



North Middlesex Regional High School

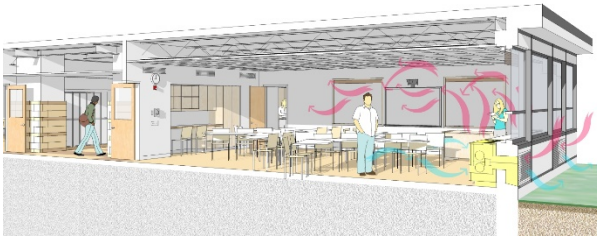
Townsend, MA

A4LE 2017 Exhibition of School
Planning and Architecture
Category of Entry: Design Concept
Project Completion: Fall, 2017

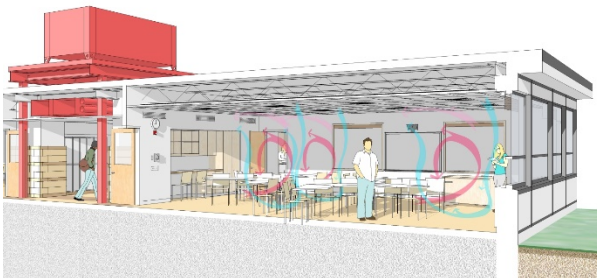
Community Environment

The north central corridor of Massachusetts lags behind the robust economy enjoyed by most of the State. The North Middlesex Regional School District is made up of three member towns adjacent to New Hampshire's southern border: Ashby (pop. 3,075); Pepperell (pop. 11,700); and Townsend (pop. 8,900).

The existing high school was a sprawling, oversized junior high and high school with dated and failing systems.



Existing low 10' – 6" Structure



Implications of adding Code Compliant Mechanical Ventilation

Existing Environment

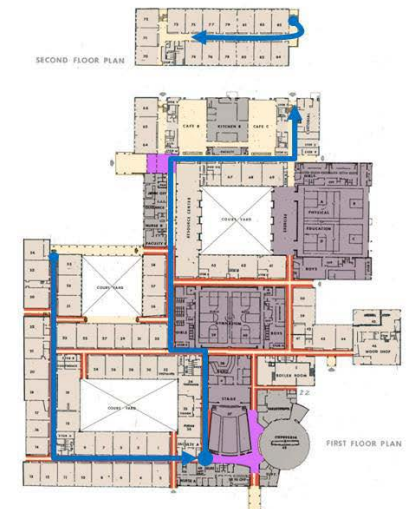


LEGEND

- INDICATES EXISTING SPACES (SF) >20% DEFICIENT
- INDICATES EXISTING SPACES (SF) 10-20% DEFICIENT

More than 50% of the existing educational spaces shown in red and pink were undersized.

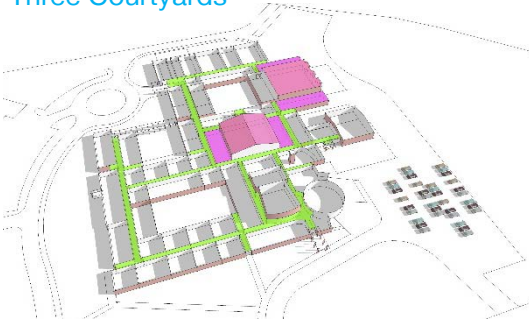
- Narrow Corridors
- Isolated Public Lobbies
- Travel Distance (over 500 feet!!)



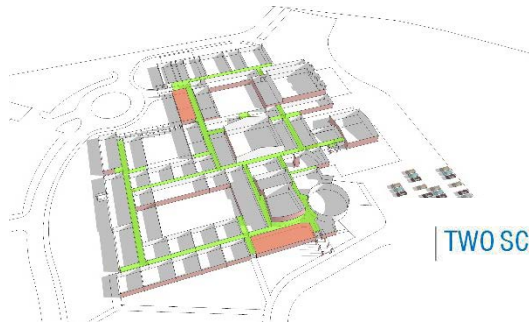
Community Environment



Three Courtyards



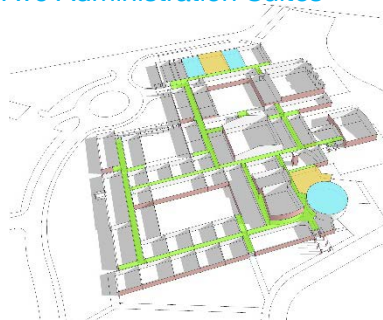
Two Gymnasiums



Two Administration Suites



Two former Libraries



Two Former Cafeterias

Renovations proved costly and ineffective at transforming the educational vision for the District. The excess duplicate spaces proved unwieldy to function for 21st Century uses.

TWO SCHOOL BUILDINGS

- 1971 – Junior HS
- 1959 – Original HS
- Entrance Confusion



Site Plan & Environment

At first glance the site appears expansive. However, building near the existing structure and respecting the rural setback zones, while also protecting play fields and wetlands, required careful consideration of the site.

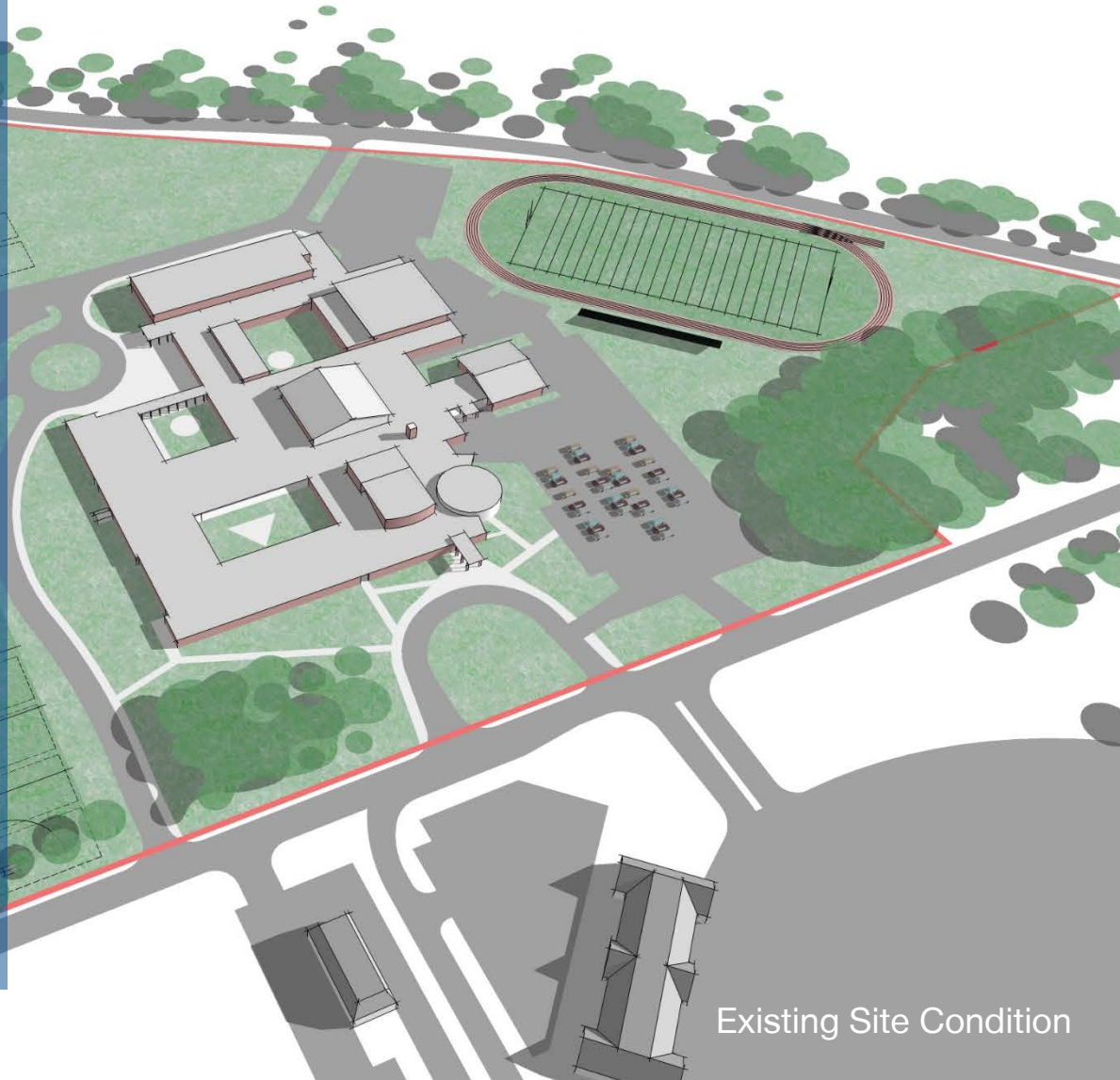
The High School Building Committee was composed of leaders from the three towns and for the planning process that involved the following:

- Community Engagement meetings in each community
- Three Town Meeting votes
- Three Referenda votes
- District wide meetings to bring the three communities into agreement on priorities, program & cost
- Meetings with three fire, police, and building inspectors – Joint meetings allowed early identification of issues and for them to be resolved at the table
- Three Visioning Sessions

Planning Process

The Planning process began with a series of three **Visioning** sessions, the agendas and outcomes included:

- What are Learning Styles - how can learning styles manifest in the school's physical design? Participants took the LS-BE Survey prior to the session enabling them to actively participate and impact the building design.
- Priority Goals and Guiding Principles – focus on interdisciplinary Project Based Learning; STEM & STEAM and sustainability – concluding that the building needed to have close working adjacencies of learning spaces in order to support collaboration.
- 21st Century Design Patterns – included an exploration of what is happening across the nation in curriculum responsive spaces, adjacencies and design opportunities.



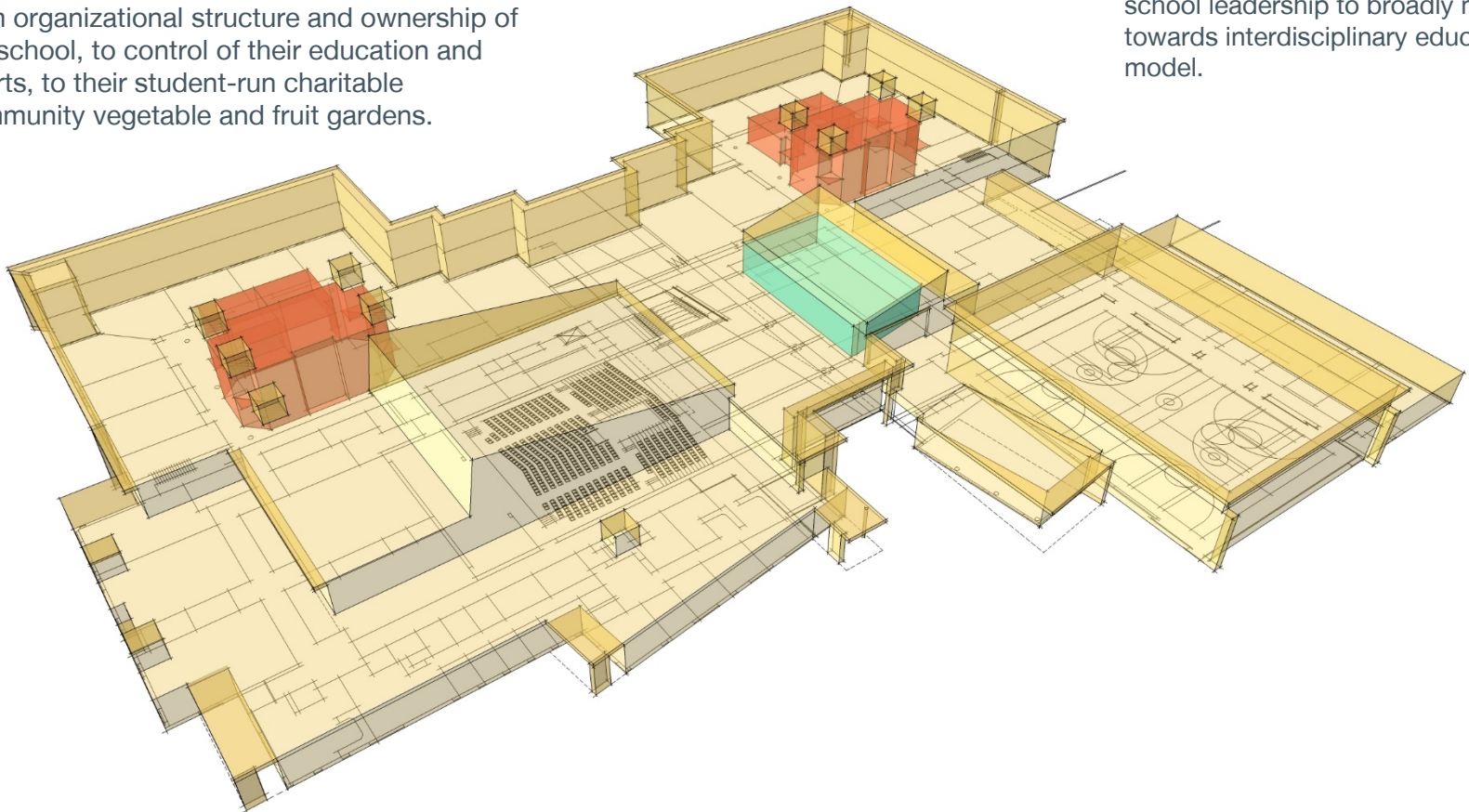
Existing Site Condition

Planning Process

Flexible and Community Centered

The planning team met with all teachers and staff, from secretaries and custodians to physics teachers. Meetings with students were an important step for understanding school culture and what is important to the students, from organizational structure and ownership of the school, to control of their education and sports, to their student-run charitable community vegetable and fruit gardens.

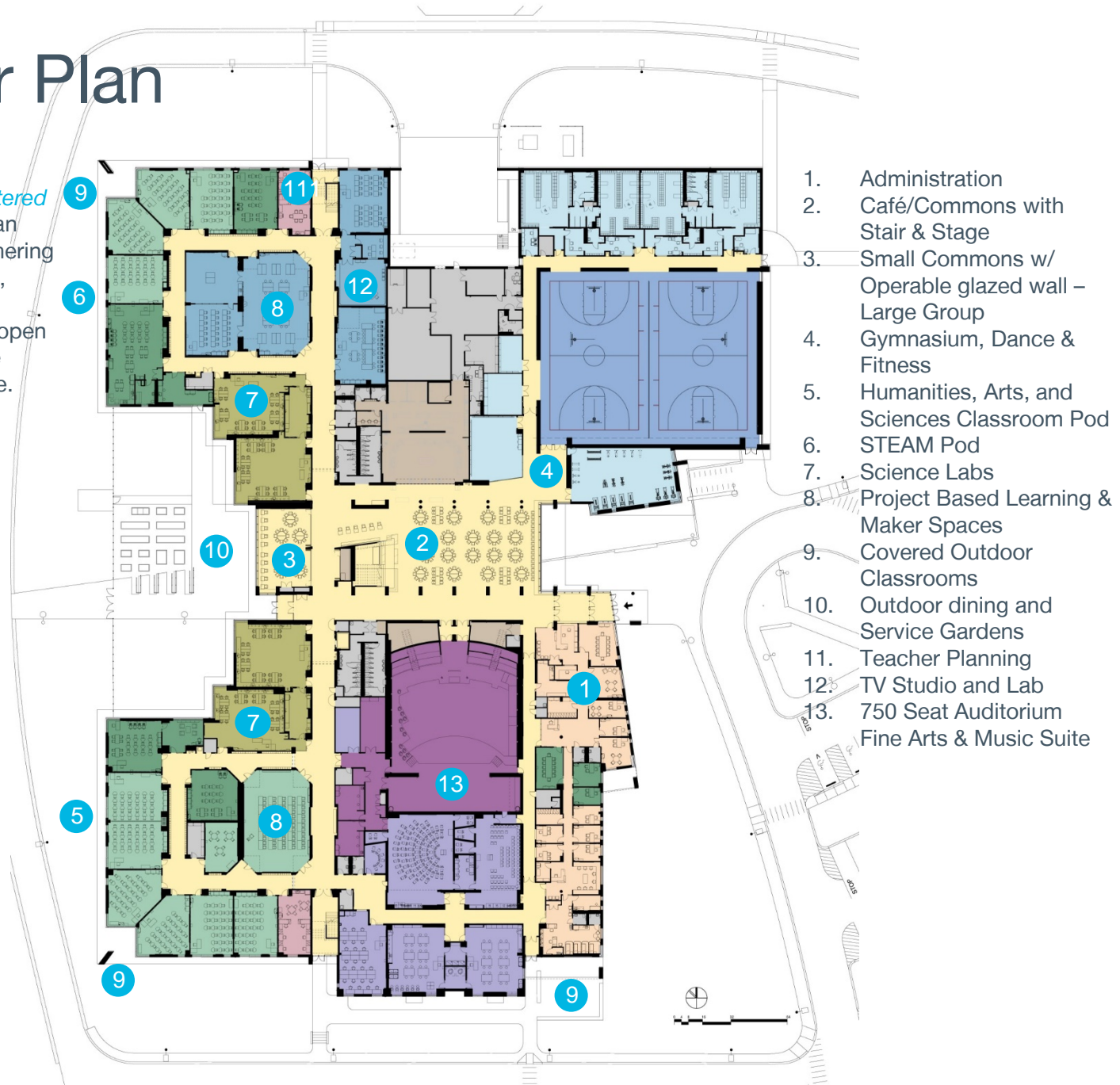
The classroom and learning environment spaces are arranged in two flexible pods, each with STEAM program connections and the ability to function as traditional departments; but it is the intention and goal of school leadership to broadly move towards interdisciplinary educational model.



First Floor Plan

Flexible and Community Centered

The compact and efficient plan links the four core public gathering spaces (Gymnasium, Theater, Media center and Dining Commons) vertically with an open central stair and large flexible central Café/Commons space.

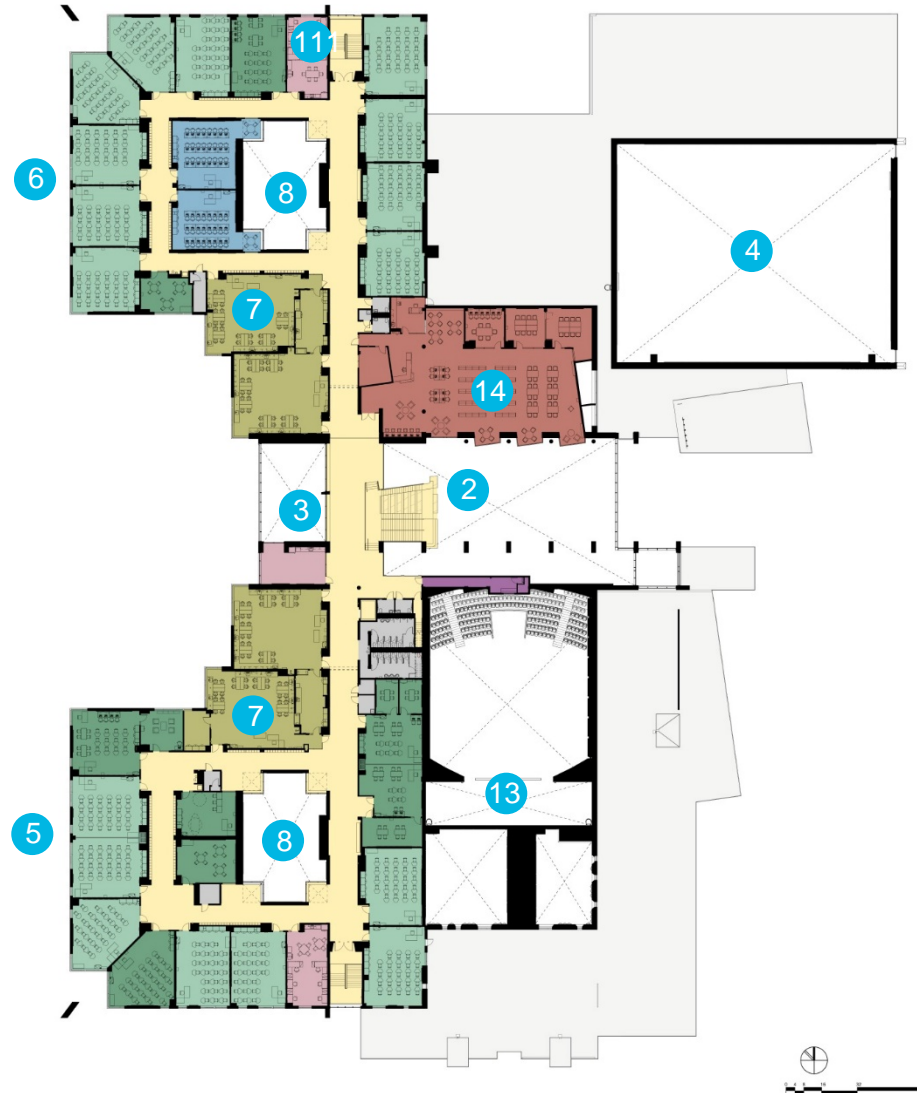


1. Administration
2. Café/Commons with Stair & Stage
3. Small Commons w/ Operable glazed wall – Large Group
4. Gymnasium, Dance & Fitness
5. Humanities, Arts, and Sciences Classroom Pod
6. STEAM Pod
7. Science Labs
8. Project Based Learning & Maker Spaces
9. Covered Outdoor Classrooms
10. Outdoor dining and Service Gardens
11. Teacher Planning
12. TV Studio and Lab
13. 750 Seat Auditorium Fine Arts & Music Suite

Second Floor Plan

Flexible and Community Centered

The glassy and open media center is located at the heart of the school, centered between the two academic pods and overlooking the student Commons



1. Administration
2. Café/Commons with Stair & Stage Below
3. Small Commons w/ Operable glazed wall – Large Group Below
4. Gymnasium, Dance & Fitness Below
5. Humanities, Arts, and Sciences Classroom Pod
6. STEAM Pod
7. Science Labs
8. Project Based Learning & Maker Spaces Below
9. Covered Outdoor Classrooms
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13. 750 Seat Auditorium
14. Fine Arts & Music Suite
- Media Center

Physical Environment



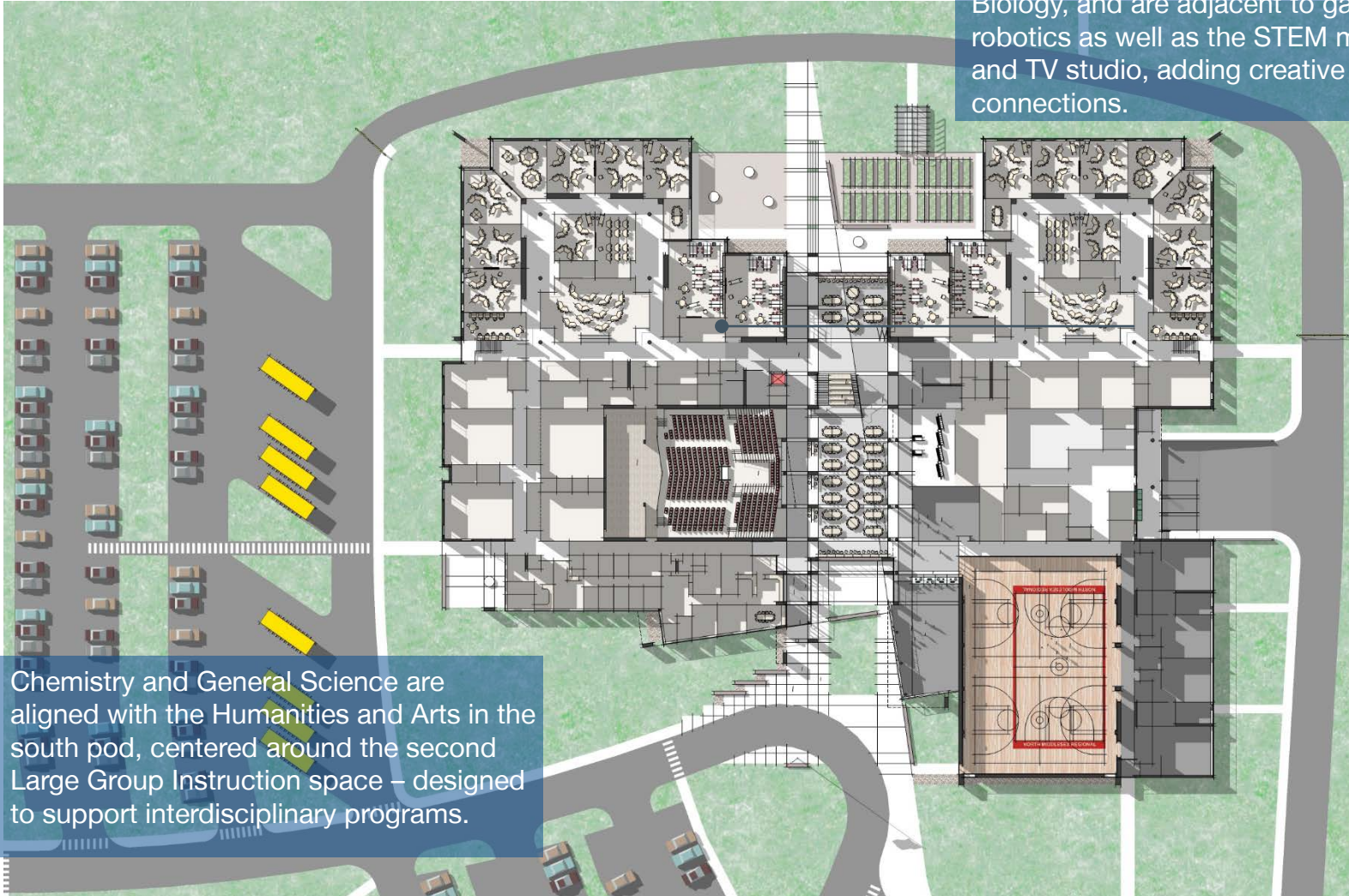
Community Use Commons

The Café Commons links all day and evening uses directly in the heart of the school – Theater, Gymnasium and the Media Center overlooking the space, but also the Dance & Weight Rooms, are visible and used by the public.

Project Based Learning

Sciences are uniquely collocated between the two academic pods, Physics and Biology, and are adjacent to gardens and robotics as well as the STEM maker lab and TV studio, adding creative connections.

Chemistry and General Science are aligned with the Humanities and Arts in the south pod, centered around the second Large Group Instruction space – designed to support interdisciplinary programs.



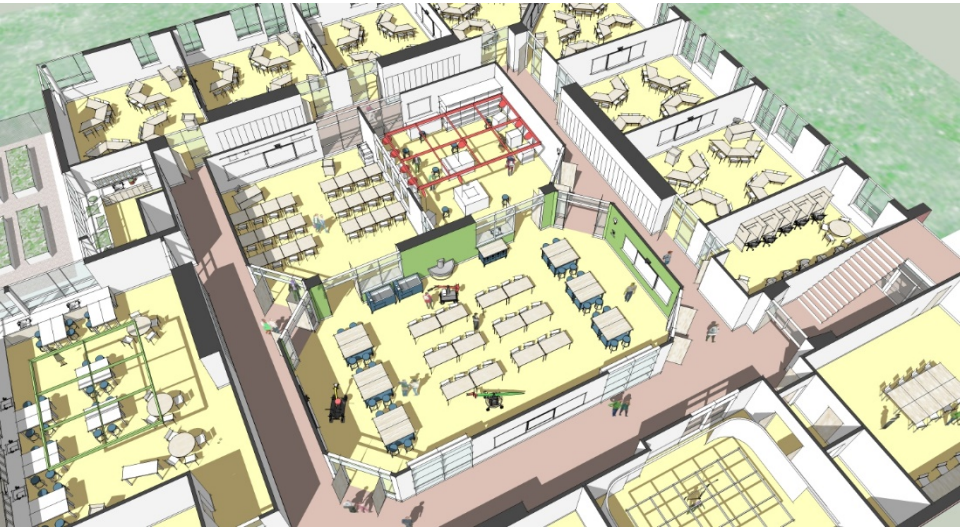
Innovations in Learning: Maker Spaces & STEAM



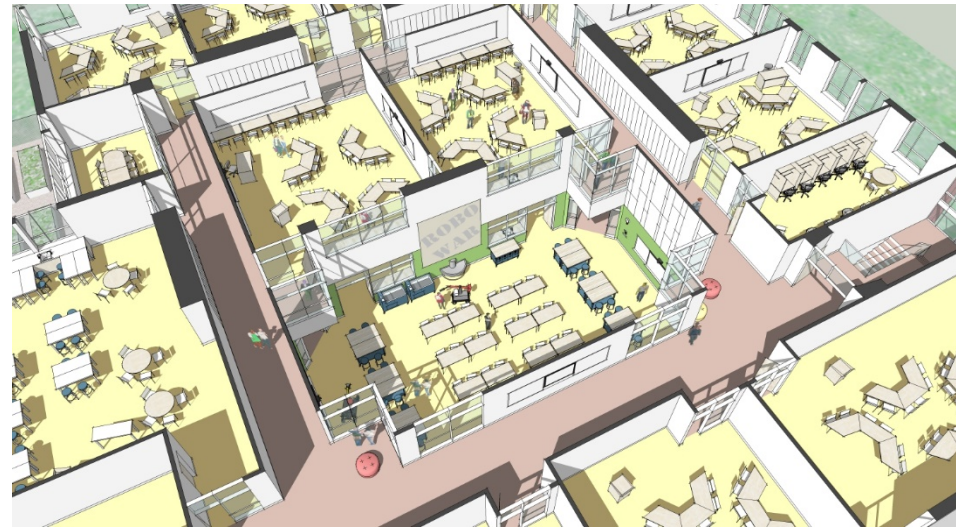
State of the Art Maker Lab

The glassy and open lab serves the Math, Business and Sciences as well as Robotics and Fabrication – the TV Studio adds a new school program for internal and external broadcasting

Planning Module



First Floor



Second Floor

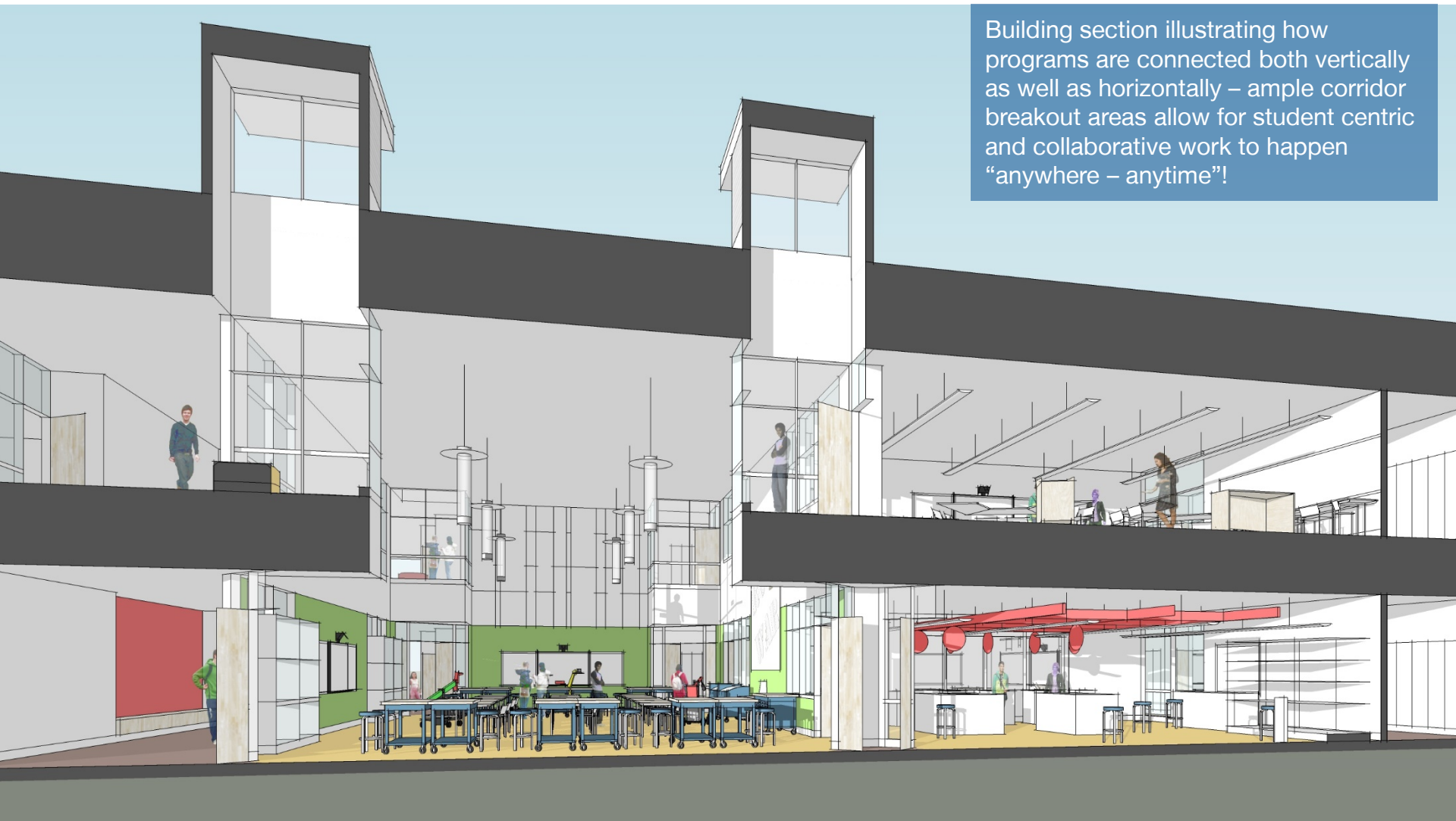
21st Century Spaces

The two pods allow for unprecedented program integration and interdisciplinary opportunities for teachers and students to explore. Every classroom has oversized borrowed lights and widened doorways, creating a more open feeling that contributes to this sense of community.

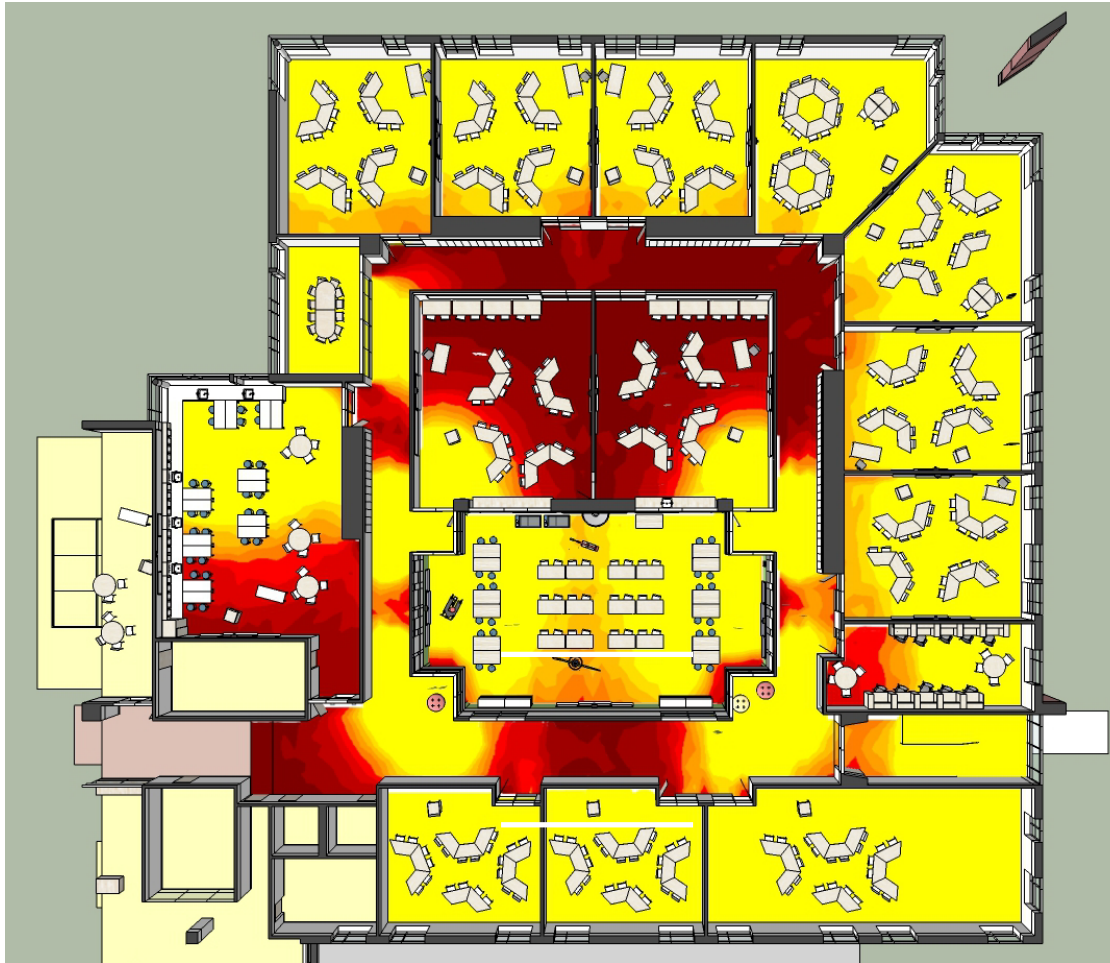


Planning Module

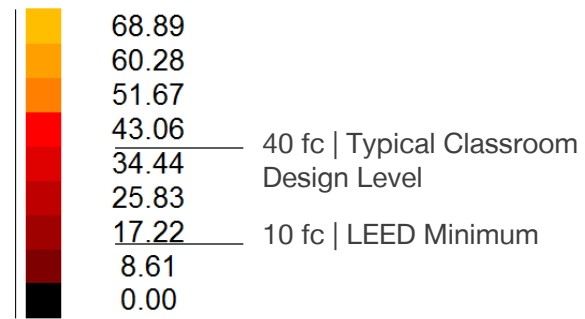
Building section illustrating how programs are connected both vertically as well as horizontally – ample corridor breakout areas allow for student centric and collaborative work to happen “anywhere – anytime”!



Planning Module



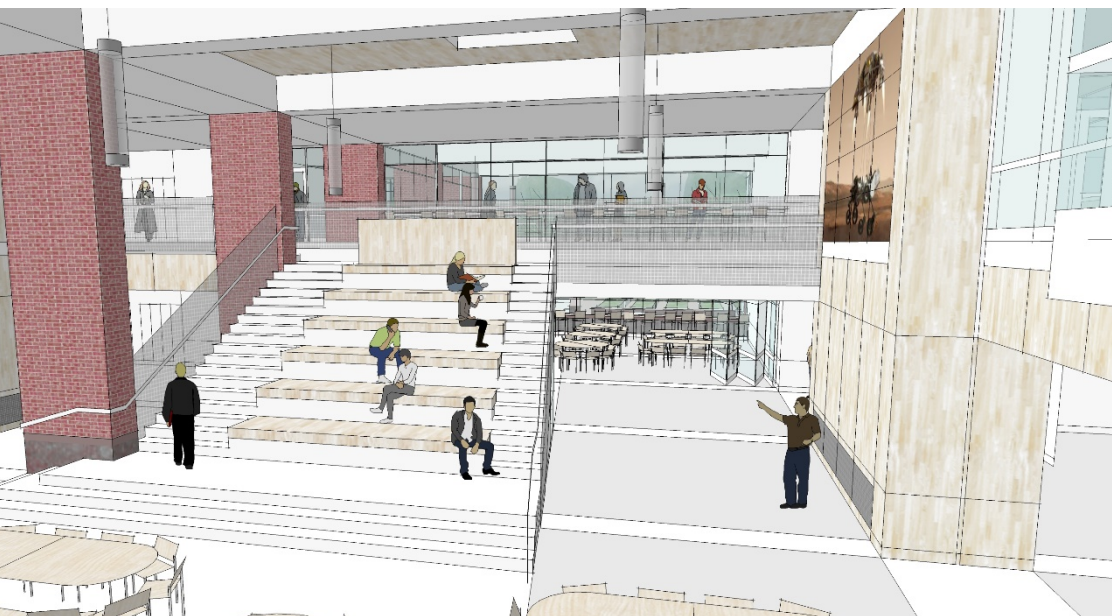
Daylight (fc)
Mar 21 12:00
Level:-0.0ft'



Daylighting Strategies

Bringing ample daylight deep into the two-story pod made space welcoming and functional; top lighting with clerestories and borrowed light is effective and efficient.

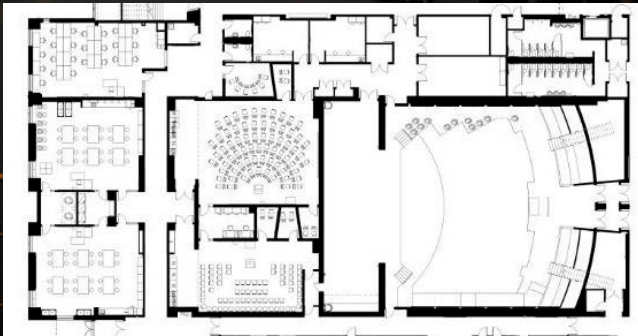
Learning Environments:



Corridors as Learning Commons

Daylit, exuberant and active learning environments that support student centered learning & increase visibility on each floor – to save space and cost every square foot of the school is considered a part of the learning process.

Learning Environment



Arts at the Heart

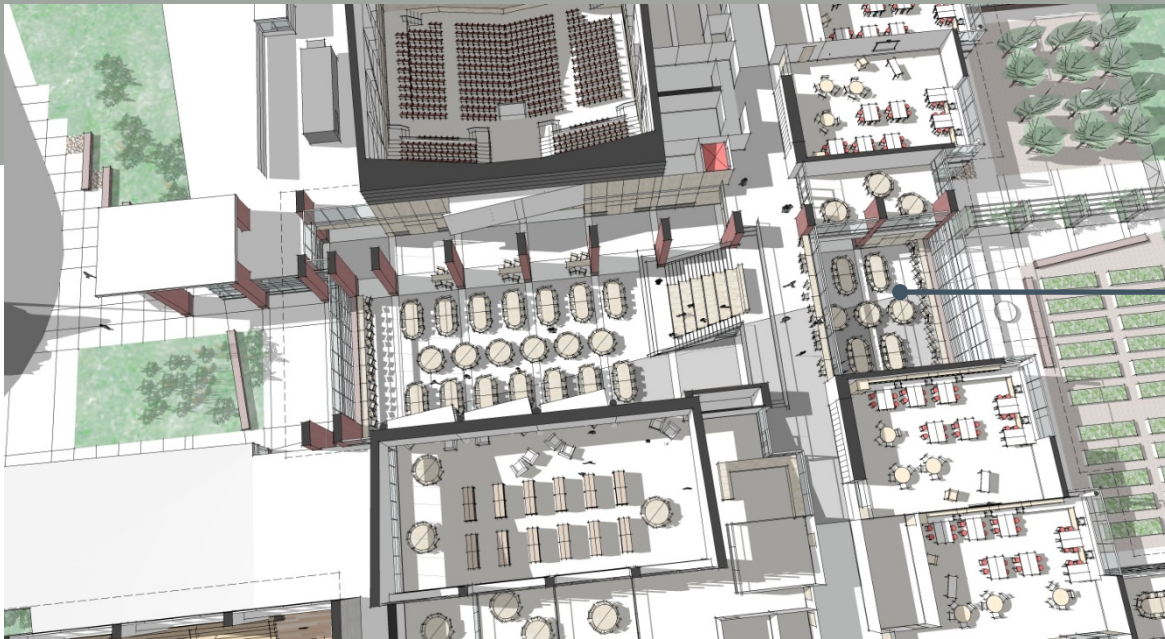
This new 750 Seat venue replaces a tiny, acoustically poor room. The state of the art theater with full fly stage will serve the popular and award winning music and theater programs and the surrounding community.

Learning Environment

The image shows a large, modern theater interior. The walls are made of curved wooden panels with a perforated pattern, illuminated from within, creating a warm, golden glow. The ceiling is dark with several cylindrical spotlights hanging down. A large audience is seated in a semi-circle, facing a stage. The stage is lit with blue spotlights, and a few performers are visible on it. The overall atmosphere is one of a high-quality, contemporary performance space.

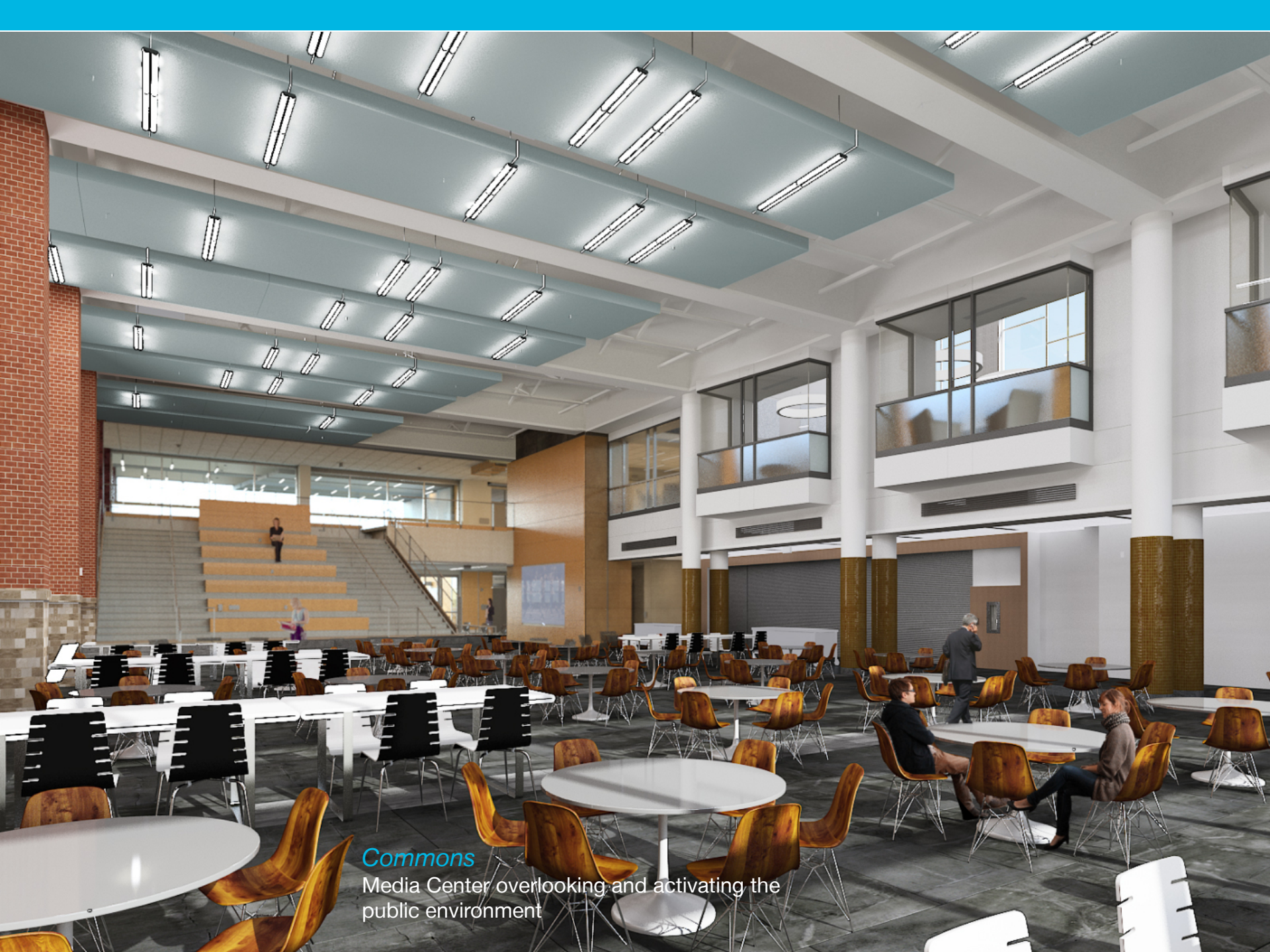
Theater

The new venue will be the regional center for arts, serving more than just the three district communities.



Cafeteria/Commons

The Commons stretches from front to back, bringing daylight throughout the heart of the public spaces. Uniquely, the Café has a smaller, carved off portion that has various functions: it can be used as an additional Large Group Instruction Space; a quieter, more intimate dining area for functions; or it can be a refuge for students more intimidated by larger spaces.



Commons

Media Center overlooking and activating the public environment



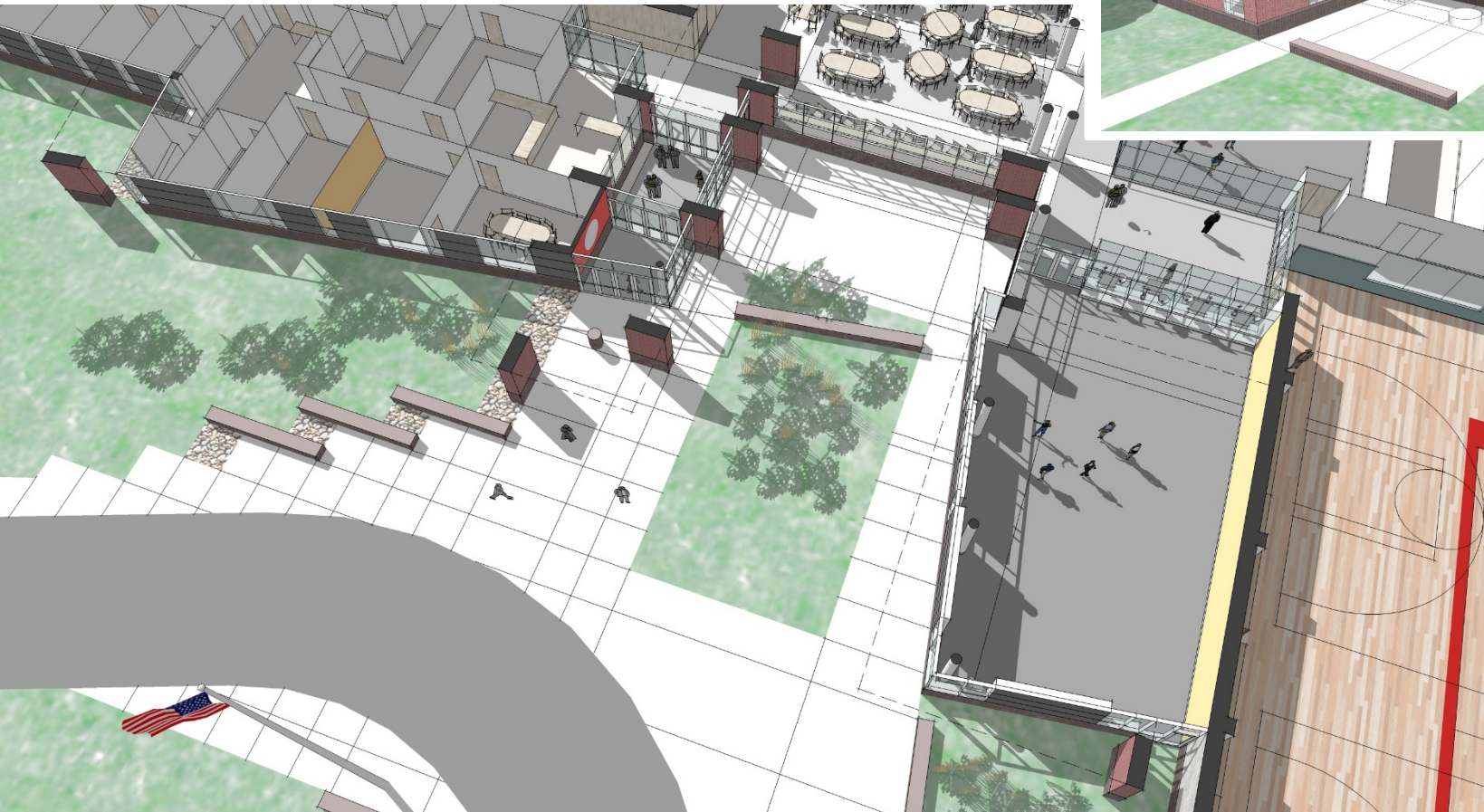
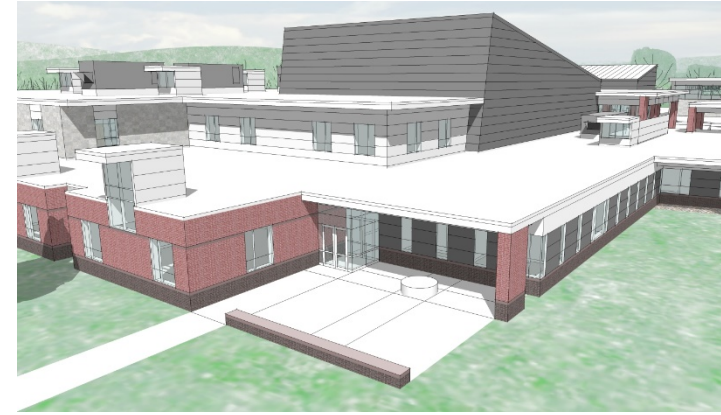
Commons

Theater entrance and informal performance spaces

Innovations in Learning: Exterior Learning Environment

Rural Roots

NMRHS remains rooted in an active farming community and natural environment. Families have a strong affinity with the outdoors and the building seeks to not only bring the outdoors in but to extend the learning environment outward – there are four distinct outdoor learning classrooms strategically located around the school.



Innovations in Learning: Exterior Learning Environment

Charitable Hearts

In addition to the three outdoor classrooms, the school has an active service club with a vegetable garden and aquatic hydroponic pool. These students donate over 10,000 lbs. of food to local shelters every year. In the new design, the program is now more closely associated with the sciences and STEAM programs.



Physical Environment



A continuous plinth of darker, textured brick, and a granite water table inspired by local stone walls, help situate the building in its rural landscape. The floors above the first floor window heads are porcelain panels, providing a stone like look and feel. Less costly metal wall surfaces are held high off the ground.

Main Entrance

It was critical that the new school express the goals and aspirations of the three communities with high quality materials such as granite and porcelain wall panels that illustrate the Towns' investment.



Results

- Because it lies adjacent to the existing high school, teachers and staff have incorporated the construction of the new school into their art curriculum, having students regularly photograph, paint, and model the building to document its progress.
- Right-sizing the physical plant to meet the school population is viewed not only as a financial benefit, but also as a culture-building aspect of the new school.
- The design is considered a highly cost-effective means of meeting the stringent performance goals stipulated by the three communities it serves.
- The district is realizing an increase in the number of returning choice-out students, as a result of the high school's imminent opening in the fall.

Project Data

| | |
|----------------------------------|---|
| Project Name | North Middlesex Regional High School |
| City | Townsend |
| State | MA |
| District Name | North Middlesex Regional School District |
| Supt/President | Dr. Joan Landers |
| Occupancy Date | September 2017 |
| Grades Housed | 9 to 12 |
| | |
| Capacity(Students) | 870 |
| Site Size (acres) | 20.2 acres |
| Gross Area (sq. ft.) | 180,530 sf |
| Per Occupant(pupil) | 207 sf |
| gross/net please indicate | 1.49 |
| | |
| Design and Build? | Design Bid Build |
| If yes, Total Cost: | \$64,995,000 |
| Includes: | Theater, new football, track and field, and baseball fields |
| | |
| If no, | |
| Site Development: | |
| Building Construction: | |
| Fixed Equipment: | |
| Other: | |
| | |
| Total: | \$64,995,000 |