

Association for Learning Environments (A4LE)
Northeast Regional Planning & Design Awards

Winchester High School

March 2, 2018



Table of Contents

- 1 Executive Summary**
- 2 Scope**
- 3 School & Community Engagement**
- 4 Educational Environment**
- 5 Physical Environment**
- 6 Results**

Application for

Association for Learning Environments
Northeast Regional Planning & Design Awards

Project submission of

Winchester High School
Town of Winchester, MA
Alex C. Pitkin, AIA, Principal, Senior Vice President
Category: Renovation/Major Addition

Executive Summary

Transforming Brutal into Beautiful

How do you transform the brutal into the beautiful, the rigid into the flexible, the imposing into the inviting? These are the questions we had to answer in our approach to renovating Winchester High School, an example of 1970s Brutalist architecture serving 1,370 students in a bedroom community situated approximately twenty minutes northwest of Boston.

The directive from the Town of Winchester was to transform the out-of-place aesthetic and poor learning environment to reflect the school's top ten Massachusetts public school status and National Blue Ribbon credentials. Through a rigorous planning process that included numerous public meetings with educators, administrators, support staff, students, and community members, the project goals were formed:

- Create interdisciplinary adjacencies that facilitate STEM and STEAM learning
- Design for the 21st Century—introduce an Innovation Lab; differing learning environments; flexible spaces and furniture; warm, tactile materials; and a “learning anywhere, anytime” philosophy
- Modernize sustainably and respectfully by reusing the pre-existing concrete structure and minimally disrupting student learning

The school's rapidly deteriorating condition did not inspire belief that it could be saved, much less transformed. However, the carefully considered additions brought a new light-filled center to the school, connecting virtually all program spaces visually and physically via a student commons. Beyond the immediate educational improvements, the reinvention of the entire building proved beneficial.

- Improved safety and security
- Improved energy efficiency without dismantling the entire building
- New bike and walking paths linking the school site to the Town's greenway
- New outdoor learning environments
- Larger, flexible, and variable use spaces throughout
- A reinvented Innovation Project Based Learning/maker environment for hands-on learning



Scope of Work and Budget

Site Size (acres)

11 + 16.5 Skillings Field (Athletics)

Gross Area

288,840 sf

Area per student

211 sf

Construction Cost

\$101,404,577

Cost per sf

\$351



School & Community Engagement

The Community

Winchester High School provides a rigorous educational curriculum for a student body of about 1,300. The school boasts National Blue Ribbon credentials and was ranked the tenth best school in Boston by *Boston Magazine* in 2016. This top ranking school is beloved by and integrated into its community—as part of its strategic visioning, it “invite(s) the community to help it shape its priorities for the next five to seven years.”

The Stakeholders

Over the course of many meetings, the planning team met with 187 stakeholders across every user and user group: town officials, business and community leaders, educators, administrators, parents, students, and support staff.

In order to successfully reuse the existing building, we prioritized engaging students in the process so that we could learn from their firsthand experiences. Not only did the students participate throughout the design and attend many meetings, but a student was also included in the Building Committee and followed the design and construction even after graduating and continuing on to college.

Value of Process to Community

Knowing the high school could be the Town’s most expensive project ever, the committee created a two year planning process—a full year longer than the typical Massachusetts school building process. This afforded the team the ability to fully engage in the educational planning, study, and testing of numerous configurations.

The community was invited to participate at all levels from the visioning, to programming, informational meetings, and design charets.

Through the visioning process, the design team was able to demonstrate that a renovation project would afford the community a building that could be transformed to meet their guiding principles for their educational vision.



The Challenges

A major community-oriented challenge revolved around the site itself: although the Winchester High School site is ideally located in the middle of town, the site is very difficult because it was built entirely on fill and surrounded by a floodplain.

Our work began with a feasibility study that included a town-wide search for a suitable alternative to the existing high school site, focusing on 12 properties. Land value is at a premium in Massachusetts, and we concluded that the only other viable site for this project was the town forest. Neither the town officials nor the school supported removal of the forest, and understood that renovating the existing structure would create limitations, but was ultimately worth the sacrifice to the greater community.

With these site considerations in mind, we saved the investment the town had made in the original building while bringing it up to current code in all aspects, including seismic. Additionally, the building was zoned internally to allow it to be used in the evening and on weekends by the community at large.

Value of Project to Community

Property values continue to outpace nearby communities, as student transitions from the middle school to the high school are now seamless and state-of-the-art.

The neighborhood surrounding the school is beautiful and attractive to young families and the site is safer and more secure, with visibility improved throughout. The building is now less likely to flood due to the site mitigation efforts.

The high school affords the community with extensive use of many spaces after school hours and on weekends, for gatherings, events, and more.



Before site aerial and site overlaid with floodplain

Educational Environment

Educational Vision and Goals

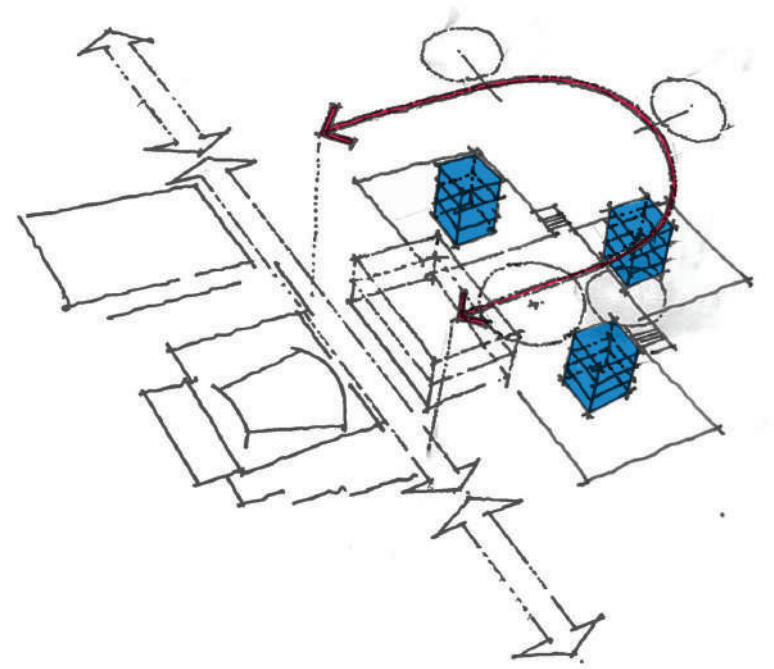
In visioning sessions, we collaborated with stakeholders to brainstorm a number of priorities for the project:

- Flexible environments to allow for changing needs
- 21st Century skills overlayed on the core curriculum
- Integration of technology, STEM, and the arts (STEAM)
- Accomodation for differentiated learning
- Co-location of classes to allow for integrated, applied learning and collaboration

Supporting the Curriculum

Changing educational deliveries to recognize and parallel the nature of knowledge through integration of traditionally separate curricular areas is one of the most important and challenging aspects of high school reform. The following strategies from visioning team members outline curriculum integration at Winchester High School in arts, STEM, and applied learning:

- Co-location of classes/labs/studios/pods
- Teamed teaching
- Common planning
- Project/thematic learning - collaborative student groups
- Developing educators' skills (Professional Development)
- An extra block
- Common planning time
- Common achievement targets (consistent curriculum)*



Supporting Varying Learning and Teaching Styles

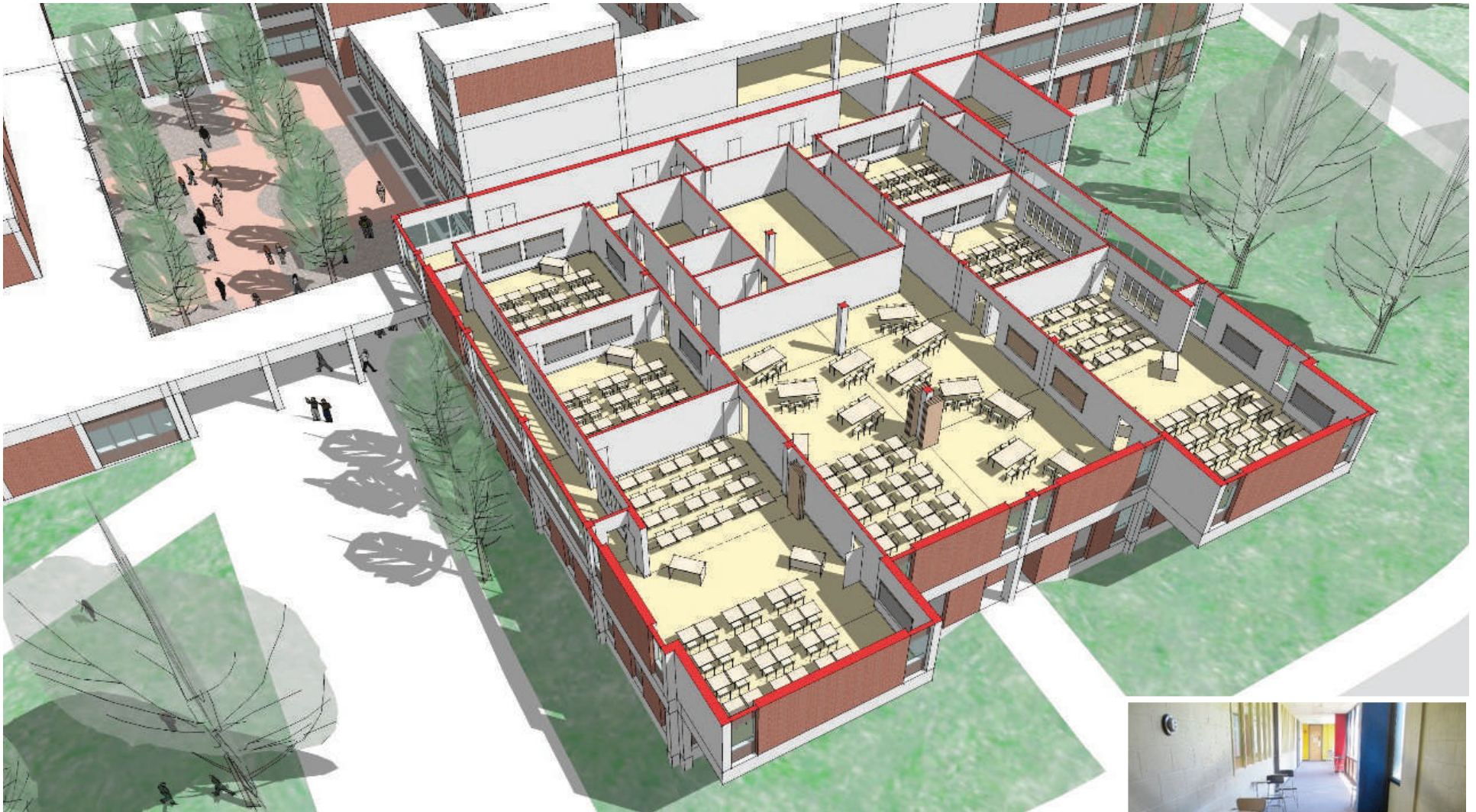
The visioning team reviewed twenty-two learning modalities, ranging from traditional direct teaching (lecturing) to independent study, and ranked them in order of importance for Winchester High School. In descending order, these are:

- Project Based Learning
- Interdisciplinary cross-curricular learning
- Social emotional learning
- Creative thinking
- Experiential/hands-on learning*

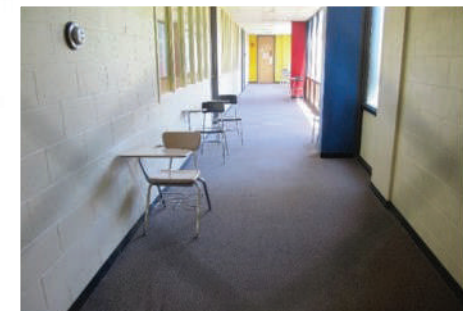
**Educational visioning was conducted with the collaboration of our in-house educational planner and an external consultant.*



Adaptability and Flexibility: Classroom Pod Before



- Interior windowless classrooms
- Exterior underutilized courtyard
- Harsh, institutional character
- Static environments



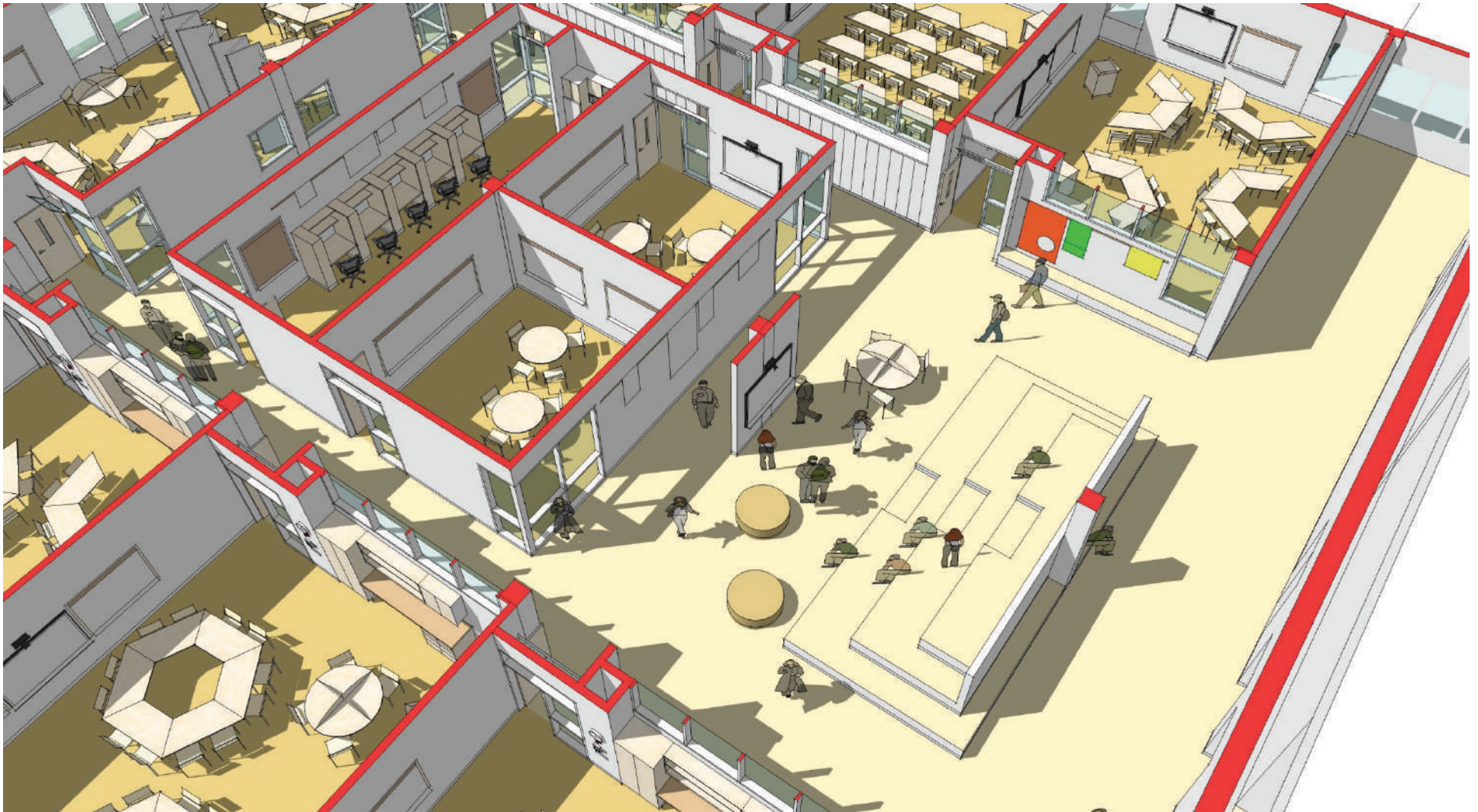
Adaptability and Flexibility: Classroom Pod After



- Mixture of learning environments
- Flexible spaces and furniture
- Corridor commons: learning anywhere, anytime
- Warm tactile materials
- Transparent or visible learning
- Wireless technology throughout

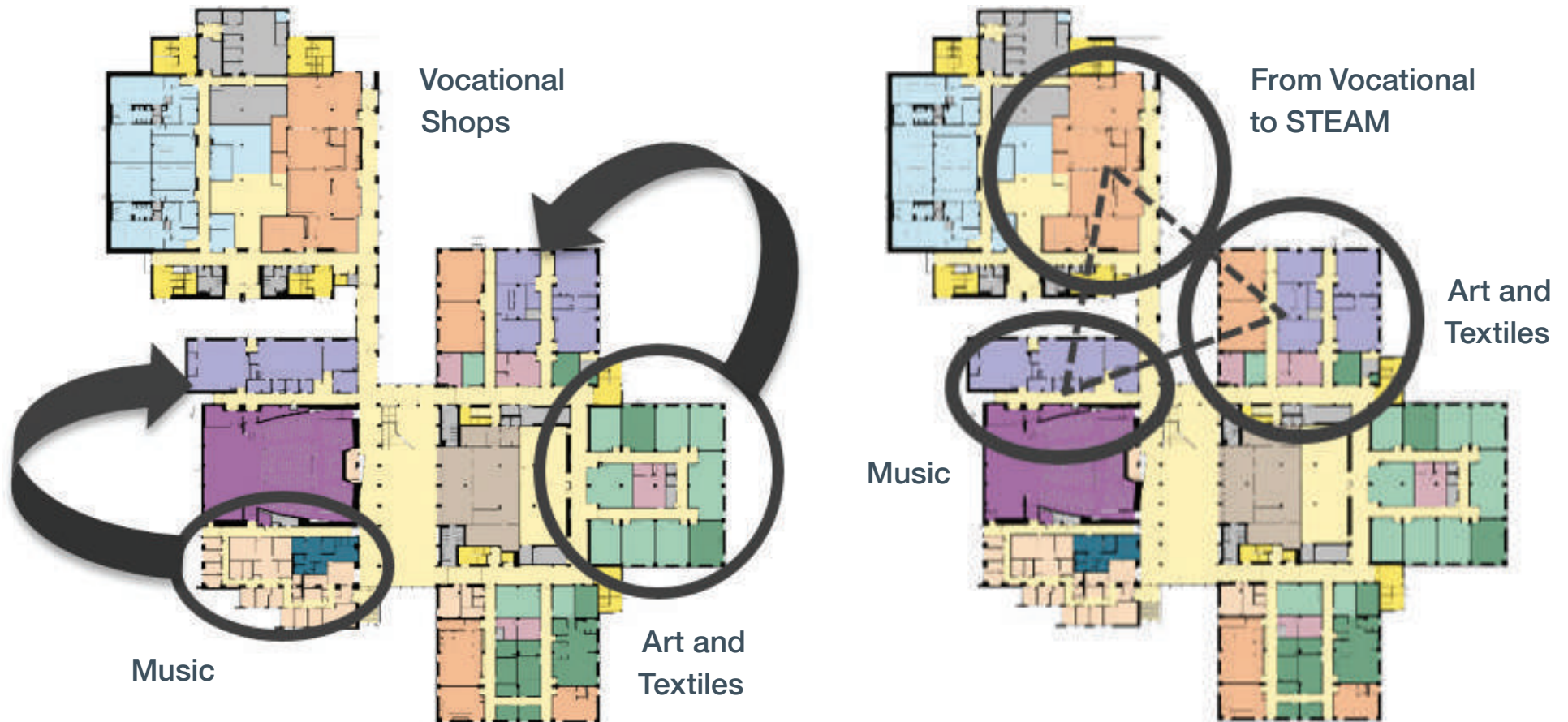


Adaptability and Flexibility: Break Out Space After



- Student display and expression throughout
- Sp. Ed. and support space interconnected
- Borrowed light to center of pods
- Reduced travel distances

Traditional to Transformational



Before

Careful consideration was given to schedule and phasing and minimizing the impact of construction on education.

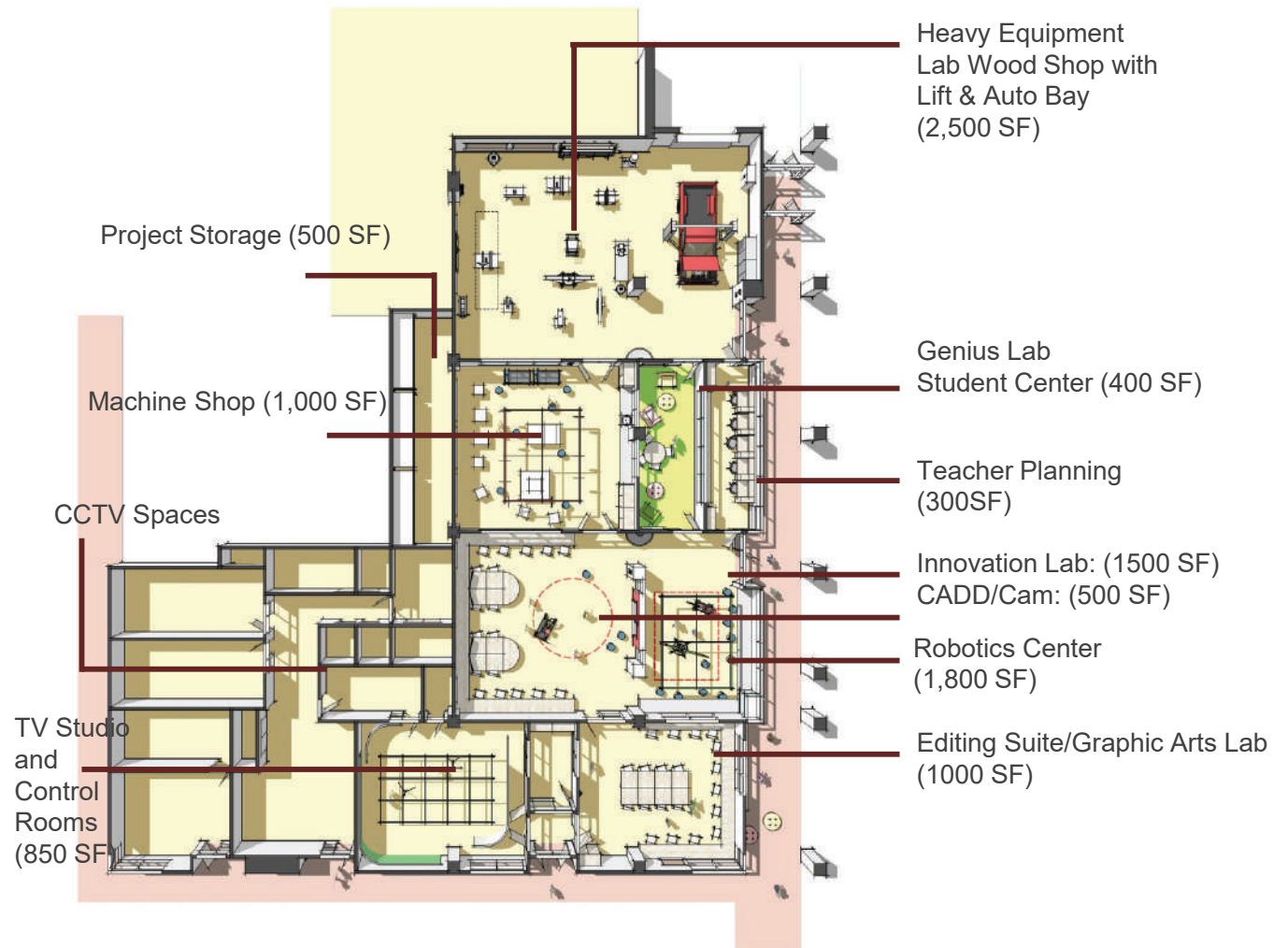
After

Relocating key visual and performing art programs puts them within direct relationship to the new Innovation Lab area and forging new integrated programming opportunities.

Rethinking the Educational Environment: Innovation Lab

We created critical adjacencies for STEAM and STEM programs: decades old shops, equipment, pedagogy and inflexible isolated rooms give way to multi-layered and connected programs.

Before



Rethinking the Educational Environment: Innovation Lab

By creating a student-centric environment called the Genius Lab, students can extend their school day around the rich project-based learning environment that includes wood and metals shops, robotics lab, prototyping spaces, and a TV studio and editing lab.

After

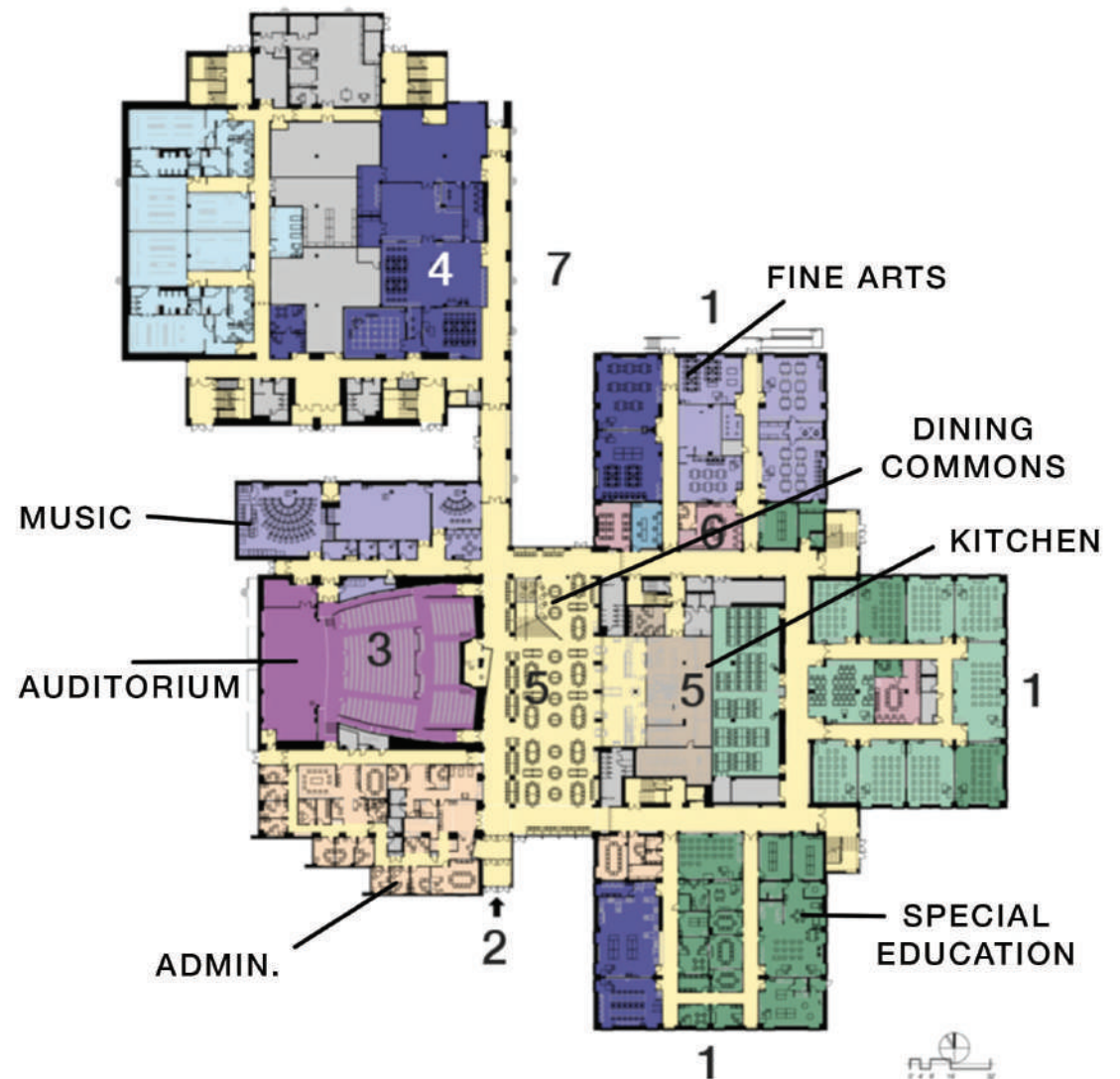




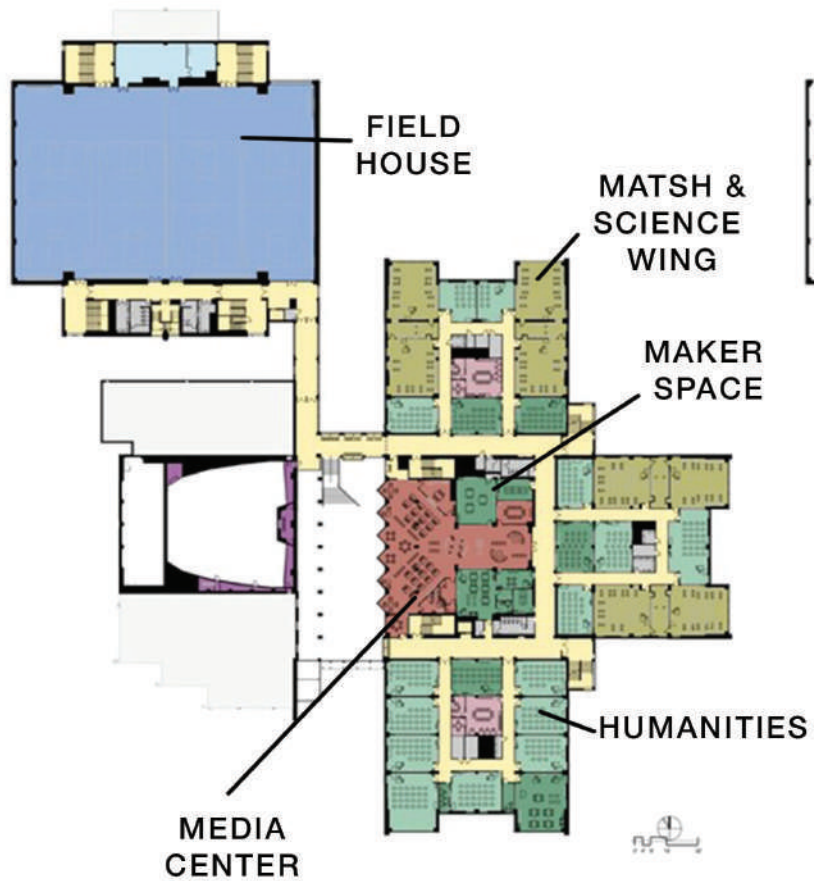
Educational Floor Plan Transformed

1. Interdepartmental pod organization*
2. Visible and secure entrance
3. Auditorium and music program as face of school and community interaction
4. New STEAM environment from reconfigured shops to promote visibility and Project Based Learning
5. Connected cafeteria and Media Center spaces at heart of the school
6. New teacher planning centers
7. Connected Second floor Gymnasium and Wellness Programs

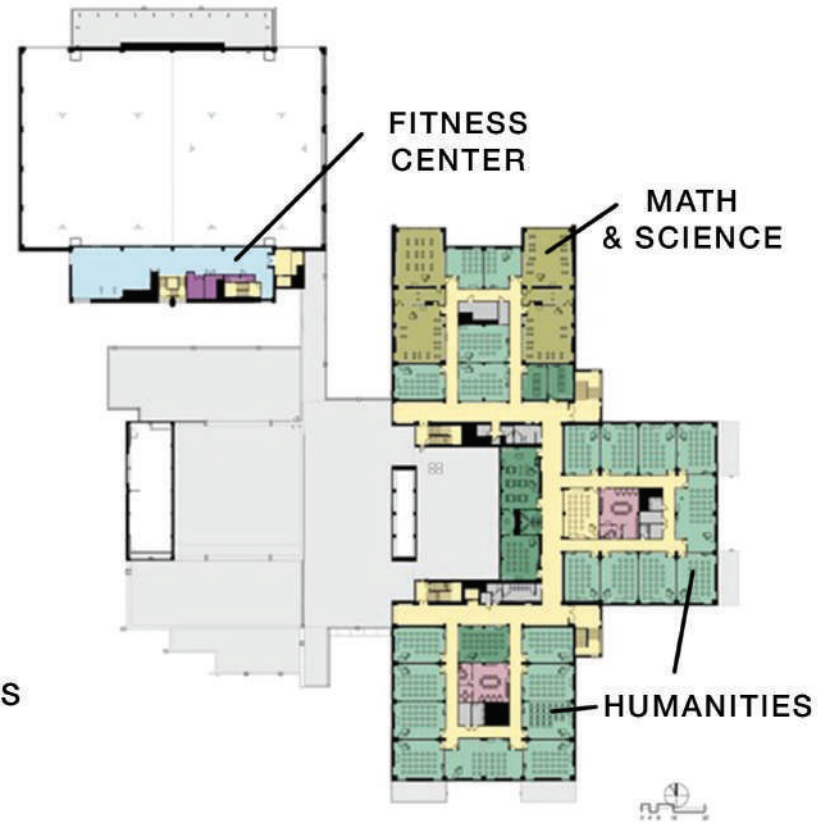
**The existing pod dimensions and the locations of the existing structural concrete frame placed significant limitations on the overall widths of classrooms and corridor spaces.*



Educational Floor Plans Transformed



Second Floor



Third Floor

Physical Environment

Physical Attributes

The High School's rapidly deteriorating condition did not inspire belief that it could be saved, much less transformed.

On the exterior, we encountered:

- Uninsulated brick walls
- Leaking walls and roofs
- Translucent window panels
- Moldy, uninsulated, cold concrete frame
- Subsiding site around perimeter
- Wet uninsulated/unheated basement space trapping unpleasant odors
- Dark, dead-end corridors
- Blank stairwells

On the interior, we discovered:

1. Internal Classrooms with poor daylighting, lacking coherent organizational diagram
2. Dark hidden main entry and courtyard – security risk
3. Disconnected auditorium and music program – adjacent railroad tracks impact acoustics
4. Second floor gymnasium with poor access and security challenges
5. Isolated cafeteria and library spaces
6. Lack of visible and coherent teacher planning centers
7. Dislocated, antiquated shops and science spaces

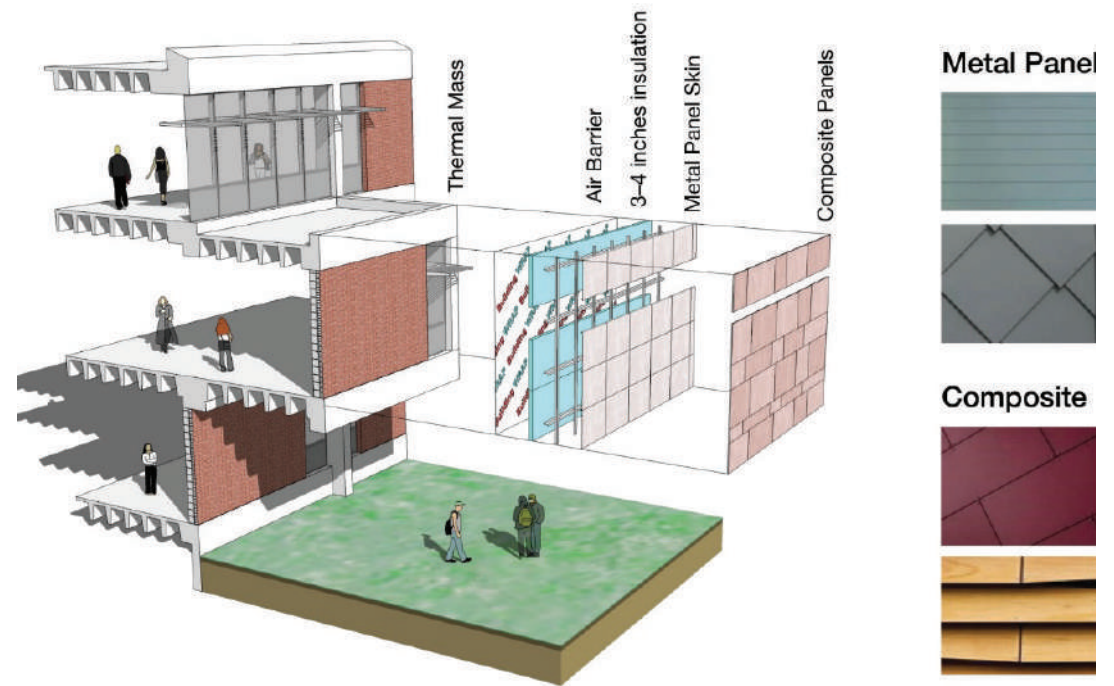


Reimagining The Exterior

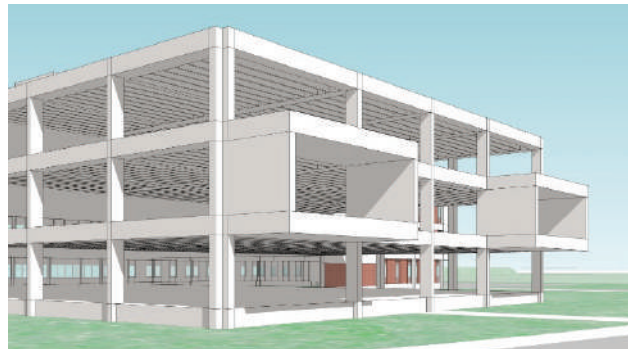
The use of lightweight materials, seismic bracings of the rigid concrete frame, chilled beam HVAC systems throughout, and increased glazing for daylight and aesthetics, all inspired nearly unanimous town meeting support.

The design continued to be influenced by neighbors, park and recreation staff, and local boards despite the challenges of occupied construction and the need to stay up and out of the floodway.

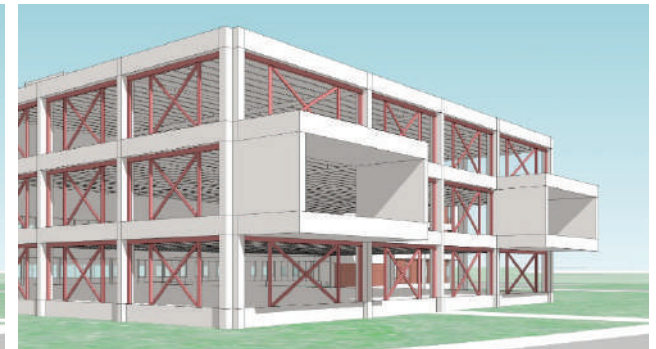
- Highly energy efficient skin
- Added daylight throughout
- Added operable windows
- Increased roofing insulation and PV panels
- Weather-tight basement and insulated slabs



Before



Stripped concrete frame



New seismic bracing



WINCHESTER
HIGH SCHOOL

AFTER

Reimagining the Interior

The interior environment did not provide the quality of spaces conducive to project based learning, independent study, or fostering imagination. It was uninspiring, and the design team had to overcome the rigid plan and open classroom environment. Many spaces lacked natural daylight and were not available for use beyond their initial intended purpose (such as the cafeteria). Additionally, antiquated electrical lighting and systems required aggressive but thoughtful transformation on many levels.

Community Context

The building remained occupied during construction, requiring careful shifting of spaces to allow for seamless, uninterrupted education and educational delivery.

The Student Commons was intentionally completed in the first Phase to foster pride and social gathering for the remaining two years of construction.

Inspiring and Motivating

By relocating the media center to the second floor, moving administrators and the main entrance to a more visible and secure location, the kitchen now occupies the darkest part of the school. Daylight fills the commons space, welcoming the students all day long, club activities before and after school, and the community for evening and weekend events.



Cafeteria before



The Library

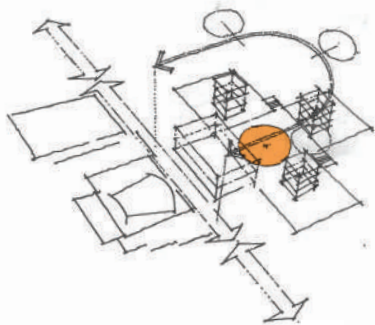
Before

- Tall inflexible book cases
- Many hidden areas
- Internal, non-ADA accessible stair was a security risk



After

The learning commons is now centrally located vertically and horizontally to all the academic programs. The enlarged open plan with flexible, comfortable furniture is a welcoming space with project rooms and a new maker space colocated inside.



The Sciences

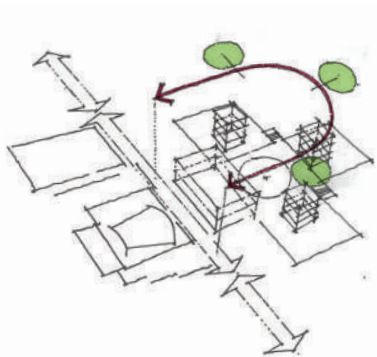
Before

- Dangerous exposed environment
- Small teaching areas isolated from labs



After

- Enlarged lab areas
- Safe environment
- Movable, configurable furniture
- All services at perimeter



From Auditorium to Theater

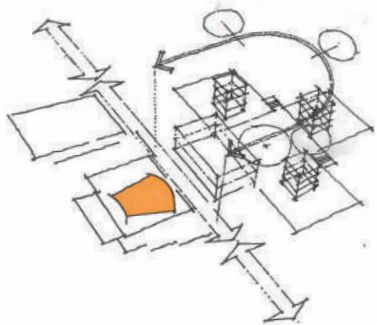
Before

- Out of date and isolated Auditorium, with significant acoustical inference from adjacent rail line
- Poor technology
- No fly loft at stage



After

- Acoustically tuned Theater supporting school and community programs throughout the year
- Expanded stage/fly loft
- Comfortable seating



Health and Fitness

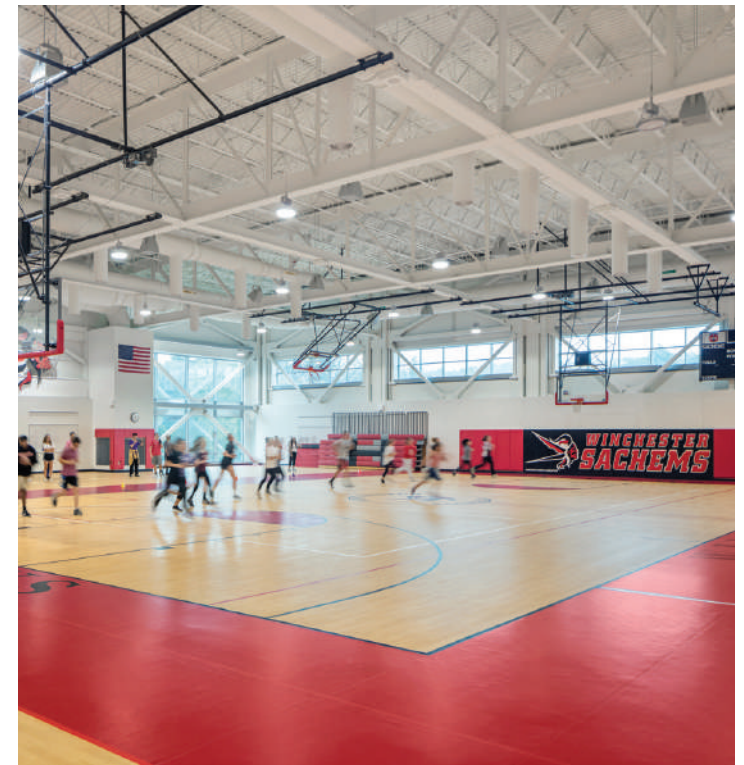
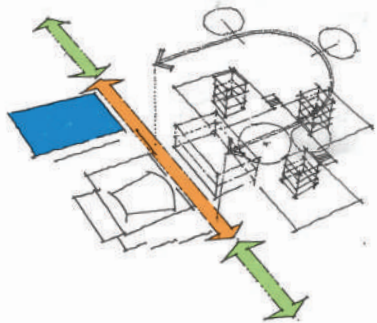
Before

- Gymnasium at second floor
- No daylight
- Poor technology and lighting



After

- New second floor connecting corridor to commons
- Consideration for wellness: new equipment with windows onto gymnasium below

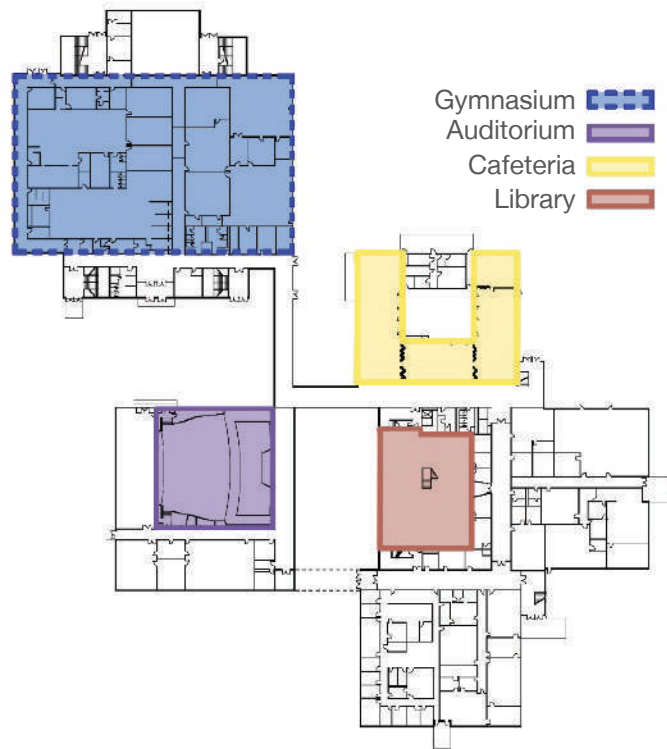


Reimagining the Site

1. New multi-discipline classroom pods
2. Courtyard infill with Student Commons connects Auditorium, Gymnasium, and Media Center – a new social heart
3. Addition – Performing arts program and STEAM labs closely aligned with academic wing
4. Railroad Tracks
5. New Outdoor classrooms and gardens
6. Skillings Field
7. Downtown Winchester



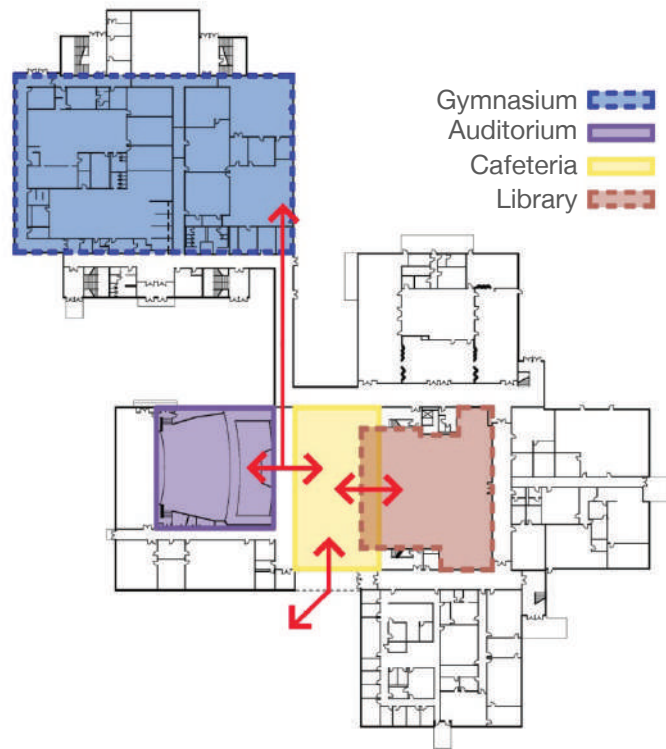
The Site Before



Dark and unsecured entry courtyard

1970s planning model located major activity and public use spaces in disconnected and isolated zones. The pods were also used for cafeteria and administration, whereas the new design aggregated academic classrooms and labs in the pods.

The Site After



The commons

Relocating the cafeteria to the central courtyard creates a new light-filled heart of the school. The kitchen now inhabits the darkest region of the school while the media center is central, both vertically (it moves up to the middle floor overlooking the commons) and horizontally, touching virtually all academic programs in the school's three pods.



Results

Outcomes linked to established Goals

- LEED Gold Certification pending
- Attracting more students back to the school than anticipated
- Higher utilization of PBL spaces Higher use of public spaces by the community – particularly the Student Commons environment
- Improved daylighting and acoustical environments
- Improved linkages between traditionally department oriented teachers and administration

How did we do?

Goals:

Winchester HS is now through construction – each phase brought new revelations and the community celebrated each transition. When we started the design process our clients assumed we would be in one of two quadrants – Where do you think they feel they ended up?

Planning Team & Process

Educators, administrators and citizens began planning early in 2012, community engagement and securing votes took 18 months, after the successful funding appropriation design took approximately one year and construction took three one-year phases.

“The school is adjacent to a residential community which had grave concerns regarding the construction noise, parking, as well as vehicular and pedestrian circulation.

Given this reality I was especially appreciative of the firm’s expert skills both in design, technical documentation, their ability to communicate with the neighbors as well as presenting the design to Town Meeting, which won a resounding ‘yes’ to fund the project.

The project the process and the finished building has been highly successful.”

– Charles Tseckares, Winchester Building Committee Member

