

New Berlin Jr. and Sr. High School

# Schematic Design

September 2022







It's more than a school,  
**it's your future.**

New Berlin Jr. and Sr. High School  
**Schematic Design**  
September 2022

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**What you get** by achieving your goals is not as important as **what you become** by achieving your goals.”  
- Henry David Thoreau

# Schematic Design

**Schematic Design** is the period in the design process when initial design concepts are **generated and refined** to solve the design problems identified during the programming process.

During this period, various design concepts are generated to solve the program needs. These initial concepts are then **evaluated and condensed** into one or two designs for further study.

These rough concepts are then **refined and modeled** for further study. Once they are critiqued in the office and modified, we feel it is important to gain greater **feedback**. In this project, we also met with and sought for critical review from administrative and staff members on the initial and revised concepts.

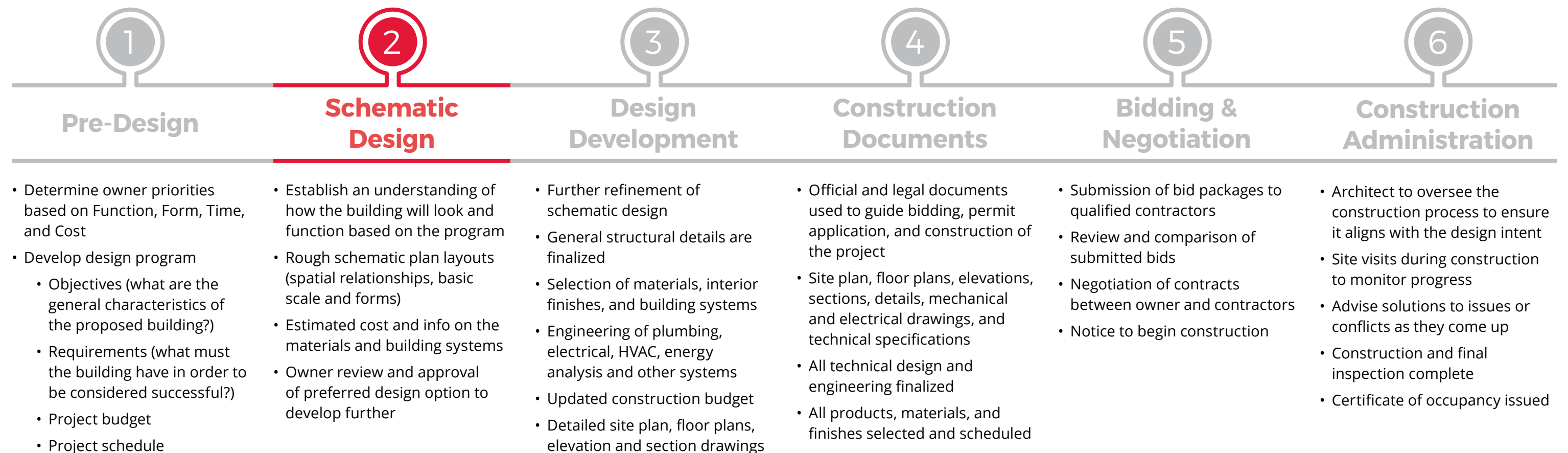
From these feedback sessions, we further refined the concept images and drawings. The result of that development is contained in the following pages of this **Schematic Design Presentation**.





Schematic Design establishes the general scope, conceptual design, scale and relationships among the components of the project.

# The Process





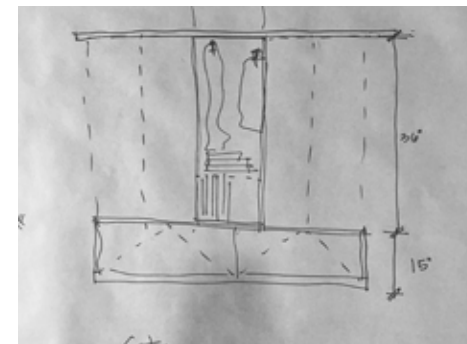
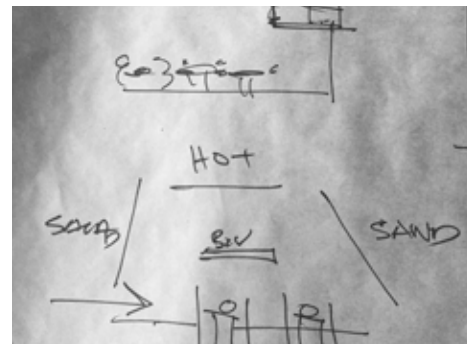
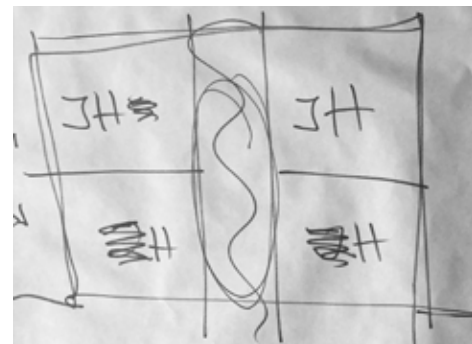
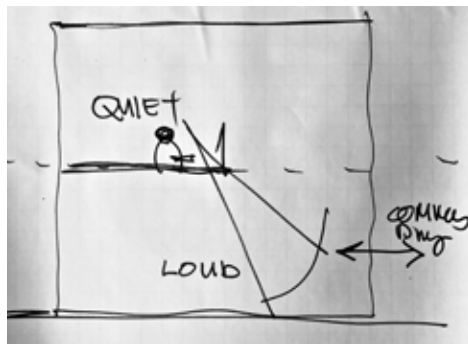
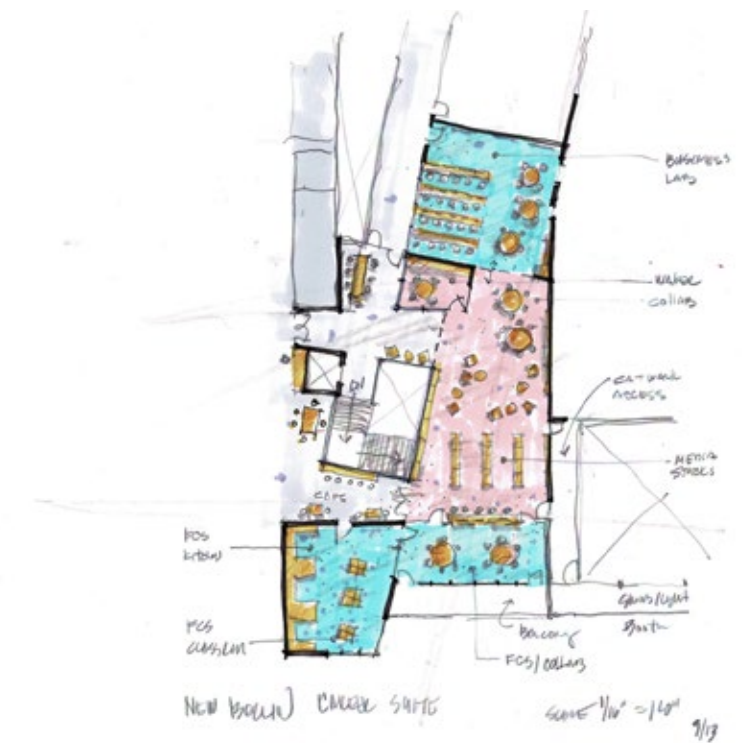
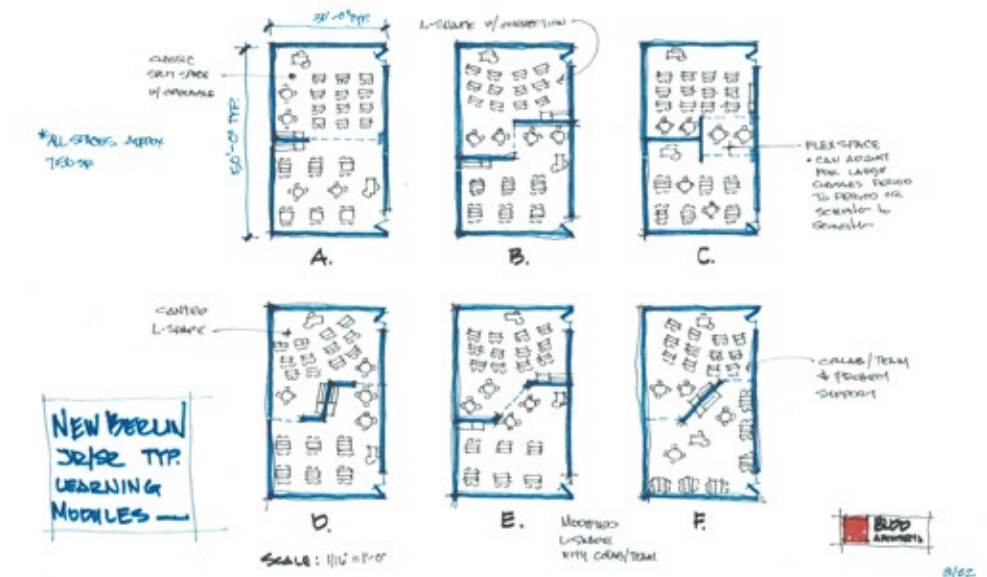
# The Concept

The project at New Berlin's Junior / Senior High School will mean that all grade levels in the district will have the opportunity to learn and grow within modern facilities. The addition and renovations to the building is focused on re-organizing the spaces to give a clear understanding of place and to create efficient student access and traffic flows to shared spaces.

The base goal of this project was to **replace approximately 70,000 SF of outdated, poorly functioning spaces** of the southern and western portions of the building. With that, portions of the 1970's building that were deemed well suited for continuing use will remain, including the J.B. Kirby Dome.

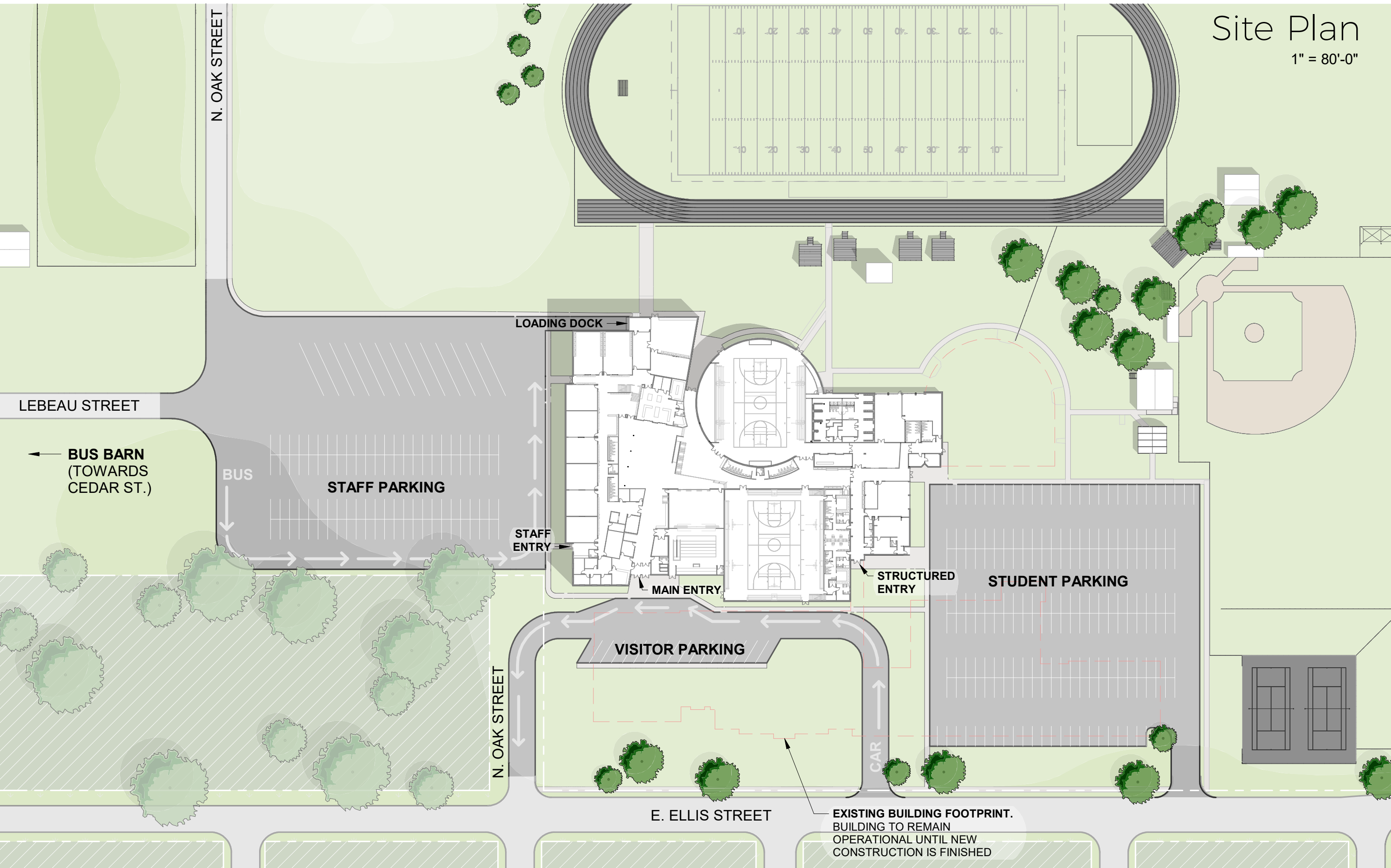
This design stemmed from the basic form of a double loaded classroom corridor, exploded into a wedge shape to allow natural light and collaboration spaces to fit within. **Multi-purpose and multi-use were another important theme to this addition.** Large spaces like the commons, band, chorus, new gym, and career suite include flexible equipment that will allow its occupants to rearrange the space to their needs for that year, week, or hour within the day.

A new bus barn will be one of the first structures to begin construction and is located on the western end of the district's campus, freeing up space to accommodate the new addition. The location of the new addition on site is south and west of the Dome, however the footprint does not touch the existing southern half. This allows the existing building to remain operational until the new addition is finished. Once the existing building is demolished, the remaining site improvements, parking, and drop-off lanes will be constructed and finalized. Student parking is secluded on the eastern side of the building and has a direct path to the main secure entry. Small buses will have access to this parking lot so students can have access to the eastern Structured classroom. Staff parking is to the west of the building and can access the main entry or a secured door that enters the core administrative spaces. The main bus loop and loading dock is also located on the western side of the building. These eastern and western parking lots frees up the southern facade of the building – emphasizing the main entry. Here, parents can drop off students directly into the secure entry, and visitors will have parking nearby. This site concept allows for future modifications to the athletic fields and other site amenities that will be implemented into a district master plan.

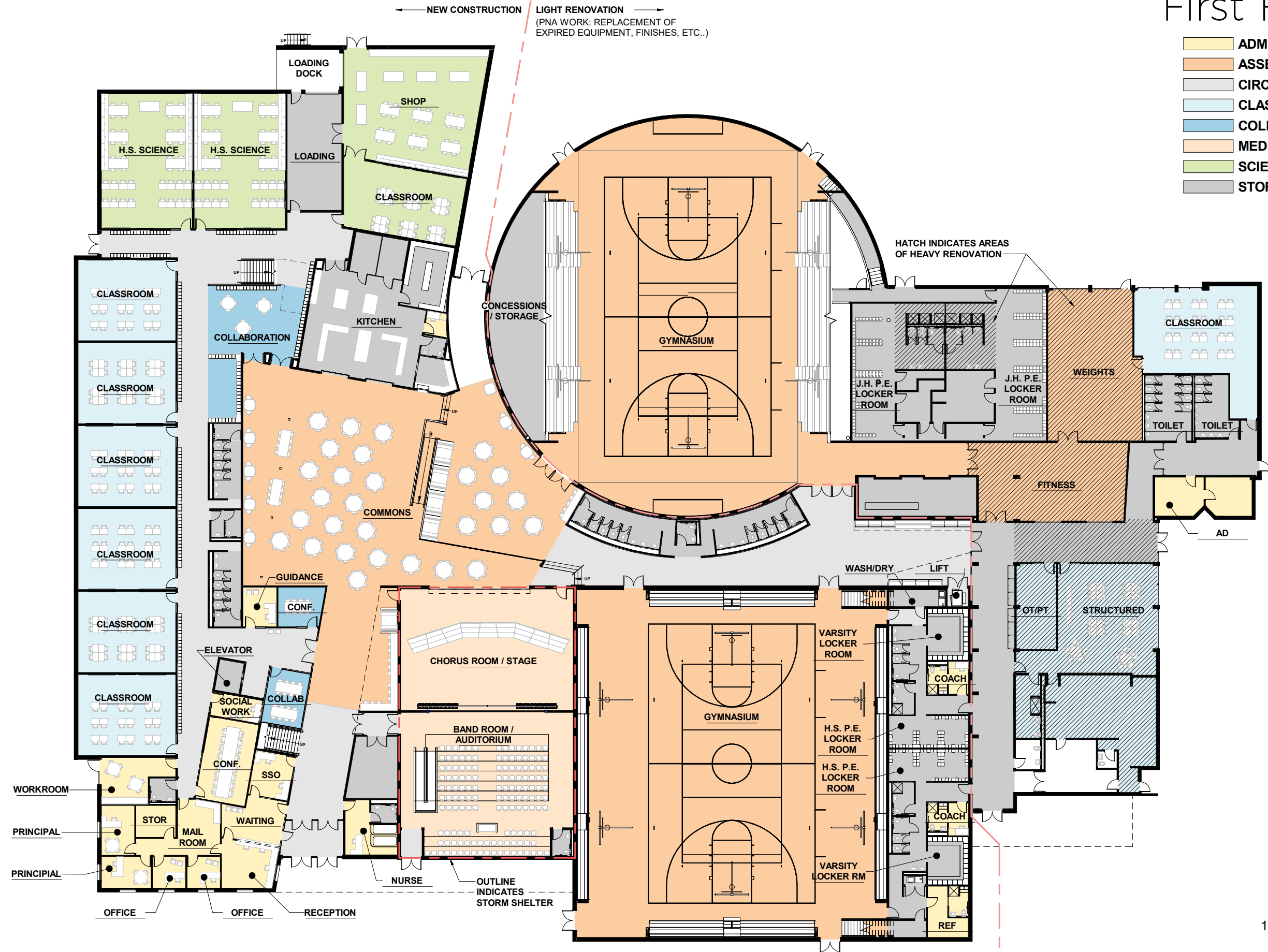


# Site Plan

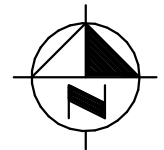
1" = 80'-0"



# First Floor Plan



- ADMINISTRATION
- ASSEMBLY
- CIRCULATION
- CLASSROOM
- COLLABORATION
- MEDIA/ARTS
- SCIENCES / SHOP
- STORAGE/SUPPORT



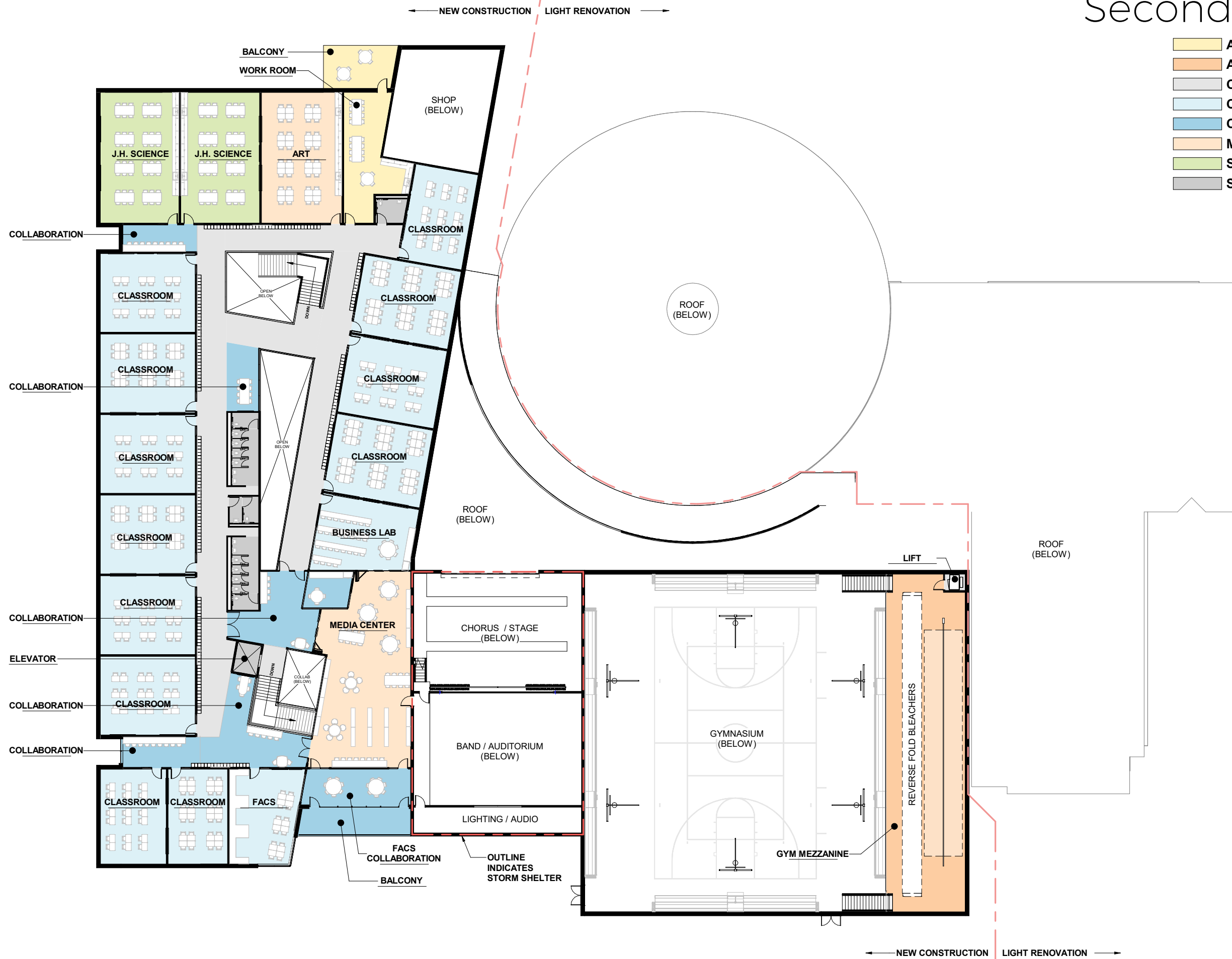
1" = 30' - 0"



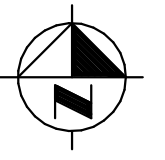


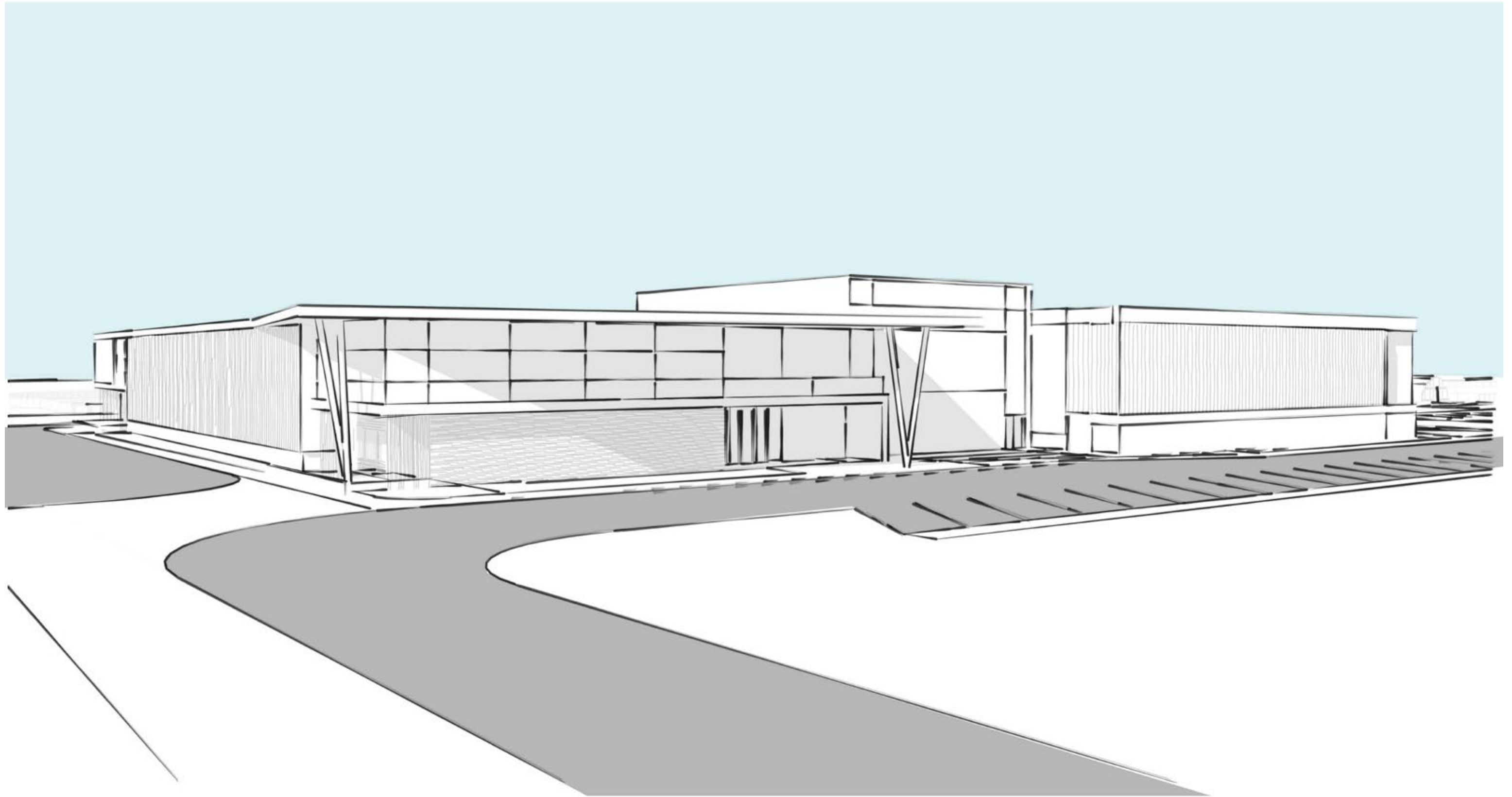
# Second Floor Plan

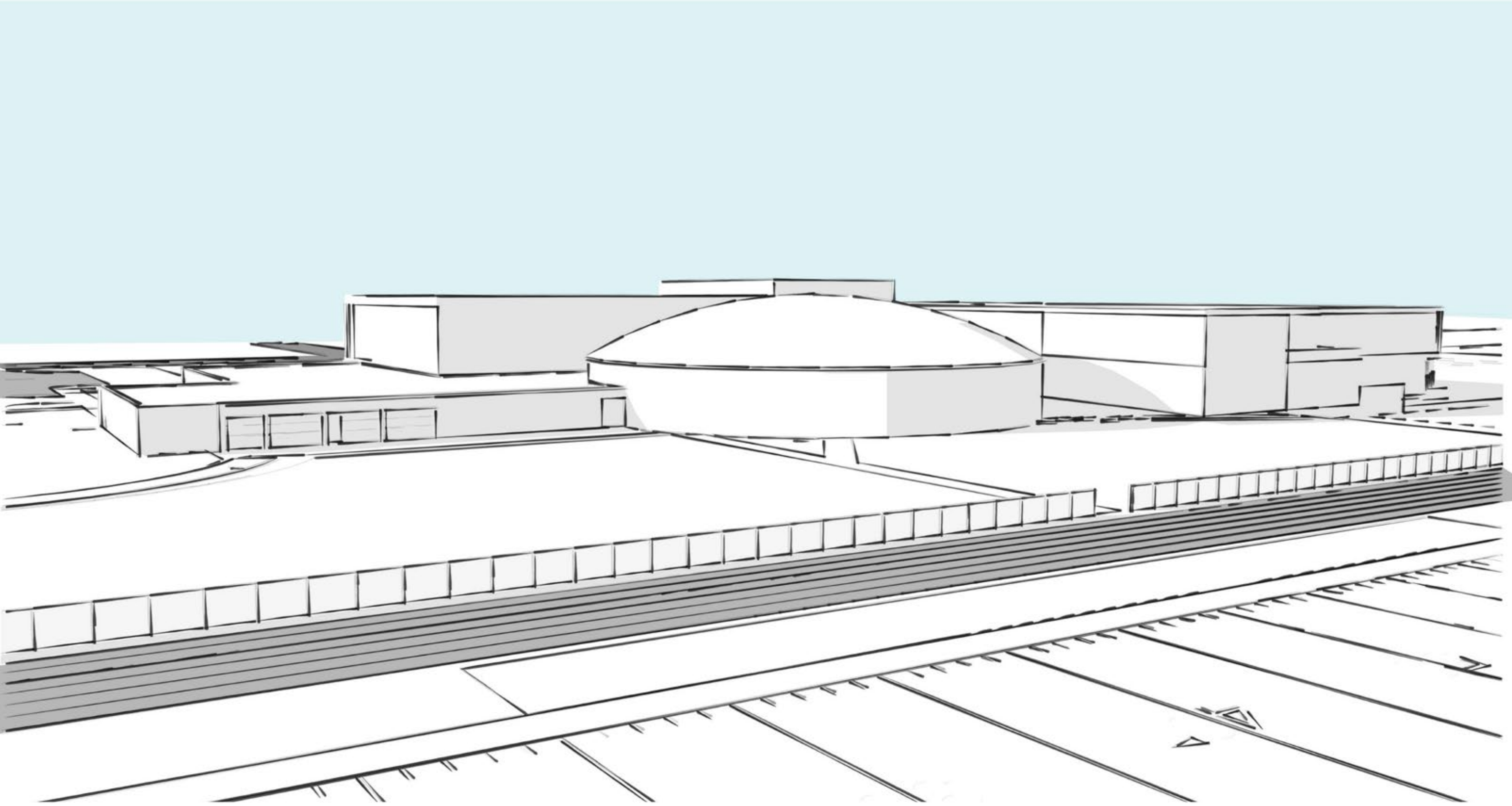
- ADMINISTRATION
- ASSEMBLY
- CIRCULATION
- CLASSROOM
- COLLABORATION
- MEDIA/ARTS
- SCIENCES / SHOP
- STORAGE/SUPPORT



1" = 30' - 0"





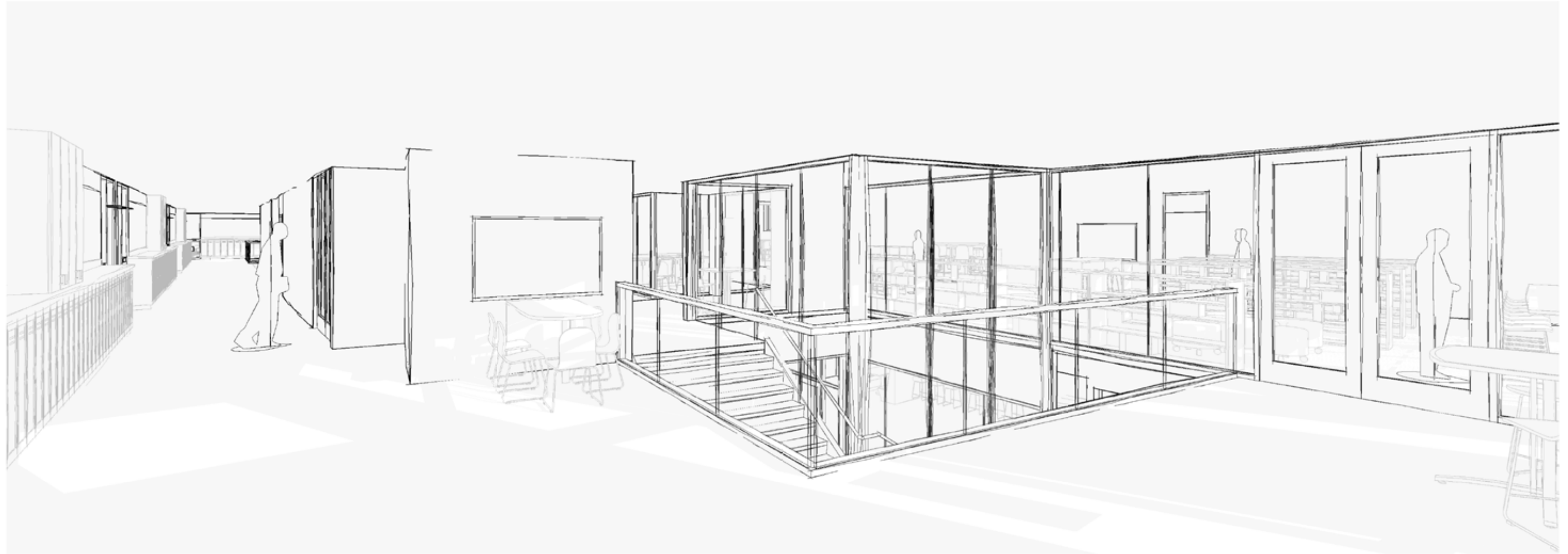






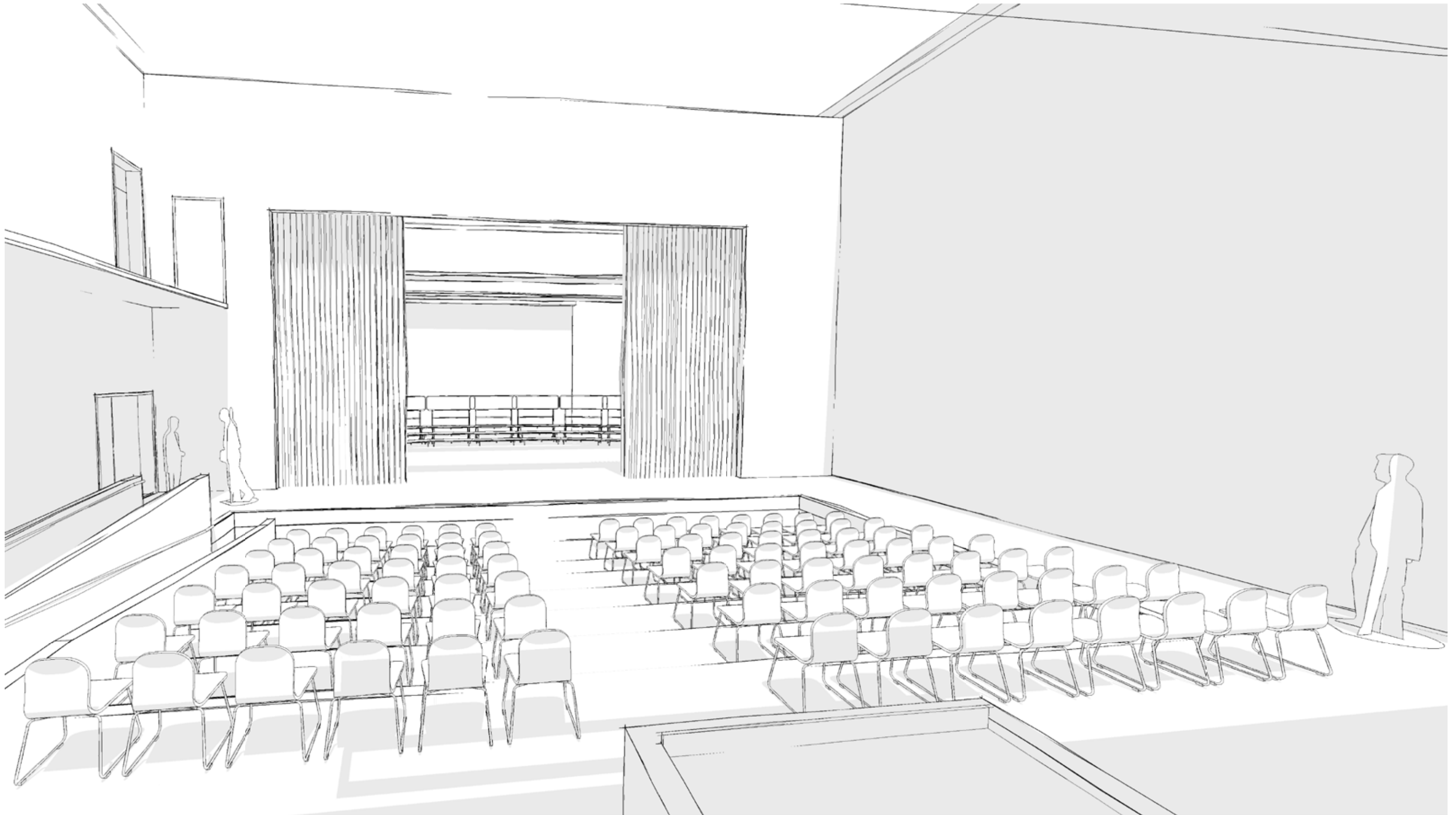
# Gymnasium





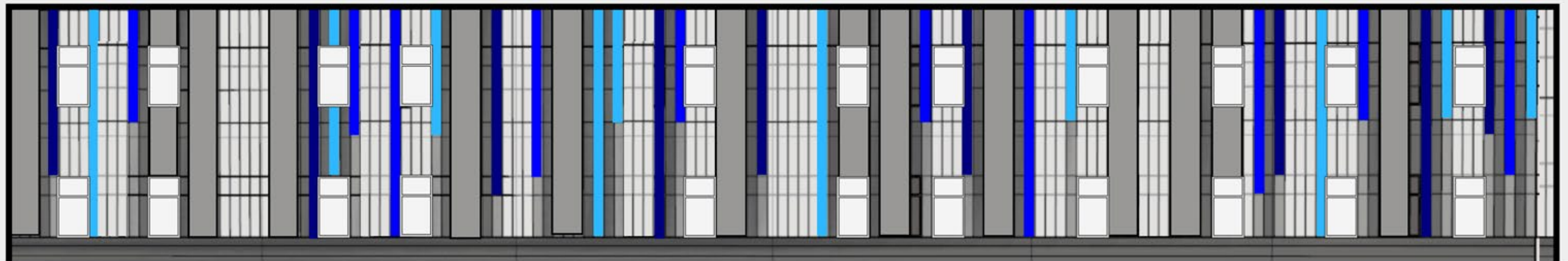


# Band & Chorus Room/Auditorium



In this design study of the exterior elevation of a typical classroom wall, we've taken inspiration from morse code to develop a pattern for the metal panels and fenestration. A pop of color was assigned to each dot while larger grey panels were assigned to each dash. Creating a hidden meaning to a seemingly random pattern. This is just one of the many design studies we plan to develop as we move forward.

n e w      b e r l i n      p r e t z e l s  
- . . - -      - . . . . - . . - . . . . - .      - - . . - . . -      - - . . . . - . . . .





# Design Criteria: Exterior



**BRIGHT, DEFINED ENTRY**



**WELCOMING GLASS FRONT**



**ACCESS TO OUTDOORS**



**SHADED**



# Design Criteria: Interior



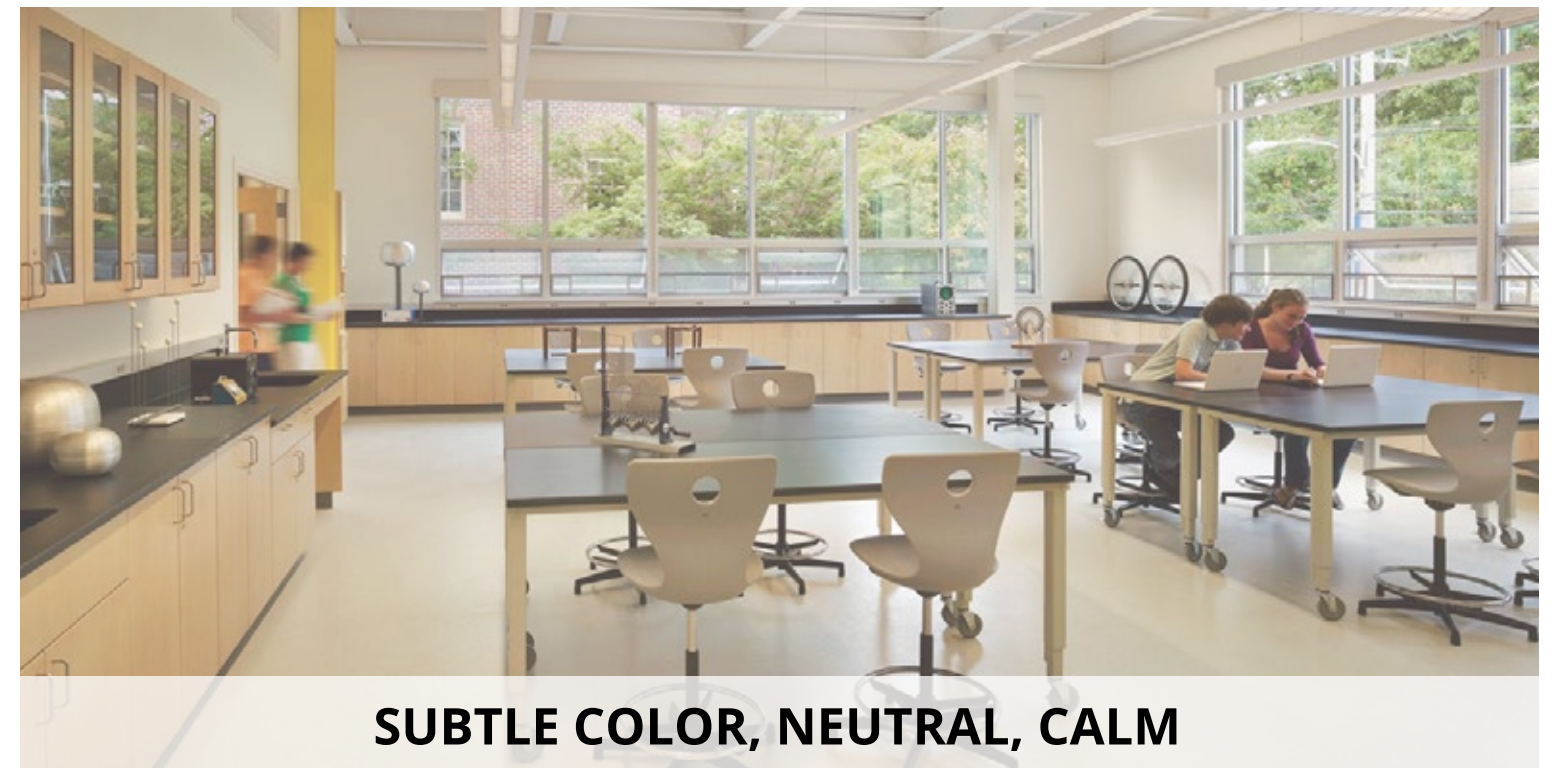
**INTIMATE, WELCOMING, NATURAL LIGHT**



**FLEXIBLE, VARIETY OF PURPOSES**



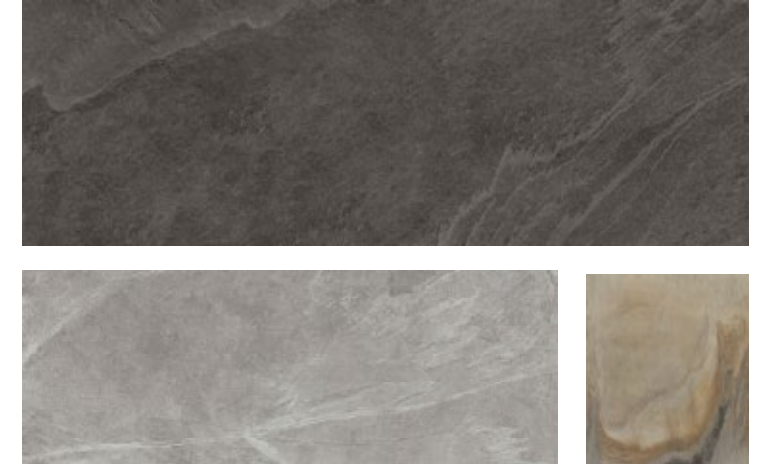
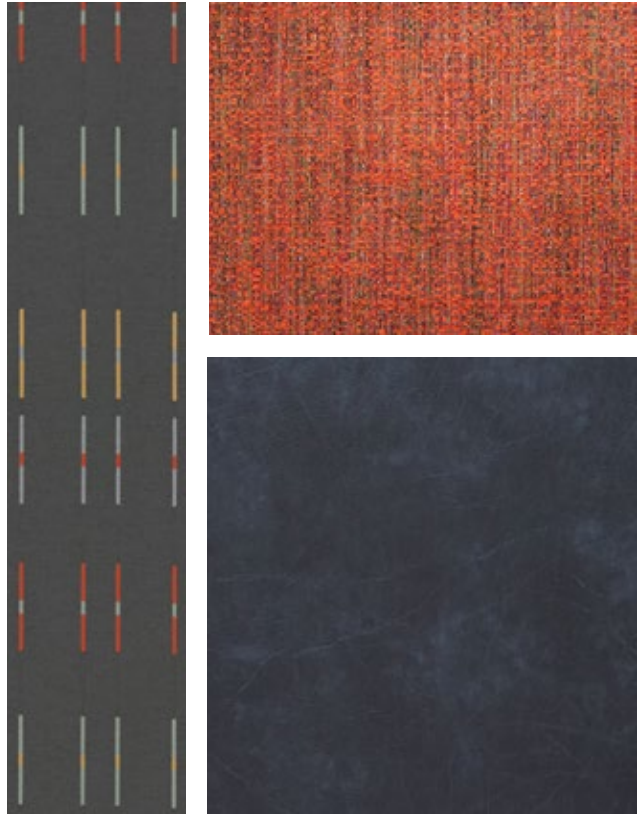
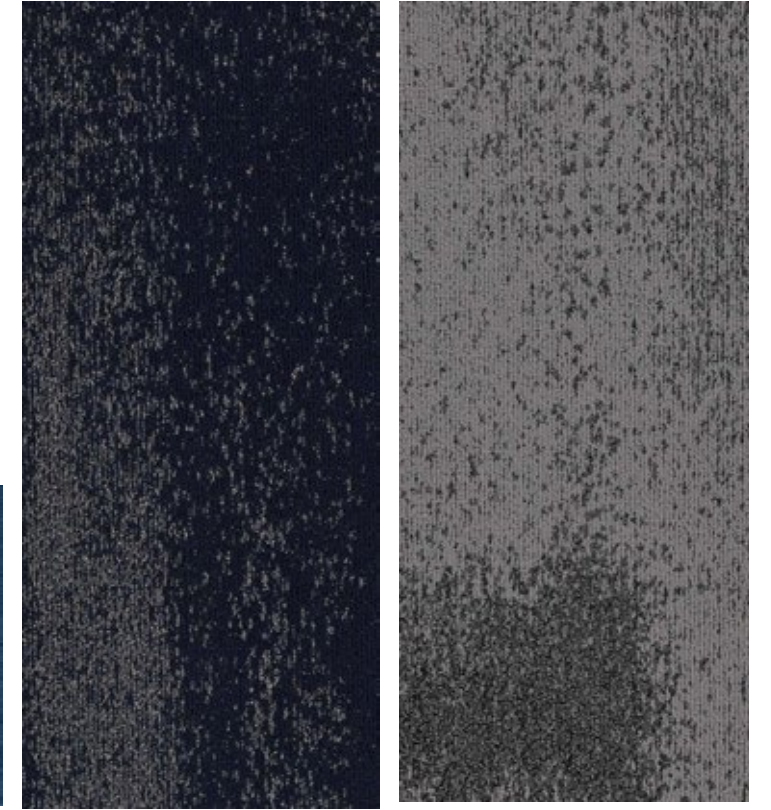
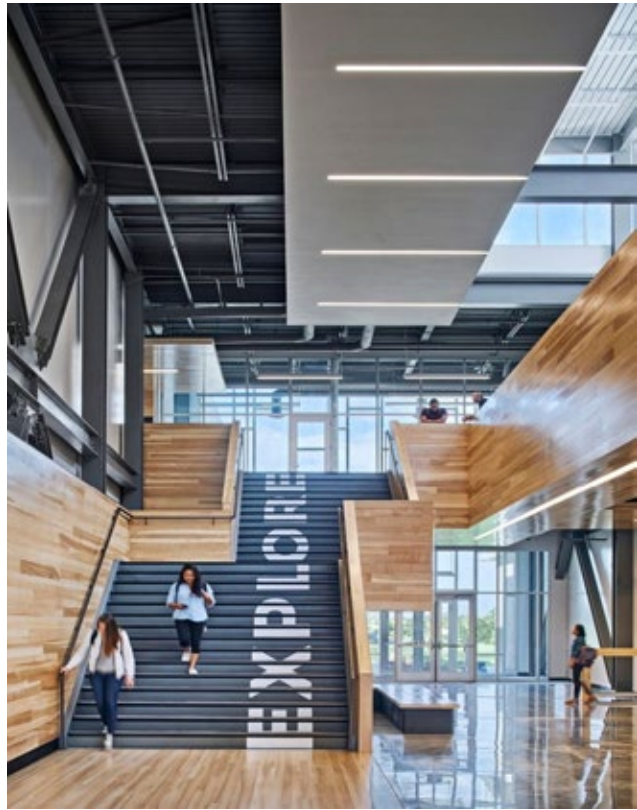
**COLLABORATION**



**SUBTLE COLOR, NEUTRAL, CALM**



# Interior Inspiration





# Proposed Construction

## Division 01 – General Requirements

Work to include the General Provisions of the Contract for Construction, including bonds insurance, overhead and profit, supervision of the work, and the General Conditions. This project will be delivered by multiple bid packages assigned to the Construction Manager at the completion of the bidding phase. The Construction Manager is CORE Construction Midwest of Peoria Illinois.

The proposed structure is a new building on the current JR/SR High school site. The new building will be located on the northwest side of the current building to allow continued use of the current facility. The building is approximately 70,000 square foot of New Construction. The building use and occupancy is classified as Education Group E. Column sizes will vary and the floor-to-floor height will vary. The building will have 1/4:12 sloped flat roof areas. The building exterior wall facade will be a combination of brick, CMU and metal panel.

Structural Design Features:

The building will be broken up structurally by 1 seismic separation joints. The foundation system will be foundation walls with continuous footings and isolated footings under columns. The building's roof will be supported by roof joists and steel beams. The gym and music areas will be reinforced CMU with structural steel roof framing. The music area will be the Storm Shelter. The building lateral force resisting system will be steel moment resisting frames and shear CMU wall panels. The classroom portion wall system will be brick and metal panels system supported by light gage metal studs for Wind and seismic loads.

- Live Load:
  - Floor Live Load: 1st Floor Corridor 100 psf
  - All Corridors above 1st Floor 80 psf
  - All Lobbies 100 psf
  - Stairs 100 psf
  - Roof Live Load: 30 psf
- Snow Load:
  - Ground Snow Load,  $P_g = 25$  psf
  - Occupancy Category III
  - Importance Factor 1.10
- Wind Load:
  - Basic Wind Speed 90 mph
  - Occupancy Category III
  - Importance Factor 1.15
  - Exposure C

- Seismic:
  - Site Class C
  - Occupancy Category III
  - $S_s = 12.00\%g$ ,  $S_1 = 6.40\%g$
  - $SD_s = 0.096g$ ,  $SD_1 = 0.073g$
  - Importance Factor 1.25
- Basic Codes:
  - Building: International Building Code, IBC 2015
    - Minimum Design Loads for Buildings and Other Structures, ASCE 7-05
  - Structural Steel: AISC 360-05 (ASD) 13th Edition
    - AISC 341-05
    - AISC 358-05 + Supplement AISC 358-05s1-09
  - Concrete: ACI 318-08
  - Masonry: ACI 530, 530.1-08

## Division 02 – Existing Conditions

Site demolition: There will be ongoing phases of the demolition to track the construction schedule. Phase 1 will consist of portions of the existing parking and outbuildings to accommodate the construction of the new portions of the project. These include a maintenance and concession facility NW of the existing building. Temporary access and parking will be required.

Phase 2 will consist of the demolition of the existing South portions and 6th grade wing of the facility. Approximately 70,000 SF of masonry and wood and steel construction.

Selective Demolition: Existing portions of the 1970 structure will require selective demolition and repair as part of the remodeling.

## Division 03 – Concrete

Foundation Type:

- The foundation information is based on future Geotechnical Report. Allowable Design Pressures and Values:
  - Footing Net Soil Bearing Pressure on soft clay TBD (Strength Limit State using Terzaghi's Equations)
  - Minimum footing Width TBD
  - Minimum frost depth TBD
  - Soil Density TBD
  - Active Earth Pressure Coefficient TBD
  - Passive Earth Pressure Coefficient TBD
  - At-Rest Earth Pressure Coefficient TBD
  - Coefficient of Friction between concrete and soil TBD

- Foundation system: We propose the first floor construction to be 4" reinforced concrete slab over a vapor barrier over 6" compacted granular fill. Foundation to be a typical formed in place, reinforced concrete foundation with footings at steel column locations. - Pending Geotechnical report
- Materials
  - Concrete: 28-day compressive strength = 4,000 psi normal weight for foundations

Framing Type:

- Auditorium/Storm shelter with steel roof joists and poured concrete deck.
- Concrete: 28-day compressive strength = 4,000 psi normal weight for floor slabs on metal deck

## Division 04 - Masonry

The exterior facade will consist of brick in lower areas.

Interior areas that require a fire-rated enclosure, e.g. fire stairwells and elevator shafts, or impact resistant or structural wall elements will be constructed of concrete masonry units (CMU) to meet the specified fire rating. Other interior remodeled spaces may require infilled wall construction, where appropriate, the use of masonry will be used.

Auditorium/Storm shelter to be reinforced concrete masonry units (non-insulated).

Gymnasium will be Reinforced Concrete masonry units.

## Division 05 – Metals

### Structural Steel

Framing Systems:

- Superstructure: Structural steel framing and composite metal deck for elevated slabs.
- Roof Framing at minimum sloped roof: Steel joists at 5'-0" centers with 1 1/2" wide rib metal deck; maximum joist depth = 26" and steel beam depth = 24".
- Floor Framing: Steel joists at 2'-6" centers with 2 1/2" concrete slab on 1 1/2" composite metal form deck (4" total thickness) supported by steel beams; maximum joist depth = 28" and Steel beam depth = 24".
- Columns: Steel Wide-flange shapes, maximum size is W14 and Steel Tube shapes, maximum size is HSS14.

Lateral System:

- Steel Moment Frames with seismic moment connection detailing in both directions. Except in Structural concrete masonry areas

Materials:

- Structural steel: A992,  $F_y = 50$
- Reinforcing steel: ASTM A-615, Grade  $F_y = 60$ .



# Proposed Construction

## Misc. Metals

Stairs will consist of precast concrete or terrazzo tread and architectural detailed structure. Stainless steel handrail and steel guardrail.

Stairs will consist of concrete filled steel pan stair with ornamental tread material (luxury vinyl tile, wood, or precast terrazzo) and architectural detailed structure. Stainless steel handrail and guardrail with cable or glass system.

## Division 06 – Wood, Plastic, Composites

Work will include rough carpentry as required for blocking in walls and roof construction as appropriate. Select areas of the lobbies, theater space, concert hall, commons, and information commons are anticipated to receive finished wood accents or composite materials that create the same warm aesthetic of wood paneling, trim, and moldings.

- Work will include plastic laminate wall and base cabinet casework as needed throughout new and renovated spaces.
- General casework throughout office areas will be commercial grade laminate with laminate tops. Layout will vary with uppers, lowers with countertop, and full height.
- Classrooms to receive ~12'-16' of tall cabinets
- Common storage zones at education wing full height - double door
- Teacher Work rooms ~8'-12' upper/lower/counter
- Admin/Reception Desk
- Library/Media Center Desk will be custom furniture

## Division 07 – Thermal and Moisture Protection

Work will include insulating the exterior envelope (i.e. along foundation walls, exterior cavity walls and new roof) in accordance with the 2015 IECC. The exterior masonry/metal/EIFS panel system over a continuous insulation barrier, air/vapor barrier, cavity wall insulation, sheathing, and a metal stud backup.

Interior metal stud partitions will receive batt insulation for sound attenuation purposes.

New roofing and reroofing areas will consist of an TPO roof membrane at low slope roof areas. Larger sloped roof areas are not anticipated at this point.

Interior acoustic qualities of spaces which support the functions of the intended user groups and events, including:

- Junior High and High School concerts and rehearsals
- Junior High School choral performances
- Combined band & choral performances of the above groups
- Drama performances

- Musical theatre performances, including pit orchestra
- Show choir performances
- Band and Choral ensemble rehearsals
- Individual instrumental practice

Acoustic isolation of each program space from adjacent spaces to a degree appropriate to its uses, especially performance spaces.

Control of noise and vibration generated by building MEP systems, to limit background noise in each program space to a level and character appropriate to its uses, especially performance spaces.

### Acoustic Performance Criteria

Acoustic isolation performance refers to the degree to which a given partition reduces the amount of sound as it transmits through the partition. High values indicate a greater amount of reduction, or attenuation, and lower values indicate a lesser amount of attenuation. Meeting given sound isolation criteria requires the selection of appropriate wall, floor, and ceiling types, with particular attention paid to interruptions to the partitions, such as penetrations, routing, and placement of MEP services, and junctions of differing construction types. Acoustic isolation is typically defined using a Sound Transmission Class (STC) rating. STC values can range from STC 30 up to STC 70+, with the upper end of this range typically only found in extremely sensitive spaces.

Background noise criteria indicate the level of steady-state noise which is allowed within each space. The level of this noise must be sufficiently low so as not to hinder the uses of each program space, especially in performance spaces, where the nuance of a wide dynamic range and silence are both critical tools for performers. Background noise also plays a role in sound isolation by masking sounds which may filter in from adjacent spaces. Hence, background noise and acoustic isolation criteria are linked; a given level of acoustic isolation in a room with low background noise will require heavier partitions to achieve the necessary sound isolation compared to a room with higher background noise. Background noise criteria are defined using the Room Criteria (RC) rating system. Refer to Threshold's MEPF Acoustic Design Guidelines document for an in-depth explanation of RC ratings.

Overall room volume, shaping, and interior treatments are employed to give acoustically sensitive spaces an acoustic signature which is supportive of the intended uses. Sound-reflective surfaces are used to provide architectural amplification to aid performers in projecting their sound to an audience as well as to each other. Sound-absorptive finishes are used to control the overall loudness of sound generated by occupants, as well as the amount of reverberant sound that is allowed to build up and linger within a given space.

## Room Requirements

### Auditorium

- The primary functions for the venue are as a performance venue for musical ensembles from the Junior High, as well as the elementary school. Ensembles include concert band, choir, combined band and choir, and jazz band. Lecture or other instructional uses are likely as well. The room should be able to accommodate both amplified and unamplified performances.
- Preliminary assumptions are of a room volume of 150,000-170,000 ft<sup>3</sup>, with a structural ceiling height around 36 ft. Mechanical equipment is strongly recommended to be located remotely from the performance space. If rooftop equipment is unavoidable, the venue roof system will require concrete to isolate the interior acoustic volume from the noise-producing equipment, and substantial structural stiffening and vibration isolation measures will be required to avoid noise within the Hall induced by structural vibration. A background noise level of RC-20(N) is recommended within the Concert Hall.
- The rehearsal space will also be a performance venue for drama and musical theatre productions and supporting rehearsals in preparation of these productions. Madrigal dinners may also take place in this room, and lectures/instruction are likely uses as well. The desired construction is of masonry, which will provide substantial isolation from the adjacent corridor and lobby.
- Main entry doors to the venue will require Sound-and-Light lock vestibules with absorption on available interior surfaces. All doors into the venue will be solid wood or stiffened steel with full perimeter gasketing to ensure proper isolation. Doors that open from adjacent spaces directly into the acoustic volume of the Theater will require the use of STC-rated door assemblies. Ancillary spaces such as a Dimmer Room and an Amplifier Room should be located outside of theater envelope. Equipment for venue may be housed in the same room if a single common location in close enough proximity to both spaces is available.

### Support Spaces

- A Control Room will be provided for the auditorium; size and layout will be determined during the project's next phase. It will require an STC 55 double stud partition with multiple layers of gypsum board on each side separating it from the interior acoustic volume of the Theatre, to allow audio monitoring and use of a production intercom during performances. An operable STC 35 rated window assembly should be used for visual connection to the stage. Background noise level of RC-30(N) is recommended in the Control Room.
- Music Commons, which is also used as crossover space, is located directly to the east of the stage. This space should contain sound absorptive treatments in the form of an ACT or Tectum ceiling through the entire space, or an equivalent area of sound absorbing materials distributed over other room surfaces.
- Due to its direct proximity to the stage, if music commons will be used simultaneously, substantial sound isolation measures will need to be taken between the two spaces. An isolated double-

# Proposed Construction

stud multilayer gypsum board partition or grouted masonry wall to achieve STC 60 or greater will be required. STC 50 rated door assemblies will be required as well, and doors in the oversize opening onto the Theater stage should be STC rated guillotine-style, sliding, or swing doors, or double overhead coiling doors in series. Due to its direct adjacency to the stage, background noise level of RC-35(N) is recommended in the Scene Shop.

- Support should contain ACT ceilings and sound-absorptive materials on two adjacent wall surfaces. Doors should be solid wood or stiffened steel with full perimeter gasketing. Background noise level of RC-35(N) is recommended in these support spaces.

## Rehearsal Rooms (Concert Band, Marching Band, Choral)

- Rehearsal spaces for Band, and Choir will be function similarly but will be optimized acoustically for their respective ensembles. All rooms will require substantial isolation from their surrounding spaces due to the high volume produced by large ensembles, particularly the bands.
- The Choral room will at times share the Band space. New walls should consist of either masonry/concrete or a deep double stud wall with multiple layers of gypsum board on each side to achieve STC 60 or greater. Any openings in existing walls to be reused should be patched with construction of comparable weight. The ceiling height will be limited to the height of the existing space, approximately 14 ft.
- Concert band room will consist of new construction. Walls should be assumed to be STC 60+ construction, consisting of concrete/grouted masonry up to 12 inches thick. Ceiling height should be 18-20 ft., with sound-reflective elements consisting of multilayer gypsum board suspended below to aid cross-ensemble hearing. Due to these rooms' close proximity, the Marching Band room slab should have an acoustic isolation joint separating it from the adjacent building structure, with walls and roof structure that bear on this isolated slab, without rigid connection to the adjacent structure.

## Music Practice Rooms

- Practice room ceilings should be 10 ft. in height. Walls should consist of isolated double stud walls with multilayer gypsum board. Walls should extend up to the structural deck, or to a gypsum board cap ceiling which bears on the isolated stud walls. A background noise level of RC-30(N) is recommended within practice rooms.

## Division 08 – Openings

Work will include exterior thermally broken aluminum storefront/curtainwall window framing, interior glass doors/framing for office separations, and interior wood doors for occupied spaces and hollow metal doors for spaces not exposed to view. Doors requiring special acoustic treatment will be as follows:

Interior doors and window openings will be hollow metal frames.

Doors will be solid core wood.

## Specialty Doors

- Other than main loading doors to the auditorium, all doors to the venue will require Sound-and-Light lock vestibules with absorption on available interior surfaces. All doors into the Theater will be solid wood or stiffened steel with full perimeter gasketing to ensure proper isolation. Hard flooring should be provided under the audience seating. Carpet may be used in aisles only. An In-House Mix Position for control of AV systems will be provided. Ancillary spaces, such as a Dimmer Room and an Amplifier Room should be located outside of the room envelope and may require isolated gypsum wall and ceiling construction.
- All doors directly into rehearsal spaces from circulation require either sound lock vestibules or STC 45 rated door assemblies. If vestibules are used, doors should be solid wood or stiffened steel with full perimeter gasketing. A background noise level of RC- 30(N) is recommended within rehearsal rooms.
- Practice Room doors should be STC 45 rated assemblies with minimally sized lites.
- Doors at storm shelter to be storm rated HM doors and frames.

Exterior Fenestration: Exterior fenestration will consist of thermally broken aluminum storefront with 1" insulated glazing.

Exterior Doors: Aluminum doors with insulated glazing will be used in aluminum storefront applications. Individual exterior door openings will be hollow metal frames and doors.

- Interior Elements:
  - Interior Partitions: Standard classroom areas, offices, etc will be painted gyp board on metal studs with sound batt insulation. Assume that partitions go to underside of deck above. Music room may have acoustically treated partitions and ceiling (multiple layers of gyp board) if deemed necessary.
  - Openings

All glazing provided will meet all safety requirements (where applicable) and the exterior glazing will also be provided in accordance with the 2009 International Energy Conservation Code.

All existing door hardware that consists of knob handles will be replaced to be lever type and to match the Districts current replacement efforts.

## Division 09 – Finishes

Interior finishes will consist of paint in most areas, floor and wall tile in toilet rooms, appropriately sized vinyl tile flooring in public spaces, carpet in offices and media areas, exposed concrete floors will be explored in more industrial classroom environments like art, science, and careers.

Ceilings will be composed of a mixture of acoustic ceiling tile, gypsum board, wood look, or exposed structure depending on the application and aesthetic of the space.

- Office and classroom ceilings will be 2x2 ACT. BASIS OF DESIGN USG Olympia: #4750 (.60 NRC)
- Common space / circulation areas will be a combination of painted exposed structure and ACT clouds with metal perimeters. Gym ceiling will be painted exposed structure.
- Toilet rooms, kitchen / server will have cleanable ACT.
- Gyp board soffits will be used at space transitions and as required for MEP system concealment in finished spaces.

## Environment Graphics

- Environmental graphics will be used in many locations to create inspiration, motivation, energy and reinforce positive learning attributes.
  - Vinyl installed on gyp board will be utilized in high profile public spaces and educational spaces to create energy and reinforce positive learning attributes. Hall of fame and specialty graphic areas will include acrylic panels

## Floor finishes

- Typical floor finishes as noted below:
  - Classrooms: Carpet at learning areas with Luxury Vinyl Tile (LVT) or epoxy at entry/locker/lab spaces
  - Offices: Carpet
  - Work Rooms: LVT or carpet
  - Classroom Commons: LVT / Carpet
  - Music – Carpet on acoustical backing
  - Art - Sealed concrete floor
  - Gym – wood athletic flooring (scissor lock)
  - Public common areas / first floor corridors – Luxury Vinyl Tile (LVT)
  - Toilet rooms – porcelain tile floors and wainscot to 6' A.F.F. on wet walls
  - Kitchen / Server – Poured, slip resistant resinous floor.

Acoustic performance will also be addressed when using interior finishes for the performance and practice spaces.

## Music Spaces

- The structural enclosure of the venue is expected to consist primarily of CMU.. This heavy structural envelope provides a high baseline level of sound isolation (STC 60+) from the adjacent circulation and lobby space. Portions of this concrete masonry structure may be exposed to the interior acoustic volume of the room to aid the interior acoustic qualities by providing massive



# Proposed Construction

sound-reflective surfaces which support the broad range of frequencies present in music and sustain reverberation with a “warm” character. Secondary surfaces within the structural enclosure also shape the interior acoustic volume of the auditorium, both for acoustic purposes as well as to form circulation and backstage space. These surfaces should be massive as well, to support the full range of musical frequencies. Wall surfaces should consist of heavy masonry or multilayer gypsum board. Ceiling surfaces will consist of shaped multilayer gypsum board, which will cover at minimum roughly the front half of the room as well as the rear quarter.

- Sound-diffusive treatments will be required in certain regions of the room, particularly at the rear walls of both parterre and balcony seating areas, as well as in some regions of the upper side and rear walls. Diffusive treatments can take the form of small-scale surface articulations in precast concrete, textured masonry, shaped gypsum board construction, or off-the-shelf acoustic diffuser products. Variable acoustic systems may be required, which consist of sound absorbing curtains and/or banners along areas of the side and rear walls.

## Rehearsal Spaces for Band & Choir

- Sound-absorptive and sound-diffusive treatments will be required in all rehearsal rooms. Absorption combats excessive loudness generated by large ensembles, while both types of treatment combat flutter echo between parallel wall surfaces. Absorptive treatments may be fabric-wrapped panels, Tectum, or unfaced duct liner. Sound-diffusive treatments may consist of shaped gypsum board construction or off-the-shelf acoustic diffuser products. Floor finish in the Choral room should be hard (wood or vinyl sheet/tile), and thin carpet in both Band rooms.

## Music Practice Rooms

- Walls should consist of isolated double stud walls with multilayer gypsum board. Walls should extend up to the structural deck, or to a gypsum board cap ceiling which bears on the isolated stud walls. The ceiling should be ACT or other sound-absorptive finish, and absorptive treatments should be placed on two adjacent walls.

## Division 10 – Specialties

Operable partitions will be provided at key locations to create a collaborative learning environment and zoning. These operable partitions will help create a flexible configuration within the teaching areas.

- Lockers will be metal or composite and will be designed without integrated locking, corridor lockers will be 36”Hx15/18” D 12”wide and integrated into a PL or Solid Surface surround. The configuration will reflect the different changes with student storage needs. Athletic lockers will be a combination of open athletic type and smaller locker room type.

## Division 11 – Equipment

### Auditorium Purposes

- The Performance space is designed as a small, intimate space for at least 175 audience members arranged on multiple levels with the ability to add 50 additional seats. The curtain system will provide masking and a proscenium so the full volume of the space will best feature musical performances. The audio/video/lighting systems will be designed to accommodate use by students and adults with minimal training. A bias to safe accessible features for lighting and rigging will be prevalent.

## Division 12 – Furnishings

### General

- Motorized shades will be provided in the Common area and where natural light will be used to enhance the athletic space when glare is a concern. Roller shades will be provided at specific occupied spaces for daylighting control.

### Stage Equipment (Rigging, Curtains, and Tracks) System

- Rigging in the Performance space is a combination of motorized hoists and dead hung battens over the stage. For the sake of flexibility, more battens are installed than would be initially required for curtains and masking so scenic drops and other pieces may be suspended; also masking may be adjusted on an as-needed basis depending on the set design. Lighting battens over the stage and audience are motorized for service and hanging operations; however a lift is still required to focus a light. A limited number of general purpose hoists are included for raising, storing or carrying drops and other scenic elements.

- No proscenium opening protection is required in either space, with the stage roof at 36’ unless otherwise required by local codes.
- Where provided, soft goods shall include a main curtain on a traveler track and main border; a complete set of black legs/ travelers; a black scrim; and a sky drop. All legs shall be traveler halves for flexibility. While it is possible to install borders (teasers) to mask the curtains these do restrict the flexibility and function of lighting so we discourage including them. The curtains are heavy weight, inherently flame resistant polyester velour: scrims are seamless sharktooth scrim; and sky drop is either Rosco Twin White or Garriets Opera. Depending on the acoustic requirements in the Concert Hall, there may be need for acoustic banners or curtains which would be motorized. Otherwise no main or masking curtains are planned in the Concert Hall.
- Acceptable manufacturing contractors for the Stage Equipment: J R Clancy, SECOA, Texas Scenic Company, H&H Specialties.

### Seating

- Fixed seating in the venue shall be fully upholstered seat and back, plastic back with steel tube standards. Seating is designed to accommodate wheelchairs as required as well as companion and accessible seating. LED aisle lighting will be included in every row-end standards for egress illumination. Where necessary, additional step lighting shall be included in wall and other locations to ensure compliant pathway lighting throughout the auditorium.
- Acceptable manufacturers: Irwin Seating, Seating Concepts, Series Seating.
- Gymnasium Bleachers will be provided within the new gymnasium and the existing Dome
- New Gymnasium: Retractable wall mounted bleachers with plastic seats to seat 1000 on the main floor. Mezzanine level 500 reverse fold.
- Up to 100 stadium seats will be distributed in areas of the main and mezzanine level
- Existing Dome Gymnasium- Replace current bleachers

### Display Surfaces

- We propose the use of marker board paint on level 5 gypsum board surfaces or (2) porcelain enamel markerboards per classroom.
- (1) 4’ x 4’ vinyl-faced tackboards per classroom.

### Signage

- In addition to environmental graphics, signage will be panel signage for wayfinding. Includes room identification, office and conference room customization and overall wayfinding as necessary. Dimensional letters will be included in some capacity on the exterior as well to serve as building identification.

### Toilet Compartments and Accessories

- Will be solid plastic toilet partitions. Toilet accessories (toilet paper dispensers, soap dispensers, hygiene product disposals) will be provided by the owner’s vendor and installed by the contractor. Grab bars, mirrors, and other accessories will be by the contractor. Hand drying at public toilet rooms to be automatic hand dryers with paper towel dispensers (by vendor installed by contractor) at individual sink locations elsewhere.

### Fire Protection Specialties

- Will be semi-recessed fire cabinets with extinguishers wherever the wall type allows.

### Athletic Equipment

- Gymnasium will have multipole volleyball sleeves in the floor system. The volleyball standards, netting, and related equipment will be included. There will be six (6) Basketball goals, with the main court having freestanding moveable goals, all will be motorized and adjustable. These will be front fold hoop systems as able in coordination with other building systems.



# Proposed Systems

- Ceiling mounted batting cages on the mezzanine level

## Stage and Other Floors System

- Preliminarily, The stage floor is 3/4 " Plyron (or similar hardboard laminated to plywood) with a low gloss black finish. Floor shall be laid on 1-1/8" plywood underlayment on 2 x 4 sleepers 2'-0" on center resting on 3/4" neoprene pads with stopper blocks. Optionally a modified gym floor system may be used as a basis for the stage floor. All slabs on grade shall have a watertight barrier on top of the slab. All floors shall have insulation for sound and thermal functions between sleepers. The floor is painted with a high-quality, durable black paint which is easy to renew or recoat as needed.

## Division 14 – Conveying Equipment

Work will include (1) electric traction/hydraulic, machine room-less passenger elevator in order to provide ADA accessibility to the second level 2000 # rating

- Work will also include a platform lift (aka LULA lift) in order to provide ADA accessibility to the gym mezzanine. 2-sided LULA type platform lift with enclosed shaft 10'-6" of travel and 1400# capacity

## Division 21 – Fire Protection

### Sprinkler Systems – General

- Sprinkler systems shall be designed per NFPA and Illinois Department of Public Health.
- Standpipes will be installed in the music performance areas due the stage sizes being over 1000 square feet. With a 100 gpm requirement at 65 psi per NFPA 14,
- Occupancy Classification: Sprinkler distribution will be hydraulically calculated for a majority light hazard density as outlined in NFPA-13 standards.
- Sprinkler heads: all heads will be concealed, quick response type heads.
- Fire Department Connection: The location of the Siamese fire department connection will be on the front of the building for easy access.
- Alarm Devices: All manual sprinkler system valves will be monitored by 120V tamper switches. Tamper and flow switches will be connected to the main building alarm system per standard practice.
- The fire pump and associated sprinkler equipment will need dedicated space, preferably in the sprinkled area.
- The fire service will be sized, and provide taps for future sprinkler projects for the entire building.

## Division 22 – Plumbing

### Domestic Water Supply

- Water will come from new mains and be distributed to new fixtures located in the renovated and addition. Domestic water supply will be copper piping with micro fiber insulation.

### Sanitary and Vent piping

- Sanitary will be connected to new mains. Sanitary and vent piping will be schedule 40 DWV PVC piping.

### Plumbing Fixtures

- Plumbing fixtures will be white vitreous china. Water closets will be low flow 1.28 GPF flush valve. Lavatories faucets will be .5 GPM. Sinks will be provided in the music area room for instrument cleaning.

### Gas piping

- Gas piping will not be required. Any gas usage required for science will be portable LP based. We may need gas for RTUs over gyms & auditorium

## Division 23 – Heating, Ventilating and Air Conditioning

### Heating and Cooling

- Air-to Air VRF systems will be utilized throughout. All classroom and office spaces will have ducted distribution above ceiling. Axillary heating will utilize electric radiant sources.

### HVAC Air Distribution System

- The new addition ductwork will be installed to meet the latest SMACNA Standards and insulated to comply with 2015 IECC. The preferred location for the new air handling equipment is within the building limiting roof mounted equipment. Access to equipment is imperative for proper maintenance for the equipment. Spaces requiring high levels of ventilation air will employ equipment capable energy recovery.
- Supply and return ductwork serving sound sensitive areas will have sound attenuators installed. The sound attenuators will be located on the supply and return duct mains off the air handling units.
- The goal of the project is to limit floor to floor height by reducing the size of ventilation equipment

### Building Ventilation

- Fresh air and exhaust air for specific spaces in the new building will meet the requirements listed in ASHRAE 62.1-2013. The goal is to reduce outside air requirements by improving recirculated indoor air through filtration. Multiple smaller zones of outside air provided by ERC or HRV is preferable to large DOAS units requiring large duct work.

### Temperature Control System

- Direct digital controls (DDC) will be utilized to control larger spaces, with localized thermostats utilized in classroom and office areas to increase user control.

## Division 26 – Electrical

### Distribution

- New service and distribution will be provided, with the existing switch gear being reused if possible.
- Aluminum conductors will not be allowed. All panelboard buses will be copper.
- General Use Receptacles will be provided at maximum 12 foot intervals in the Office and meeting spaces within the building. Corridors will be provided with separate circuits and will have receptacles located at 50 foot intervals. Receptacle circuits will be loaded to no more than 1600 VA. All receptacles will be provided with stainless steel cover plates.

### General Building Lighting

- General building lighting will consist of LED lighting with a mix of 2x2's, 2x4's, linear, decorative pendants and downlights. Target light levels will be in accordance with IES recommendations for maintained light output. Lighting power densities will be in accordance with the 2015 IECC and determined using the space-by-space method. Ease of re-lamping will be considered in the selection and placement of light fixtures.
- Emergency lighting will be of the LED wall-mounted type with integral battery back-up, and will be capable of providing emergency egress lighting throughout the added/remodeled spaces. Exit lighting will be accomplished with LED-source exit lights with integral battery back-up.
- Lighting controls will be in accordance with the 2015 IECC and accomplished with the use of wall mounted light switches or occupancy sensors. Ease of use and dimmers over switched dimming will prioritized in classroom spaces. Occupancy sensors will be provided in the "manual-on" configuration. Lighting will be zoned to allow for the use of any specialty equipment/needs (projection equipment, A/V equipment, day-lit zones, etc.). The use of automatic daylight harvesting will be integrated into the design, or independent control of fixtures within the day-lit zones will be provide (in accordance with the 2015 IECC).
- WRF will support all theatrical lighting designs by providing power and necessary pathways to all fixtures, devices, equipment and controls. There will likely be digital dimming panels, relay panels, control boards, control locations, other special power requirements, special lighting requirements, etc.

### Production Lighting Control Systems

- The intent is to specify LED lighting, and the control system shall be designed with the future in mind. The basic control system for the space shall operate over an Ethernet data network.

# Proposed Systems

- The system is designed so all lighting, including production lighting, house lighting, and work / utility lighting are centrally controlled. This includes lighting in the stage, seating areas, and spaces opening into the stage and seating areas such as control rooms, sound and light locks, catwalks, and orchestra pit including stand lights.
- The circuit distribution system shall be a combination of switched (relay) circuits and constant circuits as required by the various lighting loads planned. For solid-state lighting, switching outlets are required to reduce the power consumption of lighting instruments when the theatre is not in use and to allow for remote resets if required. Traditional centralized dimmers are not initially planned but a limited number may be required depending on lighting fixture selections made later in the project.
- The production lighting system shall be primarily designed around switched outlets to power the solid-state lighting products as well as outlets for switched loads such as work lights. Portable single-light dimmer packs are planned for traditional quartz loads, powered by the same circuits.

## Drama Theater Lighting

- Approximately (70) 20 Amp switched load circuits are planned for production use, powering single dimmer packs. For house and utility lighting a combination of up to (20) 20 Amp switched and constant circuits are planned. All circuits and controls are centrally operated. Outlets for production lighting are distributed throughout the stage and house at all potential lighting positions, with some plug boxes provided for “made up” positions such as stage toms, ladders, kickers, set mounts, etc.
- the lighting control console shall be It is intended that the consoles are interchangeable between the venues as a backup feature. Compatible lighting network signal distribution (Ethernet, ACN, DMX, etc...) is provided as required for the planned solid-state lighting and remote dimmers. Consoles models noted are representative of the class of console for each space. Final console selection will be from models current at the time of construction and with discussion and input from the users.

## House Lighting and Utility Lighting

- House lighting in each theatre shall consist of LED-based luminaires as the primary down light for the sake of energy efficiency and to eliminate need for costly access to re-lamp. There are a few viable full-range dimming LED products which are acceptable for tall rooms like an auditorium. Additional lighting in the audience spaces will be LED with special consideration to the use and need for good quality dimming control. Lighting for all egress paths will be designed to comply with all applicable codes.
- Utility lighting in the stage support spaces is primarily LED or fluorescent for work lighting use. In limited locations where low-level light performance is critical the use of either incandescent or even dimmable LED sources is planned.
- Emergency lighting is a major consideration and is integrated into the systems. Lighting levels will be planned to meet or exceed

codes for egress during loss of normal building power and will be fully coordinated with the electrical engineer. Emergency lighting shall also be activated in the event of fire alarm.

## Fire Alarm and Life Safety Systems

- A new Fire Alarm system shall be provided in accordance with the applicable version of the International Building Code, the Accessibility Guidelines as defined by the American with Disabilities Act, the Illinois Accessibility Code, and the National Fire Alarm (NFPA 72) and Life Safety (NFPA 101) Codes.

## Telephone, Data and Television Systems

- As part of this project the contractor will provide all telephone and data systems which include all communications wiring (fiber backbone and cat6a horizontal), associated connectors and connectivity equipment, as well as all electronics and hardware (including servers, network switches, and wireless access points). In addition, the contractor will furnish the raceways and rough-in work to supplement the structured wiring system, i.e. the individual conduits and boxes at the identified outlet locations, all necessary raceways from above the accessible ceiling to a wire management system.
- VoIP phone system will be assumed, via Cat6a cabling, to any new phone locations in the building. The school's VoIP phone server will be tied into their network and thus interfaced with other schools in the district.
- A new intercom system shall be provided as part of this project and shall provide coverage of the entire facility. The new system shall be used for intercom, public address, class tones and natural disaster warning. The school has expressed a desire to interface auxiliary audio source (iPod, etc) into new system. Physical locations of intercom stations in all classrooms should be evaluated with respect to current building safety plans.

## Security Systems

- All electrical work for either the Access Control systems (ACS) or Closed-Circuit Television (CCTV) systems shall include the electrical junction boxes at determined locations with conduits (and pullstrings) to accessible ceilings. The owner and their vendor will furnish and install all field devices, head-end equipment, interstitial hardware, and cabling.
- Any required new cameras or controlled access points shall be tied into the district's existing systems. The owner and their vendor will furnish and install all field devices, head-end equipment, interstitial hardware, and cabling.

## Division 31 – Earthwork

This work will consist of topsoil stripping, stockpiling and placement, earthwork excavation, and engineered fill to be placed and compacted as required to install proposed improvements. Construction of detention areas as required when additional impervious areas are added to provide storm water runoff storage requirements for the site.

## Division 32 – Exterior Improvements

### General Site Work

#### Paving

- The new parking lots to the South of the new elementary school will be concrete as a basis of design, approximately 350 permanent parking places are planned. The new car loop to the South of the new JR / SR High school will use concrete as a basis of design. The bus drive will also include installation of a “cut through” drive to connect the existing southwest portion of Junior High Parking to serve as a bus turn around loop. Concrete sidewalks will service pedestrian traffic around the building.

Site Utilities: new water service and sanitary services will be installed or extended

Storm Water: Existing storm water detention and sheet draining of parking and roadways is planned. Roof drains/leaders will be collected and piped underground to the detention

## Division 33 – Utilities

The proposed work will consist of the following: Installation of storm sewer inlets/manholes and associated piping to accommodate storm water runoff. new water service and storm sewer around the building addition at the southwest corner of the school. Provide utility lines as required. The sizing of all utilities will be based on need.

- Pads.

# Proposed Program

## JR/SR High School (6-12)

New Berlin IL

September 2022

denotes areas housed in existing space

Target Program Efficiency 85%

**TOTAL CAPACITY 779 ST**

**TOTAL BUILDING AREA 104,118 SF**

Total Net Program Area 88,500 SF

### Academic Wing

**31,050 SF**

	number	width	length	area	capacity	total area	total capacity
General Classrooms	18			750.00	24.00	13,500	432
Science Lab	4			1,200.00	24.00	4,800	96
Ag/Career Classroom	1			750.00	24.00	750	24
Ag/Career Lab	1			1,200.00	20.00	1,200	20
Small Classrooms	2			600.00	12.00	1,200	24
FACS Lab	1			1,200.00	24.00	1,200	24
Collaboration	3			1,000.00	0.00	3,000	0
Small Collaboration	5			200.00	0.00	1,000	0
Structured Learning	2			700.00	12.00	1,400	24
Health/DE/Fitness/Team Room	1			1,200.00	40.00	1,200	40
OT/PT	1			600.00	4.00	600	4
Maker Lab	1			200.00	4.00	200	4
Art/Maker Classroom	1			1,000.00	24.00	1,000	24

### Administration

**3,200 SF**

	width	length	area	capacity	total area	total capacity
Reception	1		200.00	0.00	200	0
Admin Asst./Secretary	2		100.00	0.00	200	0
Work Room/Open office	1		150.00	0.00	150	0
Principal	2		200.00	0.00	400	0
SSO Office	1		150.00	0.00	150	0
Conference Room	1		300.00	12.00	300	12
Guidance/Social Work/Office/small conf	5		150.00	0.00	750	0
Storage/File	1		100.00	0.00	100	0
Faculty	2		300.00	0.00	600	0
Nurse/Wellness	1		350.00	0.00	350	0



# Proposed Program

## Enrichment

48,425 SF

	width	length	area	capacity	total area	total capacity
Stage/choral/multi-purpose	1		1,925.00	40.00	1,925	40
Large Gymnasium	1		12,600.00	50.00	12,600	50
Gymnasium (Dome)	1		12,000.00	50.00	12,000	50
Weight/fitness	2		2,000.00	25.00	2,000	50
Athletic Storage	2		300.00	0.00	600	0
Training Room	1		200.00	0.00	200	0
Officials Room	1		250.00	0.00	250	0
Coaches Office	4		150.00	0.00	600	0
Band/Choral	1		2,500.00	80.00	2,500	80
Music Storage	1		250.00	0.00	250	0
Music Office	1		100.00	0.00	100	0
Dining/Multi-purpose	1		4,000.00	0.00	4,000	0
Media Center/STEM	1		1,750.00	40.00	1,750	40
Food Service	1		2,000.00		2,000	0
Locker/Dressing Rooms	2		1,500.00		3,000	0
locker/Dressing Rooms	3		1,500.00		4,500	0
AD office	1		150.00		150	0

## Building Support

5,825 SF

	width	length	area	capacity	total area	total capacity
Toilet Rooms	8		300.00		2,400	0
Custodial Closet	3		50.00		150	0
Elec/Water/Tech/Closet	3		150.00		450	0
Mechanical	1		1,500.00		1,500	0
Electrical Room	1		500.00		500	0
Loading Dock	1		225.00		225	0
General Storage	1		600.00		600	0
Vestibule	2		150.00		300	0

# Project Schedule

## **SCHEMATIC DESIGN (SD): JULY 2022 - SEPTEMBER 2022 (10 wks)**

BOE Approval of A/E Contract 7/11/2022

50% SD review with Leadership Team 8/24/2022

MEP / Civil Narrative Complete 9/9/2022

Print 75% SD Check Set 9/9/2022

BOE Meeting 100% SD 9/22/2022

## **DESIGN DEVELOPMENT (DD): SEPTEMBER 2022 - DECEMBER 2022 (12 wks)**

Design Team Kickoff / DD transition 9/23/2022

Interior Finishes & Env. Graphics presentation to BOE 10/19/2022

50% DD review with Leadership Team 11/3/2022

BLDD QAQC Review 11/7/2022 – 11/10/2022

Leadership Team Review 12/5/2022 – 12/9/2022

BOE Meeting 100% DD 12/15/2022

## **CONSTRUCTION DOCUMENTS (CD): DECEMBER 2022 - MARCH 2023 (13 WKS)**

CD transition meeting 12/16/2022

BOE Review of 50% CD 1/18/2023

BLDD QAQC review 1/30/2023 -2/3/2023

95% CD 2/24/2023

Final Coordination 2/27/2023 – 3/3/2023

100% CD 3/15/2023

BOE approval of Bid Documents 3/16/2023

## **BIDDING AND NEGOTIATION: MARCH 2023 - APRIL 2023 (6 WKS)**

Advertisement for Bid 3/17/2023

Bid Document Printing 3/17/2023 -3/16/2023

Bid documents released to Contractors 6/19/2023

Bid Opening 4/13/2023

Scope Review of Bid Packages by CM 4/14/2023 – 4/19/2023

Recommendation to Board for Acceptance of Bid 4/20/2023

Special BOE Meeting – Award Contract 4/26/2023

Notice of Award 4/27/2023

## **CONSTRUCTION (CA): MAY 2023 – JULY 2024 (14 MONTHS)**

Mobilize for Early Bid Packages - Feb./March 2023

Furniture installation / Move-in - July 2024

Occupancy End of - August 2024

Building Demolition & Remaining Site Work - Fall 2024

# Proposed Budget



<b>CONSTRUCTION CONCEPT BUDGET GOALS</b>				<b>\$ 30,608,651</b>
<b>Site</b>	<b>AC/SF/LS</b>	<b>\$/Unit</b>	<b>Total Cost</b>	<b>\$ 2,245,619</b>
Site Development and Site Utilities	7.80	\$ 200,000.00	\$ 1,560,375	
Building Demolition	66,500	\$ 8.80	\$ 585,245	
Abatement Allowance	1	\$ 100,000.00	\$ 100,000	
<b>CONSTRUCTION</b>	<b>SF</b>	<b>\$/Unit</b>	<b>Total Cost</b>	<b>\$ 25,160,000</b>
New Construction	71,000	\$ 310.00	\$ 22,010,000	
Renovation	25,000	\$ 126.00	\$ 3,150,000	
<b>Contingency</b>	<b>%</b>		<b>Total Cost</b>	<b>\$ 3,203,032</b>
Design Contingency	5.00		\$ 1,370,281	
Bid Contingency	2.50		\$ 685,140	
Owner Contingency	1.50		\$ 411,084	
Construction Contingency	2.50		\$ 736,526	

<b>SOFT COSTS ESTIMATE</b>				<b>\$ 2,403,490</b>
<b>SITE ACQUISITION AND EVALUATION</b>			<b>Total Cost</b>	<b>\$ 30,000</b>
Land Acquisition		\$	-	
Topographic Survey		\$	15,000	
Geotechnical Survey		\$	15,000	
<b>FEES AND SERVICES</b>				<b>\$ 2,073,490</b>
Basic Services Architect/Engineering Design Fees (7.0%)		\$	1,953,490.00	
FF&E Design Fees			included	
Food Service Consultant			included	
Technology Design Services			included	
Storm Shelter 3rd Party Structural Review			included	
CORE Preconstruction Services		\$	65,000	
Reimbursable Expenses				
Document Printing (estimate)		\$	30,000	
Construction Testing (estimate)		\$	25,000	
<b>OTHER COSTS</b>				<b>\$ 300,000</b>
Technology, Telecom, Security (estimate)		\$	300,000	

## Concept Budget Goal

New Berlin CUSD #16

Max Building and Site Budget  
Furnishings

**\$ 33,012,141**

\$ 33,000,000.00

\$ 500,000.00



BECAUSE  
**LIFE**  
DESERVES  
**DESIGN**

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