot with several cars is visible to the left of the building. In the foreground, there is a landscaped area with green plants, trees, and a paved walkway where a few people are walking. A road with a few cars is at the bottom of the image.

80%

STRATEGIES RESULT IN
REDUCTION OF MECHANICAL
SYSTEMS UP TO 80%
OF THE TIME



SUSTAINABLE STRATEGIES

- 100% Daylight for all Office Spaces
- 100% Natural Ventilation for all Shop and Offices
- Primarily Native Californian Landscape
- 86% Cooling Load Reduction
- 29% Heating Load Reduction
- 105% Renewable Energy Provided by Solar Panel Array
- 20.95 Current Designed EUI

The Center of Excellence for Energy Technology

TARRANT COUNTY COLLEGE DISTRICT
FORT WORTH, TEXAS







BUILDING
ENVELOPE

20%
REDUCTION
FROM ASHRAE

89,000 SF
Completion in 2015
LEED Platinum Certified

The Tarrant County College Center of Excellence for Energy Technology (CEET) will house the Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) program, as well as training programs for oil, gas and renewable energy technologies. Located in Fort Worth, Texas, this facility sets a new course for development on a campus largely built in the 1970s and will be a premier training center for its students, faculty and the greater community. The project has achieved LEED Platinum certification, but has also set a goal of net zero energy use. Aggressive sustainability goals established by TCCD, and refined during programming, created a foundation for vetting project decisions. Led by BNIM in partnership with Freese and Nichols, design was a collaborative effort involving faculty, administrative and campus facilities personnel.

AWARDS

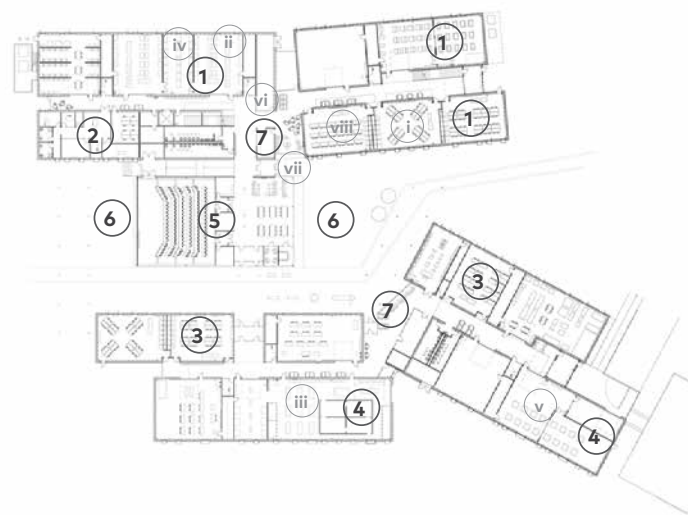
2016 ENR TEXAS AND LOUISIANA
Best Green Project

BUILDING
ENVELOPE

12.5%

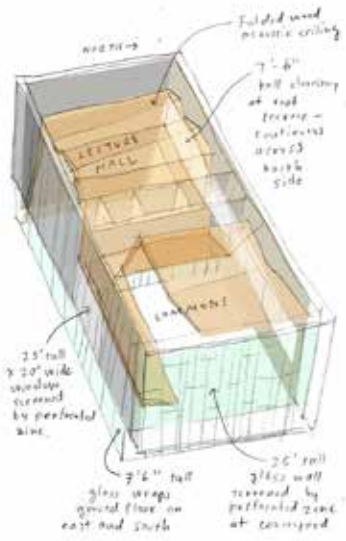
BELOW IECC*
BASELINE

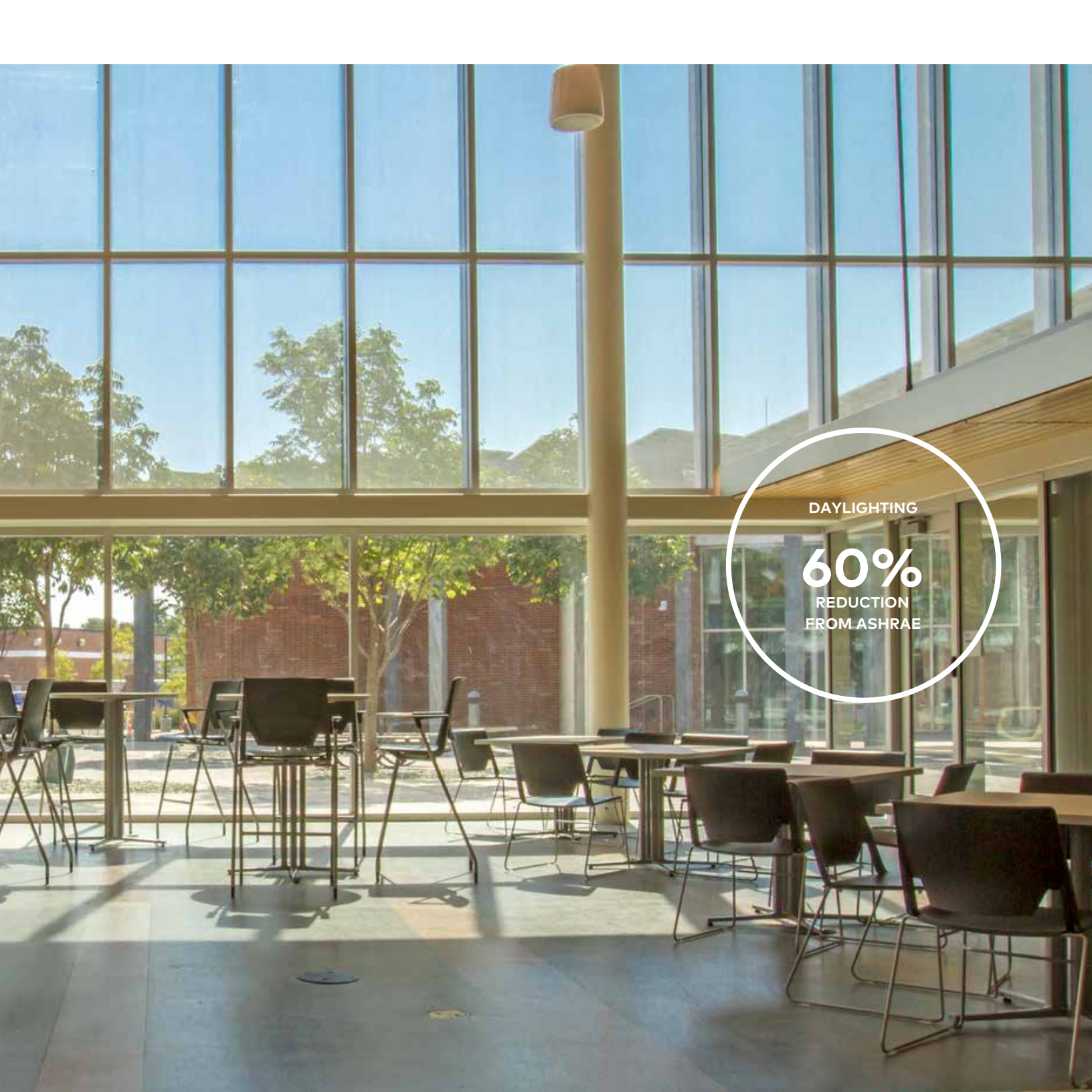




KEY

- 1 Two Story Lab/Classroom
- 2 Admin Offices
- 3 One Story Lab/Classroom
- 4 Double Height Labs
- 5 Commons
- 6 Courtyard/Outdoor Classroom
- 7 Circulation + MEP Hub





DAYLIGHTING

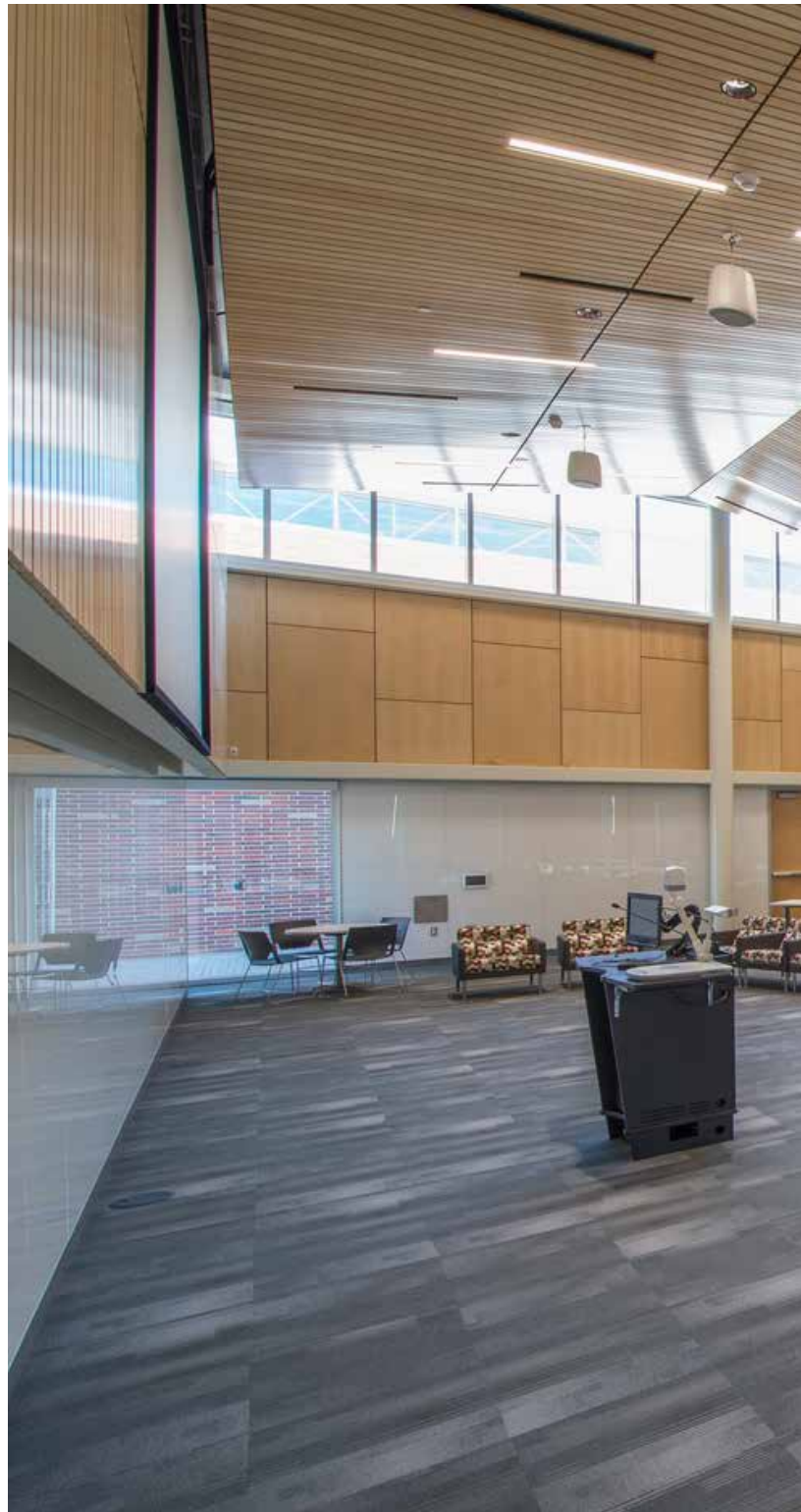
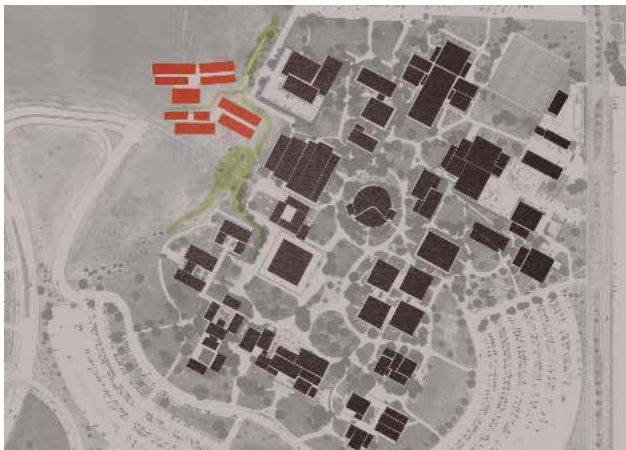
60%

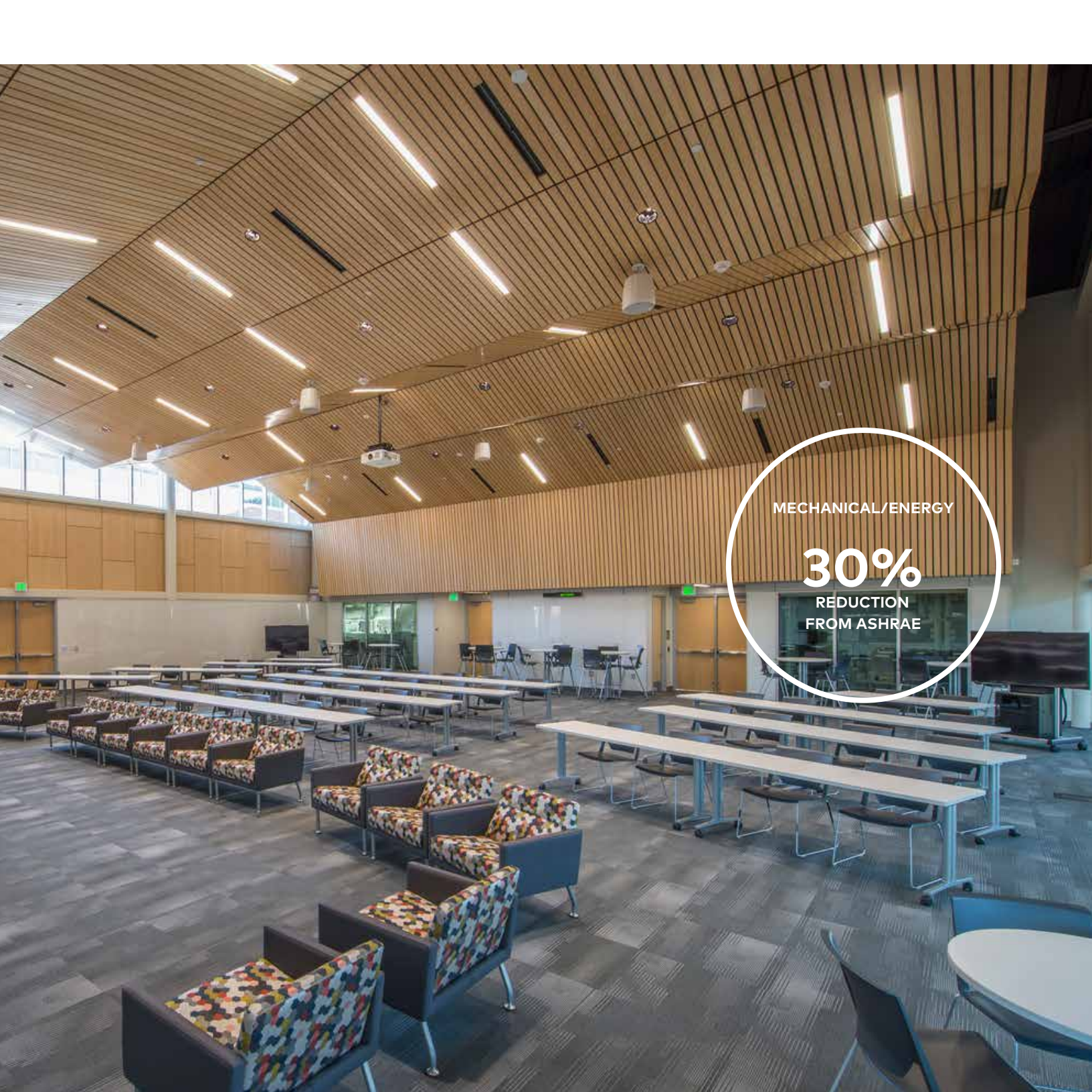
REDUCTION
FROM ASHRAE

The Tarrant County College Energy Technology Center (ETC) will house the Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) Program, as well as training programs for oil, gas and renewable energy technologies. Located in Fort Worth, Texas, on the TCCD South Campus, this facility sets a new course for development on a campus largely built in the 1970s and will be a premier training center for its students, faculty and the greater community. The project seeks to achieve and go beyond LEED Platinum with a goal of net zero energy use. Aggressive sustainability goals established by TCCD, and refined during programming, created a foundation for vetting project decisions. Lead by BNIM in partnership with Freese and Nichols, design was a collaborative effort involving faculty, administrative and campus facilities personnel.

With goals of LEED Platinum and net zero energy, the ETC will operate as a high performance building and will be a living, teaching and learning laboratory. The building will be a pedagogical tool allowing occupants to observe its inner workings and mechanics. Plumbing, electrical, mechanical, and structural components will be openly visible in strategic locations, giving students and visitors the opportunity to learn from the building systems on a daily basis. Digital displays will provide real-time feedback and informative data about how the building systems are performing. In essence, the entire building will become an instructional environment.

new building and original mid-century campus





MECHANICAL/ENERGY

30%

REDUCTION
FROM ASHRAE





KEY

- i General Classroom
- ii Refrigeration Principles Lab
- iii Duct Fab + Installation Lab
- iv Refrigeration Principles Welding Lab
- v Climate Lab
- vi Circulation + MEP Hub
- vii Foyer
- viii Computer Lab

Fine Arts + Design Studios

JOHNSON COUNTY COMMUNITY COLLEGE
OVERLAND PARK, KANSAS



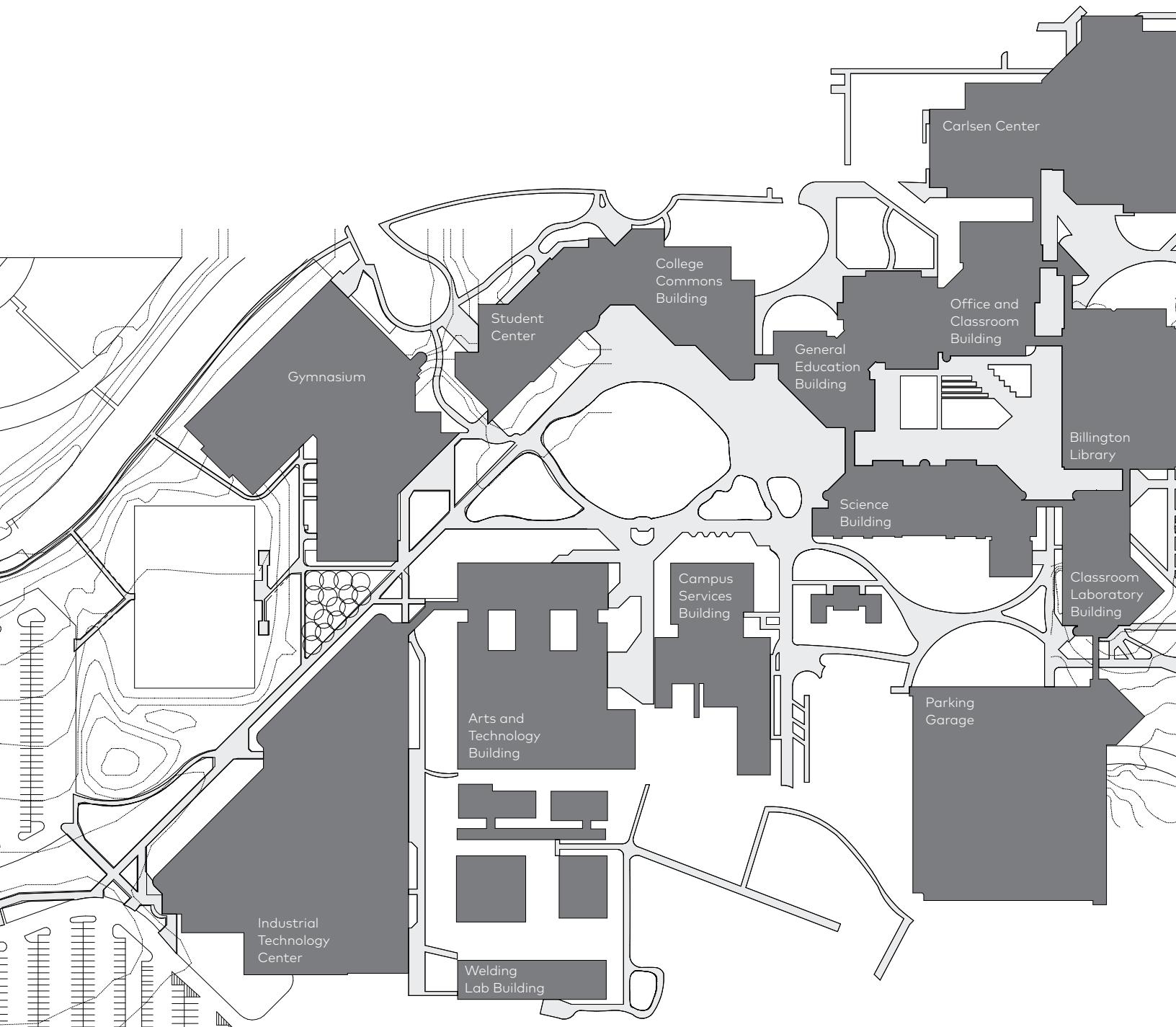


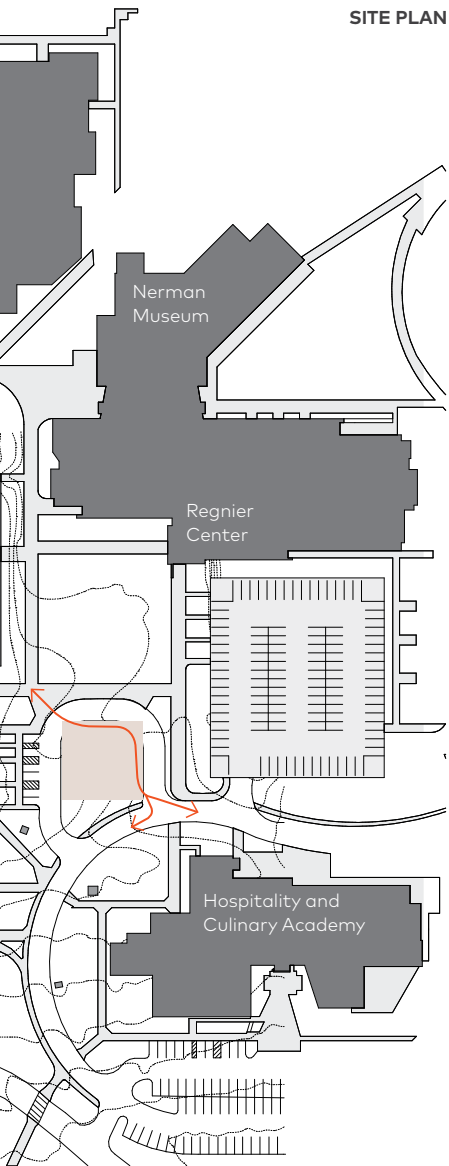
The new Fine Arts + Design Studios building at Johnson County Community College (JCCC) will bring together the following disciplines into a single, carefully crafted facility: graphic design, sculpture, ceramics, metals, painting, drawing, photography, and filmmaking. The building and its spaces will exemplify the notion of learning by doing, providing a framework for new synergies and enhanced collaboration across disciplines that are currently dispersed across campus.

In addition to providing flexible and vibrant interior studios, the building is thoughtfully sited to provide intimately scaled exterior spaces for the creation and display of art, and integrate and strengthen campus connections. The building will also anchor a new arts neighborhood on campus with its adjacency to JCCC's successful Wylie Hospitality and Culinary Academy Building and the Nerman Museum of Contemporary Art.

The design of the Fine Arts + Design Studios project has included careful consideration of the building envelope, energy use, occupant health and well-being, building systems and connection to the surrounding campus. The project is currently on target to achieve a LEED V4 Silver rating. It is anticipated that the building will achieve a total energy savings of about 25% over the baseline case.

40,000 SF
Completion in 2018





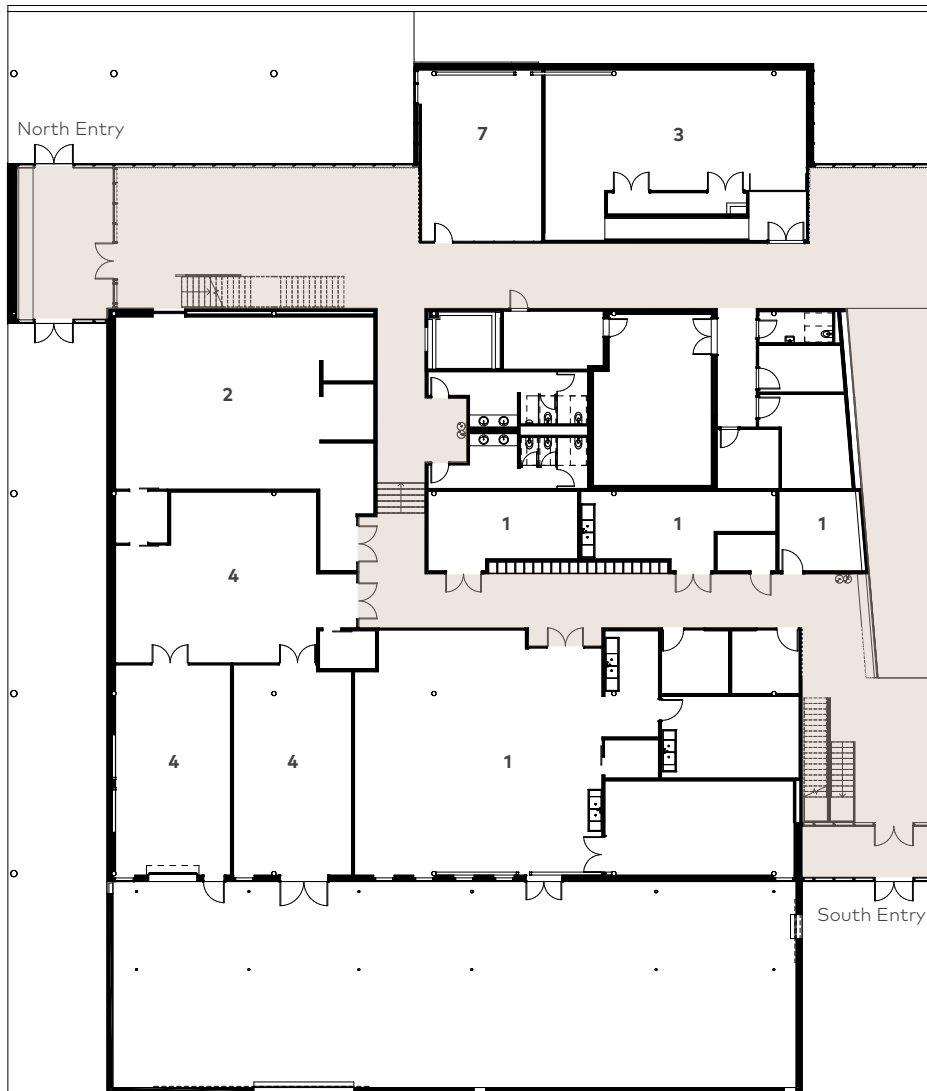
Building as Gateway and Connector

The JCCC Fine Arts and Design building brings together art and design disciplines into a single facility on campus for enhanced collaboration across disciplines and greater synergy between Graphic Design and Fine Arts. It better integrates HCA (Hospitality and Culinary Academy) with the campus core.

The placement of building on site creates and frames intimately scaled exterior spaces for the creation and display of art and to strengthen campus connectivity. The building anchors a new arts neighborhood/district on campus with adjacency to HCA and the Nerman Museum of Contemporary Art drawing students, faculty, industry and the community.

The building provides flexible and vibrant maker spaces and supports various scales of work in light-filled teaching and learning environments.

The interior "street" serves as gallery/display, circulation, critique, gathering, instruction, mixing, etc. Project leverages every inch of the building for display and critique.



FIRST FLOOR



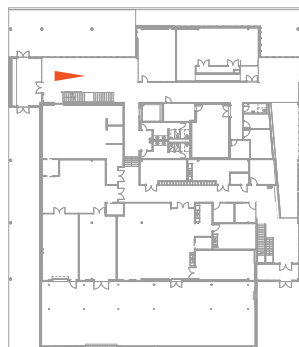
- 1 Ceramics
 - 2 Metalsmithing
 - 3 Photo + Film
 - 4 Sculpture
 - 5 2D Arts
 - 6 Graphic Design
 - 7 Multi-Use Space
 - 8 Student Production/Lounge
 - 9 Crit/Gallery Space
- Circulation through the building



SECOND FLOOR

North Entry

Informally referred to by the project team as "the Street" this north entry and corridor which expands to the east facade and connects to the southeast entry will serve as gallery space for both 2D and 3D art to be displayed. Exterior walkways allow for the viewing of work form the outside in through full height glazing along "the street". The panelized expanded metal ceiling above provides an overhead canvas for hanging work while integrating a flexible track lighting system. The Mixed-Use space beyond is not dedicated to a specific department and can therefore be used for a variety of purposes such as formal gallery space, special exhibits, special project space, classroom, etc. It has fully operable glass walls that can be opened up for special events. The connecting stair with clerestory above filters natural light into the space. This is duplicated near the southeast entry as well.







Crit/Gallery Space

Located on the second floor near the south connecting stair, this Crit/Gallery space is another area that is not dedicated to a specific department and, therefore, providing flexibility to the users. Both planned and spontaneous activities will take place here ranging from special exhibits, small group presentations, special projects, and classes.



Student Production/Lounge

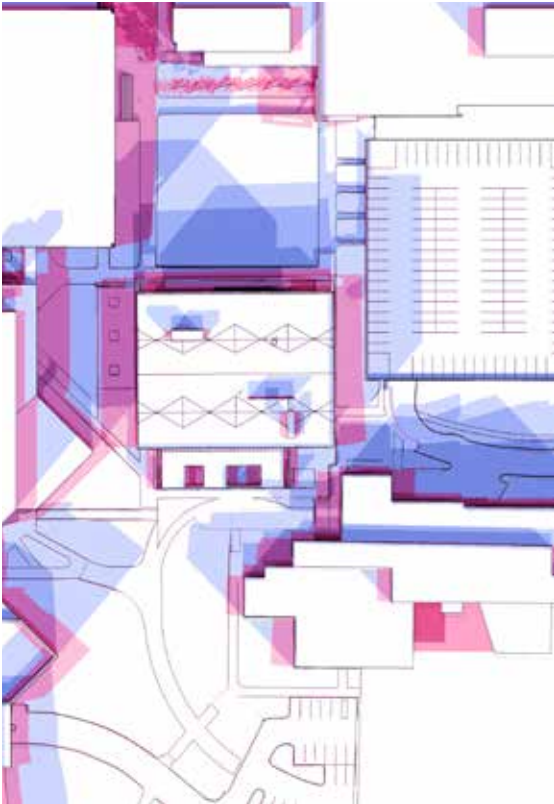
This Student Production space and lounge will not only serve as a space to help students get their work done outside of class but will also encourage the cross-pollination of programs as a place to gather and retreat away of the classrooms and studios. Visibility to and collaboration with students from the various art and design programs is a critical project goal. This space provides access to network computers, art supplies and equipment, storage for work, vending machines, and a variety of postures ranging from comfortable seating to standing. This area is located near the connecting stair to the gallery space below with other amenities directly adjacent including Print Lab/Materials Check-Out, Library for shared resources, and staff and faculty offices. All the gypsum walls are constructed with plywood backing so that various art can be displayed throughout all public corridors. Natural daylight floods the space by way of clerestories and large windows.





Painting Studio

The Painting studio with optimal northern light, gallery walls, high ceilings, flexible lighting, open floor space, updated technology and various storage spaces will support the teaching of the arts. A specialized ventilation system is integrated into the walls to maintain healthy indoor air quality.



Summer and Winter Shade Overlays

Summer	Winter
9 am	9 am
12 am	12 am
3 am	3 am



Plant Typologies Based on Sun

Full Sun
Part Sun
Full Shade





Landscape

The campus landscape at Johnson County Community College (JCCC) is similar to other community college landscapes in many ways, yet is also uniquely different. The gathering spaces between the academic buildings vary in scale, from large, more public courtyard spaces or amphitheater style spaces down to small, very intimate areas for personal study or reflection. All of these spaces, despite their scale, are enhanced by a lush, very diverse and comprehensive palette of plant material, unlike the majority of community college campuses. The landscape at the Fine Arts + Design Studios building will be no different, it will learn from its contextual surroundings and microclimate and establish unique landscape typologies that vary in function and style. There will be a large, minimal lawn area for active play, a shaded hardscape area for passive gathering and maybe most importantly, a sculpture garden, where large scale art pieces created by the students in the new academic building can be showcased, amid a dense ground plane of ornamental plantings. All of these plantings will be native, assisting in stormwater treatment and minimizing long term maintenance needs.









Career & Technical Education Building

JOHNSON COUNTY COMMUNITY COLLEGE
OVERLAND PARK, KANSAS

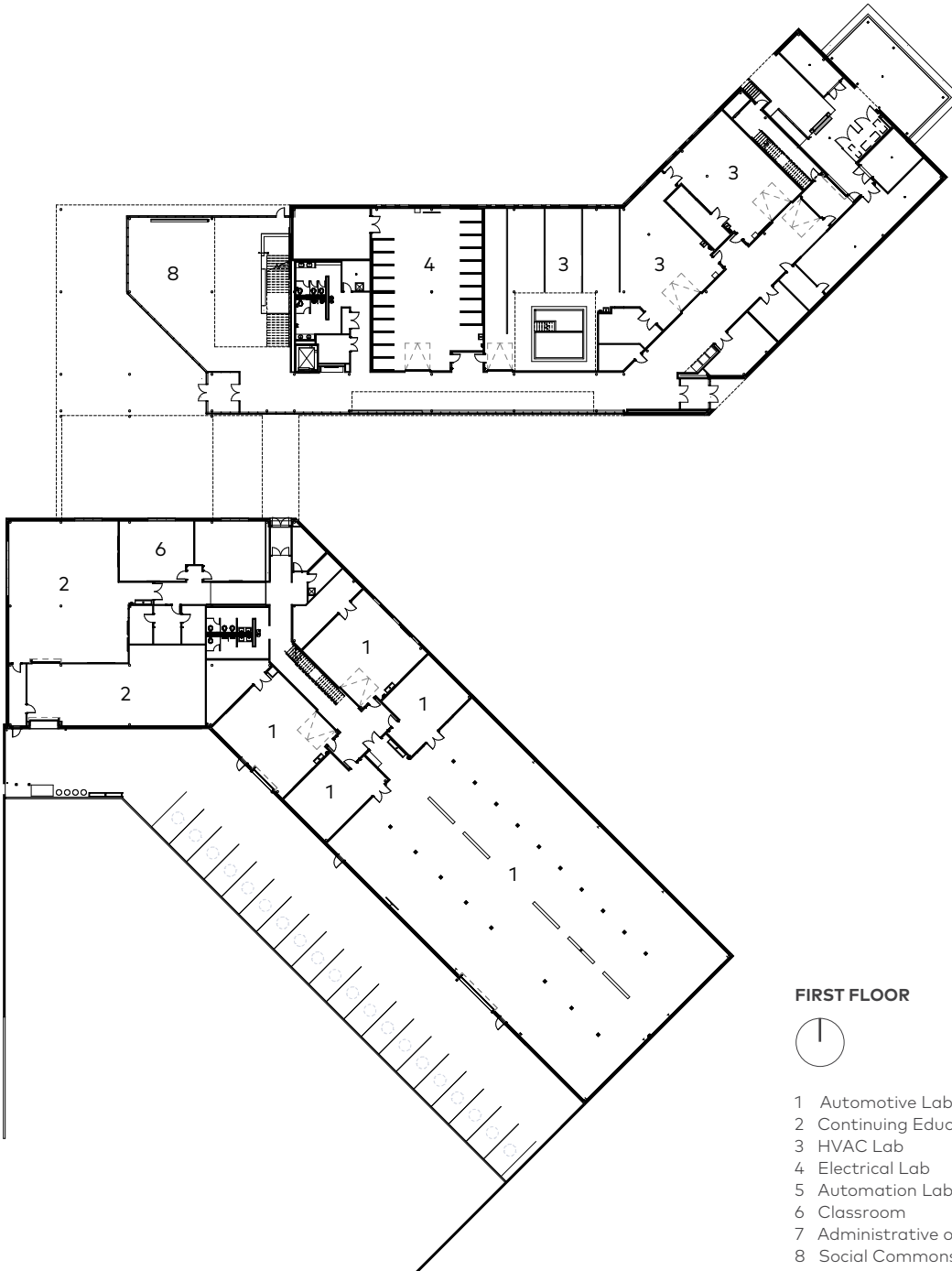




The new Career and Technical Education (CTE) facility at Johnson County Community College will anchor a new career and technical neighborhood on campus, demonstrate the college's strong commitment to technology and innovation, and provide unique opportunities for collaboration and partnerships. The facility will serve as a dynamic academic setting for those programs housed within the building, including HVAC, Electrical, Automation, Automotive & Continuing Education. The CTE facility will operate as a high-performance environment and be a living, teaching and learning laboratory, allowing occupants to observe its inner workings and mechanics. Plumbing, electrical, mechanical, and structural components will be openly visible in strategic locations, giving students and visitors the opportunity to learn from the building systems on a daily basis.

The CTE project serves as a gateway: in addition to providing vibrant interior spaces for learning and instruction, the building is thoughtfully sited to provide a rich variety of exterior spaces and unique landscape typologies that vary both in function and style. There will be a large lawn area for active play and shaded hardscape zones for passive gathering and events. Large native meadows of prairie grasses will provide a soft, lush contrast to the refined material expression of the building. Such spaces were carefully conceived to be performative, assisting in both stormwater treatment as well as minimizing long-term maintenance needs, and designed to integrate and strengthen important campus connections.

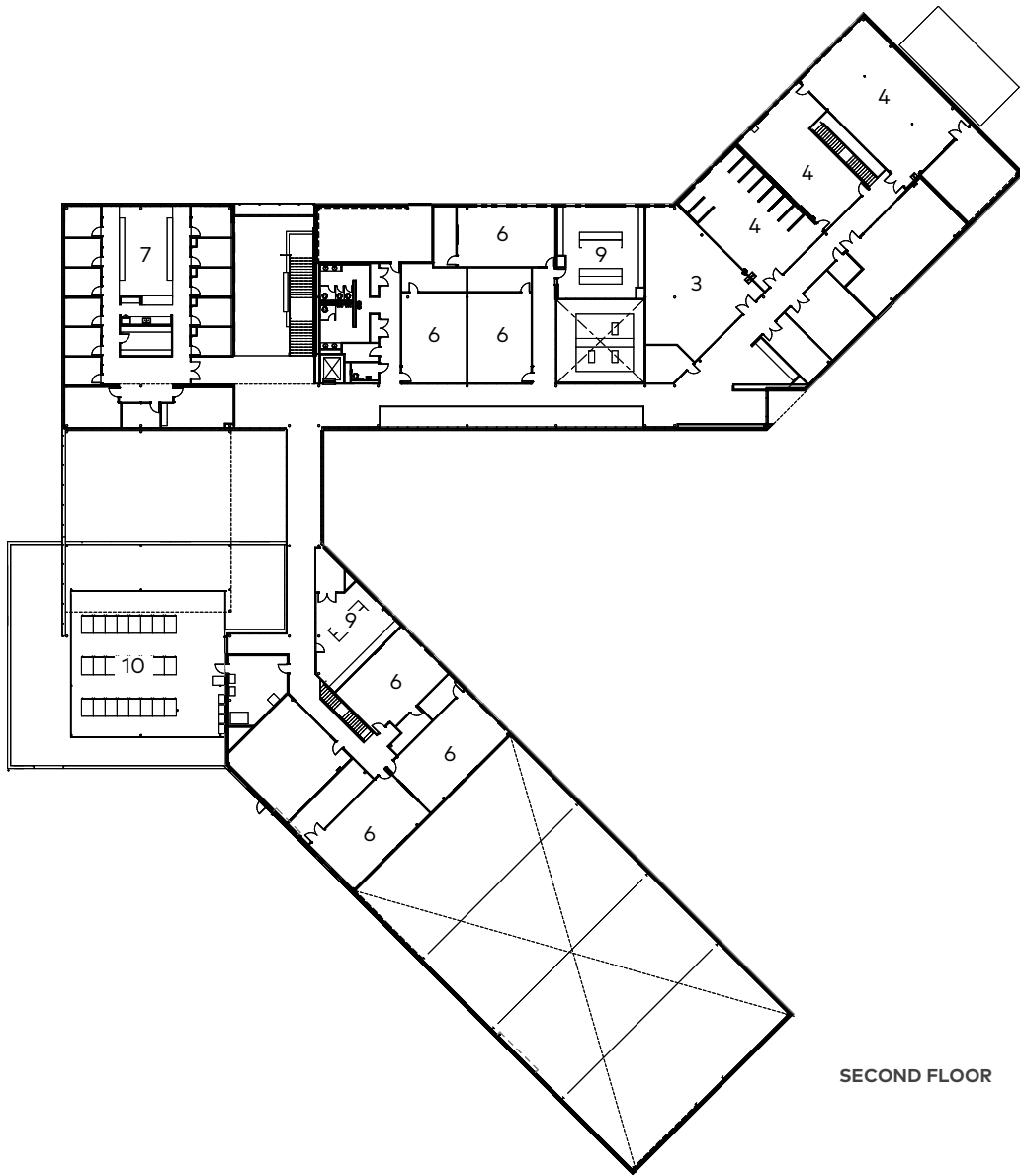
72,000 SF
Completion in 2018



FIRST FLOOR

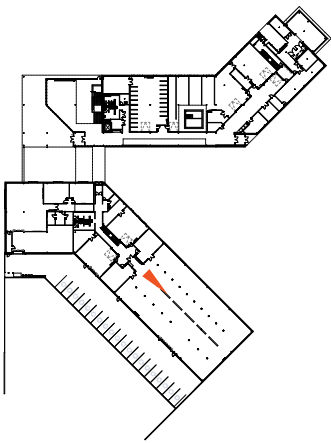


- 1 Automotive Lab
- 2 Continuing Education Lab
- 3 HVAC Lab
- 4 Electrical Lab
- 5 Automation Lab
- 6 Classroom
- 7 Administrative office Suite
- 8 Social Commons
- 9 Computer Lab
- 10 Solar Lab



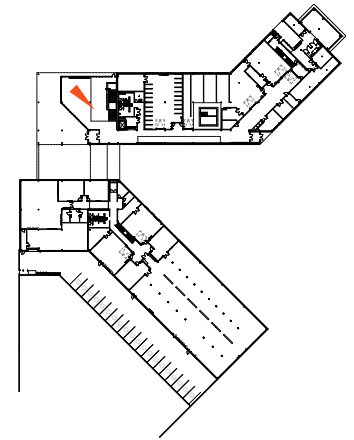
Automotive

The Automotive program is housed within the south bar of the project and is the largest academic program in the building. The Automotive area has both modern classrooms, teaching labs for transmission and engine maintenance, a state of the art indoor auto bay and outdoor auto storage. The indoor auto bay is sited for student views into the building while strategically allowing daylight to enter the space for light sensitive equipment. The landscape to the south of the auto bay is sculpted into a berm and planted with native grasses creating a contextual meadow to both fully screen and secure the auto yard. The Automotive department shares space with the adjacent continuing education program.









Commons

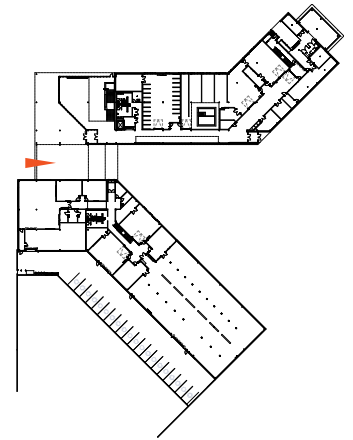
The commons is the primary social gathering area of the building for students, faculty and trade partners. The Commons is directly adjacent to the PV covered gateway and is the hub to orient students and visitors to classrooms, labs, and administrative areas. This space is multi-functional for trade events and display, lecturers, student orientation, donor appreciation and a welcome from Johnson County Community College. The exterior metal panel building skin bifurcates and folds into the 2 story portion of the commons. The metal panel is detailed to cradle a feature that ascends to the second level and acts as a backdrop to the commons.

Teaching Corridor









Entry Gateway



Landscape

The campus landscape at Johnson County Community College (JCCC) is similar to other community college landscapes in many ways, yet is also uniquely different. The gathering spaces between the academic buildings vary in scale, from large, more public courtyard spaces or amphitheater style spaces down to small, very intimate areas for personal study or reflection. All of these spaces, despite their scale, are enhanced by a lush, very diverse and comprehensive palette of plant material, unlike the majority of community college campuses. The landscape at the Career & Technical



Education building will be no different, it will learn from its contextual surroundings and microclimate and establish unique landscape typologies that vary in function and style. There will be a large, minimal lawn area for active play, shaded hardscape areas for passive gathering and maybe most importantly, large native meadows of prairie grasses on the north and south of the building, to both screen the autoyard bay and also to provide a soft, lush contrast to the materiality of the building itself. The rest of the ornamental plantings on site will also be native, assisting in stormwater treatment and minimizing long term maintenance needs.



Gym



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