



# Middle School Renovations

## Community Unit School District 200

Concept Design Deliverable

June 7, 2024

Perkins&Will



**To inspire, educate, challenge, and support all students to reach their highest level of learning and personal development.**

**Acting on the 2016 Facility Master Plan Report, this Concept Design document implements the improvements recommended by an analysis of the existing facilities, interviews with teachers and staff, and building team discussions. This work builds upon the guiding principles developed by the community to support their vision for a Portrait of a Graduate.**

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## Project Team

## Perkins&Will

Architect



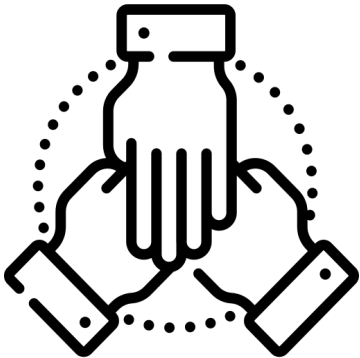
MEP/FP Engineer



Civil Engineer

# 00 Overview

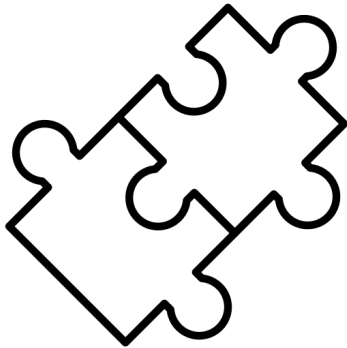
The project’s design concept was shaped by the District goals for academic excellence, underpinned by the Portrait of a Graduate...



A **collaborator** is someone who valuably contributes when working with others and is one who understands and values the diverse strengths of others, particularly by displaying a sense of empathy.



A **resilient learner** is someone who responds to challenges, engages in effortful learning, and demonstrates adaptability amidst change.



A **problem solver** is someone who designs and creates solutions by innovating, thinking critically and independently, and is ethical in their decision making.



A **communicator** is someone who articulates and expresses thoughts clearly, self-advocates for their needs, and listens and understands diverse perspectives.

With that profile in mind, the design intent was threefold...

1. To **realign** the educational environments to match the current and future goals of the community and the District by providing spaces that are flexible and adaptable.
2. To provide spaces and places that will maximize educational outcomes by addressing critical building **infrastructure** and systems needs.
3. To improve **accessibility, safety, and security** within the building while maintaining the sense of community for all students, staff, and faculty.

**Realignment**

The participatory process behind the improvement projects was based on three simple questions: What works now? What needs improvement? Where is education going in the future and how can facilities support that? This wasn't an exercise to grow a building's footprint, but to understand how the existing building could work harder for the District through understanding misalignments or opportunities for improvement within the current footprint. Only after exhausting those options would the team explore other areas for improvement.

The answers to these questions were not unchecked growth of facilities, but pragmatic, focused improvements, intended to provide spaces that are adaptable and easily reconfigurable. A majority of discussions centered around improving classrooms to remove barriers to educational delivery by changing furniture types, updating lighting, removing sources of noise, addressing temperature irregularities and maintaining parity throughout the District related to classroom configurations and science class lab size.

A renewed focus on elective class space is shown through the construction and renovation of purpose-built space around music, performing arts, family and consumer sciences, and career/technical education. Currently undersized or lacking space to provide adequate instructional support, music and performing arts facilities at all three schools will be addressed through strategic improvements or new construction.

Other elective spaces will be constructed to align with the Pathways programs at the High Schools, providing a feeder program that can adapt and change over time as new programs become available.

Small group and drop-in itinerant space provides focused space for students to meet with specialists outside of the classroom, areas for small groups to meet and collaborate, and dedicated areas for students to make up tests, meet with teachers, or complete assignments while being supervised.

**Infrastructure**

The three middle schools have had several additions since their original construction, and all have basic infrastructure needs that need to be addressed due to their age. This provides an opportunity to assess the current building systems and provide options for improvements that also reduce the energy use for each of the buildings. Through improved mechanical and electrical systems, the District can realize significant energy savings. Utilizing grants that are available can also reduce the initial cost of energy efficient systems and equipment where possible.

The goal is to address aged systems, provide consistent improvements to simplify management and reduce energy use, and provide an improved educational environment for all students, staff, and faculty.

An environment that has consistent lighting, reduced noise impact, and improved air quality provides the backbone for improved educational results for all students. Removing those barriers to the delivery of education benefits all students.

**Access/Safety/Security**

Along with the infrastructure improvements, providing a building that provides a sense of security, safety, and is easily accessible by all students is a baseline for improved educational delivery.

There are opportunities for sightline improvements at all three schools, providing corridors, stairs, restrooms, and other common areas that are easily observable and readily accessible.

Providing improvements for handicapped accessibility at all three schools also provides a sense of community, allowing all students to participate alongside one another.

A major priority was along consolidation and expansion of student wellness facilities to provide the school's wellness teams an opportunity to collaborate and care for students in need in a more comprehensive manner. Each school has a focus on providing centralized, consolidated student health and wellness space.

#QOTW



**KINDNESS**  
is a gift  
everyone can  
afford to give.

1 2 3 4 5 6 7 8 9 10 11 12

1 I can evaluate expressions

2 I can follow order of operations

3 I can...

4 I can...

5 I can...

6 I can...

7 I can...

8 I can...

9 I can...

10 I can...

11 I can...

12 I can...



IT'S  
COOL  
TO BE  
KIND

COACH

CHECK YOUR  
MINDSET

1	2	3	4	5	6	7	8	9	10	11	12
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TURN IN



# 01 Common Elements

# Common Elements

While each school has scope specifically aligned with that facility’s needs, there are certain aspects that are common amongst all three buildings. These *Common Elements* form the base package of improvements that will ensure the buildings are prepared to fulfill their mission into the future.

## Circulation Spaces

*Replace dated hallway finishes with a modern material and color palette. Realign portions of corridor to allow for better visibility and operational efficiency.*

**SCOPE: FINISH/LIGHT RENOVATIONS**

- Replace suspended ceiling and lights, resilient floor tile, and wall finishes.
- Replace doors and hardware.
- Update building signage and displays.
- Adjust locker locations/counts to current and anticipated school population

## Building Systems

*Provide new mechanical system focused on student health, energy efficiency, building resiliency, and ease of maintenance.*

**SCOPE: HEAVY RENOVATIONS**

- Replace building HVAC system. Utilize existing components where opportunity allows. Standardize across the three buildings as much as possible while aligning with District-wide goals.
- Expand building fire sprinkler system throughout entire facility.
- Replace any remaining galvanized piping in the domestic water system. Replace water heaters and other infrastructure in coordination with toilet room upgrades.
- Building A/V, security, clock, & intercom renovations aligned with current District-wide information technology goals
- Electrical upgrades to support new building additions and interior renovations. Modernize dated switchgear/service sizes as appropriate.

*Refer to MEP Narratives in appendix for detail descriptions of scope.*

## Toilet Rooms

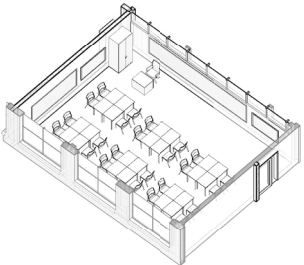
*Update toilet rooms to provide modern, ADA accessible facilities that supports student privacy and facility longevity.*

**SCOPE: HEAVY RENOVATIONS**

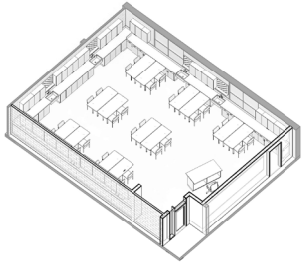
- Rework room entry to be accessible while eliminating sightlines into the space.
- Replace plumbing fixtures, toilet partitions, and accessories. Adjust fixture locations to provide ADA compliant facilities.
- Replace floor finishes with porcelain tile or resinous flooring. Provide ceramic tile wainscot.
- Provide new suspended ceiling and lighting.

**Additional Common Elements, described in further detail in this section:**

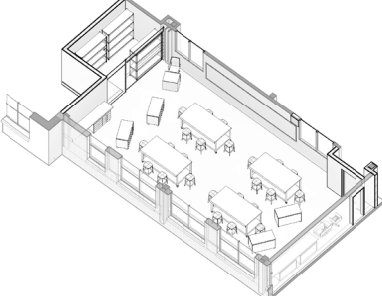
**General Classroom**



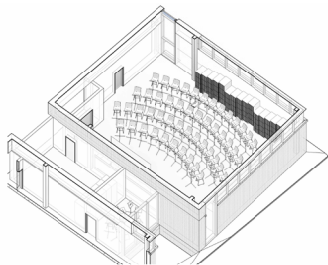
**Science Labs**



**Visual Arts & Exploratory Labs**



**Performing Arts**





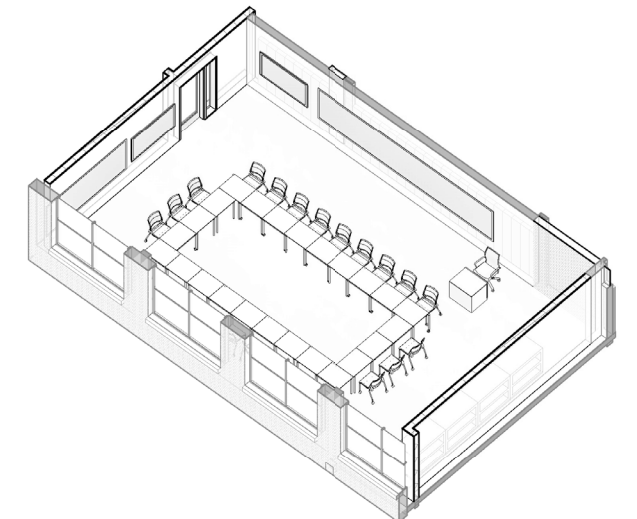
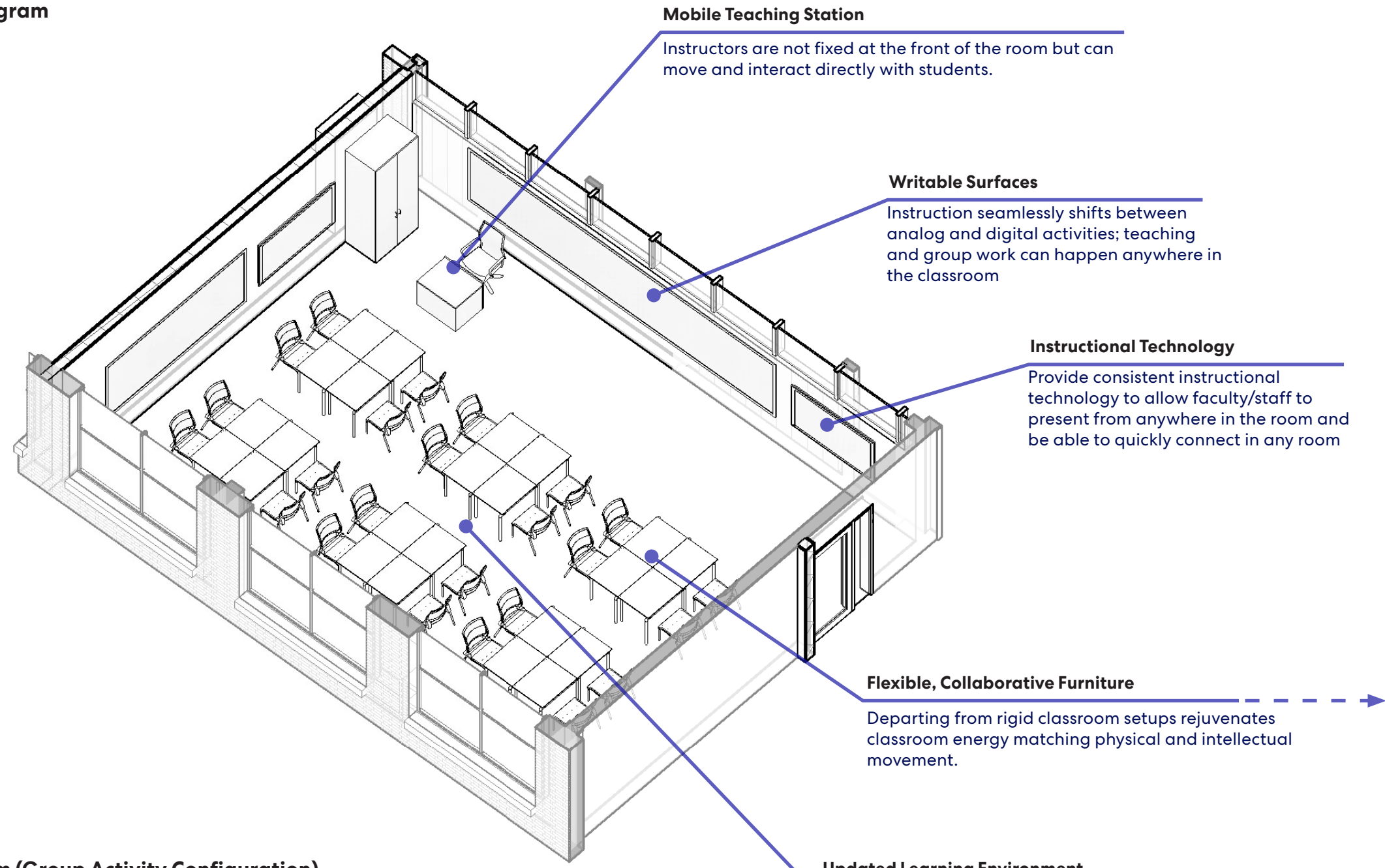


**Common Element - Typical Classroom**  
*Existing Conditions*

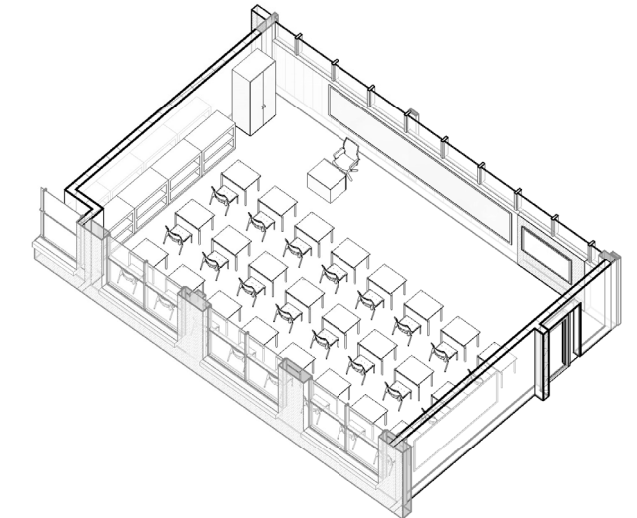
*In order to navigate the future, classrooms must become multi-faceted, providing increased control and full access to technology. As the room that students spend the most time in, this environment can have a profound impact on their academic and biologic growth.*

*Classrooms at all three schools are populated with decades old, heavy furniture targeted to one type of learning: direct instruction. A mixture of classroom technologies, storage, and finishes presents challenges to providing a consistent academic approach across the District.*

Axonomic Diagram



Socratic Discussion Configuration



Direct Instruction Configuration

Typical Classroom (Group Activity Configuration)

*Inspire academic excellence with a modern, flexible learning environment.*

SCOPE: FINISH/LIGHT RENOVATIONS

- Replace resilient tile flooring, wall base, suspended ceilings, and lighting with new. Repaint wall surfaces and metal frames. Replace window treatments with manual roller shades.
- Replace room entry doors and hardware.
- Remove existing fixed room storage and provide new mobile storage units. Replace student desks & chairs with a focus on collaborative, rapidly reconfigurable furnishings.
- For classrooms without windows, consider options to provide daylighting.



**Common Element - Typical Classroom**  
*Concept Rendering*



**Socratic Discussion Configuration**



**Direct Instruction Configuration**

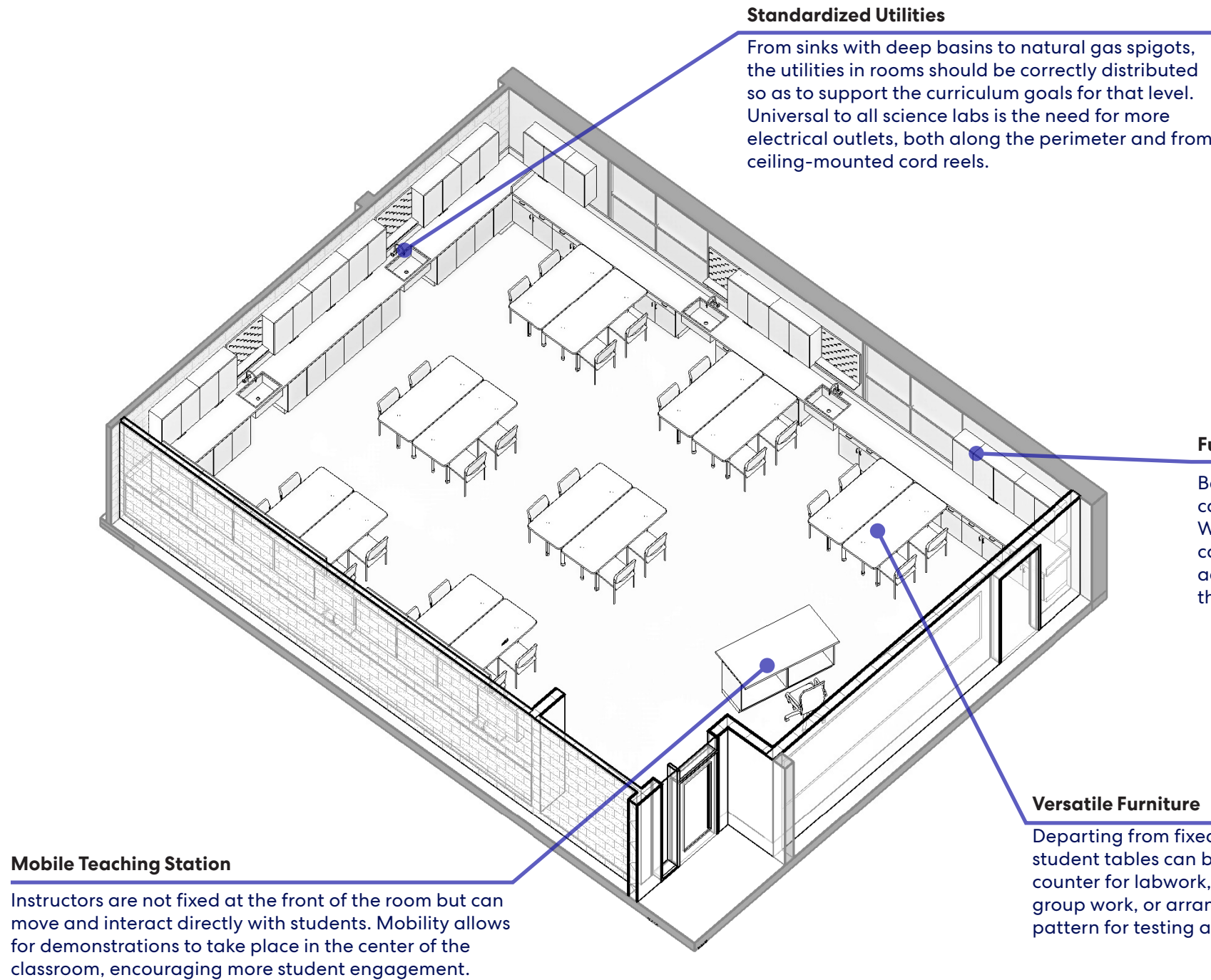


## Common Element - Science Lab

### Existing Conditions

Departing from the “follow the instructions” model of science learning, modern day middle school labs provide students the opportunity to lead their own projects, developing problem-solving skills as they discover scientific principles on their own. Science rooms at each facility display a wide variety of existing conditions that creates issues for curriculum parity within individual schools, let alone across the District. Rigid cabinetry, mis-matched storage, and dated infrastructure need updating to match modern science pedagogy.

Axometric Diagram



**Standardized Utilities**

From sinks with deep basins to natural gas spigots, the utilities in rooms should be correctly distributed so as to support the curriculum goals for that level. Universal to all science labs is the need for more electrical outlets, both along the perimeter and from ceiling-mounted cord reels.

**Furniture As Learning Surface**

Beyond replacing aged cabinetry, science lab casework can become a tool to encourage experimentation. Whiteboard surfaced doors can communicate cabinet contents or project objectives during student-led activities, supporting the creation of independent science thinkers.

**Versatile Furniture**

Departing from fixed table science labs, moveable student tables can be “docked” to the perimeter counter for labwork, pushed together for small group work, or arranged in a more traditional pattern for testing and direct instruction.

**Mobile Teaching Station**

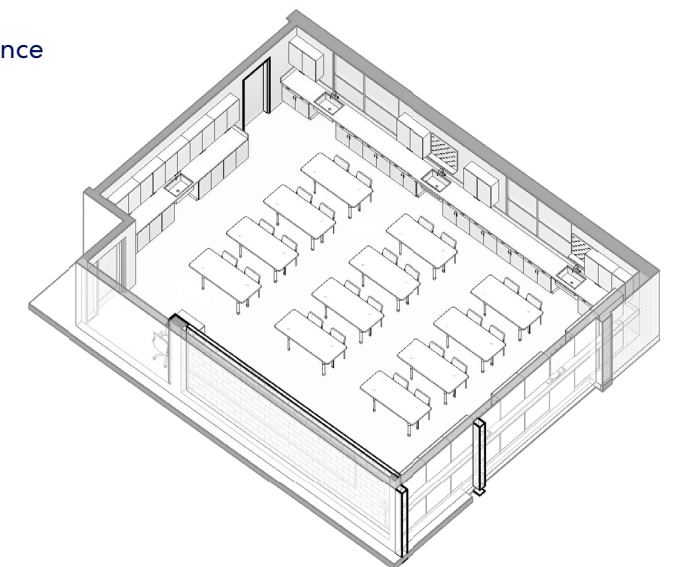
Instructors are not fixed at the front of the room but can move and interact directly with students. Mobility allows for demonstrations to take place in the center of the classroom, encouraging more student engagement.

**Typical Science Lab (Small Group & Lab Activity Configuration)**

*Create a modern learning environment that supports project-based, student-focused learning strategies. Align infrastructure with the needs of forward-thinking science curriculum.*

**SCOPE: MEDIUM/HEAVY RENOVATIONS**

- Demolish existing partition walls and construct new right-sized science classrooms to District standard. Create new shared prep rooms.
- Replace science lab casework with new perimeter hardwood casework and epoxy resin countertops and sinks, provide ADA accessible workstation. Upper wall cabinets in labs to be white board surface.
- Provide lab utilities (gas, electric, etc.) according to curriculum needs.
- Provide mobile student work tables and mobile teacher station.
- Replace resilient tile flooring, wall base. Replace suspended ceilings and lighting. Repaint wall surfaces and metal frames.
- Replace room entry doors and hardware. Provide manual roller shades for windows.



**Direct Instruction Configuration**



**Direct Instruction Configuration**



**Common Element - Science Lab**  
*Concept Rendering*



*Music education benefits students in varied and profound ways. Students who participate in music develop social skills, making them better communicators and collaborators. Music education gives students the opportunity to building language skills and convey emotional experiences.*

*Common to all three schools are music facilities that were either inadequately designed for the designated function or simply not intended for that use, at all. Storage strategies vary widely as does the age and distribution of storage cabinets.*

**Common Element - Music Classroom**  
**Existing Conditions**



## Axonometric Diagram

### Acoustical Design

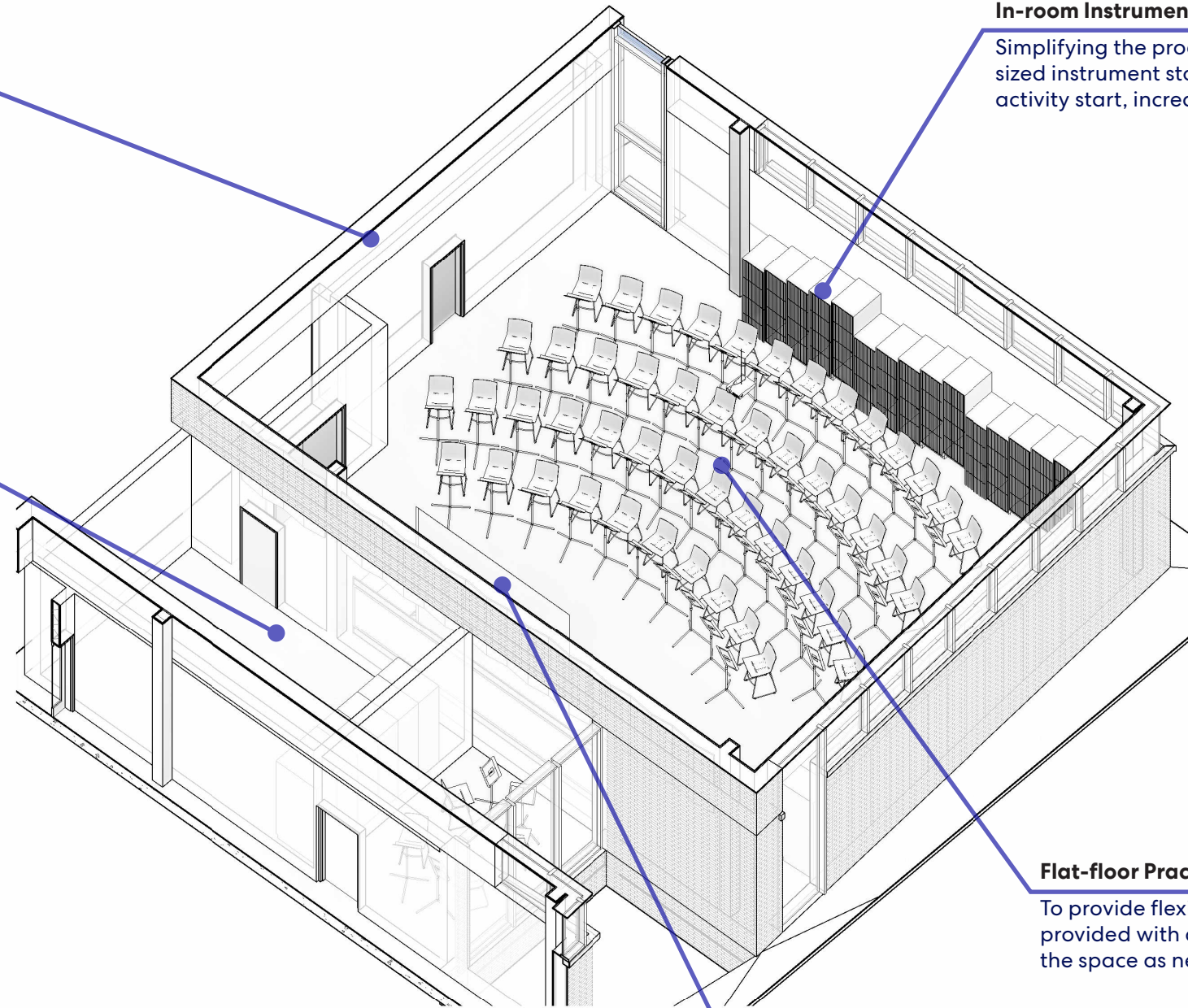
Provide engineered acoustical treatment in-room for better sound quality. Enhance existing or create new acoustically insulated construction for enclosing walls.

### Dedicated Practice Rooms

Practice rooms in multiple sizes, accessed from the main classroom allow for smaller groups of students to work independently while still in a supervised location that doesn't disturb adjacent spaces. To maximize utilization, larger practice rooms also house shared storage.

### In-room Instrument Storage

Simplifying the process of setup/takedown, right-sized instrument storage in-room allows for quicker activity start, increasing instructional time.



### Flat-floor Practice Room

To provide flexibility for the future, classrooms are provided with a flat floor, allow reconfiguration of the space as needs change over time.

### Integration of Technology

Music education has increasingly embraced technology increasing student engagement, especially through easy of sharing music across platforms.

## Typical Music Classroom

**Create acoustically tuned classrooms with supporting instrument storage and technology. Provide individual and sectional rehearsal spaces to support performing arts program.**

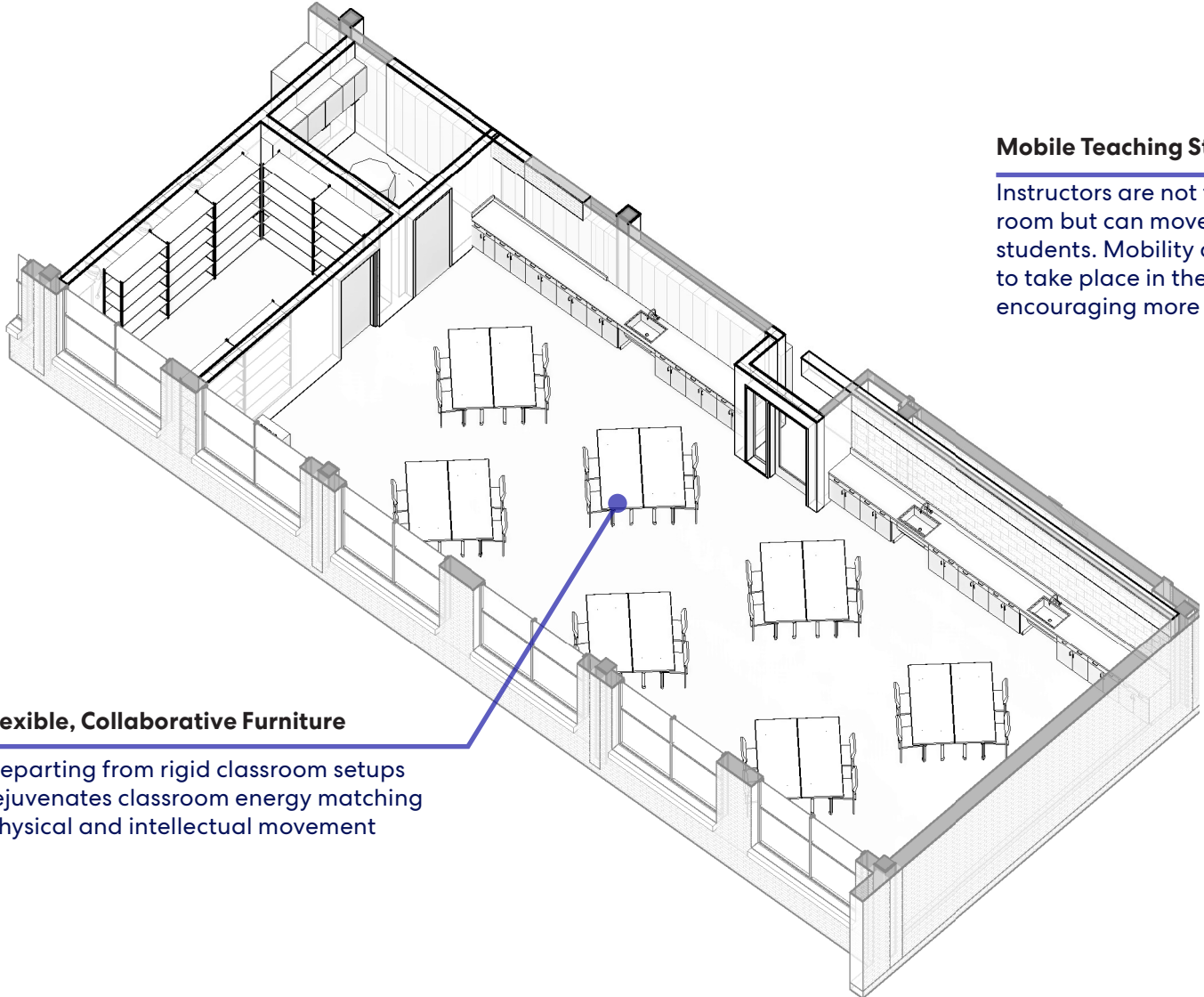
### SCOPE: MEDIUM/HEAVY RENOVATIONS & BUILDING ADDITIONS

- Create new CMU & brick cavity bearing wall addition on concrete stem wall foundation and spread footings. Glazing to be aluminum curtain wall. Roof support to be structural steel bar joists and metal deck. Concrete slab on grade with new resilient tile flooring.
- Provide acoustical ceiling, lights, and wall-mounted acoustical panels. Interior stud partition walls and hollow metal frames with solid core wood doors.
- Provide motorized window curtains.
- Create acoustically insulated small and section practice rooms.
- Large instrument storage system in the classroom with sheet music and small instrument storage divided between in-room and shared storage room.



**Common Element - Music Classroom**  
*Concept Rendering*

Axometric Diagram

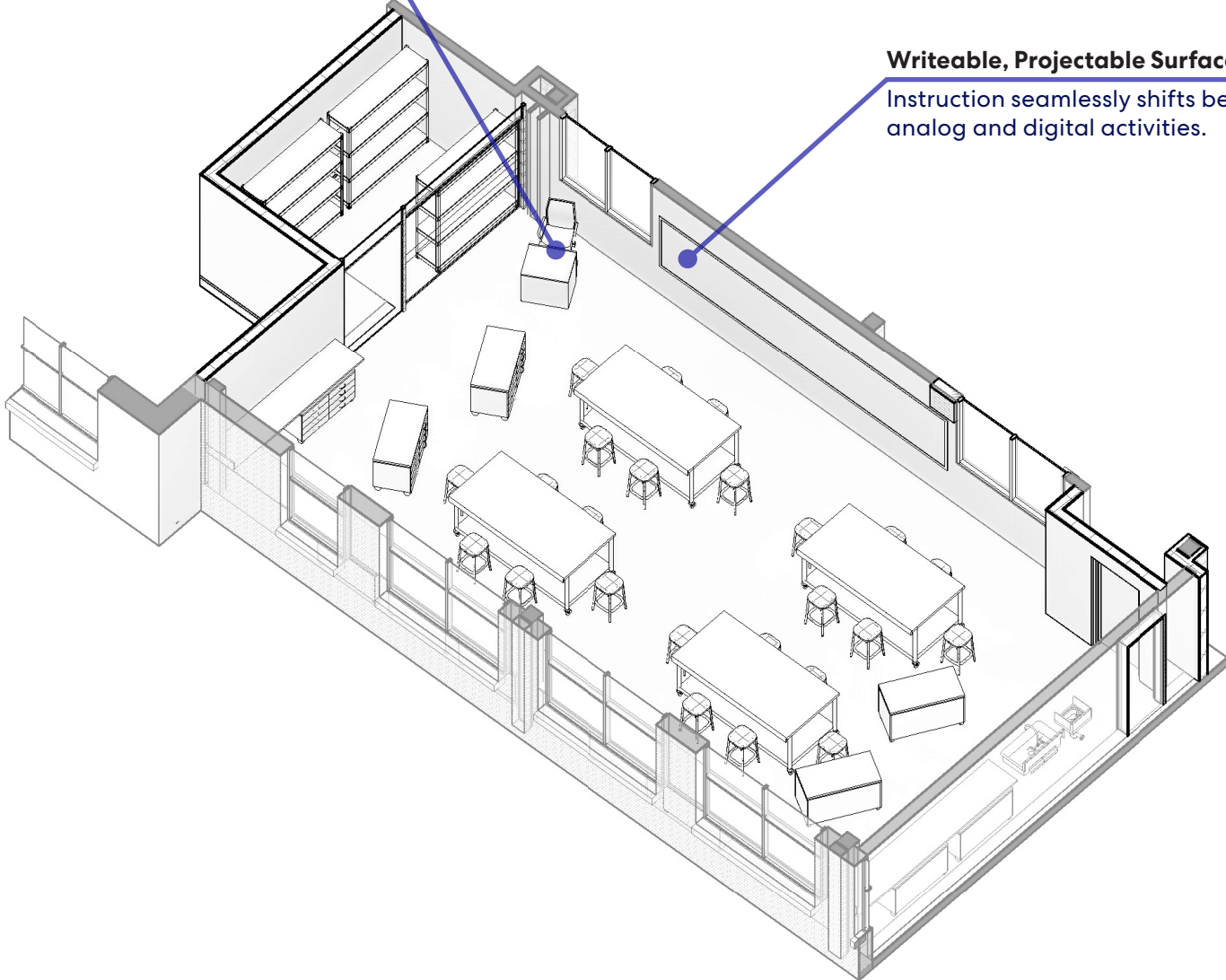


**Flexible, Collaborative Furniture**

Departing from rigid classroom setups rejuvenates classroom energy matching physical and intellectual movement

**Mobile Teaching Station**

Instructors are not fixed at the front of the room but can move and interact directly with students. Mobility allows for demonstrations to take place in the center of the classroom, encouraging more student engagement.



**Writeable, Projectable Surfaces**

Instruction seamlessly shifts between analog and digital activities.

**Visual Arts & Exploratory Labs**

*Spaces for creators. Update art rooms to better support flexibility of room layout and media and enable entrepreneurship. Support developing Pathways program with elective spaces including Career Technical Education (CTE) and Family & Consumer Sciences (FACS).*

**SCOPE: MEDIUM RENOVATIONS**

- Create new CMU & brick cavity bearing wall addition on concrete stem wall foundation and spread footings. Glazing to be aluminum curtain wall. Roof support to be structural steel bar joists and metal deck. Concrete slab on grade with new resilient tile flooring.
- Provide acoustical ceiling, lights, and wall-mounted acoustical panels. Interior stud partition walls and hollow metal frames with solid core wood doors.
- Provide motorized window curtains. Storage divided between in-room and shared storage room.



**02 Edison Middle School**

# Site Plan

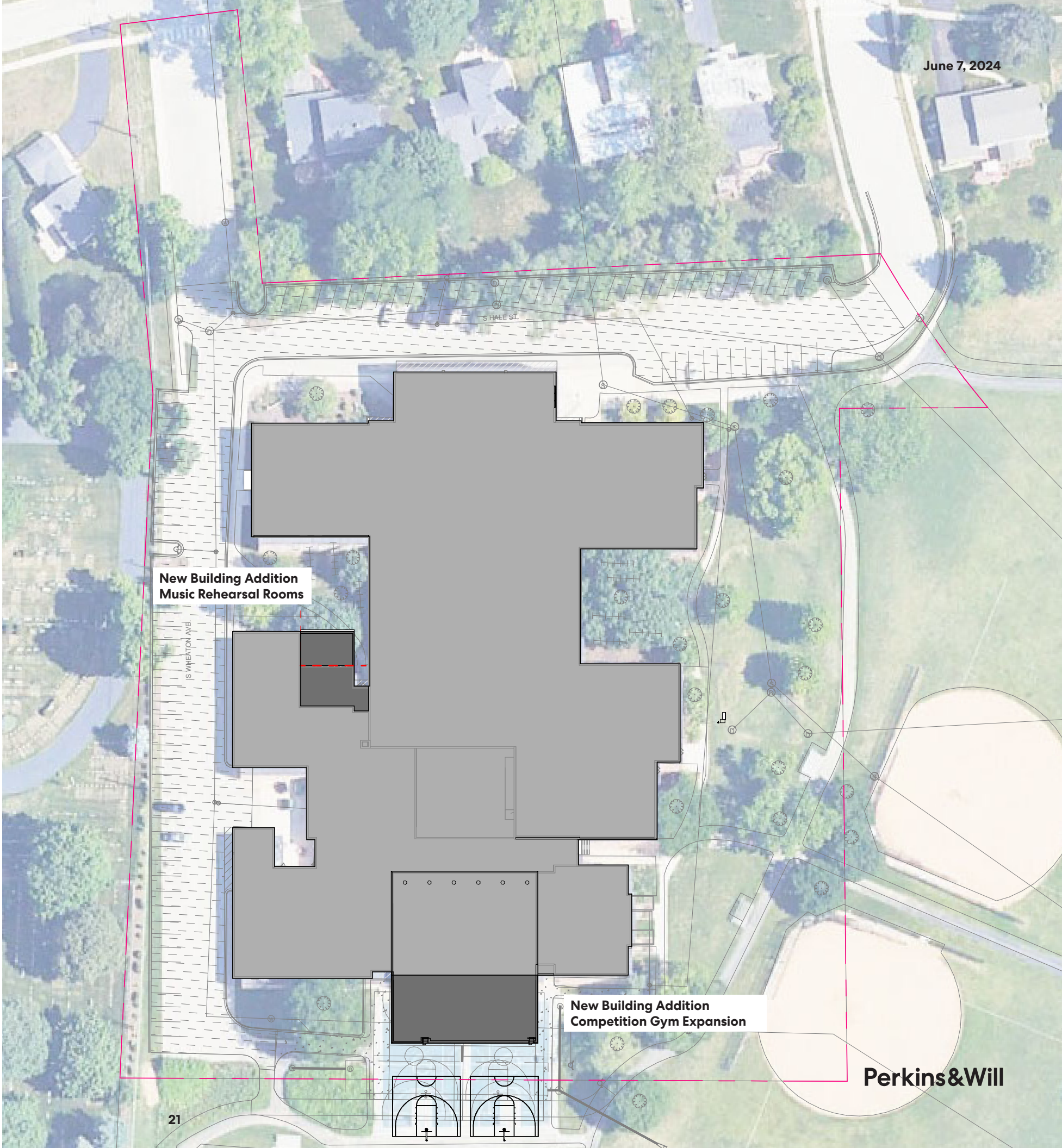
## Edison Middle School

### PROJECT OVERVIEW

The work at Edison Middle School is focused around updating existing facilities, addressing critical building systems and infrastructure needs, and right-sizing classroom and class lab space to address mis-matches between program enrollment and pedagogical shifts. In order to accomplish this, significant interior renovation, coupled with strategic building expansion allows for repositioning of existing facilities for flexible future use.

### SITE CONSIDERATIONS

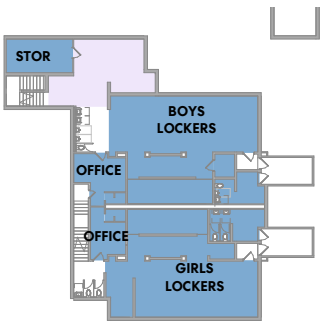
- 1. Areas for new Additions are highlighted in the diagram, those are for expansion of Performing Arts Music Rehearsal Rooms and the Main Competition Gymnasium
- 2. The site is extremely limited in available area for development. Replacement of existing outdoor play space is shown in an area with current outdoor play space operated with a collaborative agreement with the Park District.
- 3. Additional investigation needed to determine overall storm water management impacts from the new building additions and the expanded parking lot.



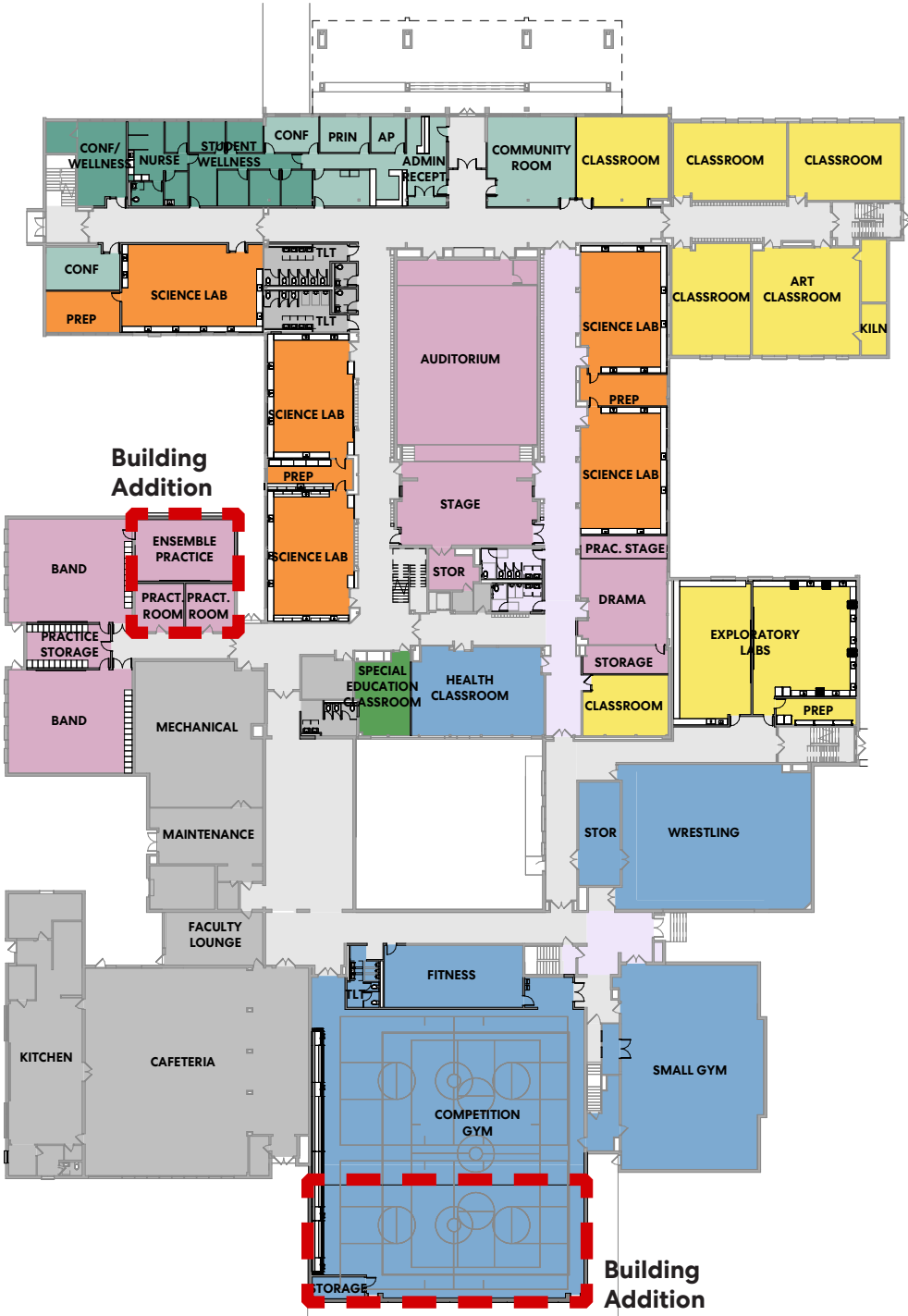
# Program Plans

## Edison Middle School

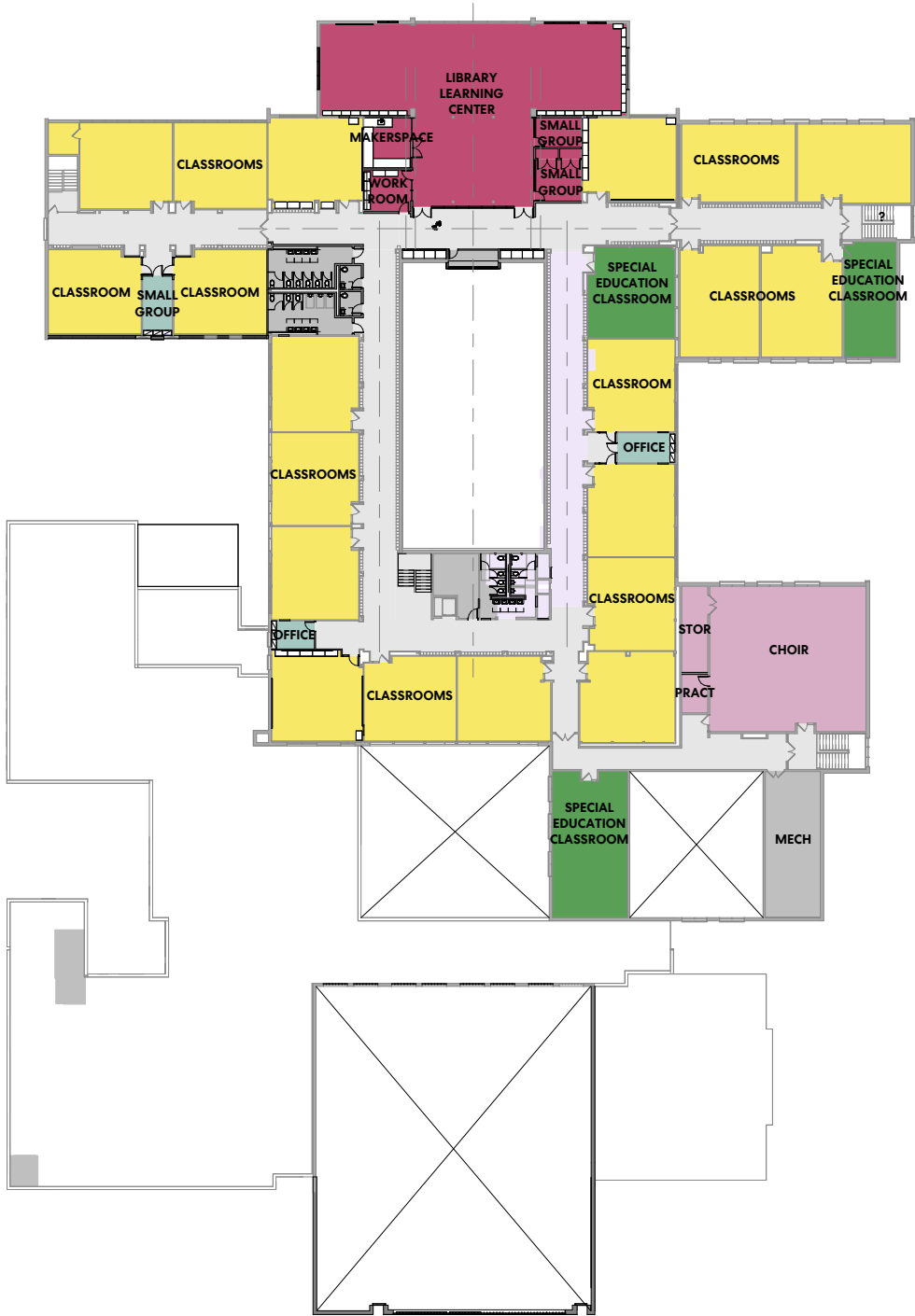
- ADMIN
- CIRCULATION
- CLASSROOM
- CORRIDOR
- LIBRARY LEARNING CENTER
- PERFORMING ARTS
- PHYSICAL EDUCATION
- SCIENCE EDUCATION
- SPECIAL EDUCATION
- STUDENT WELLNESS
- SUPPORT



Basement



Level 01

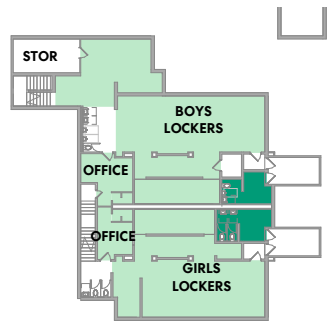


Level 02

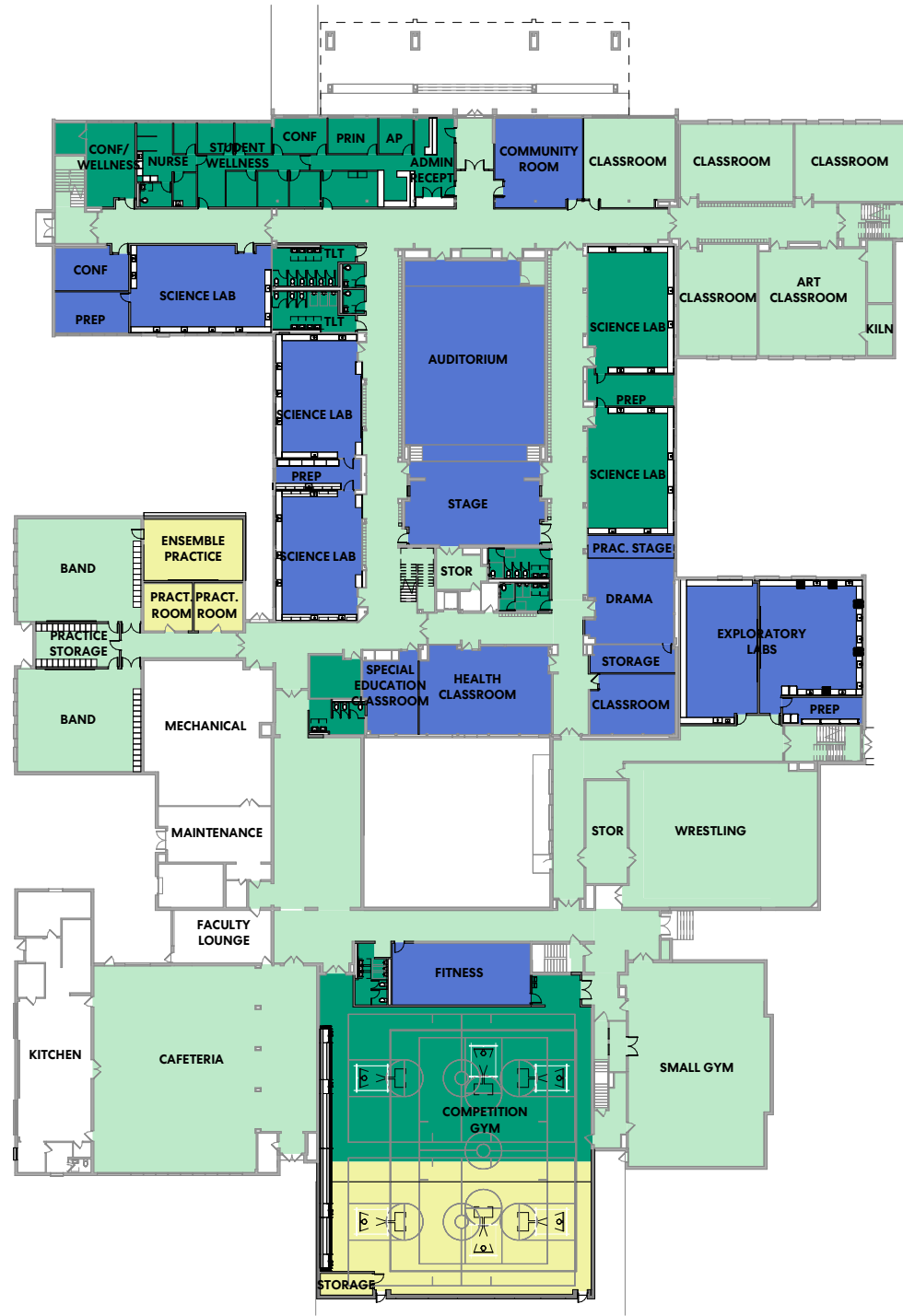
# Scope of Work Plans

## Edison Middle School

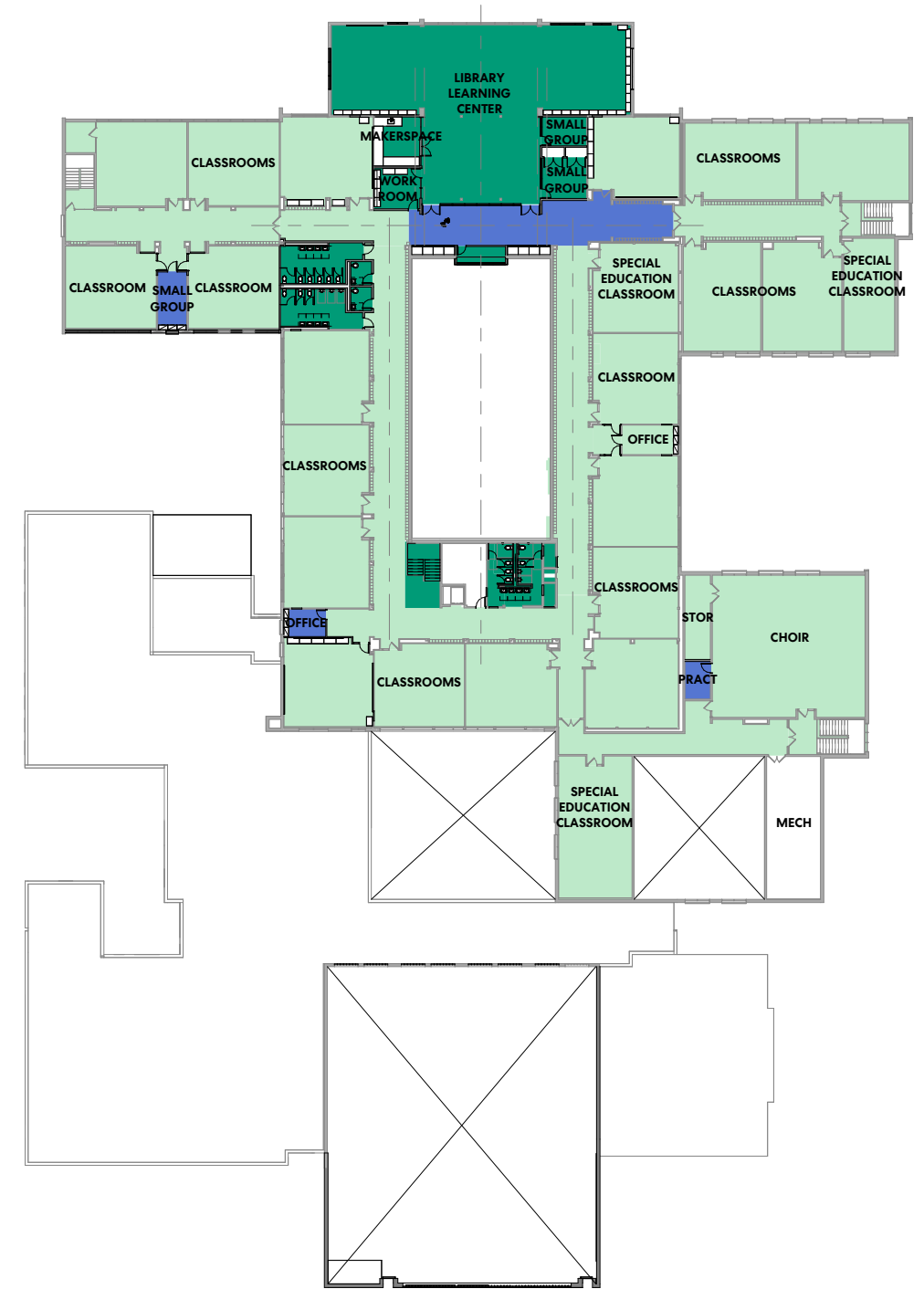
- BUILDING ADDITION**
- HEAVY RENOVATION**  
Significant changes to walls and/or floor slabs, new finishes and utilities throughout.
- MEDIUM RENOVATION**  
Replace space finishes, minor partition wall or floor slab work. New utilities throughout.
- FINISH/LIGHT RENOVATION**  
Replace floor, ceiling/lights, and wall finishes. New doors/hardware.



**Basement**



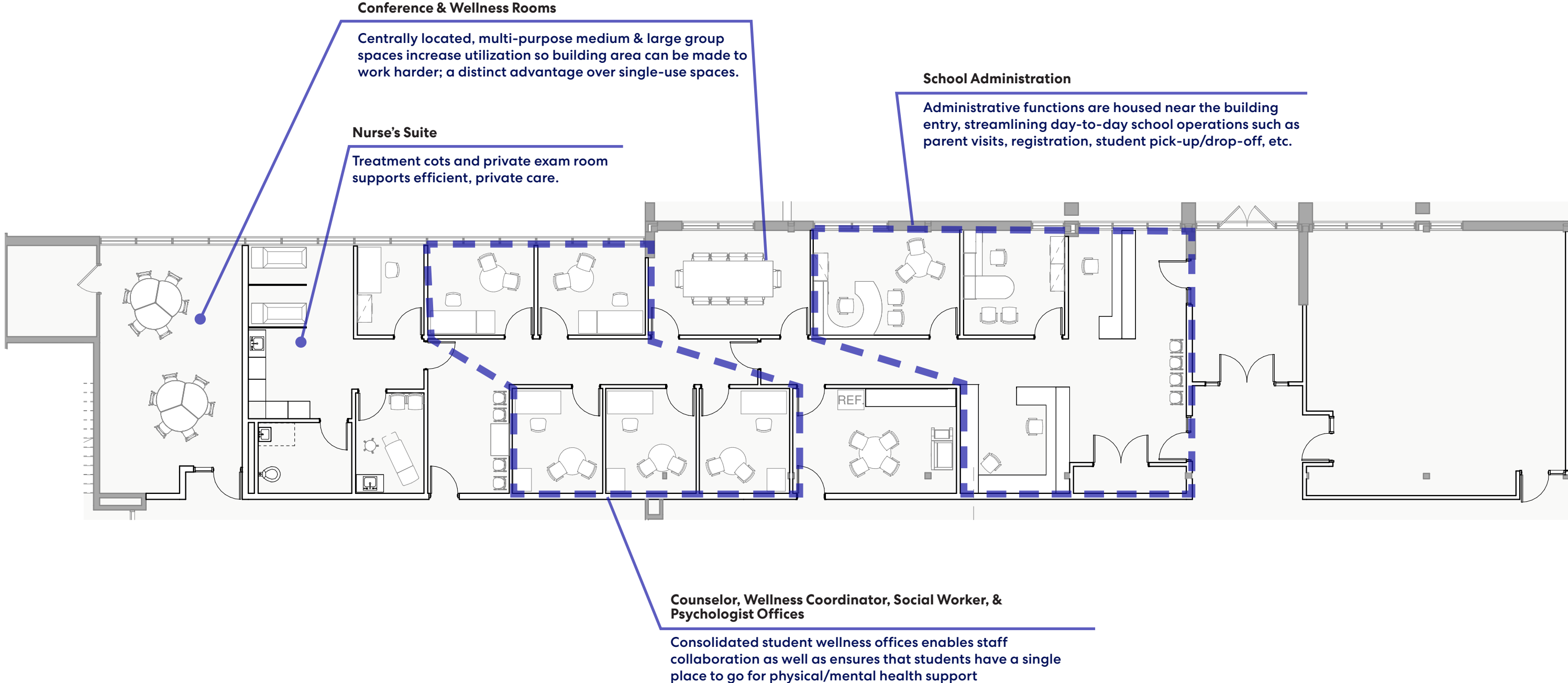
**Level 01**



**Level 02**

**Focus Area: Building Entry, Student Wellness, & Administrative Suite**

**Edison Middle School**

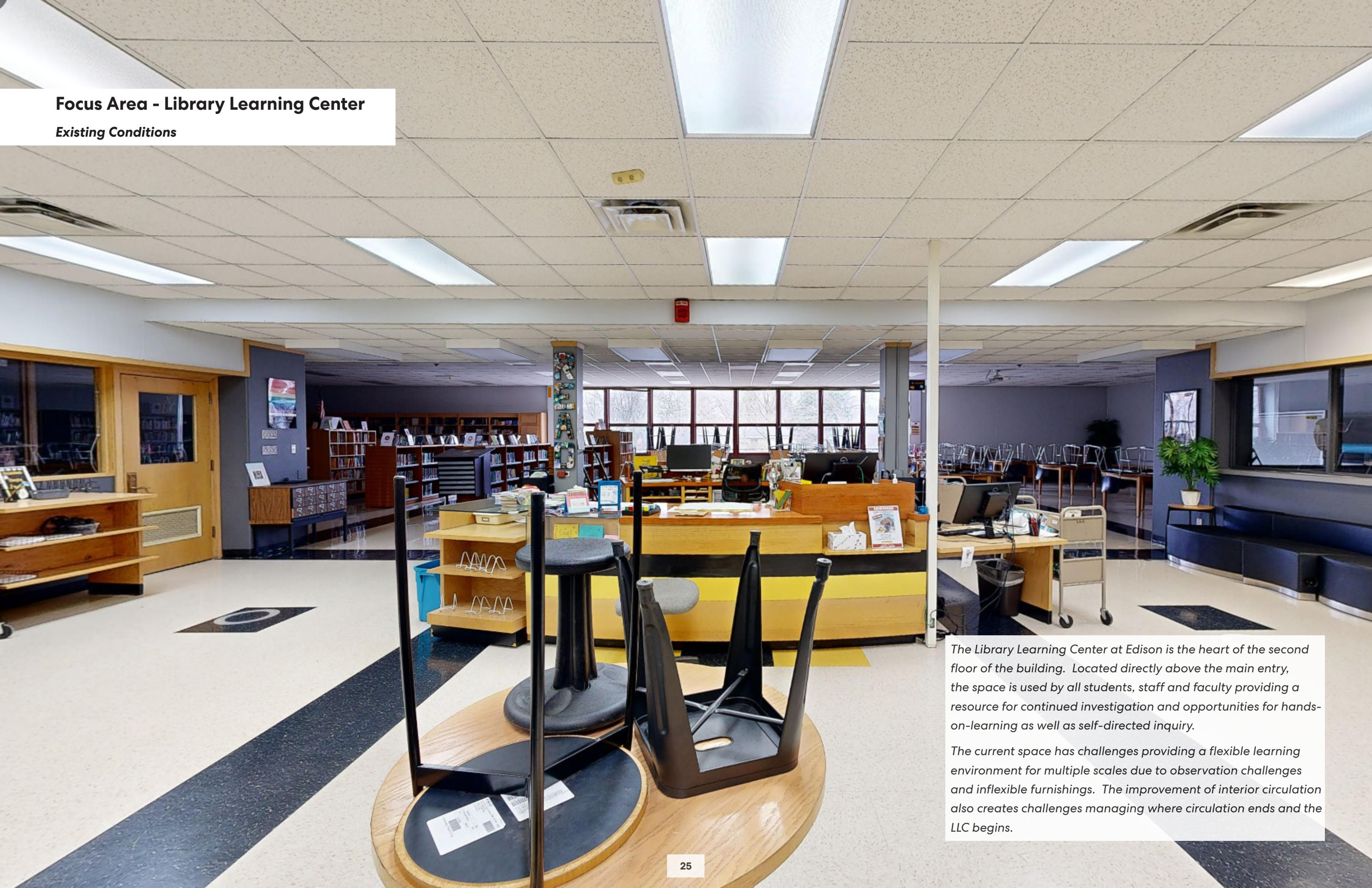


- The renovation aims to create a right-sized administration and wellness suite with consolidated services for efficient student support. This includes demolishing existing partitions, corridor walls, lockers, and finishes. A new office suite will co-locate student wellness components with acoustically controlled partitions, doors, and frames. The space will feature new carpet and resilient tile flooring, wall bases, suspended ceilings, and lights. Updated office furniture, reception desk casework, and conference furniture will enhance functionality. A new nurse's suite, including a toilet room, exam room, office, and treatment area, will be created. Manual roller shades will be installed for window coverage.



## Focus Area - Library Learning Center

### Existing Conditions

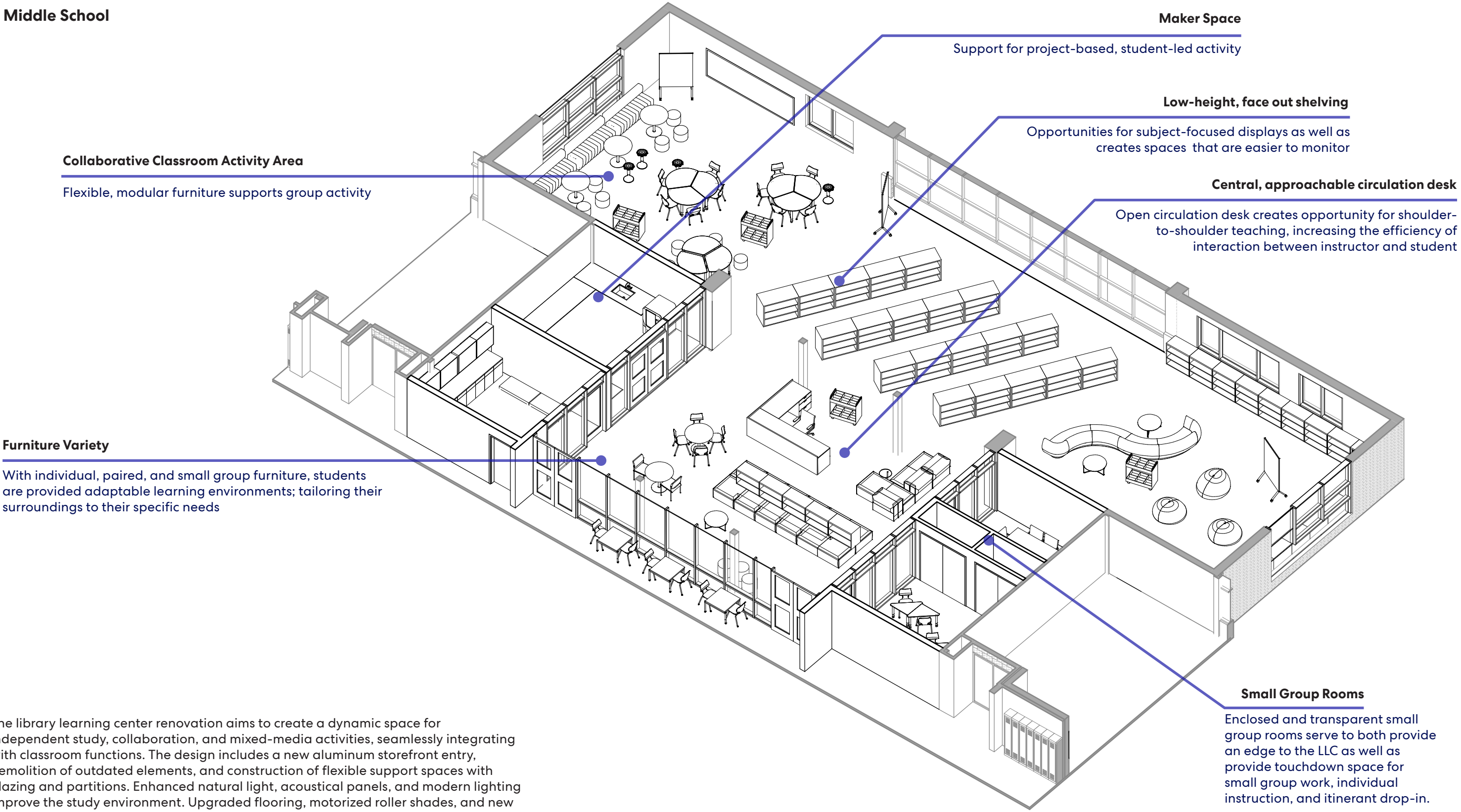


*The Library Learning Center at Edison is the heart of the second floor of the building. Located directly above the main entry, the space is used by all students, staff and faculty providing a resource for continued investigation and opportunities for hands-on-learning as well as self-directed inquiry.*

*The current space has challenges providing a flexible learning environment for multiple scales due to observation challenges and inflexible furnishings. The improvement of interior circulation also creates challenges managing where circulation ends and the LLC begins.*

# Focus Area: Library Learning Center

## Edison Middle School



**Collaborative Classroom Activity Area**

Flexible, modular furniture supports group activity

**Maker Space**

Support for project-based, student-led activity

**Low-height, face out shelving**

Opportunities for subject-focused displays as well as creates spaces that are easier to monitor

**Central, approachable circulation desk**

Open circulation desk creates opportunity for shoulder-to-shoulder teaching, increasing the efficiency of interaction between instructor and student

**Furniture Variety**

With individual, paired, and small group furniture, students are provided adaptable learning environments; tailoring their surroundings to their specific needs

**Small Group Rooms**

Enclosed and transparent small group rooms serve to both provide an edge to the LLC as well as provide touchdown space for small group work, individual instruction, and itinerant drop-in.

- The library learning center renovation aims to create a dynamic space for independent study, collaboration, and mixed-media activities, seamlessly integrating with classroom functions. The design includes a new aluminum storefront entry, demolition of outdated elements, and construction of flexible support spaces with glazing and partitions. Enhanced natural light, acoustical panels, and modern lighting improve the study environment. Upgraded flooring, motorized roller shades, and new adaptable furniture ensure the space is modern, versatile, and conducive to diverse learning activities.

## Focus Area - Library Learning Center

### Conceptual Imagery



*This concept art shows a potential improvement to the LLC at Edison. New flexible furnishings allow reconfiguration of the library space to accommodate small, medium, and large groups while enclosed study rooms provide opportunities for students to collaborate or receive one-on-one instruction.*

*Low bookshelves coupled with the repositioned location for the circulation desk allow observation to all parts of the space.*

## Focus Area: Gymnasium

### Existing Conditions

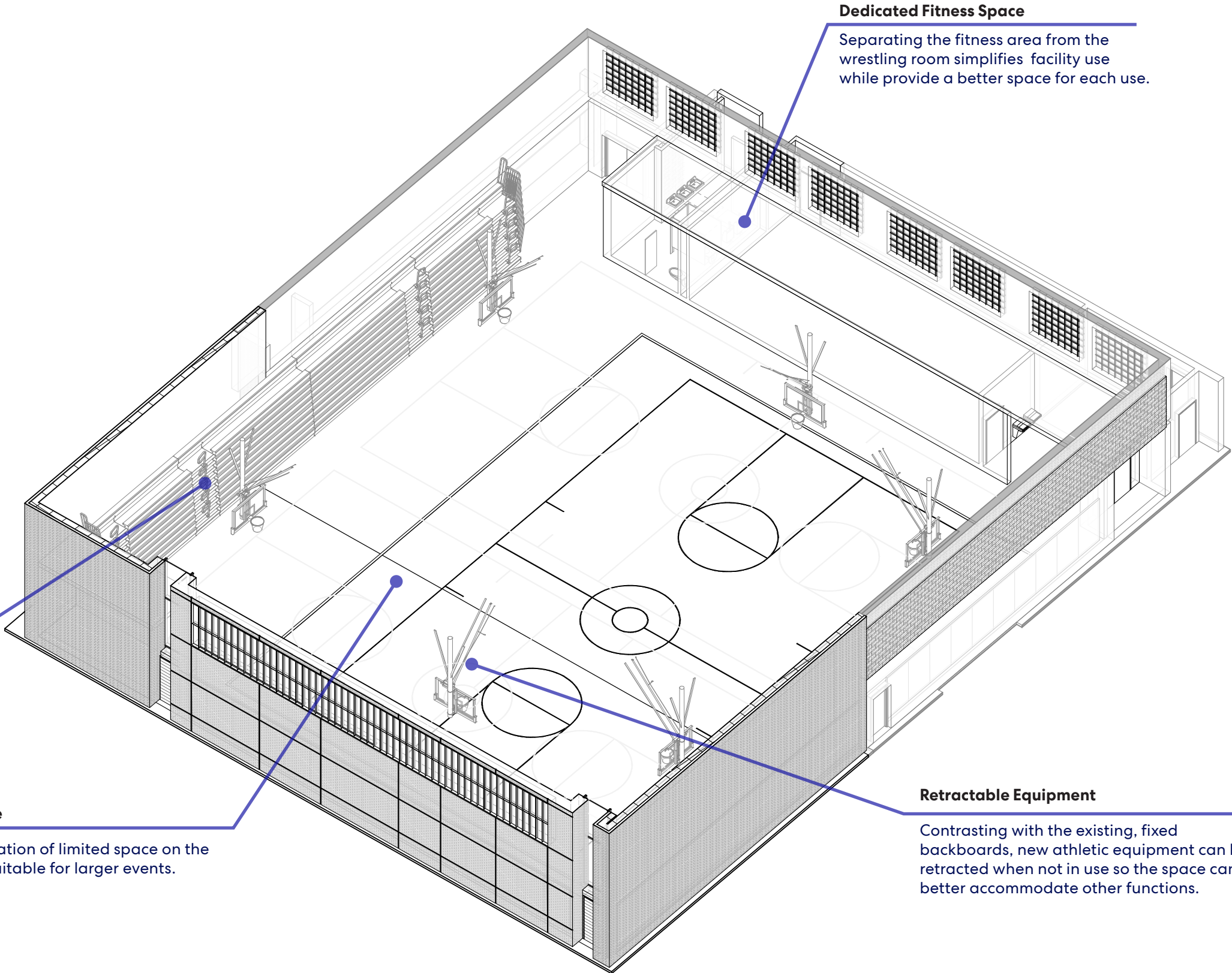


PE facilities at Edison are undersized for their use, the main gymnasium lacks the space for a full competition sized court with appropriate sidelines. Existing backstops are fixed and inflexible. Flooring lacks resiliency needed for longevity and athletic use. Bleachers are aged and undersized for their demand and lack the ability to bring large groups together in the space.

# Focus Area: Gymnasium - Axonometric Diagram

## Edison Middle School

The renovation introduces distinct zones for fitness and wrestling, optimizing functionality and enhancing the experience for each activity. The new athletic equipment, designed for flexibility, features retractable backboards, allowing the space to transition for various events. An innovative building addition maximizes the site's limited space, creating versatile facilities capable of hosting larger gatherings. Furthermore, retractable bleachers enable the gym to accommodate both large assemblies and physical education classes, ensuring the space is adaptable to diverse needs.



### Increased Seating Capacity

Retractable bleachers allow the gym to easily host large assemblies and physical education classes in the same space.

### Expand Court to Competition Size

Building addition maximizes utilization of limited space on the site while also creating facilities suitable for larger events.

### Retractable Equipment

Contrasting with the existing, fixed backboards, new athletic equipment can be retracted when not in use so the space can better accommodate other functions.

### Dedicated Fitness Space

Separating the fitness area from the wrestling room simplifies facility use while provide a better space for each use.

## Focus Area - Gymnasium

### Conceptual Imagery



*This concept image shows the proposed expansion of the Edison main gymnasium to the south. The new footprint allows a reorientation of the main competition basketball court and expansion of bleacher seating opportunities. The introduction of a rolling divider allows for more flexible use of the space, providing the ability to section off the space for multiple simultaneous activities and partnerships with the Park District and other Community organizations.*

**Building Addition: Exterior Massing**  
*Conceptual Imagery*



*This concept rendering shows the exterior expansion to the Edison gymnasium. Through judicious use of transparent or translucent materials, natural light is allowed into the gym while still meeting durability needs. Materials are shown to complement the existing building, while reflecting the interior use.*

*A new outdoor play area is defined adjacent to the addition to replace that facility that will be lost due to the facility expansion.*



FRANKLIN MIDDLE SCHOOL

# 03 Franklin Middle School



Franklin Middle School

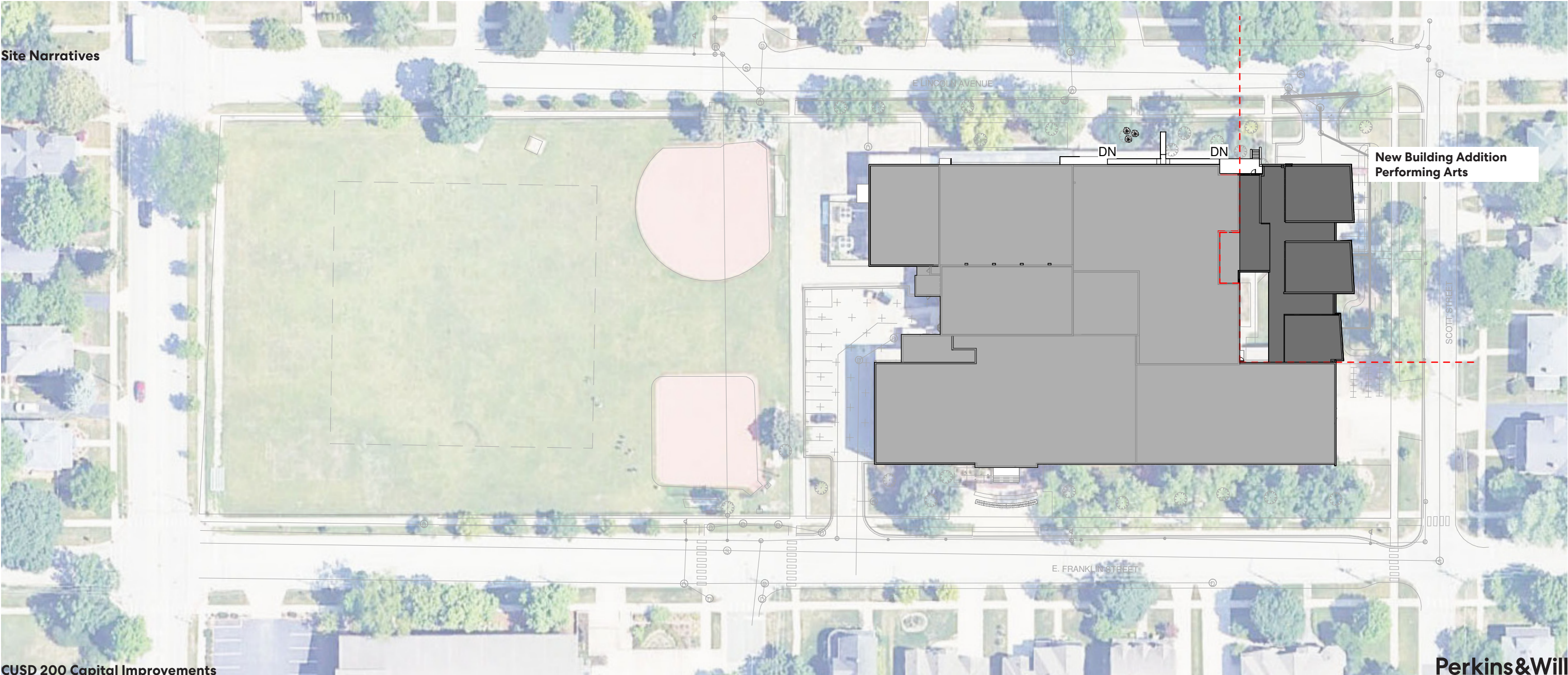
PROJECT OVERVIEW

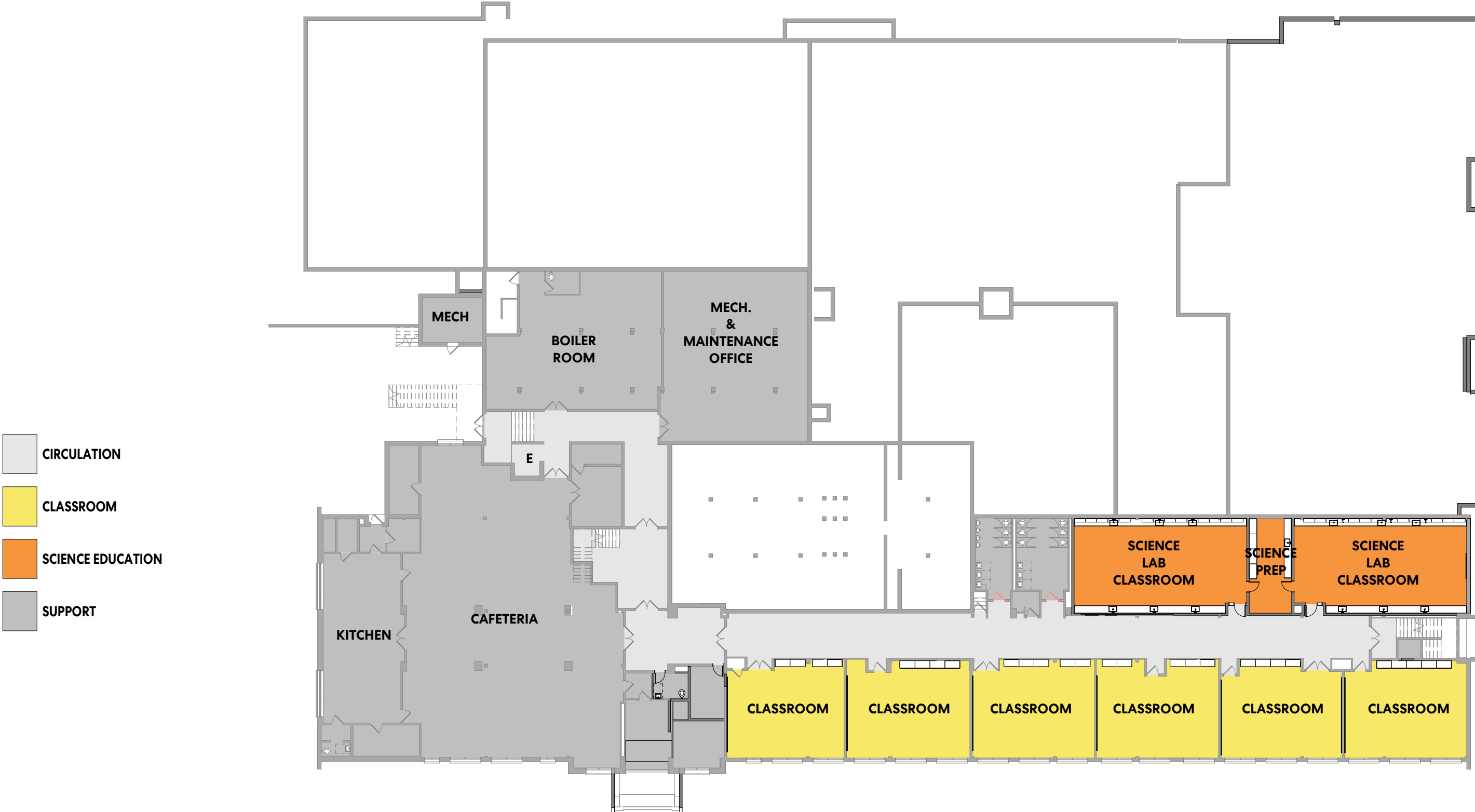
The work at Franklin Middle School is focused addressing classroom size disparities, improving sight lines and circulation, addressing aging building infrastructure, and creating dynamic shared spaces for the whole school to utilize.

The first major piece of the puzzle at Franklin is a new building addition in the north-west intended to house performing arts classes. Those facilities move out of undersized and acoustically challenged spaces. The new LLC would be relocated to the former music spaces and new classrooms built in it's place.

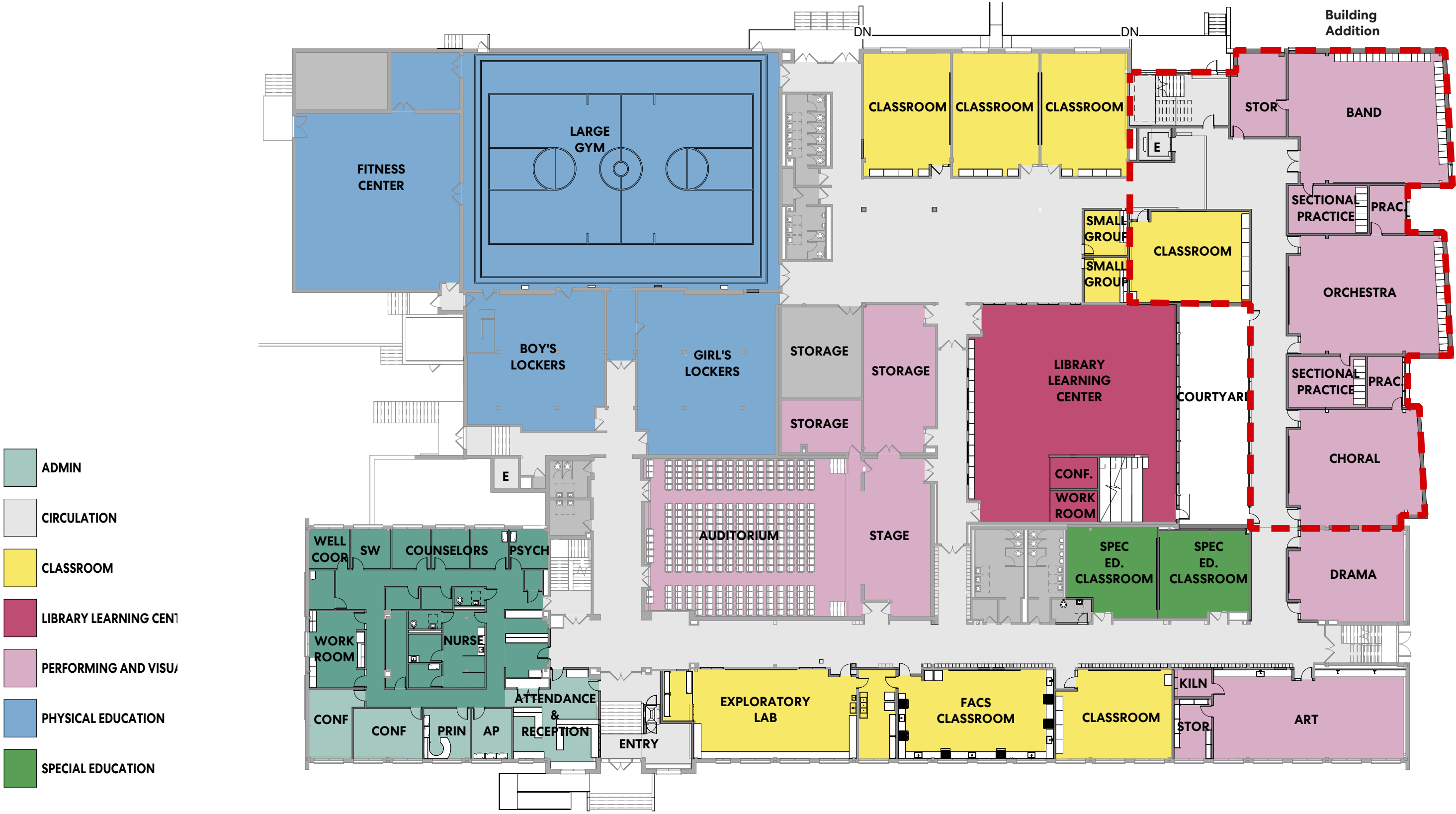
SITE CONSIDERATIONS

- 1. Areas for new Additions are highlighted in the diagram, the new building addition, located in the north-east corner of the property displaces a current on site parking lot
- 2. The new addition is generally intended to maintain the current building setback, with some modifications
- 3. Additional investigation needed to determine overall storm water management impacts from the new building additions and the expanded parking lot.





Franklin Middle School



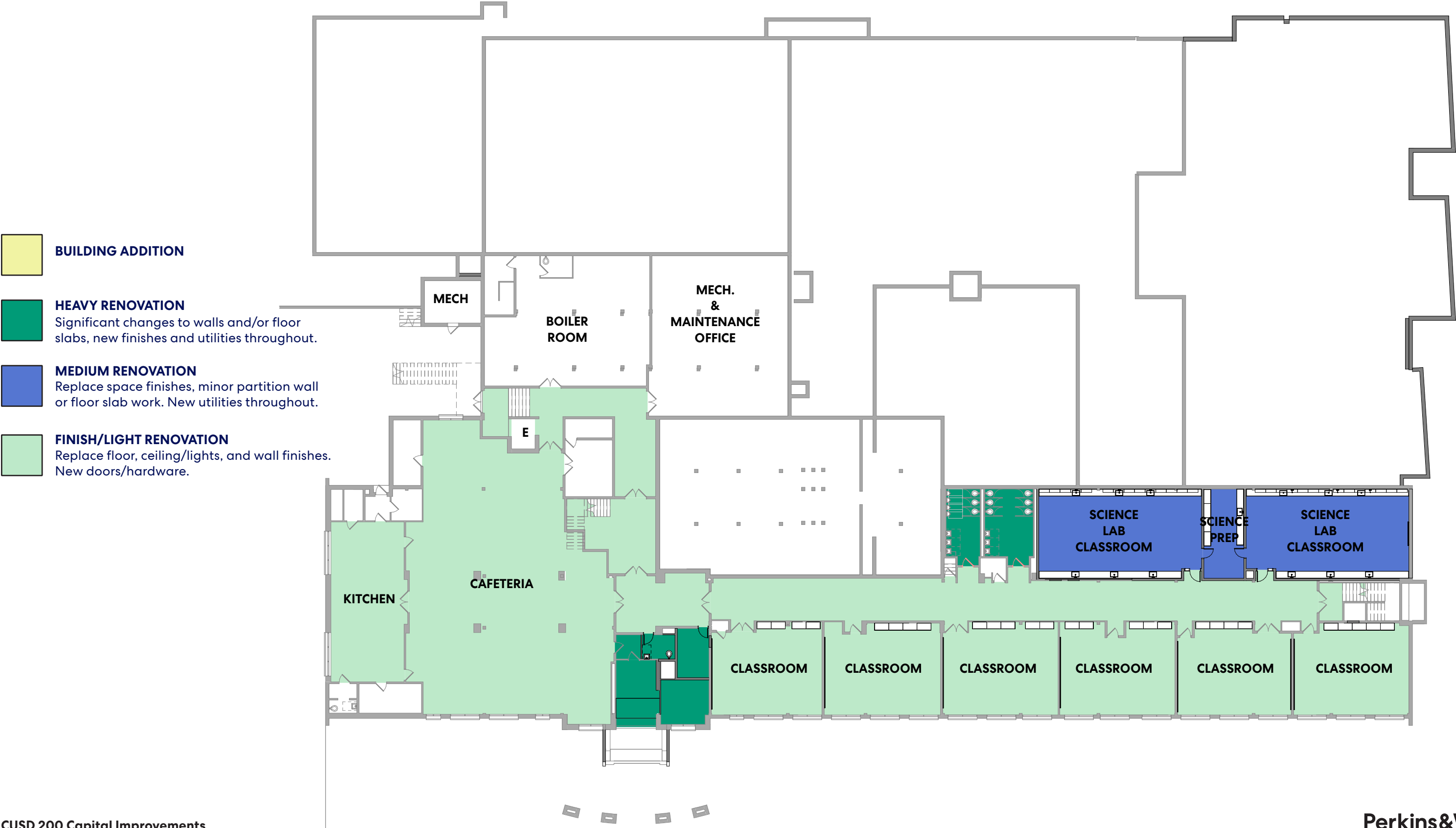


- CIRCULATION
- CLASSROOM
- LIBRARY LEARNING CENT
- PHYSICAL EDUCATION
- SCIENCE EDUCATION
- SPECIAL EDUCATION
- SUPPORT



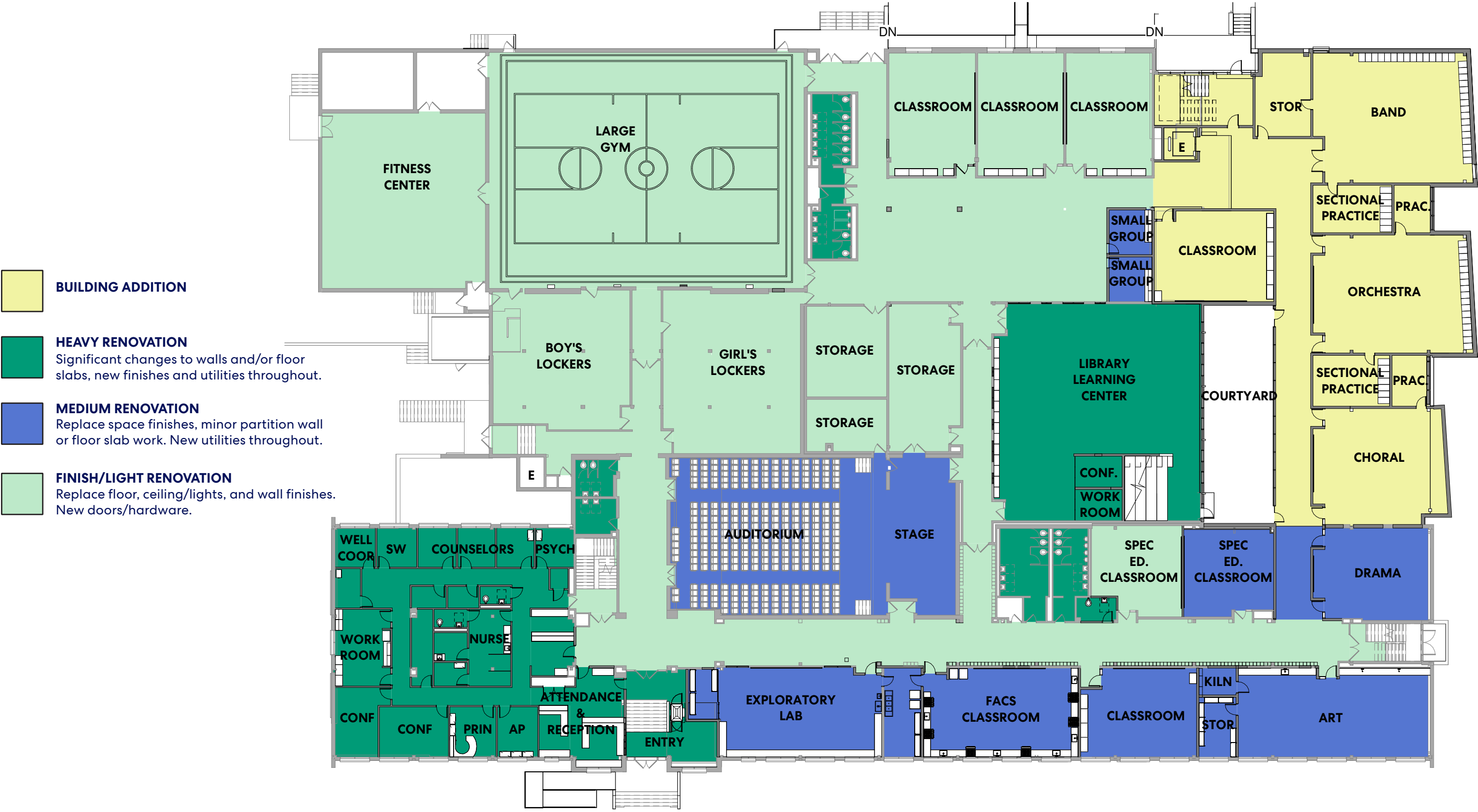
Scope of Work Plan - Level B1

Franklin Middle School



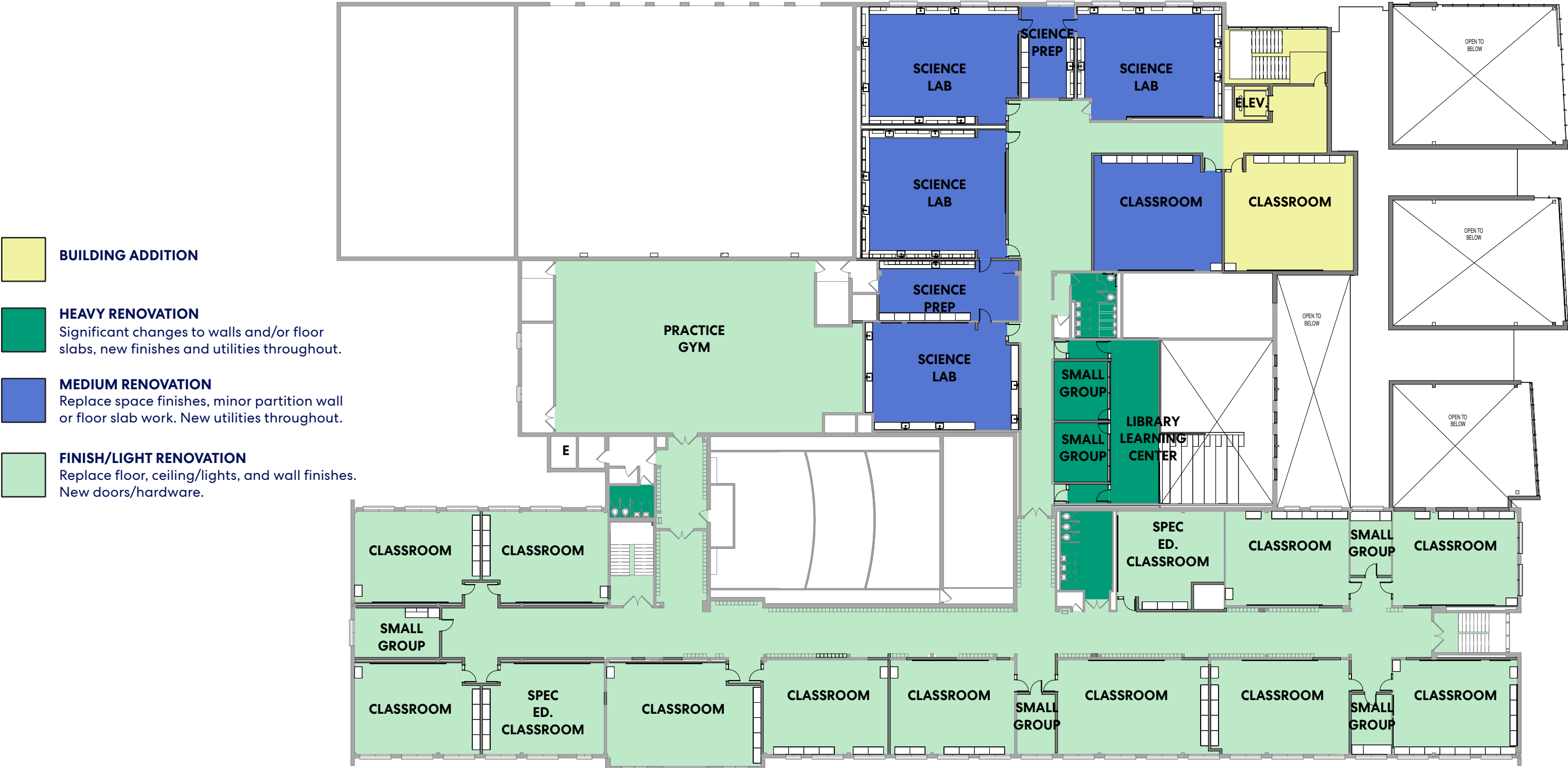
Scope of Work Plan - Level 01

Franklin Middle School



Scope of Work Plan - Level 02

Franklin Middle School





**Focus Area: Library Learning Center**

**Existing Conditions**

The LLC at Franklin was carved out of an area originally designed for classrooms. As such, the configuration is limiting and compartmentalized. Furniture, though durable, limits flexibility and variety to address student needs and provide an adaptable space capable of serving multiple purposes.



# Focus Area: Library Learning Center

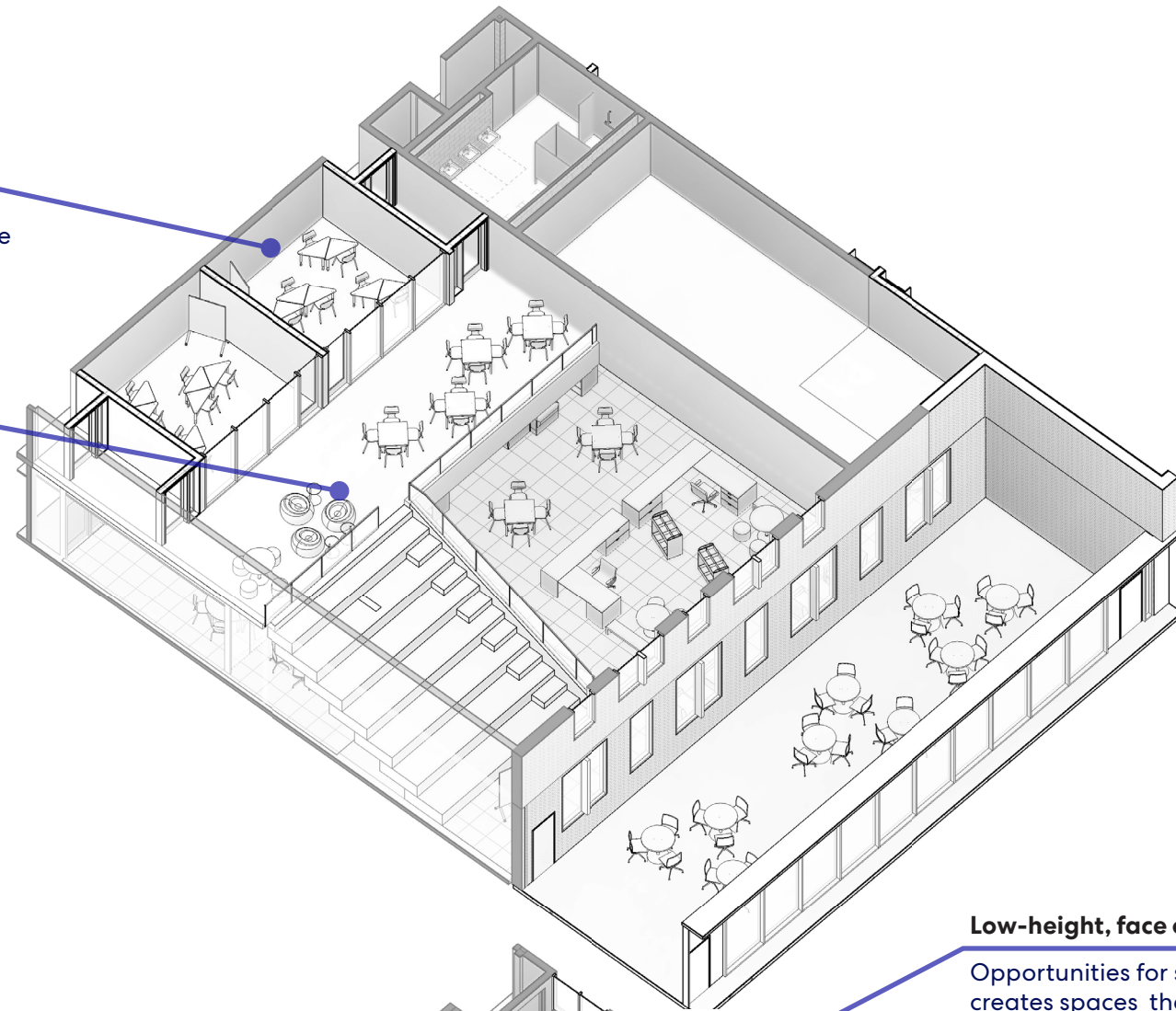
## Franklin Middle School

### Small Group Rooms

Enclosed and transparent small group rooms serve to both provide an edge to the LLC as well as provide touchdown space for small group work, individual instruction, and itinerant drop-in.

### Furniture Variety

With individual, paired, and small group furniture, students are provided adaptable learning environments; tailoring their surroundings to their specific needs



### Low-height, face out shelving

Opportunities for subject-focused displays as well as creates spaces that are easier to monitor

### Central, approachable circulation desk

Open circulation desk creates opportunity for shoulder-to-shoulder teaching, increasing the efficiency of interaction between instructor and student

The relocated Library Learning Center moves to the spaces currently occupied by performing arts music classes. The double-height space allows more breathing room for the high occupancy space and the ability to create a connection to the second floor. The new location also serves as a heart to the campus, positioned at the center of the building, rather than at the periphery.

A learning stair connects the two levels, an opportunity for classes or small groups to come together for formal or informal gatherings. Small group rooms are available on both the upper and lower levels of the space, providing observable spaces for small group collaboration, itinerant drop-in, teacher one-on-one interaction, etc.

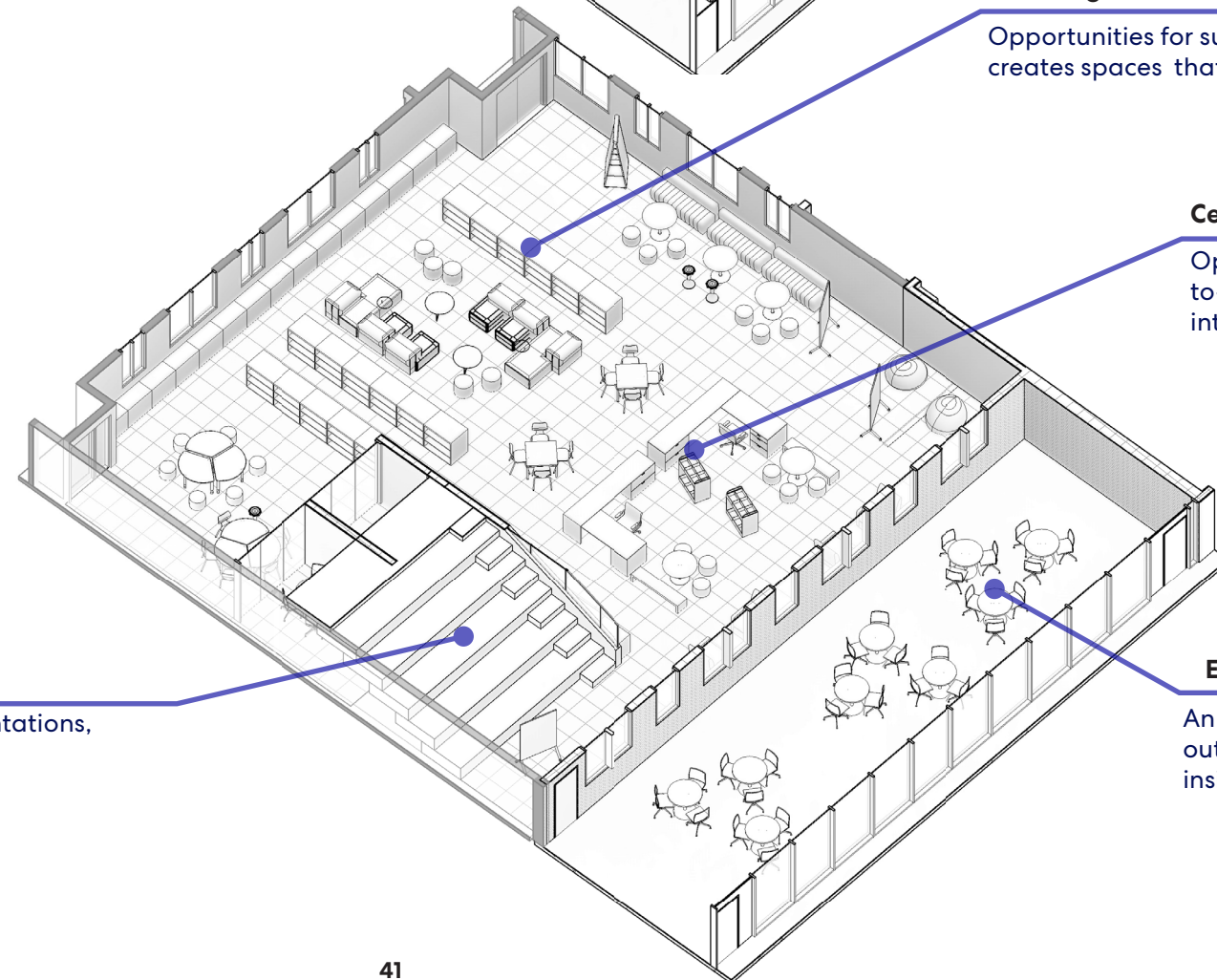
Through the use of flexible furnishings and bookcases, open spaces can be created for individual investigation, small group work and large group classroom instruction. Connection to an exterior courtyard serves as an extension of the LLC and provides daylight into the space.

### Learning Stair

Dynamic space for class presentations, guest speakers, movies, etc.

### Exterior Courtyard

An opportunity to extend the LLC into a safe, enclosed outdoor space and provide access to natural light to the inside.

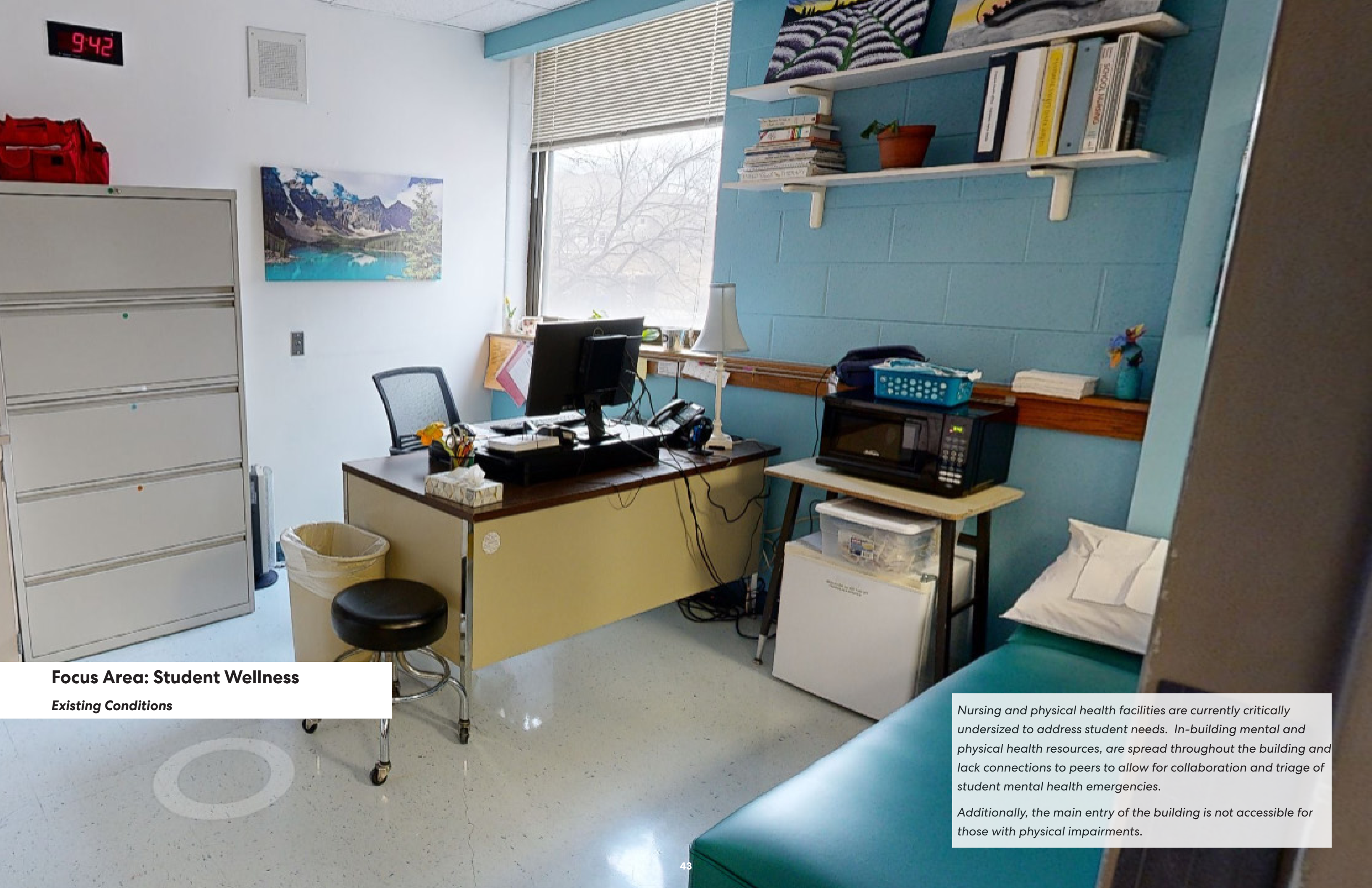




**Focus Area: Library Learning Center**

*Conceptual Rendering*

*The concept art shows a potential renovation project for the Library Learning Center at Franklin. This newly relocated space is at the heart of the campus and connects between the first and second floors. Flexible furniture allows for reconfiguration to accommodate small and large groups. Enclosed rooms provide space for study, small group work, and one-on-one tutoring.*



## Focus Area: Student Wellness

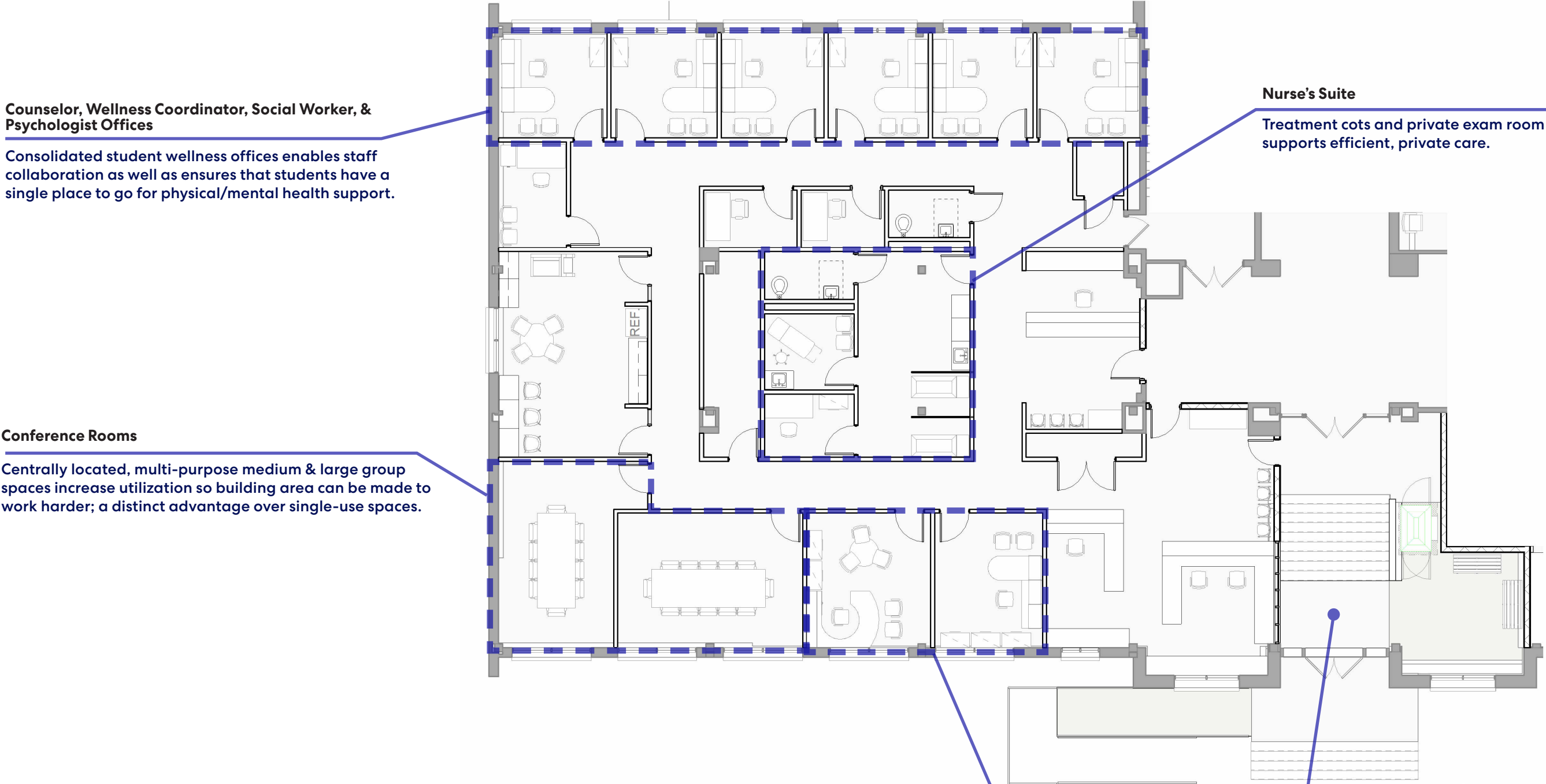
### Existing Conditions

*Nursing and physical health facilities are currently critically undersized to address student needs. In-building mental and physical health resources, are spread throughout the building and lack connections to peers to allow for collaboration and triage of student mental health emergencies.*

*Additionally, the main entry of the building is not accessible for those with physical impairments.*

# Focus Area: Student Wellness & Administrative Suite

## Franklin Middle School



### Counselor, Wellness Coordinator, Social Worker, & Psychologist Offices

Consolidated student wellness offices enables staff collaboration as well as ensures that students have a single place to go for physical/mental health support.

### Nurse's Suite

Treatment cots and private exam room supports efficient, private care.

### Conference Rooms

Centrally located, multi-purpose medium & large group spaces increase utilization so building area can be made to work harder; a distinct advantage over single-use spaces.

The relocated main office at Franklin allows for the consolidation of all student mental and physical health components at a single location. The nurse's office is expanded to allow for more capacity and isolation areas for sick students.

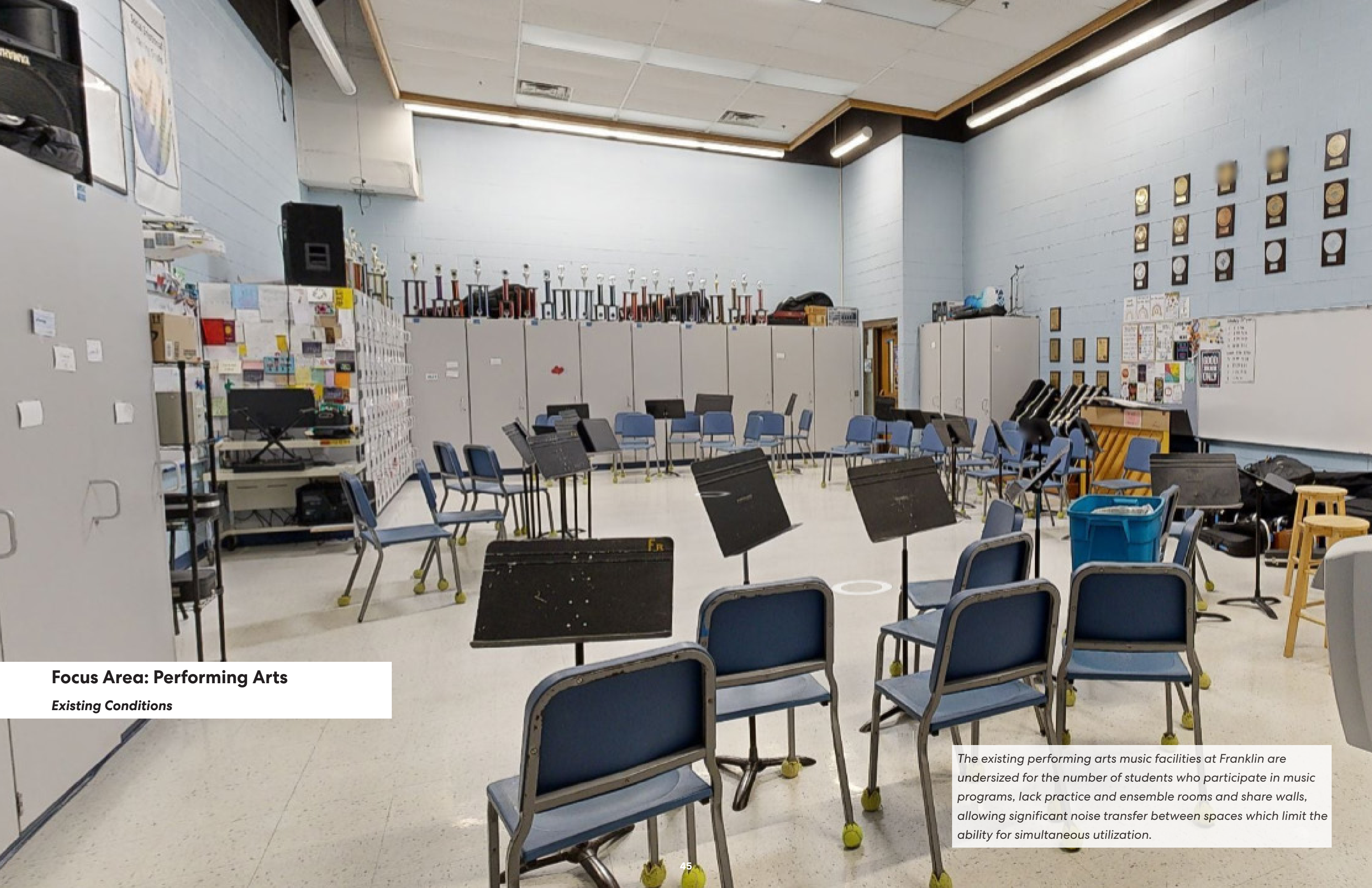
Additionally, the main secured entry is reconfigured to allow an accessible route to the mid-level main office.

### School Administration

Administrative functions are housed near the building entry, streamlining day-to-day school operations such as parent visits, registration, student pick-up/drop-off, etc.

### Accessible, Secure Entry

New ramps and limited-use lifts provide an ADA accessible entry. Rearrangement of doors allows for an entry sequence aligned with District operation standards.



**Focus Area: Performing Arts**

**Existing Conditions**

*The existing performing arts music facilities at Franklin are undersized for the number of students who participate in music programs, lack practice and ensemble rooms and share walls, allowing significant noise transfer between spaces which limit the ability for simultaneous utilization.*

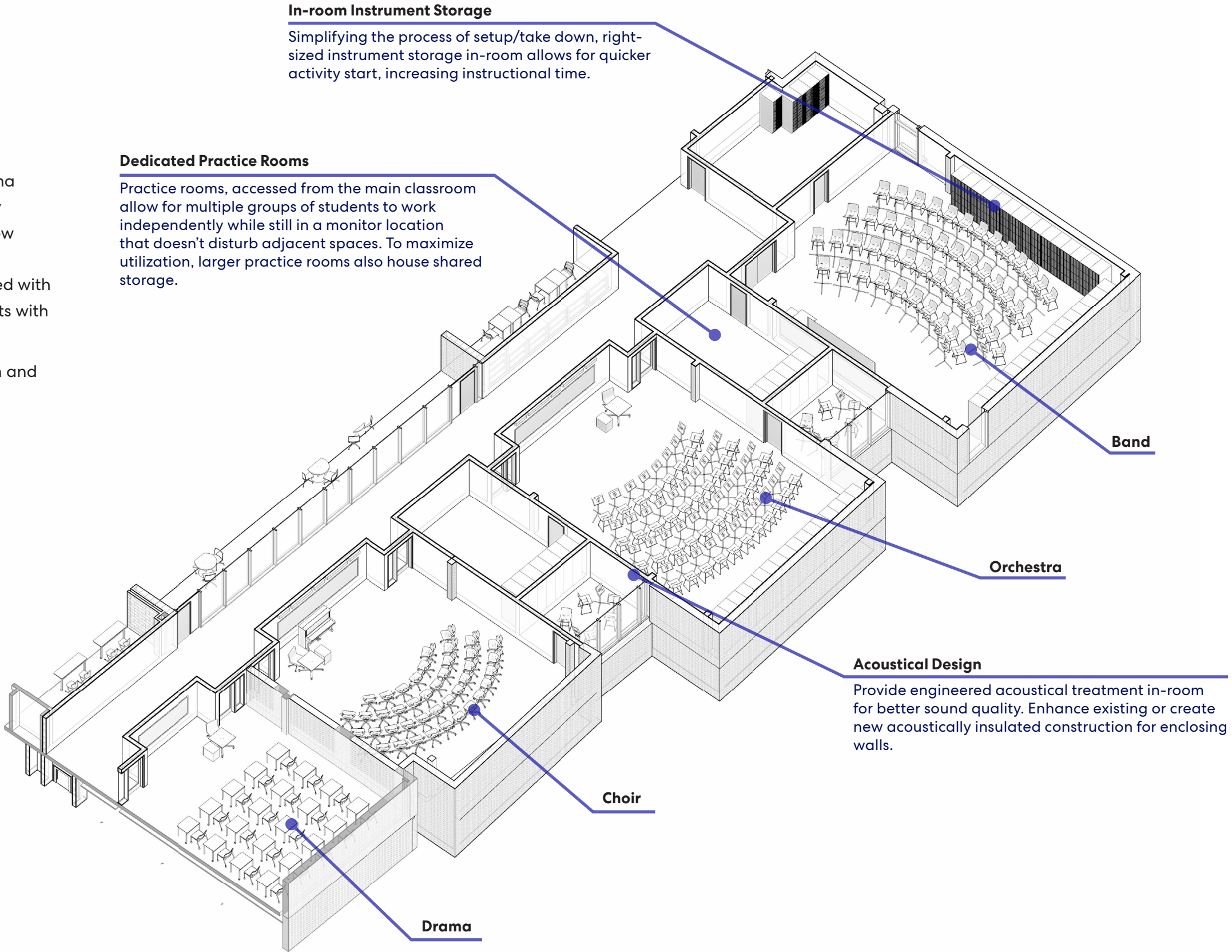
# Focus Area: Performing Arts

## Franklin Middle School

### Performing Arts

New, right-sized classrooms for Band, Orchestra, Choral, and Drama performance courses are intended to be supported by acoustically separated small group practice rooms and ensemble rooms to allow a variety of sized groups spaces to practice and receive individual instruction. The spaces will be acoustically controlled and equipped with recording capabilities to allow instructors to reflect back to students with real-time feedback.

The relocation of the music classrooms allow for further renovation and repositioning of facilities within the current building footprint.





## Building Addition: Exterior Massing

Conceptual Rendering

*This concept art shows a potential new Performing Arts addition at Franklin. The design approach takes its inspiration from the stately main building. The building maintains a green buffer between the road and new construction and includes high windows at the performing arts classrooms to bring in ample natural light while preserving base areas for instrument storage.*

# 04 James Howard Monroe Middle School





# Site Plan

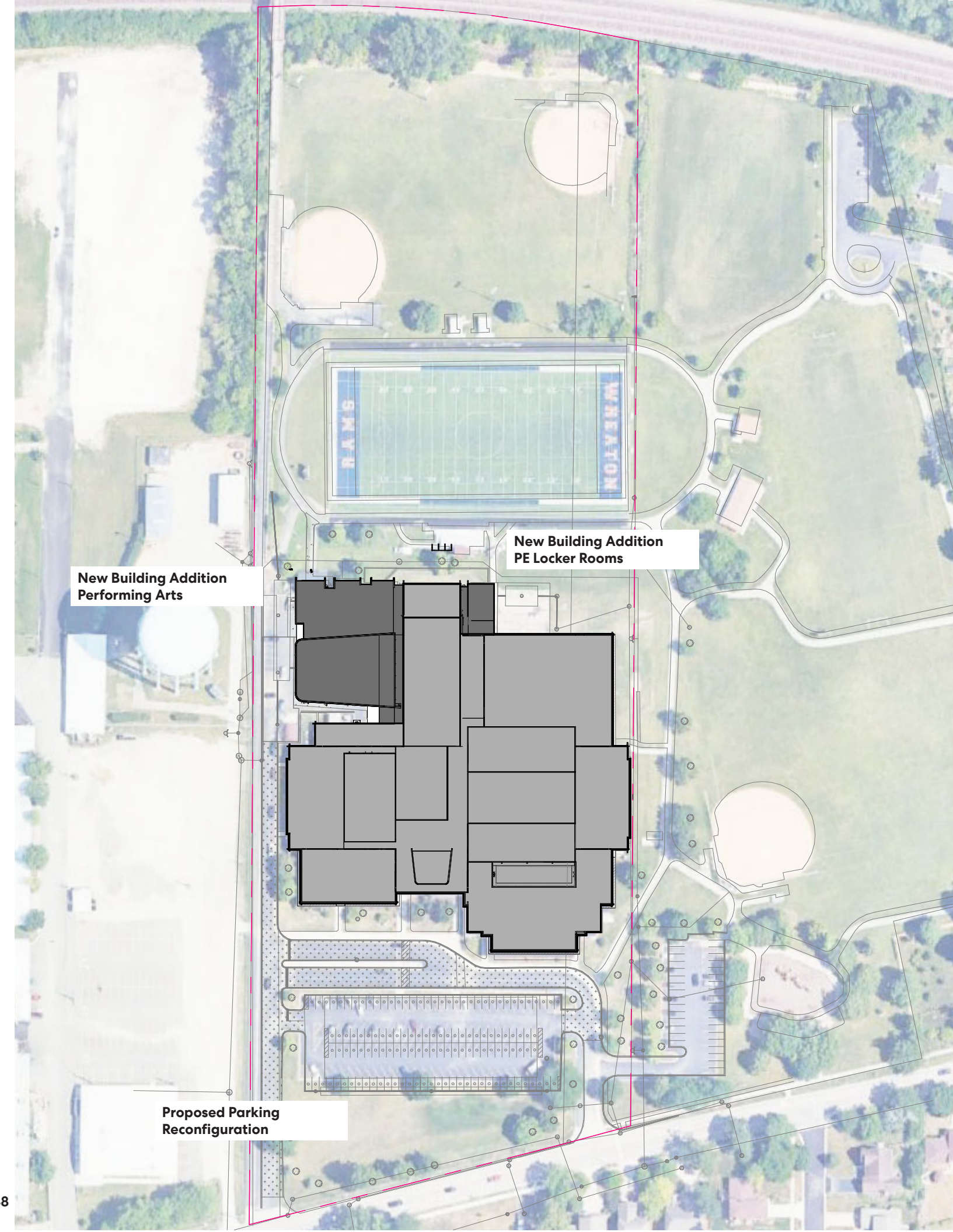
## Monroe Middle School

### PROJECT OVERVIEW

The work at Monroe Middle School is focused around right-sizing classroom and class lab space to address mis-matches between program enrollment and pedagogical shifts. In order to accomplish this, a building addition is proposed at the north-west corner of the building to house new performing arts and music facilities. These allow the existing spaces to be converted for other uses and provide opportunities throughout the building for realignment of space to meet curricular needs.

### SITE CONSIDERATIONS

1. Areas for new Additions are highlighted in the diagram, those are intending to use the north edge of the building as a demarcation line as it is generally at the location of a change in elevation for the site.
2. Minor expansion and reconfiguration of the front parking allows for more efficient and effective parking, addresses needed improvements for the site and provides additional capacity to replace the parking lost in the north-west corner.
3. Additional investigation needed to determine overall storm water management impacts from the new building additions and the expanded parking lot.
4. Additional investigation needed for vehicular access and turn-around along the west side of the Performing Arts Addition.



# Program Plan - Level 01

Monroe Middle School

June 7, 2024



## Legend

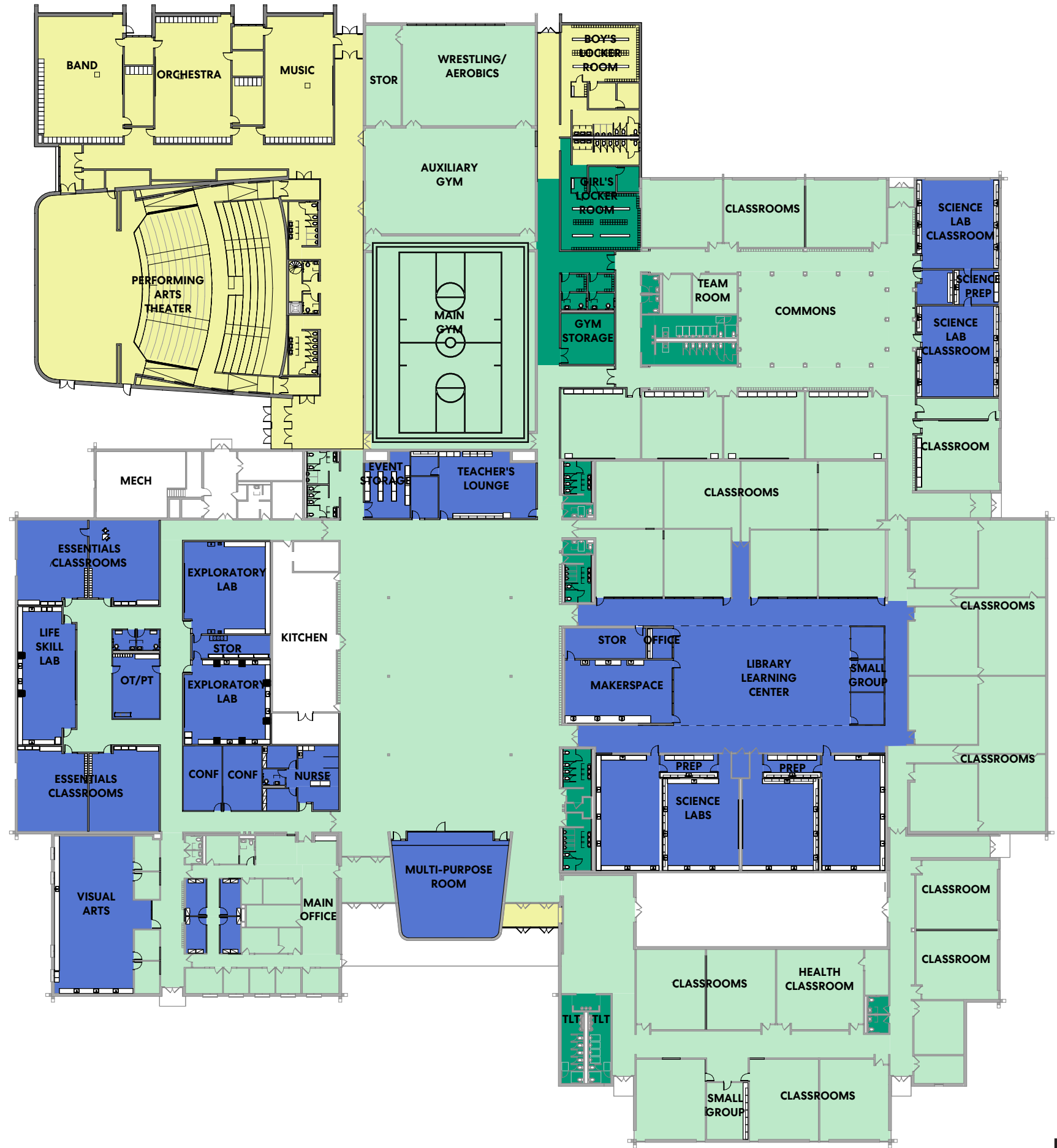
- ADMIN
- CLASSROOM
- CIRCULATION
- CORRIDOR
- MEDIA CENTER
- PERFORMING AND VISUAL ARTS
- PHYSICAL EDUCATION
- SCIENCE EDUCATION
- SPECIAL EDUCATION & ESSENTIAL
- STUDENT WELLNESS
- SUPPORT

# Scope of Work Plan - Level 01

Monroe Middle School

June 7, 2024

- BUILDING ADDITION**
- HEAVY RENOVATION**  
Significant changes to walls and/or floor slabs, new finishes and utilities throughout.
- MEDIUM RENOVATION**  
Replace space finishes, minor partition wall or floor slab work. New utilities throughout.
- FINISH/LIGHT RENOVATION**  
Replace floor, ceiling/lights, and wall finishes. New doors/hardware.





## Focus Area: Library Learning Center

### Existing Conditions

*The Library Learning Center at Monroe is the heart of the academic wing of the building. A space that is used by all students, staff and faculty providing a resource for continued investigation and opportunities for hands-on-learning as well as self-directed inquiry.*

*The current space has challenges providing a flexible learning environment for multiple scales. Additionally, the location in the building provides challenges in defining where the LLC starts and where the adjacent hallway or classroom areas begin.*

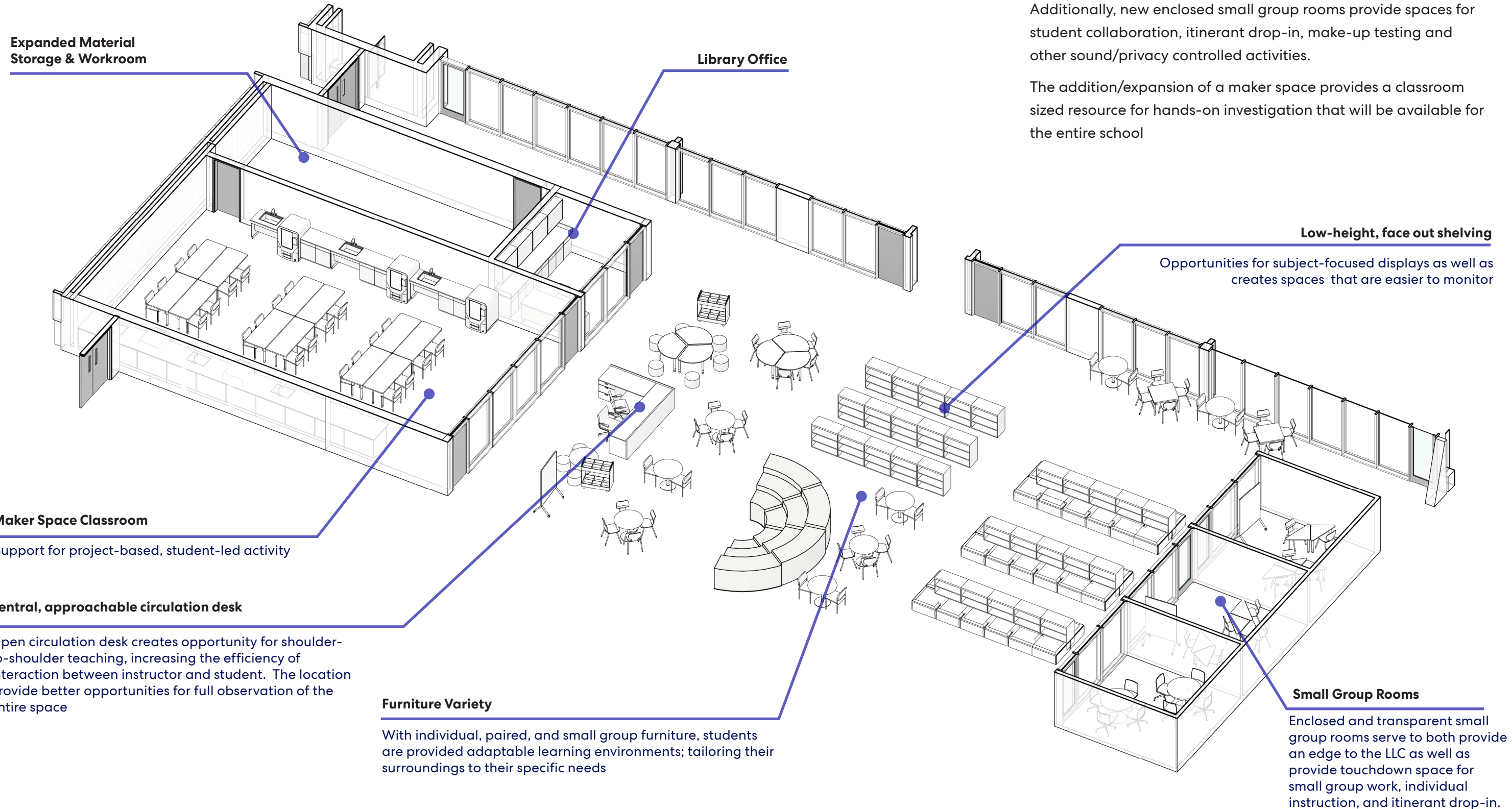
# Focus Area: Library Learning Center

## Monroe Middle School

June 7, 2024

The proposed improvement plan for the Library Learning Center takes advantage of the wide open space while creating boundaries to the LLC. Through the use of flexible furnishings and bookcases, open spaces can be created for individual investigation, small group work and large group classroom instruction. Additionally, new enclosed small group rooms provide spaces for student collaboration, itinerant drop-in, make-up testing and other sound/privacy controlled activities.

The addition/expansion of a maker space provides a classroom sized resource for hands-on investigation that will be available for the entire school



**Expanded Material Storage & Workroom**

**Library Office**

**Low-height, face out shelving**

Opportunities for subject-focused displays as well as creates spaces that are easier to monitor

**Maker Space Classroom**

Support for project-based, student-led activity

**Central, approachable circulation desk**

Open circulation desk creates opportunity for shoulder-to-shoulder teaching, increasing the efficiency of interaction between instructor and student. The location provide better opportunities for full observation of the entire space

**Furniture Variety**

With individual, paired, and small group furniture, students are provided adaptable learning environments; tailoring their surroundings to their specific needs

**Small Group Rooms**

Enclosed and transparent small group rooms serve to both provide an edge to the LLC as well as provide touchdown space for small group work, individual instruction, and itinerant drop-in.



**Focus Area: Library Learning Center**

*Conceptual Rendering*

*This concept art shows a potential improvement to the LLC at Monroe. New flexible furnishings allow reconfiguration of the library space to accommodate small, medium, and large groups while enclosed study rooms provide opportunities for students to collaborate or receive one-on-one instruction. Graphic improvements and the introduction of natural materials soften the space and provide a light and open space.*



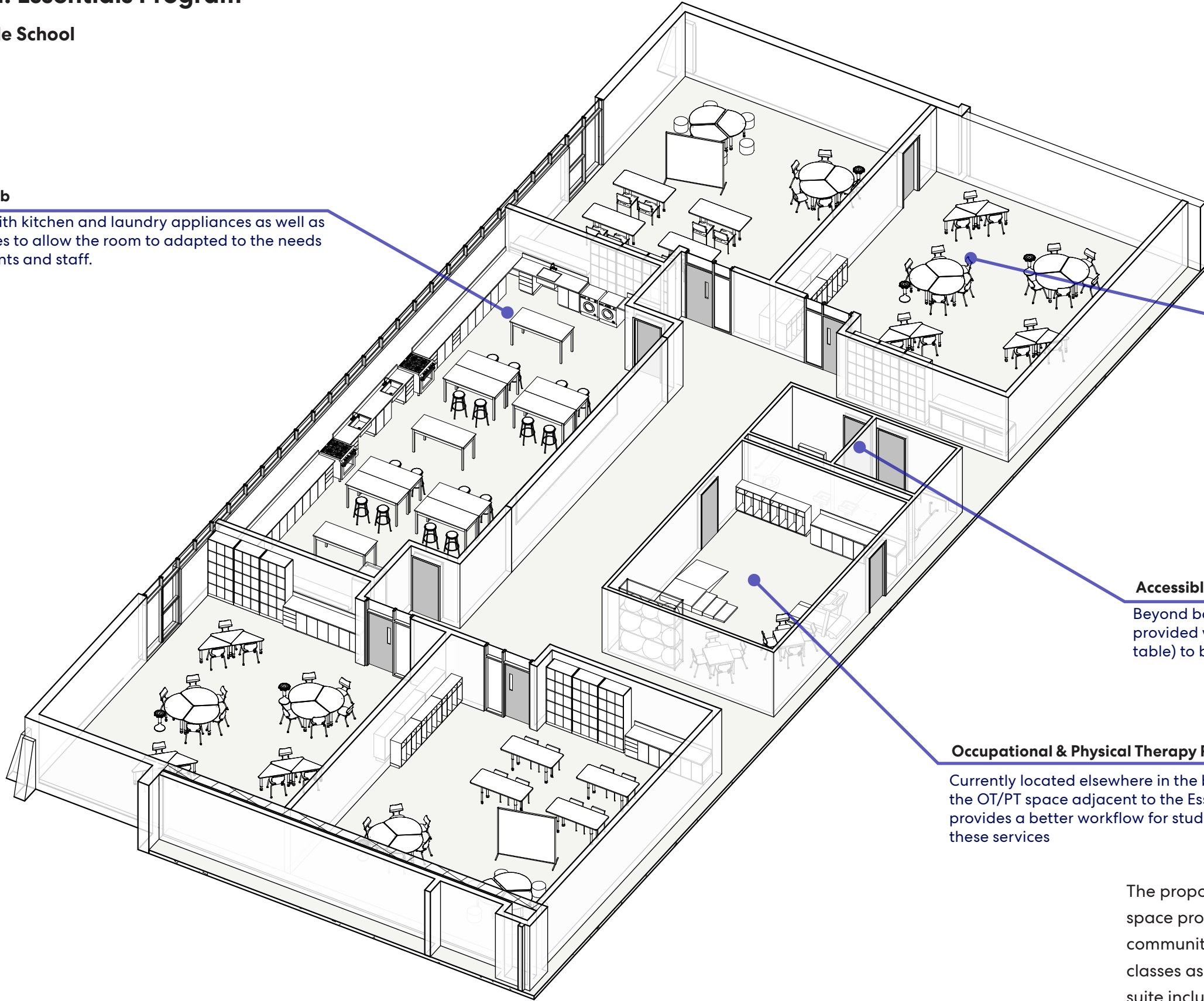
**Focus Area: Essentials Program**

**Existing Conditions**

The Essentials program currently uses classrooms that were formerly designed for other elective functions. The current life skills lab (pictured here) shares space with an Essentials instructional space, creating a difficult experience when other classes are using that space. OT/PT services are located elsewhere in the building and provide a challenge to quickly address student needs.

**Focus Area: Essentials Program**

**Monroe Middle School**



**Life Skills Lab**

Furnished with kitchen and laundry appliances as well as mobile tables to allow the room to adapted to the needs of the students and staff.

**Essentials Program Classrooms**

Right-sized classrooms will also provide furniture and storage solution tailored to the specific needs of the Essentials program.

**Accessible Toilet Rooms**

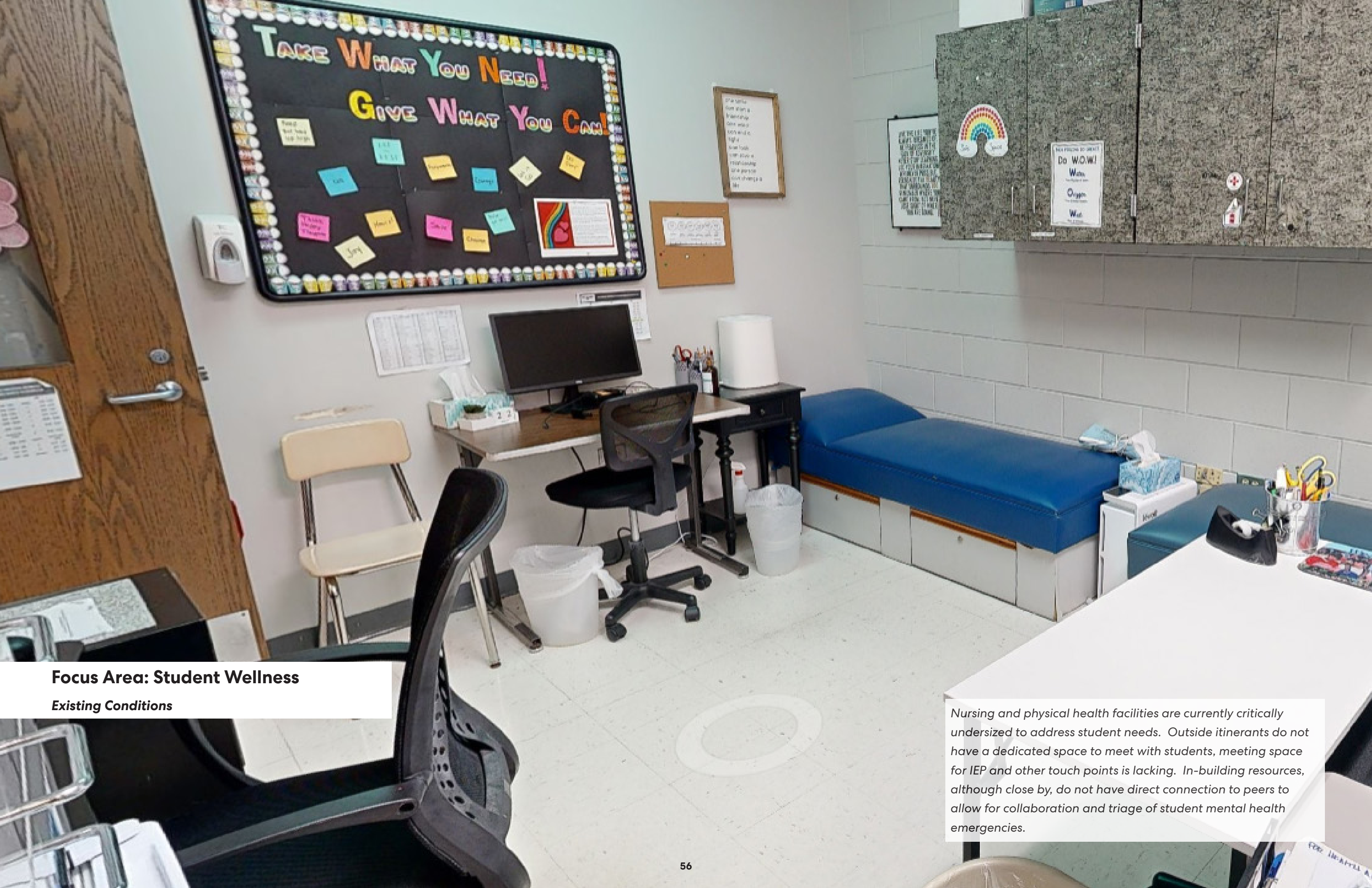
Beyond basic ADA accessibility, one toilet room will be provided with additional furniture (i.e. large changing table) to better serve the student population

**Occupational & Physical Therapy Rooms**

Currently located elsewhere in the building, relocating the OT/PT space adjacent to the Essentials classrooms provides a better workflow for students who highly utilize these services

The proposed improvement plan for the Essentials Program space provides a consolidated classroom suite for this high needs community. Intentionally grouped together and close to elective classes as well as student wellness and counseling services, the suite includes space for OT/PT, a Life Skills Lab, single user toilet rooms and right-sized classrooms





## Focus Area: Student Wellness

### Existing Conditions

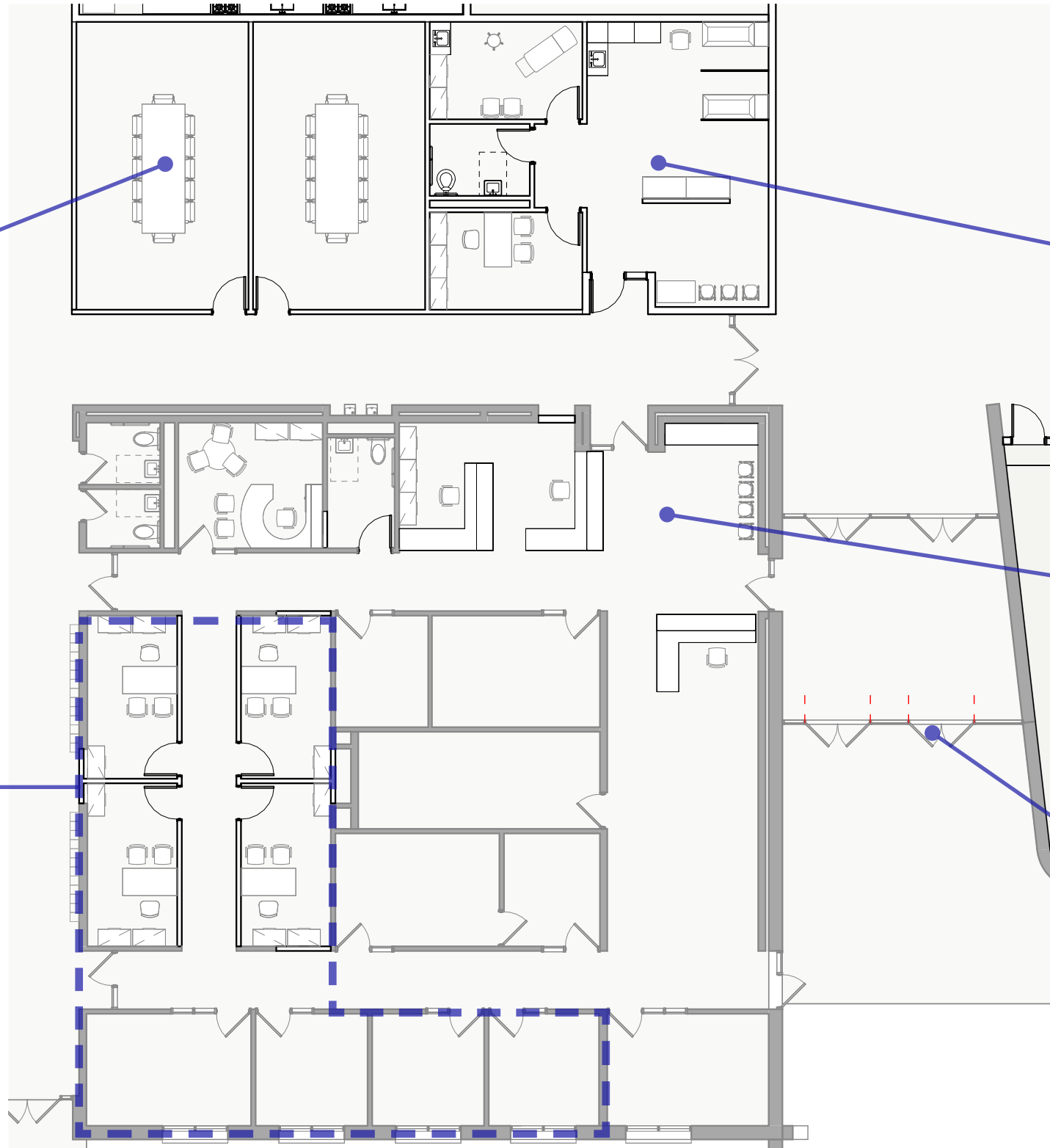
Nursing and physical health facilities are currently critically undersized to address student needs. Outside itinerants do not have a dedicated space to meet with students, meeting space for IEP and other touch points is lacking. In-building resources, although close by, do not have direct connection to peers to allow for collaboration and triage of student mental health emergencies.

Monroe Middle School

The intent at all three schools is to bring together all student wellness components, specialists for both physical and mental health and wellbeing, into one consolidated area of the building. At Monroe, there is a critical need to increase the operational capacity and size of the nurse's suite. This, along with moving student mental health services together, shapes the Student Wellness area of the building

**Conference & Rooms**

Centrally located, multi-purpose medium & large group spaces increase utilization so building area can be made to work harder; a distinct advantage over single-use spaces.



**Nurse's Suite**

Treatment cots and private exam room supports efficient, private care.

**School Visitors**

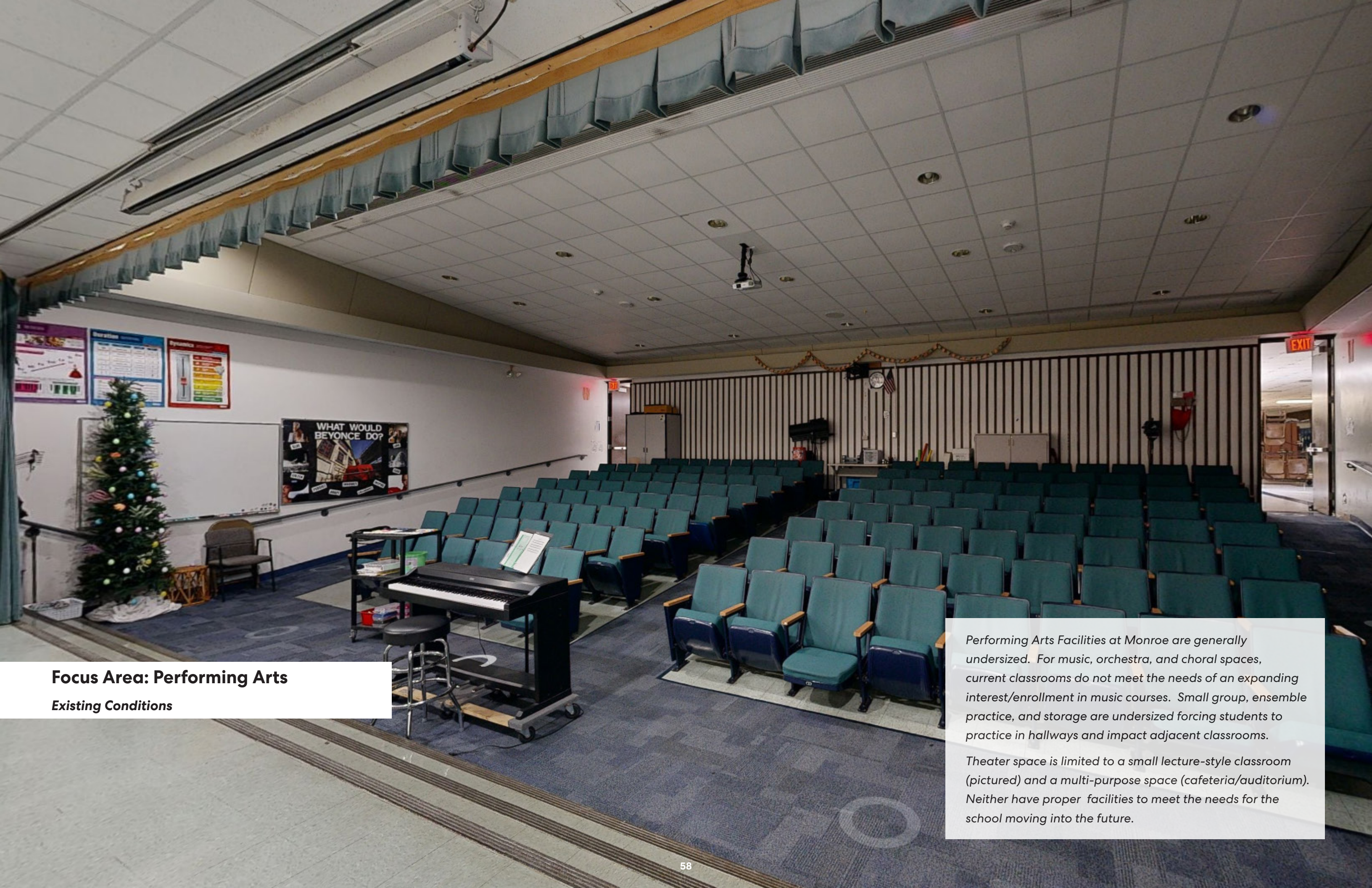
With the relocation of the Nursing Suite out of the Administrative Area, space is opened for visitors and waiting, moving that function from the vestibule into the supervised office suite.

**Counselor, Wellness Coordinator, Social Worker, & Psychologist Offices**

Consolidated student wellness offices enables staff collaboration as well as ensures that students have a single place to go for physical/mental health support.

**Accessible, Secure Entry**

Renovate doors, hardware, and security technology to bring facility into alignment with District-wide building entry procedures.



## Focus Area: Performing Arts

### Existing Conditions

*Performing Arts Facilities at Monroe are generally undersized. For music, orchestra, and choral spaces, current classrooms do not meet the needs of an expanding interest/enrollment in music courses. Small group, ensemble practice, and storage are undersized forcing students to practice in hallways and impact adjacent classrooms.*

*Theater space is limited to a small lecture-style classroom (pictured) and a multi-purpose space (cafeteria/auditorium). Neither have proper facilities to meet the needs for the school moving into the future.*

# Focus Area: Performing Arts

## Monroe Middle School

New, right-sized classrooms for Band, Orchestra, and Choral performance courses are intended to be supported by acoustically separated small group practice rooms and ensemble rooms to allow a variety of sized groups spaces to practice and receive individual instruction. The spaces will be acoustically controlled and equipped with recording capabilities to allow instructors to reflect back to students with real-time feedback.

The Auditorium mirrors the same facility at Monroe, providing a Community asset on the north side of the District and bringing a robust performing arts venue to Monroe to service it's students and general school community from performances to assemblies and other gatherings. The new space will provide new curtains, stage, rigging, sound system, theater lighting, and projection technology

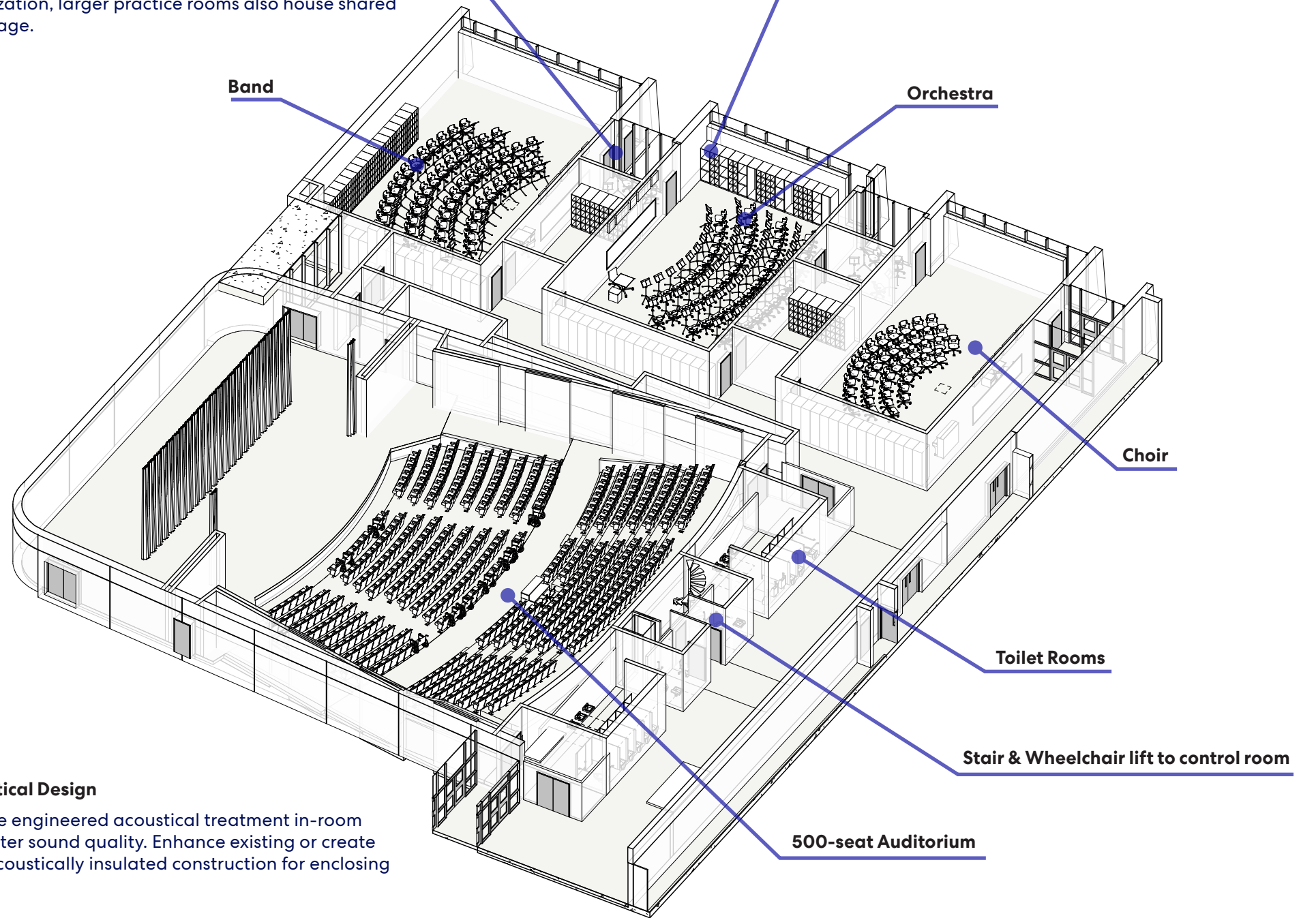
The relocation of the music classrooms and auditorium allows for further renovation and repositioning of facilities within the current building footprint.

### Dedicated Practice Rooms

Practice rooms, accessed from the main classroom allow for multiple groups of students to work independently while still in a monitor location that doesn't disturb adjacent spaces. To maximize utilization, larger practice rooms also house shared storage.

### In-room Instrument Storage

Simplifying the process of setup/take down, right-sized instrument storage in-room allows for quicker activity start, increasing instructional time.



### Acoustical Design

Provide engineered acoustical treatment in-room for better sound quality. Enhance existing or create new acoustically insulated construction for enclosing walls.



**Focus Area: Performing Arts**

*Conceptual Rendering*

This concept image shows a potential new Performing Arts Theater at Monroe. Intended to mirror the current facility at Hubble, the new theater space will be a hub for performing arts both at the school and in the Community.



**Focus Area: Performing Arts**

*Conceptual Rendering*

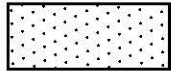


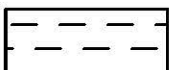


*This concept art shows a potential new Performing Arts addition at Monroe. The design approach is to mirror the distinct character of Monroe through the use of variegated brick and battered fins. High windows provide the ability to bring natural light into classrooms while allowing lower wall space for instrument storage. The theater itself is shown with a precast concrete exterior and rounded edges, mirroring the current lecture hall on the south side of the building.*

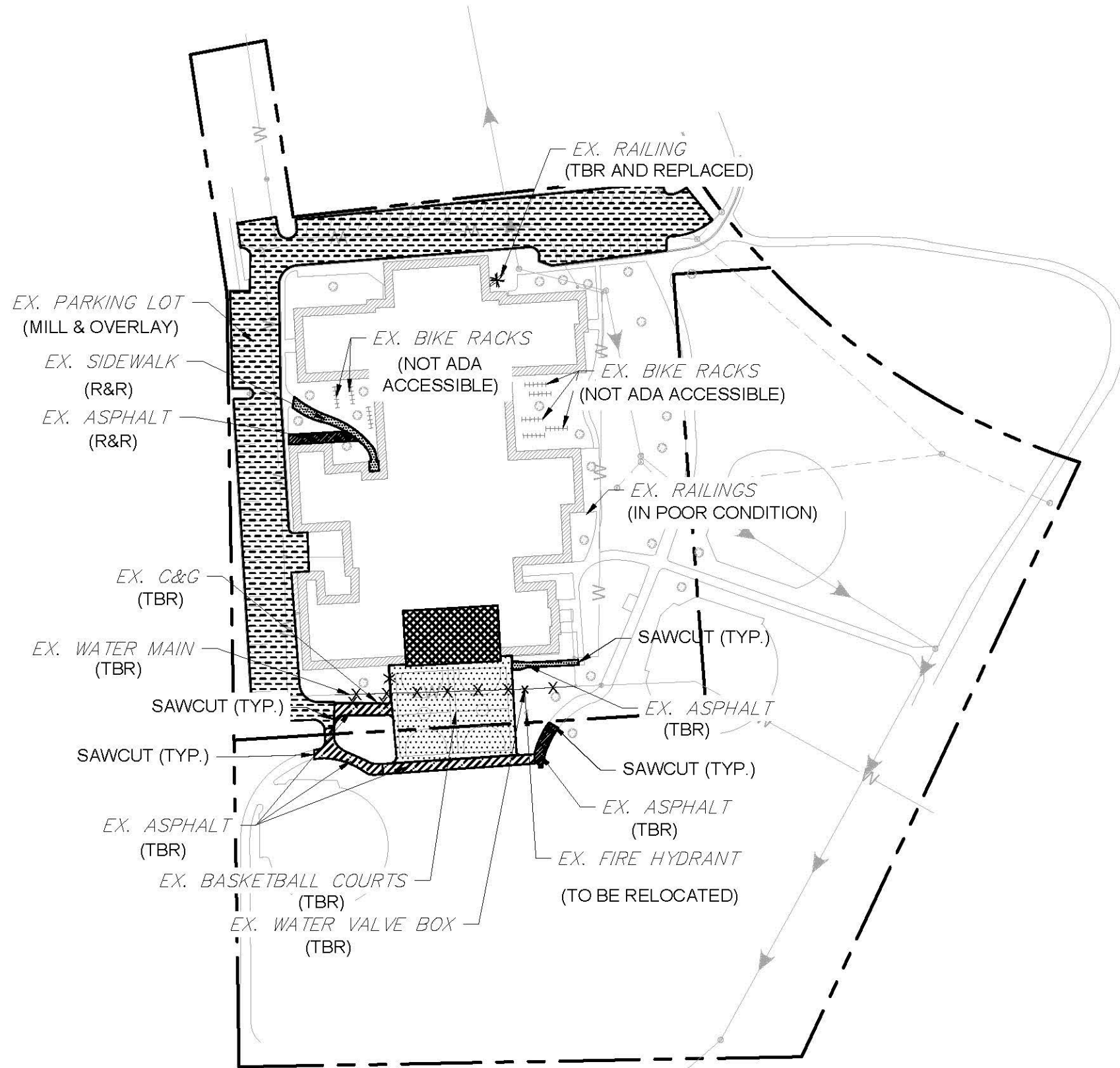
# **05 Appendix**

# Preliminary Civil Engineering Site Plans

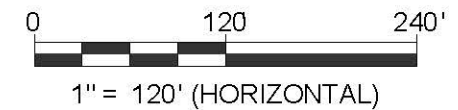


**DEMOLITION LEGEND**

	CONCRETE PAVEMENT / SIDEWALK REMOVAL, FULL DEPTH
	ASPHALT REMOVAL, FULL DEPTH
	BUILDING DEMOLITION
	2" MILL & OVERLAY
	SAWCUT PAVEMENT, FULL DEPTH
	TO BE REMOVED



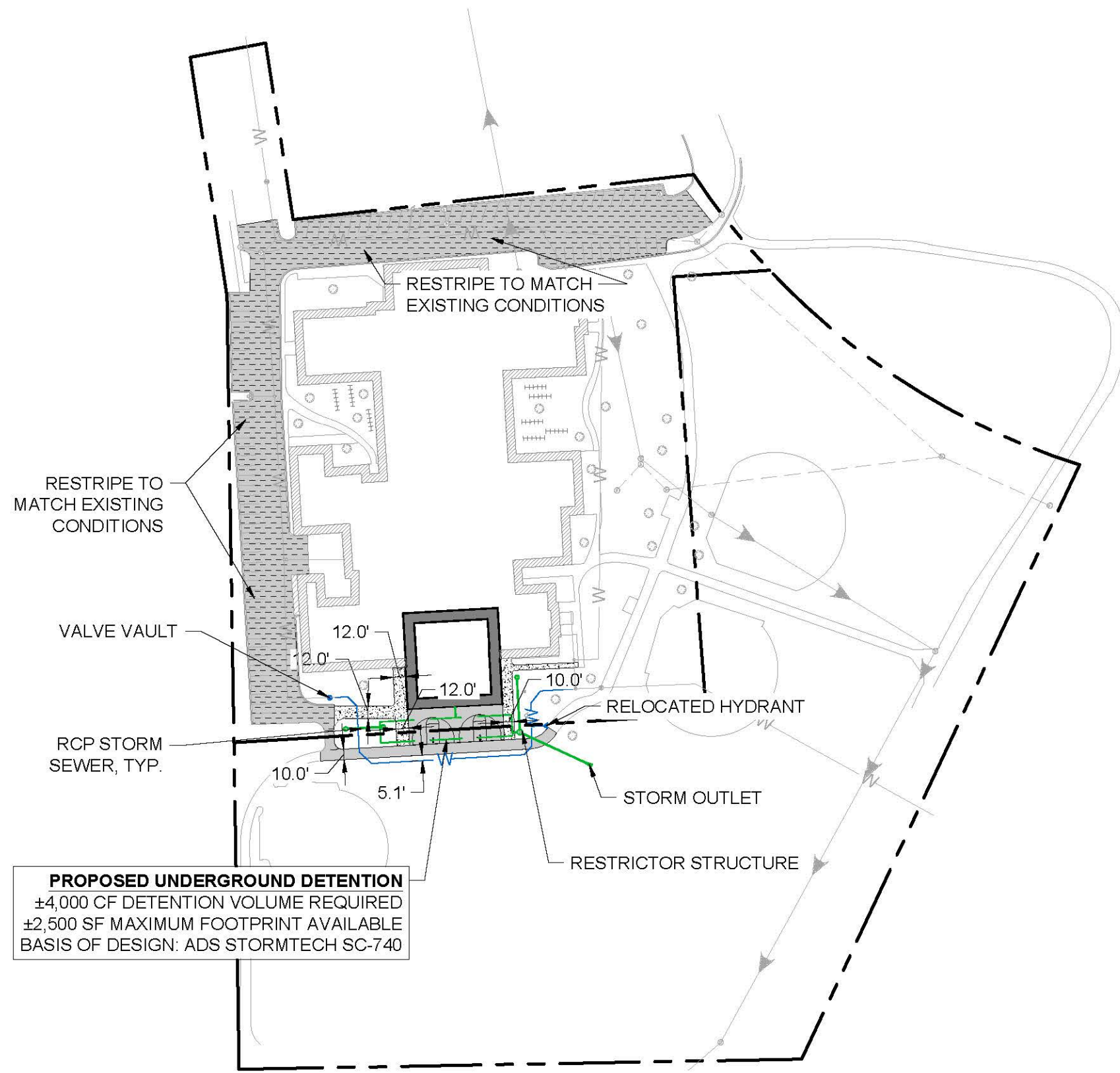
JULIE  
CALL BEFORE  
YOU DIG  
**811**



C1.0


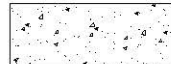




**Edison Middle School**  
Proposed Site Demolition Plan



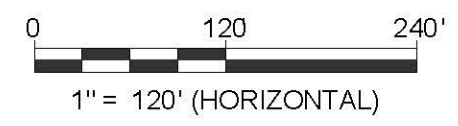
**PROPOSED UNDERGROUND DETENTION**  
 ±4,000 CF DETENTION VOLUME REQUIRED  
 ±2,500 SF MAXIMUM FOOTPRINT AVAILABLE  
 BASIS OF DESIGN: ADS STORMTECH SC-740

**PAVEMENT LEGEND**

-  STANDARD DUTY BITUMINOUS PAVEMENT
-  PCC SIDEWALK
-  CONCRETE
-  2" MILL & OVERLAY



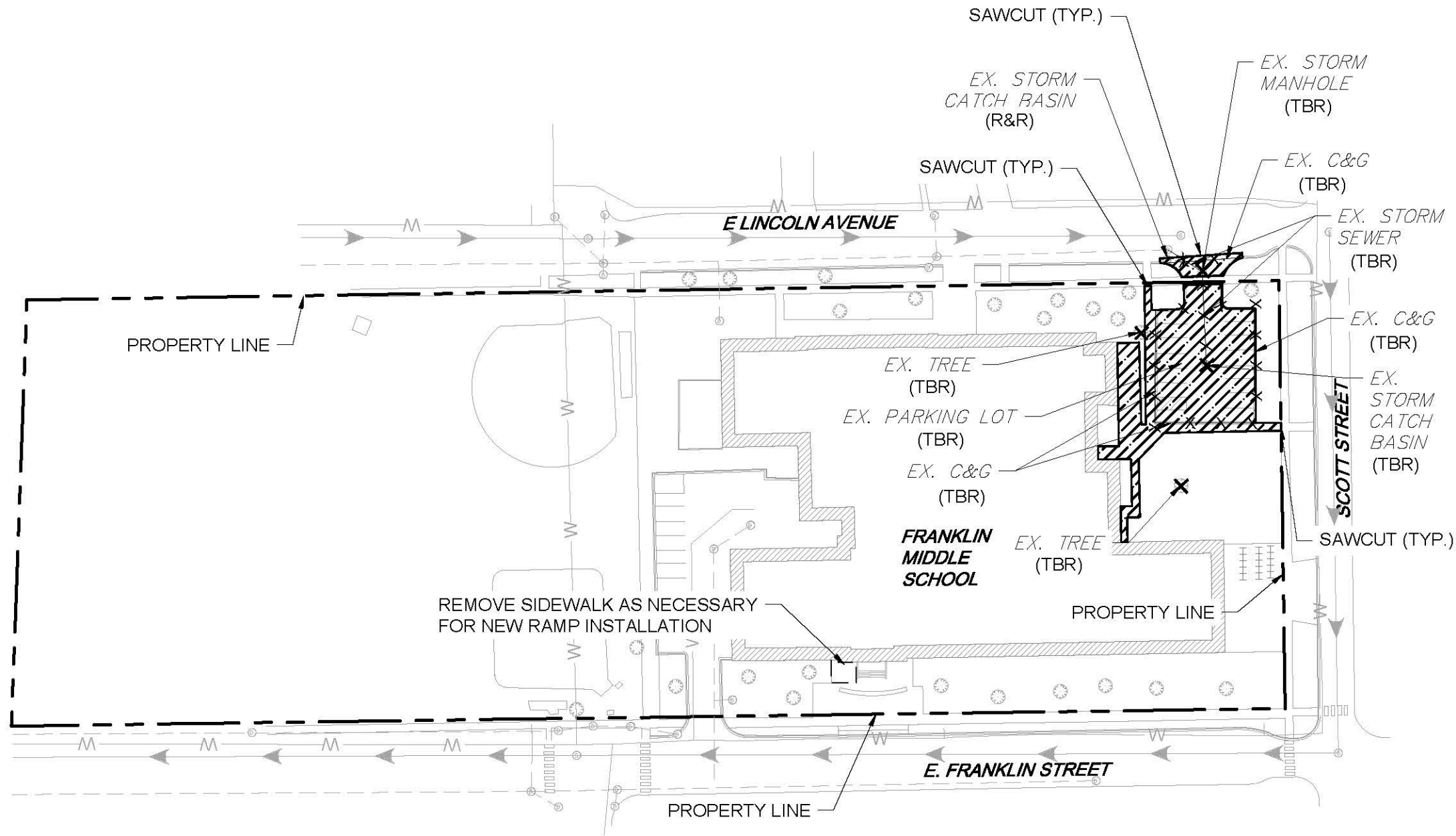
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 CALL BEFORE  
 YOU DIG  
**811**



C2.0



**Edison Middle School**  
*Proposed Site Plan*

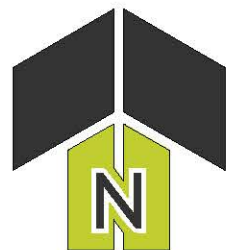
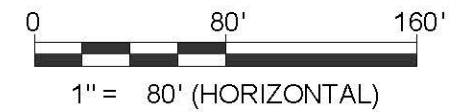


**DEMOLITION LEGEND**

-  ASPHALT PAVEMENT REMOVAL, FULL DEPTH
-  CONCRETE PAVEMENT / SIDEWALK REMOVAL, FULL DEPTH
-  SAWCUT PAVEMENT, FULL DEPTH
-  TREE/BUSH REMOVAL
-  (TBR) TO BE REMOVED



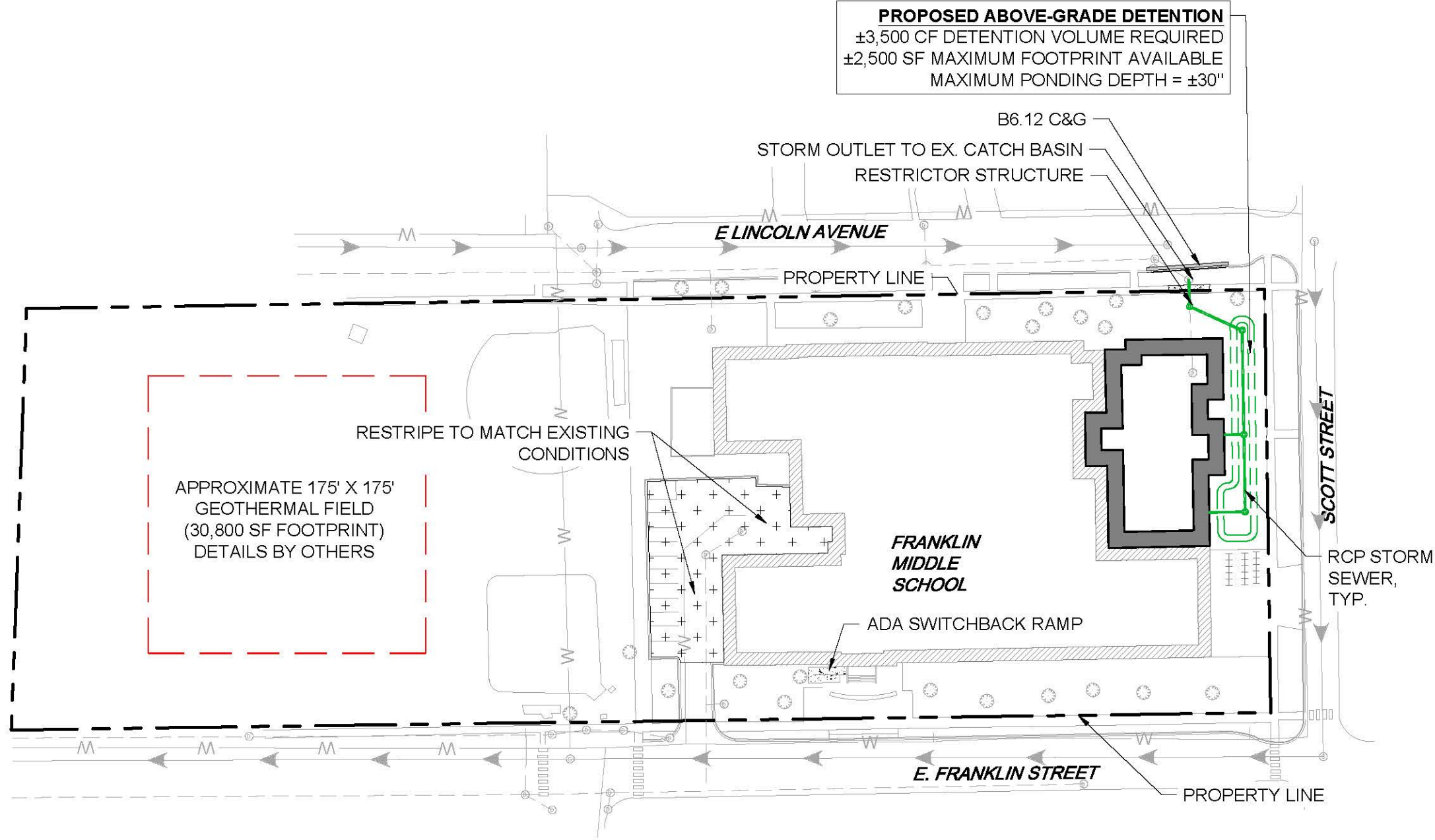
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**811**





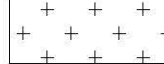

C1.0



**Franklin Middle School**  
Proposed Site Demolition Plan

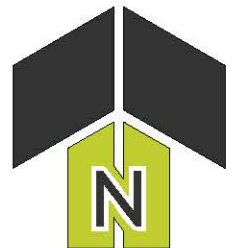
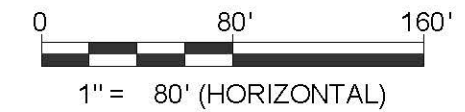


**PAVEMENT LEGEND**

-  STANDARD DUTY BITUMINOUS PAVEMENT
-  PCC SIDEWALK
-  SEALCOATING AND RESTRIPIING PAVEMENT
-  B6.12 C&G



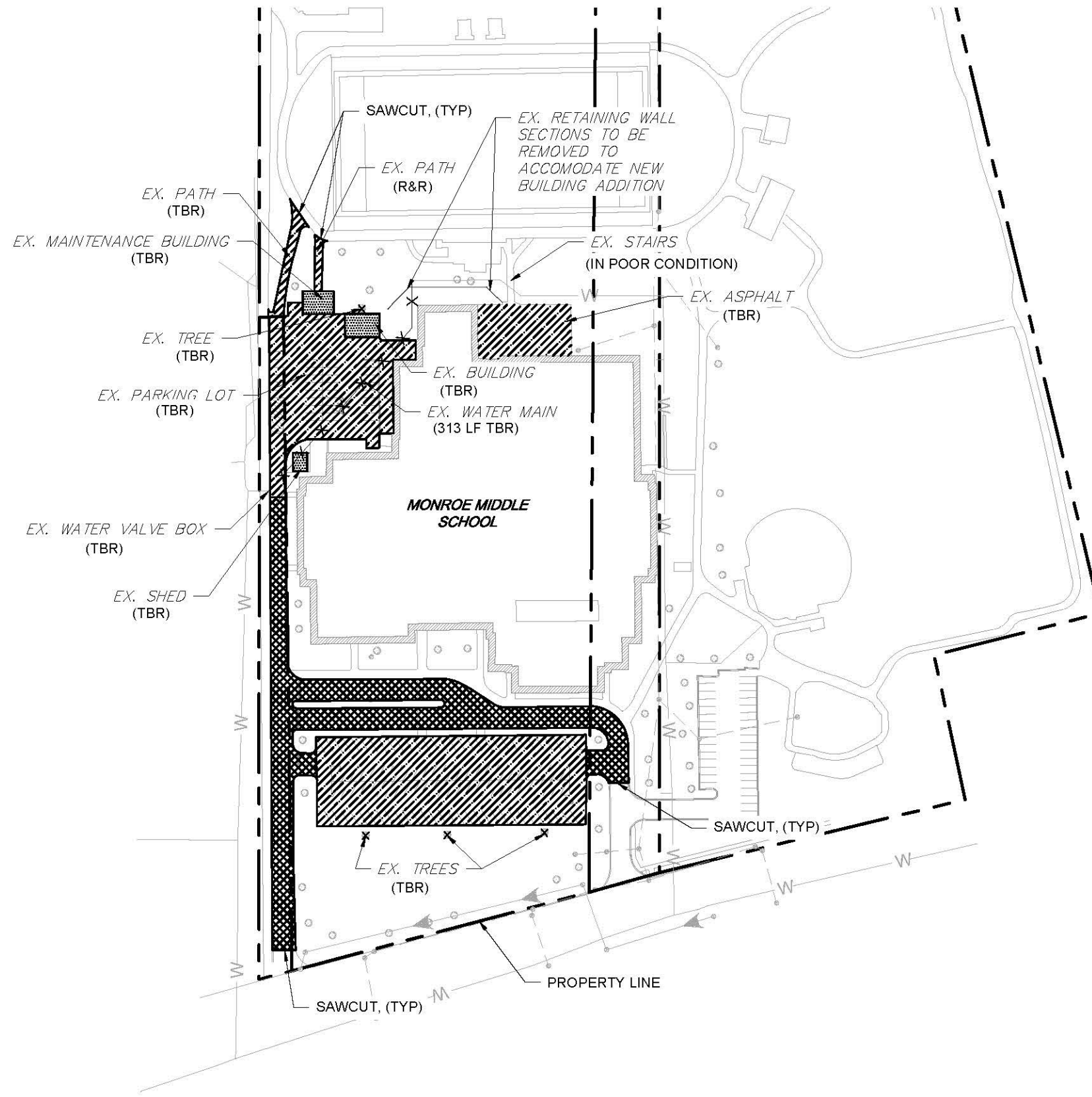
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**811**





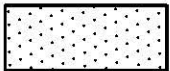


C2.0



**Franklin Middle School**  
*Proposed Site Plan*

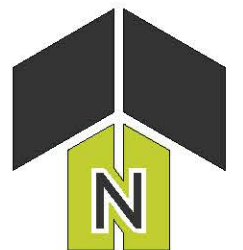
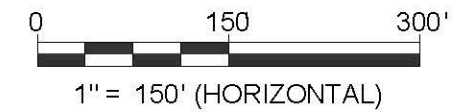


### DEMOLITION LEGEND

-  2" MILL & OVERLAY
-  ASPHALT PAVEMENT REMOVAL, FULL DEPTH
-  BUILDING DEMOLITION
-  SAWCUT PAVEMENT, FULL DEPTH
-  TREE/BUSH REMOVAL
- (TBR)** TO BE REMOVED



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YOU DIG  
**811**

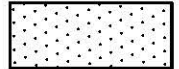


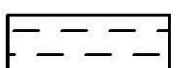




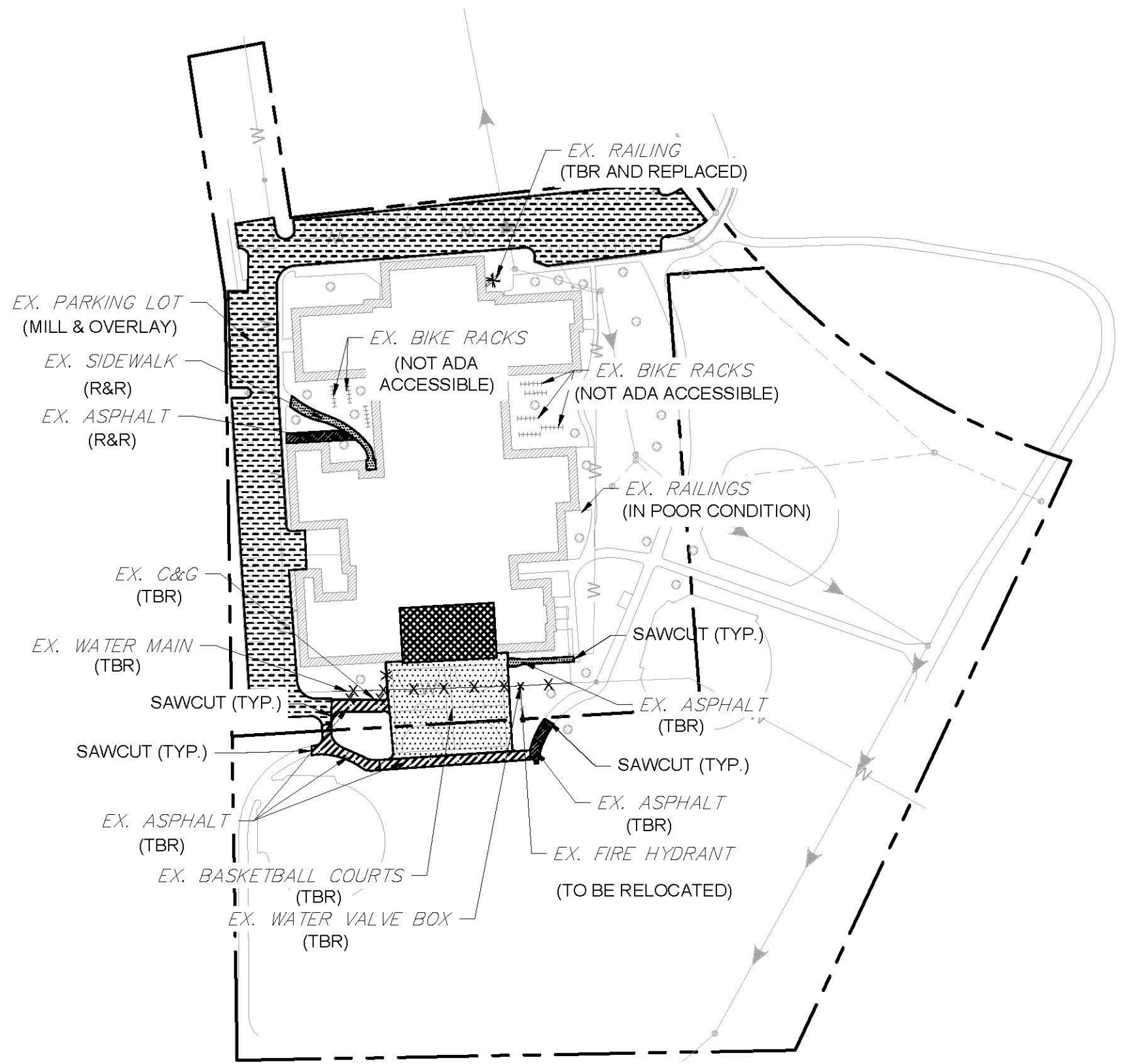
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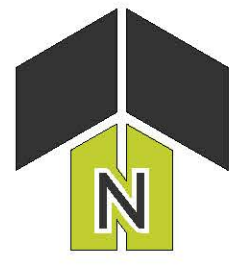
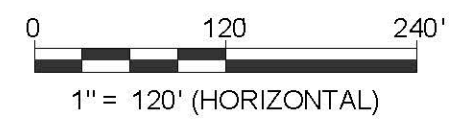
## Monroe Middle School Proposed Site Demolition Plan

**DEMOLITION LEGEND**

	CONCRETE PAVEMENT / SIDEWALK REMOVAL, FULL DEPTH
	ASPHALT REMOVAL, FULL DEPTH
	BUILDING DEMOLITION
	2" MILL & OVERLAY
	SAWCUT PAVEMENT, FULL DEPTH
	TO BE REMOVED



JULIE  
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**811**



C1.0



**Monroe Middle School**  
Proposed Site Plan

# **Building Systems Design Narratives**



**Wheaton Warrenville Community Unit  
School District 200  
Edison Middle School**

<b>Published:</b>	June 6, 2024
<b>Facility Location:</b>	1125 South Wheaton Avenue, Wheaton, Illinois 60189
<b>Elara Job #</b>	24029
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**1. EXECUTIVE SUMMARY**

Elara Engineering was enlisted by Perkins & Will to provide a facility assessment for the mechanical, electrical, plumbing, and fire protection (MEPFP) systems at Edison Middle School and develop recommendations focused on identifying items that would be impacted by the proposed renovation project. Also included are recommendations based on our investigation of the MEP/FP systems that we believe should be considered by Wheaton Warrenville CUSD 200 regardless of any architectural renovation of the facility.

Our review included:

- Surveys of the as-built condition of the building’s major MEPFP systems.
- Conversations with the School district personnel.
- Analyses of current applicable codes including those for energy efficiency, ventilation, electrical, and fire suppression and note any deficiencies observed.
- Review of existing construction drawings and proposed renovation plans outlined by P+W.
- Identification of MEPFP systems in need of repair or replacement.
- Analysis of alternatives for repair or replacement of existing equipment or systems including implementation cost, operating cost, maintenance cost, energy efficiency, and feasibility of construction.
- Review of proposed modifications and additions defined in P+W Capital Improvements to determine what modifications to existing MEP/ FP systems would be affected.

Based on the initial information provided, we understand CUSD 200 is planning renovations and additions to Edison Middle Schools to enhance existing and construct new spaces as well as address deferred maintenance items associated with the existing building infrastructure. A summary of the anticipated renovations and additions is provided below based on the Board Presentation prepared by Perkins & Will dated February 28, 2024:

- Edison Middle School (119,087 SF)
  - Renovations (2 floors)
    - Right-size science lab classrooms
    - Consolidate student services
    - Right-size wellness facilities
    - Create flexible use exploratory labs
    - Update LLC
    - Update select toilet rooms, including accessibility
    - Update classrooms and corridors throughout
  - Additions
    - Partial courtyard infill for new toilet rooms
    - New music ensemble practice space
    - Gymnasium expansion/addition



The statement made by School district personnel was that any system installed under a referendum project must be operational for the next 30 years. Based on this statement, the design intent of the project is to fully replace all HVAC systems currently serving the schools.

## 2. BUILDING DESCRIPTION

In review, Edison Middle School consists of two levels and was originally constructed in 1959. The building has undergone several interior renovations and underwent additions constructed in 1971 and 1998 that brought the building to its current total size of approximately 119,087 sq. ft.

The HVAC system serving the building currently consists of packaged rooftop units, indoor air handlers and unit ventilators. All systems utilize an air-cooled chiller and heating hot water boilers. Most if not all HVAC equipment installed is mid 90's vintage. No modifications have existed since that timeframe.

The school consists of educational classroom spaces as well as office area, cafeteria, library gymnasium spaces, locker rooms, auditorium, and technical education spaces.

### 3. EXISTING MECHANICAL SYSTEM DESCRIPTIONS

#### A. CURRENT HVAC SYSTEM

The current HVAC system serving the school today consists of the following equipment.

- Floor mounted (2) pipe chilled/ hot water unit ventilators serving the classrooms.
- (3) CAV cooling only package rooftop units with duct mounted hot water heat
- (5) CAV indoor air handlers with hot and chilled water coil
- (1) seven (7) zone, multizone, indoor chilled/ hot water air handler
- (3) Heating hot water boilers
- (1) split condenserless chiller
- Various primary & primary/secondary pumps associated with the hydronic systems of the building.

Based on the original building drawings we were not given all related sets. The contract documents received consist of the following:

- Portion of the original 1959 drawings. No module “B” & “C” were included.
- 1971 Addition
- 1998 Addition and interior renovations

The remainder of the information was gathered on site from our walkthrough of the facility. It appears from our walkthrough that the original 1959 equipment is no longer utilized. Perhaps some terminal equipment such as cabinet heaters and convectors. The remainder of the equipment appears to be from the mid to late 1990’s.

The equipment currently serving the school is approaching 30 years old and in need of replacement. Equipment is beyond its mean useful life, which is described by the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) as the point in which equipment failure is more likely to occur. Greater than 50% probability.

#### B. HEATING SYSTEM

The building’s central heating system consists of (3) hot water boiler plant located in the first-floor mechanical room. The existing boiler plant consists of (2) “Burnham” three pass generator boilers. Model number 4FW-563A-50-G-GP with an input capacity of 4,713 MBH, and an output capacity of 3,370 MBH. A third boiler was added recently that serves the building during swing months when capacity reduction is warranted. This third boiler is a “Advanced Thermal Hydronics” Series KN20 condensing boiler with an input capacity of 2000 MBH. The boiler has a natural gas burner.

The boiler plant serves unit ventilators, air handlers, duct heating coils and terminal equipment located throughout the building. Hot water is distributed via copper and black iron piping from the mechanical room.



Based on the square footage of the building, estimated at 119,087 SF, and the total output of the current boiler system at roughly 8,600 MBH. This equates to 72 BTU/SF. A “Rule of Thumb” regarding boiler sizing that includes redundancy is in the range of 50 to 60 BTU/SF. Therefore, the current capacity of all three boilers has more than sufficient redundancy built into the system.

Regarding boiler accessories the following are related comments

- The heating system has two expansion tanks hung from a structural steel platform. Both tanks have sight glass to determine level. Any new design will replace the expansion tanks with a bladder type to prevent the opportunity to become waterlogged.
- Each boiler has an inline circulation pump. Due to accessibility issues no capacity was determined. Assume the pumps are sized for a 20-degree delta across the boilers from inlet to discharge.
- Boilers are piped in a primary. / Secondary configuration.
- A three-way control valve controls the flow from the boiler and secondary loop

The intent under non geothermal options is to replace the current boiler plant with condensing boilers of sufficient size to provide heating water to the building including 2/3 capacity redundancy.

#### C. COOLING SYSTEM

Chilled water is routed throughout the building to serve air handlers and unit ventilators. Chilled water is provided by a single air cooled, condenserless Daikin chiller. Condenserless means to imply the evaporator bundle is located remote from the air-cooled condenser and

compressor. The purpose of this is to allow chilled water to never see exterior temperatures and allow for the chiller to run longer if needed in the swing months.

The current chiller is a Daikin Model AG211ETSMMNNOA and is nominally sized at 211 tons and was installed in 2021.



If we remove the three spaces in the school utilizing packaged cooling equipment (Computer Lab, Office and LLC) which equates to roughly 16,000 SF. This leaves roughly 103,000 utilizing chilled water, 211 tons over 103,000 SF equates to 488 SF / Ton of cooling. A “Rule of Thumb” for a school with a high ventilation rate would be roughly 300 to 250 SF per ton. So overall the chiller may be slightly undersized for its current usage.

If we remove the latent load from the chiller (Ventilation air) we will have more than sufficient chilled water capacity for any future renovation.

With the chilled water system only being three years old, The HVAC system selected for Edison that continues to utilize chilled water may be warranted.

**D. ROOFTOP EQUIPMENT**

The building has (3) cooling only rooftop units with duct mounted hot water heating. The current units are in poor condition and are well past their mean useful life. Below table 1. Defines the equipment currently on site.

Tag	Manufacturer	Location	Design Details	Year Manufactured	Services
RTU-1	Trane	Roof	7.5 Nominal Tons	1999	2 <sup>nd</sup> floor Computer lab
RTU-2	Trane	Roof	8.5 Nominal Tons	1991	Main Office
RTU-3	Trane	Roof	25 Nominal Tons	1992	LLC



Any future design should eliminate these rooftop units. The spaces would be served by the new HVAC system selected.

One note from our site verification, the main office rooftop unit at one time was a variable volume / temperature system (VVT). This was apparent from the bypass dampers between the supply and return risers. This system is no longer utilized due to the valves having pneumatic control and no longer having compressed air piped to the valves. A VVT system is sometimes referred to as the

“Poor Mans VAV” for the following reasons.

- The RTU is always constant air volume.
- The zone dampers have no means of reheating, just a modulating damper.
- To determine if the unit is in heating or cooling it’s a majority vote based on the number of dampers. The remainder of the spaces must go to what the majority is asking for,
- There are bypass dampers from the supply to the return. If the zone dampers start to close and pressure builds, the bypass dampers open to relieve pressure and bypass air from the supply to the return.

Currently without the VVT system operational the system is running in full constant volume mode. It is unknown if the original VVT dampers are still in place above the ceiling for the spaces they serve or if they have been removed and ductwork modified.

**E. AIR HANDLING UNITS**

The building is currently served by five (5) constant volume indoor air handlers and one (1) seven (7) zone multi-zone air handler. Each air handler is served from the two-pipe chilled /hot water system. The constant volume air handlers have only one coil that serves both the chilled and hot water needs. The multi-zone unit has both a hot deck and cold deck coil, although the mains serving these areas are dual temperature.

The issue with utilizing the same coil for both chilled and hot water is the coil is sized for cooling. Utilizing a 6-row coil for heating is difficult to controls with such a large surface area. This would require a very small volume of water flow and very low temperatures to control heating. The correct way to design an air handler served by a two-pipe system is to install both chilled water and hot water coil in the air handler. The main will be split at the unit to serve both coils with isolation valves installed on both coils to prevent either chilled or hot water from entering the other coil.



Overall, the units all appear to be of similar age, roughly 30 years old, and should be considered for replacement.

Tag	Manufacturer	Location	Design Details	Area Served	Services
AH-4	Trane	Maintenance Mezzanine	Constant Air Volume	Cafeteria	Model MCCA017
AH-1	Trane	PE Storage	Constant Air Volume	Main Gym	Model MCC017
AHU-2	Trane	PE Storage Mezzanine	Constant Air Volume	Small Gym	Model MCC010
AHU-2	Trane	Wrestling Mezzanine	Multizone Constant Air Volume	1998 South Addition Technical Education	Multizone Model MCCA014
AHU-1	Trane	Wrestling Mezzanine	Constant Air Volume	Wrestling / Aerobics	Model MCCA 010
AHU-3	Trane	Theatre Storage Mezzanine	Constant Air Volume	Stage / Auditorium	Model MCC017

The one multizone unit installed in the 1998 addition has seven (7) zones of control. Overall multizone units are not a system that is utilized in current designs. This is due to the inefficiency of the equipment due to being constant volume and essentially heating and cooling simultaneously. This unit is the one air handler that has both a heating hot deck coil and cooling cold deck coil.

### F. UNIT VENTILATORS

There are roughly 36-to-40-unit ventilators serving classroom spaces throughout the school. Base on the appearance of the unit ventilators, they do not seem to be the standard American air Filter / Daikin or Trane unit ventilator that you see majority of the time. The units installed appear to be Modine or Nesbitt as the manufacturer. The units appear to be all from the same vintage. Roughly 30 years old. The units are two pipe chilled / hot water, floor mounted, in most cases and do not have any shelving associated with them.

As you are aware the inherent problem with unit ventilators are as follows:

- The two-pipe configuration means the unit is in either cooling or heating mode.
- The unit's discharge is at one location.
- Prone to freezing coils in extreme cold
- Units are loud.
- Units take up valuable floor space
- Space temperature fluctuates based on your location within the space



Based on previous meetings with the district, the reuse of unit ventilators was eliminated as a viable option for the reasons listed above. Any removal of the unit ventilators may require wall patching the current unit ventilator louver locations and painting to match existing.

**G. TERMINAL EQUIPMENT**

By the term terminal equipment, we are referring to cabinet heaters, suspended unit heaters, fin tube radiation and convectors. It is believed that the current terminal equipment is original from the date of the building in which it is installed. Overall, there is not much that goes wrong with this type of equipment. Most do not have moving parts and the ones that do such as unit heaters and cabinet heaters are simply a fractional horsepower motor.

Under any recommendation regarding the referendum project, this equipment should be replaced in full. The age of the equipment warrants replacements and will provide 30 plus years of service moving forward.

Depending on the system selected, the terminal equipment will be all electric or utilize heating hot water. Each individual terminal unit will be evaluated to determine if any can remain and be reused.

**H. SPLIT SYSTEMS**

There appears from our visit to be two (2) split systems with indoor evaporator and roof mounted air-cooled condenser. The exact areas served are unknown although it is believed they serve individual rooms near the LLC area. The condensers on the roof are older and assumed to R-22 refrigerant.



Under any referendum design project, these split systems should be removed, and the current spaces served incorporated into the new HVAC system selected.

**I. EXHAUST FANS**

There are numerous exhaust fans located throughout the roof of the building. Based on appearance there are a mix of new and old spun aluminum fans. The fans are used for pressure relief serving unit ventilator classrooms to toilet rooms.



Under a renovation project a detailed evaluation of the current fans will need to be performed to determine what each fan serves and their condition. If determined the fans are in good condition and recently replaced, they can be reused. Otherwise, the fans will be replaced. We will determine what fans would no longer be utilized under the new design and remove them in total. This would apply to most

pressurization fans.

There are also inline fans located within the school. They are used primarily as return fans serving the air handlers systems in the school. These fans will be replaced on a per air handler basis if deemed that the existing air handler is to be replaced. If space allows the return fan can be integral to the air handler design.



The kitchen hood is an exhaust only hood that takes its makeup air from the surrounding spaces. To conserve energy, the hood should be replaced with a compensating hood or a separate make up air unit provided to prevent conditioned (cooled) air from being directly exhausted out the hood. This would be considered an energy conservation measure.

**J. TEMPERATURE CONTROLS**

The building is currently served by both an Alerton Tridium based building automation system and a Distech building automation system. It appears all pneumatic controls, once utilized, have been removed and the entire mechanical system is controlled via BAS. The multizone 1998 addition appears to be on the Distech system while the remainder of the building is Alerton.

Any renovation to the building shall incorporate new controls to either match the district standards Any control system should incorporate an open protocol, BACnet based system that is not proprietary to allow for multiple service companies to modify and service the control system selected.



**IV. HVAC SYSTEM REPLACEMENT OPTIONS**

**A. GEOTHERMAL ALTERNATE**

The district has requested that systems designed have an option to be served by Geothermal. The intent is the geothermal field to be an alternate. Therefore in lieu of a geothermal field, the systems defined below would be “geothermal ready, but the base design would include a fluid cooler located on the exterior of the building.

The design intent is to remove the latent load (ventilation air) from the geothermal field to reduce the overall number of wells. Based on the square footage of Edison Middle School, and the removal of spaces that would be served by packaged rooftop equipment, the following is a rule of thumb as it relates to the number of wells required. Note that the wells would be 450-500 feet deep, producing roughly 3 tons per well assuming average ground conductivity. Each well will need to be 20 feet to the center line of the other wells. Additionally, the rule of thumb for space conditioning only, is roughly 600 Square feet per ton of cooling, seeing the

ventilation needs will come from packaged equipment. The following is the estimated number of wells.

**Edison Middle School:**

- Square feet of building: 119,087 SF
- Square feet of space being served by equipment other than the geothermal field: 25,000 SF.
- Square footage being served by Geothermal field: 94,000 SF.
- Estimated number of wells: 60
- Area Required for Wells: 24,000 SF or .61 Acers

**B. “GEOTHERMAL READY” OPTIONS**

**Option IA**

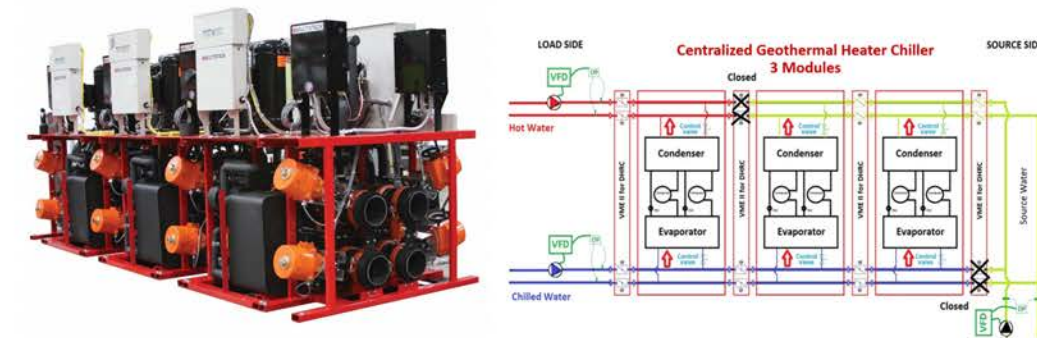
**Geothermal, Water-Cooled Modular Heater / Chiller with Dedicated Outside Air System (DOAS).**

**Description:**

This system would consist of a hybrid approach to providing enhanced HVAC to the building via water-cooled Modular heater / chiller that can provide 4 pipe chilled and hot water to the building simultaneously and send chilled and hot water throughout the building to concealed fan coil units or air handlers.

Ventilation air would be delivered from packaged, rooftop mounted DOAS units that would duct directly into each space requiring ventilation air and be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.

Spaces such as gymnasiums and auditoriums could remain on more efficient single zone rooftop air handling systems and not be integrated into the geothermal field system. This can be analyzed further into the design.



Pros:

- No cross contamination of airflow from room to room (Covid Friendly)
- Superior indoor air quality
- Energy Efficient
- Quiet operation
- Reduced carbon footprint
- Simultaneous Heating and cooling as needed.
- Potentially reuse boiler infrastructure for heat injection as part of a heating dominant geothermal system
- Reuses as much as possible the existing chilled water and heating hot water infrastructure within the building

Cons:

- Additional maintenance compressor systems
- Sophisticated controls
- Higher first cost
- Requires additional exterior building area to accommodate geothermal field wells.

Regarding heat injection into the field, the potentially best option is to utilize the domestic hot water system. The reason for this is the heat added is simply as belts and suspenders. It may or may not be utilized, therefore having a dedicated boiler installed for injection that may never be needed is not the best use of dollars. If you oversize the domestic plant the Domestic will always be utilized, just larger than needed to support the domestic needs of the building.

**Option IB**

**Geothermal, Water Cooled Variable Refrigerant Flow (VRF) with Dedicated Outside Air System (DOAS).**

Description:

This system would consist of a hybrid approach to providing enhanced HVAC to the building via water-cooled VRF condensers and associated VRF indoor units. Each indoor VRF unit will be a horizontal ducted/concealed system connected to supply and return ductwork, each space requiring individual temperature control would receive a single VRF evaporator. The indoor water-source compressor units would provide both heating and cooling to indoor units as required and would connect to each terminal unit via refrigerant piping. The system would provide both heating and cooling year around without any swing month issues current experienced with a 2 pipe system.

Ventilation air would be delivered from packaged, rooftop mounted DOAS units that would duct directly into each space requiring ventilation air and be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant

modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.

Spaces such as gymnasiums and auditoriums could remain on more efficient single zone rooftop air handling systems and not be integrated into the geothermal field system. This can be analyzed further into the design.

Pros:

- No cross contamination of airflow from room to room (Covid Friendly)
- Superior indoor air quality
- Energy Efficient
- Quiet operation
- Reduced carbon footprint
- Simultaneous Heating and cooling as needed
- Potentially reuse boiler infrastructure for heat injection as part of a heating dominant geothermal system

Cons:

- Additional maintenance of refrigeration and compressor systems
- Sophisticated controls
- Refrigerant piping throughout building
- Higher first cost
- Requires additional exterior building area to accommodate geothermal field wells.

**C. NON-GEOTHERMAL OPTIONS**

**Option IIA**

**Chilled Water / Hot Water, Four Pipe, Concealed Fan Coil Units with Dedicated Outside Air System (DOAS)**

Description:

This system would strive to reuse existing hydronic infrastructure (with modifications) with four-pipe fan, chilled water and hot water, concealed fan coil units. Each fan coil unit would be ducted to supply and return ductwork distribution for each space requiring individual temperature control.

Ventilation air would be delivered from a packaged DOAS system located on the roof that would duct directly into the return side of each fan coil and would be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.



Spaces such as gymnasiums and auditoriums could remain on more efficient single-zone rooftop air handling systems to replace existing equipment past its useful service life.

Pros:

- No cross contamination from room to room. (Covid Friendly)
- Reuse existing chilled and hot water infrastructure.
- Filter replacement in return grille of fan coil
- DOAS ducted to return of unit assists with cooling loads of the space.
- Less complicated controls
- Superior indoor air quality

Cons:

- Increase ventilation needed for interior spaces that may require cooling in months when chiller is not operational.
- Would require modification of aging hydronic piping and infrastructure which could represent risks to the project.
- Less efficient than the above option.

This option has merit for Edison seeing the chiller is only three (3) years old. Under this option the chiller would be reused to serve the chilled water needs of the fan coils. Seeing the ventilation is separated by utilizing DOAS equipment the actual tonnage of chilled water is reduced when latent loads are removed.

Under this option the existing boiler plant would be replaced with new condensing type boilers.

**Option IIB  
Air Cooled Variable Refrigerant Flow (VRF) with Dedicated Outside Air System (DOAS)**

Description:

This system includes providing enhanced HVAC to the building via air-cooled VRF condensers and associated VRF indoor units. Each indoor VRF indoor unit will be a horizontal ducted/concealed system connected to supply and return ductwork distribution for each space requiring individual temperature control. The outdoor VRF compressor units would be located on the roof or within conditioned penthouses/mezzanines with unit heaters and wall louvers. Placing the VRF compressor units in a conditioned penthouse would increase costs considerably.

Ventilation air would be delivered from packaged, rooftop mounted DOAS units that would duct directly into each space requiring ventilation air and be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate

equipment. It is the intent that the DOAS equipment would include energy recovery and be packaged.

Spaces such as gymnasiums and auditoriums could remain on more efficient single zone rooftop air handling systems and not be integrated into the geothermal field system. This can be analyzed further into the design.

Pros:

- No cross contamination from room to room
- Superior indoor air quality
- Removes the need for chilled and hot water if DOAS is roof mounted, package equipment.
- Simultaneous heating and cooling.
- Quiet operation
- Energy Efficient

Cons:

- Increased refrigerant and compressor maintenance
- Sophisticated controls
- Refrigerant piping throughout building
- Supplemental heat may be required due to equipment limitations at low ambient outdoor air temperatures.

**V. CONCLUSION**

All systems outlined above, be it Geothermal ready or non-geothermal all provide current design standards being implemented in the industry today. The separation of sensible and latent loads by introducing ventilation air separately from the room load is imperative for indoor air quality. By utilizing CO2 control you are only heating or cooling ventilation air needed to meet the code requirement.

Based on the systems outlined above, our recommendation for Edison would be a 4 pipe chilled / hot water fan coil system. The reason for this recommendation is as follows:

- The chiller that is only four (4) years old can be reused
- The chilled water and hot water main infrastructure in the building can be reused for the most part.
- Less expensive to install than either geothermal option indicated.

Elara has extensive experience in design of all systems outlined above and has these systems either installed or in construction today. If the district has interest, a site visit can be arranged to visit K-12 installations of these systems to allow the district to “kick the tires” speak to district personnel and get their thoughts on each system.

## V. ELECTRICAL SYSTEM DESCRIPTIONS

### A. UTILITY SERVICE

The building has one utility entrance from ComEd utility company. The pad mounted utility transformer is located outdoors next to the boiler room. The utility transformer feeds the main switchboard located in the Boiler Room.

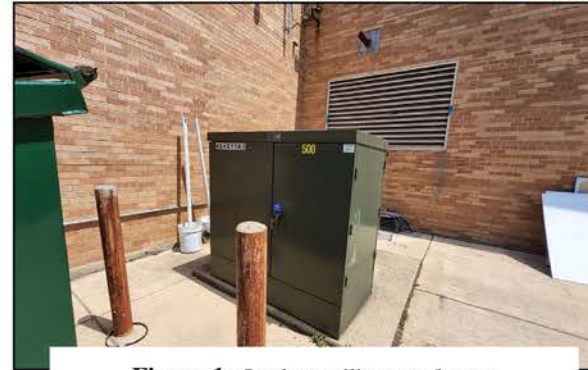


Figure 1: Outdoor utility transformer

### B. MAIN ELECTRICAL SERVICE

The building's main switchboard located in the boiler room on the first floor. The main switchboard is rated for 2,400A at 208V, 3-phase, 4-wire. The switchboard has (4) sections as detailed below:

- A. Section 1: Utility cable entrance section
- B. Section 2: Current Transformer (CT) cabinet and a 2400A bolted pressure fuse switch
- C. Section 3: Distribution panel with circuit breakers that feed the for the building distribution panels as described below:
  - a. 600A/3P circuit breaker for unlabeled equipment.
  - b. 150A/3P circuit breaker for panel K
  - c. 200A/3P circuit breaker for panel CA
  - d. 600A/3P circuit breaker for Chiller
  - e. 200A/3P circuit breaker for panel D-D1
  - f. 200A/3P circuit breaker for panel B-BA
  - g. 150A/3P circuit breaker for panel H
  - h. 100A/3P circuit breaker for unlabeled equipment
  - i. 60A/3P circuit breaker for RU
  - j. 100A/3P circuit breaker for panel E
  - k. 100A/3P circuit breaker for panel EL
  - l. 200A/3P circuit breaker for panel GJ
  - m. 175A/3P circuit breaker for RU
  - n. 100A/3P circuit breaker for panel F
  - o. 60A/3P circuit breaker for panel A



Figure 2: Existing Main Switchboard in Boiler Room

- p. 60A/3P circuit breaker for unlabeled equipment
- D. Section 4: Distribution panel with circuit breaker that feed the building distribution panels as described below:
  - a. 150A/3P circuit breaker for Dimmer Panel
  - b. 150A/3P circuit breaker for panel DA
  - c. 175A/3P circuit breaker for panel PP2
  - d. 150A/3P circuit breaker for trailer
  - e. 300A/3P circuit breaker for EM Generator ATS
  - f. 100A/3P circuit breaker for panel FS
  - g. 100A/3P circuit breaker for trailer

The following list of operational observations and key notes related to main switchboard that were made during the assessment and subsequent analysis:

1. The main switchboard is in good condition and about 20 years old. In conversation with the building engineer, it is believed to have been installed in the early 2000's though record dates were hard to find.
2. With proper maintenance, switchboards have a lifespan of 40- 50+ years. The existing switchboard would not need to be replaced in the upcoming renovation or additions, but it is recommended to be replaced within the next 30+ years.
3. The main switchboard is in the boiler room, which is also used as storage, and miscellaneous equipment blocks access to the switchboard. Per the National Electrical Code Article 110.26(A), three-foot clearance is required in front of all electrical equipment. It is recommended to clear any obstructions in front of the switchboard to maintain proper clearance.

### C. DISTRIBUTION PANELS

The school's panelboards are distributed through the schools, only a few are located in dedicated electrical rooms. About half of the panelboards are scattered throughout the school, in corridors, classrooms, and storage rooms. The condition of the panels vary as a few are from the original to the building while some newer.



Figure 6: Distribution Panels in Storage Room

All panelboards are three-phase units, with supply voltages at 120/208V throughout the school. Panelboards within the storage closets are all surface mounted, while panelboards located in classrooms and corridors are recessed into the wall.

The following list of operational observations and key notes related to the typical electrical equipment that were made during the assessment and subsequent analysis:

1. Some electrical panels are original to the building and are past their mean useful life. It is recommended that the electrical panels be replaced as part of the future renovations
2. Several electrical panels are in mechanical or storage rooms with blocked access with miscellaneous equipment. Per the National Electrical Code Article 110.26(A), three-foot clearance is required in front of all electrical equipment. It is recommended to clear any obstructions in front of the switchboard to maintain proper clearance.
3. It is recommended that all electrical panels in corridors and classrooms remain locked to prevent access from non-personnel. It is recommended that electrical panels be relocated to dedicated or away from student access areas. electrical rooms during future renovations.



Figure 6: Panel in Corridor

#### D. BUILDING LIGHTING

All the lighting throughout the building is fluorescent lighting of a variety of styles including recessed indirect troffer and T-8 fixtures and will need to be upgraded to meet current energy code when renovations take place. Control is performed mostly through toggle switches and keyed switches. Lighting throughout the entire building is 120V.

Emergency lighting is backed up by the generator through emergency panels. Exit signs throughout the building are also battery backed.

The following list of operational observations and key notes related to main switchboard that were made during the assessment and subsequent analysis:

1. The primary recommendation for the lighting system is the conversion of all fixtures, including emergency and exit lighting, to LED. LED technology carries significant benefits and cost-savings in energy usage and maintenance that in many cases will turn into a payback to the facility over time. Fixtures that have been retrofitted with LED T8 tube replacements should eventually be replaced in full.
2. All future renovations shall have energy code required lighting systems, which include daylight harvesting in corridors and exterior areas, occupancy sensing in offices and other interior rooms, and more precise zoned controls. The new controls will offer



additional energy savings for the school and provide an extra level of precision for staff to customize the light output for the facility.

#### E. FIRE ALARM SYSTEM

The main fire alarm control panel (FACP) is an addressable type located in the building electrical room and is manufactured by “Simplex” type 4002. The FACP serves the entire building’s fire alarm system which consists of code required smoke detectors, audio and visual notification fire alarm devices, water flow and tamper switches, the elevator recall system, and other miscellaneous components to warn against a fire.

The following list of operational observations and key notes related to the fire alarm system that were made during the assessment and subsequent analysis:

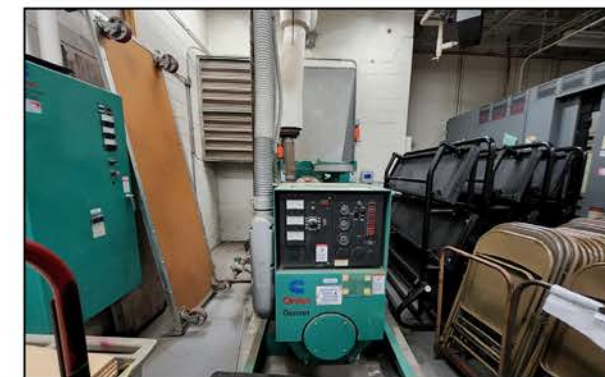
1. The existing fire alarm control panel is considered outdated and replacement parts may be harder to find. Furthermore, per the latest code, any modification or addition to the existing fire alarm system will require the building to meet the newer code guidelines as noted in the Illinois Accessibility Code.



#### F. EMERGENCY SYSTEM

The building is served by a natural gas standby emergency generator that serves the building emergency life safety and critical equipment.

The generator is in the boiler room and is rated for 208/120V, 3-phase, 4-wire. The equipment tag is blocked by conduit, so the accurate kW of the generator was not able to be determined. The manufacturer of the generator is Onan by Cummins.



The generator feeds one (1) automatic transfer switch also located in the boiler room. This feeds an emergency distribution panel EDP that feeds emergency, exit lighting, and critical loads.

The following list of operational observations and key notes related to the generator that were made during the assessment and subsequent analysis:

1. It is recommended to maintain a regular, weekly test of the generator. Per NFPA guidelines, the testing of life-safety generators is required to be performed at least once a week to ensure proper operation in a true emergency situation. The weekly test lasts around a half-hour and can be performed on a load bank.
2. A typical generator lifespan is 30 years and due to the age of the generator, it is recommended to have the generator replaced as part of the future renovations and additions. We recommend a larger size generator for future loads or to pick up the heating of the building.
3. Recommend to add building IT system, sump pump, and refrigerator to the future with a separate ATS.

**G. ADDITIONAL ELECTRICAL DISTRIBUTION RECOMMENDATIONS**

YEARLY RECOMMENDATION THERMAL INSPECTIONS

It is recommended to perform annual thermal inspections of all electrical panels. It should be performed to more easily identify problematic areas of unwanted heat buildup in the system.

EVERY 5 YEAR RECOMMENDATION FOR PREVENTATIVE MAINTANCE

It is recommended that the building perform preventative maintenance on the main switchboard. Preventative maintenance would include exercising all circuit breakers, lubricating all switch mechanisms, torquing the busbar bolts, clean and greasing all moving parts, tightening all cable terminations, and clean/vacuuming the inside enclosure of the substation.

ENGINEERING STUDY (SHORT CIRCUIT, COORDINATION, AND ARC FLASH)

OSHA 2015 regulations and the National Electrical Code require the application of an arc flash label that provides information on arc flash protection boundary, incident energy, working distance, PPE class, and available short circuit information for all electrical equipment. It is required to perform a short circuit, coordination and arc flash study and apply the labels in a timely manner to comply with OSHA and National Electric Code.

EVERY 5 YEAR GROUNDING STUDY

It is considered good practice to test the building grounding system every five years. It is recommended to hire a licensed electrical contractor to verify the existing building grounding condition for verification of code compliance and to address any possible loose connections. This shall include testing the grounding system ohm resistance to verify it matches the code required resistance.

**H. ELECTRICAL CHANGES IN RENOVATION/ADDITIONS**

The following description is intended to cover the proposed changes for future renovation and addition areas. The impact on the electrical system is described by areas as shared by the proposed program layout.

LEVEL 1

The proposed renovation of the first floor Area A will consist of significant demolition and renovation of the classrooms, offices and bathrooms.

The renovations would affect the electrical panels in those areas and require them to be demolished. See list below of panels that would be affected and need to be demolished.

- Panel DA
- Panel D
- Unnamed panel in office area
- Panel F

The following panels can be salvaged and relocated if they are less than 5 years old.

- Panel LP-1C

THE FOLLOWING ADDITIONAL CHANGES AND UPGRADES WOULD NEED TO BE MADE TO THE RENOVATED AREAS:

- New LED lighting and lighting controls
- New emergency lighting and exit signs
- New power for all new lighting, receptacles, appliances, gym equipment, mechanical equipment etc. from the new distribution panelboards. Salvaged electrical panels would be used to best extent possible for renovated areas.
- New fire alarm devices from new fire alarm system. As noted previously, a new fire alarm system would be required for the entire school during the addition or renovation of the school.
- Demolished electrical panels would need to be replaced with new and relocated to dedicated electrical rooms.

LEVEL 1 AREA B

The proposed renovation of the second floor will consist of significant demolition and renovation of the classrooms, offices and bathrooms.

The renovations would affect the electrical panels in those areas and require them to be demolished. See list below of panels that would be affected and need to be demolished.

- Panel MR
- Unnamed panel in AV Storage Room
- Panel B

THE FOLLOWING ADDITIONAL CHANGES AND UPGRADES WOULD NEED TO BE MADE TO THE RENOVATED AREAS:

- New LED lighting and lighting controls
- New emergency lighting and exit signs
- New power for all new lighting, receptacles, appliances, mechanical equipment etc. from the new distribution panelboards.
- New fire alarm devices from new fire alarm system. As noted previously, a new fire alarm system would be required for the entire school during the addition or renovation of the school.
- Demolished electrical panels would need to be replaced with new and relocated to dedicated electrical rooms.

## I. TECHNOLOGY

### Information Communications Technology

Existing Information Communications Technology Systems are compliant with industry standard and meet the needs of the school. Systems shall be expanded to support the proposed addition and modified to support areas identified for renovation. Care shall be taken to protect existing cabinets, equipment, and cabling throughout construction to minimize the need to replace existing cabling systems.

The horizontal cabling system shall comply with TIA Standards for Category 6 performance and installation. System shall be a complete end to end solution (work area outlet to patch panel) from a single manufacturer. Acceptable manufacturers include CommScope, Panduit, Hubbell, Belden, and Leviton. Minimum work area outlet requirements shall include-

1. Typical of areas of new construction-
  - a. New Classrooms-
    - i. Instructors Desk – (1) work area outlet equipped with (2) drops.
    - ii. Wireless Access Point – (1) work area outlet equipped with (1) drop.
    - iii. Wall mount displays (typical of two) – (1) work area outlet per display, each equipped with (1) drop.
  - b. New Collaboration Spaces/Small Group-
    - i. General work area outlet – (1) work area outlet equipped with (2) drops.
    - ii. Wall mount display – (1) work area outlet equipped with (1) drop.
  - c. New Support spaces/Team/Testing-
    - i. Minimum of (1) work area outlet equipped with (2) drops.
  - d. New Offices-
    - i. Minimum of (2) work area outlets equipped with (2) drops.
  - e. Library Learning Center
    - i. Resource Desk – (2) work area outlets each equipped with (2) drops.

- ii. Office – (1) work area outlet equipped with (2) drops.
- iii. Public printers/copiers – (2) work area outlets each equipped with (2) drops.
- iv. Computer workstations – (4) workstations each equipped with (2) drops.
- v. Wireless Access points – (2) work area outlets each equipped with (1) drop.

### 2. Typical of Renovated Spaces

#### a. Renovated and Right-sized Classrooms-

- i. Instructors Desk – (1) work area outlet equipped with (2) drops.
- ii. Wireless Access Point – (1) work area outlet equipped with (1) drop.
- iii. Wall mount displays (typical of two) – (1) work area outlet per display, each equipped with (1) drop.

#### b. Collaboration Spaces/Small Group-

- i. General work area outlet – (1) work area outlet equipped with (2) drops.
- ii. Wall mount display – (1) work area outlet equipped with (1) drop.

#### c. Support spaces/Team/Testing-

- i. Minimum of (1) work area outlet equipped with (2) drops.

#### d. Offices-

- i. Minimum of (2) work area outlets equipped with (2) drops.

### 3. Modifications to Existing Classrooms to Support New AV-

- i. Wall mount displays (typical of two) – (1) work area outlet per display, each equipped with (1) drop.

The work area outlet infrastructure in areas of new construction shall consist of a two-gang back box with one gang trim ring and 1” conduit stub above accessible ceiling. Metal surface mount raceway shall be used to support new work area outlets in existing areas that are being renovated. J-Hooks shall be used to support cable above accessible ceilings.

### Intercom/Clock/Paging System

The existing Telecor XL intercom/paging system was replaced in 2021. The system is fully supported by the manufacturer and meets the operational needs of the school. The system shall be expanded to support new and renovated spaces. New classrooms are to be equipped with new speaker assembly and call-in switch. General paging coverage shall be provided in new corridors, common spaces, and pre-function, with quantity and placement of speakers as required for consistent coverage. Provide upgrades to head end as required to support new field devices. Care shall be taken to protect existing cabinet, equipment, and cabling throughout construction.

Existing speaker assemblies and call-in switches located in classrooms identified as being right sized shall be relocated. Provide new cabling between relocated devices and head end.

The existing Sapling wireless clock system was replaced in 2021. The existing system shall be expanded to support new and renovated spaces. New wall mount clocks to be provided in

new classrooms, offices, support spaces, and Library Learning Center. Bi-directional clocks shall be provided in new corridors, common spaces, and pre-function.

#### Audio/Visual

A new classroom A/V presentation standard is being developed by the district. This new standard will be applied to all classrooms.

Typical of all classrooms, equipment and infrastructure shall be provided for new A/V presentation systems. Systems are to be comprised of two wall mount commercial displays on opposing walls. HDMI source will originate at the instructor's desk. Distribution, processing hardware, cabling, power, and infrastructure required for support of the systems shall be provided.

Existing audio reinforcement and video presentation systems were found to be outdated and lacking in performance. Replacements to systems for gymnasium, auditoriums, and common spaces is recommended.

New audio reinforcement systems are required for the Main Gymnasium, Small Gymnasium, Wrestling/Aerobics, and Cafeteria. The systems will support reinforcement of voice and program and shall be comprised of speakers, amplifiers, processing and level control equipment, touchscreen control panel, equipment cabinet, hardwired and wireless microphones, and hardwired and wireless interfaces for program sources. Power and infrastructure required for support of the system shall also be provided.

New performance audio reinforcement and video presentation systems are required for the Auditorium. The systems will support reinforcement of voice and program and shall be comprised of speakers, amplifiers, digital mixing console, processing and level control equipment, equipment cabinet, hardwired and wireless microphones, and hardwire and wireless interfaces for program sources. The video presentation system will support multiple hardwired HDMI and wireless video sources and shall consist of a fixed ceiling mount video projector, motorized projection screen, signal processing and distribution equipment. Cabling, equipment cabinet, and infrastructure required for support of the system shall be provided.

In addition to classroom A/V presentation systems, the Band, Orchestra, and Music classrooms shall be equipped with audio recording/playback systems. Systems shall accommodate digital stereo recording and stereo playback. All input, processing, amplification, recording, speaker systems, and equipment cabinet necessary for a complete functional system shall be included.

#### Security Electronics

District wide upgrades have been made to enhance electronic security. New standards are in place for building alarm, access control, and CCTV. Systems are compliant with industry standards and meet the requirements of the school.

#### Building Alarm

The existing Bosch alarm system shall be expanded. New exterior doors are to be furnished with door contact switches. Provide modifications to alarm head end to support new contact switches, as well as necessary programming.

#### Access Control

The existing Open Path access controls system shall be expanded to support new exterior doors. Exterior doors shall be equipped with electronic locking mechanisms. Access control panels, power supplies, and proximity readers shall be included, as well as necessary programming.

#### CCTV

The existing Verkada CCTV system shall be expanded. New cameras are required for coverage of the Music and Gymnasium additions. Cameras shall be provided to cover the exterior of the additions, new building entrances, new public/common spaces, and new interior corridors.

## VII. FIRE PROTECTION SYSTEM DESCRIPTIONS

### A. FIRE PROTECTION SYSTEM

The existing fire protection is provided via a 6” water service that enters the building in the lower level of the 1998 addition in the Storage under Wrestling Mat alcove. The service reduces from 6” to 4” to serve the 1998 addition only. This is the only portion of the building that currently is served by a wet pipe sprinkler system.

The riser is equipped with all the required tamper and flow switches and has a reduced pressure backflow preventor installed. A fire department connection was not observed although one may be provided.

Based on the tag installed on the rise the following are the characteristics of the system.

- Density: .10 GPM / SF
  - Design Area of discharge: 1300 SF
  - Flow Rate: 353.9
  - Residual pressure at base of riser: 52.3 PSI
  - Installed by Nelson Fire Protection
1. The existing 6” service may be adequate to serve the needs of the entire school, although this will need to be evaluated during design. At a minimum a second riser would be required to accommodate the full area of the building.



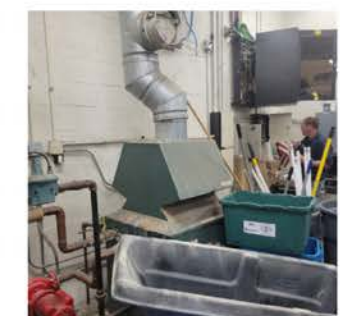
## VIII. DOMESTIC SYSTEM DESCRIPTIONS

### A. DOMESTIC WATER SYSTEM

The building’s domestic heating hot water is currently served by two (1) domestic hot water heaters. One heater is in the boiler room that serves the domestic heating hot water needs of the school. The second is located near the kitchen and serves the kitchen only. The following tables provides a summary of the domestic hot water systems:

**Table 2:** Domestic Water Heating Equipment Summary

Tag	Type	Location	Design Details	Services
No Tag	AO Smith Model BTR-199-118 Gas fired	Kitchen	199 MBH Input, 100 Gallon capacity, 193 gallons / Hour Recovery	Kitchen only. Installed in September 15 <sup>th</sup> 2023
No tag	Raypak Gas fired domestic heater. No nameplate data	Entire school less kitchen	Unknown	Installation date is unknow



The following is a list of operational observations made during the assessment and subsequent analysis:

1. The building domestic storage tank is broken and nonoperational. Elara and P+W are working with D200 to determine a fixture count so a new tank type heater can be provided to serve the needs of the school.
2. Under a geothermal HVAC option, the domestic water system may be increase in size to be utilized to add heat to the geothermal system. This option is defined under the HVAC portion of the report.

### B. DOMESTIC WATER SYSTEM

The building currently utilizes municipal city water pressure to deliver domestic water to the building. The current service is in the receiving area near the boiler room and enters the building as a 6” and appears to reduce to 4”.

The domestic water is routed throughout the building to all plumbing fixtures. Based on the age of the building there is a large probability that galvanized piping exists, either in the wet

walls or mains routed above the ceiling in areas not modified under the 1998 addition projects.

The following is a list of operational observations made during the assessment and subsequent analysis:

1. No backflow preventer was observed.
2. Most of fixtures present in the building had adequate pressure to operate per design intent.
3. Recommend that all galvanized piping through the building be replaced with copper.

### **C. PLUMBING FIXTURES**

The building utilizes flush valves on the existing water closets and urinals in the gang bathrooms. All plumbing fixtures appear to be in good working order and do not need to be updated at this time. Further evaluation of condition will be explored under the design phase of the project. new fixtures may be warranted if wet wall piping replacement is considered.

### **D. SANITARY SYSTEM**

Under any renovation phase to the project, it is recommended that the existing sanitary system be videoed to confirm slope and jetted to ensure proper flow.





**Wheaton Warrenville Community Unit  
School District 200  
Franklin Middle School**

<b>Published:</b>	June 6, 2024
<b>Facility Location:</b>	211 E Franklin St., Wheaton IL, 60187
<b>Elara Job #</b>	24029
<b>Elara Team</b>	James Gibson, Robert St. Mary, and Melissa Rodas

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**I. EXECUTIVE SUMMARY**

Elara Engineering was enlisted by Perkins & Will to provide a facility assessment and concept design for the mechanical, electrical, plumbing, and fire protection (MEPFP) systems at Monroe Middle School and develop recommendations focused on identifying items that would be impacted by the proposed renovation project. Also included are recommendations based on our investigation of the MEP/FP systems that we believe should be considered by Wheaton Warrenville CUSD 200 regardless of any architectural renovation of the facility.

Our review included:

- Surveys of the as-built condition of the building’s major MEPFP systems.
- Conversations with the School district personnel.
- Analyses of current applicable codes including those for energy efficiency, ventilation, electrical, and fire suppression and note any deficiencies observed.
- Review of existing construction drawings and proposed renovation plans outlined by P+W.
- Identification of MEPFP systems in need of repair or replacement.
- Analysis of alternatives for repair or replacement of existing equipment or systems including implementation cost, operating cost, maintenance cost, energy efficiency, and feasibility of construction.
- Review of proposed modifications and additions defined in P+W Capital Improvements to determine what modifications to existing MEP/ FP systems would be affected.

Based on the initial information provided, we understand CUSD 200 is planning renovations and addition to Franklin Middle Schools to enhance existing and construct new spaces as well as address deferred maintenance items associated with the existing building infrastructure. A summary of the anticipated renovations and additions is provided below based on the Board Presentation prepared by Perkins & Will dated February 28, 2024 and as described in their Concept Design Drawings:

- Franklin Middle School (125,000 SF)
  - Renovations (3 floors)
    - Relocation and renovation of exploratory labs
    - Science lab renovations throughout
    - Lighting, medium and heavy renovations throughout
    - Create flexible use exploratory labs
    - Update LLC
    - Update select toilet rooms, including accessibility
    - Update classrooms and corridors throughout
  - Additions
    - New multi-story addition to the northeast side of the building.
    - New classroom areas within existing mechanical mezzanine area

The statement made by School district personnel was that any system installed under a referendum project must be operational for the next 30 years. Based on this statement, the design intent of the project is to fully replace all HVAC systems currently serving the schools



## II. BUILDING DESCRIPTION

In review, Franklin Middle School consists of three levels with a mechanical mezzanine above the first floor orchestra/band rooms. The school was originally constructed in 1953. The building has undergone several interior renovations and alterations, most notably in 1996 and 1997. The building's current approximate square footage is 125,000 SF. Major modifications made in 1996 and 1997 were focused on various MEP upgrades including but not limited to HVAC replacements and life safety upgrades. It appears that these upgrades were the last major upgrades made to the facility.

The lower level, level 100 is partially above grade with area wells and windows serving classrooms, a cafeteria, kitchen, and Mechanical/Electrical rooms in the south and southeast portion of the building. Level 200 is fully above grade and is comprised of admin offices, educational classrooms and labs, an auditorium, locker rooms, a fitness center, and a large gymnasium. The 300 level is above grade and is comprised of classrooms, an LRC, and a practice gym.

Building services enter the building in the 100 level mechanical and electrical rooms on the west side of the building. Of particular note is a ComED vault built within a masonry structure on the west side of the building directly under an existing life safety generator.

## III. EXISTING MECHANICAL SYSTEM DESCRIPTIONS

### A. EXISTING HVAC SYSTEM SUMMARY

The current HVAC system serving the school today consists of the following equipment

- Mix of floor and ceiling mounted (2) pipe chilled/hot water unit ventilators server many classroom spaces throughout.
- (2) CAV packaged gas fired/DX RTUs which feed main gym
- (1) CAV packaged gas fired/DX RTU which feeds gym F200
- (1) CAV packaged gas fired/DX RTU which feeds Auditorium
- (1) VAV packaged gas fired/DX RTU which feeds LRC
- (1) VAV packaged gas fired/DX RTU which feeds admin office area
- (1) VAV indoor air handler unit with hot water and chilled water coils
- (3) heating hot water boilers
- Split chiller with indoor remote evaporator
- Various primary & primary/secondary pumps associated with the hydronic systems of the building.

The existing building drawings Elara has access to consist of the following:

- The original 1953 drawings.
- 1965 Life safety alterations
- 1994 life safety alterations
- 1996 Addition and Alternations
- 2016 Health Life Safety survey

Along with the drawing sets listed above, the remainder of the information was gathered on site from our walkthrough of the facility. It appears from this walkthrough that all original equipment has been replaced during the 1996, 97' additions and renovations. It is possible that some terminal equipment such as cabinet heaters and convectors may be original and were not surveyed at the concept design level.

The equipment currently serving the school is approaching 30 years old and in need of replacement. Equipment is beyond its mean useful life which is described by the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) as the point in which equipment failure is more likely to occur. Greater than 50% probability.

The statement made by School district personnel was that any system installed under a referendum project must be suitable for the next 30 years. Based on this statement the design intent of the project is to fully replace all HVAC systems currently serving the schools.

### B. HEATING SYSTEM

The building's central heating system consists of (3) space heating boilers located in the 100 level boiler room. Each hot water boiler is manufactured by Kewanee and is rated for a maximum input of 5,231 MBH. A third boiler was added recently that serves the building during swing months when capacity reduction is needed.

The boiler plant serves unit ventilators, air handlers, duct heating coils and terminal equipment located throughout the building. Hot water is distributed via copper and black iron piping from the mechanical room.

Based on the square footage of the building and the total output of the current boiler system, the boiler plant provides approximately 64 BTU/SF. A “Rule of Thumb” regarding boiler sizing that includes redundancy is in the range of 50 to 60 BTU/SF. Therefore, the current capacity of all three boilers likely provides sufficient redundancy built into the system. It should be noted that a detailed load analysis has not been performed at a concept design level and may be impacted by potential architectural renovations and additions that need to be considered later in the design process.

Regarding boiler accessories, the following are related comments

- The boiler system is piped in a primary-secondary configuration with the building. This is based on the presence of 2 way control valves at heating coils on various pieces of equipment throughout the building.
- The boiler system is part of a dual-temperature hydronic system that provides heating and cooling to unit ventilators and air handlers throughout the building.
- There is a small heating-only loop in the building that serves heating coils, re-heat coils, and specific unit ventilators according to the 1996, 97’ renovation drawings.
- A three-way control valve controls the temperature from the boiler into the secondary loop.

**C. COOLING SYSTEM**

Chilled water serving air handlers and unit ventilators throughout the building is served by air cooled, condenserless chillers. Condenserless means to imply the evaporator bundle is located remote from the air-cooled condenser and compressor. The purpose of this is to allow chilled water to never see exterior temperatures and allow for the chiller to run longer if needed in the swing months. It should be noted that the presence of glycol was *not* noted in the hydronic systems of the building. The current chillers are nominally sized at 100 tons. One was installed in 1996, 97’ renovation and the other was noted as being existing to remain at that time.

The condenser units associated with the chiller equipment are located on grade at the northwest corner of the building adjacent to the existing fitness center.

The following observations were made with respect to the chillers:

- The chillers are equipped with inline circulation pumps. Each chiller is piped in a primary/secondary configuration with the building. P-3 and P-6 provide primary pumping to the building’s unit ventilators, air handler coil, etc. P-6 and P-7 are noted as being new as part of the ’96, ’97 renovation scope.

**D. ROOFTOP EQUIPMENT**

The building is equipped with (6) rooftop units that serve various spaces located throughout the building. Each of the RTUs is equipped with DX cooling and gas heating. The current equipment should be considered for replacement as part of the project. Below, table 1 defines the equipment currently on site.

Table 1: Mechanical Ventilation Equipment Summary

Tag	Manufacturer	Location	Heating Design Details	Cooling Design Details	Services
RTU-1	Trane	Roof	350 MBH	15 Nominal Tons	GYM C100
RTU-2	Trane	Roof	350 MBH	15 Nominal Tons	GYM C100
RTU-3	Trane	Roof	400 MBH	20 Nominal Tons	GYM 200
RTU-4	Trane	Roof	400 MBH	20 Nominal Tons	AUDITORIUM
RTU-5	Trane	Roof	400 MBH	20 Nominal Tons	LRC
RTU-6	Trane	Roof	350 MBH	15 Nominal Tons	ADMIN

The following was noted with respect to the RTU systems currently serving the building:

- The existing RTUs utilize R-22 refrigerant and should be replaced since this refrigerant is considered obsolete by modern standards.
- RTU-6 serves the office/admin areas of level 200 and should be replaced with a RTU which utilizes variable-speed fan technology. It is likely this unit will be replaced as part of a renovation, or system type changed altogether.

**E. AIR HANDLING UNITS**

The building is equipped with (1) indoor AHU, AHU-1. This unit is located in a mezzanine area above the existing band/orchestra area of level 200. It should be noted that this unit was noted as being replaced as part of the ’96, ’97 renovation scope but this was not able to be confirmed due to the location and difficulty of access in the mezzanine. AHU-1 is equipped with a heating coil, cooling coil, and fan(s) which provides conditioned air to a number of terminal air box equipment on level 200 and 300 primarily in the addition area of the building.

**F. UNIT VENTILATORS**

There are approximately 40 unit ventilators serving classroom spaces throughout the school. According to the ’96, ’97 renovation drawings, Trane is noted as the manufacturer. The units are two-pipe chilled / hot water, floor mounted, in most cases, and do not have any shelving associated with them. It should be noted that there are floor-mounted unit ventilators in level 100 which are installed below grade and rely on an area well to allow the outside air louver to bring in ventilation. This is less than optimal and should be addressed as part of the project.

Based on previous meetings with the district the reuse of unit ventilators was eliminated as a viable option for the reasons listed above. Any removal of the unit ventilators may require wall patching at the current unit ventilator louver location. In the case of Franklin, this could mean abandoning the area wells altogether.

**G. TERMINAL EQUIPMENT**

By the term terminal equipment, we are referring to cabinet heaters, suspended unit heaters, fan coils, fin tube radiation, convectors, and VAV/FBP boxes. It is believed that many of the fin-tube and cabinet unit heaters are original to the building or installed before the '96, '97 renovation projects. However, the VAV box terminal units were noted as being replaced as part of those renovations.

Overall, there is not much that goes wrong with this type of equipment. Most do not have moving parts and the ones that do such as unit heaters and cabinet heaters are simply fractional horsepower motors. Control valves can also be replaced over time as they fail in a typical scenario.

Under any recommendation regarding the referendum project this equipment should be replaced in full. The age of the equipment warrants replacements and will provide 30 plus years of service moving forward.

Depending on the system selected, the terminal equipment will be all electric or utilize heating hot water. Each individual terminal unit will be evaluated to determine if any can remain and be reused.

**H. EXHAUST FANS**

There are numerous exhaust fans located throughout the roof of the building. Based on appearance there are a mix of new and old spun aluminum fans. The fans are used for pressure relief serving unit ventilator classrooms to toilet rooms.

Under a renovation project a detailed evaluation of the current fans will need to be performed to determine what each one serves and their condition. If determined the fans are in good condition and recently replaced, they can be reused. Otherwise, the fans will be replaced. We will determine what fans would no longer be utilized under the new design and remove them in total. This would apply to most pressurization fans.

There are also inline fans located within the school. They are used primarily as return fans serving the air handlers systems in the school. these fans will be placed on a per air handler basis if deemed that the existing air handler is to be replaced. If space allows the return fan can be integral to the air handler design.

**I. TEMPERATURE CONTROLS**

Any renovation to the building shall incorporate new controls to either match the district standards Any control system should incorporate an open protocol, BACnet based system that is not

proprietary to allow for multiple service companies to modify and service the control system selected.

**IV. HVAC SYSTEM REPLACEMENT OPTIONS**

**A. GEOTHERMAL ALTERNATE**

The district has requested that systems design that have a potential option to be served by Geothermal to be an alternate. Therefore in lieu of geothermal field the systems defined below would be “geothermal ready” but the initial design would include a fluid cooler or cooling tower located on the exterior of the building.

The design intent is to remove the latent load (ventilation air) from the geothermal field to reduce the overall number of wells. Based on the square footage of Franklin Middle School, and the removal of spaces that would be served by packaged rooftop equipment, the following is a rule of thumb as it relates to the number of wells required. Note that the wells would be 450-500 feet deep, producing roughly 3 tons per well assuming average ground conductivity. Each well will need to be 20 feet to the center line of the other wells. Additionally, the rule of thumb for space conditioning only, is roughly 600 Square feet per ton of cooling, seeing the ventilation needs will come from packaged equipment. The following is the estimated number of wells.

**Franklin Middle School:**

- Square feet of building: 125,576 SF
- Square feet of space being served by equipment other than the geothermal field: 105,000 SF
- Square footage of new addition: Approx. 15,000 SF
- Square footage being served by Geothermal field: 120,000 SF
- Estimated number of wells: 77
- Area Required for Wells: 30,800 SF or .71 Acers

**B. “GEOTHERMAL READY” OPTIONS**

**Option IA**

**Geothermal, Water-Cooled Modular Heater / Chiller with Dedicated Outside Air System (DOAS).**

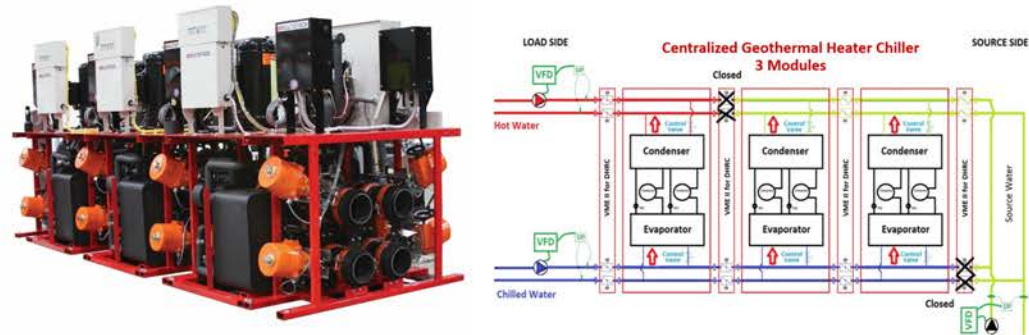
**Description:**

This system would consist of a hybrid approach to providing enhanced HVAC to the building via water-cooled Modular heater / chiller that can provide 4 pipe chilled and hot water to the building simultaneously and send chilled and hot water throughout the building to concealed fan coil units or air handlers.

Ventilation air would be delivered from packaged, rooftop mounted DOAS units that would duct directly into each space requiring ventilation air and be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of

ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.

Spaces such as gymnasiums and auditoriums could remain on more efficient single zone rooftop air handling systems and not be integrated into the geothermal field system. This can be analyzed further into the design.



Pros:

- No cross-contamination of airflow from room to room (Covid Friendly)
- Superior indoor air quality
- Energy Efficient
- Quiet operation
- Reduced carbon footprint
- Simultaneous Heating and cooling as needed.
- Potentially reuse boiler infrastructure for heat injection as part of a heating-dominant geothermal system
- Reuses existing chilled water and heating hot water infrastructure within the building.

Cons:

- Additional maintenance of compressor systems
- Sophisticated controls
- Higher first cost
- Requires additional exterior building area to accommodate geothermal field wells.

If heat injection into the geothermal field is required due to the building being heating dominant, we may be able to utilize an oversized domestic hot water heating plant. This would allow injection of heat into the field during summertime, and may be the most cost-effective solution to maintaining geothermal field performance.

**Option IB  
Geothermal, Water Cooled Variable Refrigerant Flow (VRF) with Dedicated Outside Air System (DOAS).**

Description:

This system would consist of a hybrid approach to providing enhanced HVAC to the building via water-cooled VRF condensers and associated VRF indoor units. Each indoor VRF indoor unit will be a horizontal ducted/concealed system connected to supply and return ductwork distribution for each space requiring individual temperature control. The indoor water-source compressor units would provide both heating and cooling to indoor units as required and would connect to each terminal unit via refrigerant piping.

Ventilation air would be delivered from packaged, rooftop mounted DOAS units that would duct directly into each space requiring ventilation air and be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.

Spaces such as gymnasiums and auditoriums could remain on more efficient single zone rooftop air handling systems and not be integrated into the geothermal field system. This can be analyzed further into the design.

Pros:

- No cross-contamination of airflow from room to room (Covid Friendly)
- Superior indoor air quality
- Energy Efficient
- Quiet operation
- Reduced carbon footprint
- Simultaneous Heating and cooling as needed
- Potentially reuse boiler infrastructure for heat injection as part of a heating-dominant geothermal system

Cons:

- Additional maintenance of refrigeration and compressor systems
- Sophisticated controls
- Refrigerant piping throughout building
- Higher first cost
- Requires additional exterior building area to accommodate geothermal field wells.

**C. NON-GEOTHERMAL OPTIONS**

**Option IIA**

**Chilled Water / Hot Water, Four Pipe, Concealed Fan Coil Units with Dedicated Outside Air System (DOAS)**

Description:

This system would strive to reuse existing hydronic infrastructure (with modifications) with four-pipe fan, chilled water and hot water, concealed or floor-mounted fan coil units. Each fan coil unit would be ducted to supply and return ductwork distribution for each space requiring individual temperature control.

Ventilation air would be delivered from a packaged DOAS system located on the roof that would duct directly into the return side of each fan coil and would be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery. Spaces such as gymnasiums and auditoriums could remain on more efficient single-zone rooftop air handling systems to replace existing equipment past its useful service life.

Crucial to this recommendation is the installation of a new chiller plant and boiler plant. The chiller plant would consist of several air cooled, high-efficiency chillers with inverter driven compressor. New high efficiency condensing hot water boilers would also replace the existing boiler plant. New chilled water and hot water variable-primary pumps would be installed; two for the chilled water system and two for the hot water system.

Pros:

- No cross-contamination from room to room. (Covid Friendly)
- Reuse existing chilled and hot water infrastructure.
- Filter replacement in return grille of fan coil
- DOAS ducted to return of unit assists with cooling loads of the space.
- Less complicated controls
- Superior indoor air quality

Cons:

- Increase ventilation needed for interior spaces that may require cooling in months when chiller is not operational.
- Would require modification of aging hydronic piping and infrastructure which could represent risks to the project.
- Less efficient than the above option.

**Option IIB**

**Air Cooled Variable Refrigerant Flow (VRF) with Dedicated Outside Air System (DOAS)**

Description:

This system includes providing enhanced HVAC to the building via air-source VRF condensers and associated VRF indoor units. Each indoor VRF indoor unit will be a horizontal ducted/concealed system connected to supply and return ductwork distribution for each space requiring individual temperature control. The outdoor VRF compressor units would be located on the roof or within conditioned penthouses/mezzanines with unit heaters and wall louvers. Placing the VRF compressor units in a conditioned penthouse would increase costs considerably.

Ventilation air would be delivered from packaged, rooftop mounted DOAS units that would duct directly into each space requiring ventilation air and be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.

Spaces such as gymnasiums and auditoriums could remain on more efficient single zone rooftop air handling systems and not be integrated into the geothermal field system. This can be analyzed further into the design.

Pros:

- No cross-contamination from room to room
- Superior indoor air quality
- Removes the need for chilled and hot water if DOAS is roof mounted, package equipment.
- Simultaneous heating and cooling.
- Quiet operation
- Energy Efficient

Cons:

- Increased refrigerant and compressor maintenance
- Sophisticated controls
- Refrigerant piping throughout building
- Supplemental heat may be required due to equipment limitations at low ambient outdoor air temperatures.

## V. ELECTRICAL SYSTEM DESCRIPTIONS

### A. UTILITY SERVICE

The building has one utility entrance from ComEd utility company. The pad mounted utility transformer is located on the east side of the building inside a ComED vault, located next to the maintenance room. The utility transformer feeds the main switchboard located in the Maintenance Room.



Figure 1: Outdoor utility transformer

### B. MAIN ELECTRICAL SERVICE

The building main switchboard located in the maintenance room on the first floor. The main switchboard is rated for 1600A at 480V, 3-phase, 4-wire. The switchboard has (4) sections as detailed below:



Figure 2: Existing Main Switchboard in Boiler Room

- A. Section 1: Utility Current Transformer (CT) cabinet and main 1600A circuit breaker
- B. Section 2: Distribution panel with circuit breakers that feed the building equipment as described below:
  - a. 30A/3P switch for VFD P6F.
  - b. 30A/3P spare switch.
  - c. 100A/3P switch for unlabeled equipment.
  - d. 100A/3P spare switch.
  - e. 400A/3P switch for North Chiller #2
  - f. 30A/3P switch for unknown equipment.
  - g. 30A/3P switch for unknown equipment.
- C. Section 3: Distribution panel with circuit breaker that feed the building equipment and panels as described below:
  - a. 30A/3P switch for equipment RF.
  - b. 30A/3P switch for equipment AH.
  - c. 100A/3P switch for panel LP2.
  - d. 100A/3P switch for panel LP1.
  - e. 100A/3P spare switch.

- f. 100A/3P switch for ATS-2.
- g. 30A/3P switch for equipment VFD-P3F.
- h. 30A/3P switch for pump P7.
- i. 400A/3P switch for unlabeled equipment.
- j. 30A/3P switch for pump P7.
- k. 30A/3P switch for unlabeled equipment.
- D. Section 4: Distribution panel with circuit breaker that feed the building distribution panels as described below:
  - a. 30A/3P switch for VFD-P10FA.
  - b. 30A/3P switch for unlabeled equipment.
  - c. 100A/3P switch for VFD-P9FA.
  - d. 100A/3P switch for ATS-1.
  - e. 600A/3P switch for unlabeled equipment.
  - f. 30A/3P switch for unlabeled equipment.
  - g. 30A/3P switch for pump 1.

The following list of operational observations and key notes related to main switchboard that were made during the assessment and subsequent analysis:

1. The main switchboard is in good condition and about 20 years old. In conversation with the building engineer, it is believed to have been installed in the early 2000's though record dates were hard to find.
2. With proper maintenance, switchboards have a lifespan of 40- 50+ years. The existing switchboard would not need to be replaced in the upcoming renovation or additions, but it is recommended to be replaced within the next 30+ years.
3. The main switch does not have ground fault protection as required by code.

### C. DISTRIBUTION PANELS

The school's panelboards are distributed through the schools, only a few are located in dedicated electrical rooms. About half of the panelboards are scattered throughout the school, in corridors, classrooms, and storage rooms. The condition of the panels vary as a few are from the original to the building while some are newer.

All panelboards are three-phase units, with supply voltages at 277/480V and 120/208V throughout the school. Panelboards within the storage closets are all surface mounted, while panelboards located in classrooms and corridors are recessed into the wall.



The following list of operational observations and key notes related to the typical electrical equipment that were made during the assessment and subsequent analysis:



1. Some electrical panels are original to the building and are past their mean useful life. It is recommended that the electrical panels be replaced as part of the future renovations
2. Several electrical panels are located in mechanical or storage rooms with blocked access with miscellaneous equipment. Per the National Electrical Code Article 110.26(A), three foot clearance is required in front of all electrical equipment. It is recommended to clear any obstructions in front of the switchboard to maintain proper clearance.
3. It is recommended that all electrical panels in corridors and classrooms remain locked to prevent access from non-personnel. It is recommended that electrical panels be relocated to dedicated electrical rooms or away from the student access areas during future renovations.

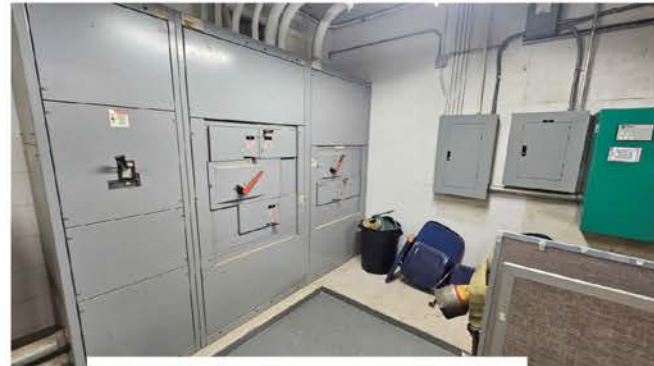


Figure 6: 208V Distribution Panelboard



Figure 7: Panel in Corridor

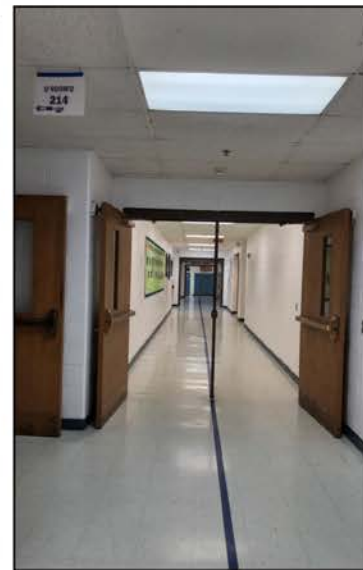
#### D. BUILDING LIGHTING

All the lighting throughout the building are fluorescent lighting of a variety of styles including recessed indirect troffer and T-8 fixtures and will need to be upgraded to meet current energy code when renovations take place. Control is performed mostly through toggle switches and keyed switches. Lighting throughout the entire building is 277V.

Emergency lighting is backed up by the generator through emergency panels. Exit signs throughout the building are also battery backed.

The following list of operational observations and key notes related to main switchboard that were made during the assessment and subsequent analysis:

1. The primary recommendation for the lighting system is the conversion of all fixtures, including emergency and exit lighting, to LED. LED technology carries significant benefits and cost-savings in energy usage and maintenance that in many cases will turn into a payback to the facility over time.



2. All future renovations shall have energy code required lighting control systems, which include daylight harvesting in corridors and exterior areas, occupancy sensing in offices and other interior rooms, and more precise zoned controls. The new controls will offer additional energy savings for the school and provide an extra level of precision for staff to customize the light output for the facility.

#### E. FIRE ALARM SYSTEM

The main fire alarm control panel (FACP) is an addressable type located in the building electrical room and is manufactured by “Simplex” type 4020. The FACP serves the entire building’s fire alarm system which consists of code required smoke detectors, audio and visual notification fire alarm devices, water flow and tamper switches, the elevator recall system, and other miscellaneous components to warn against a fire.

The following list of operational observations and key notes related to the fire alarm system that were made during the assessment and subsequent analysis:

1. The existing fire alarm control panel is considered outdated and replacement parts may be harder to find. Furthermore, per the latest code, any modification or addition to the existing fire alarm system will require the building to meet the newer code guidelines as noted in the Illinois Accessibility Code.



#### F. EMERGENCY SYSTEM

The building is served by a natural gas standby emergency generator that serves the building emergency life safety and critical equipment.

The generator is located outside the building near the Maintenance room and is rated for 277/480V, 3-phase, 4-wire. The generator has a rating of 100 kW. The manufacturer of the generator is Cummins.



The generator feeds the distribution panel GDP which then feeds two (2) automatic transfer switches, all of which is located in the Maintenance room. These then feed an emergency, exit lighting, and critical loads.

The following list of operational observations and key notes related to the generator that were made during the assessment and subsequent analysis:

1. It is recommended to maintain a regular, weekly test of the generator. Per NFPA guidelines, the testing of life-safety generators is required to be performed at least once a week to ensure proper operation in a true emergency situation. The weekly test last around a half-hour and can be performed on a load bank.
2. Typical generator lifespan is 30 years and due to the age of the generator, it is recommended to have the generator replaced as part of the future renovations and additions. We recommend a bigger size generator for future loads.
3. Recommend to add building IT system, sump pump, and refrigerator to the future generator with a separate ATS.

**G. ADDITIONAL ELECTRICAL DISTRIBUTION RECOMMENDATIONS**

YEARLY RECOMMENDATION THERMAL INSPECTIONS

It is recommended to perform annual thermal inspections of all electrical panels. It should be performed to more easily identify problematic areas of unwanted heat buildup in the system.

EVERY 5 YEAR RECOMMENDATION FOR PREVENTATIVE MAINTANCE

It is recommended that the building perform preventative maintenance on the main switchboard. Preventative maintenance would include exercising all circuit breakers, lubricating all switch mechanisms, torquing the busbar bolts, clean and greasing all moving parts, tightening all cable terminations, and clean/vacuuming the inside enclosure of the substation.

ENGINEERING STUDY (SHORT CIRCUIT, COORDINATION, AND ARC FLASH)

OSHA 2015 regulations and the National Electrical Code require the application of an arc flash label that provides information on arc flash protection boundary, incident energy, working distance, PPE class, and available short circuit information for all electrical equipment. It is required to perform a short circuit, coordination and arc flash study and apply the labels in a timely manner to comply with OSHA and National Electric Code.

EVERY 5 YEAR GROUNDING STUDY

It is considered good practice to test the building grounding system every five years. It is recommended to hire a licensed electrical contractor to verify the existing building grounding condition for verification of code compliance and to address any possible loose connections. This shall include testing the grounding system ohm resistance to verify it matches the code required resistance.

**H. ELECTRICAL CHANGES IN RENOVATION/ADDITIONS**

The following description is intended to cover the proposed changes for future renovation and addition areas. The impact to the electrical system is described by areas as shared by the proposed program layout.

LEVEL B1

The proposed renovation of the lower floor will consist of significant demolition and renovation of the classrooms, offices and bathrooms.

The renovations would affect the electrical panels in those areas and require them to be demolished. See list below of panels that would be affected and need to be demolished.

- Panel PBC
- Panel PBD
- Panel PBE

The following additional changes and upgrades would need to be made to the renovated areas:

- New LED lighting and lighting controls
- New emergency lighting and exit signs
- New power for all new lighting, receptacles, appliances, gym equipment, mechanical equipment etc. from the new distribution panelboards. Salvaged electrical panels would be used to best extent possible for renovated areas.
- New fire alarm devices from new fire alarm system. As noted previously, a new fire alarm system would be required for the entire school during the addition or renovation of the school.
- Demolished electrical panels would need to be replaced with new, and relocated to dedicated electrical rooms or away from student access.

LEVEL 1

The proposed renovation of the first floor will consist of significant demolition and renovation of the classrooms, offices and bathrooms.

The renovations would affect the electrical panels in those areas and require them to be demolished. See list below of panels that would be affected and need to be demolished.

- Panel P1C
- Panel P1E
- Panel P1N
- Panel P1W

The following additional changes and upgrades would need to be made to the renovated areas:

- New LED lighting and lighting controls
- New emergency lighting and exit signs
- New power for all new lighting, receptacles, appliances, gym equipment, mechanical equipment etc. from the new distribution panelboards. Salvaged electrical panels would be used to best extent possible for renovated areas.
- New fire alarm devices from new fire alarm system. As noted previously, a new fire alarm system would be required for the entire school during the addition or renovation of the school.
- Demolished electrical panels would need to be replaced with new and relocated to dedicated electrical rooms or away from student access.

LEVEL 2

The proposed renovation of the second floor will consist of significant demolition and renovation of the classrooms, offices and bathrooms.

The renovations would affect the electrical panels in those areas and require them to be demolished. See list below of panels that would be affected and need to be demolished.

- Panel P2C
- Panel P2E
- Panel P2N

The following additional changes and upgrades would need to be made to the renovated areas:

- New LED lighting and lighting controls
- New emergency lighting and exit signs
- New power for all new lighting, receptacles, appliances, mechanical equipment etc. from the new distribution panelboards.
- New fire alarm devices from new fire alarm system. As noted previously, a new fire alarm system would be required for the entire school during the addition or renovation of the school.
- Demolished electrical panels would need to be replaced with new and relocated to dedicated electrical rooms.

ADDITIONS

LEVEL 1

The addition will require one (1) 480/277V, 3-phase, 4-wire panelboards, one (1) step down transformers, and one (1) 208/120V, 3-phase, 4-wire panelboards. It will also require one (1) fused disconnect switch at the main 480/277V switchboard. The electrical equipment should be installed in dedicated electrical rooms.

The following would also need to be made in all new areas:

- New LED lighting and lighting controls
- New emergency lighting and exit signs
- New power for all new lighting, receptacles, appliances, mechanical equipment etc. from the new distribution panelboards.
- New fire alarm devices from new fire alarm system. As noted previously, a new fire alarm system would be required for the entire school during the addition or renovation of the school.

LEVEL 2

The addition will require one (1) 480/277V, 3-phase, 4-wire panelboards and one (1) 208/120V, 3-phase, 4-wire panelboards. It will also require one (1) fused disconnect switch at the main 480/277V switchboard. The electrical equipment should be installed in a dedicated electrical room.

The following would also need to be made in all new areas:

- New LED lighting and lighting controls
- New emergency lighting and exit signs
- New power for all new lighting, receptacles, appliances, mechanical equipment etc. from the new distribution panelboards.
- New fire alarm devices from new fire alarm system. As noted previously, a new fire alarm system would be required for the entire school during the addition or renovation of the school.

**I. TECHNOLOGY**

Information Communications Technology

Existing Information Communications Technology Systems are compliant with industry standard and meet the needs of the school. Systems shall be expanded to support the proposed addition and modified to support areas identified for renovation. Care shall be taken to protect existing cabinets, equipment, and cabling throughout construction to minimize the need to replace existing cabling systems.

The horizontal cabling system shall comply with TIA Standards for Category 6 performance and installation. System shall be a complete end to end solution (work area outlet to patch panel) from a single manufacturer. Acceptable manufacturers include CommScope, Panduit, Hubbell, Belden, and Leviton. Minimum work area outlet requirements shall include-

1. Typical of areas of new construction-
  - a. New Classrooms-
    - i. Instructors Desk – (1) work area outlet equipped with (2) drops.
    - ii. Wireless Access Point – (1) work area outlet equipped with (1) drop.
    - iii. Wall mount displays (typical of two) – (1) work area outlet per display, each equipped with (1) drop.
  - b. New Collaboration Spaces/Small Group-
    - i. General work area outlet – (1) work area outlet equipped with (2) drops.
    - ii. Wall mount display – (1) work area outlet equipped with (1) drop.
  - c. New Support spaces/Team/Testing-
    - i. Minimum of (1) work area outlet equipped with (2) drops.
  - d. New Offices-
    - i. Minimum of (2) work area outlets equipped with (2) drops.
  - e. Library Learning Center
    - i. Resource Desk – (2) work area outlets each equipped with (2) drops.
    - ii. Office – (1) work area outlet equipped with (2) drops.
    - iii. Public printers/copiers – (2) work area outlets each equipped with (2) drops.
    - iv. Computer workstations – (4) workstations each equipped with (2) drops.
    - v. Wireless Access points – (2) work area outlets each equipped with (1) drop.
2. Typical of Renovated Spaces
  - a. Renovated and Right-sized Classrooms-
    - i. Instructors Desk – (1) work area outlet equipped with (2) drops.
    - ii. Wireless Access Point – (1) work area outlet equipped with (1) drop.
    - iii. Wall mount displays (typical of two) – (1) work area outlet per display, each equipped with (1) drop.
  - b. Collaboration Spaces/Small Group-
    - i. General work area outlet – (1) work area outlet equipped with (2) drops.
    - ii. Wall mount display – (1) work area outlet equipped with (1) drop.
  - c. Support spaces/Team/Testing-
    - i. Minimum of (1) work area outlet equipped with (2) drops.
  - d. Offices-
    - i. Minimum of (2) work area outlets equipped with (2) drops.
3. Modifications to Existing Classrooms to Support new AV-
  - i. Wall mount displays (typical of two) – (1) work area outlet per display, each equipped with (1) drop.

The work area outlet infrastructure in areas of new construction shall consist of a two-gang back box with one gang trim ring and 1” conduit stub above the accessible ceiling. Metal surface mount

raceway shall be used to support new work area outlets in existing areas that are being renovated. J-Hooks shall be used to support cable above accessible ceilings.

The existing Level 01 MDF shall be relocated to accommodate new classroom spaces. Level 01 horizontal cabling shall be replaced in its entirety. Furnish new (12) strand OM4 multimode backbone fiber between new MDF and all IDF's. Fiber optic and category 6 patch panels to be provided in addition to cable management. Extend new telecommunications bonding conductor to building ground.

The existing Level 02 IDF shall be relocated to accommodate new classroom spaces. Level 02 floor horizontal cabling shall be replaced in its entirety. Furnish new (12) strand OM4 multimode backbone fiber between new IDF and MDF. Fiber optic and category 6 patch panels to be provided in addition to cable management. Extend new telecommunications bonding conductor to building ground.

A new IDF is required for support of new telecommunications cabling installed in the Performing Arts Addition. The IDF will be equipped with a wall mount equipment cabinet. Furnish (12) strand OM4 multimode backbone fiber between MDF and new IDF. Fiber optic and category 6 patch panels to be provided in addition to cable management. Extend new telecommunications bonding conductor to building ground.

Intercom/Clock/Paging System

The existing Telecor XL intercom/paging system was replaced in 2021. The system is fully supported by the manufacturer and meets the operational needs of the school. The system shall be expanded to support new and renovated spaces.

The existing headend equipment cabinet shall be relocated to accommodate new classrooms. Existing cabling shall be terminated and extended between the existing cabinet location and new location.

New classrooms are to be equipped with new speaker assembly and call-in switch. General paging coverage shall be provided in new corridors, common spaces, pre-function, and Library Learning Center, with quantity and placement of speakers as required for consistent coverage. Provide upgrades to head end as required to support new field devices. Care shall be taken to protect existing cabinet, equipment, and cabling throughout construction.

Existing speaker assemblies and call-in switches located in classrooms identified as being right sized shall be relocated. Provide new cabling between relocated devices and head end.

The existing Sapling wireless clock system was replaced in 2021. The existing system shall be expanded to support new and renovated spaces. New wall mount clocks to be provided in new classrooms, offices, support spaces, and Library Learning Center. Bi-directional clocks shall be provided in new corridors, common spaces, and pre-function.

Audio/Visual

A new classroom A/V presentation standard is being developed by the District. This new standard will be applied to all classrooms.

Typical of all classrooms, equipment and infrastructure shall be provided for new A/V presentation systems. Systems are to be comprised of two wall mount commercial displays on opposing walls.

HDMI source will originate at the instructor's desk. Distribution, processing hardware, cabling, power, and infrastructure required for support of the systems shall be provided.

New audio reinforcement systems are required for the Large Gymnasium, Practice Gymnasium, and Cafeteria. The systems will support reinforcement of voice and program and shall be comprised of speakers, amplifiers, processing and level control equipment, touchscreen control panel, equipment cabinet, hardwired and wireless microphones, and hardwired and wireless interfaces for program sources. Power and infrastructure required for support of the system shall also be provided.

Existing audio reinforcement and video presentation systems were found to be outdated and lacking in performance. Replacements to systems for gymnasium, auditoriums, and common spaces is recommended.

New performance audio reinforcement and video presentation systems are required for the Auditorium. The systems will support reinforcement of voice and program and shall be comprised of speakers, amplifiers, digital mixing console, processing and level control equipment, equipment cabinet, hardwired and wireless microphones, and hardwire and wireless interfaces for program sources. The video presentation system will support multiple hardwired HDMI and wireless video sources and shall consist of a fixed ceiling mount video projector, motorized projection screen, signal processing and distribution equipment. Cabling, equipment cabinet, and infrastructure required for support of the system shall be provided.

In addition to classroom A/V presentation systems, the new Band, Orchestra, and Choral classrooms shall be equipped with audio recording/playback systems. Systems shall accommodate digital stereo recording and stereo playback. All input, processing, amplification, recording, speaker systems, and equipment cabinet necessary for a complete functional system shall be included.

#### Security Electronics

District wide upgrades have been made to enhance electronic security. New standards are in place for building alarm, access control, and CCTV. Systems are compliant with industry standards and meet the requirements of the school.

#### Building Alarm

The existing Bosch alarm system shall be expanded. New exterior doors are to be furnished with door contact switches. Provide modifications to alarm head end to support new contact switches, as well as necessary programming.

#### Access Control

The existing Open Path access controls system shall be expanded to support new exterior doors. Exterior doors shall be equipped with electronic locking mechanisms. Access control panels, power supplies, and proximity readers shall be included, as well as necessary programming.

#### CCTV

The existing Verkada CCTV system shall be expanded. New cameras are required for coverage of the Performing Arts addition. Cameras shall be provided to cover the exterior of the addition, new building entrances, new public/common spaces, and new interior corridors.

**VI. FIRE PROTECTION AND PLUMBING SYSTEM DESCRIPTIONS**

**A. FIRE PROTECTION SYSTEM**

The existing fire protection is provided via a 6” water service that enters the building in the level 100 maintenance/mechanical room. The sprinkler service supplies multiple fire protection wet-sprinkler zones throughout the building according to the ’96, ’97 renovation drawings. Sprinklers were observed throughout the building.

The following is a list of operational observations made during the assessment and subsequent analysis:

1. The building’s fire department connection location needs to be confirmed as part of the design process. The ’96, ’97 renovation drawings reference this location as being near the main entrance, although at the time of this writing it was not confirmed visually.
2. The fire protection service is installed with all the required tamper and flow switches to meet NFPA requirements. This would be evaluated further in the schematic design process.

As part of any addition or renovation, the sprinkler systems would be extended to areas as required to maintain sprinkler coverage throughout the building’s renovated and new areas. Per the proposed arch

**B. DOMESTIC HOT WATER SYSTEM**

The building's domestic heating hot water is currently served by a domestic hot water plant located in the level 100 mechanical room. Domestic hot water is provided by (2) natural gas, tank-type domestic hot water heaters (WH-1, WH-2) with associated recirculating pumps (RCP-1).

The following is a list of operational observations made during the assessment and subsequent analysis:

1. The existing water heaters are noted in the ’96, ’97 drawings as being provided by Owner and existing. It is the intent of this project to replace the existing domestic hot water plant as part of any facility upgrade. Any new equipment would be selected with an increase in capacity to serve the proposed addition.
2. The domestic hot water system does not contain a master thermostatic mixing valve; therefore, the DHW does not produce high enough temperatures to prevent the spread of legionella. The CDC recommends storage of DHW at a minimum temperature of 140°F. A mixing valve would allow for mixing of hot and cold water so that the recommended delivery temperature of 120°F can be supplied to tenant fixtures.

**C. DOMESTIC WATER SYSTEM**

The building currently utilizes municipal city water pressure to deliver domestic water to the building. The current service is located in the mechanical room. The domestic water service utilizes a double check back flow preventor (BFP-2). The BFP likely dates back to the ’96, ’97 renovation which is when it is indicated as being replaced.

The following is a list of operational observations made during the assessment and subsequent analysis:

1. The backflow preventor installed appears to be in good condition though is not a model number that is considered lead-free. Given the age of the unit, a new backflow preventor should be installed in the domestic water service that meets the requirements of the city of Wheaton and is lead free.
2. Most of fixtures present in the building had adequate pressure to operate per design intent.
3. Although a significant portion of original domestic water piping, waste and vent appears to be noted as replaced in the ’96, ’97 drawings, it was noted that building engineering staff indicated a significant portion of original galvanized piping remains. A subsequent phase of design would be needed to truly understand the extents of galvanized plumbing piping, but the intent would be to replaced all galvanized within the building. Additionally, it is likely the domestic cold and hot water piping modifications will need to be made to feed the new addition proposed.

**D. PLUMBING FIXTURES**

The building utilizes manual flush valves on the existing water closets and urinals in the gang bathrooms. Water closets installed during the renovation are wall-mounted with a flush valve. All existing sinks and lavatories are equipment with manual faucets.



# Wheaton Warrenville Community Unit School District 200 Monroe Middle School

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<b>Elara Job #</b>	24029
<b>Elara Team</b>	James Gibson, Robert St. Mary, and Melissa Rodas

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## I. EXECUTIVE SUMMARY

Elara Engineering was enlisted by Perkins & Will to provide a facility assessment for the mechanical, electrical, plumbing, and fire protection (MEPFP) systems at Monroe Middle School and develop recommendations focused on identifying items that would be impacted by the proposed renovation project. Also included are recommendations based on our investigation of the MEP/FP systems that we believe should be considered by Wheaton Warrenville CUSD 200 regardless of any architectural renovation of the facility.

Our review included:

- Surveys of the as-built condition of the building’s major MEPFP systems.
- Conversations with the School district personnel.
- Analyses of current applicable codes including those for energy efficiency, ventilation, electrical, and fire suppression and note any deficiencies observed.
- Review of existing construction drawings and proposed renovation plans outlined by P+W.
- Identification of MEPFP systems in need of repair or replacement.
- Analysis of alternatives for repair or replacement of existing equipment or systems including implementation cost, operating cost, maintenance cost, energy efficiency, and feasibility of construction.
- Review of proposed modifications and additions defined in P+W Capital Improvements to determine what modifications to existing MEP/ FP systems would be affected.

Based on the initial information provided, we understand CUSD 200 is planning renovations and additions to Edison, Franklin, and Monroe Middle Schools to enhance existing and construct new spaces as well as address deferred maintenance items associated with the existing building infrastructure. A summary of the anticipated renovations and additions is provided below based on the Board Presentation prepared by Perkins & Will dated February 28, 2024:

- Monroe Middle School (132,300 SF)
  - Renovations (1 floor)
    - Right-size science lab classrooms
    - New central teacher’s workspace
    - Consolidate and expand student wellness and itinerant spaces
    - Create flexible use exploratory labs
    - Create consolidated essentials program space with support facilities
    - Create new multipurpose space
    - Update LLC
    - Update classrooms and corridors throughout
  - Additions
    - Performing arts, music, orchestra, and band addition
    - PE locker rooms & support space addition

The statement made by School district personnel was that any system installed under a referendum project must be operational for the next 30 years. Based on this statement, the design intent of the project is to fully replace all HVAC systems currently serving the schools

## II. BUILDING DESCRIPTION

In review, Monroe Middle School consists of a single level with mechanical mezzanines and was originally constructed in 1968. The building has undergone several interior renovations and underwent additions constructed in 1996 and 2000 that brought the building to its current total size of approximately 132,300 sq. ft.

The HVAC system serving the building currently consists of one packaged rooftop unit, Eight (8) indoor air handlers, seven (7) horizontal unit ventilators and three (3) heating only fan coils. All air handling units utilize remote, air cooled, direct expansion (DX) roof mounted condensers and heating hot water boilers. Most if not all HVAC equipment installed is late 90’s vintage. No modifications have existed since that timeframe.

The school consists of educational classroom spaces as well as office area, cafeteria, library gymnasium spaces, locker rooms, auditorium, and technical education spaces.



### III. EXISTING MECHANICAL SYSTEM DESCRIPTIONS

#### A. CURRENT HVAC SYSTEM

The current HVAC system serving the school today consists of the following equipment.

- Indoor air handling units with chilled and hot water cooling
- (3) Variable air volume (VAV) with hot water reheats.
- (5) Constant air volume (CAV)
- (1) gas fired package rooftop unit serving the Auditorium
- Hot water heating via two separate boiler plants
- Direct expansion (DX) air cooled condensers serving air handlers with cooling.
- (3) heating only fan coils
- (7) Horizontal unit ventilators
- Various primary & primary/secondary pumps associated with the hydronic systems of the building.

The contract documents we have consist of the following:

- The original 1968 drawings.
- 1996 Addition and Alternations
- 2000 Addition and Alternations

Along with the drawing sets listed above, the remainder of the information was gathered on site from our walkthrough of the facility. It appears from this walkthrough that original 1968 equipment is no longer utilized. Perhaps some terminal equipment such as cabinet heaters and convectors. The remainder of the equipment appears to be from the late 1990's.

The equipment currently serving the school is approaching 30 years old and in need of replacement. Equipment is beyond its mean useful life which is described by the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) as the point in which equipment failure is more likely to occur. Greater than 50% probability.

#### B. HEATING SYSTEM

The building's central heating system consists of two (2) separate boiler plants. One plant located on an equipment mezzanine within the 1996 addition, serves only the spaces constructed as part of that addition. The second plant is in the boiler room on the main level near the wood shop and serves the remainder of the school including the original portion and 2000 addition. These two boiler plants are not interconnected and operate standalone for the areas served.

The 1996 boiler plant consists of (2) hot water boilers, Burnham Three pass Generators with an input capacity of 854 MHB and output capacity of 683. Model number 4FW-92-45-G-GP. Each



boiler is provided with Gordon Piatt burners, which are no longer manufactured and obtaining replacement parts may be difficult. The area served by this plant is roughly 22,500 square feet. With a total output capacity of 1,366 MBH, this equates to 60 BTU/SF. A "Rule of Thumb" regarding boiler sizing that includes redundancy is in the range of 50 to 60 BTU/SF. Therefore, the current capacity of both boilers has more than sufficient redundancy built into the system.

The second boiler plant serves the remainder of the building less the 1996 addition. This plant was constructed in 2000 and consists of two (2) Burnham three pass boilers. Each sized for 4713 MBH input and 3,770 output capacity. Each boiler is provided

with Gordon Piatt burners, which are no longer manufactured and obtaining replacement parts may be difficult. The area served by this plant is roughly 116,500 square feet. With a total output capacity of 7,540 MBH, this equates to 65 BTU/SF. A "Rule of Thumb" regarding boiler sizing that includes redundancy is in the range of 50 to 60 BTU/SF. Therefore, the current capacity of both boilers has more than sufficient redundancy built into the system.



Both boiler plants serve unit ventilators, air handlers, duct heating coils and terminal equipment located throughout the building. Hot water is distributed via copper and black iron piping from each of the mechanical rooms.

Regarding boiler accessories the following are related comments:

1996 Plant:

- The heating system has a single bladder type expansion tank hung from the structure.
- Each boiler has an inline circulation pump. Based on original design drawings the pumps are sized for 70 GPM at 12' TDH and sized for 20-degree delta across the boilers
- There are two secondary, base mounted pumps. Each pump is sized for 135 GPM and 35' TDH. Pumps are lead / lag configuration.
- Boilers are piped in a primary. / Secondary configuration.
- A three-way control valve controls the flow from the boiler and secondary loop.

2000 Plant:

- The heating system has a single bladder type expansion tank. floor mounted.
- Each boiler has an inline circulation pump. Based on original design drawings the pumps are sized for 260 GPM at 20' TDH and sized for 20-degree delta across the boilers
- There are two secondary, base mounted pumps. Each pump is sized for 520 GPM and 80' TDH. Pumps are lead / lag configuration.

- Boilers are piped in a primary. / Secondary configuration.
- A three-way control valve controls the flow from the boiler and secondary loop.

**C. COOLING SYSTEM**

The building is not equipped with a chilled water system. All cooling for the entire school is via direct expansion (DX Cooling) with remote air-cooled condensers. This is typical for all air handling equipment. The following table defines the make and model of condenser serving each air handling unit.

Equipment Served	Manufacturer	Location	Nominal Tons	Year Manufactured	Model
AHU-1.1	McQuay	Roof	60	1996	ALP -055C
AHU-1.2	Trane	Roof	10	1996	TTA 120B
ASU-1	Trane	Roof	80	2000	RAUC-C80
ASU-2	Trane	Roof	80	2000	RAUC-C80
ASU-3	Trane	Roof	50	2000	RAUC-C50
ASU-7	Trane	Roof	80	2000	RAUC-C80
ASU-8	Trane	Roof	30	2000	RAUC-C30

All condensers are R-22 refrigerant that is no longer manufactured and expensive to obtain. There are five (5) additional air-cooled condensers that serve unit ventilators. These are also R-22 and are 4 tons of nominal capacity.

**D. ROOFTOP EQUIPMENT**

The building has (1) gas fired heating, direct expansion cooling, package rooftop unit that serves the Auditorium and Stage. The unit is Trane Model YCD181C4HAHB (15 nominal Tons) with a heating capacity of 284 MBH. Both the supply and return ductwork, prior to entering the auditorium, are equipment with sound traps. There is a separate hot water heating coil in the supply duct that serves the stage area for reheat capabilities. The unit is constant air volume and was manufactured in June of 2001, making the unit 23 years old and in need of replacement.

Tag	Manufacturer	Location	Design Details	Year Manufactured	Services
RTU-1	Trane	Roof	15 Nominal Tons	June 2001	Auditorium and Stage

Any future design may eliminate this rooftop unit and the space incorporated into the new HVAC system selected. This unit could also just be a like for like replacement under any renovation.

**E. AIR HANDLING UNITS**

The building is currently served by ten (10) indoor air handling units that are either direct expansion cooling, or heating only. Units are either Constant Air Volume (CAV) or Variable air Volume (VAV). All air handlers have hot water heating.

Overall, the units all appear to be of similar age, either 1996 or 2001 roughly 28 to 23 years old and should be considered for replacement.

The Variable Air volume (VAV) air handlers are served by single zone VAV boxes with Hot water reheat. The issue with this installation occurs in the summer when reheat capabilities are not available. To prevent over cooling of the space the only option is to allow the VAV box to go to a zero minimum. This presents additional issues such as stagnant air, although space temperature is satisfied, and the lack of ventilation being introduced into the space. Below is a list of air handling equipment currently serving the building.

Tag	Manufacturer	Location	Design Details	Area Served	Services
AHU-1.1	RACAN	1997 Addition Mezzanine 200	VAV / HW / DX	1997 Addition classroom / Commons	14,500 CFM
AHU-1.2	RACAN	1997 Addition Storage 131	CAV / HW / DX	1997 Addition Wrestling / Aerobics	3,200 CFM
ASU-1	Trane	2000 Addition Mechanical Room 328	VAV / HW / DX	2000 Addition Science Classrooms	16,000 CFM 800 Nominal Tons
ASU-2	Trane	Mezzanine EM01 & EM02	VAV / HW / DX	Administration / Art / Band	13,000 CFM 50 Nominal Tons
ASU-3	Trane	Mezzanine EM01 & EM02	CAV / HW / DX	Commons	12,500 CFM 50 Nominal Tons
ASU-4	Trane	Mezzanine EM01 & EM02	CAV / HW Only	Kitchen	10,000 CFM
ASU-5	Trane	Mezzanine EM04	CAV / HW Only	Large Gymnasium	13,000 CFM
ASU-6	Trane	Mechanical / Storage E049	CAV / HW Only	Small Gymnasium	6,000 CFM
ASU-7	Trane	Mezzanine EM03	VAV / HW / DX	Classrooms	15,000 CFM 80 Nominal Tons
ASU-8	Trane	Mezzanine EM03	CAV / HW / DX	Library	8,000 CFM 300 Nominal Tons

**F. UNIT VENTILATORS**

There are Nine (9) unit ventilators serving computer classroom, Wood shop. Home Economics and locker rooms spaces throughout the school. All units are horizontal discharge with no discharge ductwork.

One (1) unit serving the computer lab is from 1997 addition project. Seven (7) units are from the 2000 Addition and Renovation project and one (1) unit is old, actual vintage is unknow. This unit is in Computer lab E132.

All unit ventilators except for the three (3) locker room units all have direct expansion cooling via roof mounted air-cooled condensers. The three (3) locker room units are all heating only.

As you are aware the inherent problem with unit ventilators are as follows:

- The unit’s discharge is at one location.
- Prone to freezing coils in extreme cold
- Units are loud.
- Space temperature fluctuates based on where you are in space.

Based on previous meetings with the district the reuse of unit ventilators was eliminated as a viable option for the reasons listed above. Any removal of the unit ventilators may require wall or roof patching at the current unit ventilator fresh air intake location.

**G. TERMINAL EQUIPMENT**

By the term terminal equipment, we are referring to cabinet heaters, suspended unit heaters, fin tube radiation and convectors. It is believed that the current terminal equipment is original from the date of the building in which it is installed. Overall, there is not much that goes wrong with this type of equipment. Most do not have moving parts and the ones that do such as unit heaters and cabinet heaters are simply a fractional horsepower motor.

Under any recommendation regarding the referendum project this equipment should be replaced in full. The age of the equipment warrants replacements and will provide 30 plus years of service moving forward.

Depending on the system selected, the terminal equipment will be all electric or utilize heating hot water. Each individual terminal unit will be evaluated to determine if any can remain and be reused. Units installed in 1997 or 2000 may still be reused.

**H. FAN COILS**

There are three (3) heating only, horizontal fan coil units serving individual offices. Under any referendum design project, these fan coil systems should be removed, and the current spaces served incorporated into the new HVAC system selected.

**I. EXHAUST FANS**

There are numerous exhaust fans located throughout the roof of the building. Based on appearance there are a mix of new and old spun aluminum fans. The fans are used for toilet rooms.



Under a renovation project a detailed evaluation of the current fans will need to be performed to determine what each one serves and their condition. If determined the fans are in good condition and recently replaced, they can be reused. Otherwise, the fans will be replaced. We will determine what fans would no longer be utilized under the new design and remove them in total. This would apply to most pressurization fans.

There are also inline fans located within the school. They are used primarily as return fans serving the air handlers systems in the school. these fans will be replaced on a per air handler basis if deemed that the existing air handler is to be replaced. If space allows the return fan can be integral to the air handler design.

**J. TEMPERATURE CONTROLS**

The building is currently served by a Trane Trace building automation system. It appears all pneumatic controls, once utilized, have been removed and the entire mechanical system is controlled via BAS.

Any renovation to the building shall incorporate new controls to either match the district standards Any control system should incorporate an open protocol, BACnet based system that is not proprietary to allow for multiple service companies to modify and service the control system selected.

**IV. HVAC SYSTEM REPLACEMENT OPTIONS**

**A. GEOTHERMAL ALTERNATE**

The district has requested that systems designed have an option to be served by Geothermal. The intent is the geothermal field to be an alternate. Therefore in lieu of a geothermal field, the systems defined below would be “geothermal ready, but the base design would include a fluid cooler located on the exterior of the building

The design intent is to remove the latent load (ventilation air) from the geothermal field to reduce the overall number of wells. Based on the square footage of Monroe Middle School, and the removal of spaces that would be served by packaged rooftop equipment, the following is a rule of thumb as it relates to the number of wells required. Note that the wells would be 450-500 feet

deep, producing roughly 3 tons per well assuming average ground conductivity. Each well will need to be 20 feet to the center line of the other wells. Additionally, the rule of thumb for space conditioning only, is roughly 600 Square feet per ton of cooling, seeing the ventilation needs will come from packaged equipment. The following is the estimated number of wells.

**Monroe Middle School:**

- Square feet of building: 132,300 SF
- Square feet of space being served by equipment other than the geothermal field: 29,000 SF.
- Square footage being served by Geothermal field: 103,000 SF.
- Estimated number of wells: 66
- Area Required for Wells: 26,400 SF or .55 Acres.

**B. "GEOHERMAL READY" OPTIONS**

**Option IA**

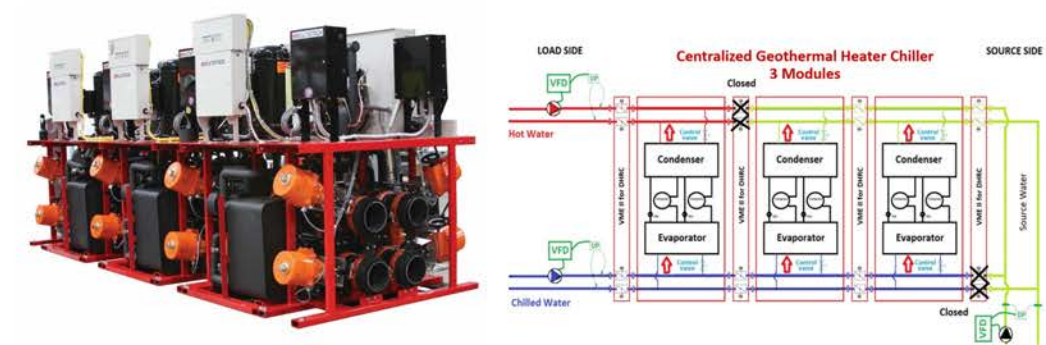
**Geothermal, Water-Cooled Modular Heater / Chiller with Dedicated Outside Air System (DOAS).**

**Description:**

This system would consist of a hybrid approach to providing enhanced HVAC to the building via water-cooled Modular heater / chiller that can provide 4 pipe chilled and hot water to the building simultaneously and send chilled and hot water throughout the building to concealed fan coil units or air handlers.

Ventilation air would be delivered from packaged, rooftop mounted DOAS units that would duct directly into each space requiring ventilation air and be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.

Spaces such as gymnasiums and auditoriums could remain on more efficient single zone rooftop air handling systems and not be integrated into the geothermal field system. This can be analyzed further into the design.



**Pros:**

- No cross contamination of airflow from room to room (Covid Friendly)
- Superior indoor air quality
- Energy Efficient
- Quiet operation
- Reduced carbon footprint
- Simultaneous Heating and cooling as needed.
- Potentially reuse boiler infrastructure for heat injection as part of a heating dominant geothermal system
- Reuses existing chilled water and heating hot water infrastructure within the building.

**Cons:**

- Additional maintenance compressor systems
- Sophisticated controls
- Higher first cost
- Requires additional exterior building area to accommodate geothermal field wells.

Regarding heat injection into the field, the potentially best option is to utilize the domestic hot water system. The reason for this is the heat added is simply as belts and suspenders. It may or may not be utilized, therefore having a dedicated boiler installed for injection that may never be needed is not the best use of dollars. If you oversize the domestic plant the Domestic will always be utilized, just larger than needed to support the domestic needs of the building.

**Option IB**

**Geothermal, Water Cooled Variable Refrigerant Flow (VRF) with Dedicated Outside Air System (DOAS).**

**Description:**

This system would consist of a hybrid approach to providing enhanced HVAC to the building via water-cooled VRF condensers and associated VRF indoor units. Each indoor VRF indoor unit will be a horizontal ducted/concealed system connected to supply and return ductwork distribution for

each space requiring individual temperature control. The indoor water-source compressor units would provide both heating and cooling to indoor units as required and would connect to each terminal unit via refrigerant piping.

Ventilation air would be delivered from packaged, rooftop mounted DOAS units that would duct directly into each space requiring ventilation air and be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.

Spaces such as gymnasiums and auditoriums could remain on more efficient single zone rooftop air handling systems and not be integrated into the geothermal field system. This can be analyzed further into the design.

Pros:

- No cross contamination of airflow from room to room (Covid Friendly)
- Superior indoor air quality
- Energy Efficient
- Quiet operation
- Reduced carbon footprint
- Simultaneous Heating and cooling as needed
- Potentially reuse boiler infrastructure for heat injection as part of a heating dominant geothermal system

Cons:

- Additional maintenance of refrigeration and compressor systems
- Sophisticated controls
- Refrigerant piping throughout building
- Higher first cost
- Requires additional exterior building area to accommodate geothermal field wells.

### C. NON-GEOTHERMAL OPTIONS

#### Option IIA

#### Chilled Water / Hot Water, Four Pipe, Concealed Fan Coil Units with Dedicated Outside Air System (DOAS)

Description:

This system would strive to reuse existing hydronic infrastructure (with modifications) with four-pipe fan, chilled water and hot water, concealed fan coil units. Each fan coil unit would be ducted to supply and return ductwork distribution for each space requiring individual temperature control.

Ventilation air would be delivered from a packaged DOAS system located on the roof that would duct directly into the return side of each fan coil and would be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.

Spaces such as gymnasiums and auditoriums could remain on more efficient single-zone rooftop air handling systems to replace existing equipment past its useful service life.

Pros:

- No cross contamination from room to room. (Covid Friendly)
- Reuse existing hot water infrastructure.
- Filter replacement in return grille of fan coil
- DOAS ducted to return of unit assists with cooling loads of the space.
- Less complicated controls
- Superior indoor air quality

Cons:

- Increase ventilation needed for interior spaces that may require cooling in months when chiller is not operational.
- Would require modification of aging hydronic piping and infrastructure which could represent risks to the project.
- Less efficient than the above option.

Under this option the existing boiler plant would be replaced with new condensing type boilers and an air-cooled chiller would be added to provide chilled water to cooling equipment.

#### Option IIB

#### Air Cooled Variable Refrigerant Flow (VRF) with Dedicated Outside Air System (DOAS)

Description:

This system includes providing enhanced HVAC to the building via air-source VRF condensers and associated VRF indoor units. Each indoor VRF indoor unit will be a horizontal ducted/concealed system connected to supply and return ductwork distribution for each space requiring individual temperature control. The outdoor VRF compressor units would be located on the roof or within conditioned penthouses/mezzanines with unit heaters and wall louvers. Placing the VRF compressor units in a conditioned penthouse would increase costs considerably.

Ventilation air would be delivered from packaged, rooftop mounted DOAS units that would duct directly into each space requiring ventilation air and be controlled via space CO2. Each ventilation zone would be equipped with a VAV box or motorized damper that will control the flow of ventilation air from the DOAS unit to each space. DOAS units can potentially be indoor units with chilled water and hot water in lieu of rooftops, although this may require significant modifications

to the distribution piping, pumping, and architectural layout to accommodate equipment. It is the intent that the DOAS equipment would include energy recovery.

Spaces such as gymnasiums and auditoriums could remain on more efficient single zone rooftop air handling systems and not be integrated into the geothermal field system. This can be analyzed further into the design.

Pros:

- No cross contamination from room to room
- Superior indoor air quality
- Removes the need for chilled and hot water if DOAS is roof mounted, package equipment.
- Simultaneous heating and cooling.
- Quiet operation
- Energy Efficient

Cons:

- Increased refrigerant and compressor maintenance
- Sophisticated controls
- Refrigerant piping throughout building
- Supplemental heat may be required due to equipment limitations at low ambient outdoor air temperatures.

## V. CONCLUSION

All systems outlined above, be it Geothermal ready or non-geothermal all provide current design standards being implemented in the industry today. The separation of sensible and latent loads by introducing ventilation air separately from the room load is imperative for indoor air quality. By utilizing CO2 control you are only heating or cooling ventilation air needed to meet the code requirement.

Based on the systems outlined above, all recommendations would be suitable for Monroe Middle School.

Elara has extensive experience in design of all systems outlined above and has these systems either installed or in construction today. If the district has interest, a site visit can be arranged to visit K-12 installations of these systems to allow the district to “kick the tires” speak to district personnel and get their thoughts on each system.

## VI. ELECTRICAL SYSTEM DESCRIPTIONS

### A. UTILITY SERVICE

The building has one utility entrance from ComEd utility company. The pad mounted utility transformer is located outdoors next to the receiving room. The utility transformer feeds the main switchboard located in the Receiving Room.



Figure 1: Outdoor utility transformer

### B. MAIN ELECTRICAL SERVICE

The building main switchboard located in the receiving room on the first floor. The main switchboard is rated for 1,600A at 480V, 3-phase, 4-wire. The switchboard has (2) sections as detailed below:

- A. Section 1: Utility CT cabinet and main 1600A bolted pressure fuse switch
- B. Section 2: Distribution panel with circuit breakers that feed the building distribution panels as described below:
  - a. 100A/3P circuit breaker for unlabeled equipment.
  - b. 100A/3P circuit breaker for unlabeled equipment.
  - c. 100A/3P circuit breaker for CU-9.
  - d. 100A/3P circuit breaker for RTU-1.
  - e. 150A/3P circuit breaker for unlabeled equipment.
  - f. 150A/3P circuit breaker for CU-7
  - g. 400A/3P circuit breaker for unlabeled equipment.
  - h. 400A/3P circuit breaker for unlabeled equipment.
  - i. 100A/3P circuit breaker for unlabeled equipment.
  - j. 60A/3P circuit breaker for unlabeled equipment.
  - k. 100A/3P circuit breaker for Roof Top A.C.
  - l. 100A/3P circuit breaker for Roof Top A.C.
  - m. 100A/3P circuit breaker for panel RF.
  - n. 70A/3P circuit breaker for panel EM.
  - o. 200A/3P circuit breaker for unlabeled equipment.
  - p. 50A/3P circuit breaker for Roof Top A.C.
  - q. 200A/3P circuit breaker for panel LK.
  - r. 150A/3P circuit breaker for Roof Top A.C.
  - s. 200A/3P circuit breaker for panel LC.



Figure 2: Existing Main Switchboard in Maintenance Room

- t. 200A/3P circuit breaker for panel LD.
- u. 200A/3P circuit breaker for panel LB.
- v. 200A/3P circuit breaker for panel LF.

The following list of operational observations and key notes related to main switchboard that were made during the assessment and subsequent analysis:

1. The main switchboard is in poor condition and believed to be over 30 years old. Looking through existing drawings it appears to have been installed before the 1990s.
2. With proper maintenance, switchboards have a lifespan of 40- 50+ years. Because of the age of the existing switchboard, it is recommended to be replaced with a new switchboard.
3. The main switch does not have ground fault protection as required by code.

### C. DISTRIBUTION PANELS

The school’s panelboards are distributed through the schools, only a few are in dedicated electrical rooms. About half of the panelboards are scattered throughout the school, in corridors, classrooms, and storage rooms. The condition of the panels vary as a few are original to the building while some are newer.

All panelboards are three-phase units, with supply voltages at 277/480V and 120/208V throughout the school. Panelboards within the storage closets are all surface mounted, while panelboards located in classrooms and corridors are recessed into the wall.

The following list of operational observations and key notes related to the typical electrical equipment that were made during the assessment and subsequent analysis:

1. Some electrical panels are original to the building and are past their mean useful life. It is recommended that the electrical panels are replaced as part of the future renovations
2. Several electrical panels are located in mechanical or storage rooms with blocked access with miscellaneous equipment. Per the National Electrical Code Article 110.26(A), three-foot clearance is required in front of all electrical equipment. It is recommended to clear any obstructions in front of the switchboard to maintain proper clearance.
3. It is recommended that all electrical panels in corridors and classrooms remain locked to prevent access from non-personnel. It is recommended that electrical panels be relocated to dedicated electrical rooms or away from the student access areas during future renovations.



Figure 6: Distribution Panel in Mezzanine above Kitchen



4. Some electrical panels contain open spaces to the electrical bus. It is recommended that covers are added to any electrical panel with open spaces as they could lead to injury.

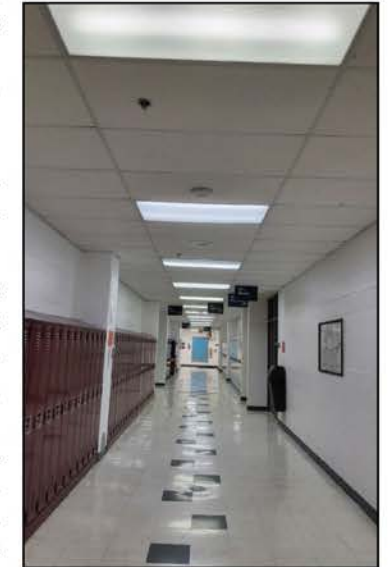
### D. BUILDING LIGHTING

All the lighting throughout the building are fluorescent lighting of a variety of styles including recessed indirect troffer and T-8 fixtures and will need to be upgraded to meet current energy code when renovations take place. Control is performed mostly through toggle switches and keyed switches. Lighting throughout the entire building is 277V.

Emergency lighting is backed up by the generator through emergency panels. Exit signs throughout the building are also battery backed.

The following list of operational observations and key notes related to main switchboard that were made during the assessment and subsequent analysis:

1. The primary recommendation for the lighting system is the conversion of all fixtures, including emergency and exit lighting, to LED. LED technology carries significant benefits and cost-savings in energy usage and maintenance that in many cases will turn into a payback to the facility over time.
2. All future renovations shall have energy code required lighting control systems, which include daylight harvesting in corridors and exterior areas, occupancy sensing in offices and other interior rooms, and more precise zoned controls. The new controls will offer additional energy savings for the school and provide an extra level of precision for staff to customize the light output for the facility.



**E. FIRE ALARM SYSTEM**

The main fire alarm control panel (FACP) is an addressable type located in the building electrical room and is manufactured by “Edwards” type EST. The FACP serves the entire building’s fire alarm system which consists of code required smoke detectors, speaker and visual notification fire alarm devices, water flow and tamper switches, the elevator recall system, and other miscellaneous components to warn against a fire.

The following list of operational observations and key notes related to the fire alarm system that were made during the assessment and subsequent analysis:

1. The existing fire alarm control panel is up to date, fire alarm devices seen throughout the building appear to be speaker/visual type.



**F. EMERGENCY SYSTEM**

The building is served by a natural gas standby emergency generator that serves the building emergency life safety and critical equipment.

The generator is located in the boiler room and is rated for 480/277V, 3-phase, 4-wire. The generator has a rating of 50kW. The manufacturer of the generator is Onan by Cummins.

The generator feeds one (1) automatic transfer switch also located in the receiving room. This feeds an emergency distribution panel EM that feeds emergency, exit lighting, and critical loads.

The following list of operational observations and key notes related to the generator that were made during the assessment and subsequent analysis:

1. It is recommended to maintain a regular, weekly test of the generator. Per NFPA guidelines, the testing of life-safety generators is required to be performed at least once a week to ensure proper operation in a true emergency situation. The weekly test lasts around a half-hour and can be performed on a load bank.
2. A typical generator lifespan is 30 years and due to the age of the generator, it is recommended to have the generator replaced as part of the future renovations and additions. We recommend a bigger size generator for future loads.
3. Recommend to add building IT system, sump pump, and refrigerator to the future generator with a separate ATS.



**G. ADDITIONAL ELECTRICAL DISTRIBUTION RECOMMENDATIONS**

YEARLY RECOMMENDATION THERMAL INSPECTIONS

It is recommended to perform annual thermal inspections of all electrical panels. It should be performed to more easily identify problematic areas of unwanted heat buildup in the system.

EVERY 5 YEAR RECOMMENDATION FOR PREVENTATIVE MAINTANCE

It is recommended that the building perform preventative maintenance on the main switchboard. Preventative maintenance would include exercising all circuit breakers, lubricating all switch mechanisms, torquing the busbar bolts, clean and greasing all moving parts, tightening all cable terminations, and clean/vacuuming the inside enclosure of the substation.

ENGINEERING STUDY (SHORT CIRCUIT, COORDINATION, AND ARC FLASH)

OSHA 2015 regulations and the National Electrical Code require the application of an arc flash label that provides information on arc flash protection boundary, incident energy, working distance, PPE class, and available short circuit information for all electrical equipment. It is required to perform a short circuit, coordination and arc flash study and apply the labels in a timely manner to comply with OSHA and National Electric Code.

EVERY 5 YEAR GROUNDING STUDY

It is considered good practice to test the building grounding system every five years. It is recommended to hire a licensed electrical contractor to verify the existing building grounding condition for verification of code compliance and to address any possible loose connections. This shall include testing the grounding system ohm resistance to verify it matches the code required resistance.

**H. ELECTRICAL CHANGES IN RENOVATION/ADDITIONS**

The following description is intended to cover the proposed changes for future renovation and addition areas. The impact to the electrical system is described by areas as shared by the proposed program layout.

LEVEL 1 AREA A

The proposed renovation of the first floor Area A will consist of significant demolition and renovation of the classrooms, offices and bathrooms.



The renovations would affect the electrical panels and transformers in those areas and require them to be demolished. See list below of panels and transformers that would be affected and need to be demolished.

- Panel RB
- Panel LD
- Panel 152
- Panel RJ
- 45kVA Transformer in room 146
- Lighting Stage Panel

The following additional changes and upgrades would need to be made to the renovated areas:

- New LED lighting and lighting controls
- New emergency lighting and exit signs
- New power for all new lighting, receptacles, appliances, gym equipment, mechanical equipment etc. from the new distribution panelboards. Salvaged electrical panels would be used to best extent possible for renovated areas.
- Relocated fire alarm devices from existing fire alarm system.
- Demolished electrical panels would need to be replaced with new and relocated to dedicated electrical rooms.

**LEVEL 1 AREA B, C, AND D**

The proposed renovation of the first floor will consist of demolition and renovation of the classrooms, offices and bathrooms.

The following additional changes and upgrades would need to be made to the renovated areas:

- New LED lighting and lighting controls
- New emergency lighting and exit signs
- New power for all new lighting, receptacles, appliances, mechanical equipment etc. from the new distribution panelboards.
- Relocated fire alarm devices from existing fire alarm system.

**ADDITIONS**

The proposed northern addition will require to relocate the utility medium voltage service cable, as the built-out would occupy the space of the existing utility transformer. The new pad mount utility transformer shall be installed outside west of the new addition prior to the existing transformer being demolished and disconnected.

The additions will require two (2) 480/277V, 3-phase, 4-wire panelboards, (2) step down transformer, and (2) 208/120V, 3-phase, 4-wire panelboards. It will also require two (2) circuit breakers at the main 480/277V switchboard. The new electrical equipment shall be installed in dedicated electrical rooms.

The following would also need to be made in all new areas:

- New LED lighting and lighting controls
- New emergency lighting and exit signs

- New power for all new lighting, receptacles, appliances, mechanical equipment etc. from the new distribution panelboards.
- New fire alarm devices from existing fire alarm system.

**I. TECHNOLOGY**

Information Communications Technology

Existing Information Communications Technology Systems are compliant with industry standard and meet the needs of the school. Systems shall be expanded to support the proposed addition and modified to support areas identified for renovation. Care shall be taken to protect existing cabinets, equipment, and cabling throughout construction to minimize the need to replace existing cabling systems.

The horizontal cabling system shall comply with TIA Standards for Category 6 performance and installation. System shall be a complete end to end solution (work area outlet to patch panel) from a single manufacturer. Acceptable manufacturers include CommScope, Panduit, Hubbell, Belden, and Leviton. Minimum work area outlet requirements shall include-

1. Typical of areas of new construction-
  - a. New Classrooms-
    - i. Instructors Desk – (1) work area outlet equipped with (2) drops.
    - ii. Wireless Access Point – (1) work area outlet equipped with (1) drop.
    - iii. Wall mount displays (typical of two) – (1) work area outlet per display, each equipped with (1) drop.
  - b. New Collaboration Spaces/Small Group-
    - i. General work area outlet – (1) work area outlet equipped with (2) drops.
    - ii. Wall mount display – (1) work area outlet equipped with (1) drop.
  - c. New Support spaces/Team/Testing-
    - i. Minimum of (1) work area outlet equipped with (2) drops.
  - d. New Offices-
    - i. Minimum of (2) work area outlets equipped with (2) drops.
  - e. Library Learning Center
    - i. Resource Desk – (2) work area outlets each equipped with (2) drops.
    - ii. Office – (1) work area outlet equipped with (2) drops.
    - iii. Public printers/copiers – (2) work area outlets each equipped with (2) drops.
    - iv. Computer workstations – (4) workstations each equipped with (2) drops.
    - v. Wireless Access points – (2) work area outlets each equipped with (1) drop.
2. Typical of Renovated Spaces
  - a. Renovated and Right-sized Classrooms-
    - i. Instructors Desk – (1) work area outlet equipped with (2) drops.
    - ii. Wireless Access Point – (1) work area outlet equipped with (1) drop.

- iii. Wall mount displays (typical of two) – (1) work area outlet per display, each equipped with (1) drop.
- b. Collaboration Spaces/Small Group-
  - i. General work area outlet – (1) work area outlet equipped with (2) drops.
  - ii. Wall mount display – (1) work area outlet equipped with (1) drop.
- c. Support spaces/Team/Testing-
  - i. Minimum of (1) work area outlet equipped with (2) drops.
- d. Offices-
  - i. Minimum of (2) work area outlets equipped with (2) drops.
- 3. Modifications to Existing Classrooms to Support new A/V-
  - i. Wall mount displays (typical of two) – (1) work area outlet per display, each equipped with (1) drop.

The work area outlet infrastructure in areas of new construction shall consist of a two-gang back box with one gang trim ring and 1” conduit stub above accessible ceiling. Metal surface mount raceway shall be used to support new work area outlets in existing areas that are being renovated. J-Hooks shall be used to support cable above accessible ceilings.

The existing MDF shall be relocated to accommodate new classroom spaces. Associated horizontal cabling shall be replaced in its entirety. Furnish new (12) strand OM4 multimode backbone fiber between new MDF and all IDF’s. Fiber optic and category 6 patch panels to be provided in addition to cable management. Extend new telecommunications bonding conductor to building ground.

The existing west IDF #3 shall be relocated to accommodate new classroom spaces. Associated horizontal cabling shall be replaced in its entirety. Furnish new (12) strand OM4 multimode backbone fiber between new IDF and MDF. Fiber optic and category 6 patch panels to be provided in addition to cable management. Extend new telecommunications bonding conductor to building ground.

A new IDF is required for support of new telecommunications cabling installed in the Performing Arts Addition. The IDF will be equipped with a wall mount equipment cabinet. Furnish (12) strand OM4 multimode backbone fiber between main server room and new IDF. Fiber optic and category 6 patch panels to be provided in addition to cable management. Extend new telecommunications bonding conductor to building ground.

#### Intercom/Clock/Paging System

The existing Telecor XL intercom/paging system was replaced in 2021. The system is fully supported by the manufacturer and meets the operational needs of the school. The system shall be expanded to support new and renovated spaces. New classrooms are to be equipped with new speaker assembly and call-in switch. General paging coverage shall be provided in new corridors, common spaces, pre-function, and Library Learning Center, with quantity and placement of speakers as required for consistent coverage. Provide upgrades to head end as required to support new field devices. Care shall be taken to protect existing cabinet, equipment, and cabling throughout construction. Paging coverage shall be extended to the exterior of the school facing the athletic fields.

Existing speaker assemblies and call-in switches located in classrooms identified as being right sized shall be relocated. Provide new cabling between relocated devices and head end.

The existing Sapling wireless clock system was replaced in 2021. The existing system shall be expanded to support new and renovated spaces. New wall mount clocks to be provided in new classrooms, offices, support spaces, and Library Learning Center. Bi-directional clocks shall be provided in new corridors, common spaces, and pre-function.

#### Audio/Visual

A new classroom A/V presentation standard is being developed by the District. This new standard will be applied to all classrooms.

Typical of all classrooms, equipment and infrastructure shall be provided for new A/V presentation systems. Systems are to be comprised of two wall mount commercial displays on opposing walls. HDMI source will originate at the instructor’s desk. Distribution, processing hardware, cabling, power, and infrastructure required for support of the systems shall be provided.

Existing audio reinforcement and video presentation systems were found to be outdated and lacking in performance. Replacements to systems for gymnasium, auditoriums, and common spaces is recommended.

New audio reinforcement systems are required for the Large Gymnasium, Small Gymnasium, Wrestling/Aerobics, Main Commons, and Second Commons. The systems will support reinforcement of voice and program and shall be comprised of speakers, amplifiers, processing and level control equipment, touchscreen control panel, equipment cabinet, hardwired and wireless microphones, and hardwired and wireless interfaces for program sources. Power and infrastructure required for support of the system shall also be provided.

New performance audio reinforcement and video presentation systems are required for the Auditorium. The systems will support reinforcement of voice and program and shall be comprised of speakers, amplifiers, digital mixing console, processing and level control equipment, equipment cabinet, hardwired and wireless microphones, and hardwire and wireless interfaces for program sources. The video presentation system will support multiple hardwired HDMI and wireless video sources and shall consist of a fixed ceiling mount video projector, motorized projection screen, signal processing and distribution equipment. Cabling, equipment cabinet, and infrastructure required for support of the system shall be provided.

In addition to classroom A/V presentation systems, the new Band, Orchestra, and Choral classrooms shall be equipped with audio recording/playback systems. Systems shall accommodate digital stereo recording and stereo playback. All input, processing, amplification, recording, speaker systems, and equipment cabinet necessary for a complete functional system shall be included.

#### Security Electronics

District wide upgrades have been made to enhance electronic security. New standards are in place for building alarms, access control, and CCTV. Systems are compliant with industry standards and meet the requirements of the school.

Building Alarm

The existing Bosch alarm system shall be expanded. New exterior doors are to be furnished with door contact switches. Provide modifications to alarm head end to support new contact switches, as well as necessary programming.

#### Access Control

The existing Open Path access controls system shall be expanded to support new exterior doors. Exterior doors shall be equipped with electronic locking mechanisms. Access control panels, power supplies, and proximity readers shall be included, as well as necessary programming.

#### CCTV

The existing Verkada CCTV system shall be expanded. New cameras are required for coverage of the Performing Arts addition. Cameras shall be provided to cover the exterior of the addition, new building entrances, new public/common spaces, and new interior corridors.

## VII. FIRE PROTECTION SYSTEM DESCRIPTIONS

### A. FIRE PROTECTION SYSTEM

The existing fire protection is provided via a 6" water service that enters the building in the first floor Storage room in the NW corner of the building near the boy's locker room. The service enters the building and has a 6" main and two risers. One (1) is 6" and serves the 1996 addition which consist of Wrestling and Aerobics as well as Commons, classrooms, and Science classrooms.

A second riser sized for 2 1/2" extends to the original boiler room and was connected to a 2 1/2" original sprinkler main. The extent of what this original sprinkler served is unknown, although believed to possibly serve the stage. The original fire protection service in the boiler room was abandoned in 1996.

This 2 1/2" riser was tapped in 2000 to serve the 2000 addition area which included to administration offices, Classrooms and Science Classrooms. In addition, the main also branched to serve the Art Room storage and Kiln room.

The current fire protection will need to be relocated based on the proposed building modifications and additions indicated in Perkins +Will conceptual design package. The new location of this service will need to be determined during design.

The relocated service should have sufficient capacity to not only serve the current spaces sprinklered today but also include the remainder of the building along with any addition to ensure the entire facility is covered by a wet pipe sprinkler system.

The following is a list of operational observations made during the assessment and subsequent analysis:

1. The building has a Siamese fire department connection located outside the current service location. This will need to be relocated under the addition and renovation project.
2. The fire protection service appeared to include all the required tamper and flow switches to meet NFPA requirements.

**VIII. DOMESTIC SYSTEM DESCRIPTIONS**

**A. DOMESTIC WATER SYSTEM**

The building’s domestic heating hot water is currently served by three (3) domestic hot water heaters located in the boiler room, the 1996 mechanical mezzanine and 2000 addition mechanical room.. The following tables provides a summary of the domestic hot water systems:

**Table 2:** Domestic Water Heating Equipment Summary

Tag	Type	Location	Design Details	Services
No Tag	Bradford White Model D199L1993N Gas fired	Boiler room	199 MBH Input, 100 Gallon capacity, 193 gallons / Hour Recovery	All Area less 1996 and 2000 Addition
GWH-1 (per design drawings)	AO Smith Proline Model FGC-75-400 Gas fired	1996 Addition Mechanical Mezzanine	75.1MBH input. 71 gallon / hour recovery	1996 Addition. Installed in 2017
DWH-1 (per Design Drawings)	AO Smith model BT-100-230 Gas fired	2000 Addition Mechanical room	100 Gallon capacity 68.3 Gallons per hour Recovery	2000 Addition

The following is a list of operational observations made during the assessment and subsequent analysis:

1. 2000 Water heat gas valve is closed and sign to not use. Not sure of the issue or if unit is operational.
2. All water heaters appear new within the last 6 to 8 years.

**B. DOMESTIC WATER SYSTEM**

The building currently utilizes municipal city water pressure to deliver domestic water to the building. The current service is the storage / mechanical room in the NW corner of the building near the Boy’s locker room. This service was installed as part of the 1996 addition. At that time a dedicated line was routed to the boiler room to connect to the original service. The original service is abandoned currently.

The domestic water is routed throughout the building to all plumbing fixtures. Based on the age of the building there is a large probability that galvanized piping exists, either in the wet walls or mains routed above the ceiling in areas not modified under the 1996 or 2000 addition projects.

The following is a list of operational observations made during the assessment and subsequent analysis:

1. The backflow preventor installed appears to be in good condition.
2. Most of fixtures present in the building had adequate pressure to operate per design intent.
3. Recommend that all galvanized piping through the building be replaced with copper.

4. Under the proposed addition and renovations outlined in Perkins + Will conceptual plans the existing domestic water service will need to be relocated due to the auditorium addition.

**C. PLUMBING FIXTURES**

The building utilizes flush valves on the existing water closets and urinals in the gang bathrooms. All plumbing fixtures appear to be in good working order and do not need to be updated at this time. Further evaluation of condition will be explored under the design phase of the project. new fixtures may be warranted if wet wall piping replacement is considered.

**D. SANITARY SYSTEM**

Under any renovation phase to the project, it is recommended that the existing sanitary system be videoed to confirm slope and jetted to ensure proper flow.

# Existing Conditions Survey Results

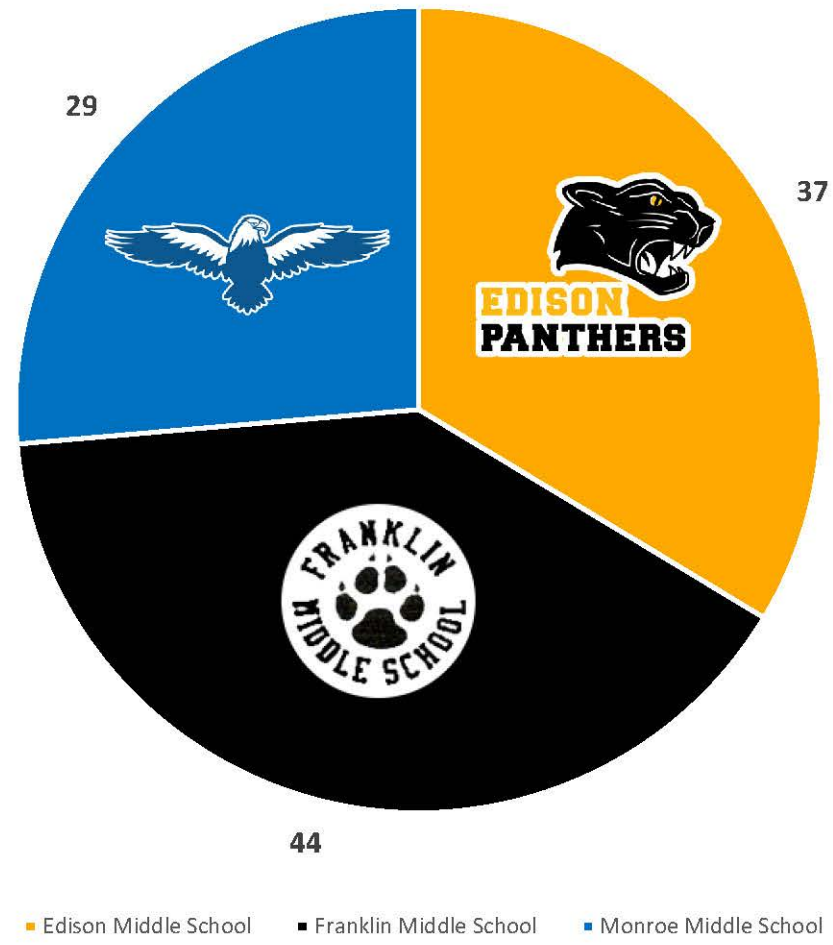
# Overall Results

*Faculty/Staff Survey*

1

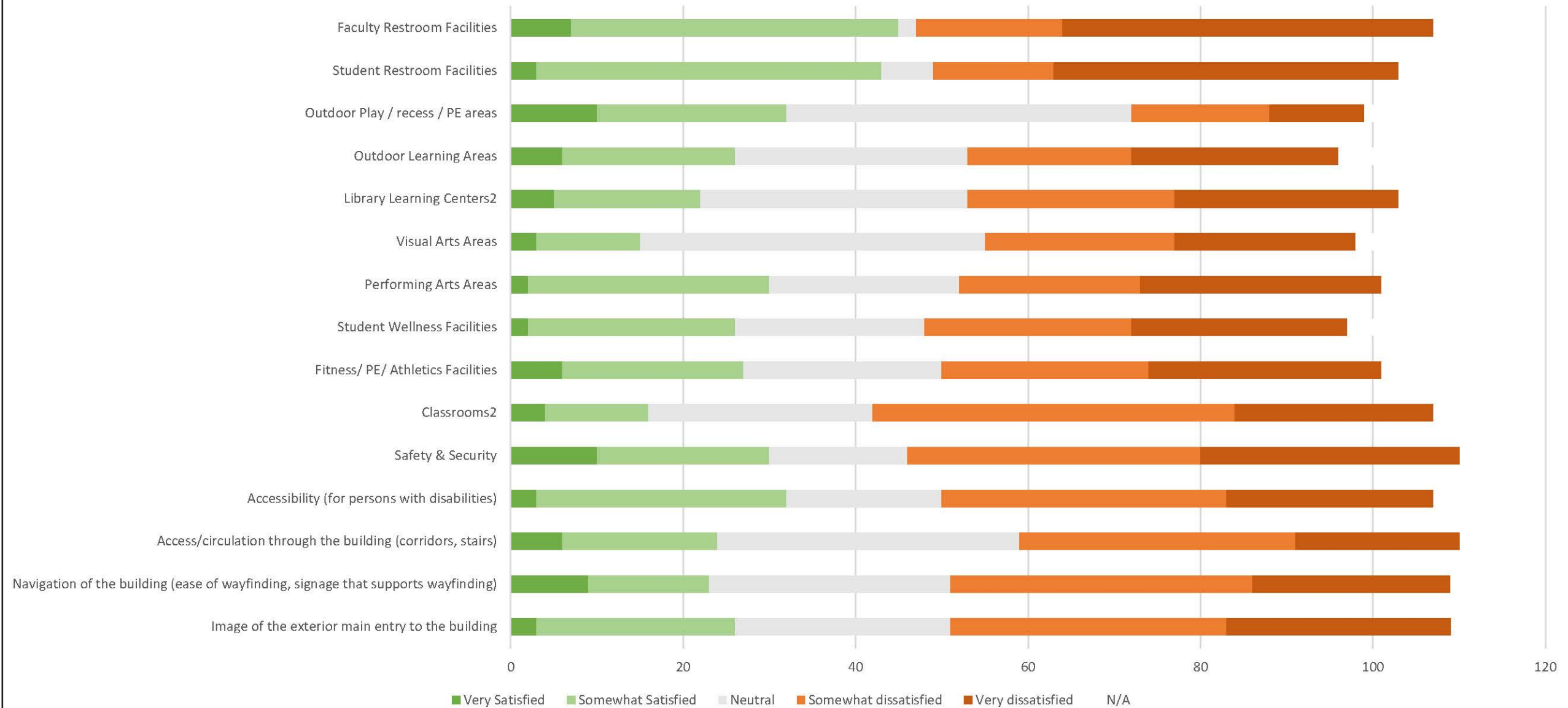
**Faculty/Staff – Overall**  
*Building Breakdown*

In which building do you spend most of your time?



### Faculty/Staff – Overall

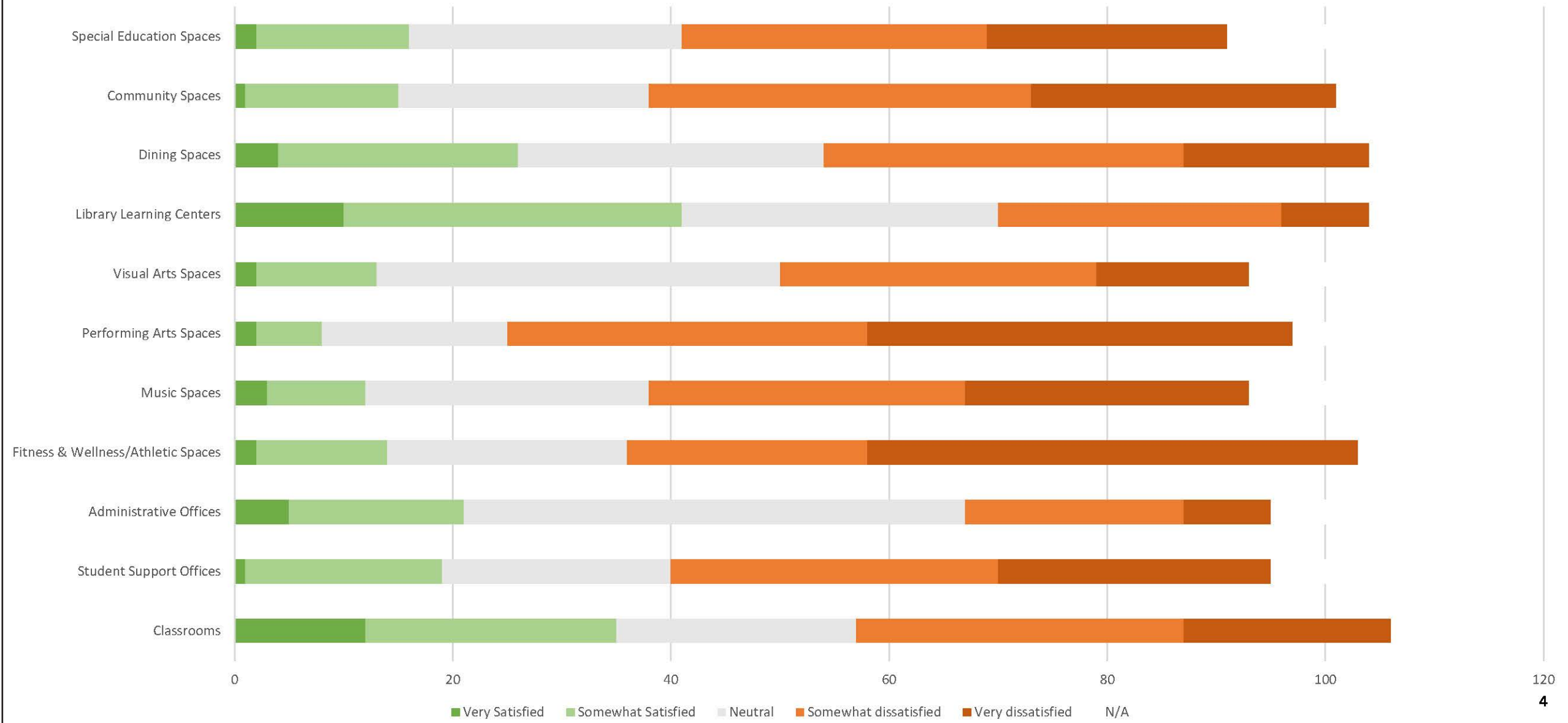
How satisfied are you with the **following aspects of your current building?**





### Faculty/Staff – Overall

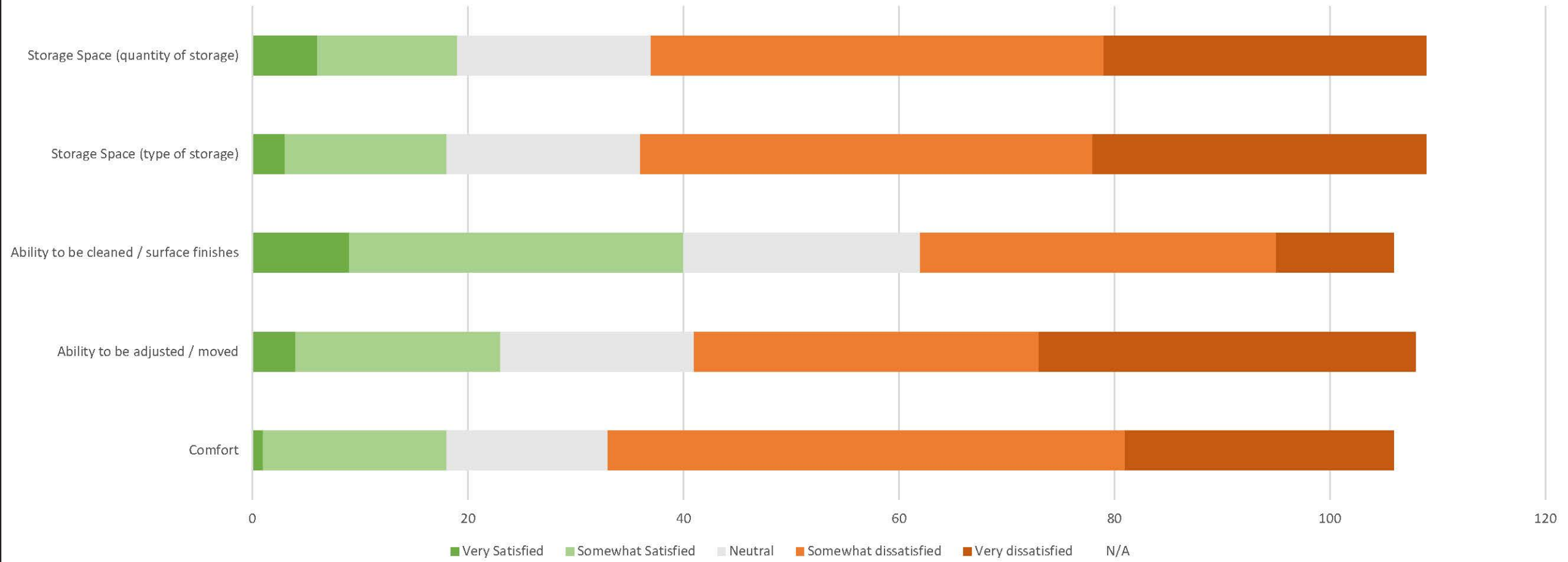
How satisfied are you with the **space size** of the following building components?



120  
4

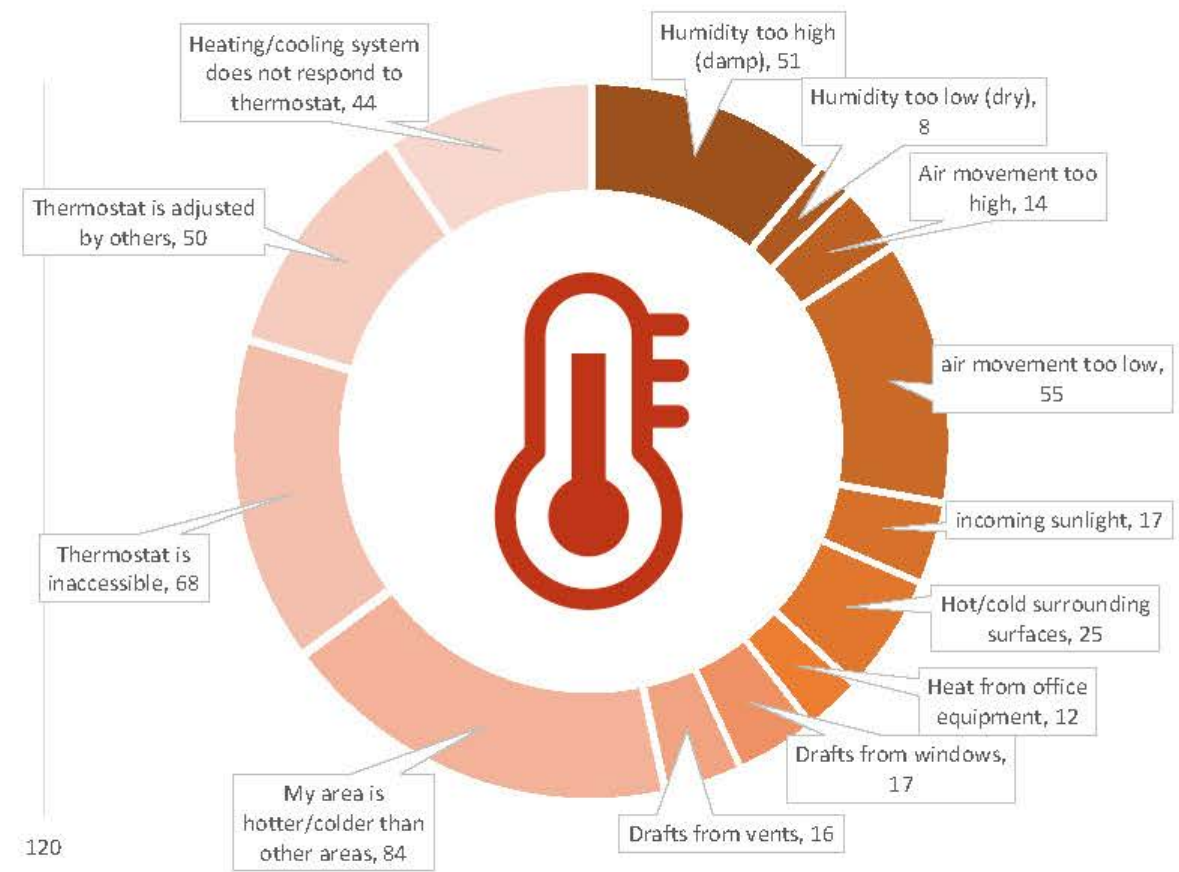
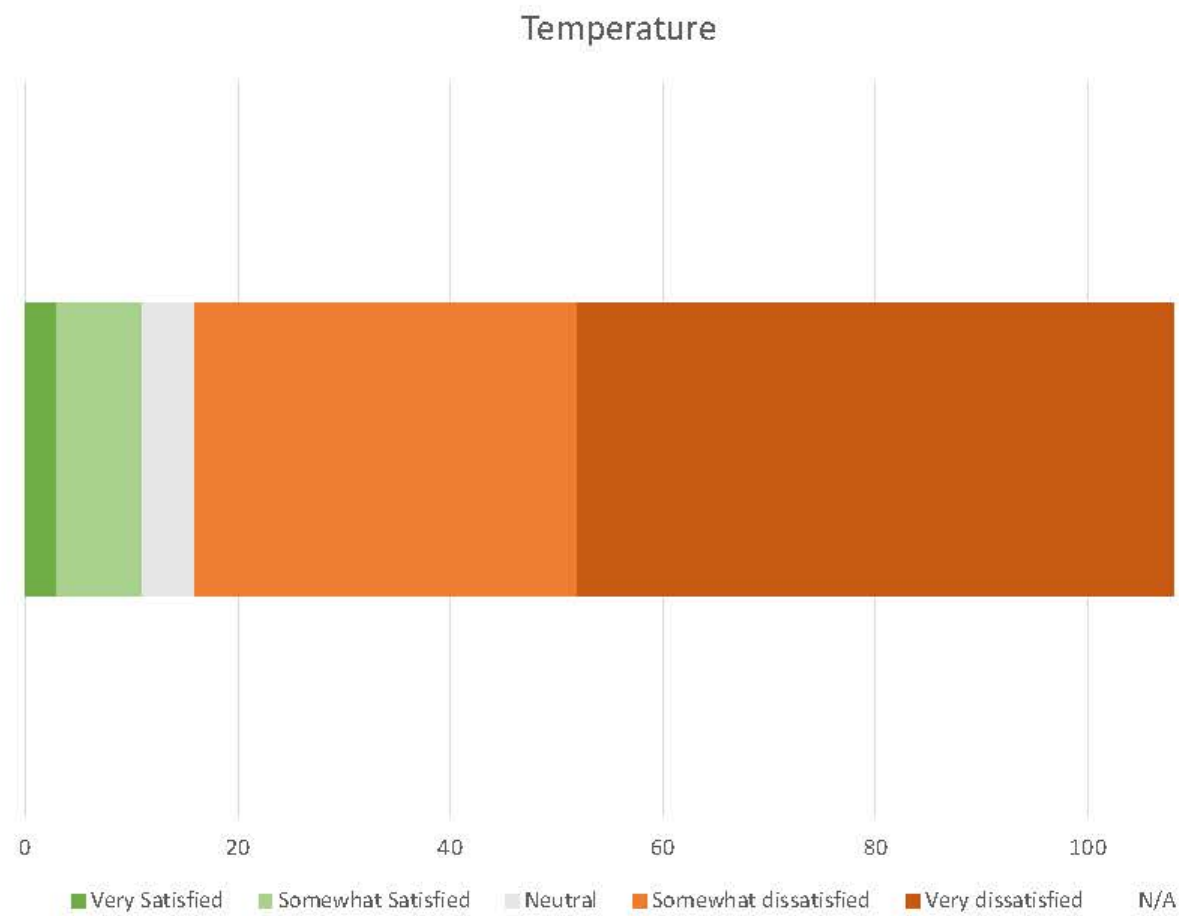
### Faculty/Staff – Overall

How satisfied are you with the **furnishings** in your space?



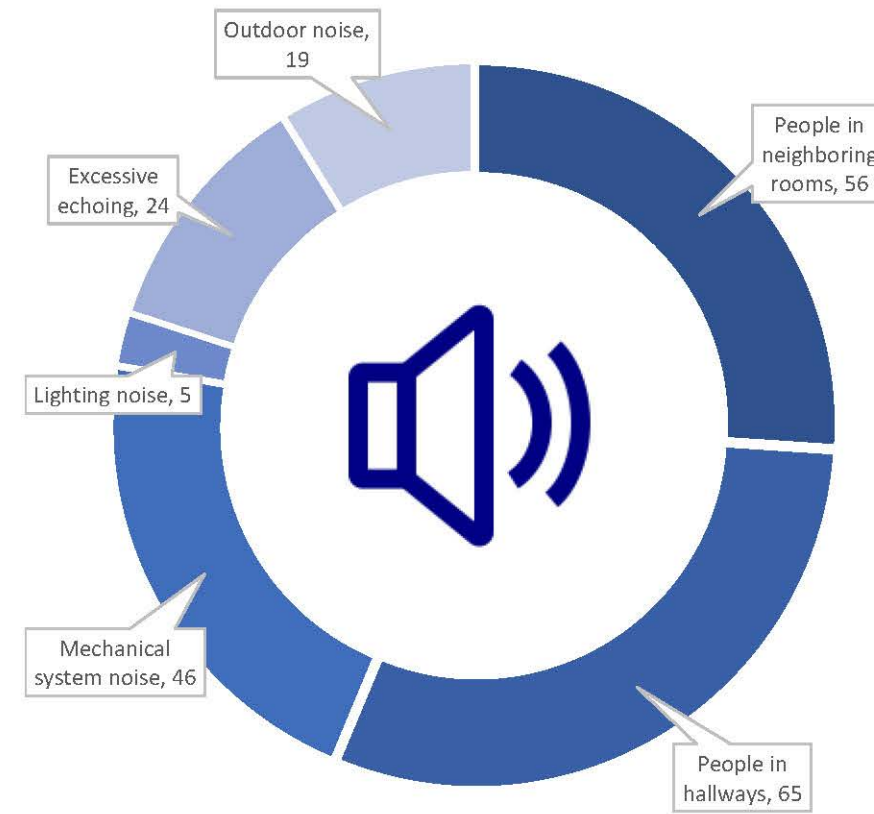
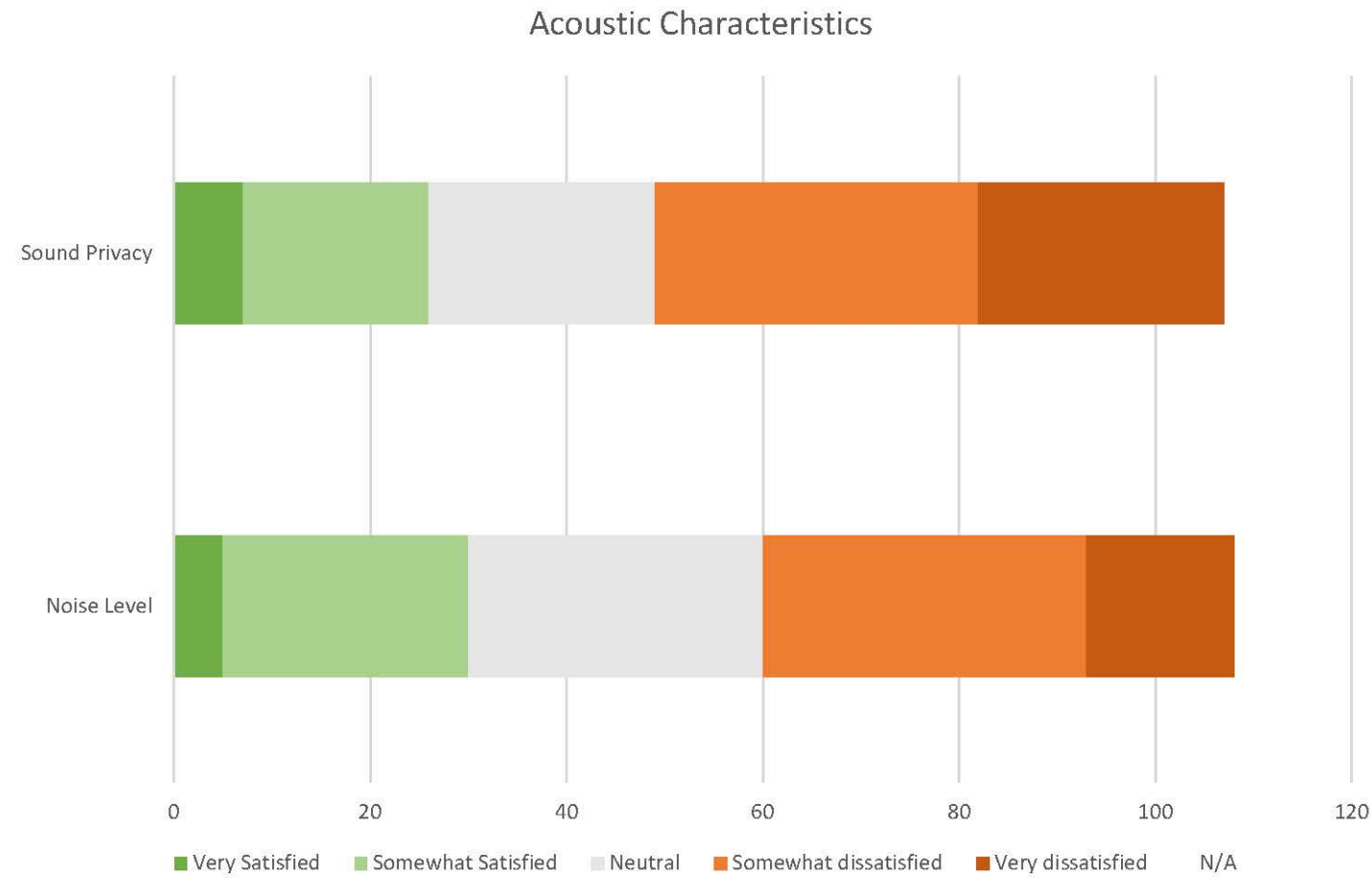
### Faculty/Staff - Overall

How satisfied are you with the **temperature** of your current space?



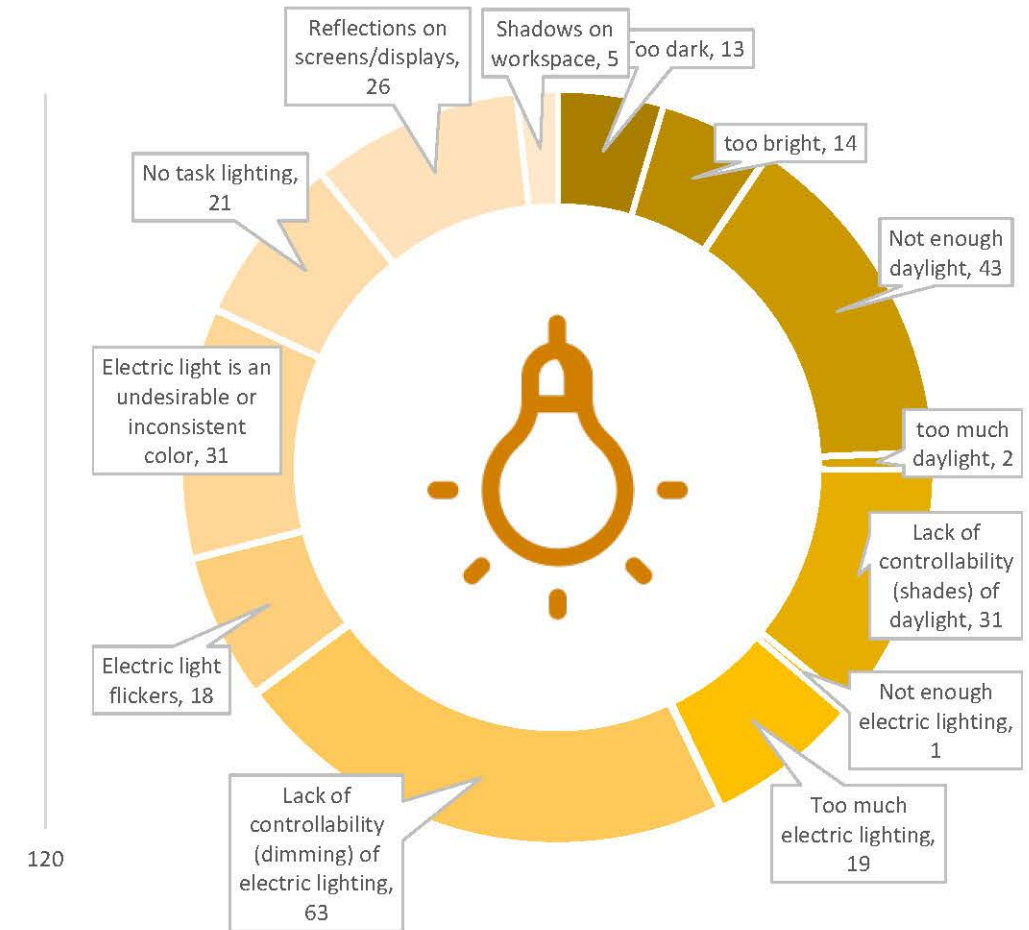
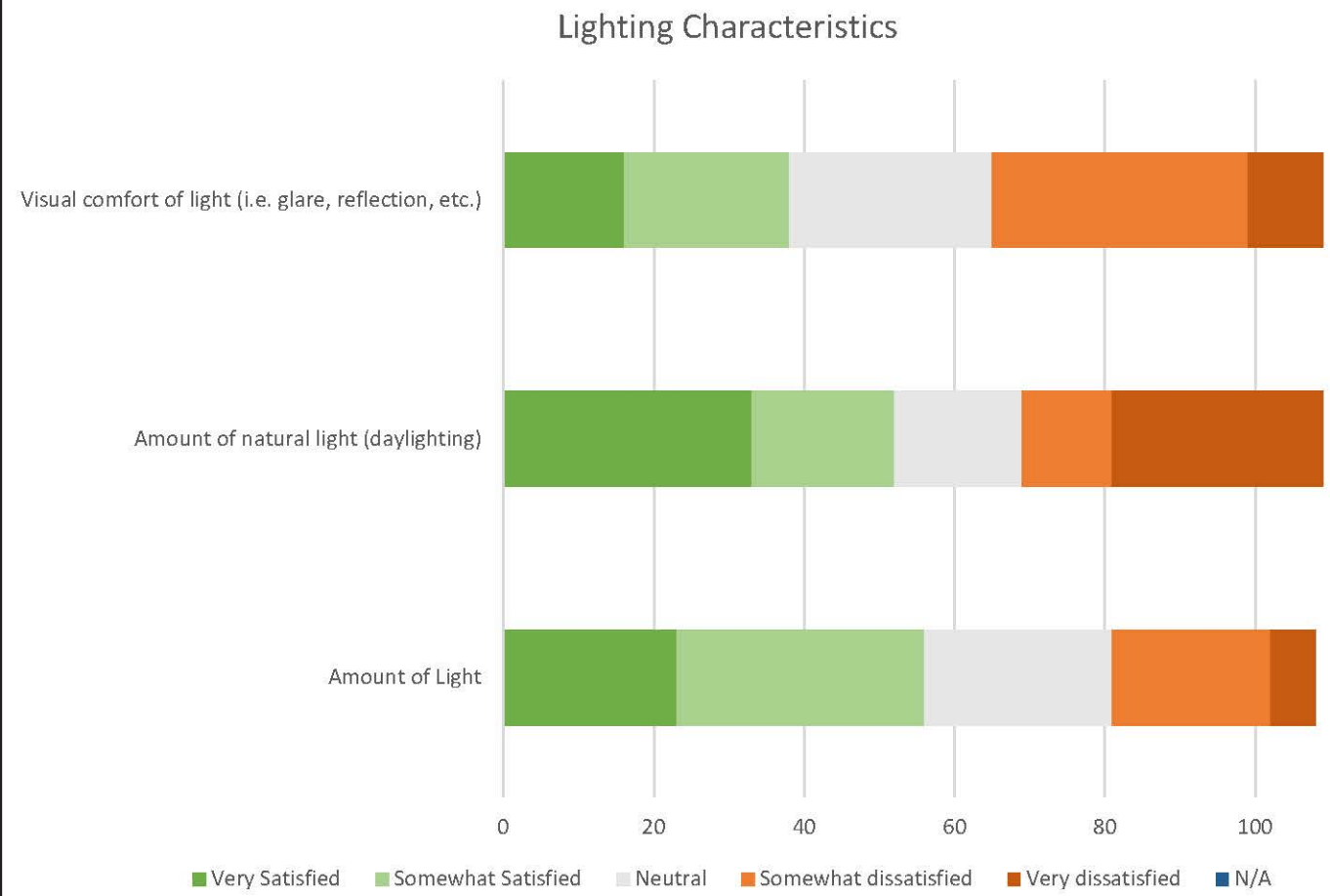
### Faculty/Staff – Overall

How satisfied are you with the **acoustic characteristics** of your current space?



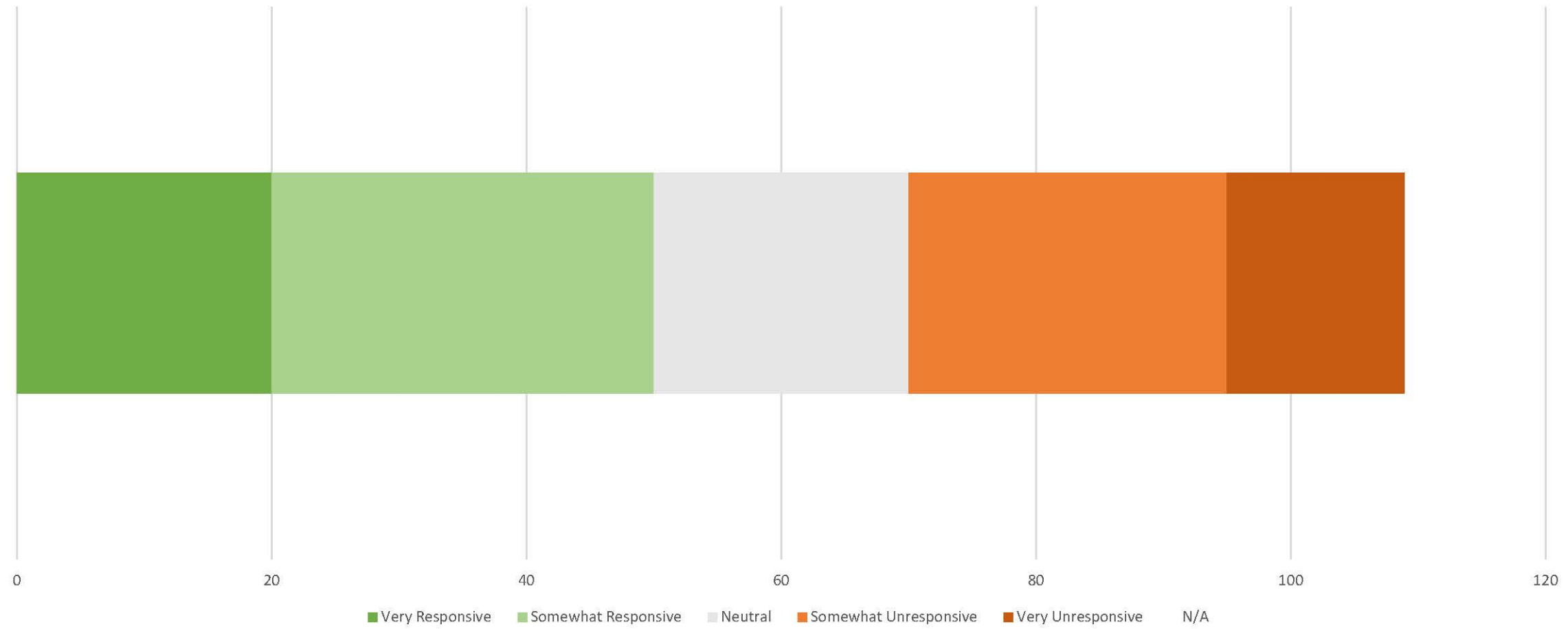
### Faculty/Staff – Overall

How satisfied are you with the **lighting characteristics** of your current space?



### Faculty/Staff – Overall

From your perspective, how **responsive** is your current building to **current and future best practices** for teaching and learning?

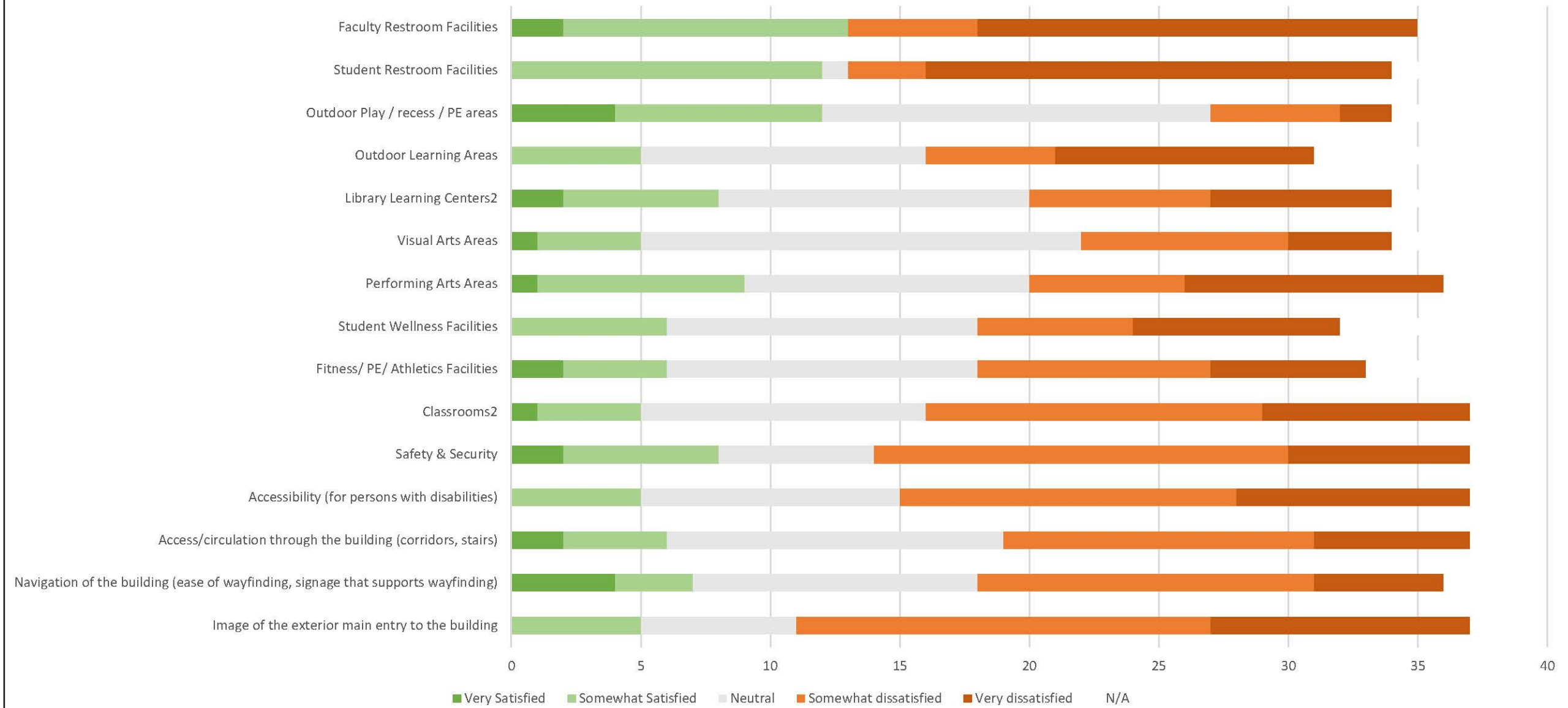


# Edison Middle School

*Faculty/Staff Survey*

### Faculty/Staff – Edison

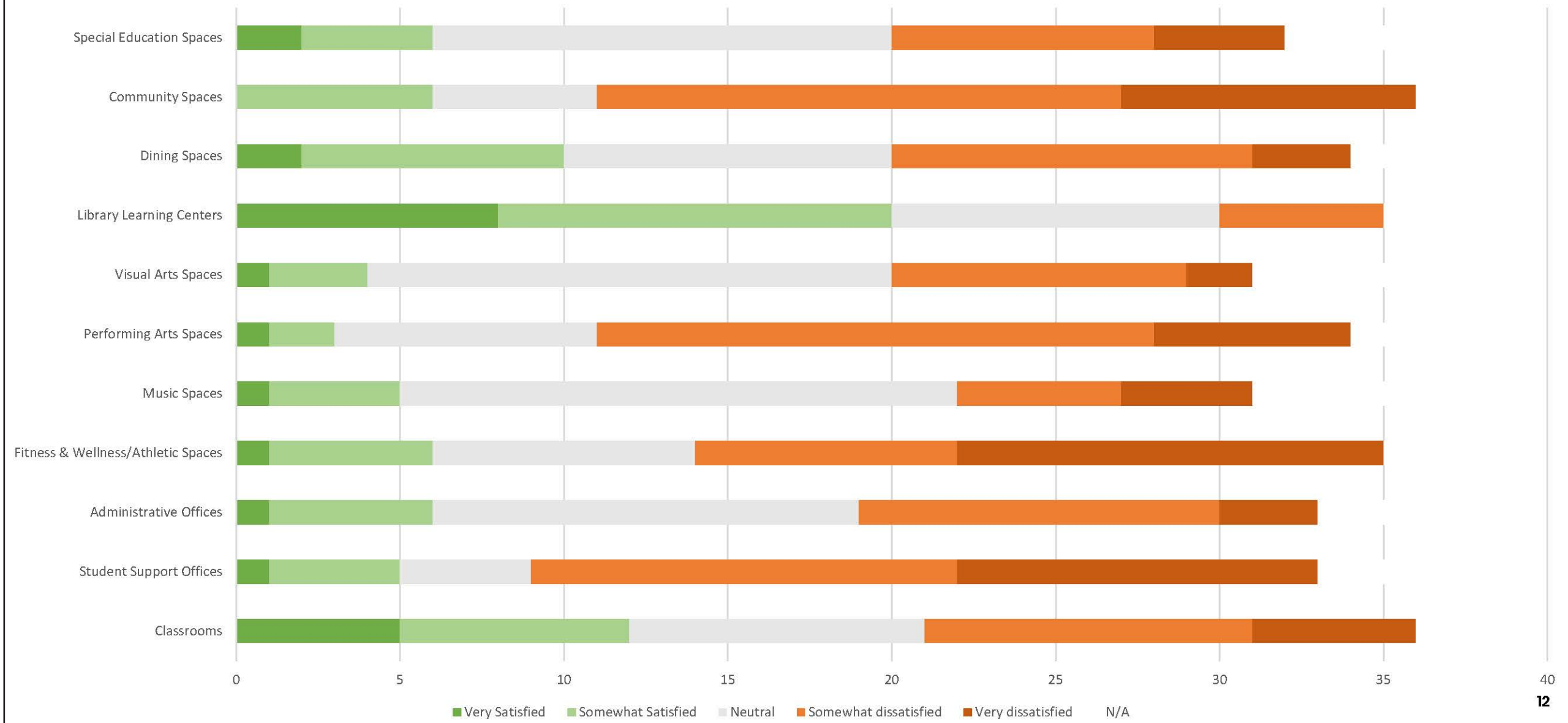
How satisfied are you with the **following aspects of your current building?**





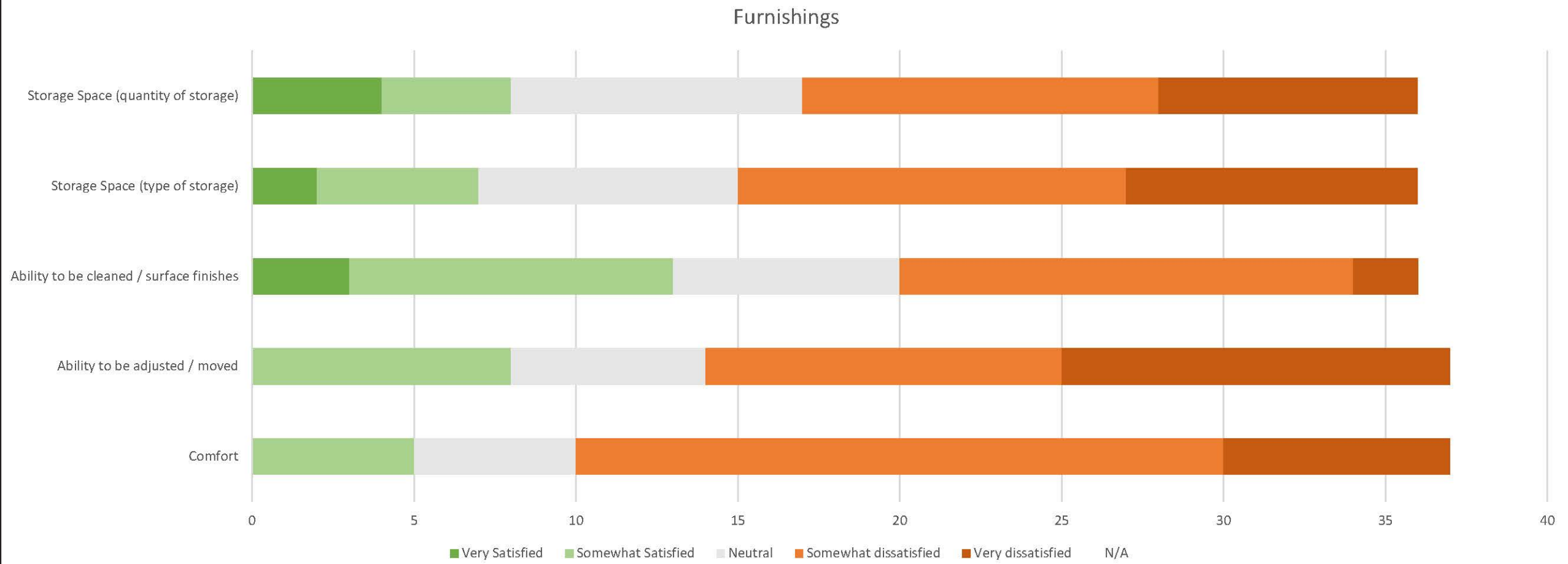
### Faculty/Staff – Edison

How satisfied are you with the **space size** of the following building components?



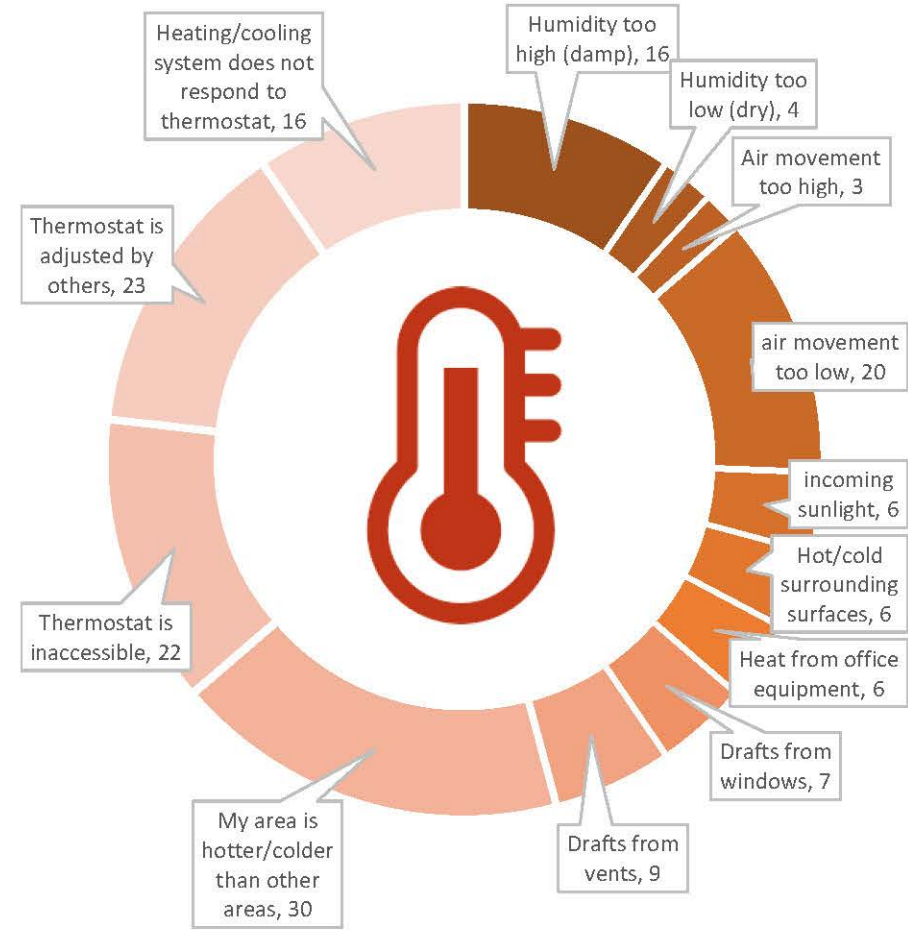
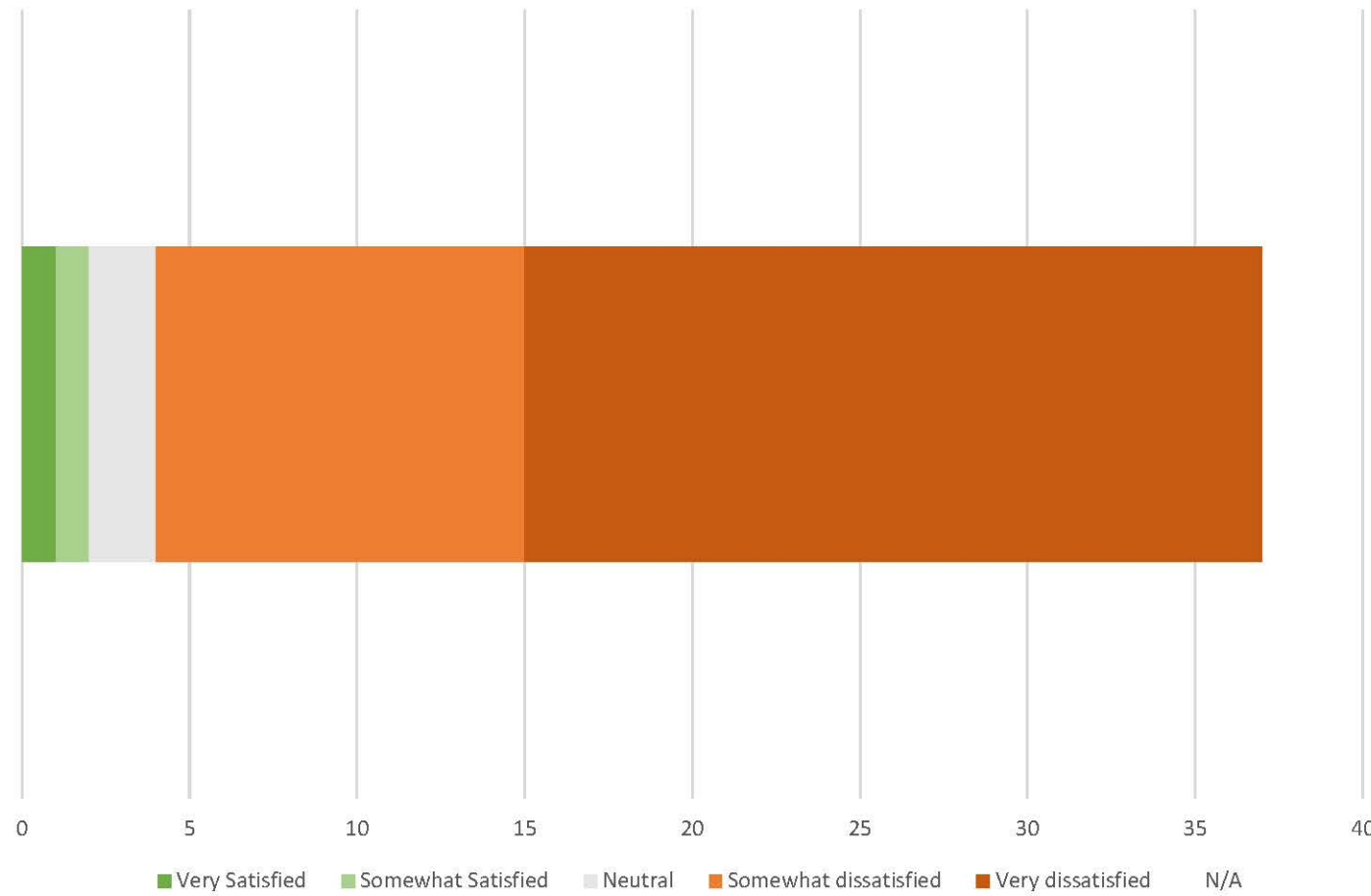
### Faculty/Staff – Edison

How satisfied are you with the **furnishings** in your space?



### Faculty/Staff – Edison

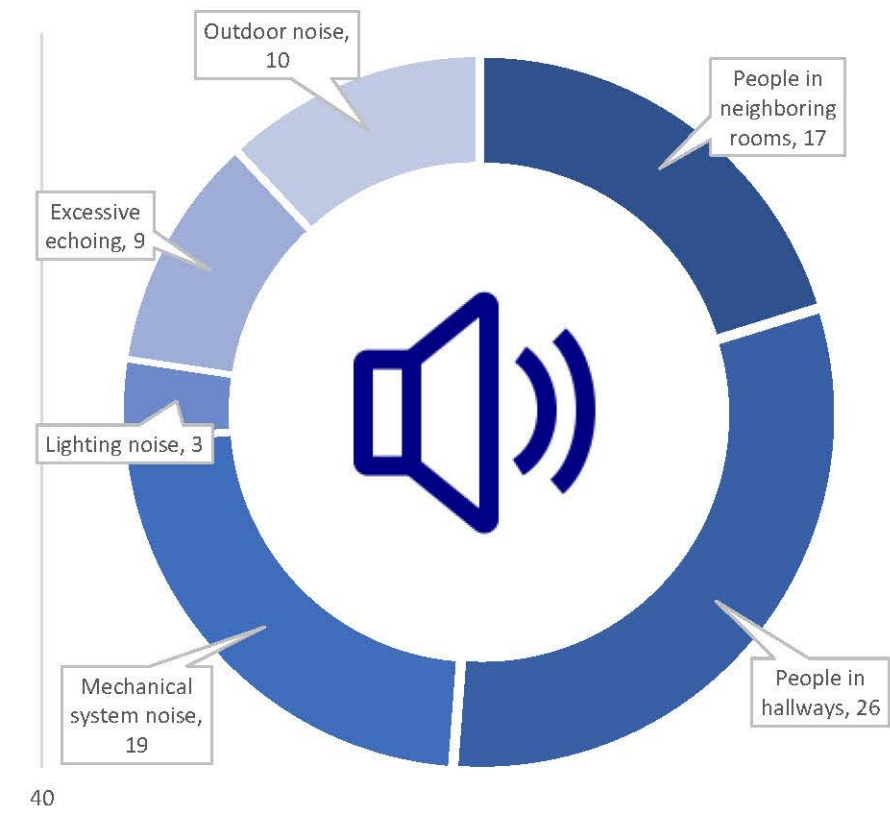
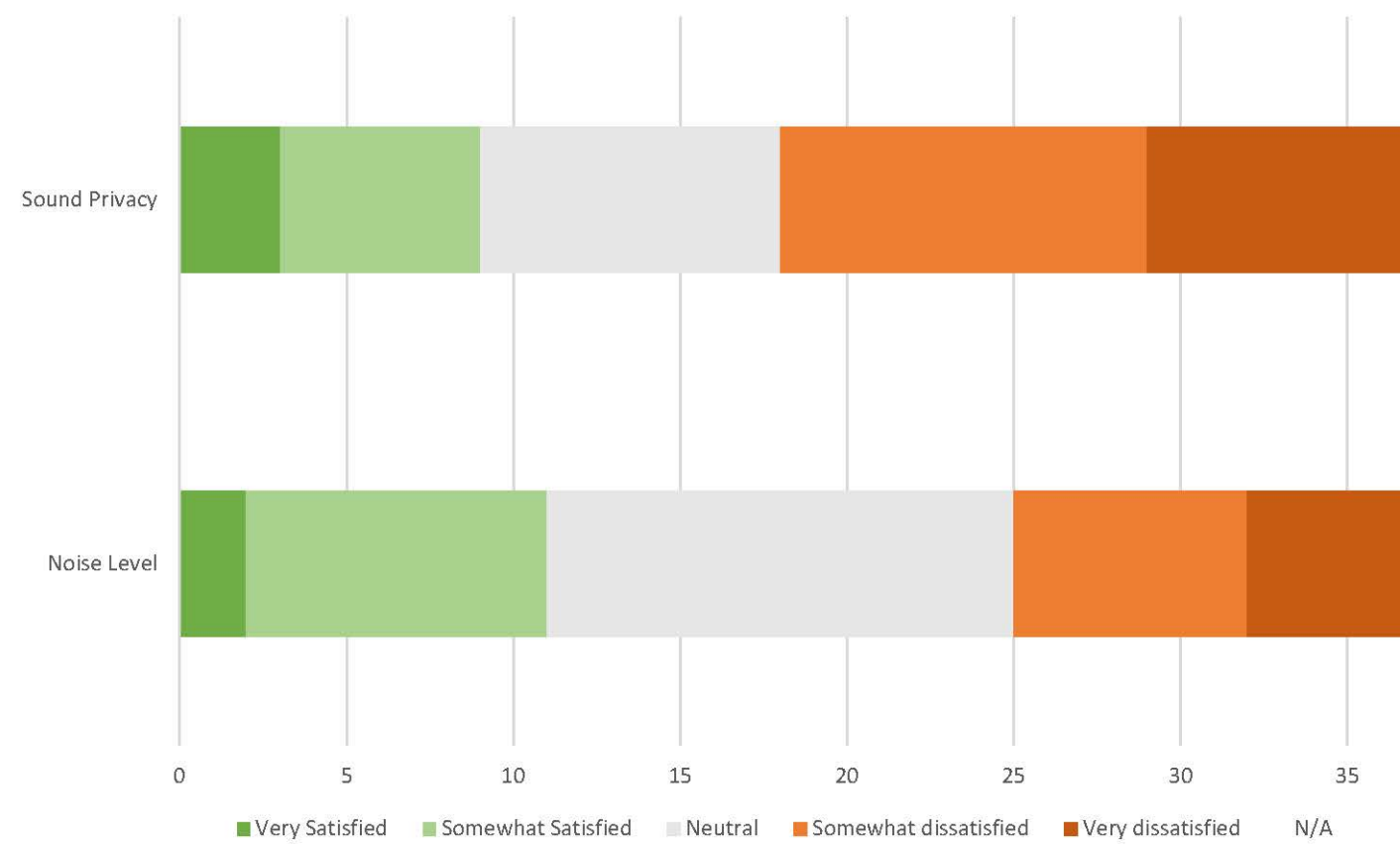
How satisfied are you with the **temperature** of your current space?



### Faculty/Staff – Edison

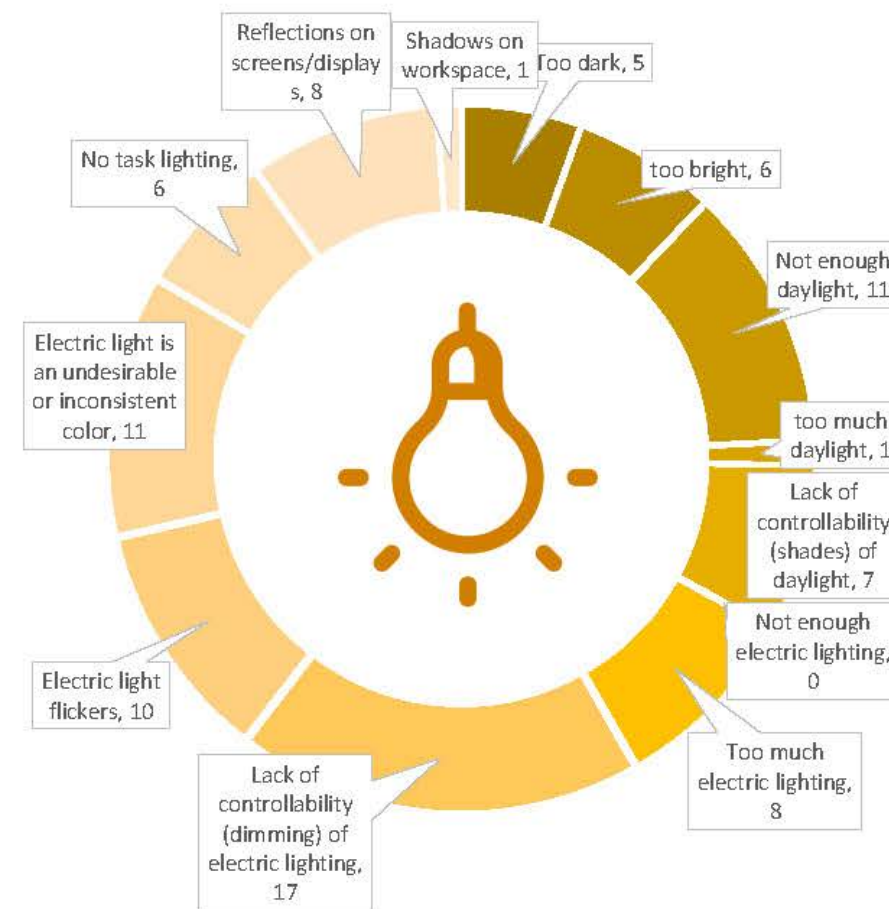
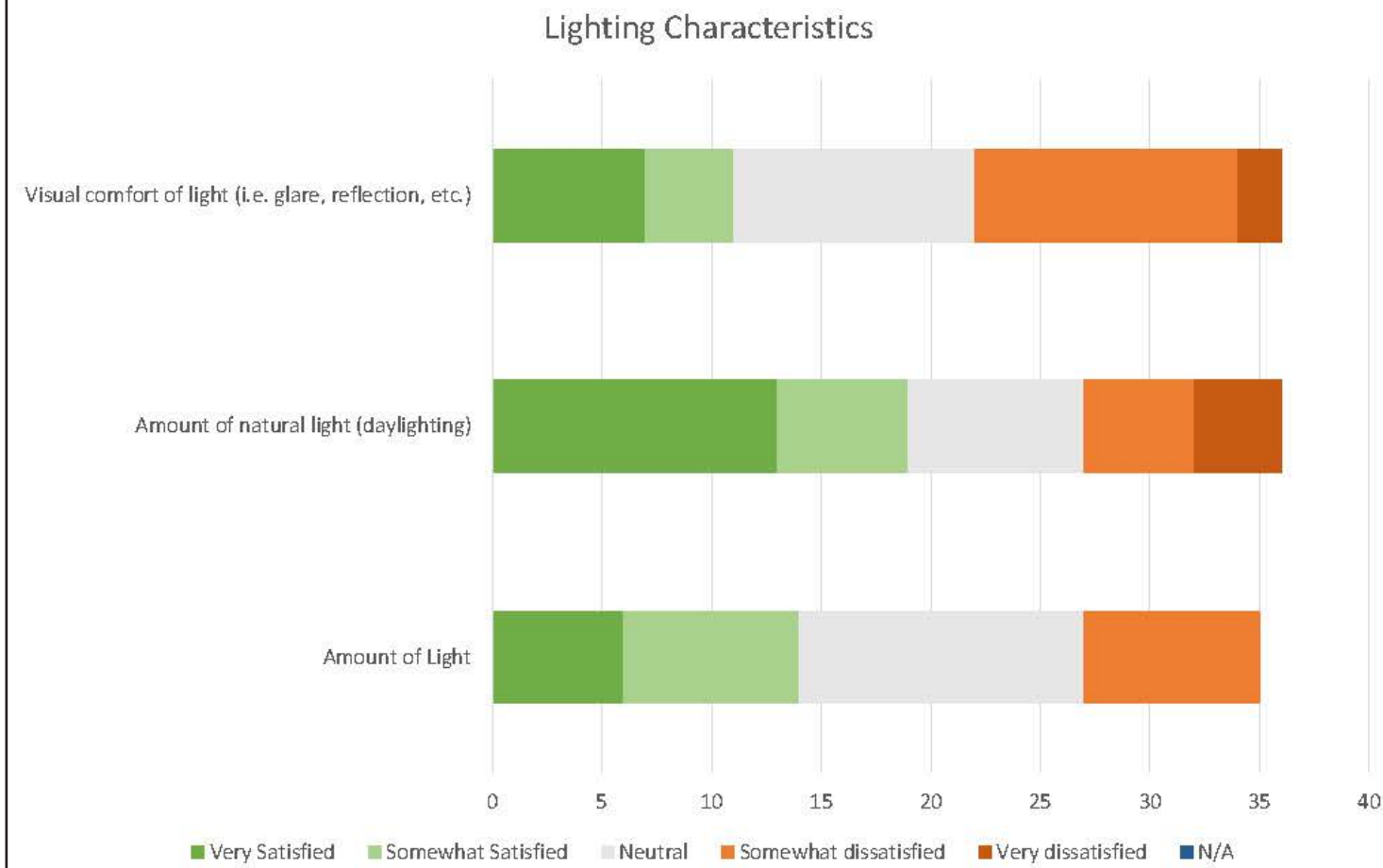
How satisfied are you with the **acoustic characteristics** of your current space?

Acoustic Characteristics



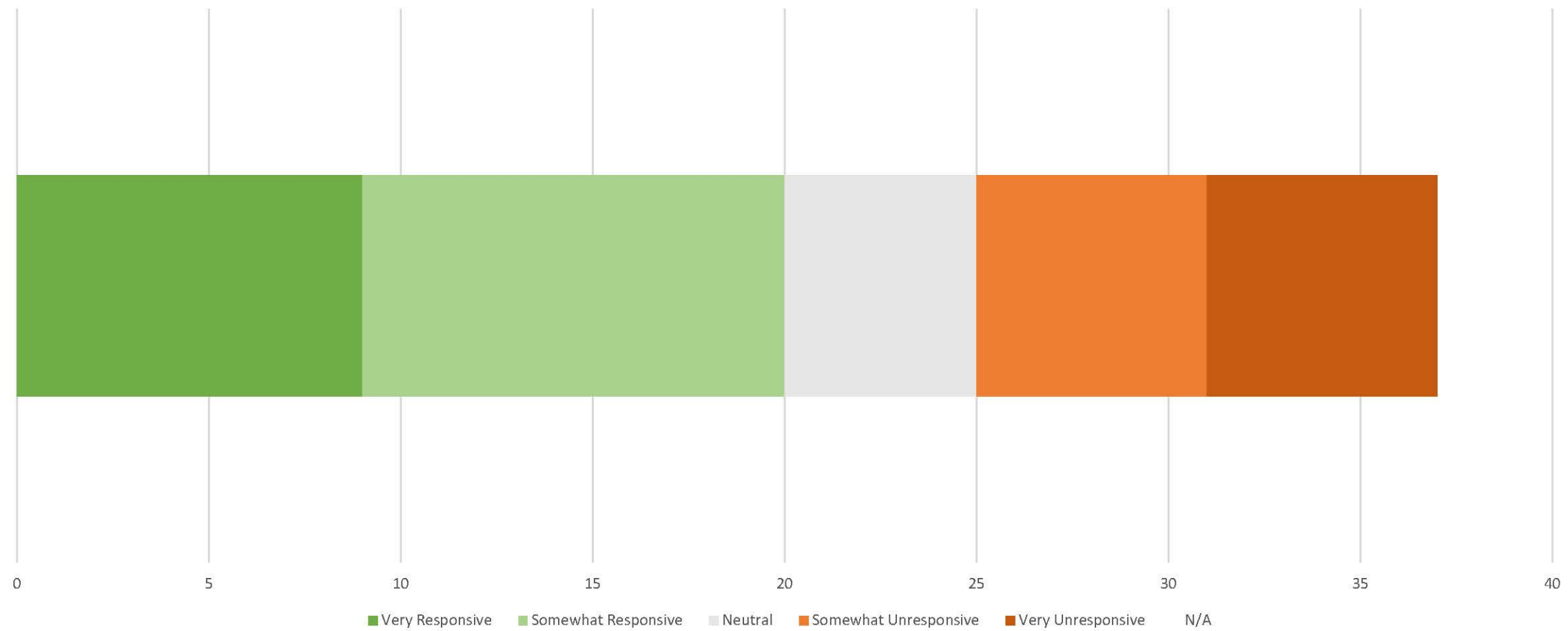
### Faculty/Staff – Edison

How satisfied are you with the **lighting characteristics** of your current space?



**Faculty/Staff – Edison**

From your perspective, how **responsive** is your current building to **current and future best practices** for teaching and learning?

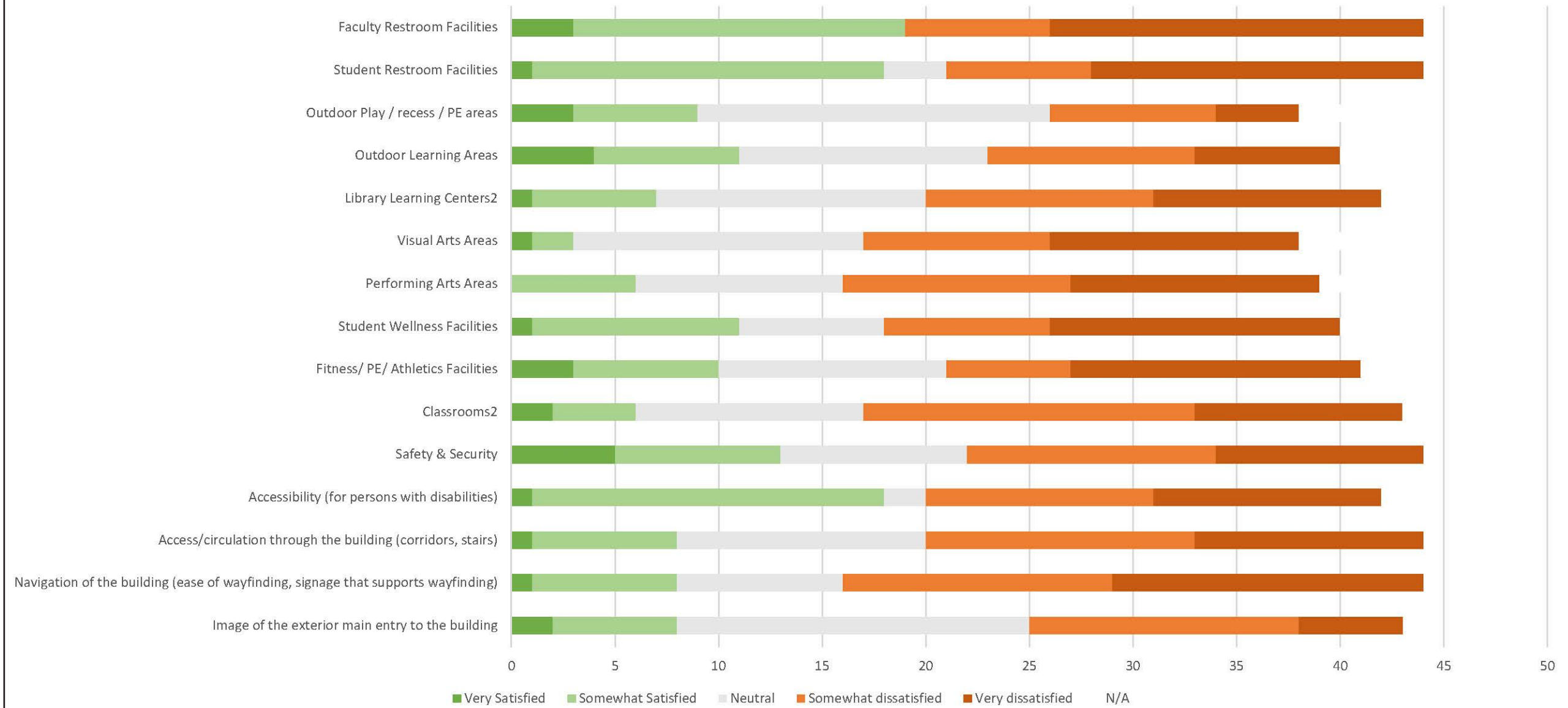


# Franklin Middle School

*Faculty/Staff Survey*

### Faculty/Staff – Franklin

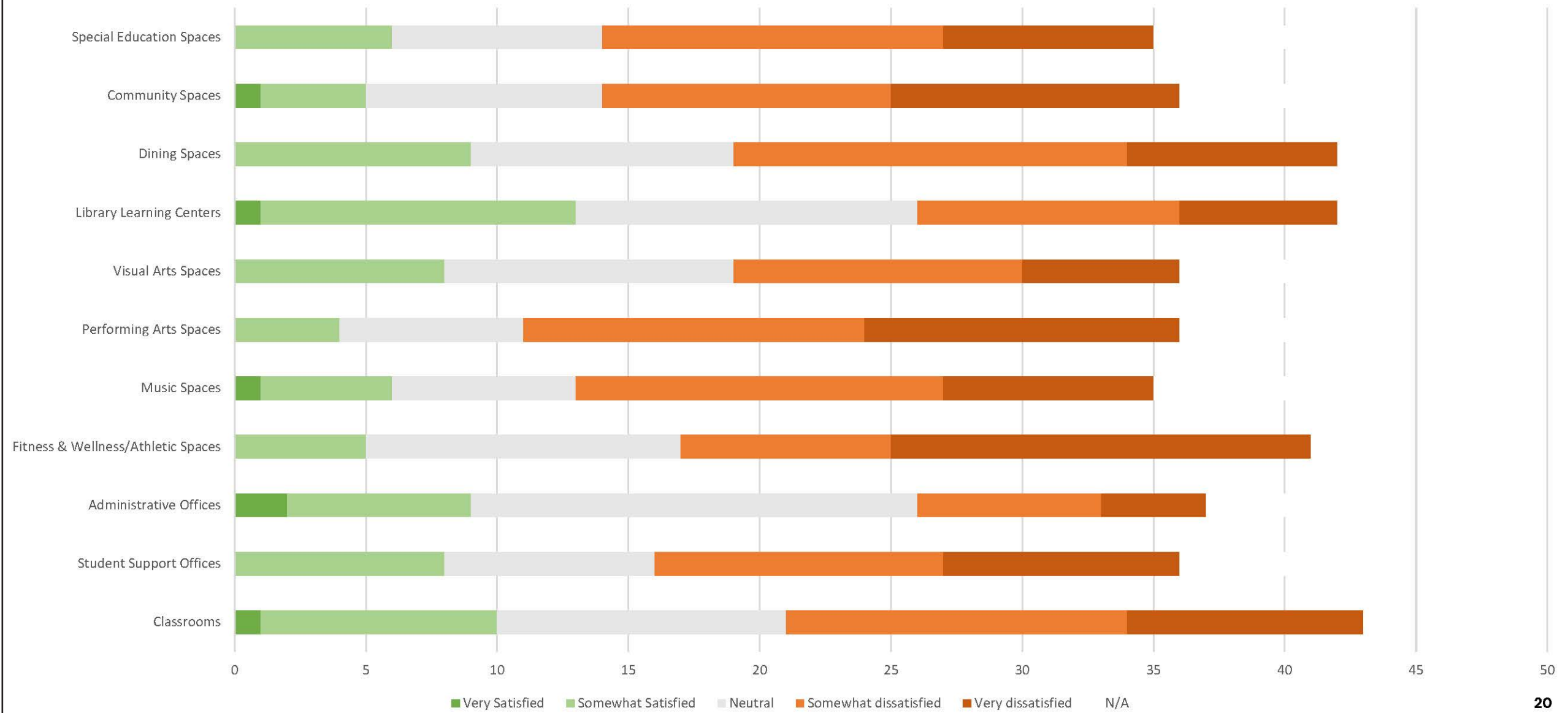
How satisfied are you with the **following aspects of your current building?**





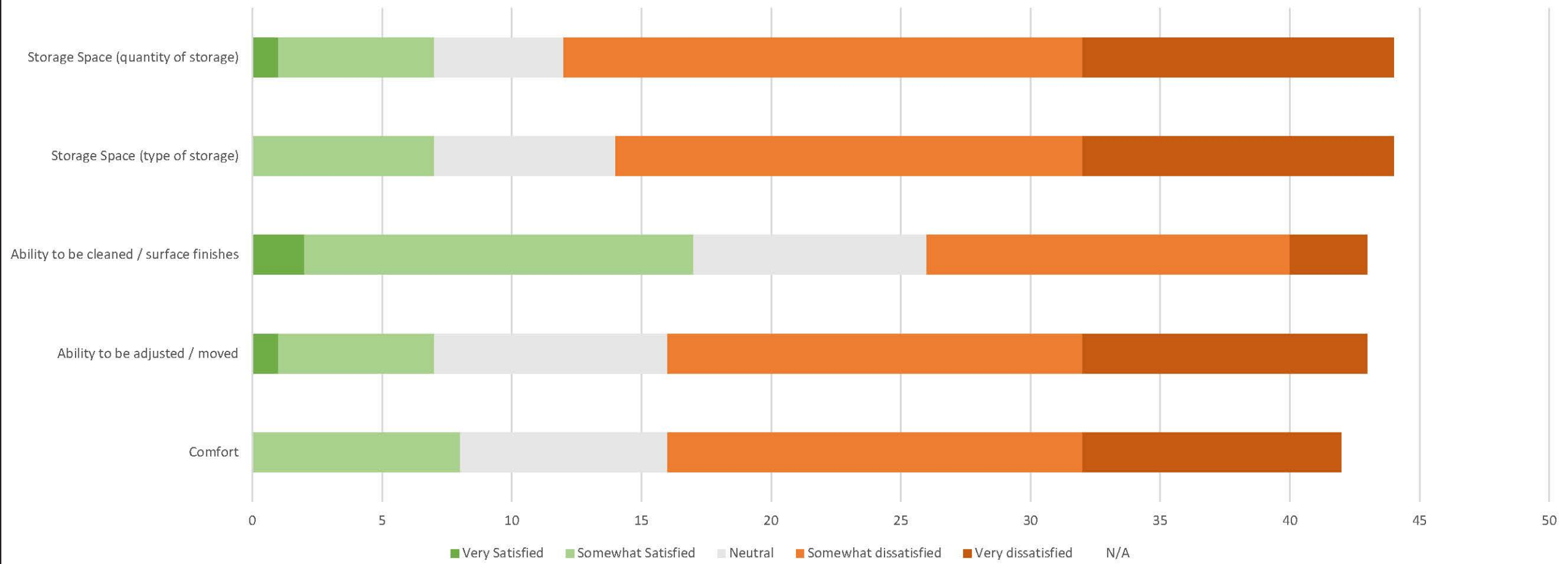
### Faculty/Staff – Franklin

How satisfied are you with the **space size** of the following building components?



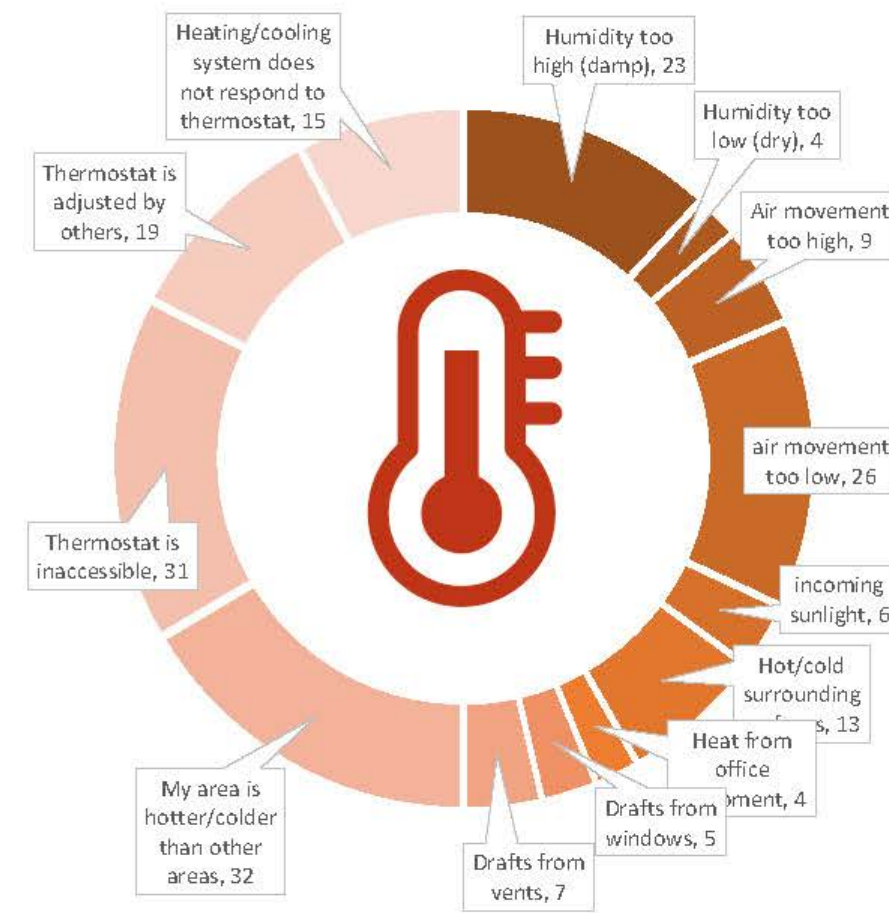
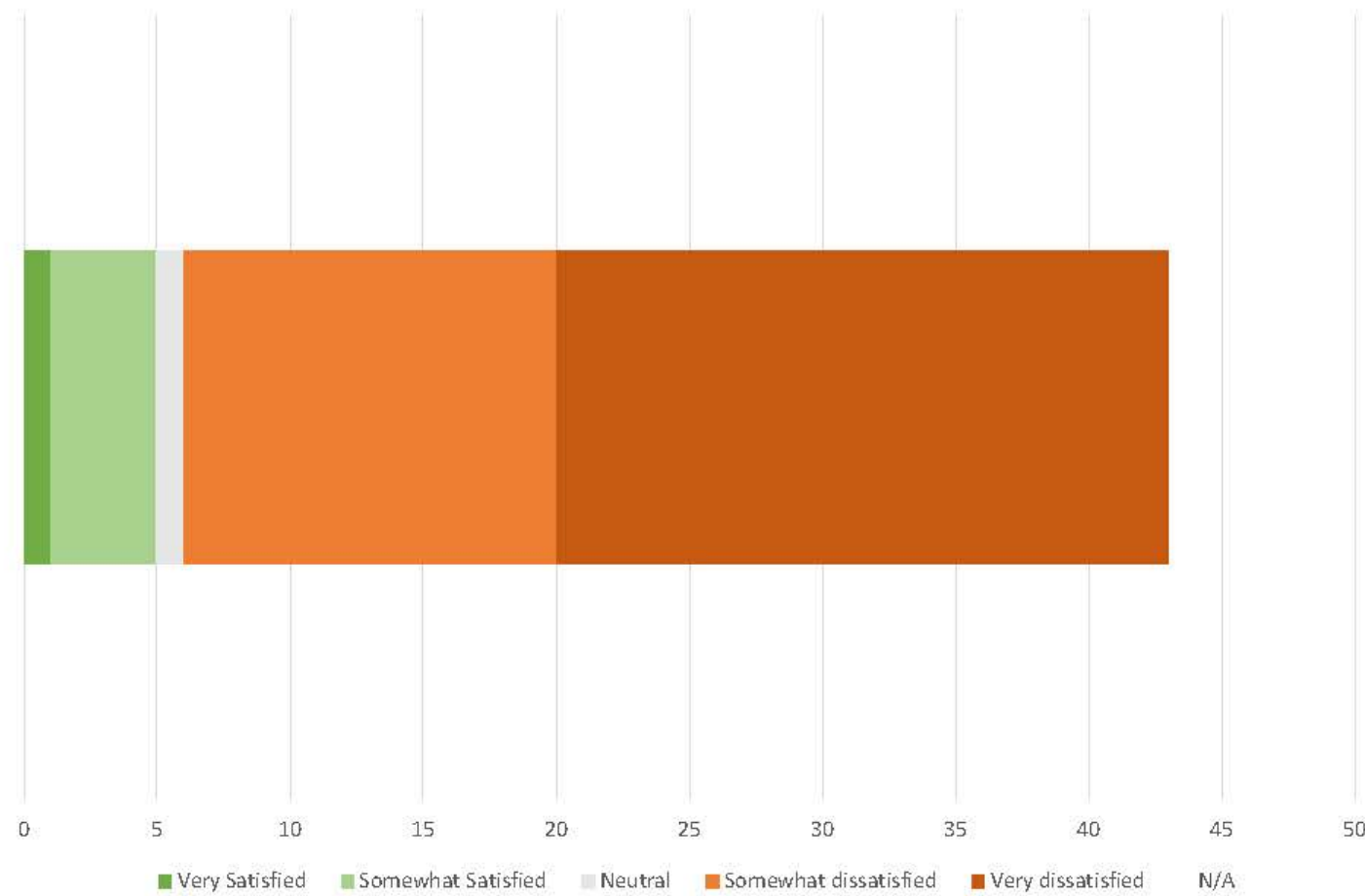
### Faculty/Staff – Franklin

How satisfied are you with the **furnishings** in your space?



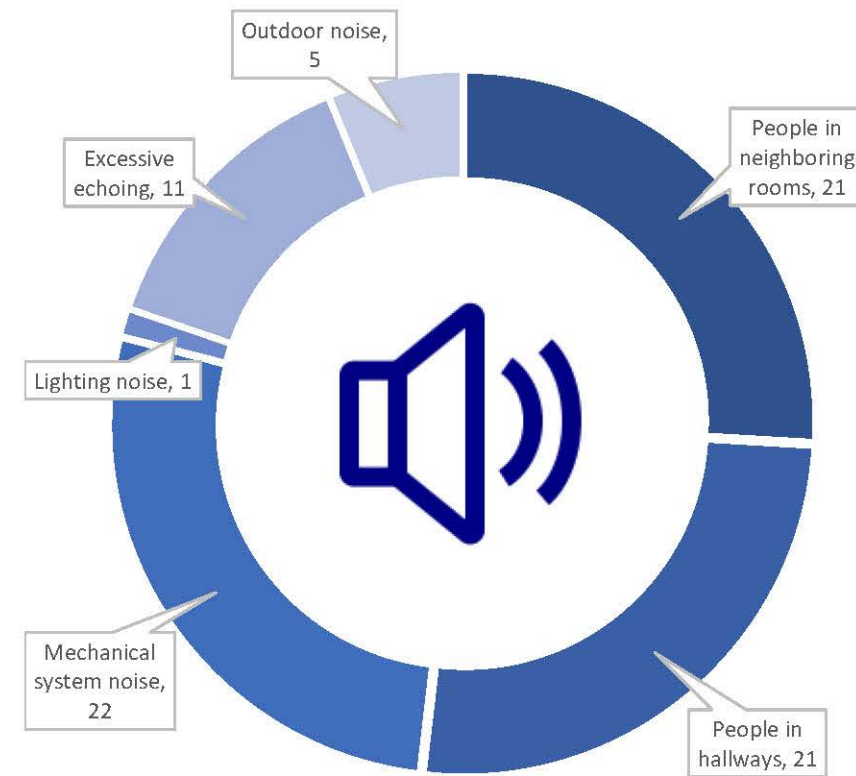
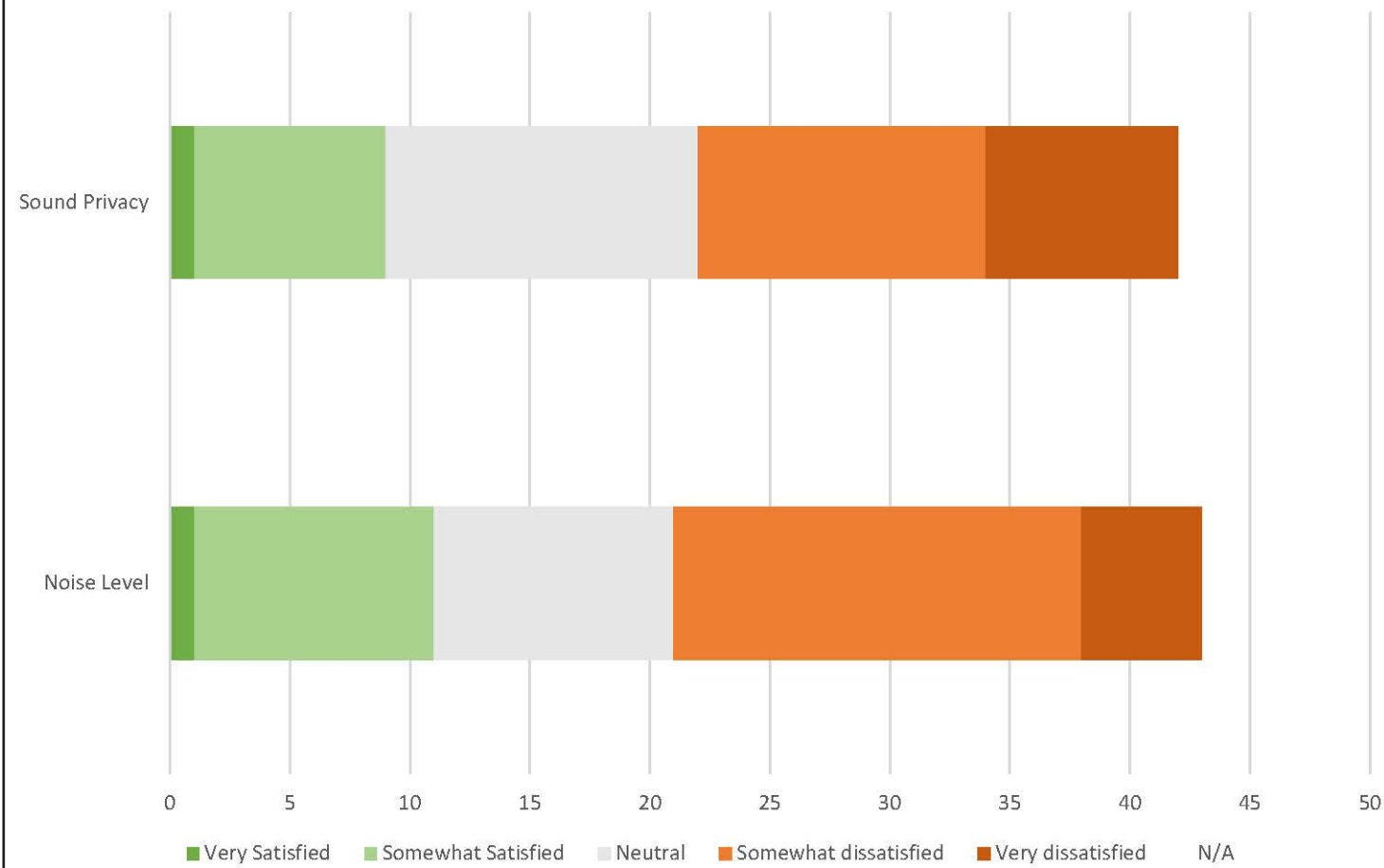
### Faculty/Staff – Franklin

How satisfied are you with the **temperature** of your current space?



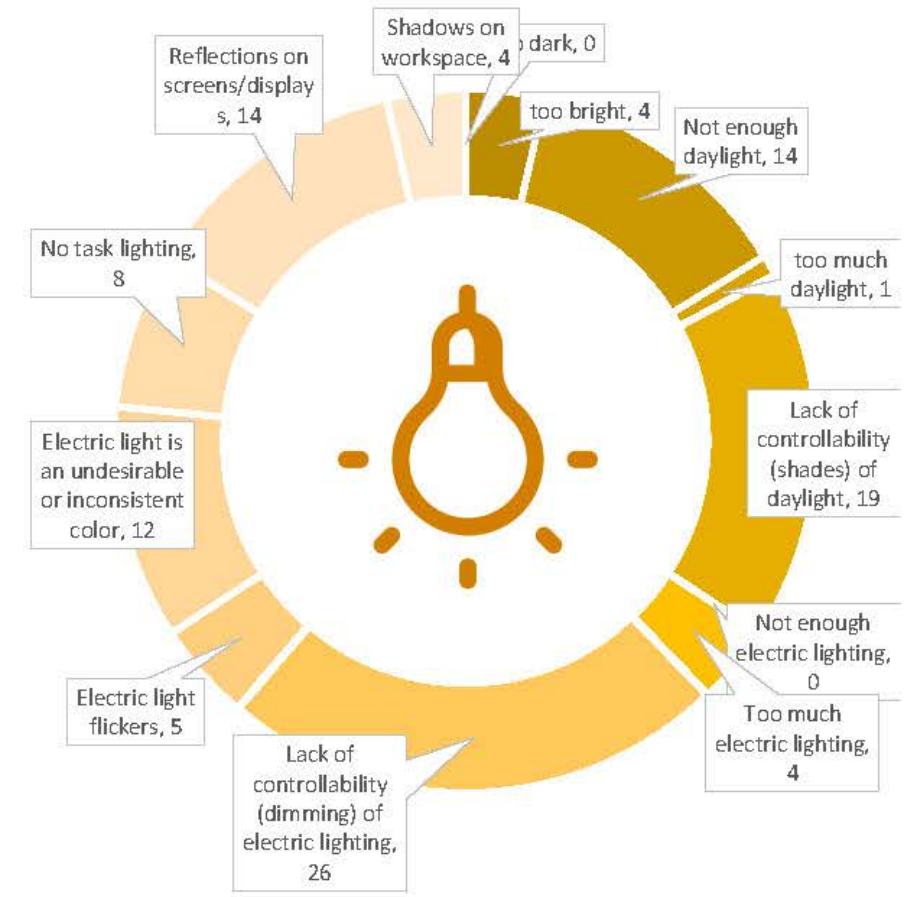
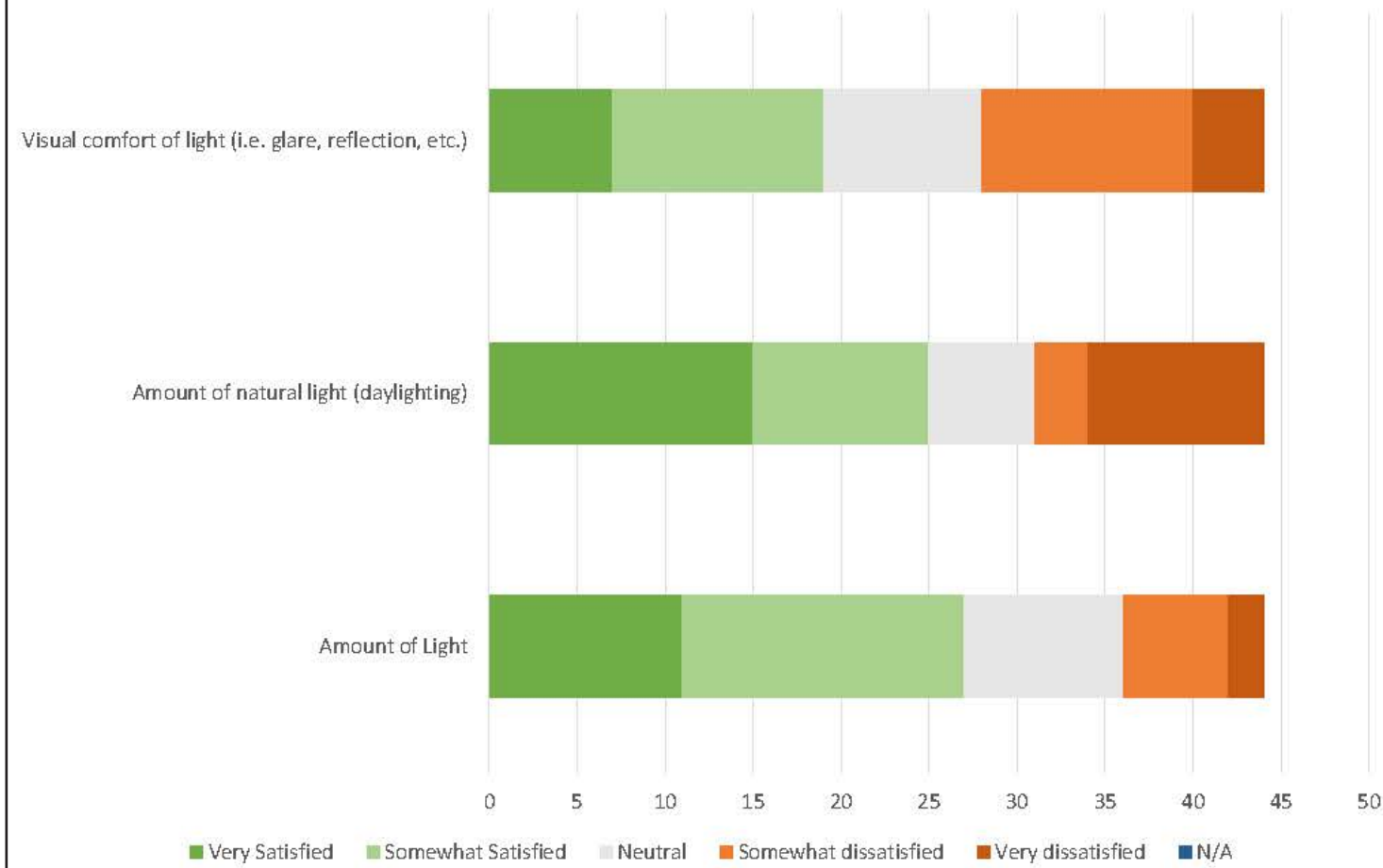
### Faculty/Staff – Franklin

How satisfied are you with the **acoustic characteristics** of your current space?



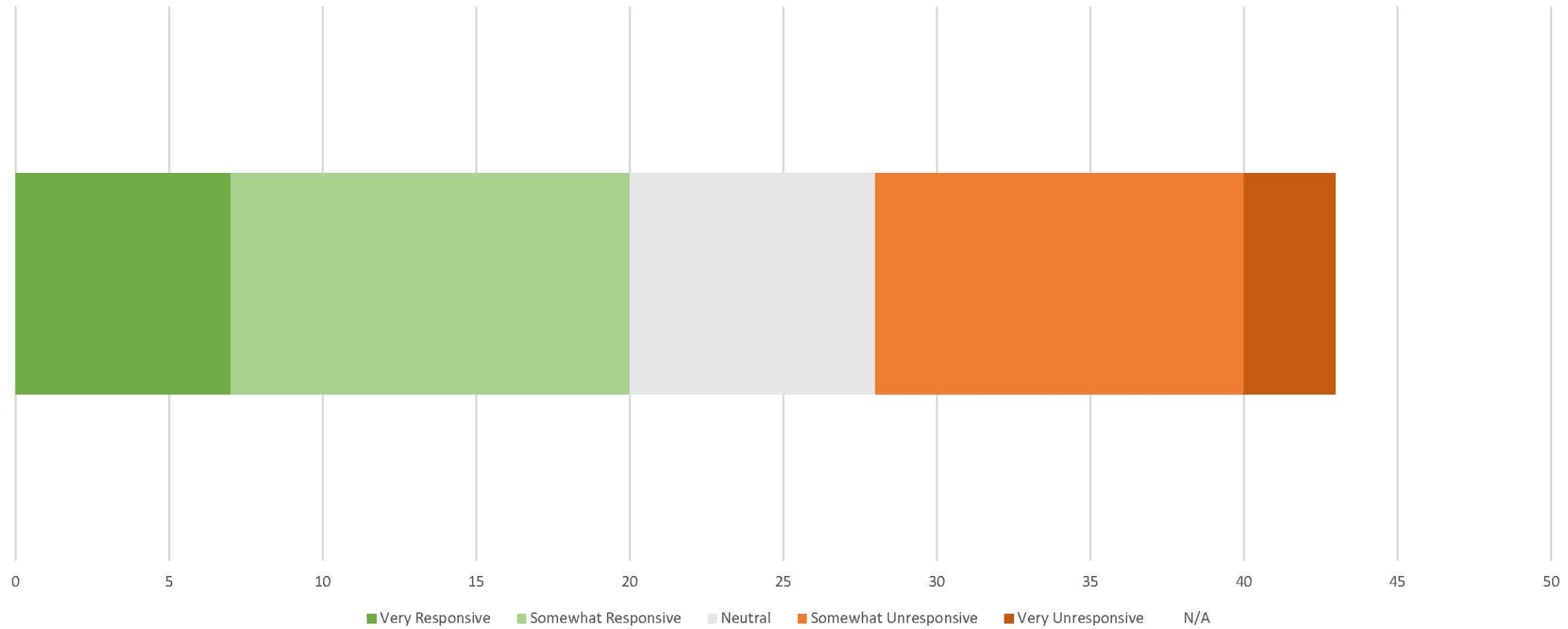
### Faculty/Staff – Franklin

How satisfied are you with the **lighting characteristics** of your current space?



**Faculty/Staff – Franklin**

From your perspective, how **responsive** is your current building to **current and future best practices** for teaching and learning?

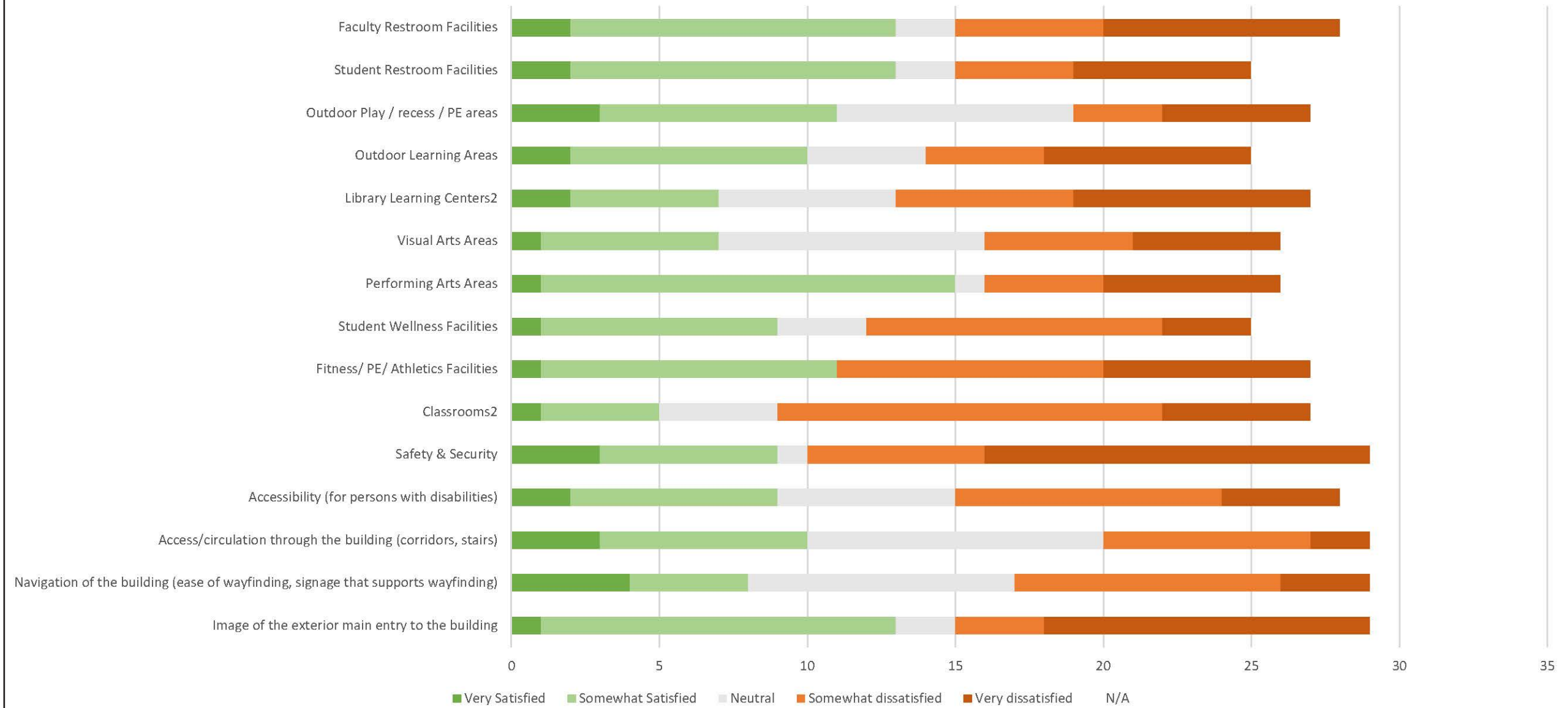


# Monroe Middle School

*Faculty/Staff Survey*

### Faculty/Staff – Monroe

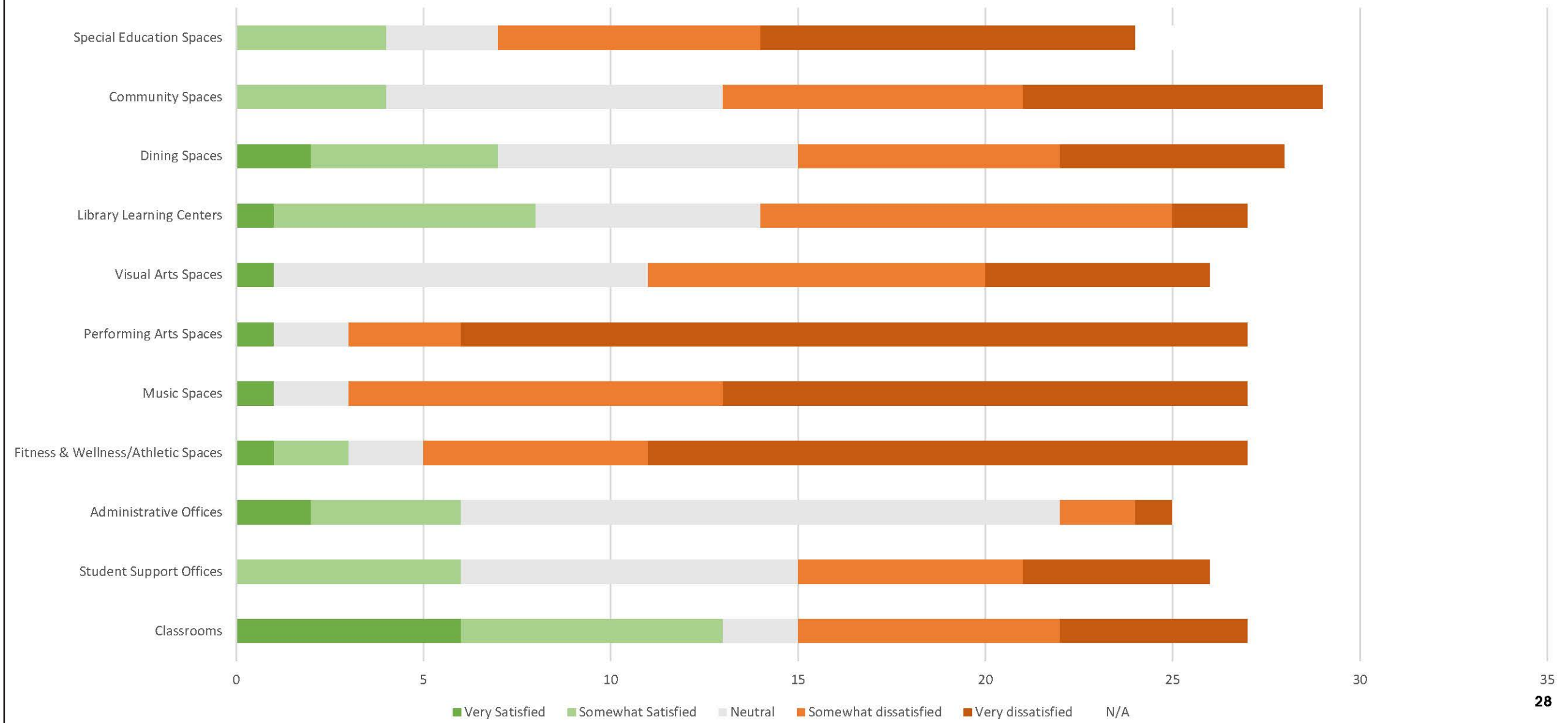
How satisfied are you with the **following aspects of your current building?**





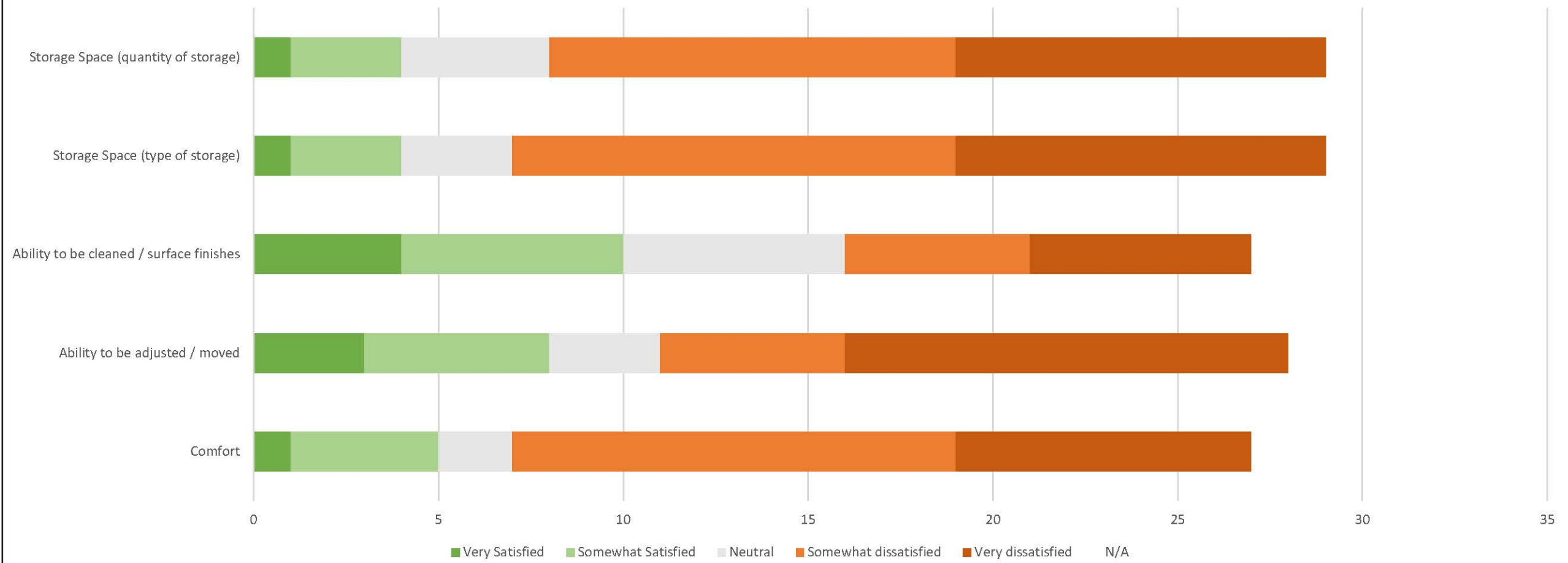
### Faculty/Staff – Monroe

How satisfied are you with the **space size** of the following building components?



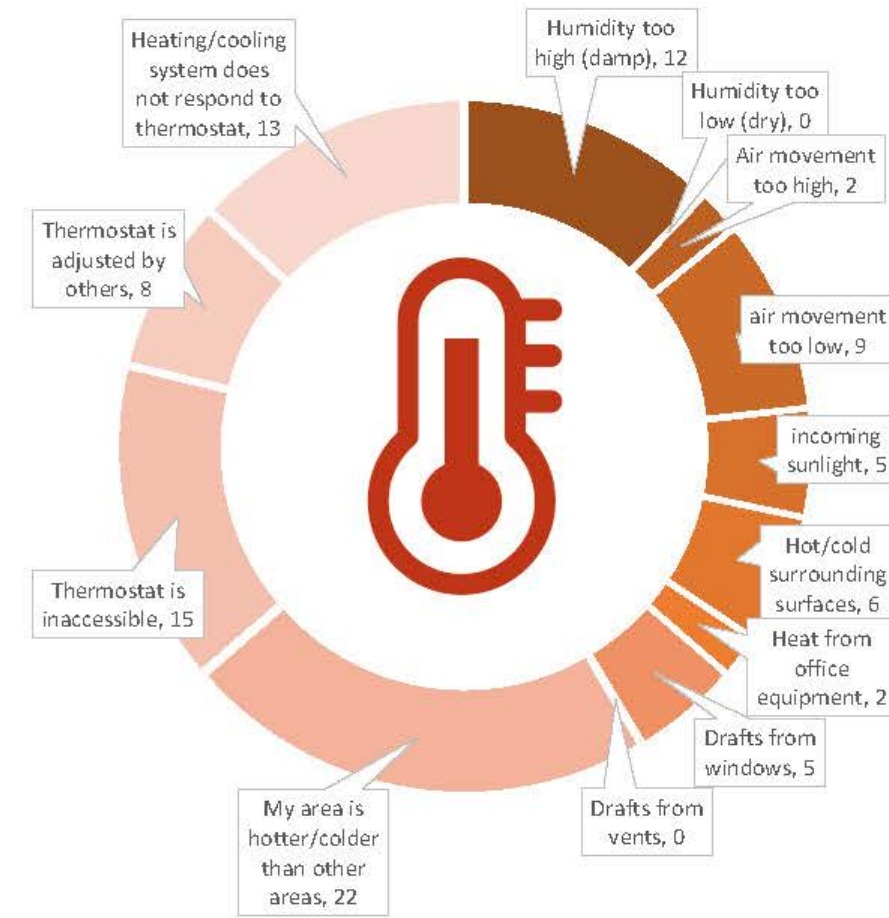
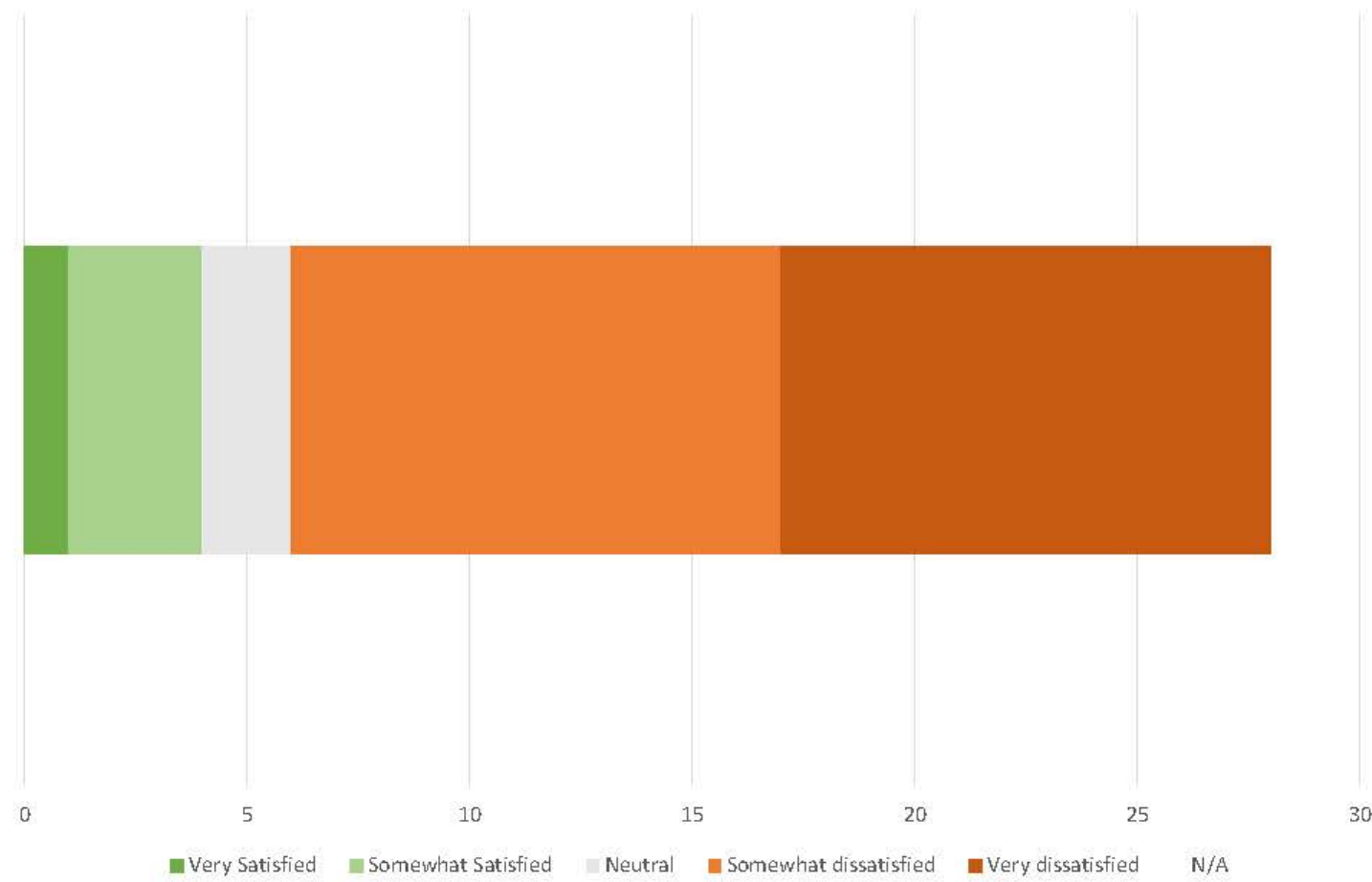
### Faculty/Staff – Monroe

How satisfied are you with the **furnishings** in your space?



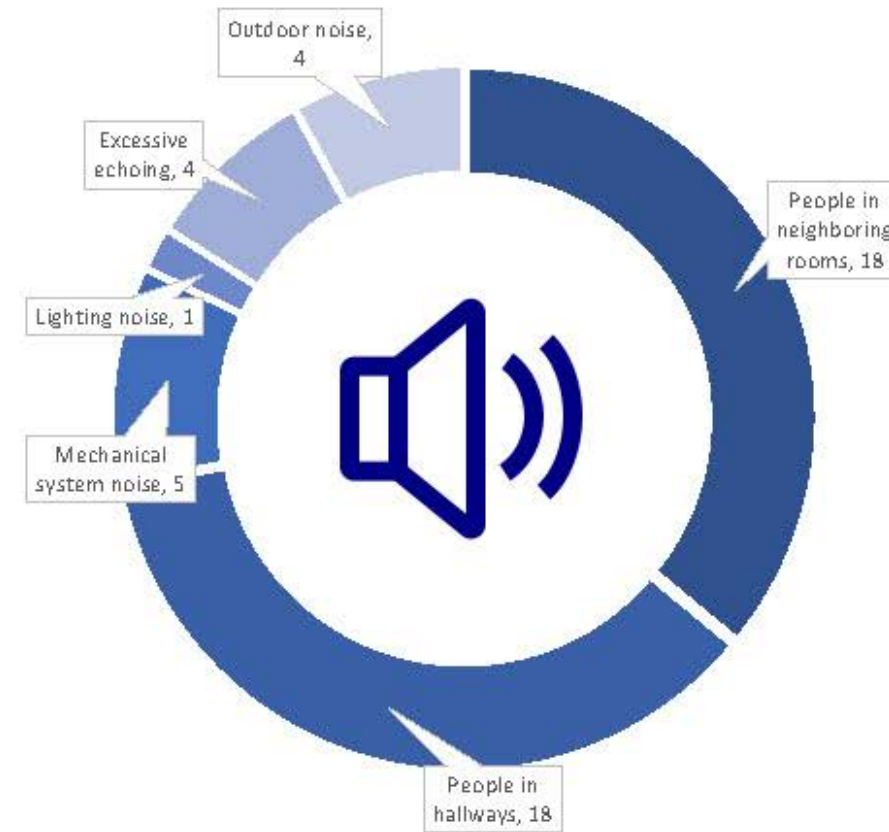
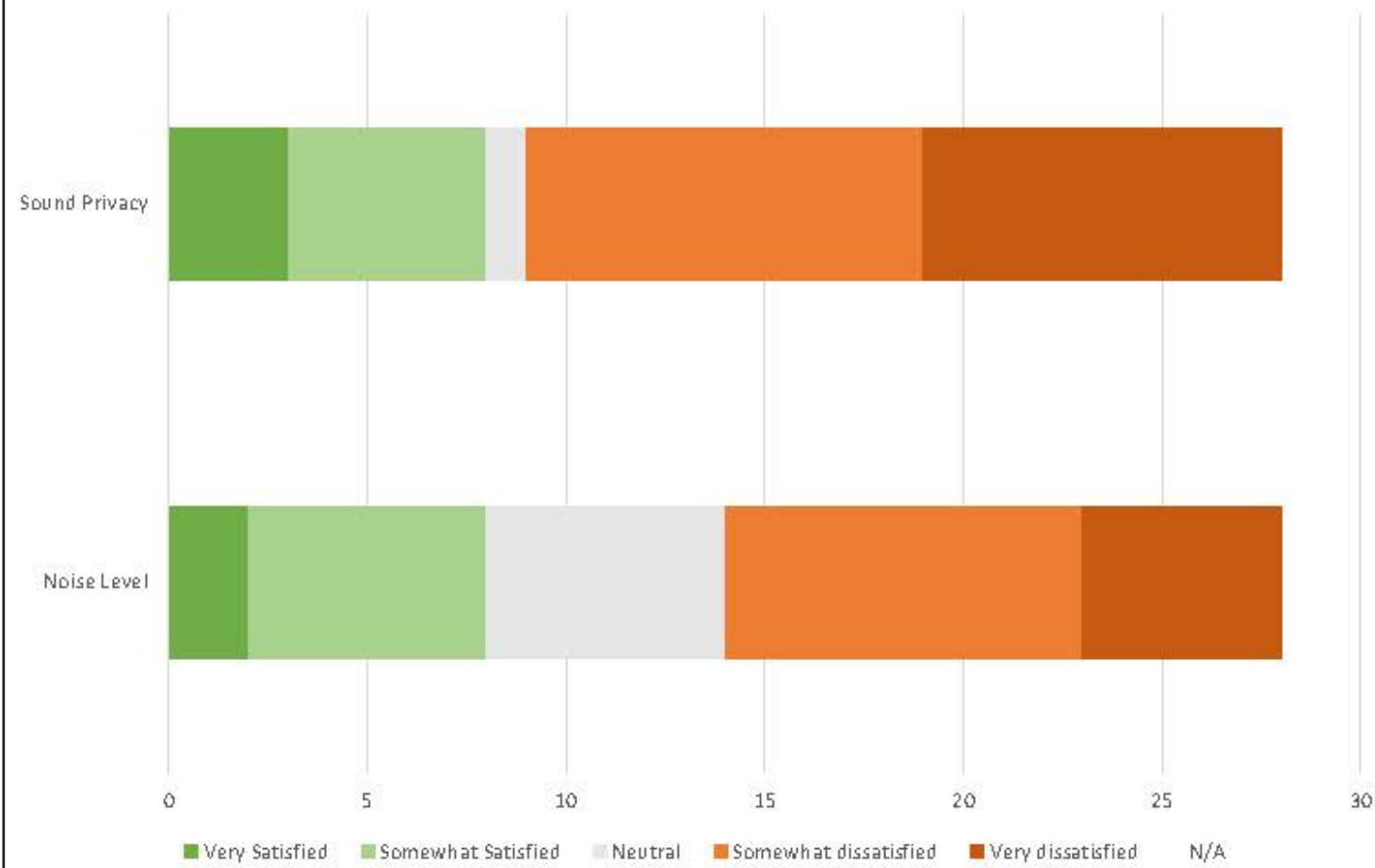
### Faculty/Staff - Monroe

How satisfied are you with the **temperature** of your current space?



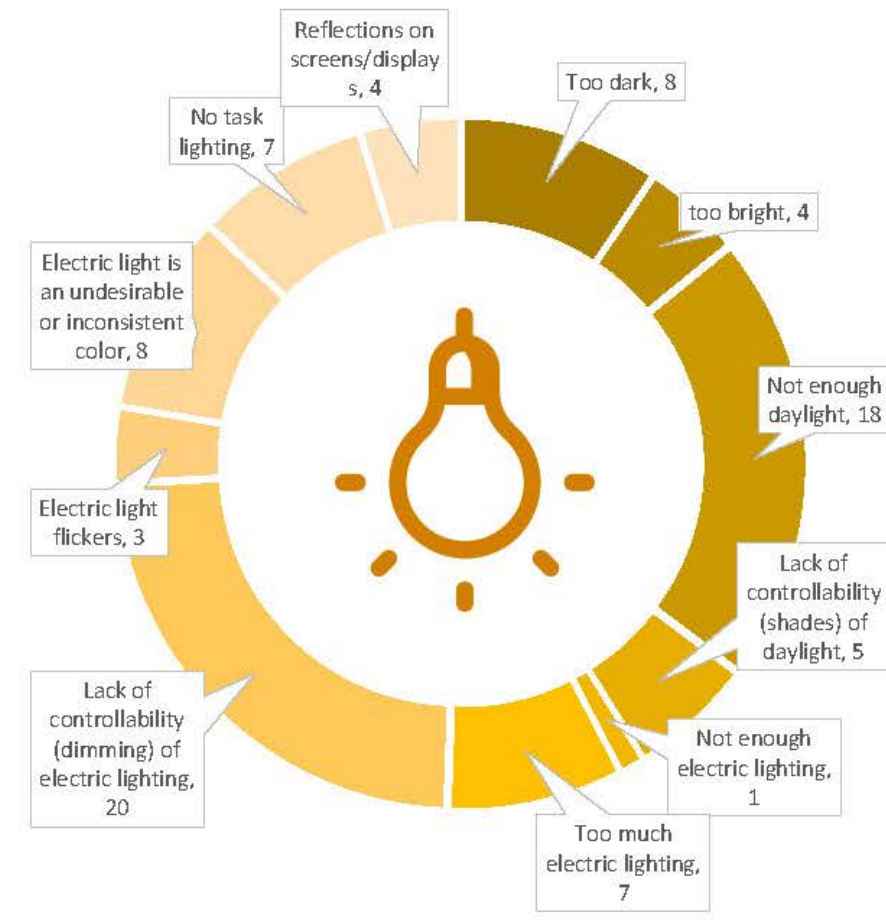
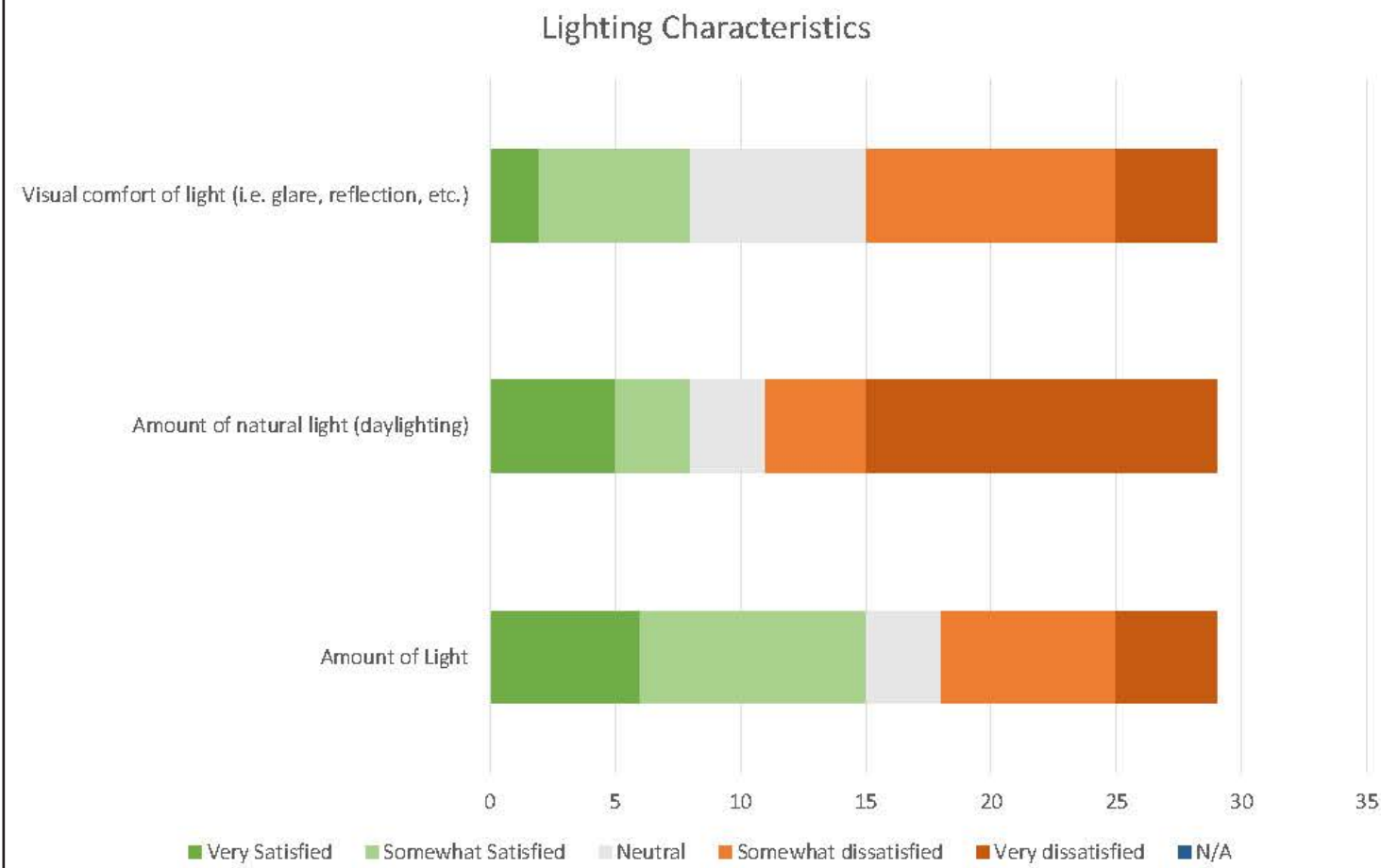
### Faculty/Staff – Monroe

How satisfied are you with the **acoustic characteristics** of your current space?



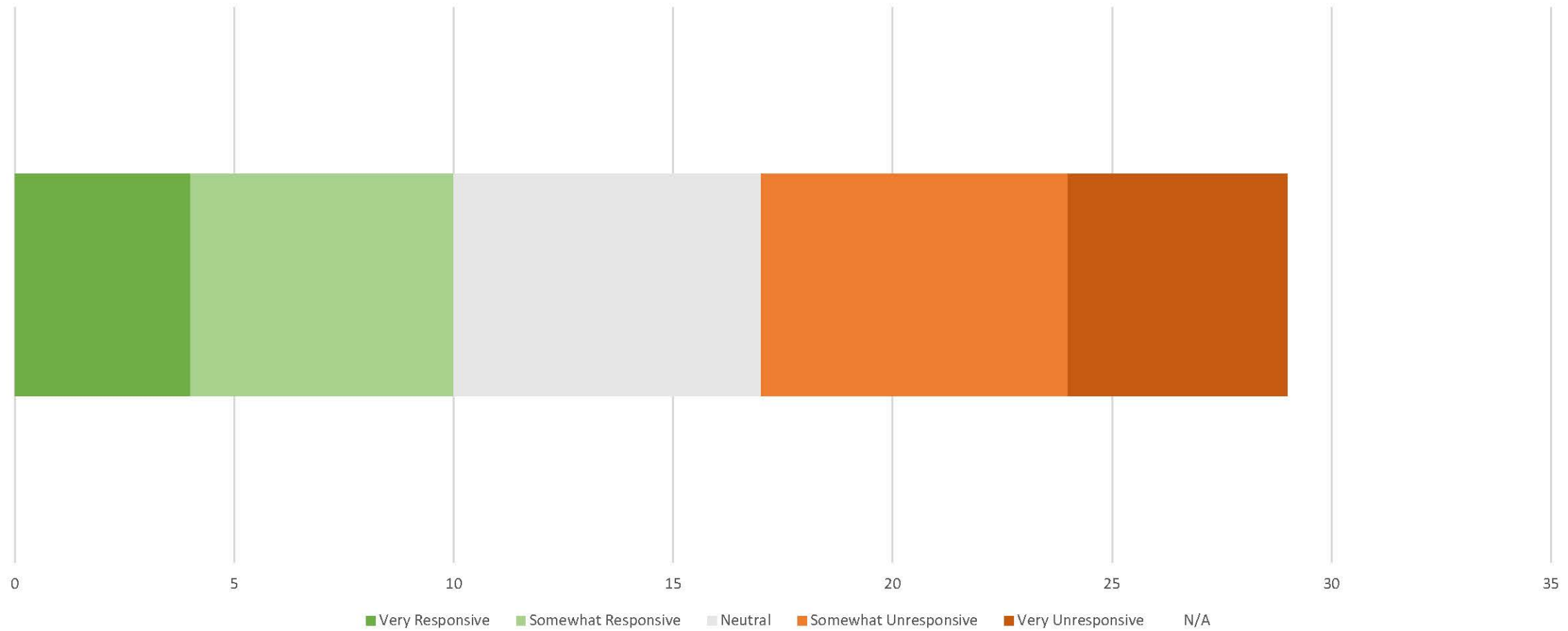
### Faculty/Staff – Monroe

How satisfied are you with the **lighting characteristics** of your current space?



**Faculty/Staff – Monroe**

From your perspective, how **responsive** is your current building to **current and future best practices** for teaching and learning?

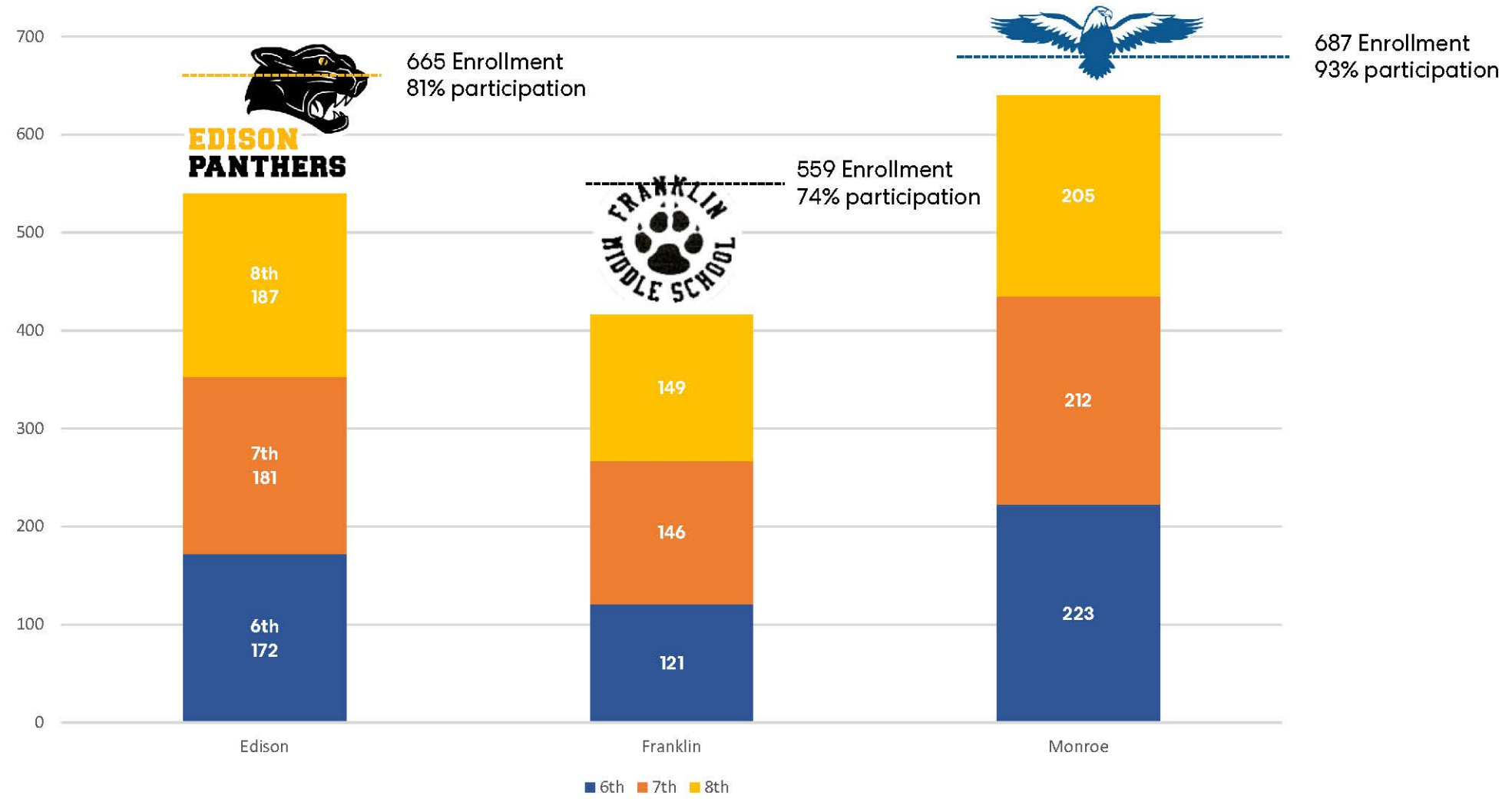


# Overall Results

*Student Survey*

1

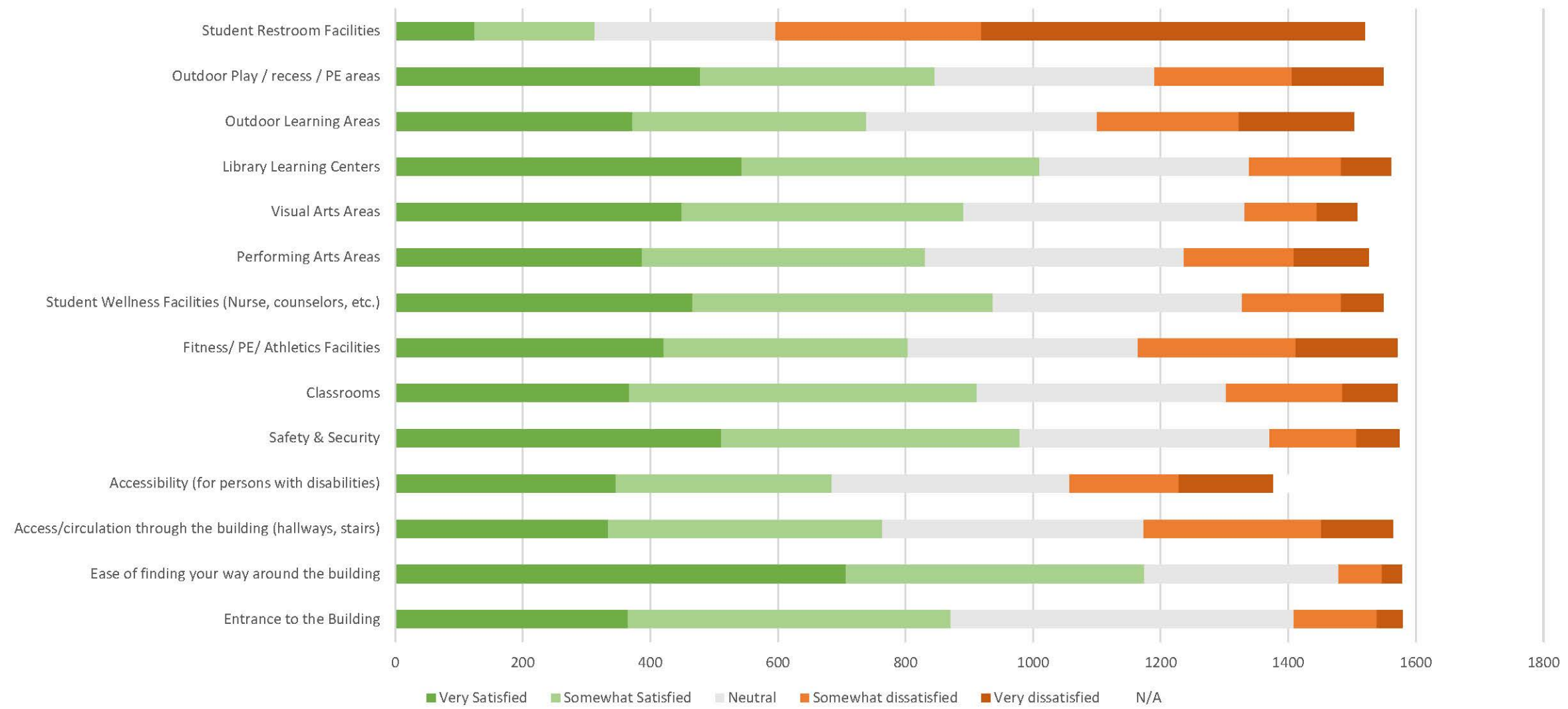
### Student Survey – Overall Participant Breakdown





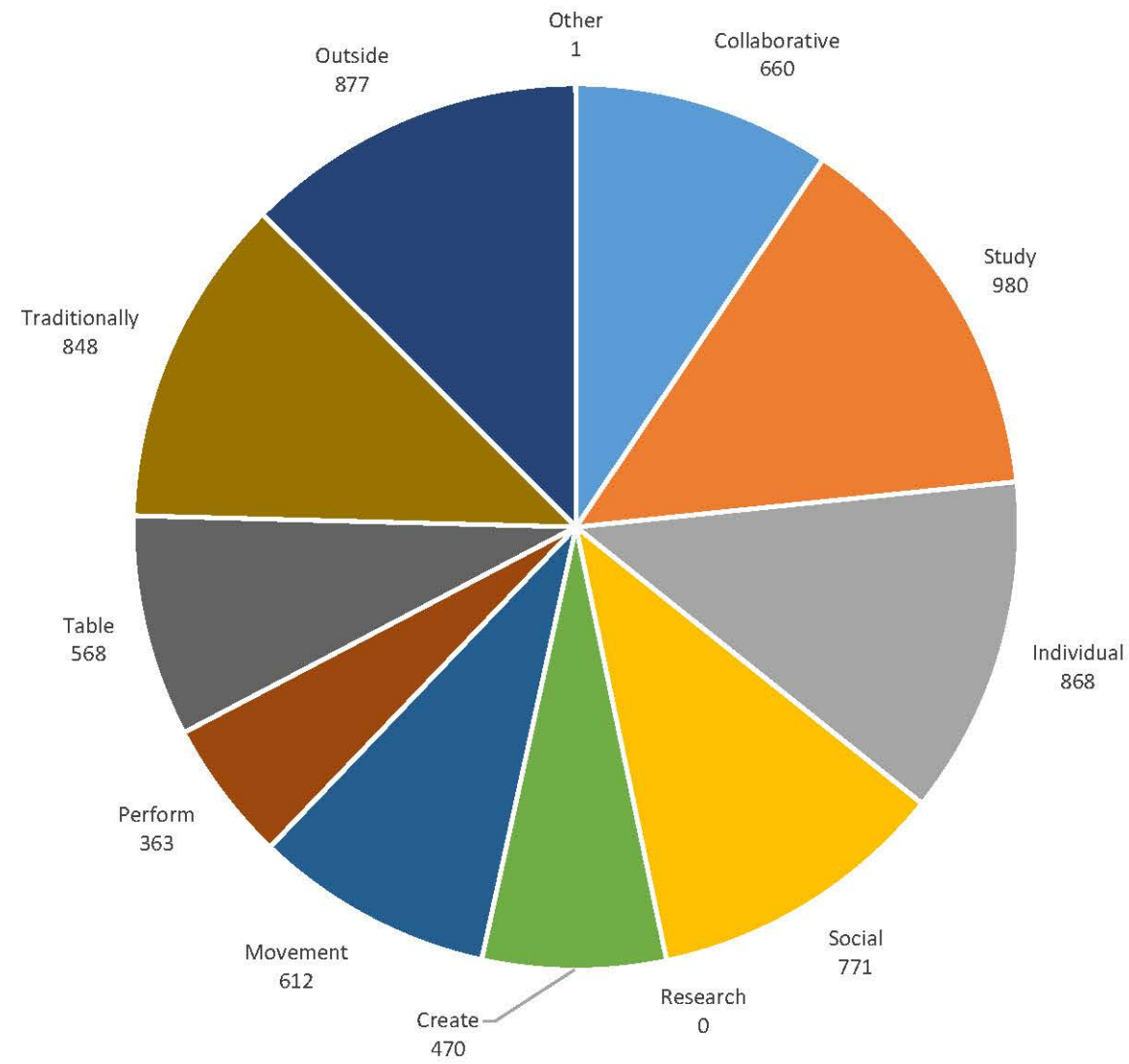
### Student Survey – Overall

How satisfied are you with the **following aspects of your current building?**



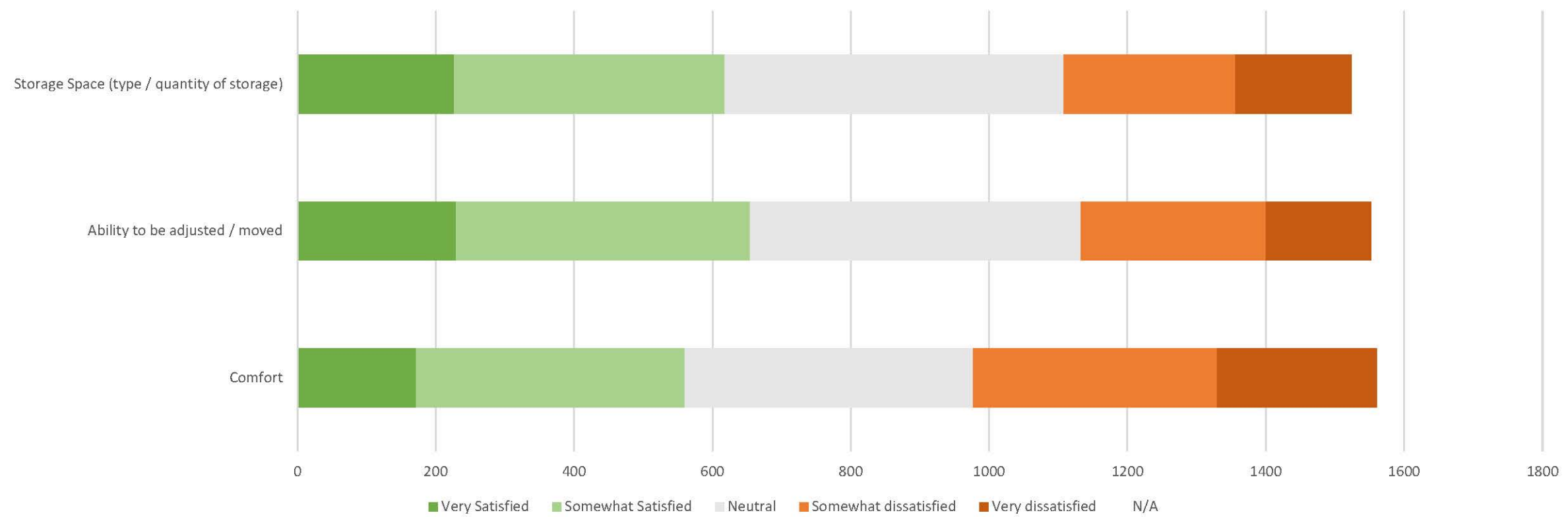
### Student Survey – Overall

Where are your *favorite types of spaces* in which to learn?



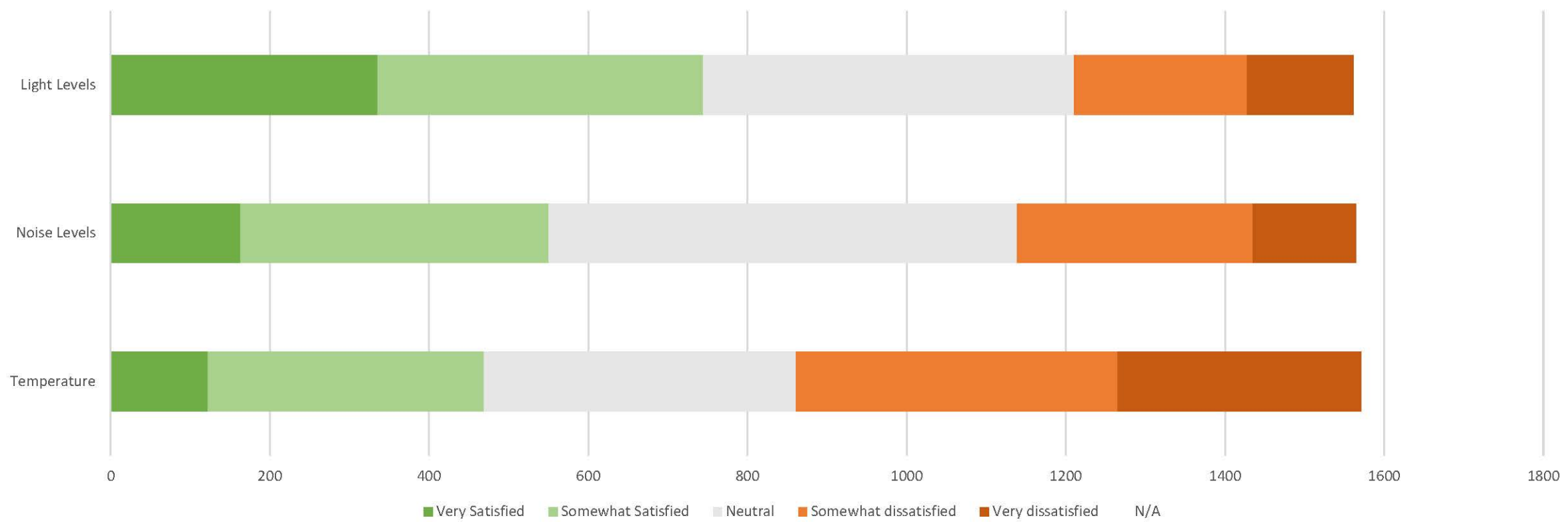
### Student Survey – Overall

How satisfied are you with the **current classroom furniture**?



### Student Survey – Overall

How satisfied are you with your **classroom experience**?



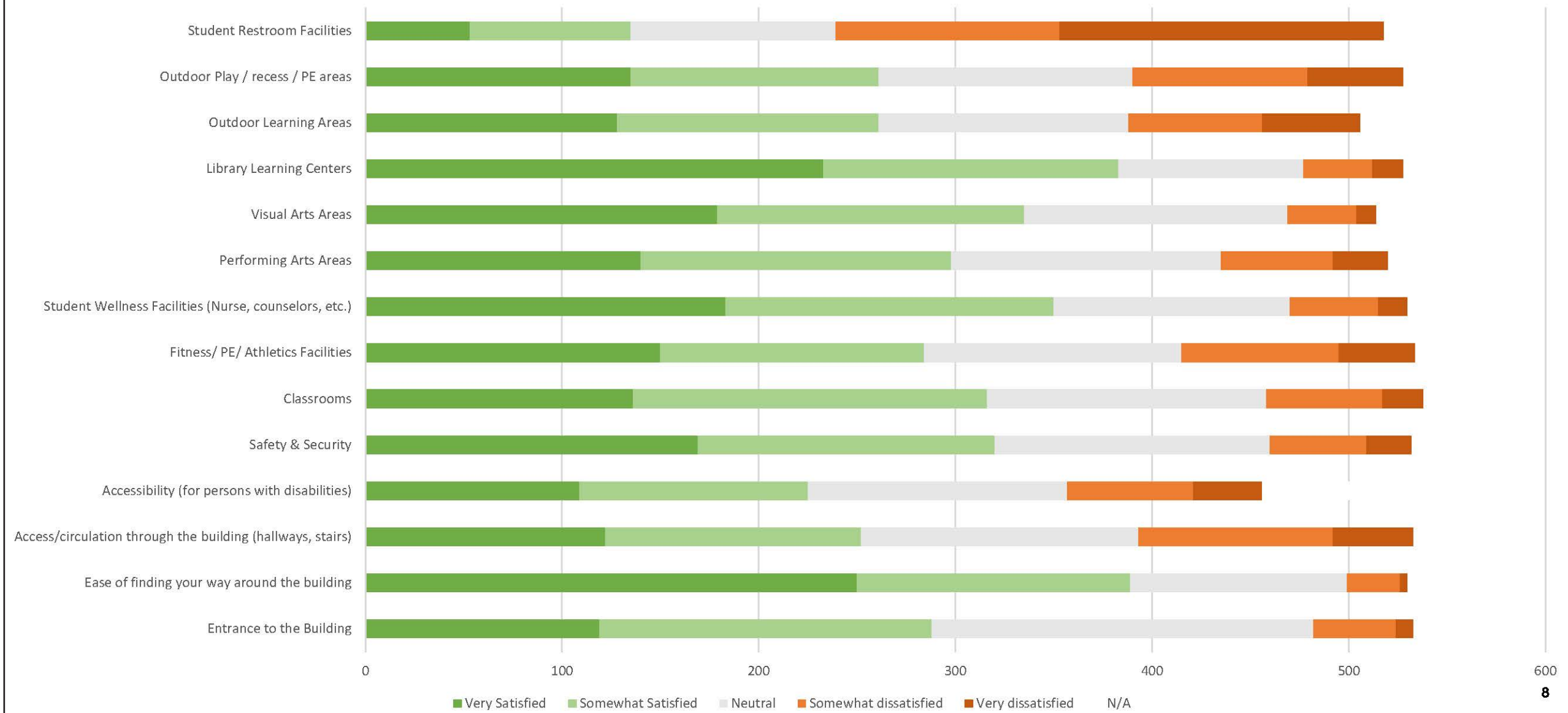
# Edison Middle School

*Student Survey*

7

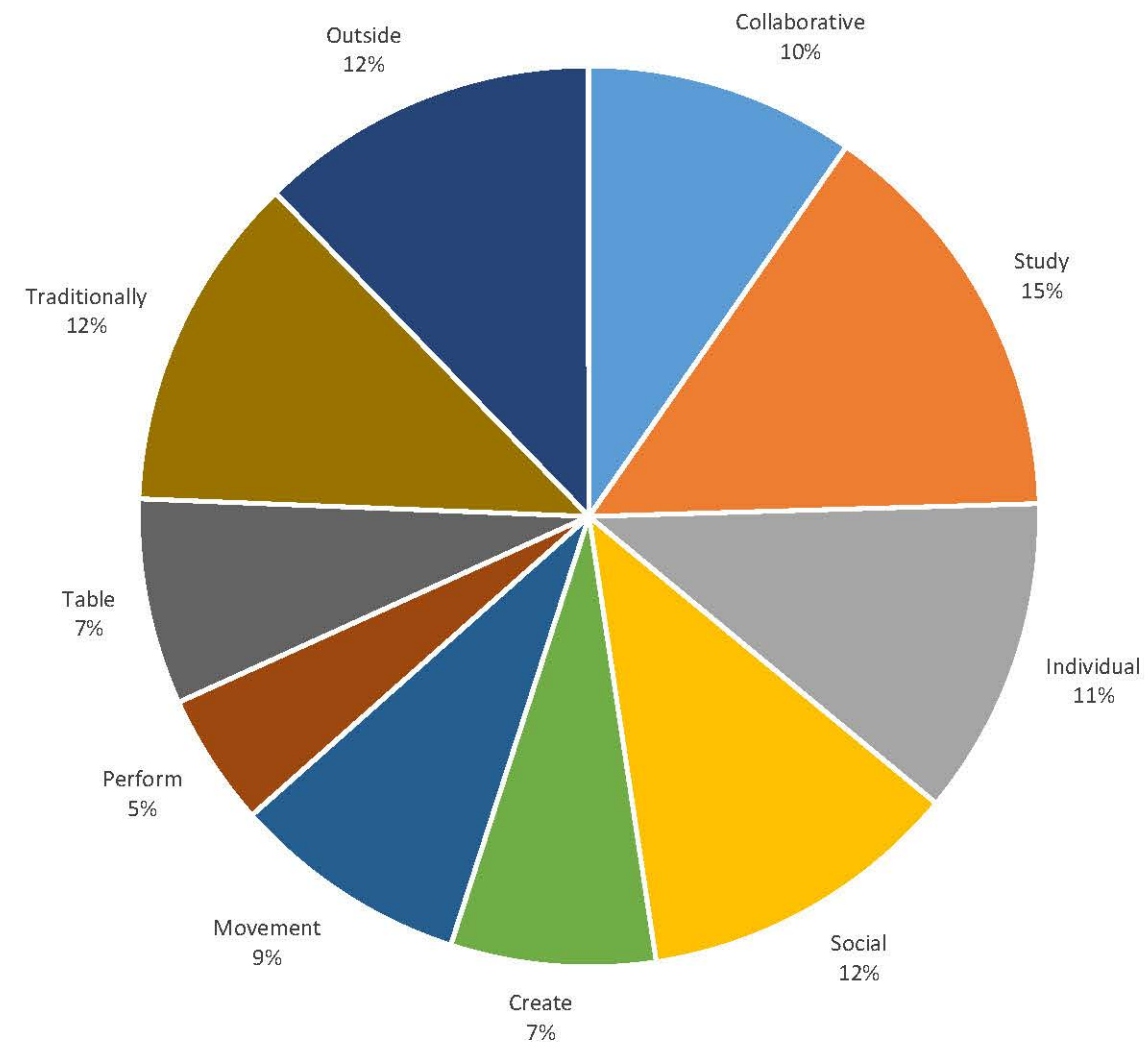
### Student Survey – Edison

How satisfied are you with the **following aspects of your current building?**



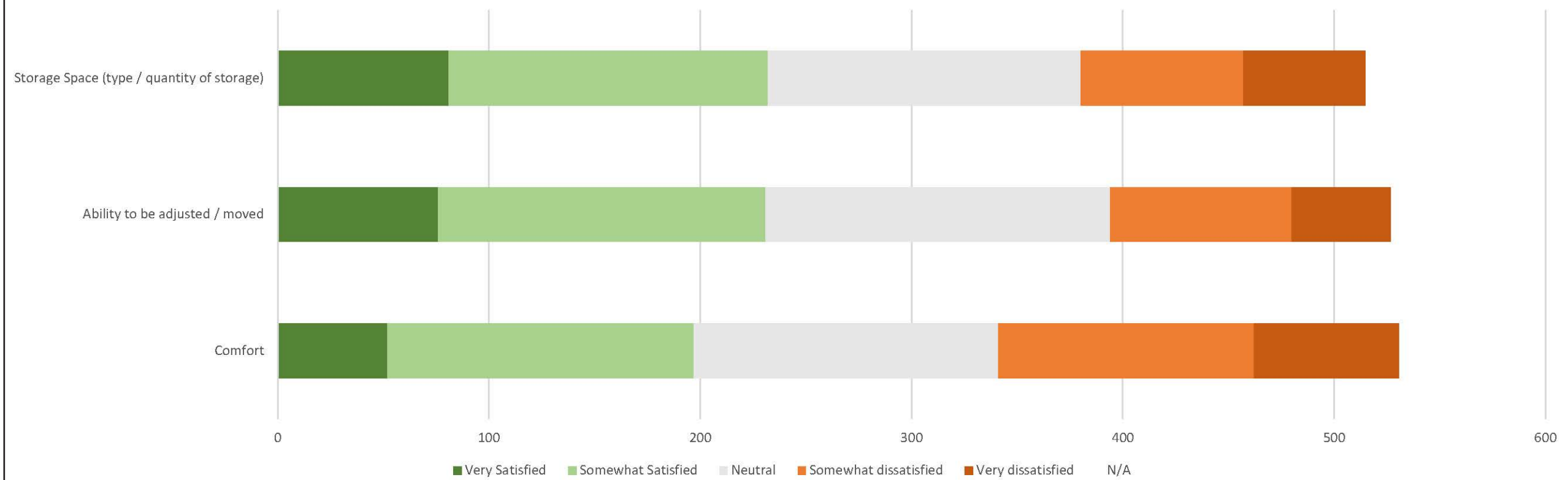
### Student Survey – Edison

Where are your *favorite types of spaces* in which to learn?



### Student Survey – Edison

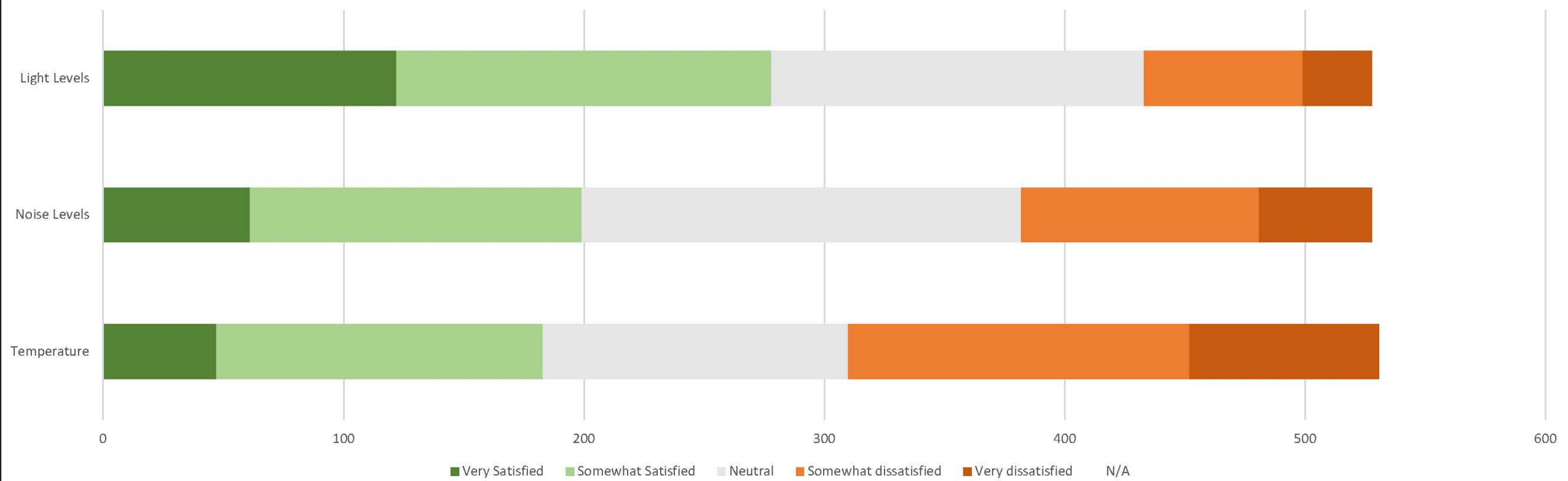
How satisfied are you with the **current classroom furniture**?





### Student Survey – Edison

How satisfied are you with your **classroom experience**?

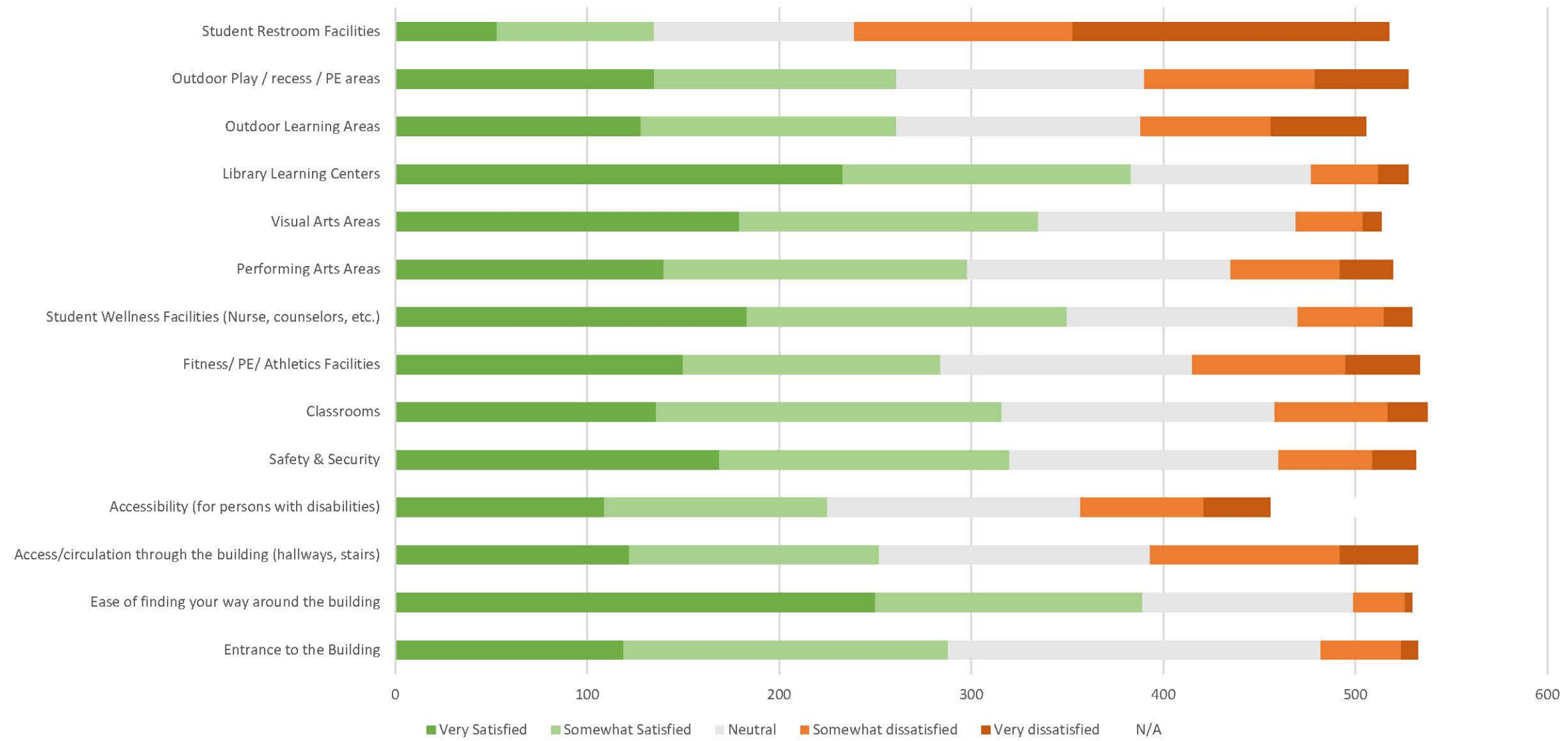


# Franklin Middle School

## *Student Survey*

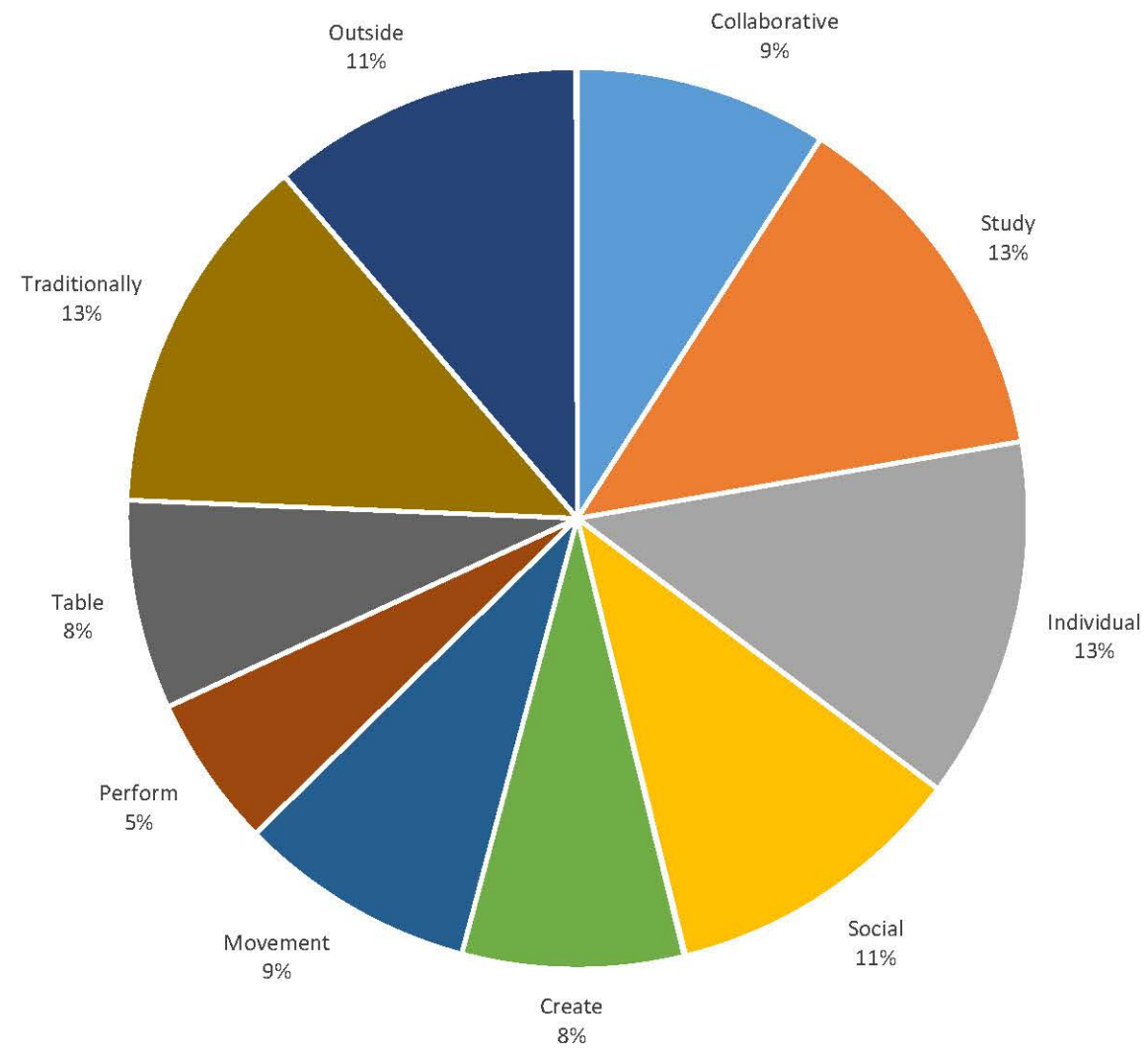
### Student Survey – Franklin

How satisfied are you with the **following aspects of your current building?**



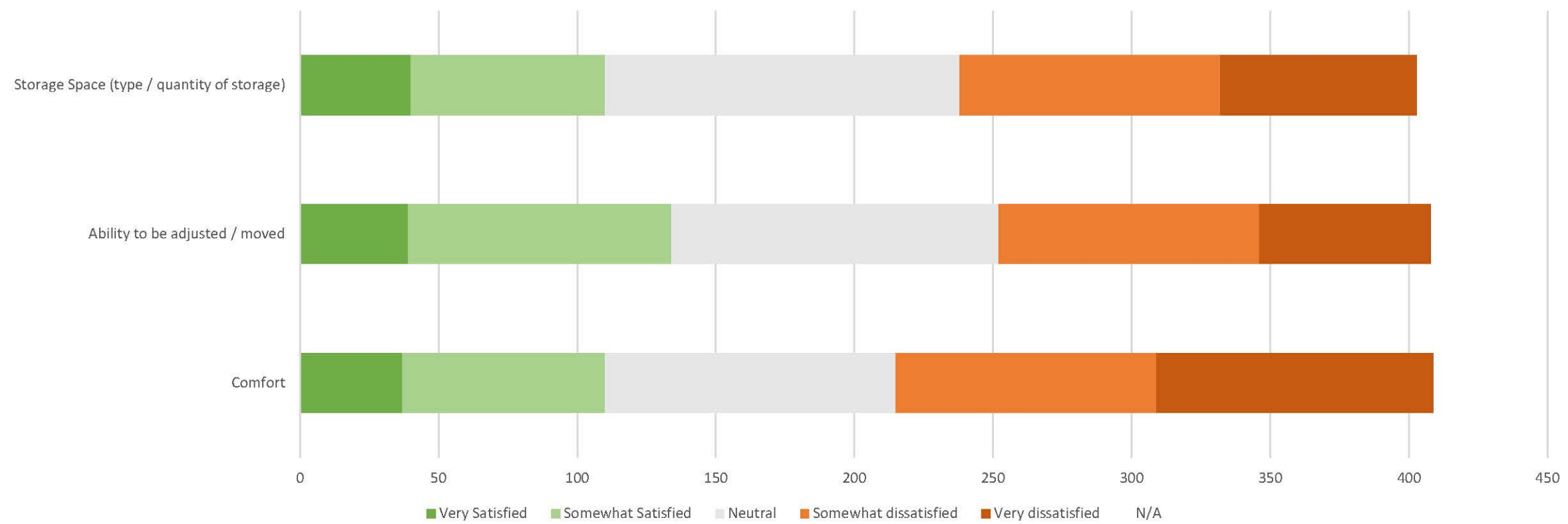
### Student Survey – Franklin

Where are your *favorite types of spaces* in which to learn?



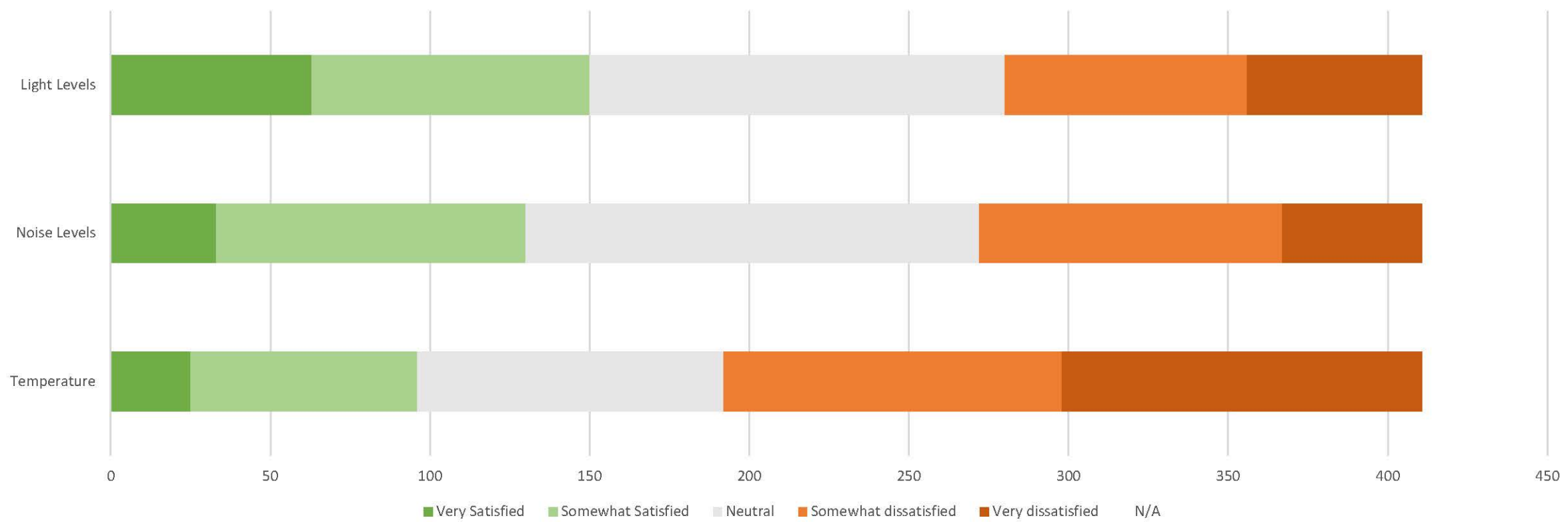
### Student Survey – Franklin

How satisfied are you with the **current classroom furniture**?



### Student Survey – Franklin

How satisfied are you with your **classroom experience**?

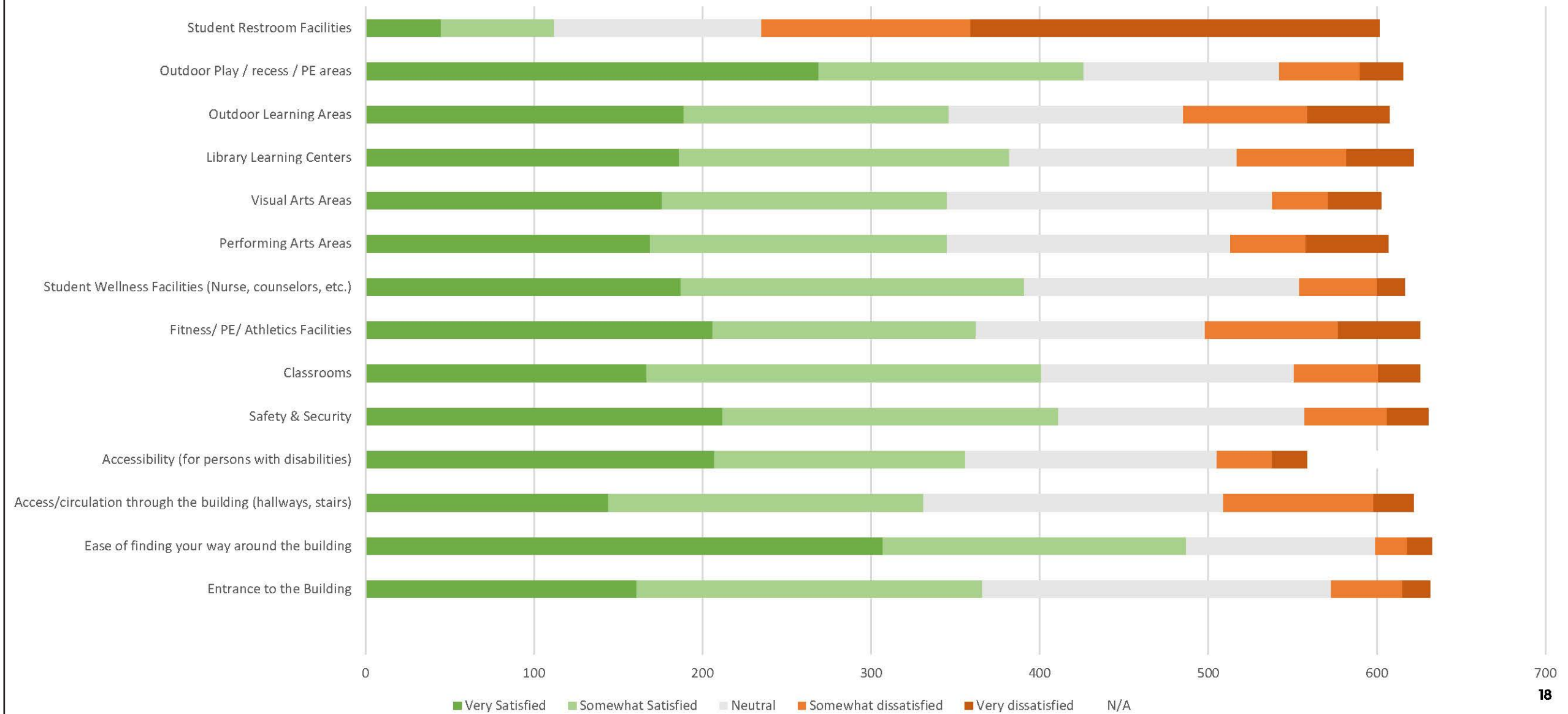


# Monroe Middle School

*Student Survey*

### Student Survey – Monroe

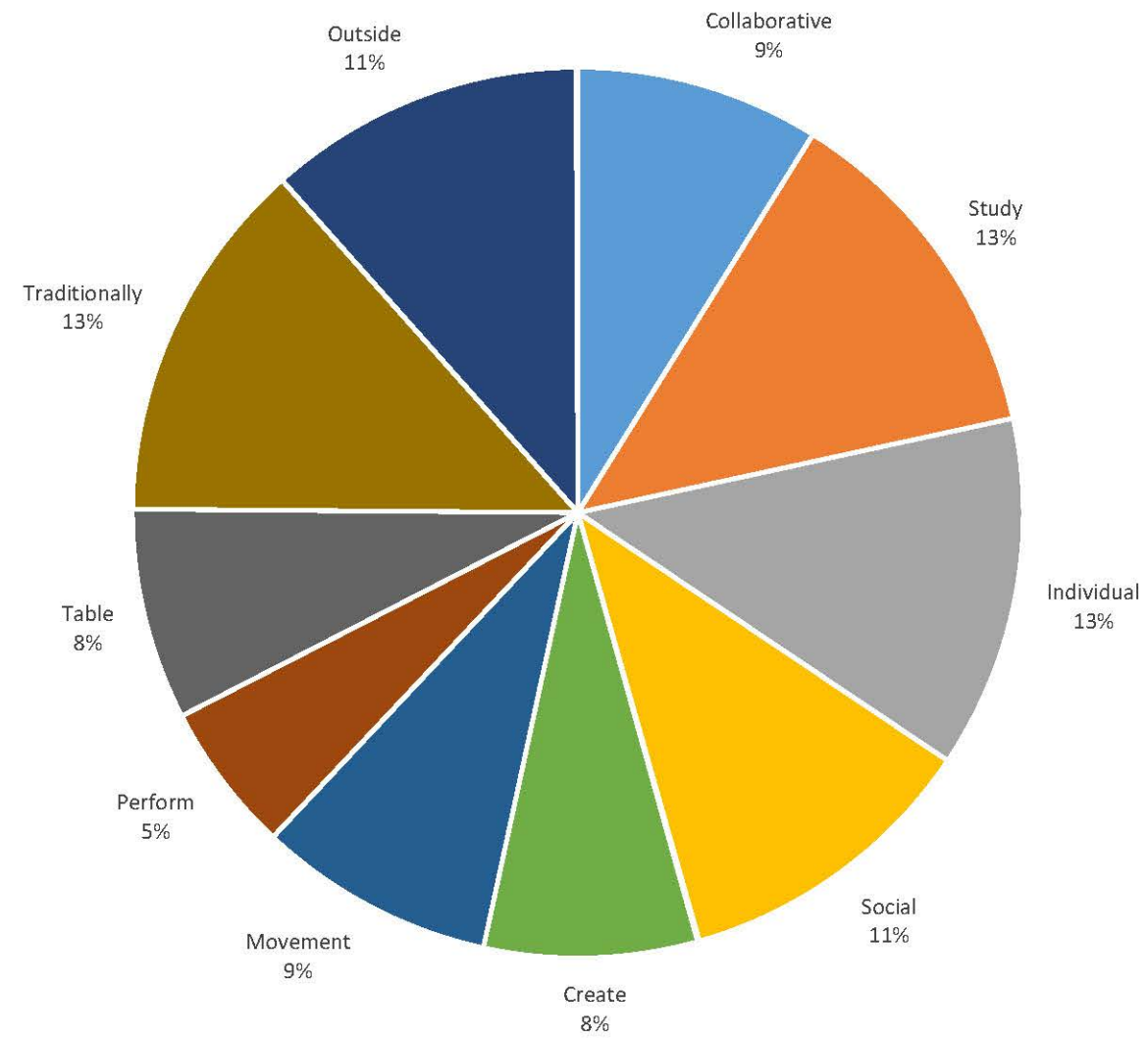
How satisfied are you with the **following aspects of your current building?**





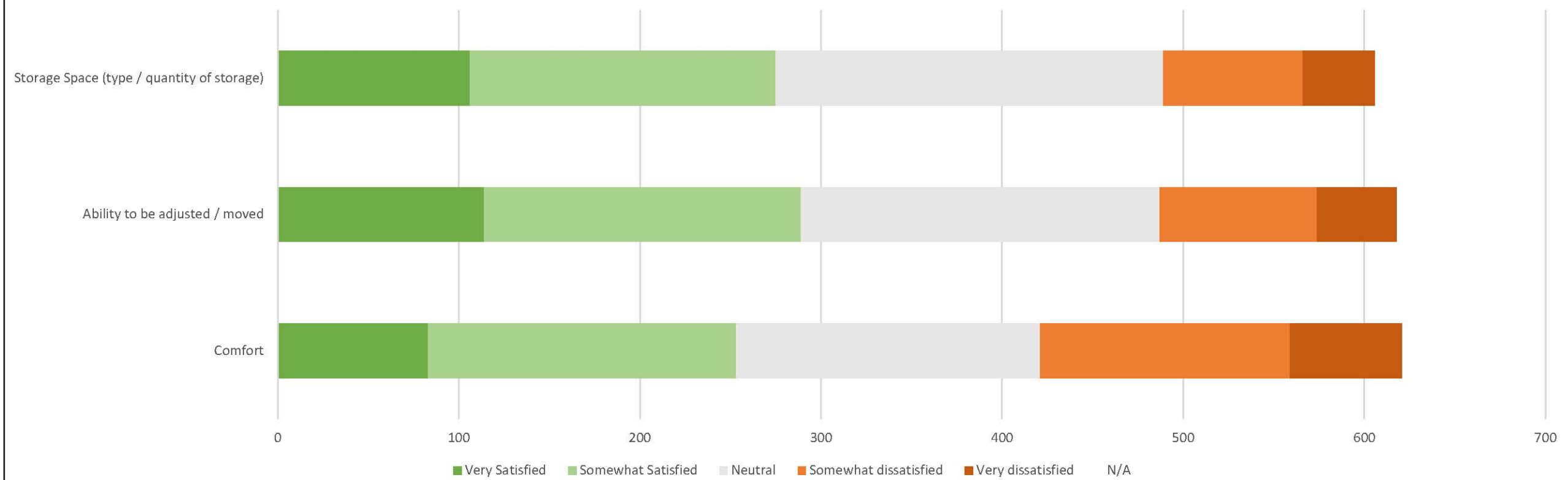
### Student Survey – Monroe

Where are your *favorite types of spaces* in which to learn?



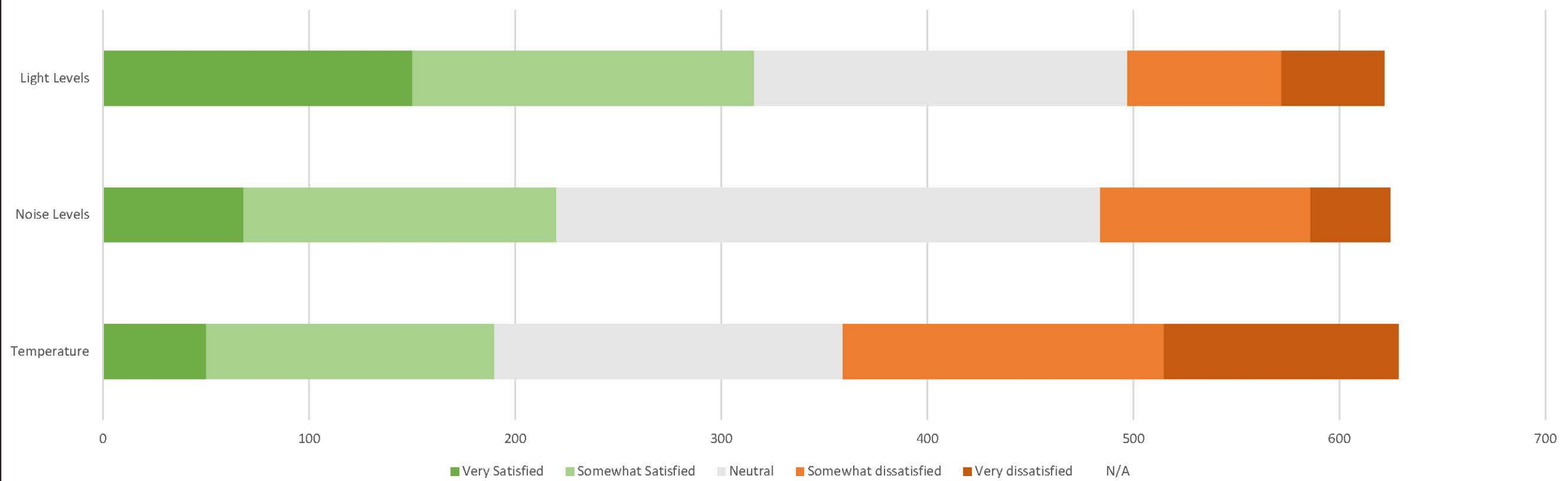
### Student Survey – Monroe

How satisfied are you with the **current classroom furniture**?



### Student Survey – Monroe

How satisfied are you with your **classroom experience**?



# User Group Meeting Minutes

2024-04-03 User Group Meetings (Edison)

# Perkins&Will

## Meeting Minutes

Date: 4/3/24 Authored by: Carl Giometti

### Meeting Details

<b>Meeting Date:</b>	4/3/24	<b>Project Name:</b>	CUSD 200 Middle School Capital Improvements
<b>Meeting Time:</b>	Indicated Below	<b>Project Number:</b>	022881.000
<b>Meeting Location:</b>	Edison Middle School	<b>Attendees:</b>	Dr. Jeff Schuler, Superintendent (CUSD 200) Brian O'Keeffe, Asst. Supt. Operations (CUSD 200) Kevin Weisenberger, Director Facilities (CUSD 200) Rachel Bednar, Principal (Edison) Jim Zimmerman, Asst. Principal (Edison) Mark Jolicoeur, Principal (PW) Mike Dolter, Sr. Proj. Arch. (PW) Carl Giometti, Sr. Proj. Arch. (PW)  <i>Additional attendees listed below</i>
<b>Next Meeting Date:</b>	TBD	<b>Cc:</b>	

### Discussion

#### 1. Library/LLC - 10:00am

**Additional Attendees: Kori Wentzloff (LLC Director)**

- a. Discussed entry to LLC, more glass for proposed corridor link across space but still being sealed off from circulation
- b. LLC isn't able to be secured in the same way other classrooms can - acoustic issues from action in hallways
- c. Exist entry doors would likely be removed - new entry doors don't necessarily need to be traditional swinging doors
- d. Consider shelter-in-place security issues
- e. Circulation to adjacent classrooms has hardware functionality issues
- f. Staff likes that there's a dedicate meeting/classroom space, separate from books in existing space
- g. Staff likes the existing huddle rooms, one has TV. Usually used by 2-6 students, depending on size of room. 6-8 max size.
- h. School currently has one maker room that they'd like to see more improvement on
- i. Several spaces currently operate according to their specific use as well as a general group work room
- j. Currently use mobile solutions for specialty items like green screens

- k. Anticipates more weeding but storage is at a premium. Shelves are crowded - needs more room. Shelving is hand-me-downs and dated (1960's). Shelving creates areas that are difficult to monitor - some sight line challenges.
- l. Classroom needs projection capabilities, needs a variety of different work styles (high tops, lecture format, independent work)
- m. Existing furniture very heavy, inflexible. No wheels.
- n. Need to accommodate up to 50+ students if two class sections are using the space. Faculty meetings also held in this space.
- o. Likes the central location for the circulation desk and collecting work stations with circulation desk.
- p. Soft seating is used daily but could be better positioned to get more use from.
- q. Utilities - more power needed, some existing powered furniture, works well.
- r. Lights definitely needing replacement
- s. Natural lighting just needs to be balanced with space functional needs
- t. Existing space has a staff lounge area, access to it creates cross-use problems. Especially the copier. Suggested the idea of a 2nd floor mini-lounge, decouple teacher resources from LLC.
- u. Loves being a space where learning happens but students can drop in and make connections to the teachers (i.e. 6th grader who comes in during lunch to work with Legos)

#### 2. General Building - 10:25am

**Additional Attendees: Brian Wiewiora (Teacher, Social Studies), Stephanie Incrocci (Teacher, Science)**

- a. Building lacks consistency (classroom layouts, colors, locker sizes, etc.) different parts of the building feel like you're in different buildings, not one place. Missing cohesive identity.
- b. Needs general updating
- c. Teaching staff is innovative, open to new things, definitely receptive to group work and the space doesn't allow that. Current facility has a lack of flexibility for individual work and group work.
- d. "Excellence" is the Edison culture. Need the tools to help create academic excellence.
- e. The diversity of things that are happening needs to find a match in the building. Looking to create a sense of pride for the middle school.
- f. The quality of teachers at this facility is high and they're able to do incredible work without all the resources needed. The building is "vintage" and needs "love". The quality of the building needs to align with the quality of the staff.
- g. Parking is a challenge, especially during events.
- h. Space utilization is a challenge, particularly the commons is miss-utilized, no student commons really exists. A lot of "random, weird" spaces. Sometimes large closets or offices between classrooms that aren't necessarily where they need to be. Some only accessible through a classroom, limiting that space's use.
- i. At Hubble, a lot of classrooms have windows to the corridor with student use spaces allows for the visual connection but could potentially cause distractions.
- j. Security - Stairwell by door 19 is "very dark and blocked off". It would be nice to have this more open. Main stairwell is hard to observe because it's so closed off. Door 3 stair and adjacent hall isn't well supervised.
- k. During high corridor usage, center stair becomes a chokepoint. Doesn't see the need for an additional stair near the front. Opening up the main stair would solve a lot of their issues.
  - l. If main stair could be widened, that could be a useful measure.
- m. Elevator is very aged, feels unsafe. Even if just brightened up, that would be a huge improvement.
- n. Lockers - Most students need to use lockers, aren't allowed to carry backpacks. Lockers are inconsistent in terms of sizes, functionality. Trying to keep grades together makes it difficult to have supervision level match the number of students using that area. Lockers are a "disaster" and at the end of their life. Lack of one master key a challenge. Students visit lockers multiple times a day. Individual lockers. Students have assigned gym lockers.
- o. Variety of storage options for teachers are available.
- p. Restrooms have many challenges are very outdated. Don't know how they feel about shared gender spaces with common sink areas. PW would need to review with AHJs. Visibility a real challenge. Community concerns would need to be gauged also would create a dual standard across the district.
- q. Staff restrooms have wasted space.
- r. There are a lot of toilet rooms dispersed throughout the facility but the large numbers of fixtures are not provided where they're needed (i.e. cafeteria, gym, etc.)

- s. Toilet use during the passing period is inadequate.
- t. Need for an established Wellness room, possibly need some sensory rooms or "break rooms". Seined wall very popular - emotional breakpoints spread throughout to help student well-being. Soft spaces can be leveraged to serve an academic function as well as a student support space.
- u. Students are not allowed to congregate in the corridors, no hang out spots but could use some designated areas for supervised before/after school entry.
- v. Sidewalks are really narrow and cause issues with school entry.
- w. Would like for all science labs to be as close to each other as possible.

**3. General Classroom - 11:13am**

**Additional Attendees: Amanda Landi (Teacher, Health), Katherine Lesniak (Teacher, Math Interv), Jodeci Hrudicka (Teacher, Art)**

- a. Equipment disparity amongst the classrooms (some have projectors, some have TVs)
- b. Classrooms are antiquated, bookshelves not needed. Need more wall space, whiteboards.
- c. Window operation is limited
- d. Classrooms will receive lighting, HVAC, finishes upgrades.
- e. Need general updates - furniture included
- f. Desks that have white board surfaces and standing height tables have been some of the recent shifts that have worked well but not all needs are consistent across all rooms. More flexibility.
- g. Art room - cabinets are outdated and not well matched to room needs, leads to limited usage of built-in cabinets. More wall space, a lot of things attached to the wall that limit usage of the space. Tables are working well but could use more flexibility in seating options. Sinks are kitchen sinks, not suited to art activities (i.e. deep sinks). Countertops flood the floors. Storage closet works very well. Heating system deficiencies, especially in kiln room, where clay is stored. Cubbies may not work because students use their laptops during class, so storage integrated with furniture could work better. Would like to have more space to display artwork.
- h. Overall, storage in rooms seems ad hoc and a more consistent approach would be welcome.
- i. More power for charging needed throughout.
- j. Furniture that allows flexibility for setups (individual desks but can be arranged into groups)
- k. Would welcome sit-stand tables, again, providing more flexibility in the space
- l. Need updated desk space, current desks aged and in a state of repair. Like having a table and a desk - but the right furniture could allow for both of those to happen at the same place.
- m. Would like the furniture and technology to help "de-front" rooms. Would like the room set up to inspire unique experiences, not the traditional lecture format. Multiple TV's/projectors supporting a de-fronted classroom experience. Mobile instructors, not fixed in one standpoint. District would need provide some professional development to help teachers adapt to the new strategy of space usage.
- n. There's a variety of presentation technology used... TVs, smart boards, projectors, document cameras, etc. needs to be a standard.
- o. Hard to imagine completely eliminating paper, still need to provide light accommodations for hard documents.
- p. In general, teachers would favor multi-purpose, mobile furniture. Would like display capabilities into the corridor that can allow more communication to the students about what's happening in the classroom.

**4. PE/Athletics - 11:48am**

**Additional Attendees: Amanda Landi (Teacher, Health), Jim McAuslan (Teacher, PE), Pat Murphy (Teacher, PE)**

- a. In general facilities are dated and beyond their serviceable life.
- b. 3 classes sharing same space, even using corridors as overflow spaces.
- c. Volleyball recently added - overall very limited on space.
- d. Subdividing would be favorable
- e. Standard PE period is 4 sections with one in health
- f. Need standard middle school competition gym
- g. Would be ideal to have only one team in the space
- h. Gym capabilities... volleyball, basketball, indoor soccer, spikeball, paddleball/pickleball, kickball. Wrestling room used for fitness, spikeball, & wrestling mats (rolled out daily). Fitness equipment stays in place when used for wrestling
- i. Wrestling room undersized for number of students accommodated, need two competition mats.

- j. Would increase number of activities if space and storage allowed
- k. Locker rooms are sized appropriately but dated. More lockers needed for girls. Showers would go away. Might consider a couple showers for coach's office.
- l. Existing 12x12 lockers work fine - new lockers would have separate locks.
- m. Lower level toilet rooms only used during cross country but see limited usage. Typically a portapotty is provided (by park district). Functionally, the lower level locker room access is not useful.
- n. Gym used as an assembly space requires kids to be able to sit on the floor - would be amazing if bleachers could accommodate entire student population. No ADA areas a challenge.
- o. Competitions against local schools exceeds bleacher capacity. 150-200 people
- p. Exterior spaces adjacent to the existing building are heavily used for both PE and recess
- q. More investigation is needed into the floor sections but resilient floor would be ideal.
- r. Large TV in each room but may need better AV (projector, retractable screen). Central audio system in place, works well.
- s. Making the toilet rooms/gym operate independently of the building is a big need.
- t. Having a dedicated, single purpose fitness gym would free up space and eliminate overcrowding.
- u. Athletic facilities are programmed off hours for park district functions.
- v. Facility will lose at least one gym for a year during improvements - more detail will be provided as plans developed.
- w. Parking would become an even bigger issue if the gyms are able to host more/larger events.
- x. School does have concessions, operated from table. A dedicated concession stand is probably not needed but some more accommodation for temporary concessions would be welcome.
- y. No strong opinion on trophy/plaque display but a designated place could be nice.
- z. "Huge sense of community" especially with PE, to have a space where the community could come together would be great - to see all the activities that are going on in the school.

**5. Fine Arts - 12:34pm**

**Additional Attendees: Deana Madalinski (Teacher, Drama), Jill Carr (Teacher, Music/Band),**

**Kyle Grace (Teacher, Music/Vocal)**

- a. Stage is a great learning tool for student use but it has challenges.
- b. Stage area and back of house is not a safe space (chains have fallen, wood floor gives splinters, etc.).
- c. Curtains have shrunk and no longer go to floor. Fire curtain is on an old pulley system and difficult to use.
- d. Sound system has basic functional issues. Light system is original, limited capabilities.
- e. Aged facilities present challenges when instructing students - many items were done ad hoc and not really planned.
- f. Backroom needs better planning - lack of backstage means things are stored in the wings.
- g. Space limitations prevents band usage of the auditorium
- h. Need better sound in the space. No great way to capture and amplify what is being done in the stage.
- i. Need more flexibility so it can serve multiple uses - overall modernize.
- j. Technology repeatedly fails during performances.
- k. Space uses: Varies but all school play 25-45 students on the stage, 25-30 backstage. Generally not large sets but could be a lot of students on the stage at one time. Hosts a variety show, dancers, bands, plays, etc. Improv club. Every 6th grader goes through this room. Used everyday. Movies for other classes and assemblies use projection screen doesn't work well & damaged. Show choir brings in additional risers that causes damage to the existing wood floor.
- l. Community room serves as dressing room with drapes across the corridor.
- m. Choir will always bring risers in, does not use a shell but would like one. On balance, doesn't really fit, rehearses at high school. HVAC noises are prevalent. Band has to go on the floor. Would like to area mic with some soloists. Show choir will fill all the seats.
- n. Stage is regularly extended forward to create more space.
- o. House lighting aged, needs replacement.
- p. Orchestra does not use a riser system. Between 30-45 students in orchestra.
- q. Band room acoustics needs improvement - room is loud. Doors need to be sufficiently wide to allow equipment to more easily move in and out of the space. Rehearsal spaces would ideally be accessible without passing through another room.
- r. Set loading into auditorium is a challenge - no clear route, large openings into space would be welcome.

- s. Seating is aged and anchoring has slowly loosened but on balance has held up well given the intensity of use.
- t. Auditorium transition strips regularly come loose.
- u. It would be great to have a black-box where the 6th & 7th grade class did not have to use the auditorium space.
- v. If the sound could be improved for the 3 practice rooms, that would be great

#### 6. Student Wellness - 1:27pm

**Attendees: Christine Chestnut (School Nurse), June Deetjen (School Psychologist), Chloe Soto (School Counselor), Mary Schwartzhoff (School Social Worker)**

- a. Nurse - #1 priority is privacy and current space does not have that... "fish bowl". People can look directly into the health office from the entry. Need a way to communicate with the nurse where students feel comfortable. Right now, health office is separated from the rest of the student services team, would like to be closer since there's so much collaboration amongst those services.
- b. Right now services are split among the floors which leads to students wandering to find help. Major obstacle to providing the service to the students.
- c. Student health services needs to be close to the main office.
- d. Currently does not have a group space or a work space. Group space should accommodate about 15 people, currently uses 122. No space for students to take tests, currently using the hallway. A supervised work space for students transitioning back into the building.
- e. Health office typical sees 25 visits, as high as 40. 2 chairs and 2 cots in current office. Full occupied a few times a week. Cot room is shared with nurse work space. Currently has a dedicated toilet room.
- f. If there was a way to include a smaller break-off space for sensitive calls/conversations but still keep eye contact on the suite, that would help the health office function better.
- g. Consolidated services would remove the burden of finding people from students. Minimize wandering. Thought that collecting the services to one office removes the possibility of stigmas for kids, i.e. "I'm just going to the office".
- h. Transient services need a spot (i.e. occupational therapy) - would be nice for more offices accessible from the hallway.
- i. Front office secretary controls access at front door - then a health office secretary who would direct students to particular service.
- j. Suite would contain: grade level counselors (3), wellness coordinator, nurse (2), psych, social worker, attendance secretary. Group room could double as conference room.
- k. Light tuning and dimming capabilities would be desirable. Sound privacy a must.
  - l. Need secure storage for state-mandated files.
- m. A second toilet room in this suite would be great but isn't necessarily required.
- n. Greater maneuverability for first responders needed.
- o. Psych office... desk, table for 4 students, filing cabinet. Ideally another space for students to sit.
- p. Clear path of egress needed so staff can exit if situation warrants.
- q. Health office... 2 desks, file cabinet, sink, refrigerator.
- r. Adequate seating in the general area to give kids more space - secretary would greet at entry into space.

#### 7. Science - 2:15pm

**Additional Attendees: Stephanie Incrocci (Teacher, Science), Elisabeth Eland (Teacher, Science), Amy Schwartz (Teacher, Science)**

- a. Space is very inflexible, tables can't be easily moved.
- b. Shared spaces end up being wasted space - inefficiently used.
- c. Size varies among the classrooms, surface space limited once student belongings stored away
- d. Managing with pods as large as 8 and ending up with limited circulation.
- e. Bigger rooms needed. Movable tables. Utilizing hallways since room size is limited.
- f. More sinks around the room (one per group would be ideal).
- g. Chairs with backs, no stools (becomes issue with testing)
- h. Rooms that enable student led inquiry - what do you need to test this hypothesis?
- i. Power for chromebooks a must.
- j. Cord reels very desirable.
- k. Daylit spaces would be great for both improvement of student experience but as a visual laboratory.

- l. Shared spaces currently require access through classrooms. More storage in the room would all for students to be self-determining. Reduce amount of shared storage but it would still be needed.
- m. Instructors spend most of their time standing, demonstrations would be more ideally held at the individual stations or set up in the center of the room. A fixed teacher station is not needed.
- n. TVs and projectors are used now. Being able to project and write is regularly used. (i.e. project on a whiteboard)
- o. It's thought that individual station screens would be too much a distraction.
- p. Drying racks above sinks needed.
- q. Lights definitely need to be replaced. Current spaces have task lighting issues.
- r. It would be ideal if the science rooms could be together both from a utilitarian standpoint and from a collaboration standpoint.
- s. Existing acid collection basin has issues.

#### 8. General Building (Main Office)- 3:00pm

**Additional Attendees: Chris Boyd (Sec, Asst Principal), Maria McAuslan (Sec, Principal), Lisa Papiervis (Sec, Attendance)**

- a. The outside/inside flow of visitors is very tight - need more space
- b. Privacy for nursing and counselling is a big issue, current use sound masking machine
- c. Very little counter space at the waiting area - need visitor seating for at least 3-4 people
- d. Need more flexible storage and designated secure storage
- e. Would like to have more windows in the office area.
- f. Need in-school suspension area
- g. Typical visitor flow needs to be more efficient

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**Please note:** The foregoing constitutes our understanding of matters discussed and conclusions reached. Other participants are requested to review these items and advise the originator in writing of any errors or omissions.

2024-04-05 User Group Meetings (Monroe)

# Perkins&Will

## Meeting Minutes

Date: 4/5/24 Authored by: Carl Giometti

### Meeting Details

<b>Meeting Date:</b>	4/5/24	<b>Project Name:</b>	CUSD 200 Middle School Capital Improvements
<b>Meeting Time:</b>	See below	<b>Project Number:</b>	022881.000
<b>Meeting Location:</b>	Monroe Middle School	<b>Attendees:</b>	Dr. Jeff Schuler, Superintendent (CUSD 200) Brian O'Keeffe, Asst. Supt. Operations (CUSD 200) Kevin Weisenberger, Director Facilities (CUSD 200) Ashley Huettmann, Principal (Monroe) Mark Jolicoeur, Principal (PW) Mike Dolter, Sr. Proj. Arch. (PW) Carl Giometti, Sr. Proj. Arch. (PW)  <i>Additional attendees listed below</i>
<b>Next Meeting Date:</b>	TBD	<b>Cc:</b>	

### Discussion

#### 1. Physical Education - 8:00am

**Additional Attendees:** Brooke Rodgers (Teacher, PE), Mark Gordon (Teacher, Coach), Michael McCormack (Teacher, AD)

- a. Lockers are falling off the wall. Gang shower areas not used and "scare students"
- b. Need bottle fill stations - current locations require students to leave supervised areas to get water
- c. No AC or air flow in locker rooms and gym - gets to over 80 degrees during summer months
- d. Bleachers broken, kids get splinters.
- e. Overall, the space is very dated. More space would be great.
- f. Typically split into 3 groups among 3 different spaces: gym, small gym, fitness room.
- g. Use of the fitness room is a challenge, especially during wrestling season.
- h. Dust on surfaces that falls to the floor creates slippery surfaces
  - i. The space does not work very well for hold large events, not much room for circulation when bleachers are extended.
  - j. Larger doorways would allow gyms to be "linked" during winter indoor running activities.
- k. PE department would prefer 3 separate spaces compared to a divider for sound separation
  - l. Operable backboards would be useful as they get in the way for volleyball.
- m. Current storage is adequate but more would be better.
- n. Separate storage for adaptive PE would be welcome
- o. Current bleachers support about 450-500. Ideally a little bit more capacity would be nice. For larger events, it would be ideal to fit the entire school on the bleachers. Current population is about 715.
- p. Having an office in the locker room is critical for work but also supervision/support of students (window needed). Need bathroom inside office. Two desks per office. A shower would be nice in the office but could do without them.
- q. Students have their own PE locker. Athletes have their own lockers that are assigned during season (larger lockers). All lockers would be nice if a bit larger.

- r. No showers.
- s. Coaches would not need their own space.
- t. Visiting teams are free to use the locker room and are accommodated on the bleachers but don't really have a designated space right now. Fairly typical arrangement around the conference.
- u. Controlling space for the athletics is difficult - students wander the building. Facilities are used by the community and operate independently.
- v. Anything that can be done to accommodate more spectators would be welcome.
- w. Better arrangement of doors to the locker rooms to provide privacy
- x. Need storage for non-school functions that use the space.
- y. Currently no designated accommodation for gender-neutral use. Staff toilet room used for this purpose.
- z. Concession space would be nice, doesn't have to be large. School has purchased some equipment, a storage spot that could be mobilized into a concession area. Would be nice to be able to serve the performing arts center, as well.
- aa. Need better scoreboard setup, currently only one with limited visibility.
- bb. Tech - Scoreboard is dated. Scoreboard in small gym unused. Need the sound system to tie into the intercom system, school announcements get drowned out.

#### 2. Essentials Program - 8:45am

**Additional Attendees:** Romona Toner (Teacher, Sp Ed), Christine Landek (Teacher, Sp Ed), Jody Field (Student Support), Valerie DiFresco (Director),

- a. Sinks in the classroom are needed for cooking, hygiene, etc.
- b. More bathroom space with connected changing space. ADA accessible.
- c. Need a sensory space. Rocking chairs, seating options, squeeze machines, etc. currently no space.
- d. Splitting sensory off from life skills space. Usually one student, maybe two but the equipment is larger.
- e. Would likely not need in-room calming spaces but perhaps a small corner with some acoustic separation. Could be done with portable dividers.
- f. Future needs anticipate an increase in autistic students.
- g. General student population may also want to use a sensory space but needs to be separate from the essentials.
- h. Storage with doors would be better - exposed cubbies become a distraction. Lockers more important than cubbie. Counter space would be ideal. Movable storage would be favorable to allow rearrangements of room.
- i. Classroom activities: all academic activities, desk, white board, vocational skills, 3d printer/cricket.
- j. Need main instructional zone for typical academic activities. Rec/leisure. Furniture more determinative of use, moveable furniture.
- k. Physical therapy needs space outside typical space. Rooms that accommodate wheelchairs/standers needs to be larger.
  - l. Current spaces, in terms of area allocation, seem adequate
- m. 5 rooms seems to be the appropriate allocation giving future needs.
- n. Life skills lab: 20 is max student load but that's unusual. One adaptive section for wheelchairs, three other areas for more typical setup. Storage for all the different setups. Sinks, oven/stove at each section. Needs dishwasher, microwave, and washer/dryer. Prep tables that adjust height. Need to have enough space for preparation, counters/tables. Refrigerator (full-size). Preparing and eating meals.
- o. Separate the work room from the life skills area - student run business uses the 3d printer/cricket to create items to sell. Not more than 20 people to be used. Enclosed room.
- p. OT/TP would be outside this suite.
- q. One toilet room would need a changing mat table & life, one standard ADA toilet room.
- r. TV Monitor with traditional white board works well. In the kitchen, a projector/TV is sufficient. A document camera is heavily utilized.
- s. Classrooms need to have the interactive promethean board, fixed would be preferable to mobile.
- t. The staff feels that the students are throughout the building and not separated off from the rest of the population. Students will have a higher success rate being in their own "pod" and being able to move around.
- u. The programming and way that the courses are run has more to do with the connectedness of the essentials students to the remainder of the population. The benefits of the cluster outweigh the benefits of the physical location being closer to the rest of the classroom groups.

#### 3. Visual Arts - 9:50am

**Additional Attendees:** Mike Divilbiss (Teacher, Art)

- a. Not excited about the new design because it's reducing space. Happy with current setup.
- b. Wants separate kiln room with storage. Kiln is electric.
- c. Would like to have 2 deep basin sinks, one hand wash sink.
- d. Currently has a small office for screen printing - very popular.
- e. Natural light critical. Current location only has clerestory.
- f. Wall storage is very useful but would also like a small storage room.



- g. Classes up to 32 kids - will also serve essentials students.
- h. Drawing, printmaking, collage, ceramics, fiber arts, jewelry, digital art, etc.. Choice based program.
- i. Studio needs to be able to transform based on what the student-led focus may be. Lots of things on wheels - storage, tables, etc. "more flexible the better"
- j. Like having tables that can be trashed. Stools would be preferable to chairs.
- k. For display, uses large foam core, each student has to have one piece of artwork on display. Only one display case right now but would like to have more capabilities for 3d artwork. 4x8 foam cores are displayed throughout the facility.
- l. Trying to incorporate entrepreneurship into the art program. Possibly with screen-printing/heat transfer/t-shirts.
- m. For digital art would like to use iPads instead of chromebooks.
- n. Digital art is being created in a separate space than "messy art" right now in the hallway leading into the room
- o. Uses wall mounted screens and speakers. Uses two computers in the space right now.
- p. Class arranged where students face each other.
- q. Would like to do fused glass.
- r. Students just bring chromebooks or books to class. Currently, there's a table drop off area.
- s. Currently doesn't have much adaptive equipment - would like to have more of that equipment but would need to coordinate with the essentials team.
- t. Would like to bring more kids outside - courtyard space underutilized. "if we can do it outside, let's get outside". Loves the possibility of an outdoor classroom.

**4. Wellness - 10:30am**

**Additional Attendees: Sarah Grunner (School Counselor), Michelle Healy (OT), John Henrikson (School Social Worker), Kari Walker (PT)**

- a. Counselors (3), Social Workers (2), wellness coordinator, school psychologist, OT/TP/Speech pathologist (4), and nurse (3) make up Wellness suite. Currently "exploding and running out of room"
- b. Need a student wellness space or calming/sensory room.
- c. Issues with existing facilities being able to supervise students.
- d. Current locations are not in an ideal location would be nice if they were closer to the essentials students as that makes up the bulk of their student load.
- e. Matt table is needed for kids that are in wheelchair as well as a table to work on fine motor skills.
- f. When co-treatment is needed and students need to be pulled from a class, it's currently a long walk.
- g. Need significant improvements on ADA entrances into building. Need more automatic door operators. Lighting needs improvement for students with visual impairments. All entrances should be evaluated for accessibility. No accessible path leading to the field.
- h. Nurses office is not big enough, especially to serve the student needs. Need ADA toilet rooms. Treatment room with sink for delivering medication. Room for 3-4 staff with one private office. 3 cots needed. Beneficial for the nurse office to be part of the wellness suite as a large number of the services provided are mental health. Sink in the prep area nurses office. Need refrigerator. Enough space in the treatment room for varying needs/equipment to be brought in. Need a place to make private calls.
- i. For social work, would need a space for 5-7 people max.
- j. Keeping location near essentials allows for staff to be grouped together but still "on call" to the essential program.
- k. Staff being split leads to missing information, hurts collaboration amongst staff
- l. Students enter suite, talk to secretary, then walk down hallway until they find who they need - they can wander until they find someone who they talk to. Generally, what the student experience is now works well.
- m. Lack of conference room space. The existing, dividable conference room works well, would be nice to have one additional room that seats about 12. Becomes an issue weekly, often spills over to classroom.
- n. Sound between offices is a problem, currently using sound machines.
- o. Would be nice to have some distributed rooms throughout the facility where a student didn't necessarily need to come all the way to the office but wellness services could go to the area the student is at. Could be used for a variety of functions (i.e. IEP, wellness, testing, etc.). Could be paired well with small group spaces in LLC. 4 person room
- p. Toilet room for essentials - blue wave toilet system

**5. Performing Arts - 11:51am**

**Additional Attendees: Logan Bertrand (Teacher, Music/Vocal), Jeff Novak (Teacher, Music/Band), Kelsey Dewar (Teacher, Music/Orchestra), Tammy Croll (Teacher, Drama), Anthony Crespo (Asst. Principal)**

- a. Stage will be used for band/orchestra/choral/drama but also expect concert events to be regularly held. Need to be able to efficiently get people from the house or outside the space onto the stage. On the stage 75 band/orchestra would be ideal but could be as big as 125.
- b. Summer band is very popular and currently held at Hubble - 100 kids there is very tight.
- c. More space in the wings for staging and can help clear up space in the seats.
- d. Fall musical typically have about 90-100 cast and crew members
- e. See use of the auditorium outside the arts (i.e. debates, public speaking, etc)

- f. Square footage is key, especially for the stage - whatever the maximum size that can be provided would be welcome
- g. Current configuration severely limits participation from all students, especially ADA needs.
- h. New facility would allow dress rehearsals in the space and the ability to invite other students in to watch them (i.e. invite elementary schools to the facility). Would allow school to bring in outside performers.
- i. Performances can't be held during the day because those spaces need to serve other functions during the day - would open performances to more students.
- j. Would allow the district to host outside schools and share their pride in their school.
- k. Access to the stage for essentials students would be critical to maximize participation
- l. Storage for outside district users conflicts with school use of the facility
- m. Production is part of a student elective. (sound, lighting, etc.)
- n. A shell would likely be welcome depending on the acoustics of the space
- o. Sets are usually built per show, off site and brought in. Perhaps a little bit stored on site but still mostly off site.
- p. Being able to store some sets would allow for better value instead of just building/buying and discarding/donating.
- q. Large doors between band rooms and stage to move instruments
- r. Flat risers needed for choir and jazz band.
- s. Would like instrument storage in the classroom but would consider storage in the corridors if the space could accommodate it but have supervision concerns.
- t. Class sizes have been split so the full square footage of a classroom is not as needed and could potentially be used for in-room storage.
- u. Choral just need a wide open space. Some general music instrument storage would be needed.
- v. 2 practice rooms for band, 2 for orchestra, & sectional practice rooms
- w. Daylighting would be great.

**6. General Classroom - 12:39pm**

**Additional Attendees: Alex Prus (Teacher, Social Studies), Shannon Brown (Teacher, Math), Ryan Falck (Teacher, Social Studies), Kelly Klenck (Teacher, Math Interv), Becky Rauen (Teacher, Lang Arts), Lauren Pector (Teacher, Lang Arts)**

- a. Math program is focusing on building "thinking classrooms" working on vertical surfaces (dry erase boards). A lot of rooms have cabinets in the way to use the vertical writable surfaces. Furniture needs to be flexible so it can be moved out of the way when people are at the walls.
- b. Current furniture doesn't allow for students to have all the materials students need out in front of them.
- c. Some multi-person tables gives a lot of flexibility but needs to not lead to congested rooms.
- d. Would like a mobile teacher station that could remain wireless connected to the technology in the classroom while they roll their station to the students.
- e. Don't want to be "tethered" to devices and positions in the room, "more fluid"
- f. Would value some sort of interactive screen technology (promethean board)
- g. Like the idea of technology being more omnidirectional, less fronted classroom.
- h. Never use the movable panel partitions - take out
- i. Acoustical separation between classrooms needs attention, especially at shared door rooms.
- j. Doors connecting classrooms are universally disliked, very few benefits.
- k. Windows in classrooms often create distractions, clerestory may be more preferable.
- l. If there's any way daylight could be brought into the buried classrooms, that'd be great
- m. General storage - students are bringing in their chromebook, binders, books, all currently housed under their desk, ineffectively. Ends up on the floor. Because lockers are not well suited to the materials, storage ends up happening in the classroom but it's not well served.
- n. Lack of outlets in the room a big problem.
- o. Grade planning takes place in the classrooms that aren't being used whether 1-on-1 or larger group. Group rooms were converted to classrooms.
- p. Often struggles to find small group rooms when the class is splitting or individuals/groups need to test or work independently
- q. Stacked lockers present a problem. Most students do not go to their locker after every class, except for 8th grade.
- r. Projection or interactive displays allow for teaching by demonstrating.

**7. Building Team - 1:27pm**

**Additional Attendees: Dawn Will (Sec, Principal), Darlene Fanselow (Teacher, Health), Anthony Crespo (Asst. Principal)**

- a. Monroe "will become the crown jewel of the district but it's a high mountain to climb because of the building".
- b. Aesthetic looks dated, needs a welcoming entry.
- c. Bathrooms are a huge challenge. Student behavior, vandalism. Working to build pride in the facility.
- d. Safety/Security - currently on keys, many different masters. Building access is a challenge.
- e. Sightlines throughout a challenge, especially because of the lockers.
- f. Camera system need study.

- g. Lockdown separations need compliant hardware/door placement. After school functions are not well accommodated with the current design.
- h. The wood paneling makes the building feel dated - whole building feels tired.
- i. Building signage is small and unassuming - looking for something that shows people that they're "here"
- j. Thinking of the possibilities for the cafeteria space - welcome center for new families, ambassador, program.
- k. Single student per locker currently, too small, stacked lockers are better sized but cause issues. 8th grade locker numbering is disorganized - signs are used to direct people to the appropriate locker. 8th grade lockers have congestion spots. Some lockers are tucked into unsupervised areas. Whole bank of 7th grade lockers unused. More lockers than needed. 7th & 8th grade lockers are slightly undersized, especially for their backpacks. Struggle to accommodate even a binder. 7th grade lockers are the newest. Having separate lockers and locks is much better than integral locks
- l. 7th Grade lockers being relocated to the 7th grade pod area would be possible albeit not considered to this point. Would like to see various options.
- m. Right now, only one line of security exists. New guest system works great.
- n. Would prefer the entry system be located in the secure vestibule rather than in the office. Would like to handle most of the initial interaction in the secure vestibule, not in the office.
- o. Currently no waiting area for visitors in the office area.
- p. Currently after school, securing the building is a challenge.
- q. Faculty lounge - mailboxes, tables, refrigerator, minimal storage - very inefficient right now. Rarely used by teachers for meetings, mostly TA's. Absolutely max 20 people using that space.

**8. General Science - 2:15pm**

**Additional Attendees:** Donna Skibbe (Teacher, Science), Cathy Johnson, (Teacher, Science), Pearl Anderson (Teacher, Science), Nicole Torres (Teacher, Science), Lisa Yelmini-Metz (Teacher, Science)

- a. Obvious things are upgrading outlets, finishes, etc. would be very helpful. More consistency would be make parity much easier to achieve. More space needed.
- b. The perimeter stations allows the students to work collaboratively but also need the space in the middle to have focused activities. Have storage issues with kids' stuff. Stations need to be amply spaced apart.
- c. Like the idea of common prep rooms for individual grades - don't think it would work well to share storage amongst the grade levels.
- d. Uses Bunsen burners in 7th grade only at every student station. 6th & 8th grade only for demonstration.
- e. Some support for more fixed furniture - prefers a more traditional lab layout with a designated class space and the other half of the room fixed lab space.
- f. The difficult is trying to standardize rooms so some larger rooms would have to be reduced, smaller rooms would have to be enlarged.
- g. Science curriculum is a traditional step-by-step approach - do not want students to interact with storage.
- h. No exhaust hoods needed.
- i. Would support removing fixed teacher station but need a designated demonstration station.
- j. Mostly projection needs, would be nice to have more than just a single point at the front of the room. Projecting onto a whiteboard provides a lot of capabilities.
- k. Cord reels generally not a need/want, some expressed support.
- l. 6th Grade sinks have issues backing up.
- m. Need shared prep space for labs by LLC.
- n. Suggestion to converting block of 4 science rooms to 3 plus storage and one in the 8th grade hallway.

**9. LLC - 3:15pm**

**Additional Attendees:** Patricia Nordyke (Teacher, Lang Arts/CTE), Kim Rumrey (Teacher, LLC)

- a. LLC is a fishbowl, open to every classroom. No privacy or places to work quietly without being watched by anyone who walks by.
- b. Enjoys how the lack of walls makes the space feel larger and open but presents challenges.
- c. Shelving is aged and not of the best type or adequate for the collection size. 14,000 volumes.
- d. No office space for LLC exhibits work issues. Would like to have glass from office to LLC to supervise. Once office would be sufficient.
- e. Needs space to work on chrome books, better charging space. Store up to 10 replacement chromebooks
- f. Would love to have a maker space. Arts/crafts, tech, STEM club, electronics/robotics, a place for "students to be creative". Not more than 10-15 students in the maker space at a time but would be nice to be able to fit an entire class.
- g. Would be nice to have some breakout spaces for podcasting, small group, independent work. Would be nice to have screens in those rooms where students could cast and work in a group.
- h. Could see the LLC hosting an entire class with segments split up among the support and main spaces.
- i. Book processing happens in house - without office, little area to do this work.
- j. Circulation desk at the end was a problem because you were too remote from parts of the LLC. Would like to look at a few different ideas for smaller and differently located circulation desks.

- k. West portion of the space would be a good location for maker space and office.
- l. LLC regularly hosts classes of 25-30 students, roughly every 2-3 weeks.
- m. Could use furniture, especially soft furniture.
- n. In mornings 8th graders hang out in the LLC.
- o. For the digital authorship class, would be great to have the maker space support digital production services. Students could check out materials and then use that space.
- p. Need to increase access to a variety of materials for students with effective storage and more flexible spaces.
- q. Shelving needs to better bring the materials to the students. Bottom shelves bury materials that don't circulate.
- r. Would love to have more projection/TVs but the space doesn't easily suit that function.

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2024-04-04 User Group Meetings (Franklin)

# Perkins&Will

## Meeting Minutes

Date: 4/4/24 Authored by: Carl Giometti

### Meeting Details

<b>Meeting Date:</b>	4/4/24	<b>Project Name:</b>	CUSD 200 Middle School Capital Improvements
<b>Meeting Time:</b>	See below	<b>Project Number:</b>	022881.000
<b>Meeting Location:</b>	Franklin Middle School	<b>Attendees:</b>	Dr. Jeff Schuler, Superintendent (CUSD 200) Brian O'Keefe, Asst. Supt. Operations (CUSD 200) Kevin Weisenberger, Director Facilities (CUSD 200) David Bendis, Principal (Franklin) Joe Kish, Asst. Principal (Franklin) Mark Jolicoeur, Principal (PW) Mike Dolter, Sr. Proj. Arch. (PW) Carl Giometti, Sr. Proj. Arch. (PW)  <i>Additional attendees listed below</i>
<b>Next Meeting Date:</b>	TBD	<b>Cc:</b>	

### Discussion

#### 1. Science - 8:00am

**Additional Attendees:** Jennifer O'Brien (Teacher, EL), Michael Klafeta (Teacher, Science)

- a. Existing room sinks difficult to use
- b. New surfaces need to be chemical resistant, appropriate science lab countertop
- c. No floor outlets but need more power overall, like overhead power reels.
- d. No need for fixed teacher station
- e. Chemistry needs natural gas - additional investigation needed
- f. Need flat panel monitors
- g. Storage - in room and prep rooms. Will need some book storage for modules. Central location for prep room preferred.
- h. No exhaust hood needed - just adequate room ventilation
- i. Chemistry storage - flammable, refrigerator/freezer, microscope

#### 2. General Classroom - 8:50am

**Additional Attendees:** Lisa Doherty (Teacher, Sp Ed), Susan Warnke (Teacher, Social Studies), Amanda Yost (Teacher, EL), Julie Forde (Teacher, Sp Ed), Cheryl Hasenjaeger (Teacher, Math), Allan Rovik (Teacher, Lang Arts), Robert Reder (Teacher, PE)

- a. Need more storage in room

- b. Would like more daylight in classrooms
- c. Current power is lacking in rooms
- d. Existing windows don't work well - would like window replacement
- e. Configuration of classrooms is inefficient
- f. Rooms are noisy - lots of mechanical system interference
- g. Furniture should be more mobile and flexible, also more consistent between rooms
- h. Proximity and shared doors create sound issues
- i. Overall facility accessibility issues

#### 3. Building Team - 9:40am

**Additional Attendees:** Ashley Atchison (Behavior Interv/Wellness Coord)

- a. Classes right sized as much as possible - would value those over the small group spaces.
- b. Staff is collaborative and the space should reflect that. Collaboration happens both within the classroom and amongst the classrooms
- c. (clarify what "the nook" is and how it's used)
- d. Doors being irregular amongst the rooms makes it difficult to orient classrooms logically and consistently. More standardization.
- e. Lack of windows in certain rooms create unfavorable spaces
- f. Few untouchable spaces, if any.
- g. General updates will have a big impact, staff grin and bears things
- h. Staff meets in classrooms to collaborate together - seem to prefer that arrangement
- i. Team rooms are set up for office space have assumed other functions. Team rooms probably not needed. However, setting them up as general conference rooms could be a better utilization of those areas.
- j. Unless teachers have a co-teacher, collaborative spaces not necessarily needed
- k. Speech pathologist room serves as overflow conference rooms - more meeting space needed.
- l. Would be nice to have a meeting room that could more comfortably accommodate a group of about 15-20 people.
- m. Athletic facilities at hubble are envied by students
- n. Franklin is not about bricks, it's about kids.
- o. Functionality of the LLC is not great but excited about the redesign
- p. Staff & students have learned to deal with the building "that's just the way it is"
- q. Bathrooms definitely need upgrades
- r. Locker rooms need upgrades
- s. Cafeteria low ceiling creates a loud, poorly daylit, difficult to monitor space
- t. Entryway requires students walk through the teacher parking lot
- u. Snack corner is unused and will likely not be brought online again. Not been used for a decade.
- v. Food service vendor wants their staff together, not distributed around the space
- w. Gigantic fixed desk structures for the main offices don't function well. Consider moving the proposed student wellness to the main office grouping and then expanding the science labs closer to the district standard 1,200 sf.
- x. Hall lockers are dated and the size of lockers are not well equipped for today's students. About 900 lockers in facility so whole areas are unused. Could definitely reduce locker count. Want to keep individual lockers.
- y. Current population about 550. Even when peaked at 815, lockers were unused.
- z. Only one ADA entryway is currently available, would like to have accessible entrances at the 2 main entrances
- aa. Random collection of doors that lock/secure differently that causes issues when securing the facility
- bb. Sightlines in corridors issues - a lot of places kids can disappear to if they want.
- cc. Stairwells connecting back-of-house areas and classroom areas sometimes cause issues with students wandering. Especially, the gym stair.
- dd. Would like to capture hallway space and give it to the LLC
- ee. Small gym is hosting sports that it's inadequately sized for (too short)
- ff. A lot of internal spaces would really be improved with some daylight - clerestories possible?
- gg. Need a designated spot for in-school suspensions.

#### 4. Performing Arts - 10:30am

**Additional Attendees:** Rachael Lemna (Teacher, Music/Orchestra), Kurt Makaryk (Teacher, Music/Band), Crystal Forbes (Teacher, Music/Vocal)

- a. Likes the proximity of the choral room to the stage. For rehearsal, the room works great, for instruction, it's oddly proportioned. Probably the smallest choral room in the district. Insufficient storage space. General music classes use a wide range of instruments and very little storage to accommodate this - requires the class move to another room

occupied by another subject. Currently no teacher desk because of the odd shape - desk in team room now. Storage distributed wherever it can be found.

- b. Band - Issues with band simply being louder, band room is small and made smaller with the inclusion of storage in the space. Students currently forced to set up their instrument on the floor causing circulation issues. "Pure chaos". Storage a "huge concern". Current room is very echo-y, not conducive to hearing yourself play. Sound proofing between band/orchestra/other classrooms is non-existent.
- c. In the new rooms - being able to move big equipment is critical. Choral in auditorium, band/orchestra in gym. Properly conditioned (i.e. humidity control especially for wood instrument storage)
- d. Would love the possibility of having small break away groups from the main practice space. Small groups 2-4 students. Needs to be observable for teacher.
- e. Would like to have some storage in the room for larger instruments and then smaller instruments outside the room.
- f. Concerned that storage rooms become hangout spaces - orchestra prefers storage in room. Band would not be opposed to storage in room if it was logically laid out for proper flow.
- g. Prefers mobile risers to fixed risers.
- h. Would like to consider hard flooring options that perform better acoustically but still meet budget/maintenance needs.
- i. Auditorium stage has hosted as many as 100 students. Proscenium undersized. More typically, 50-ish kids on a stage.
- j. Lighting is significantly insufficient in auditorium.
- k. Mezzanine booth mostly serves as storage.
- l. Sound system is aged but overall sound for choir isn't bad. When fewer kids are on stage, it can get tough to hear.
- m. Existing choral room has ventilation issues, runs warm.
- n. Would love to have a green room, perhaps choral room could be repurposed to that.
- o. For band performances in gym, the bleachers are pulled out and many chairs are added. Performs off of flat floor.
- p. For orchestra performances, gym acoustics are not ideal. A shell would be great.

**5. Arts-Electives - 1:30pm**

**Additional Attendees: Margaret Hammer (Teacher, Tech/CTE), Lauren Nielsen (Teacher, Art), Michelle Hoffmeyer (Teacher, Science/CTE)**

- a. Multi-discipline arts - needs electricity, uses a lot of equipment, problems separating the dirty and clean activities. Missing collaborative spaces. Tables where groups of students can work but still have access to the technology/tools they need. Flexibility to change the space over to a particular use. Deep sinks would be favorable. Need to be able to work as well as monitor students. Typ projects: cornhole boards, t shirts, mini golf course, etc. Makes money for the program by selling stuff. Would need a refrigerator, doesn't have any ability to bake or clean dishes. Use digital audio & video equipment. Outdoor outlets would be helpful for activities.
- b. Art Room - More space (32 students high class count). Would like a separate closet & kiln room. Missing a large drying rack. More power needed. Lots of natural light in the existing space is great. Right now only chainlink protecting kids from kiln. Storage that currently exists is not always the right kind of storage. 2 Existing deep sinks work well but 3 would be better. Typ. Activities - sculptures, drawing, spray painting (usually outside). Has camera that can be broadcast around the room - very valuable capability. Uses natural ventilation heavily.
- c. Robotics - Space works pretty well. Need lots of storage for robotics equipment, currently sharing storage with music. Would not want at lab if space cut in half, would just want tables and chromebooks. Needs lots of power. Building machines and coding. Much of assembly happens at the desktop but then moved where there's more space for testing.
- d. There could be some more collaboration if the appropriate space existed but would need to be planned in a way that wouldn't limit one class due to its use by another class.
- e. Opportunities for spaces for digital art (i.e. green screen).
- f. Flexibility for future needs for elective spaces as needs change. Increasing opportunities for students who are interested in the trades. More project-based learning seems to be the direction the curriculum is going.
- g. Large sturdy tables would some ability for flexibility would be ideal. Students tend to prefer lower tables and chairs with backs.
- h. Cord reels would be great.
- i. All 3 grade levels are involved in these electives.
- j. Art used to collaborate with performing arts but hasn't recently. If there was spacing for the cross-disciplinary work to take place.
- k. More white boards needed. Mostly just projection. Ideal would be being able to write but have it show up digitally around the room.
- l. Spaces are used for afterhours activities.

- m. Would be very difficult to have to use a space elsewhere in the building on a given day since so many activities need prior set up.

**6. Student Wellness - 2:15pm**

**Additional Attendees: Ashley Atchison (Behavior Interv/Wellness Coord), Hannah Craig (School Social Worker), Erik Jensen (School Counselor), Kristy Adkins (School Counselor), Meghan Wignall (School Counselor), Kathy Dibadj (School Nurse)**

- a. Needs better, more meeting space. Configuration of space doesn't allow for direct interaction.
- b. Hallways sightlines always a challenge.
- c. Meetings are homeless right now "lacks professionalism" when you're jumping into random classrooms and pulling desks together.
- d. Clustering the rooms together to avoid having to walk around the building to find a space
- e. Narrow hallways don't allow for shoulder-to-shoulder walking
- f. Current facilities don't have good acoustical separation, staff had to buy noisemakers to mask sound transmission
- g. Team needs to be co-located and separation proves a challenge to doing jobs well.
- h. Offices are too small for individual meetings, can't even hold a 1 on 1 meeting.
- i. Office to meet with two parents would be ideal size.
- j. Team is very collaborative - just needs the space to do it more effectively
- k. Need flexible space for students who need to take breaks or need a private space but still gives adult supervision.
- l. Health Office - "Zero privacy" no bathroom attached to it. Only one cot. Needs a sink in and outside of the toilet room. Separate spot needed for private phone calls. No quiet spot where kids can lie down. Fridge, 2 cots, 2 bathrooms, sinks, much more supply storage space.
- m. Needs multiple private spaces.
- n. In a consolidated suite, functions would be 3 counselors, social workers, pysch, wellness coord, health office (3), secretary/touchpoint person.
- o. No privacy with attendance calls.
- p. Speech Pathology/OT/Hearing/Vision Itinerant offices. Possibly located in a secondary student services suite.
- q. Usually only 2-3 waiting but sometimes 4.
- r. Figure out how in-school suspension is incorporated into suite.
- s. Support for consolidated model... The staff functions as a team, proximity lends itself to team functions. Contributes to the "welcoming environment" especially for students in crisis, there's always someone there. Student safety, they absolutely know they have a safe space to go to. Staff feels that the stigma of walking to a central office has largely disappeared.
- t. Also convenient for teachers to have one central location
- u. Wellness could use both individual storage and shared storage.
- v. Some concerns about the entry sequence. Right now only one security point exists to let visitors into the building.
- w. Accessible entrances are very limited. Office accessibility is also a big issue.
- x. Elevator function is questionable.
- y. For rooms with glass (ISS), ability to lower shades and provide privacy.

**7. LLC - 3:05pm**

**Additional Attendees: Laine Pehta (Teacher, LLC)**

- a. Natural light is very important
- b. Office space needs more privacy (doesn't have a door right now)
- c. LLC needs a sink (work with glue, space used during lunch, etc.)
- d. Needs 1 or 2 rooms with noise separation. Rooms to fit about 10 students and a teacher. Room could be used for a student that needs to have tests read to them. i.e. privacy.
- e. Movable furniture would provide much needed flexibility.
- f. Sometimes used for staff meetings 50-60 people.
- g. Existing high stacks are not very practical or modern. Would be nice to have more outward facing shelves.
- h. Needs charging capability throughout. Would be nice to have just a couple permanent computer stations.
- i. LLC often serves at the multipurpose room - could be used as flex space for other disciplines that don't necessarily have their own large meeting space.
- j. More projections screen throughout that could be pulled down and seating moved to utilize.
- k. Don't want to overdue it with lounge feel but it should also feel like it is a learning space.
- l. Potential cross-use with workrooms for the rest of the building, storage for class novels.

- m. Current circulation desk is oversized. Does not want it fixed in the center of the space since it would restrict how the center of the room would be used.
- n. Current collection size: 9,000 volumes, probably going to stay about that size.
- o. Need to be able to control shades on glazing when projecting.
- p. LLC has afterhours activities at least 4 days a week.
- q. LLC is regularly used as a hangout area, small group area. Needs to be separate from individual/quiet uses.
- r. Maker space in the LLC is perhaps a "want" but there are options for pairing with the elective spaces. Adaptability (i.e. adequate power) would be a good thing to provide.
- s. If a proper green screen room were provided, it would get used more. However, spaces are most used as meeting room so they should all be flexible, multi-function spaces.
- t. Two staff members in the LLC
- u. Two level scheme probably wouldn't provide significant supervision challenges. Like to provide an LLC that is a "practice space" for the real world.

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**Please note:** The foregoing constitutes our understanding of matters discussed and conclusions reached. Other participants are requested to review these items and advise the originator in writing of any errors or omissions.

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## Meeting Minutes

Date: 5/8/24 Authored by: Carl Giometti

### Meeting Details

<b>Meeting Date:</b>	5/8/2024	<b>Project Name:</b>	CUSD 200 Middle School Capital Improvements
<b>Meeting Time:</b>	See below	<b>Project Number:</b>	022881.000
<b>Meeting Location:</b>	Monroe Middle School	<b>Attendees:</b>	Dr. Jeff Schuler, Superintendent (CUSD 200) Brian O'Keeffe, Asst. Supt. Operations (CUSD 200) Kevin Weisenberger, Director Facilities (CUSD 200) Colin Wilkie, Operations (CUSD 200) Ashley Huettemann, Principal (Monroe) Mike Dolter, Sr. Proj. Arch. (PW) Carl Giometti, Sr. Proj. Arch. (PW)  <i>Additional attendees listed below</i>
<b>Next Meeting Date:</b>	TBD	<b>Cc:</b>	

### Discussion

#### 1. Physical Athletics - 8:00am

**Additional Attendees: Brooke Rodgers (Teacher, PE), Mark Gordon (Teacher, Coach), Michael McCormack (Teacher, AD)**

- a. Offices in the locker rooms could use toilet rooms so teachers don't have to leave the locker room to use the facilities
- b. Storage is mostly filing cabinets, space can be reallocated to toilet room
- c. A small closet would be adequate, not necessarily a full storage room
- d. Current design has some challenges for teachers monitoring what goes on in the locker room. Would like windows from office to the locker room.
- e. Need to study the route from the gym storage into the gym.
- f. The ref changing rooms/toilet rooms are nice but if there were a better use for that space, that would be an easy element to remove from the program.
- g. Locker room office should include a shower
- h. Need water in all three PE rooms, in room seems preferable.
- i. Would like drinking fountains in locker rooms. Fountain and bottle fill

- j. Expand doors from the main gym to small gym. Need to keep the wall and sound separation.
- k. Current plan includes a full academic year without locker rooms. An issue that needs further study. 6th grade commons could be a possible spot for temporary changing rooms.
- l. For the paving lost to the addition, could this be extended? Pickleball, outdoor basketball hoops. Paving in poor condition but would like to use it more than they do.
- m. If the outdoor paving area were renovated, they'd need outdoor storage. Track & field equipment, soccer goals, etc. Having access on the field level would be ideal.

#### 2. Essentials - 8:50am

**Additional Attendees: Romona Toner (Teacher, Sp Ed), Katy Mangin (Teacher, Sp Ed), Jody Field (Student Support), Molly Brischetto (Speech Lang Path)**

- a. 3 Kitchen stations, typical, 1 fully adaptive total of 4.
- b. OT/PT space may end up being a location for a 5th classroom
- c. Speech therapy needs a room for a couple wheelchairs and students
- d. Critical classroom needs are protector.
- e. SpEd classrooms are zoned to have sensory areas. Individual desks, small group.
- f. Either OT/PT or life skills needs a landing area for walkers, chairs, etc.
- g. Toilet room may need a lift, currently use a mobile.
- h. Life skills lab would be better laid out as a more zoned classroom with focus areas collection to one spot.
  - i. Life skills typically used by 10 students, 2 adults. 20 max with two classes in there
  - j. Gas ranges preferred. At least one dishwasher.
  - k. 6-10 Students in each classroom is typical
  - l. Students would need lockers in that suite - adaptive and larger lockers
- m. No doors separating essentials area

#### 3. Visual Arts - 9:42am

**Additional Attendees: Mike Divilbiss (Teacher, Art)**

- a. Repurpose (4) offices into kiln room, clay storage, printing, and storage.
- b. Overall, plan looks great.

#### 4. Student Wellness - 10:30am

**Additional Attendees: Sarah Grunner (School Counselor), Michelle Healy (OT), John Henrikson (School Social Worker), Kari Walker (PT), Emily Scanlan (School Pysch), JoAnn Monahan (School Nurse)**

- a. Mat table in the nurses (murphy bed type furniture)
- b. Floor drain in the existing SW office has smell issues
- c. Nurse office across the hall is less than ideal but doable.
- d. Could use additional toilet room accommodation with the general student population - could be a possible dual use for the referee changing/toilet room.

#### 5. LLC - 11:52am

**Additional Attendees: Patricia Nordyke (Teacher, Lang Arts/CTE), Kim Rumrey (Teacher, LLC)**

- a. Need the ability to have a full class in the LLC
- b. Maker space should be considered as part of the LLC operation - a class and a resource
- c. Small group rooms a bit large
- d. When class comes to space, there needs to be a collected area where LLC staff can easily address the full class
- e. Could use individual touchdown spots along the classroom walls for teacher aides or science students that need to finish up assignments in the hall. Need to take into account circulation concerns.
- f. Need space for green screen/podcasting/media production
- g. Staff will provide volume count - collection does seem some volume growth

- h. Storage can help minimize uncertainty about what people have what capabilities - better utilizations
- i. Uncertainty with the elective space will always remain - less about building them as a one-for-one match to the current capabilities but how can it adapt for future needs.
- j. Success means enough books and enough places to talk to students about books and for students to have spaces to do other activities that would enhance their educational experience. Every square inch of the space is used - central hub of the building. Increase access to information and resources.
- k. Culinary room too heavy on cooking

#### 6. General Classroom - 12:40pm

**Additional Attendees: Shannon Brown (Teacher, Math), Kelly Klenck (Teacher, Math Interv), Becky Rauhen (Teacher, Lang Arts), Lauren Pector (Teacher, Lang Arts), Brian Hoffman (Teacher, PLTW)**

- a. Doors between classrooms creates a lot of noise issues
- b. Would like the ability to have flexible media around the room
- c. Storage varies based on room
- d. Easier to go from a mobile teacher desk configuration to a fixed approach than vice versa

#### 7. Building Team - 1:27pm

**Additional Attendees: Dawn Will (Sec, Principal), Darlene Fanelow (Teacher, Health)**

- a. There's a lack of water fountain availability for the easternmost classrooms
- b. Currently have 400 7th grade lockers - could easily get rid of 100. 6th Grade has extra lockers, 8th is about fully used
- c. Students access lockers throughout the day
- d. Need general building storage - areas around existing teacher lounge and boiler room could become new storage

#### 8. Science - 2:18pm

**Additional Attendees: Donna Skibbe (Teacher, Science), Cathy Johnson, (Teacher, Science), Pearl Anderson (Teacher, Science), Nicole Torres (Teacher, Science), Lisa Yelmini-Metz (Teacher, Science)**

- a. A dishwasher in the prep room would be very useful
- b. One sink in prep room is sufficient
- c. Labware is stored in prep room; everything that is owned by science is stored in there. Textbooks are stored in rooms or prep. Textbooks are swapped out 4-5 times a year.
- d. Mini-fridge/freezer - preferably larger than undercounter
- e. 7th Grade - 8th Grade use microscopes - shared
- f. 7th grade has biggest need for gas - possibly limited to demo or isolated use, that strategy would be sufficient for 6th grade. No gas need for 8th grade.
- g. Classroom layouts should be able to accommodate 28 students
- h. Cubbies would be great to keep student materials off the floor
- i. Need to accommodate direct instruction for when math and science are taught in the same space

#### 9. Performing Arts - 3:05pm

**Additional Attendees: Logan Bertrand (Teacher, Music/Vocal), Jeff Novak (Teacher, Music/Band), Kelsey Dewar (Teacher, Music/Orchestra), Tammy Croll (Teacher, Drama)**

- a. Need some space for 6-8 students for sectional practice
- b. Store all instruments in the space
- c. Will be additional meeting with theater consultant

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## Meeting Minutes

Date: 5/9/24 Authored by: Carl Giometti

### Meeting Details

<b>Meeting Date:</b>	5/9/24	<b>Project Name:</b>	CUSD 200 Middle School Capital Improvements
<b>Meeting Time:</b>	See below	<b>Project Number:</b>	022881.000
<b>Meeting Location:</b>	Edison Middle School	<b>Attendees:</b>	Dr. Jeff Schuler, Superintendent (CUSD 200) Brian O'Keeffe, Asst. Supt. Operations (CUSD 200) Kevin Weisenberger, Director Facilities (CUSD 200) Colin Wilkie, Operations (CUSD 200) Rachel Bednar, Principal (Edison) Jim Zimmerman, Asst. Principal (Edison) Mike Dolter, Sr. Proj. Arch. (PW) Carl Giometti, Sr. Proj. Arch. (PW)  <i>Additional attendees listed below</i>
<b>Next Meeting Date:</b>	TBD	<b>Cc:</b>	

### Discussion

#### 1. General Building - 10:00am

**Additional Attendees:** Brian Wiewiora (Teacher, Social Studies), Stephanie Incrocci (Teacher, Science)

- a. Option 3 for the science lab presents challenges for sharing materials
- b. Option 2, in terms of adjacencies, works better but may be some space challenges with the wellness suite
- c. Doesn't seem like a big operational difference in the wellness location in any of the options

#### 2. LLC - 10:25am

**Additional Attendees:** Kori Wentzloff (LLC Director)

- a. Would need a sink in the workroom, perhaps a mini-kitchenette
- b. Need to confirm that the media lab can be placed where there are currently air handlers
- c. Visual monitoring of the entire LLC is key - make sure prominent spaces (maker space, etc)
- d. Currently don't have an office, got rid of it a few years ago. Just need enough storage space.
- e. Being able to close and lock the space is critical - further discussion for what is housed across the

entry. Display of student works would be great. Could still have some modest amount of tables and chairs, just don't want to go all in and find out it doesn't work.

- f. Concerned raised for interior glass and how much regular cleaning is needed
- g. Would be great to have some digital signage but district would need to figure out who manages content
- h. Maker space could have double doors that swing out and can be locked open
- i. Doesn't see a need to close off full class space - providing wall to corridor eliminates the only problems with noise
- j. 11,000 volumes currently - will provide breakdown. Includes class novels. Probably only about 6,000 non-class novels. Class novels can be located elsewhere but could be a little difficult, depending on where it'd be located.
- k. Could use the area in the hall for closed storage for class novels
- l. Tables with casters, no chairs on wheels
- m. LLC has daily loaners and carts with charged chromebooks. Need space to store/access about 30 chromebooks
- n. Currently has about 8 carts, but could be by with much less. Just need some thought as to where they rest
- o. Would be nice to have a remote book return.
- p. No need for more traditional tables or writeable surfaces

#### 3. PE/Athletics - 11:15am

**Additional Attendees:** Amanda Landi (Teacher, Health), Jim McAuslan (Teacher, PE), Pat Murphy (Teacher, PE), Jessica Brezwyn (Teacher, PE)

- a. Need a route to get wrestling mats into the competition gym. Area to the right of the gym has a lot of twists and turns would like to see that area "cleaned up". Could put double doors in fitness room and gym to allow easier loading of the gym.
- b. Could alleviate need to move mats around by having competition mats in the main gym.
- c. There could be some other spaces between the small gym and main gym that could provide storage.
- d. Volleyball equipment, basketballs, etc. would need to be in storage room. Uniforms other activities stored elsewhere.
- e. 25-33 would be using the fitness room for cardio. Space would be great if it could accommodate a whole class.
- f. Basketball main court plus 2 cross courts
- g. Would like to have space for pickleball
- h. If the small gym could get some daylight, that'd improve the quality of the space
- i. General finish and equipment upgrades could improve the usability of the small gym
- j. Favorable to bleachers on one side - ideal would be 700 students
- k. Would like the divider curtain for class use
- l. Overall, the concept seems viable
- m. Would like capabilities to project on walls opposite bleachers
- n. New speakers in existing gym, should consider reuse.
- o. Wood floor in competition gym, resilient in small gym and wrestling room
- p. Drinking fountains outside the main gym, by the restrooms
- q. For events, everyone uses door 5 (south of wrestling room). Need to review accessibility.
- r. Concessions is usually just a folding table.

#### 4. General Classroom 12:01pm

**Additional Attendees:** Amanda Landi (Teacher, Health), Katherine Lesniak (Teacher, Math Interv), Jodeci Hrudicka (Teacher, Art)

- a. Open/mobile storage is good, as long as it can fit bins
- b. Main math storage need is manipulatives - but trend for general rooms is less storage in the room
- c. Difficulty of getting the right amount of storage for each room - may want to survey the staff to



- see who is using storage and what they're storing.
- d. Students are bring a binder, chromebook, and a water bottle with them. Occasionally a few books or pencil case. In general, people seem comfortable with putting the stuff on the desk but sometimes it's put on the floor. Under desk or under chair storage would help keep stuff from getting tripped on. No cubbies that would need to be cleaned out. Like under chair because it's easy to see who left stuff behind.
- e. Like the desk with 2 wheels, no wheels on student chairs, instructor chair with wheels.
- f. Need a little storage for office supplies.
- g. Consider standing height student and teacher desks - some students really like standing through the day. Would need to figure out how that gets standardized across rooms - very teacher specific. Many teachers have asked for that. Need could be served with a couple height adjustable tables that allow groups to congregate around it.
- h. Mocking up a typical classroom with new furniture would be a good way to see what kind of furniture should be selected can help inform the district standard
- i. Art room would probably be about 50/50 standing/seating
- j. Art has a large storage closet but just houses extras - most everything is stored in the room so students can access it. Clay is stored in the kiln room. Shelving and drawings, no tall wardrobes. May want more fixed shelving to limit materials getting disorganized.

**5. Visual Arts 12:38pm**

**Additional Attendees: Deana Madalinski (Teacher, Drama), Katie DiJohn (Teacher, Language Arts), Kyle Grace (Teacher, Music/Vocal)**

- a. Projection is used in the band and orchestra rooms but more minimal
- b. Problem with choir room is that it was just two rooms combined into a choir room. Currently using some portable risers. Generally, not moved around. But see use for the risers continuing. 54 maximum students
- c. Tech in choir room is more limited, would be nice to have the ability to record and playback
- d. Would be great to have some small private rehearsal room, 10-15 sectional with a standing piano.
- e. Adjacent storage room is used for general building storage, costumes.
- f. Most students come in the choir room via the main hallway, not the stair.
- g. Needs 32 feet in width for the risers, 40 would be ideal. Could take over the storage to create a small ensemble room.
- h. Would love to not have to go to the auditorium to work for drama. Would like to have a small stage.
- i. Lots of group work in the drama class and space gets tight with desks and chairs as well as the open space.
- j. Community room 122 is used as their "green room". Would be great to have a place to store costumes and have a room with mirrors.
- k. Language arts room doubles as set design/prop design room. No place to do building of sets.
- l. Light bleed into the auditorium stage is bad
- m. Show choir is a large group and is the reason why choir is where it is. Overall, choir does not feel left out but happy to have a permanent place. Would not be opposed to being co-located with the remainder of the fine arts programs.
- n. Can only fit 24" riser in the current choir space, would be great to have more height.

**6. Student Wellness 1:27pm**

**Attendees: Chloe Soto (School Counselor), Mary Schwartzhoff (School Social Worker)**

- a. Need to consider wellness space, however, the other two schools don't have space allocated specifically for that. Need to accommodate 8-12 people.
- b. Consider taking 2 SpEd rooms next to courtyard and creating general music room.
- c. Current wellness space is underutilized.
- d. Need a place where students can work supervised.
- e. Consider flipping the admin conference room and the nurse suite. The conference room can then

- dual serve as the wellness room and meeting room.
- f. 3 Open office positions in the main admin suite

**7. Science 2:15pm**

**Additional Attendees: Stephanie Incrocci (Teacher, Science), Elisabeth Eland (Teacher, Science), Amy Schwartz (Teacher, Science)**

- a. Kids hide under stairs adjacent to the existing science rooms.
- b. Demonstration station would like to have gas, don't need throughout room
- c. Love the idea of power from the ceiling, do not think it would be a distraction
- d. Need space for up to 28 students, 7 sinks
- e. Like the idea of cubbies built into the perimeter casework for student materials. Alternatively could provide touchdown spot near the door. Consider providing chromebook power charging in the cubbies.

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