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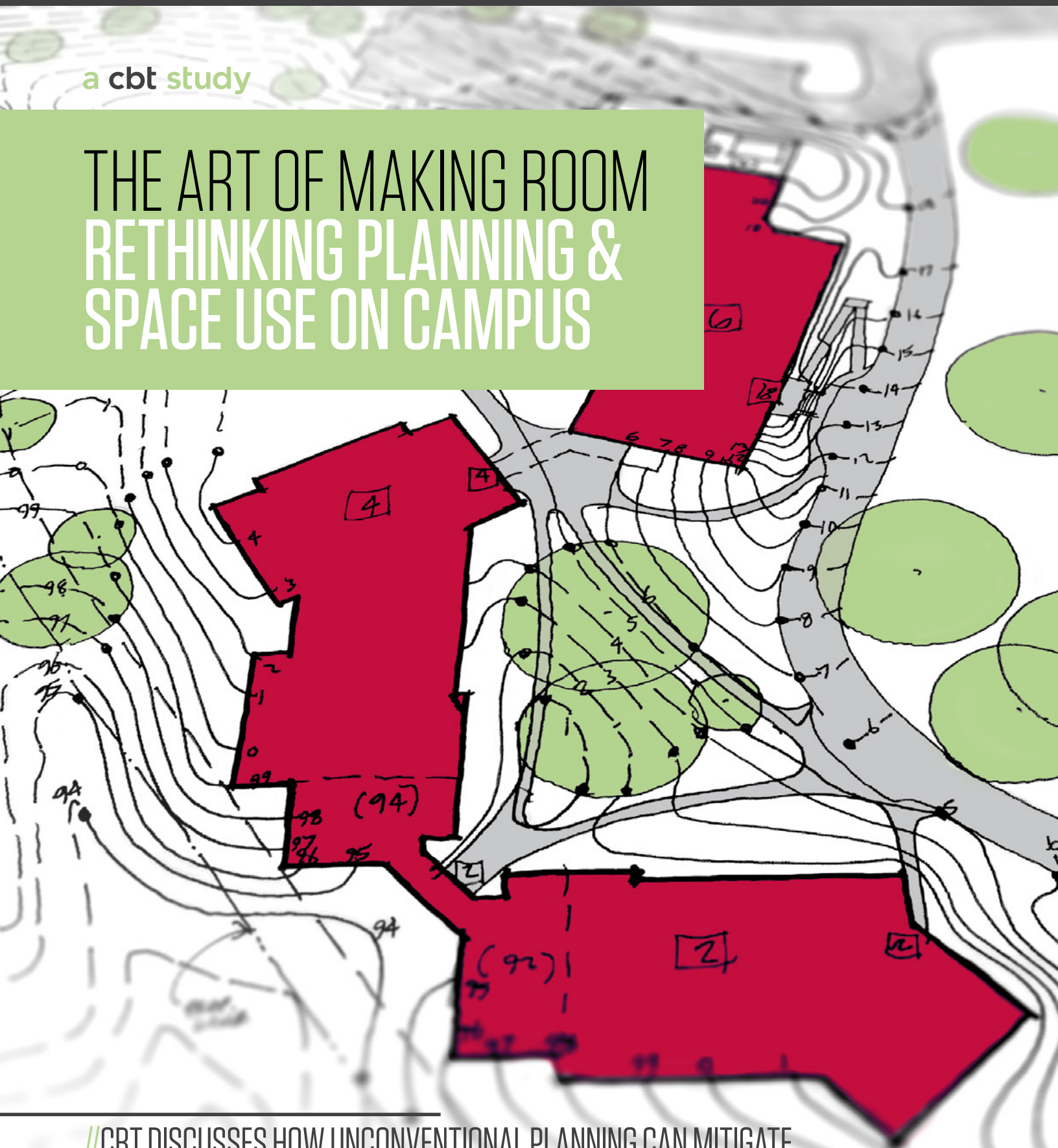
a cbt study

THE ART OF MAKING ROOM
RETHINKING PLANNING & SPACE USE ON CAMPUS



//CBT DISCUSSES HOW UNCONVENTIONAL PLANNING CAN MITIGATE CONSTRUCTION COSTS AND RESTORE EQUITY ON CAMPUS

TRADITIONAL PLANNING VS. EVOLVING CAMPUS NEEDS

Deliberate land planning for academic campuses has been a long-practiced area of expertise. Campus cores and academic threads were conceived to promote pedestrian connections and support institutional culture. Buildings were sited in strategic locations to cultivate physical and social harmony on campus.

With time, however, many of the original principles that guided campus development have lost relevance as school populations grow in an increasingly tech-based world that is changing how students learn and how faculty teach. Buildings that were once peripheral to the campus core are needed for new and evolving curricular uses, while those at the former heart of campus are often suffering from deferred maintenance and obsolete interior programming. In this fourth installment of CBT Studies, we examine a few common issues besetting evolving institutions, and look at innovative solutions that have succeeded in solving some planning and infrastructure challenges.

GROWING PAINS

As established schools evolve and expand, they need to reckon with the limits of their physical design. Once small and exclusive, many independent schools were conservative in size and concentrated in configuration. Residential and academic clusters formed fixed and inflexible networks that may not have had the room for long-term transformation.

Today, however, schools and their curricula are evolving in ways that challenge their original designs. Many are increasing enrollment, resulting in strains on the capacity of classrooms and residence halls. Evolving pedagogies are requiring new space types; and STEM labs and makerspaces can be difficult to house on a traditional campus landscape. We have observed that failure to adapt to new needs can threaten a school's competitive edge relative to their peer institutions.

FIRST IMPRESSIONS

Schools take pride in making strong first impressions. Many campuses were planned in a way to offer a pleasing arrival experience, a sequence painstakingly conceived down to each sapling and stone along the way. As campus cores expand and reorient, these traditional welcoming corridors are no longer the only (or most widely used) avenues to campus. Service roads once reserved for groundskeepers and maintenance vehicles are now commonly used by students and visitors. Far from the white columns or architectural portico of the campus welcome center, first impressions can now include views of landscaping equipment and mulch piles. Is there a way to counter this orientation and reclaim the quality of the arrival?

SECOND LIVES

Consider maintenance buildings. These structures were originally built at the outskirts of campus, removed from the academic thread and distanced from general circulation. Over time, however, these "back door" areas have been slowly absorbed into the main campus circuits as campuses grow outward and their cores expand. **Now front and center, these buildings can pose a challenge to the programmatic and aesthetic harmony of the greater context.**

How do schools balance the logistical necessity of facilities buildings with their ill-positioned prominence? Is there a way of restoring these prime points of real estate to more effective and appropriate uses? The following pages offer an interesting case study.

THE RESONANCE OF BOILER ROOMS

Middlesex School, an independent secondary school in Concord, Massachusetts, faced the dueling issues of conspicuous service buildings and an over-used back-door entrance. Founded in 1901, the campus had evolved substantially over the last century. The school's power plant, originally located at the campus periphery, had become a close neighbor to the central academic thread due to long-term campus expansion.

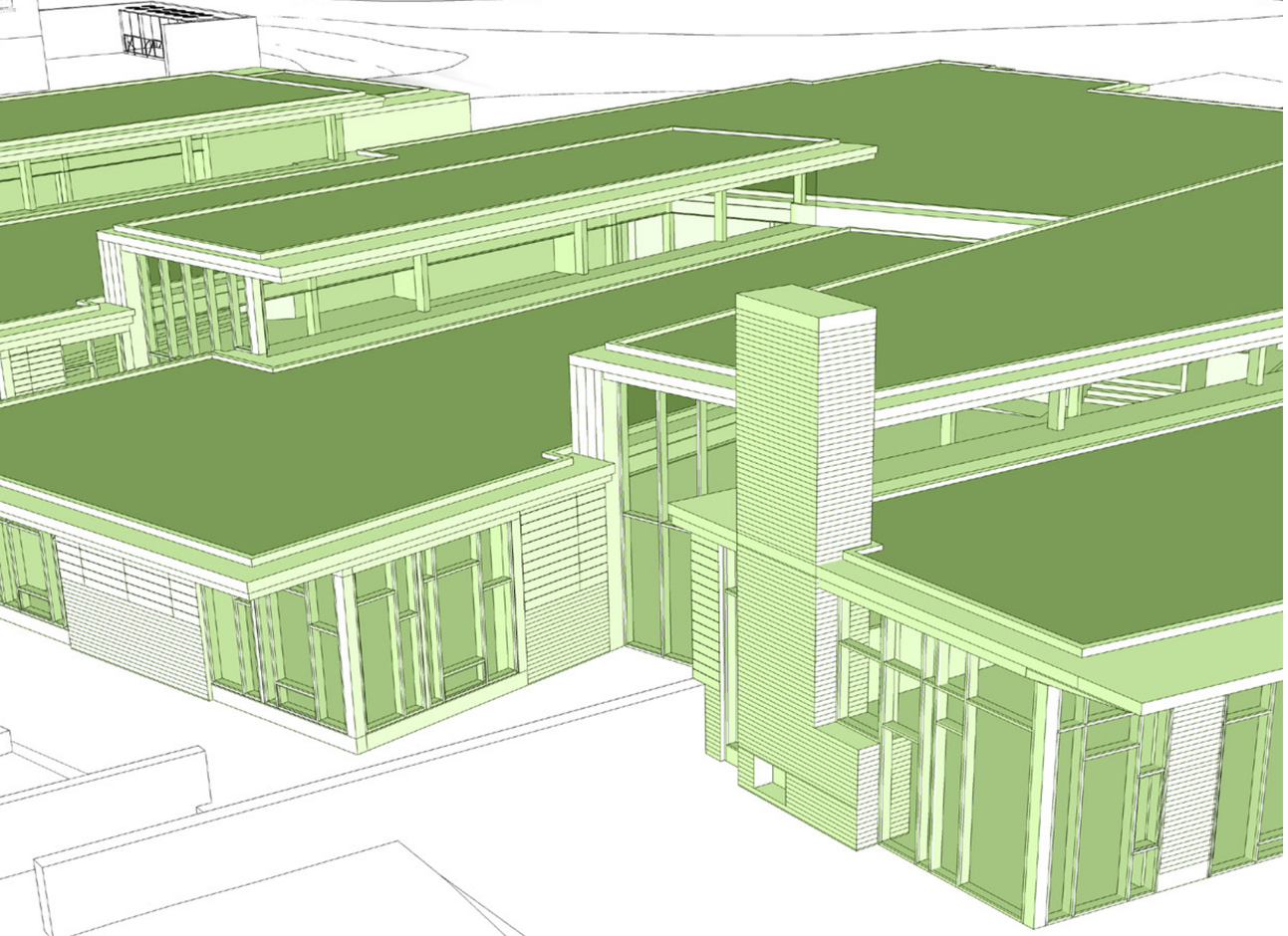
To help dramatically reduce its carbon footprint, the school advanced a decentralized heating system and fuel conversion, and the plant was largely decommissioned. The question arose of what to do with this predominantly unused building that was now very visible to the school community and their visitors. Tearing down the structure would clear the way for new development, but **at a legacy campus like Middlesex, the psychological relationship between historic structures and the campus community runs deep.**

It happened that the school was in the process of expanding their arts program, but limited space in the existing arts building restricted its expansion. CBT was in the process of master planning the campus, and the site and position of the decommissioned power plant presented curious potential as a music center. Our study of the building revealed that the construction of the plant, originally designed to house large boilers, was perfect for the acoustics needed in a recital hall.

The conversion of the power plant into a new music center is a point of pride and a signature project for the school. Through creative repurposing of the existing structure, the project smartly extended the core of the campus and created an iconic new entrance. The smokestack, a symbol of campus history, is now part of a greater story: one of creative space use, sustainability, and campus stewardship.

THE DECOMMISSIONED POWER PLANT PRESENTED CURIOUS POTENTIAL AS A MUSIC CENTER

One architect's boiler room is another architect's recital hall. Originally built to generate power on the Middlesex campus, this building had become less critical in recent years. With some visionary planning and support from the school, a dramatic transformation allowed the growing arts program to flourish.



UNTAPPED POCKETS

Changing pedagogies have driven the need for different kinds of learning spaces on campus. Where once the majority of learning spaces once took the form of traditional classrooms, the rise of project-based learning has revolutionized how we think of — and design — the environments needed to support new methodologies. In addition, less-traditional spaces are proving to be more cost-effective in their construction due to more flexible spatial design. The flexibility can offer a place for school gatherings and special events in addition to teaching and learning. How do schools make room on campus to support radically new space types? How can programs carve out new spaces to remain educationally relevant and competitive with other institutions? The Fessenden School found a way (see next page).

COURTYARD BECOMES MAKERSPACE

The Fessenden School is an independent boarding school for boys in Newton, Massachusetts. Integrating project-based learning into school curricula and campus culture, the school had first developed a modest innovation center to test the concept of a makerspace and how it could affect teaching and learning. While this space served as an important jumpstart to hands-on experiential learning, there was no way to support a large student contingent.

To extend the benefits of project-based learning championed by this lab, the center needed a new, dedicated space to support the intricate and diverse needs of an active student body. But on a campus already at capacity, how do you carve out the space for a growing and unprecedented learning typology?

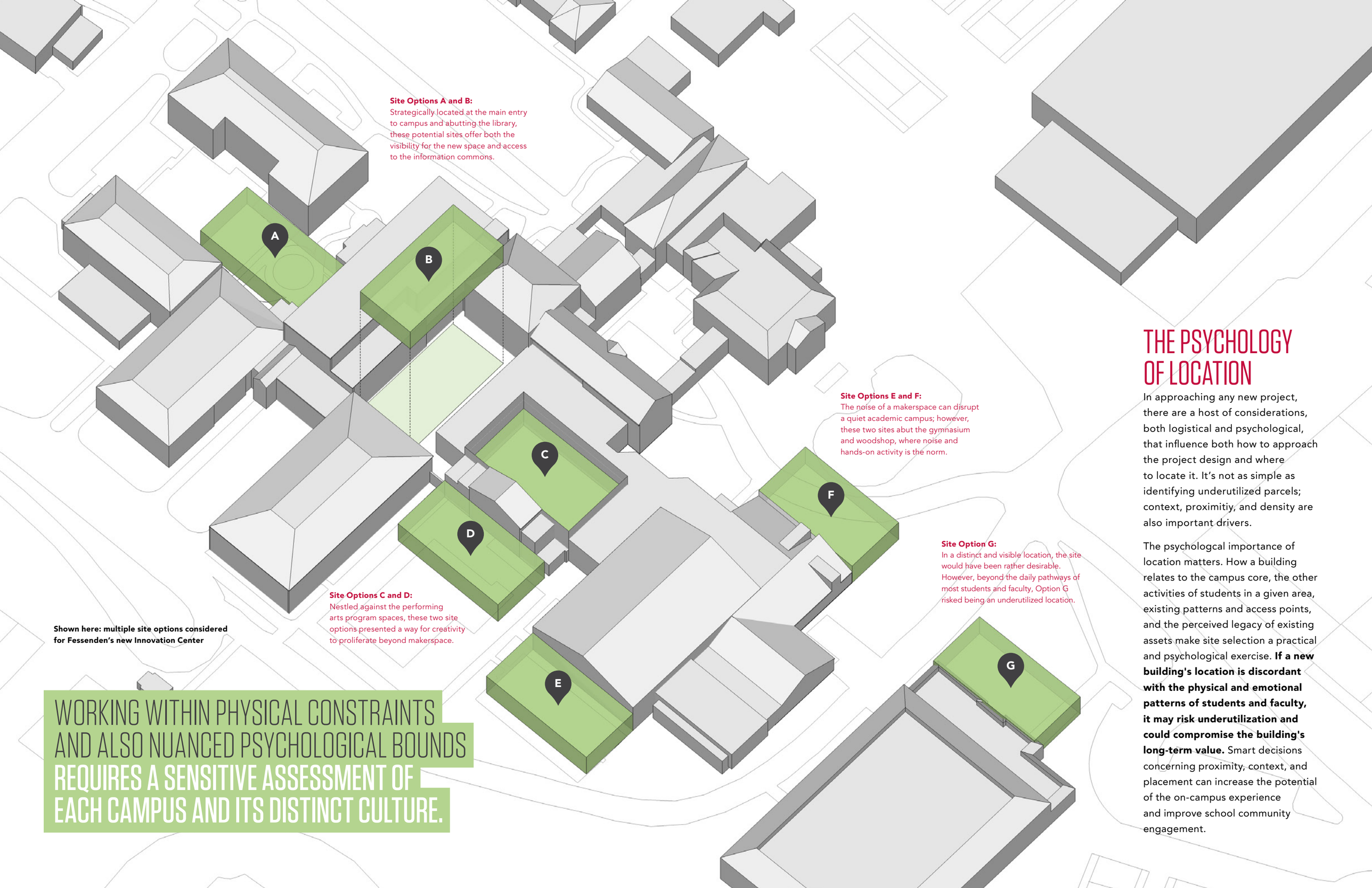
After a lengthy assessment of existing spaces and adjacencies, a lesser-used courtyard, tucked away from general circulation, was identified. Surrounded by buildings on all sides, this courtyard presented the opportunity to unlock a unique parcel of land. This isolated pocket of land was transformed into a state-of-the-art learning facility: The Ciongoli Center for Innovation.

The new center is a glass-enclosed, 2,400-square-foot makerspace dedicated to offering project-based learning to all students. A resource-rich environment, each spatial component serves as an industrial and intellectual toolbox. The space is optimized to promote real-world problem solving and encourage active collaboration. Directly adjacent to the school's library, the innovation center also offers a new learning dynamic: students can pivot from research to making, then back to research simply by crossing the hall. The center is visible from a variety of locations, is frequented by Admissions tours, and embodies the uniqueness of a Fessenden education.

The creative unlocking of this courtyard has resulted in a facility that supports the school's campus-wide focus on experiential learning. With the availability of the new space, 85% of the teachers use the center as part of their teaching, and 70% of all classes schoolwide use the lab for cross-disciplinary learning and making. Beyond classwork, students make constant use of the center through study hall and after-school hours.

THE NEW MAKERSPACE INVOLVED BOTH AN UNDERUSED COURTYARD SPACE AND THE ABUTTING LIBRARY.

THE REAL ESTATE OFFERED A TWO-PRONGED OPPORTUNITY: THE LIBRARY IS REVIVED AS AN INFORMATION COMMONS AND A PRECIOUS RESOURCE FOR THE HANDS-ON WORK IN THE iLAB.



Site Options A and B:
Strategically located at the main entry to campus and abutting the library, these potential sites offer both the visibility for the new space and access to the information commons.

Site Options C and D:
Nestled against the performing arts program spaces, these two site options presented a way for creativity to proliferate beyond makerspace.

Site Options E and F:
The noise of a makerspace can disrupt a quiet academic campus; however, these two sites abut the gymnasium and woodshop, where noise and hands-on activity is the norm.

Site Option G:
In a distinct and visible location, the site would have been rather desirable. However, beyond the daily pathways of most students and faculty, Option G risked being an underutilized location.

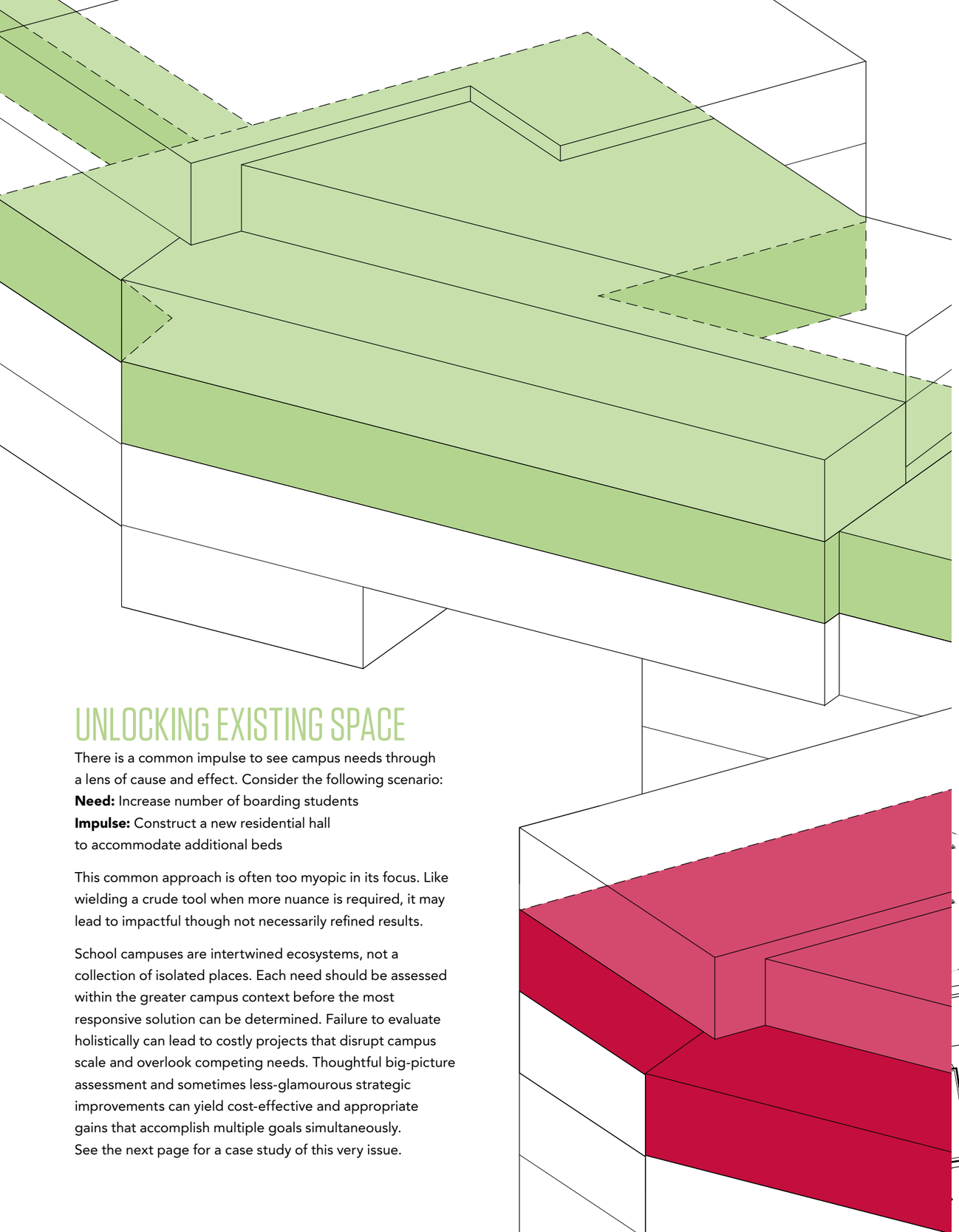
Shown here: multiple site options considered for Fessenden's new Innovation Center

WORKING WITHIN PHYSICAL CONSTRAINTS AND ALSO NUANCED PSYCHOLOGICAL BOUNDS REQUIRES A SENSITIVE ASSESSMENT OF EACH CAMPUS AND ITS DISTINCT CULTURE.

THE PSYCHOLOGY OF LOCATION

In approaching any new project, there are a host of considerations, both logistical and psychological, that influence both how to approach the project design and where to locate it. It's not as simple as identifying underutilized parcels; context, proximitiy, and density are also important drivers.

The psychologcal importance of location matters. How a building relates to the campus core, the other activities of students in a given area, existing patterns and access points, and the perceived legacy of existing assets make site selection a practical and psychological exercise. **If a new building's location is discordant with the physical and emotional patterns of students and faculty, it may risk underutilization and could compromise the building's long-term value.** Smart decisions concerning proximity, context, and placement can increase the potential of the on-campus experience and improve school community engagement.



UNLOCKING EXISTING SPACE

There is a common impulse to see campus needs through a lens of cause and effect. Consider the following scenario:
Need: Increase number of boarding students
Impulse: Construct a new residential hall to accommodate additional beds

This common approach is often too myopic in its focus. Like wielding a crude tool when more nuance is required, it may lead to impactful though not necessarily refined results.

School campuses are intertwined ecosystems, not a collection of isolated places. Each need should be assessed within the greater campus context before the most responsive solution can be determined. Failure to evaluate holistically can lead to costly projects that disrupt campus scale and overlook competing needs. Thoughtful big-picture assessment and sometimes less-glamourous strategic improvements can yield cost-effective and appropriate gains that accomplish multiple goals simultaneously.
See the next page for a case study of this very issue.

CASE STUDY MIDDLESEX SCHOOL, RESIDENCE HALLS

DEBUNKING 'BUILD BUILD BUILD'

Middlesex School, with the goal of increasing student boarders to 75% of their enrollment, concluded they needed to add 48 new beds to their historic campus. Looking at the numbers alone suggested that a new residential hall was needed. This approach, however, would be a significant disruption to the smaller-scaled buildings that make up their campus and would be a costly investment to meet just one goal. It would have solved the immediate housing defecit, but a massive new dorm would have used resources to respond to several other campus needs.

Years of deferred maintenance had resulted in less-than-ideal conditions for three of their existing residential halls. Odd room configurations and piecemeal renovations had left these halls without common rooms or communal study spaces. After a comprehensive assessment of the school's residential program, these three halls emerged as opportunities for incremental gains. The chance to add much-needed beds was an opportunity to restore equity to these existing assets on campus.

Renovations and reconfigurations within these three residence halls created a net of 12 new beds, creating a substantially lower need for new construction: only 36 new student beds were now needed, as opposed to the original 48. Result: a smaller, much more contextual new residence with a more appropriate scale and financial investment.

For the three existing residence halls, the renovations and reconfigurations returned study areas and community space in each building. The residential experience in these historic spaces is now on par with the more recently built dormitories on campus. Financially, the renovations checked-off deferred maintenance, reduced operational costs, and returned value to existing assets.

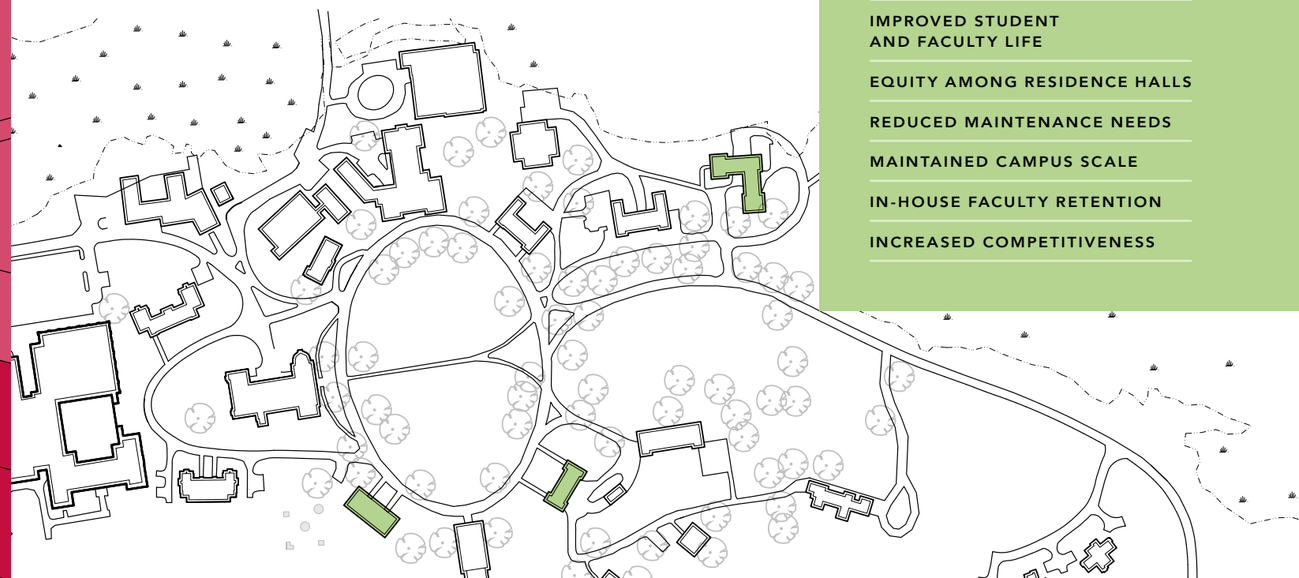
When needs arise, evaluate hidden space on the entire campus to accomplish more than one goal. Holistic assessment affects more than one project, and can maximize equity across campus.

WHAT DOES THE **DEFAULT SOLUTION** DELIVER?

ONE RESIDENCE HALL

WHAT DOES THE **STRATEGIC SOLUTION** DELIVER?

- REDUCTION IN CAMPUS OPERATING COSTS
- IMPROVED STUDENT AND FACULTY LIFE
- EQUITY AMONG RESIDENCE HALLS
- REDUCED MAINTENANCE NEEDS
- MAINTAINED CAMPUS SCALE
- IN-HOUSE FACULTY RETENTION
- INCREASED COMPETITIVENESS



UNCOMMONLY GOOD PLANNING FOR THE COMMON GOOD

While some solutions to campus space needs seem evident, campus leaders may struggle to truly examine their real estate and assets. By allowing for less common — though nonetheless desirable — spatial transformations, schools can unlock potential that had been unrealized. Breaking up a program into smaller pieces, evaluating more than the obvious infrastructure needs, and looking to future curricular evolution can contribute to some unexpected solutions.

As planners and designers, we have observed some highly innovative ways of supporting campus growth, advancing institutional missions, and maximizing the value of existing space. We work with institutions to carve out strategic design responses to common challenges faced by many institutions today. When done thoughtfully, creative and unexpected planning methods can align with fiscal, social and spatial imperatives effectively and lead to greater institutional success.

"THE CARE WITH WHICH THE BUILDING WAS SITED, AND THE ATTENTION TO DETAIL IN ADDING ELEMENTS THAT INTEGRATE IT VISUALLY AND SPATIALLY WITH THE REST OF THE CAMPUS ARE AMAZING."

MATT CROZIER, CHIEF OPERATING OFFICER, MIDDLESEX SCHOOL, ON THE CONVERSION OF A POWER PLANT INTO A MUSIC AND CAMPUS CENTER

CBT Studies is an ongoing research project that examines the ways that planning and design can impact life on campus, at work, and in the other communities to which we belong. Interested in learning more? Contact ***academicdesign@cbtarchitects.com***