

# West Roxbury Educational Complex

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Final Report  
March 2, 2023

# Goals for WREC Study

To test the feasibility of the existing WREC to accommodate the **established Exam School Program**

To provide drawings, engineering narratives and diagrams to help get an **ROM cost estimate for renovation/expansion**

To propose a **design intervention** that helps to **improve the public's current perception of the building** and to convey the opportunities and amenities of the building and site

To look at a renovation that aims to achieve the **highest sustainability standards/ minimum of LEED Silver.**



**Infill & Addition Areas**

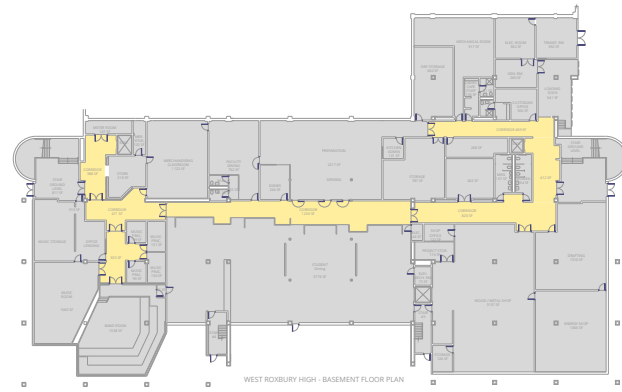
# Program Summary

Exam School: Grades 7-12 | Total Student Enrollment: 2000 | Total Required Program Area: 171,471 sq. ft.

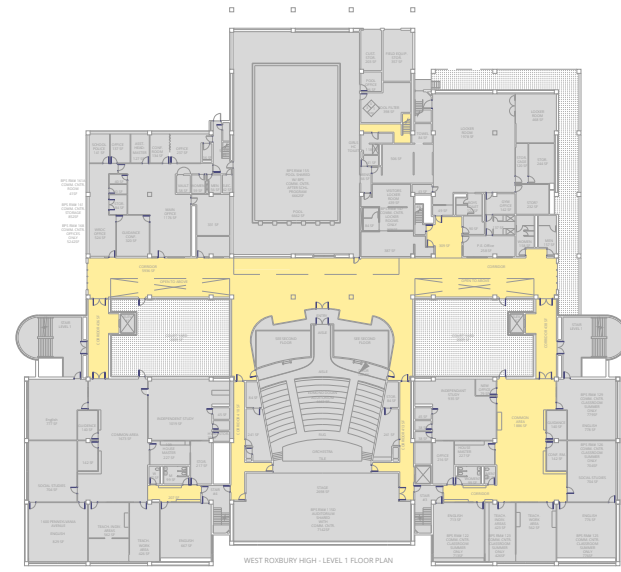
Proposed Program for 2000 Student, 7-12 Exam School

Not for design -- conceptual program needs to be verified with BPS selected school program, BPS Academics, and school community

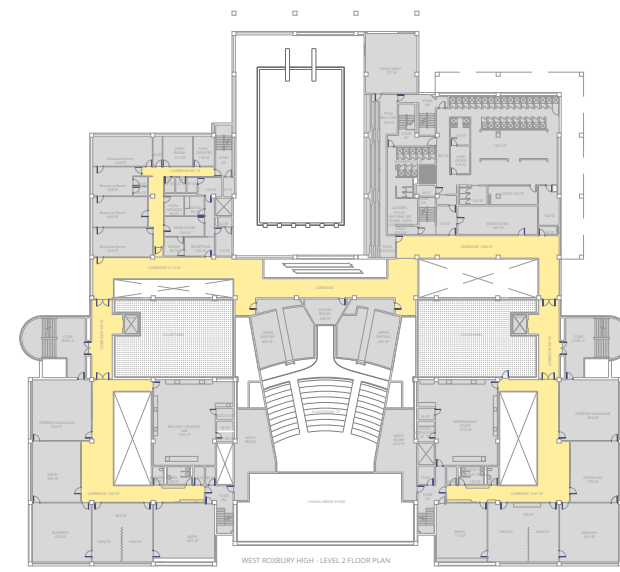




BASEMENT  
36,096 GSF

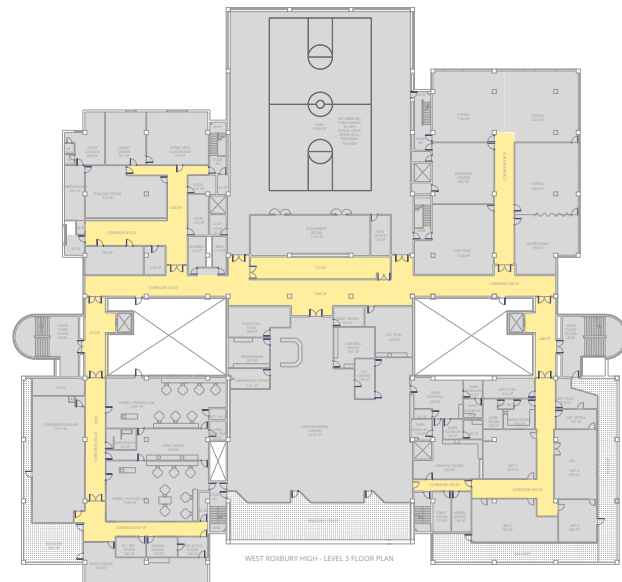


LEVEL 1  
56,692 GSF

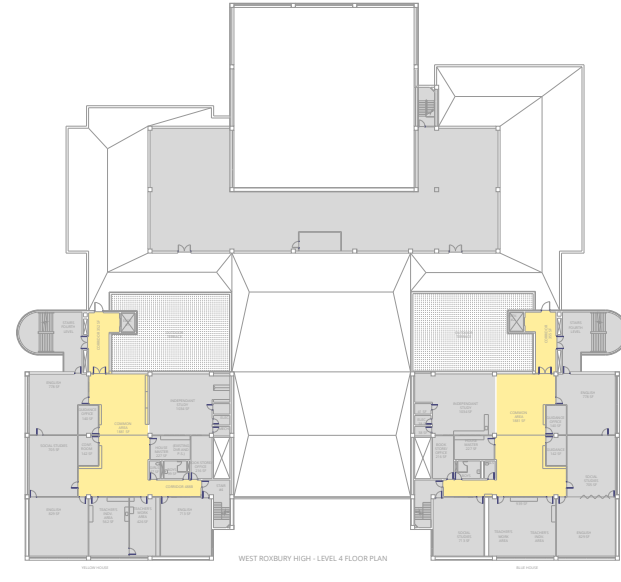


LEVEL 2  
39,874 GSF

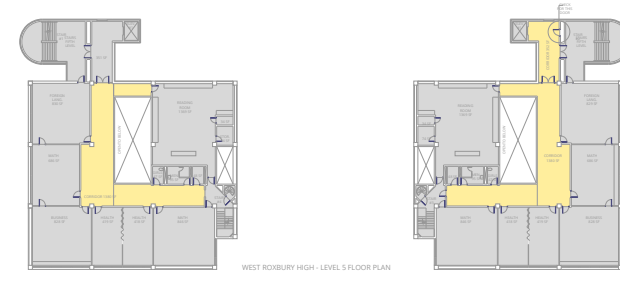
**EXISTING  
GROSS AREA**  
237,598 GSF



LEVEL 3  
56,534 GSF



LEVEL 4  
28,933 GSF

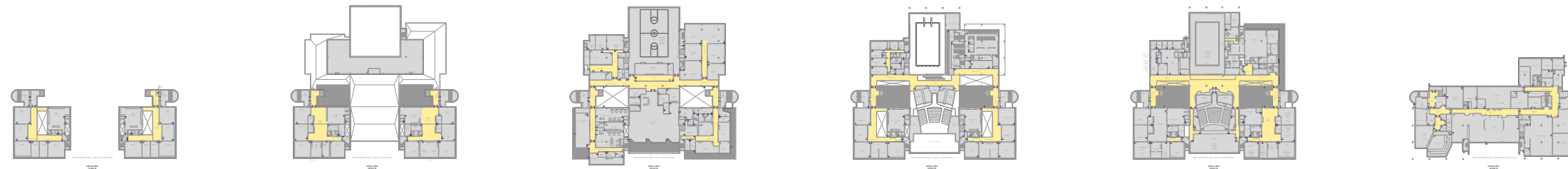


LEVEL 5  
19,469 GSF

## Existing Floor Plans

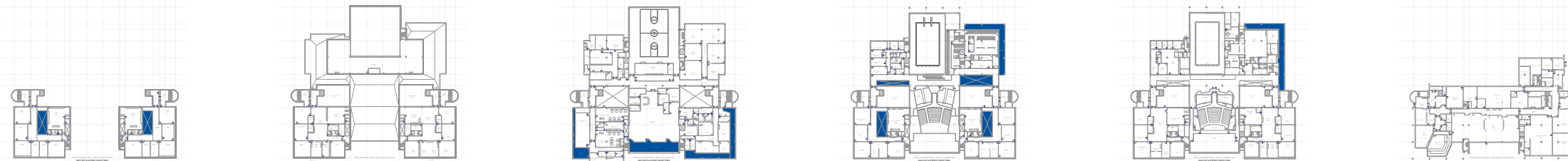
Test-Fit Program

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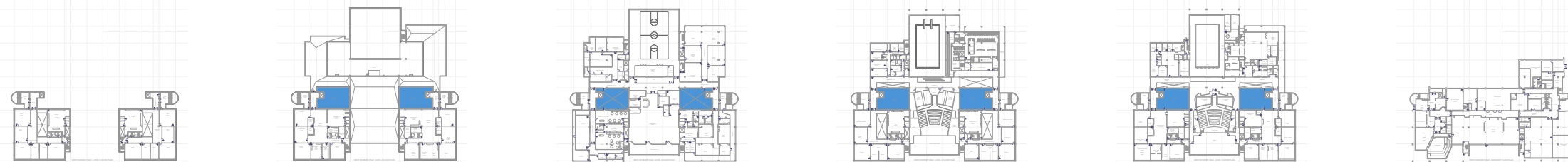
EXISTING

TOTAL NET EXISTING  
**135,380 NSF**



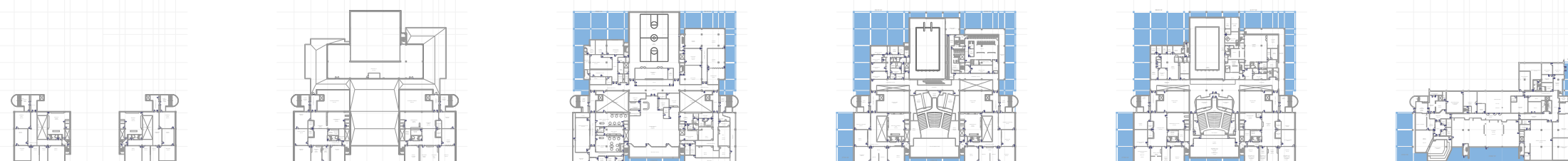
+ 12,432 GSF

BALCONY & DOUBLE HEIGHT INFILL



+ 16,136 GSF

COURTYARD INFILL



+ 57,714 GSF

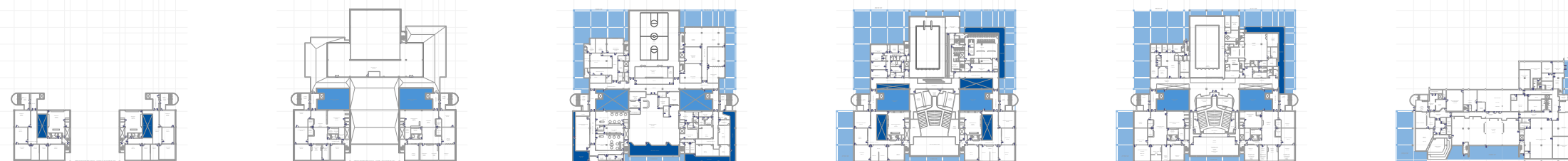
ADDITIONS

PROPOSED PROGRAM  
TOTAL NET TARGET  
**171,471 NSF**

TOTAL DELTA -  
NET AREA NEEDED  
**36,091 NSF**

1.5 GROSSING FACTOR  
36,091 NSF X 1.5

**= 54,136 GSF**  
ADDITIONAL GSF NEEDED



= 86,282 GSF

ALL ADDITION OPTIONS

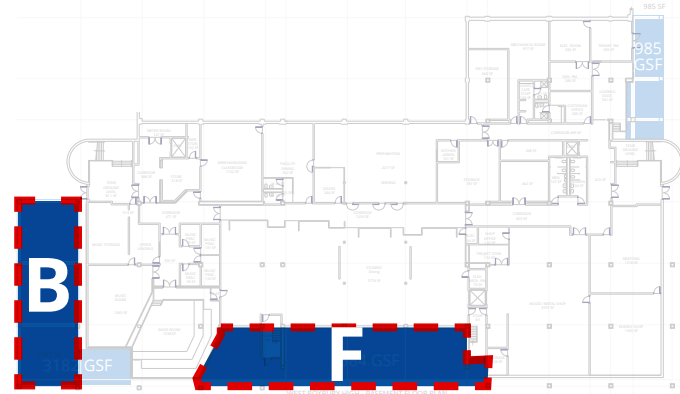
## Summary of Added Areas

Total added areas in sequence

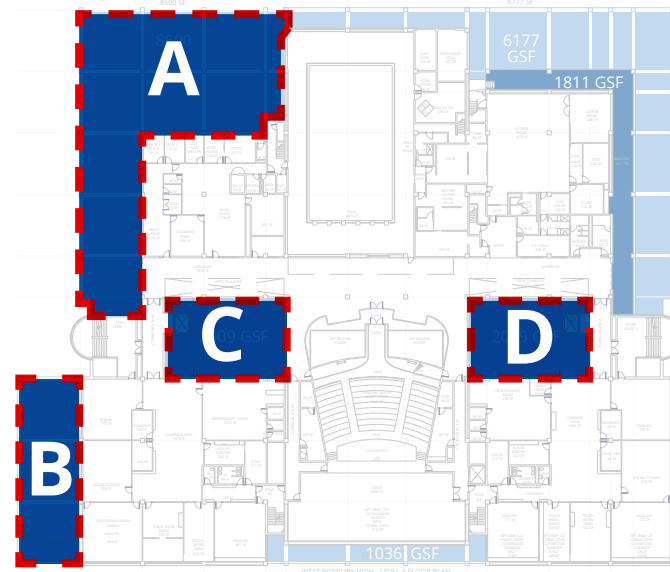
TOTAL GROSS AVAILABLE  
WITH ALL ADDITION OPTIONS  
**86,282 GSF**

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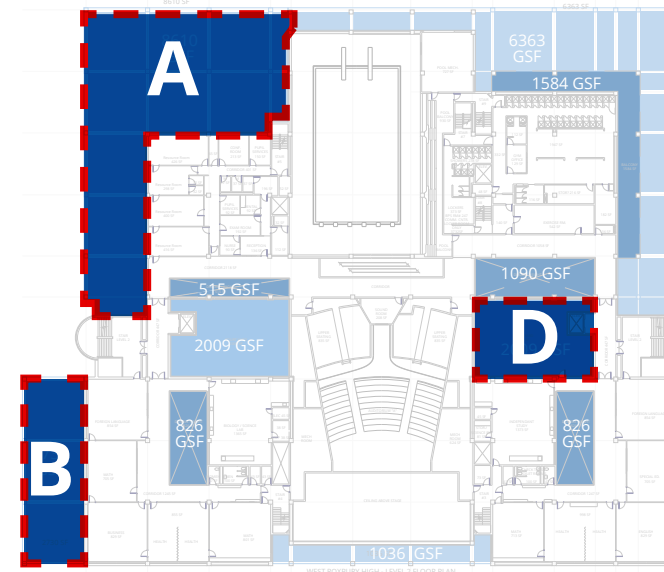
**= 54,136 GSF**  
ADDITIONAL GSF NEEDED



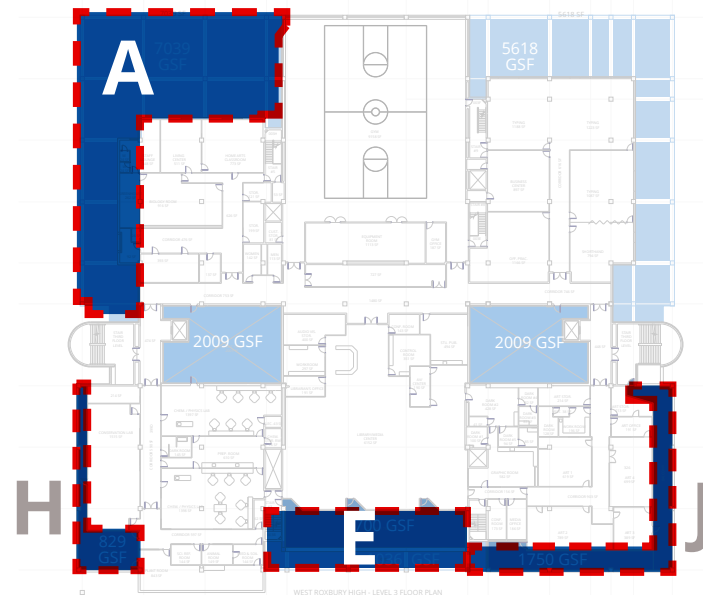
**BASEMENT**  
7,151 GSF



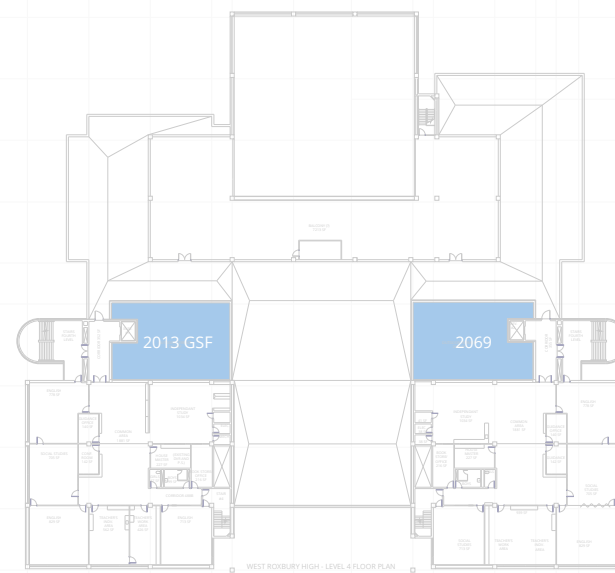
**LEVEL 1**  
24,372 GSF



**LEVEL 2**  
27,600 GSF



**LEVEL 3**  
21,990 GSF



**LEVEL 4**  
4,082 GSF



**LEVEL 5**  
1,499 GSF

*TOTAL GSF ADDITION A*  
*3-STORY, GLULAM STRUCTURE*  
**24,249 GSF**

*TOTAL GSF ADDITION B*  
*3-STORY, GLULAM STRUCTURE*  
**8,642 GSF**

*TOTAL GSF ADDITION C*  
*ROOF COURTYARD, NEW BLEACHER*  
*STAIR & PLATFORMS ON EACH LEVEL*  
*OVERLOOKING ATRIUM*  
**3,000 GSF**

*TOTAL GSF ADDITION D*  
*ROOF COURTYARD,*  
*(1) NEW FLOOR AT L2*  
**4,018 GSF**

*TOTAL GSF ADDITION E*  
*ENCLOSE EXISTING BALCONY*  
**2,736 GSF**

*TOTAL GSF ADDITION F*  
*ENCLOSE EXISTING PATIO*  
**2,984 GSF**

*TOTAL GSF ADDITION G*  
*INFILL OPEN TO BELOW*  
**1,498 GSF**

*TOTAL GSF ADDITION H*  
*ENCLOSE EXISTING BALCONY*  
**829 GSF**

*TOTAL GSF ADDITION J*  
*ENCLOSE EXISTING BALCONY*  
**1,750 GSF**

*TOTAL GSF ADDED*  
**= 49,454 GSF**

## Summary of Added Areas

Total added areas in sequence

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## Existing Axon View

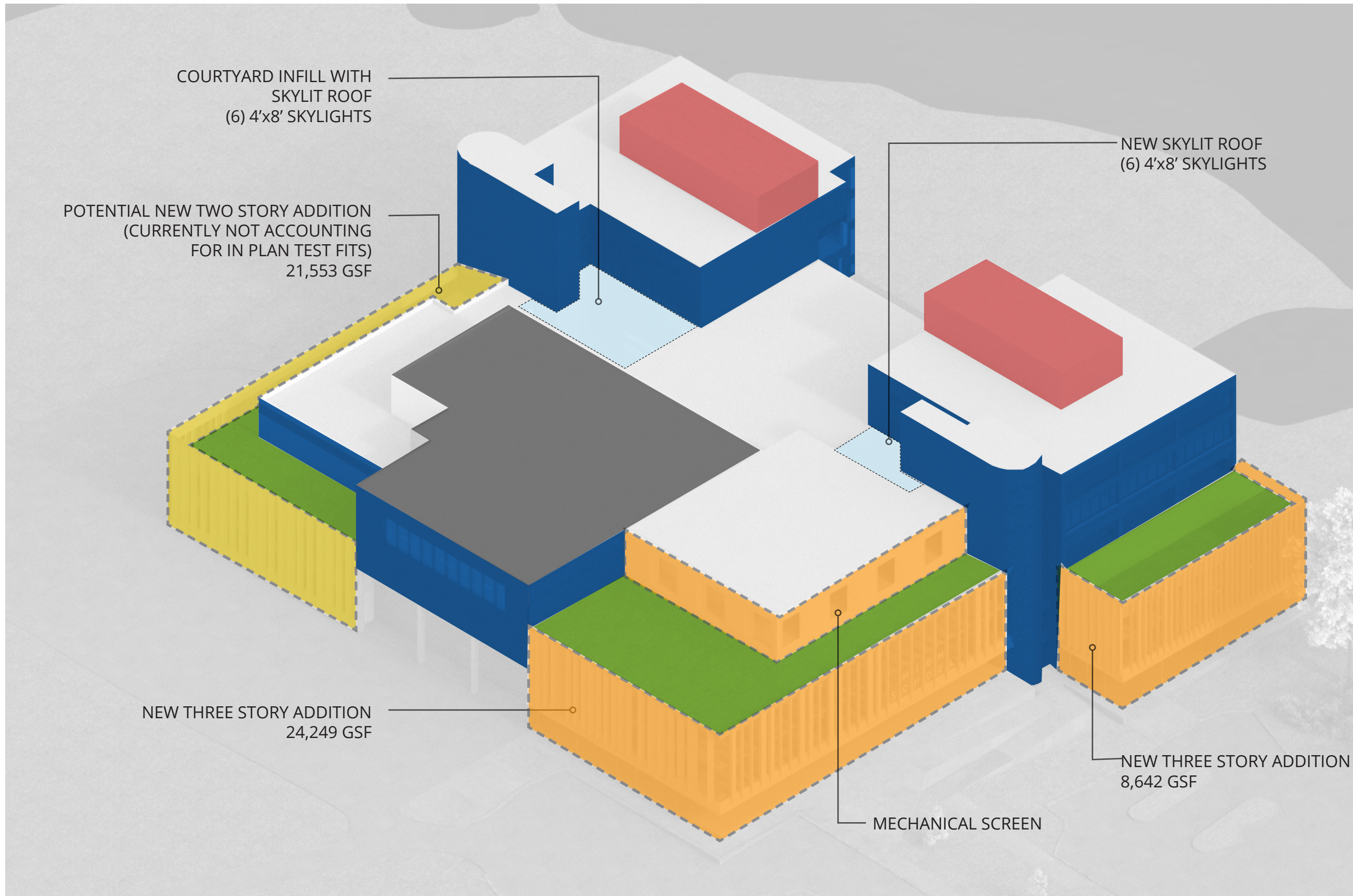
Southwest Axon Enclosure Series

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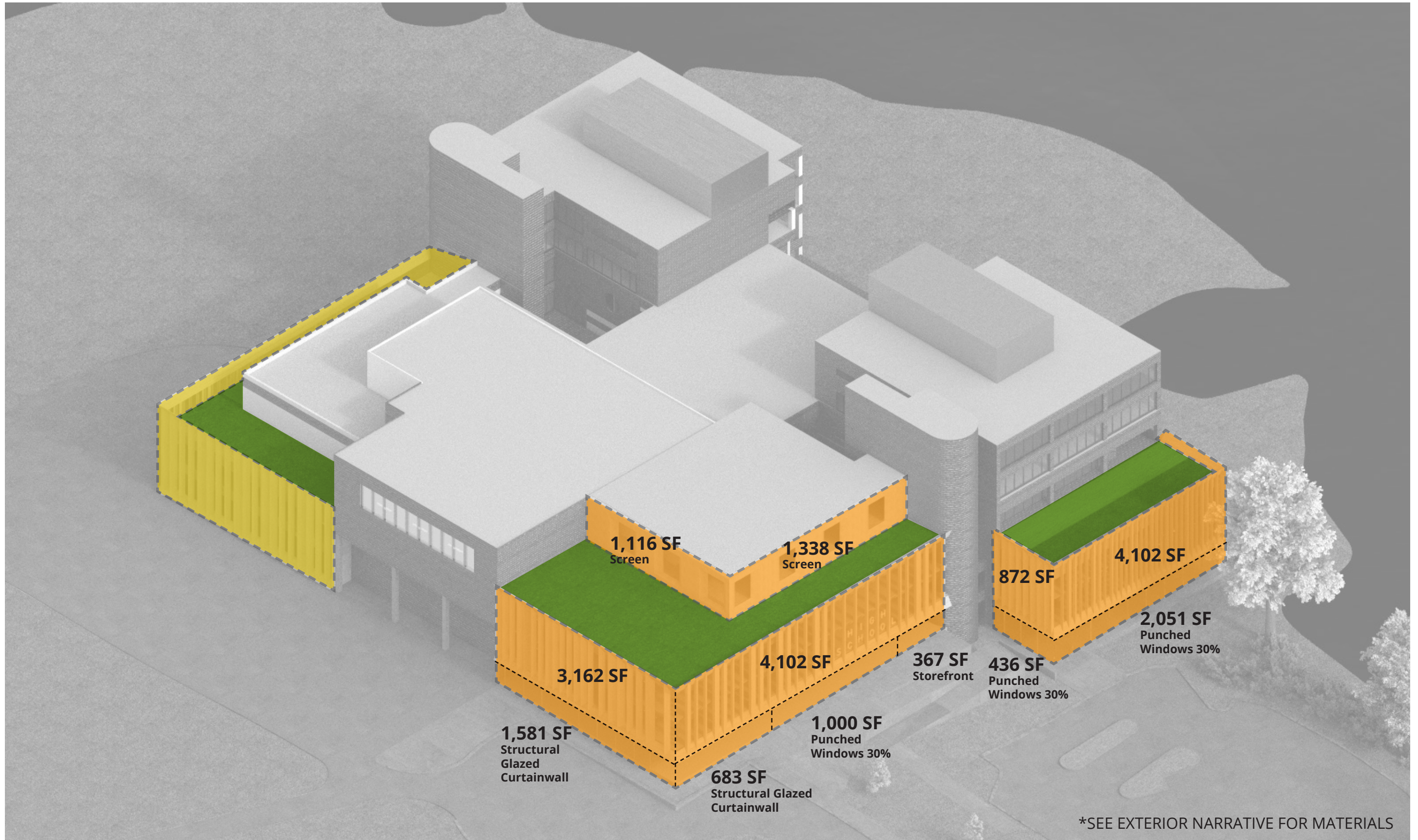
**KEY**

- RECLAD FACADE
- EXPANSION
- GREEN ROOF
- ATRIUM
- DEMOLITION
- PHOTO-VOLTAIC PANELS

**Renovation and Expansion Axon View**

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## Expansion and Green Roofs

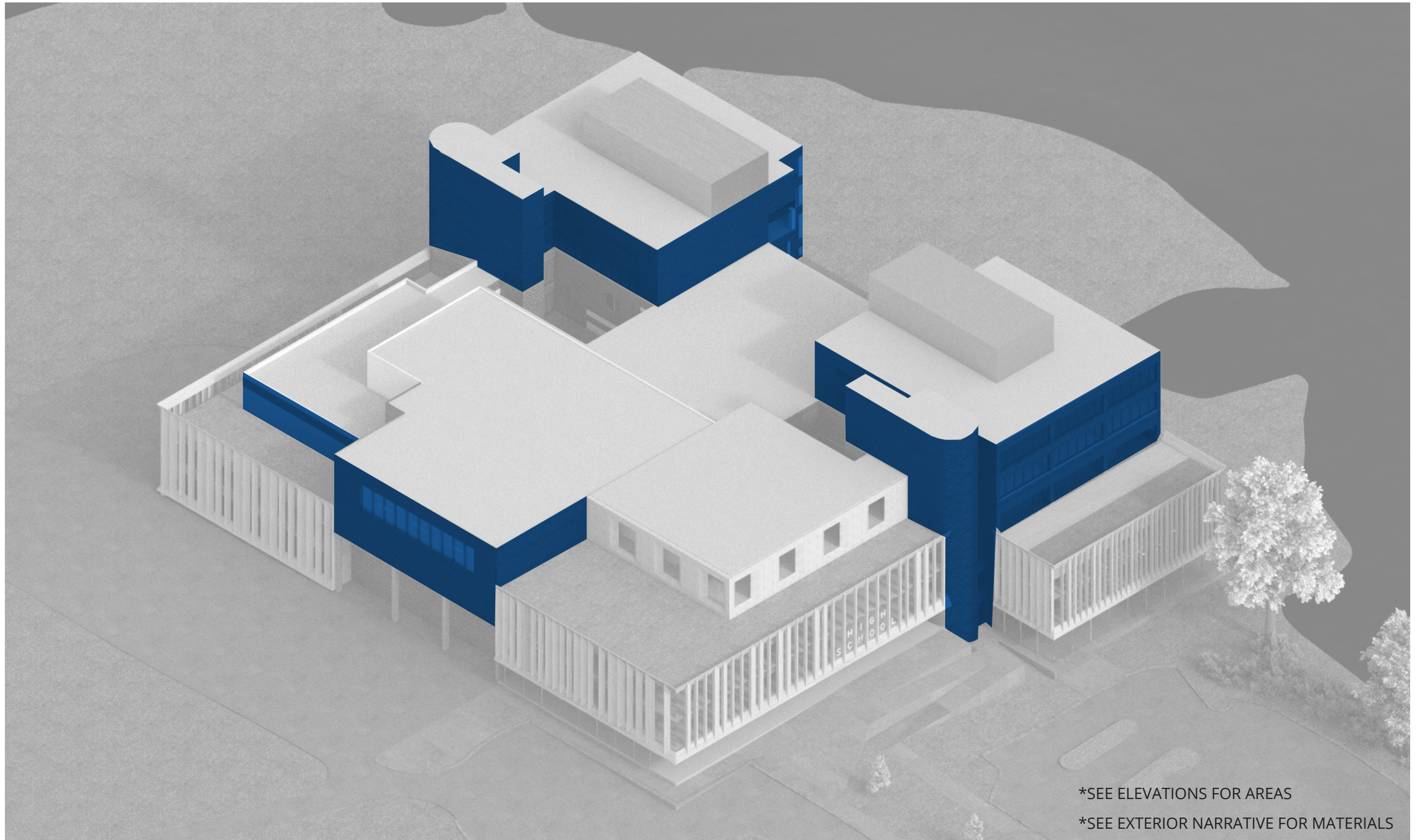
Southwest Axon Enclosure Series

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\*SEE ELEVATIONS FOR AREAS

\*SEE EXTERIOR NARRATIVE FOR MATERIALS

## Reclad Facade

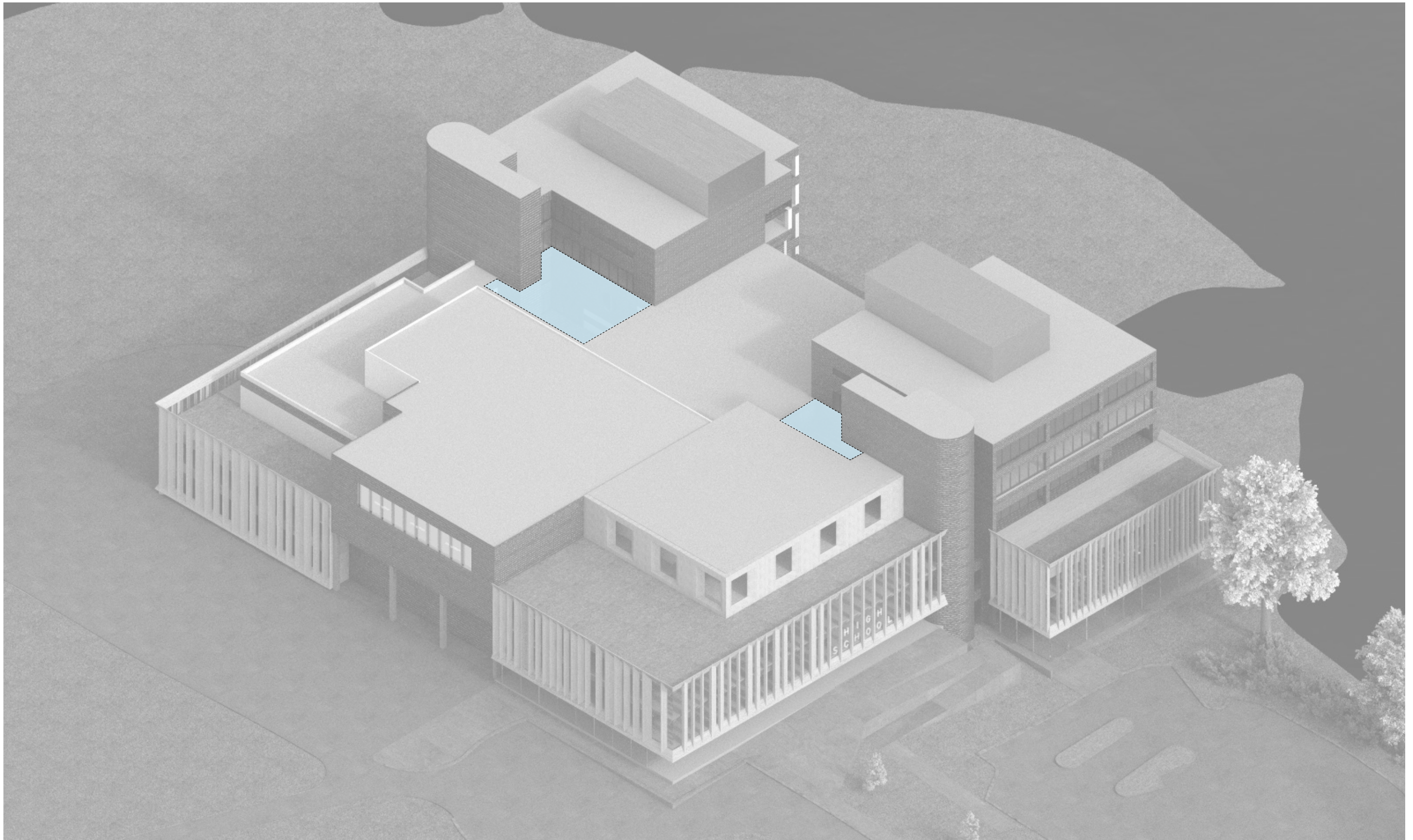
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## Atrium Enclosure

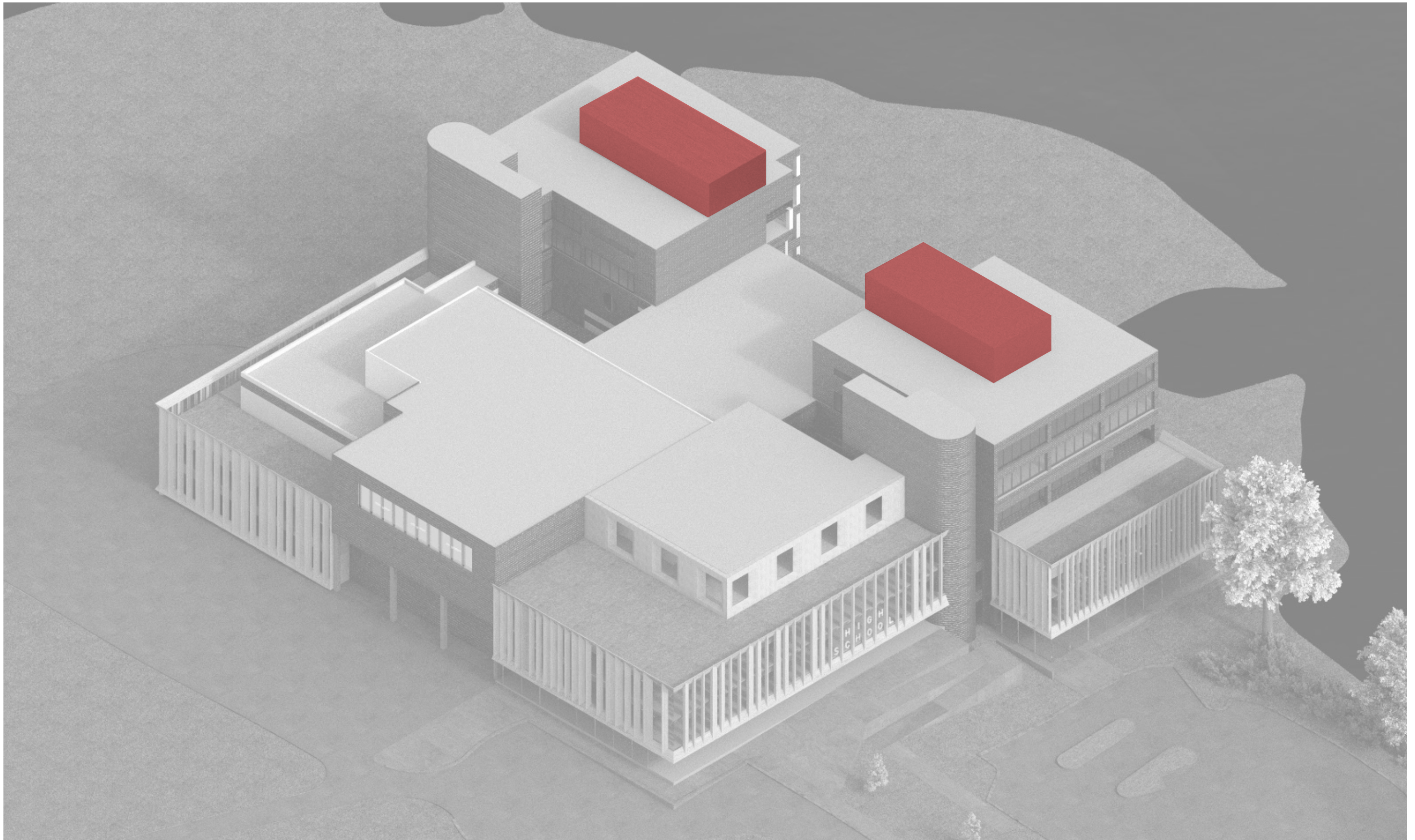
Southwest Axon Enclosure Series

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## Demolition of Head Houses

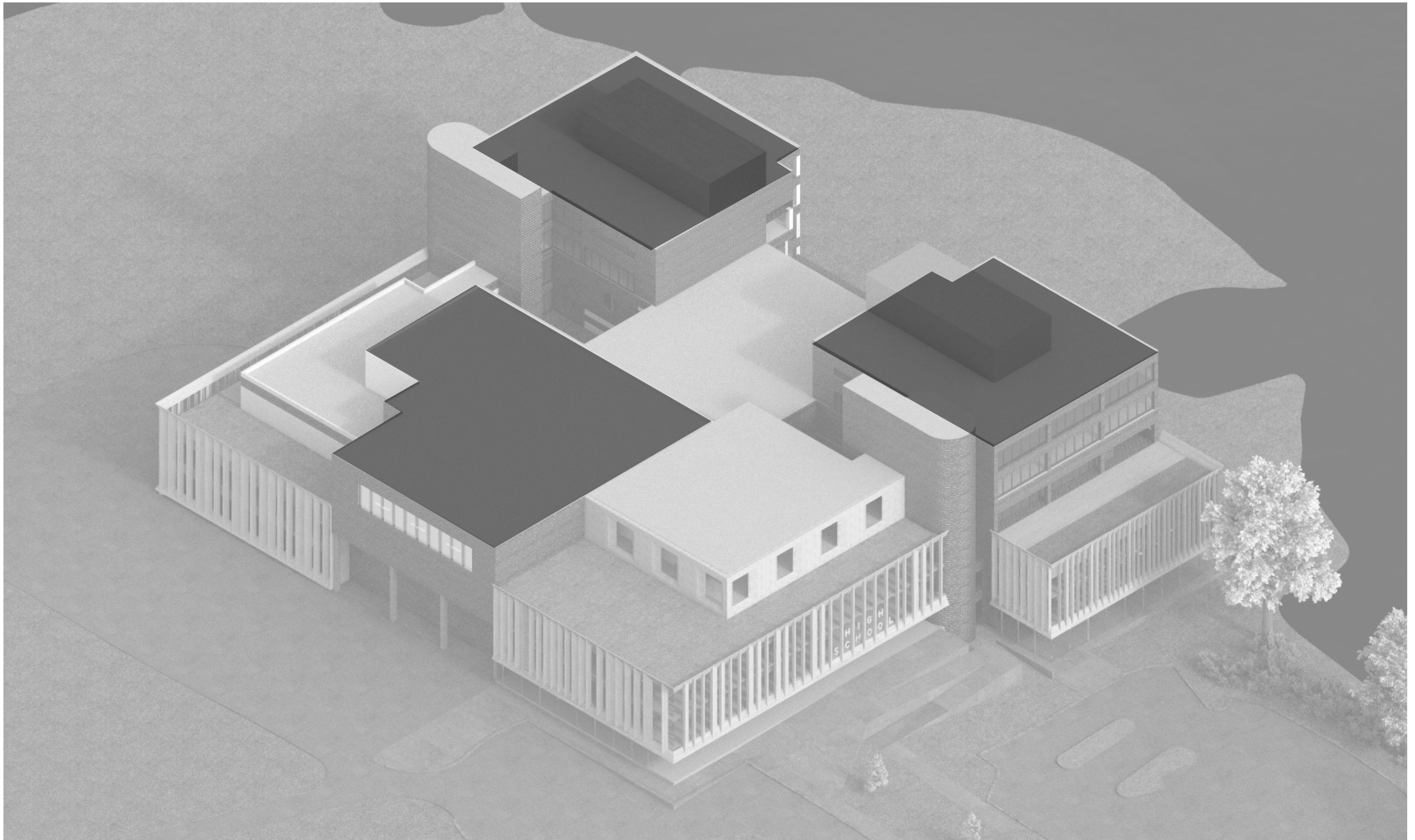
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## Photo-voltaic Panels

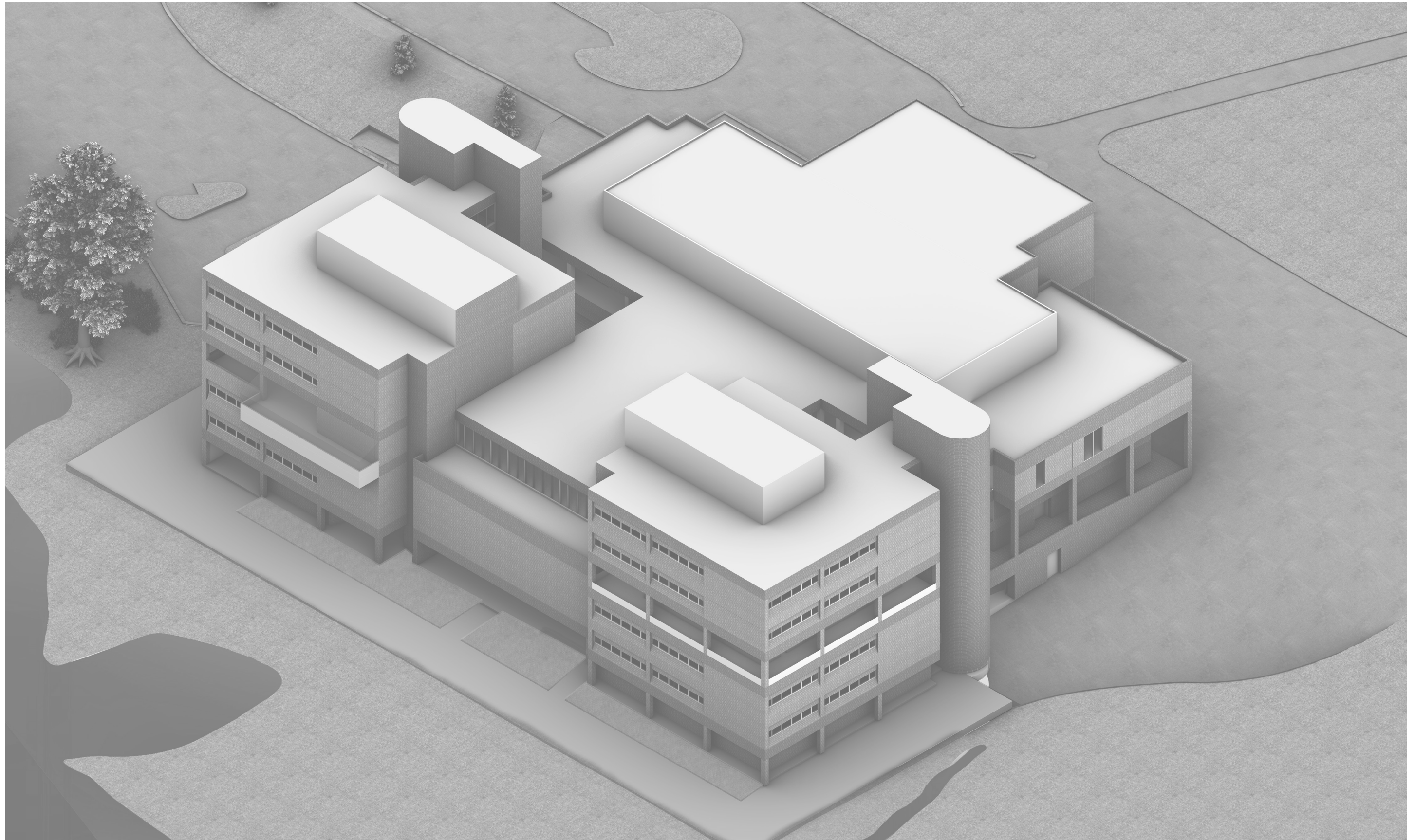
Southwest Axon Enclosure Series

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## Existing Axon View

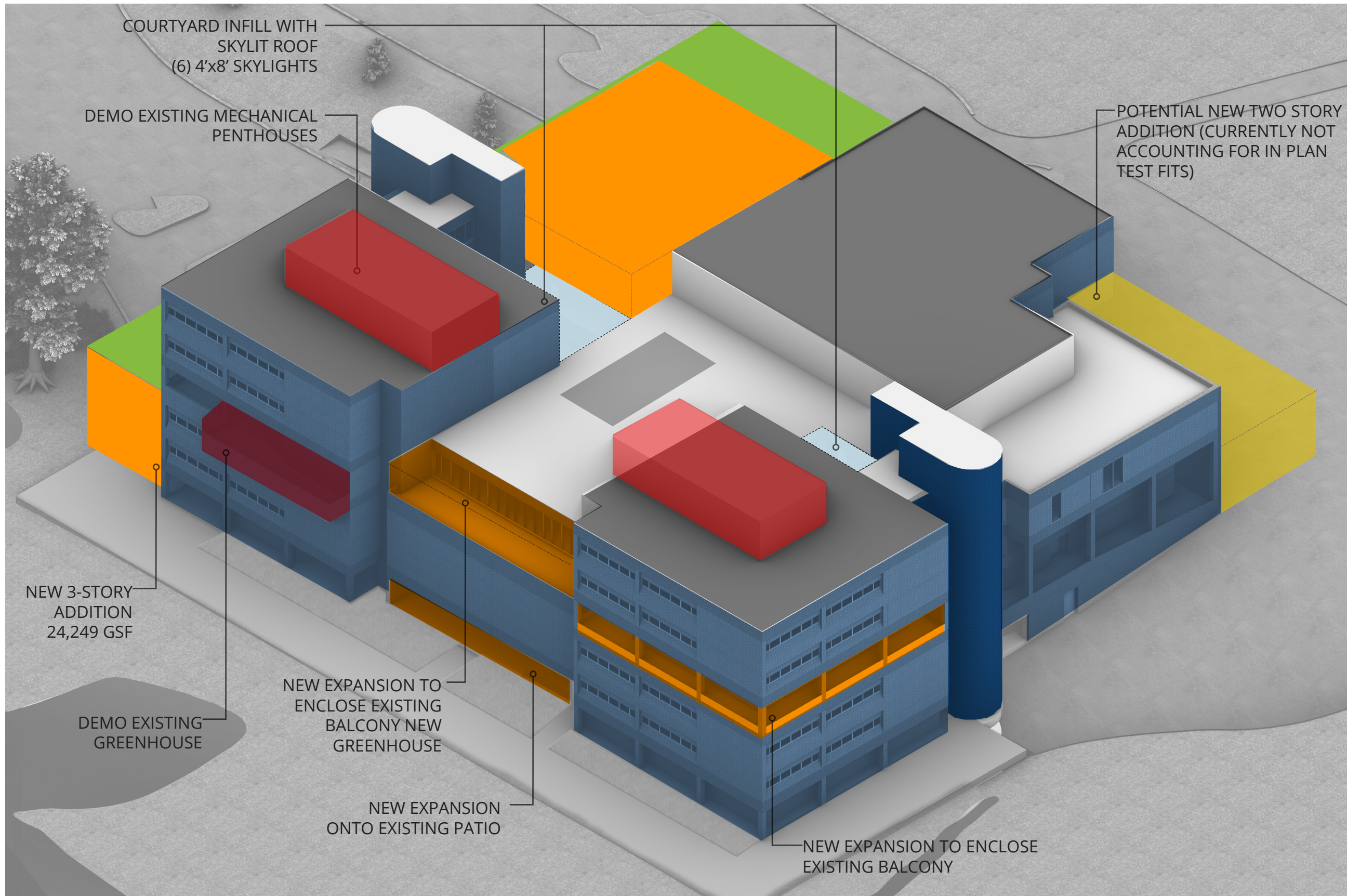
Northeast Axon Enclosure Series

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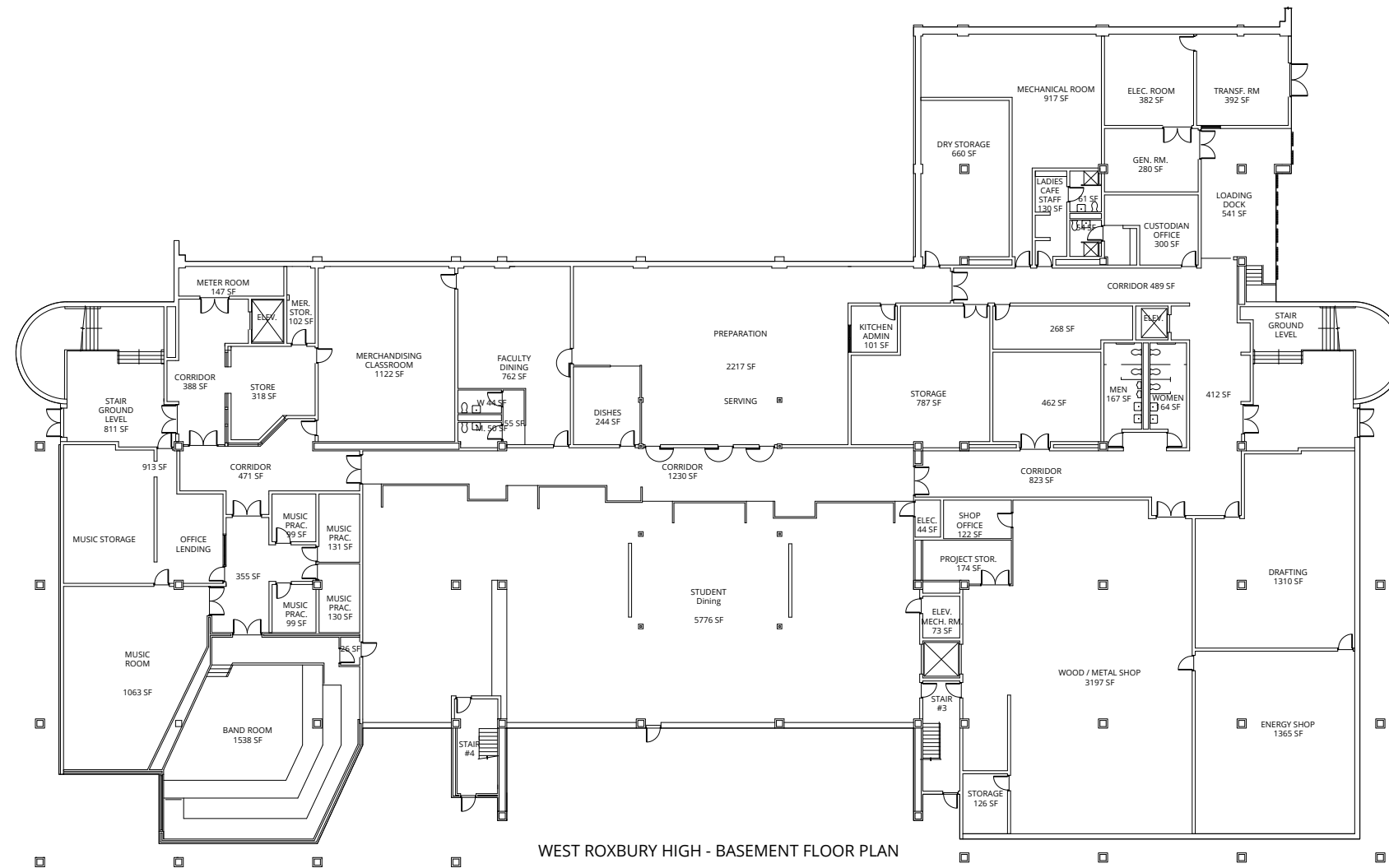


- KEY**
- RECLAD FACADE
  - EXPANSION
  - GREEN ROOF
  - ATRIUM
  - DEMOLITION
  - PHOTO-VOLTAIC PANELS

## Renovation & Expansion Axon View



Existing Plans

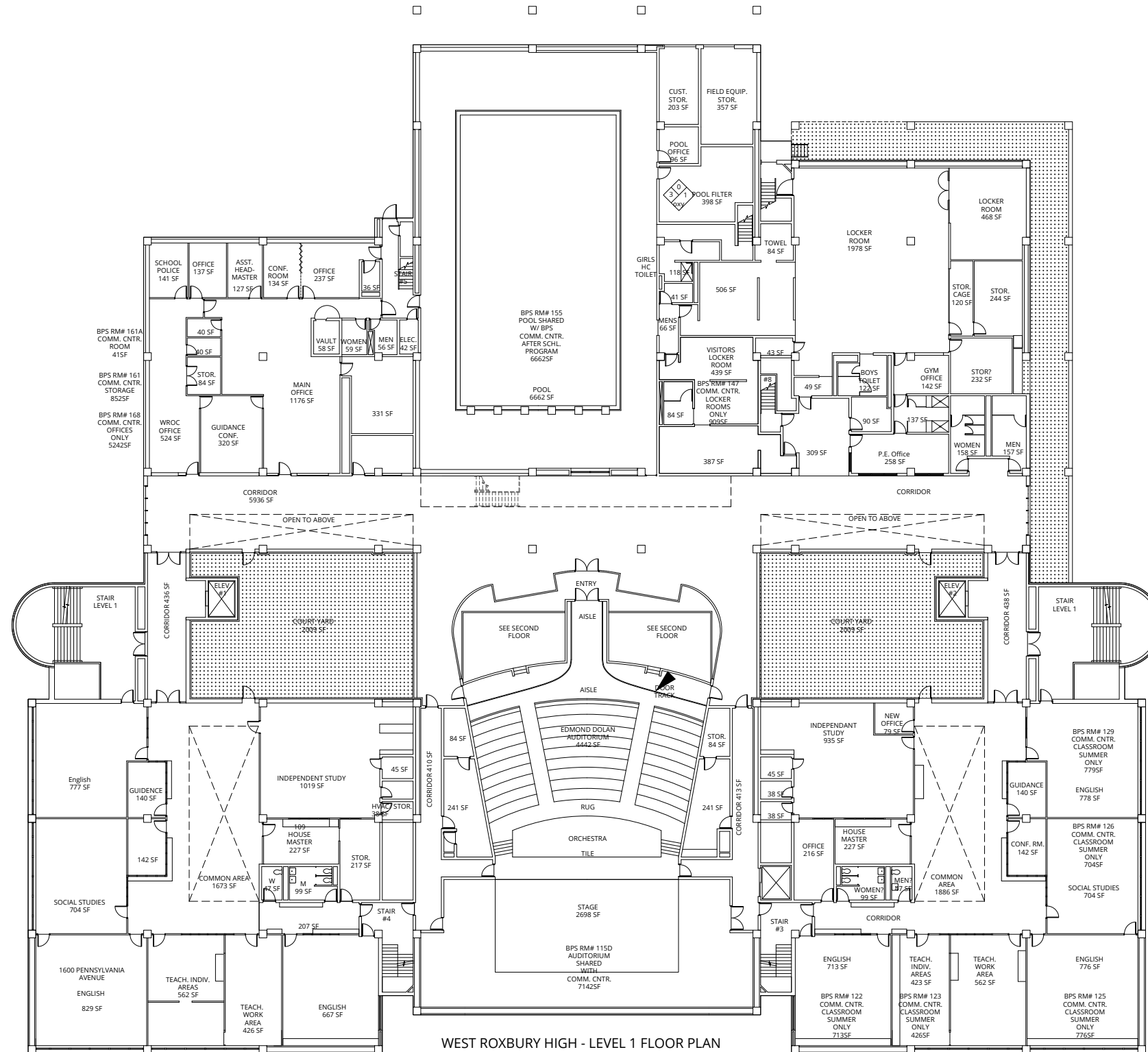


## Basement Floor Plan

Existing West Roxbury Plans

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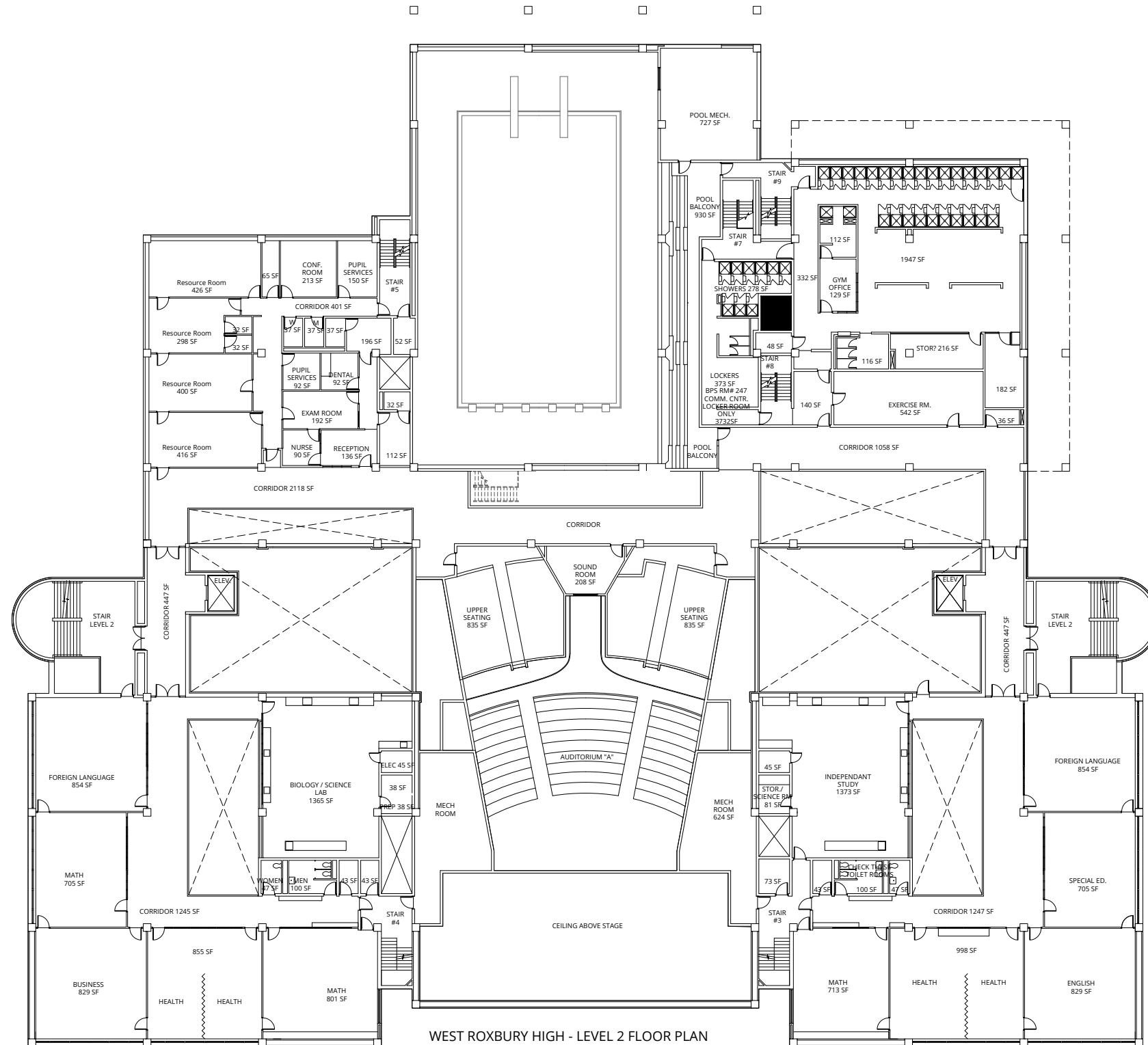




# Level 1 Floor Plan

Existing West Roxbury Plans

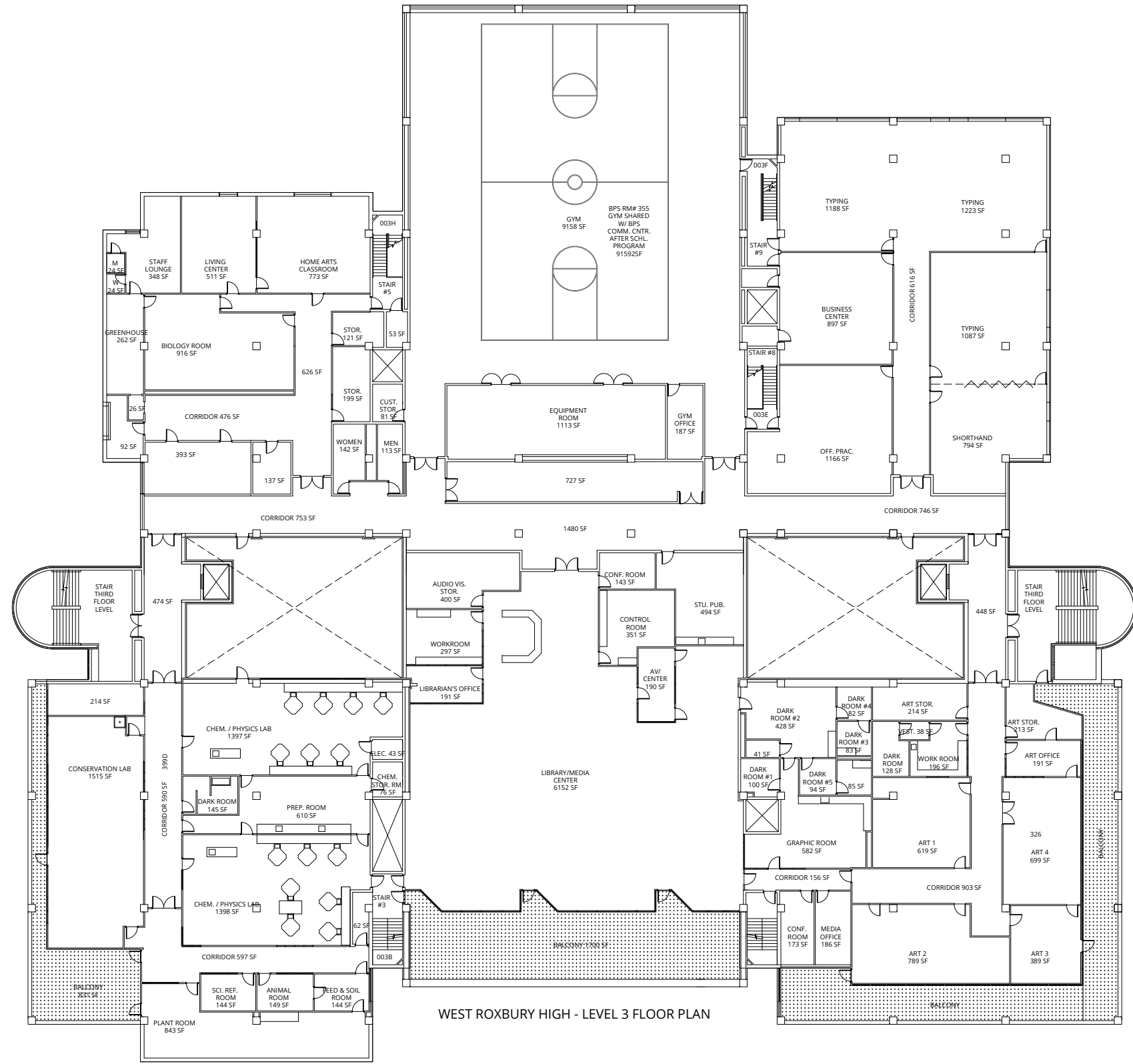
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# Level 2 Floor Plan

Existing West Roxbury Plans

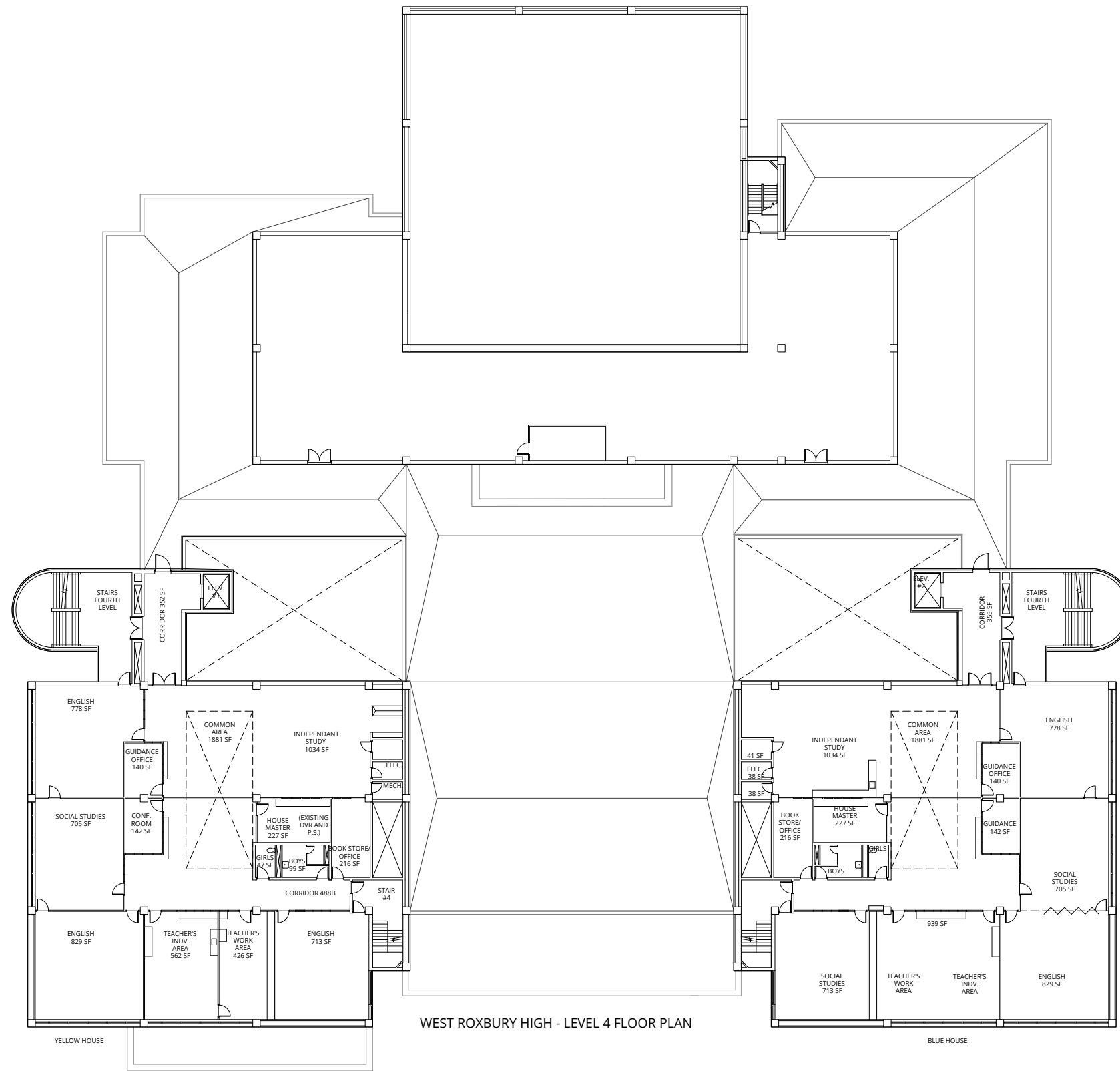
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# Level 3 Floor Plan

Existing West Roxbury Plans

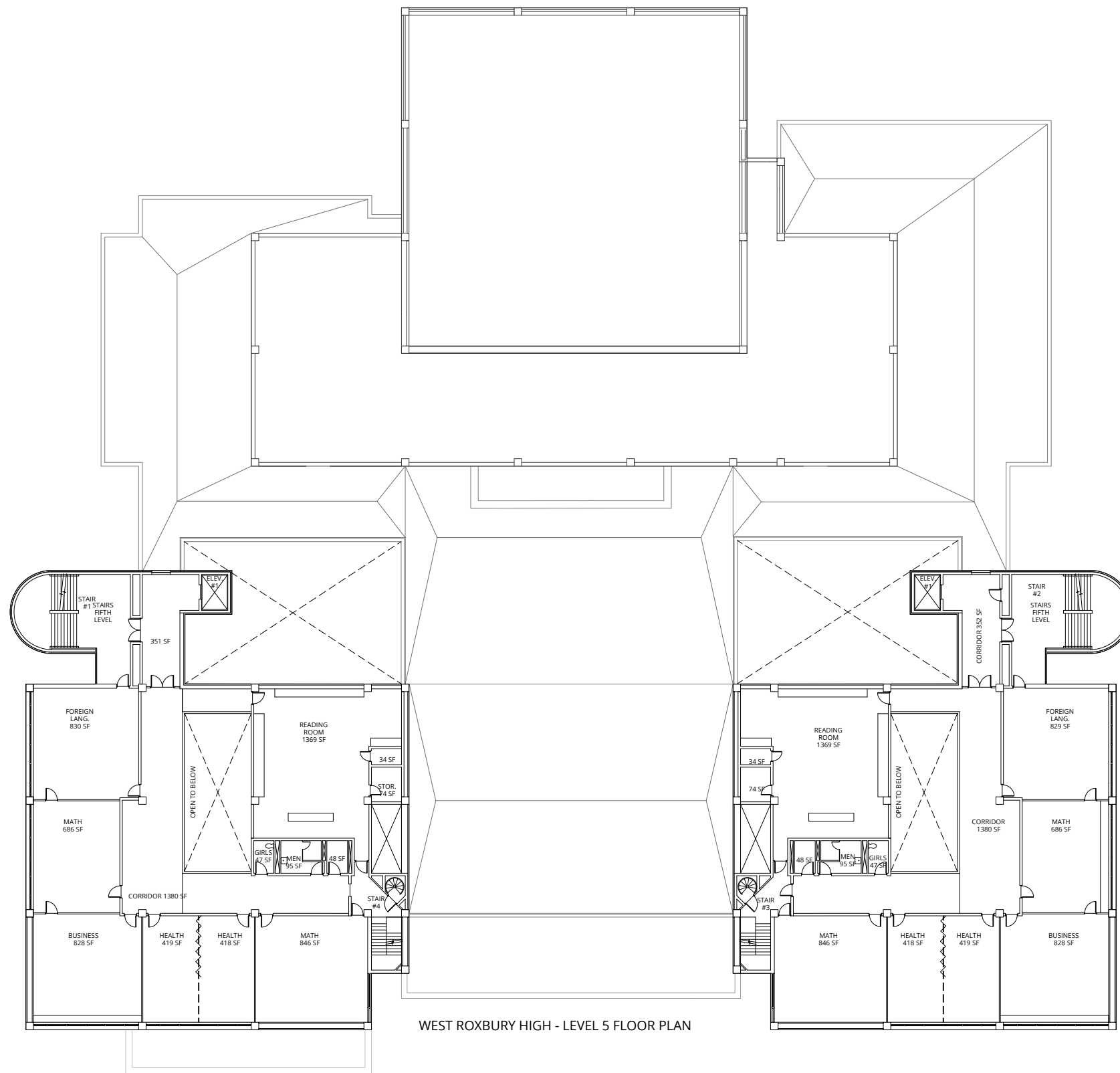
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# Level 4 Floor Plan

Existing West Roxbury Plans

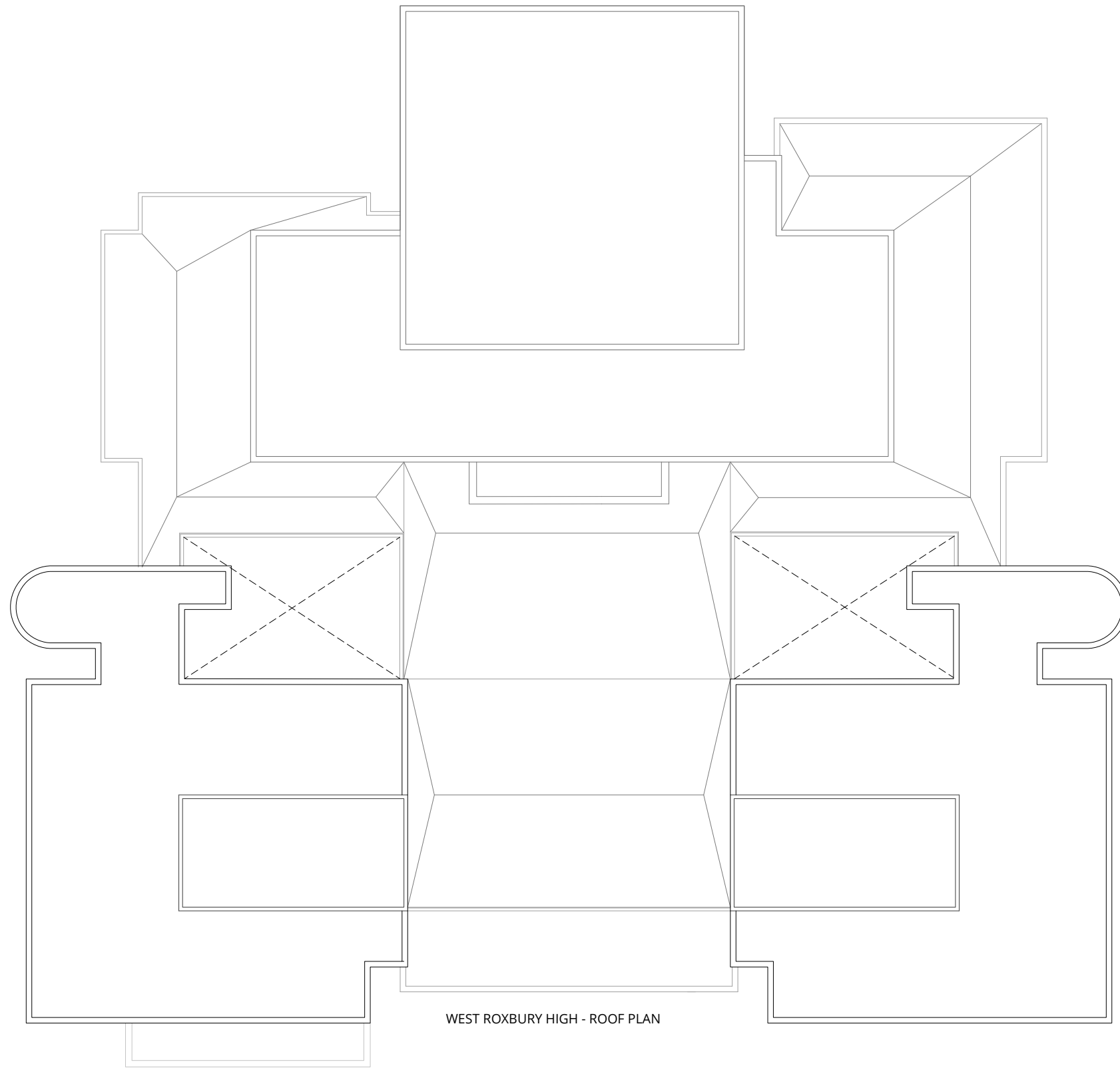
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## Level 5 Floor Plan

Existing West Roxbury Plans

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WEST ROXBURY HIGH - ROOF PLAN

## Roof Plan

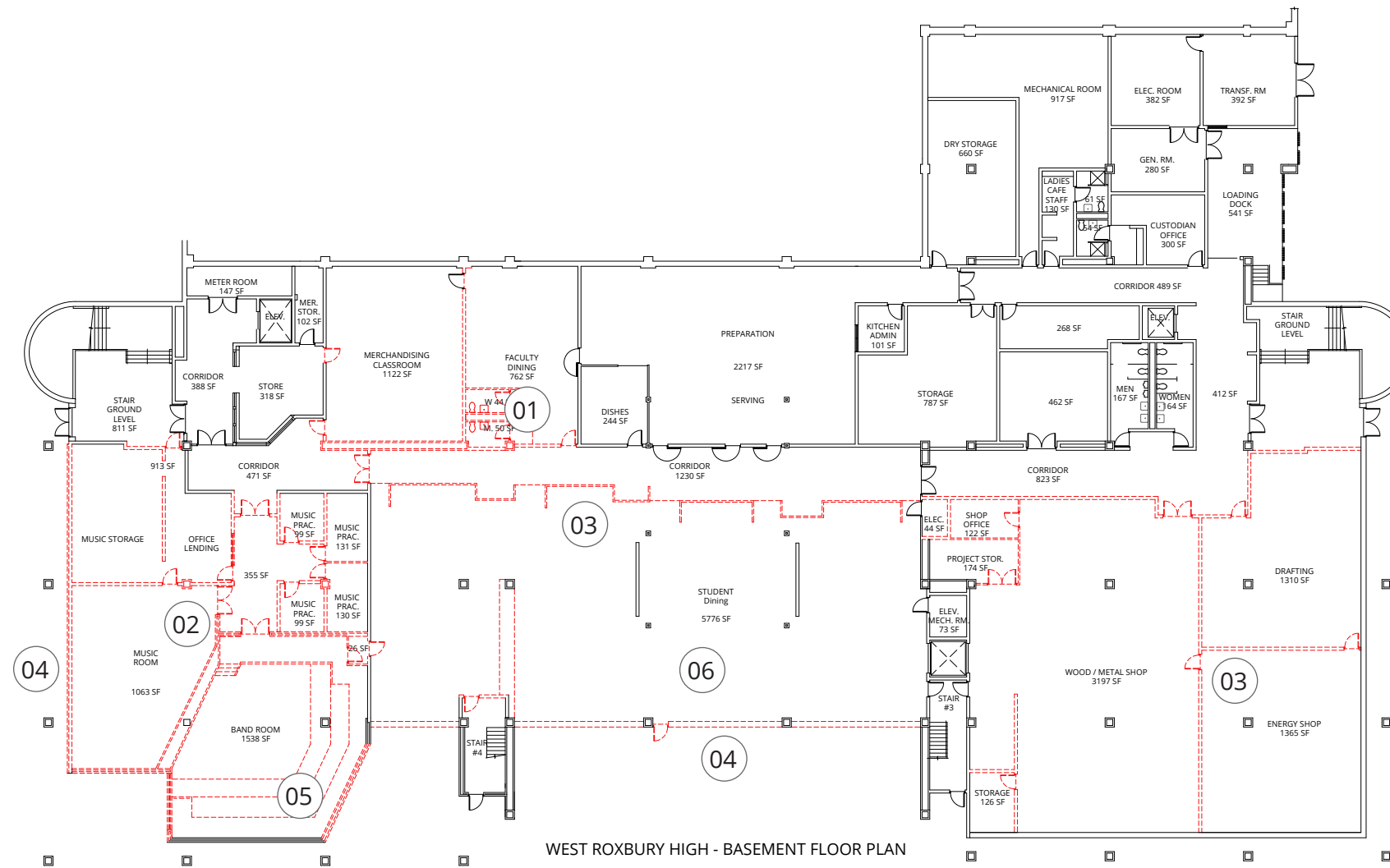
Existing West Roxbury Plans

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**Demo Plans - Annotated**



**REMOVALS LEGEND:**

- REMOVE
- CUT OPENING IN FLOOR
- EXISTING WALL TO REMAIN

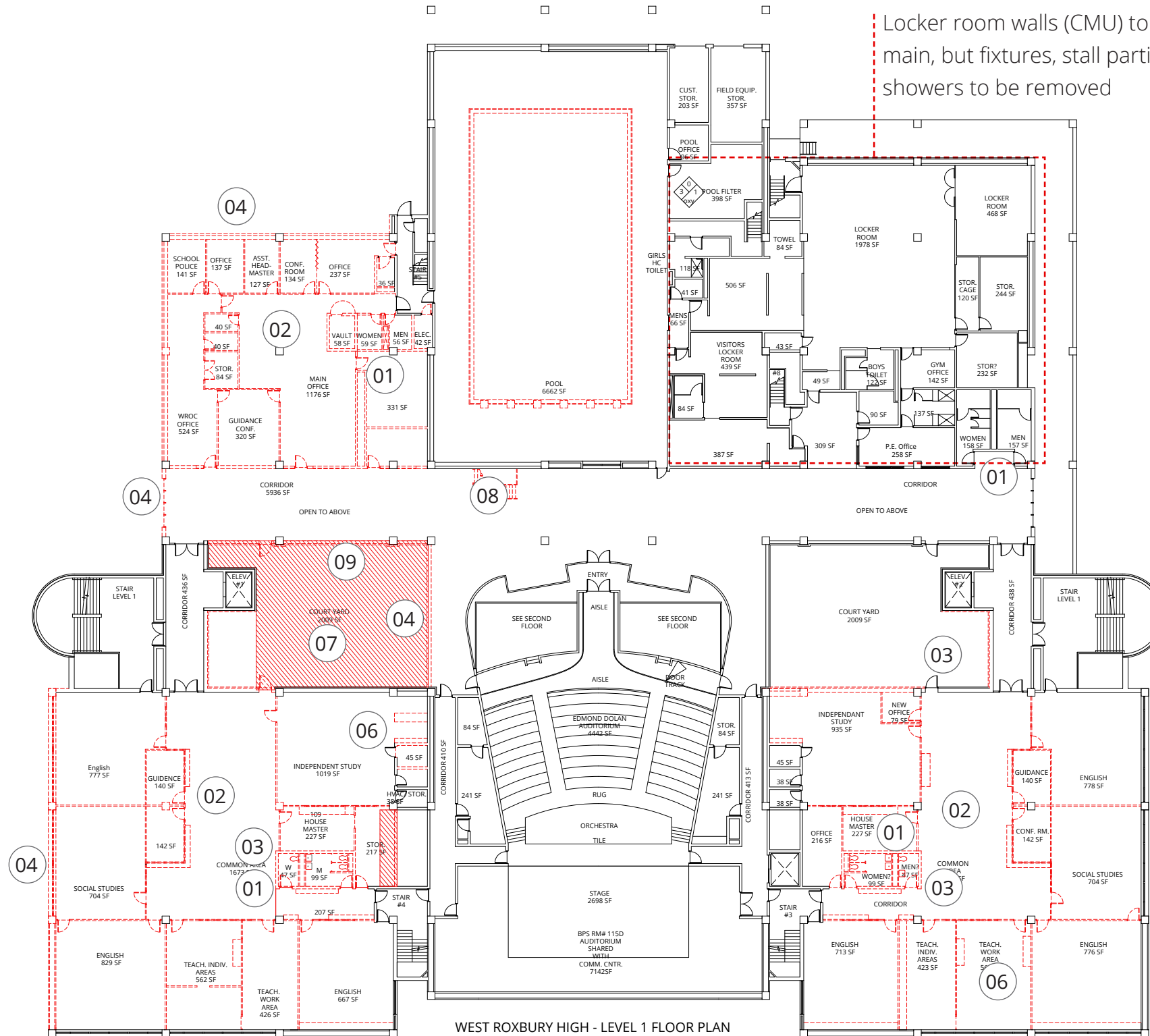
**KEYED REMOVALS NOTES:**

- 01 Remove plumbing fixtures
- 02 Remove partitions and doors
- 03 Remove CMU partitions
- 04 Remove exterior wall (not re-clad zone)
- 05 Remove stepped seating
- 06 Existing Cafeteria concrete floor to remain

\* Not shown: Exterior masonry/windows to be re-clad - refer to elevations for areas and extents of re-clad (all brick & windows that are not getting an expansion). Re-cladding will require new structural supports - see enclosure narrative.

**Basement Floor Plan**





Locker room walls (CMU) to remain, but fixtures, stall partitions, showers to be removed

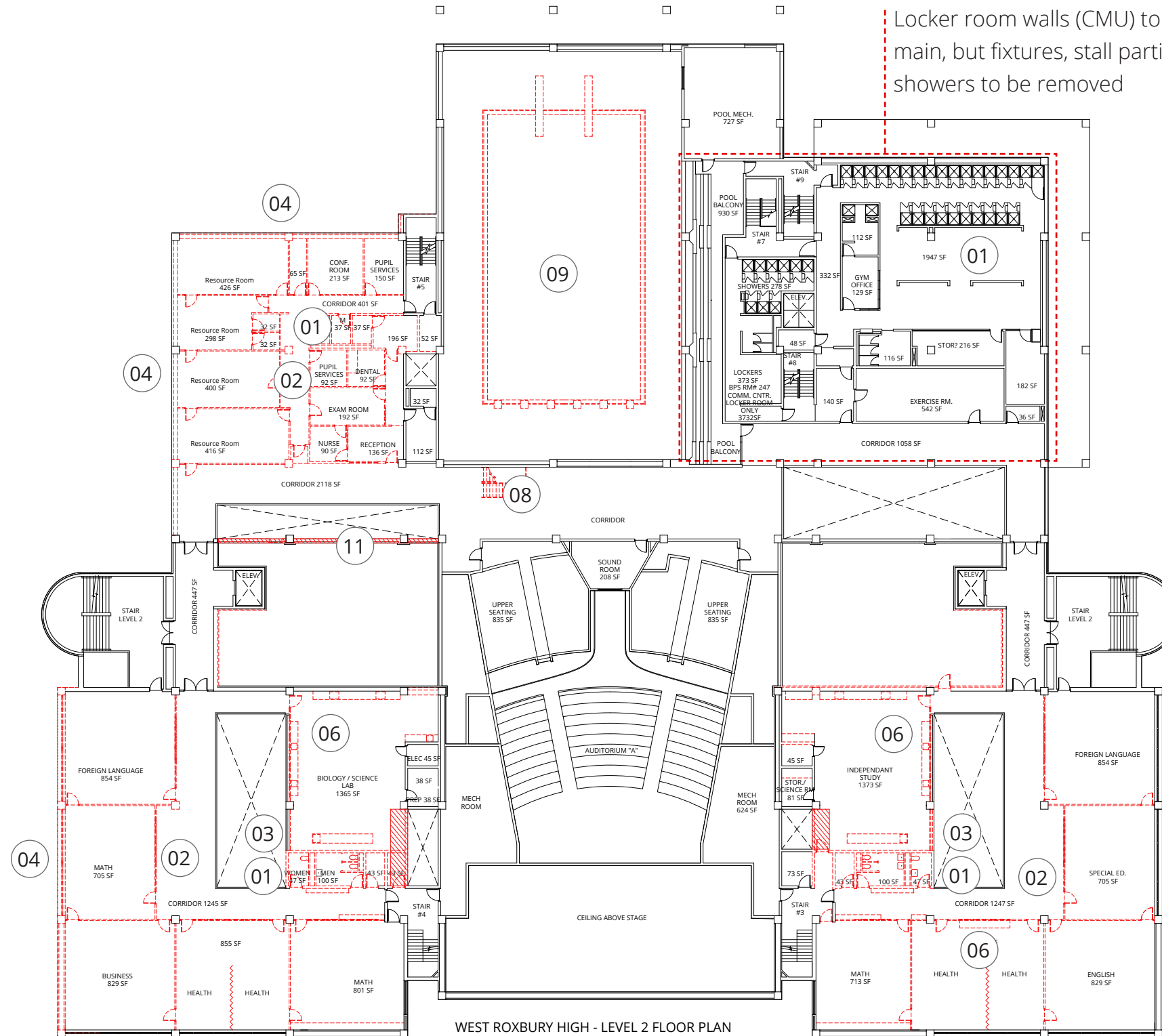
- REMOVALS LEGEND:**
- REMOVE
  - CUT OPENING IN FLOOR
  - EXISTING WALL TO REMAIN

- KEYED REMOVALS NOTES:**
- 01 Remove plumbing fixtures
  - 02 Remove partitions and doors
  - 03 Remove CMU partitions at restroom
  - 04 Remove exterior wall (not re-clad zone)
  - 05 Remove stepped seating
  - 06 Remove Built-in Millwork
  - 07 Remove brick floor, stepped planters, and slab
  - 08 Remove existing stair
  - 09 Remove brick atrium wall/bracing at L1&2
- \* Not shown: Remove 1,200 Existing Lockers  
 \* Not shown: Remove existing stair handrails  
 \* Not shown: Remove all ACT ceiling and VCT floor (classrooms, library, admin)  
 \* Not shown (all plans): Exterior masonry/windows demo for re-cladding - refer to elevations for areas and extents of re-clad (all brick & windows that are not getting an expansion). Re-cladding will require new structural supports - see enclosure narrative.

# Level 1 Floor Plan

West Roxbury Demo Plans

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Locker room walls (CMU) to remain, but fixtures, stall partitions, showers to be removed

**REMOVALS LEGEND:**

- REMOVE
- CUT OPENING IN FLOOR
- EXISTING WALL TO REMAIN

**KEYED REMOVALS NOTES:**

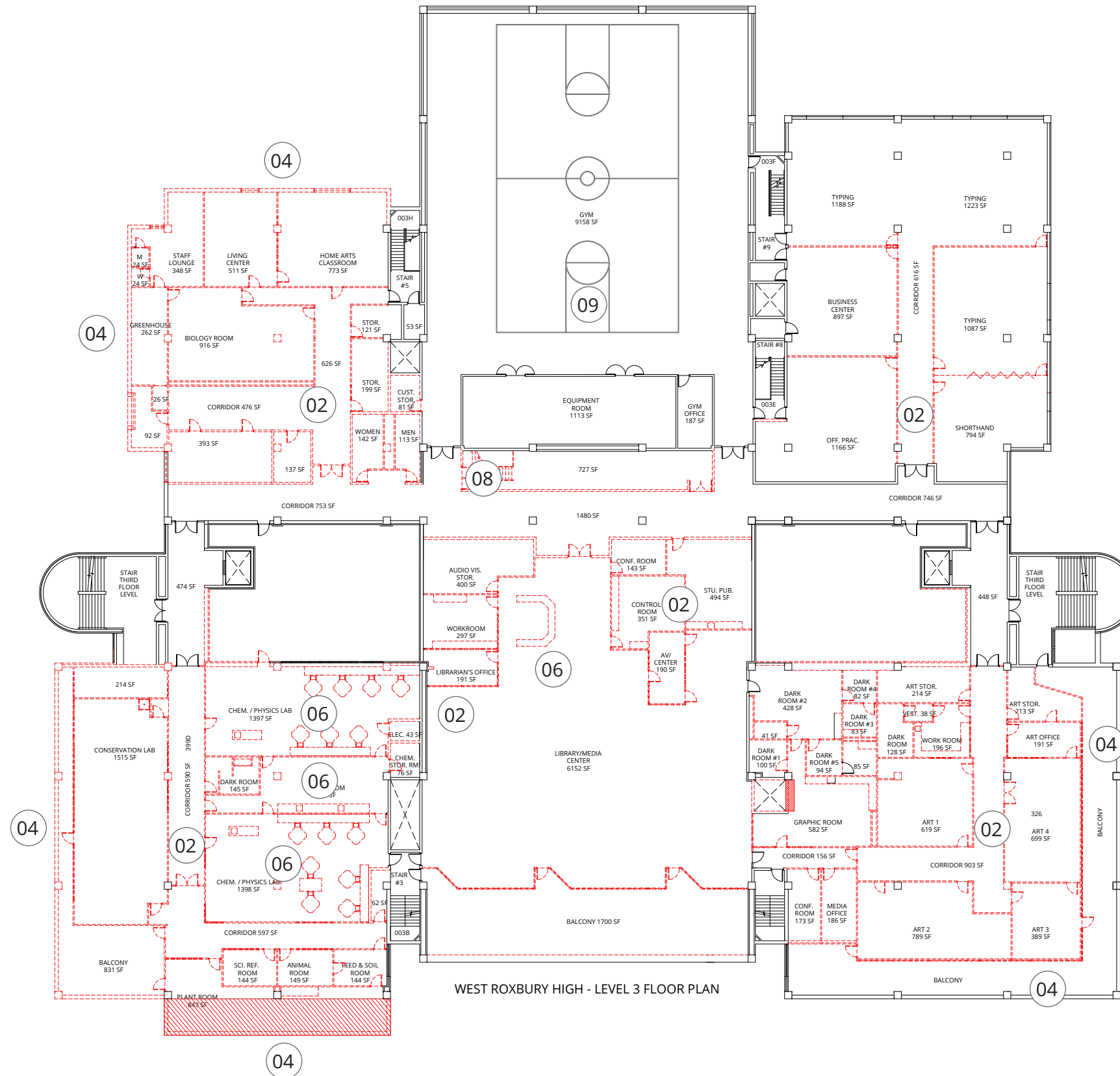
- 01 Remove plumbing fixtures
- 02 Remove partitions and doors
- 03 Remove CMU partitions at restroom
- 04 Remove exterior wall (not re-clad zone)
- 05 Remove stepped seating
- 06 Remove Built-in Millwork
- 07 Remove brick floor, stepped planters, and slab
- 08 Remove existing stair
- 09 Remove existing aluminum pool + liner
- 10 Remove acoustic wall tile and carpet floors
- 11 Remove brick atrium wall/bracing at L1&2

\* Not shown: Remove 1,200 Existing Lockers  
 \* Not shown: Remove existing stair handrails  
 \* Not shown: Remove all ACT ceiling and VCT floor (classrooms, library, admin)

**Level 2 Floor Plan**

West Roxbury Demo Plans

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**REMOVALS LEGEND:**

- REMOVE
- CUT OPENING IN FLOOR
- EXISTING WALL TO REMAIN

**KEYED REMOVALS NOTES:**

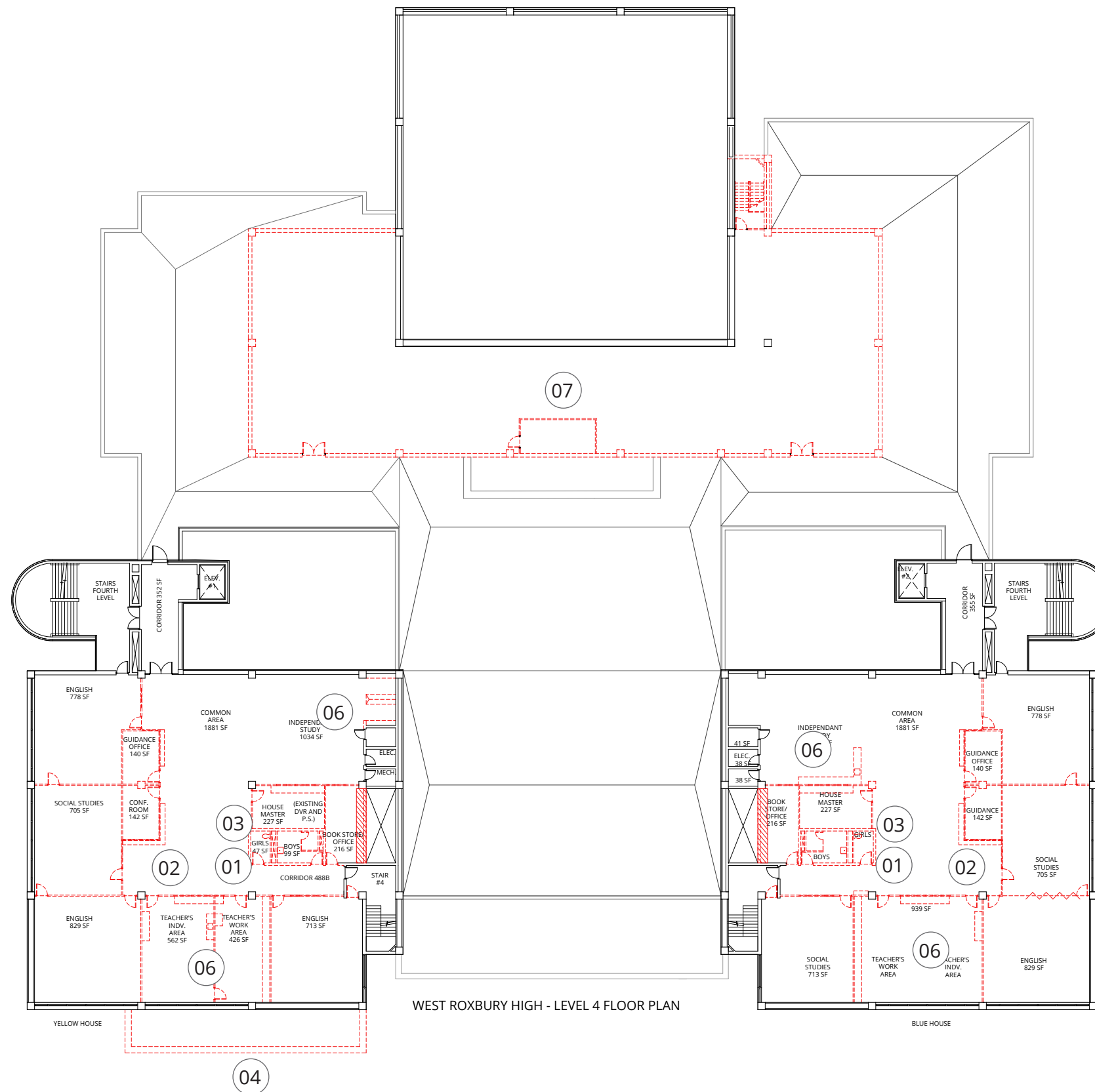
- 01 Remove plumbing fixtures
- 02 Remove partitions and doors
- 03 Remove CMU partitions at restroom
- 04 Remove exterior wall (not re-clad zone)
- 05 Remove stepped seating
- 06 Remove Built-in Millwork
- 07 Remove brick floor, stepped planters, and slab
- 08 Remove existing stair
- 09 Remove acoustic wall tile and damaged wood floor (~35%)

- \* Not shown: Remove 1,200 Existing Lockers
- \* Not shown: Remove existing stair handrails
- \* Not shown: Remove all ACT ceiling and VCT floor (classrooms, library, admin)

**Level 3 Floor Plan**

West Roxbury Demo Plans

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**REMOVALS LEGEND:**

- REMOVE
- CUT OPENING IN FLOOR
- EXISTING WALL TO REMAIN

**KEYED REMOVALS NOTES:**

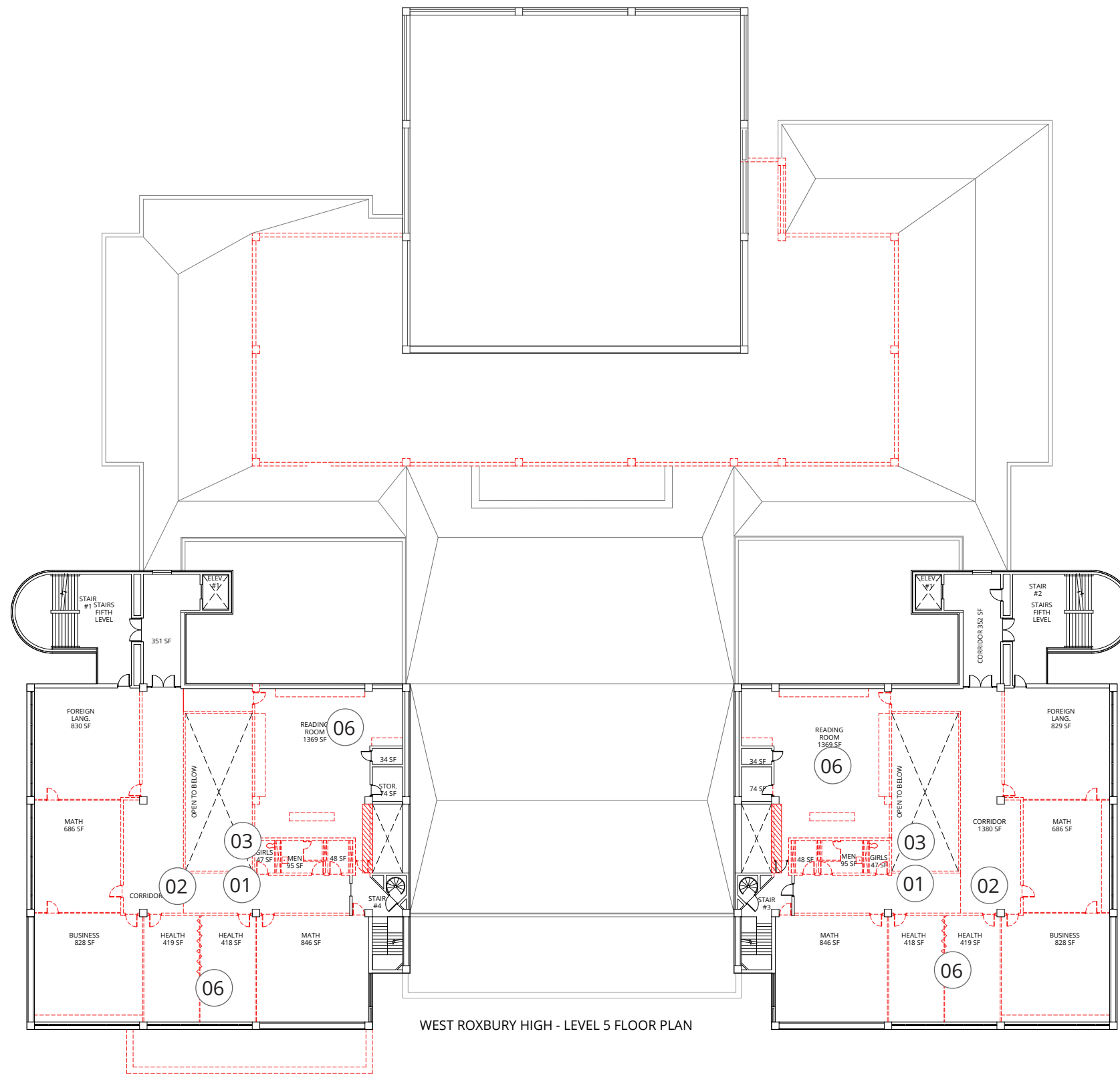
- 01 Remove plumbing fixtures
- 02 Remove partitions and doors
- 03 Remove CMU partitions at restroom
- 04 Remove cantilevered greenhouse
- 05 Remove stepped seating
- 06 Remove Built-in Millwork
- 07 Remove Mechanical Penthouse - walls, units, roof, doors, concrete pads

- \* Not shown: Remove 1,200 Existing Lockers
- \* Not shown: Remove existing stair handrails
- \* Not shown: Remove all ACT ceiling and VCT floor (classrooms, library, admin)

**Level 4 Floor Plan**

West Roxbury Demo Plans

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**REMOVALS LEGEND:**

- REMOVE
- CUT OPENING IN FLOOR
- EXISTING WALL TO REMAIN

**KEYED REMOVALS NOTES:**

- 01 Remove plumbing fixtures
- 02 Remove partitions and doors
- 03 Remove CMU partitions at restroom
- 04 Remove cantilevered greenhouse
- 05 Remove stepped seating
- 06 Remove Built-in Millwork
- 07 Remove Mechanical Penthouse - walls, units, roof, doors, concrete pads

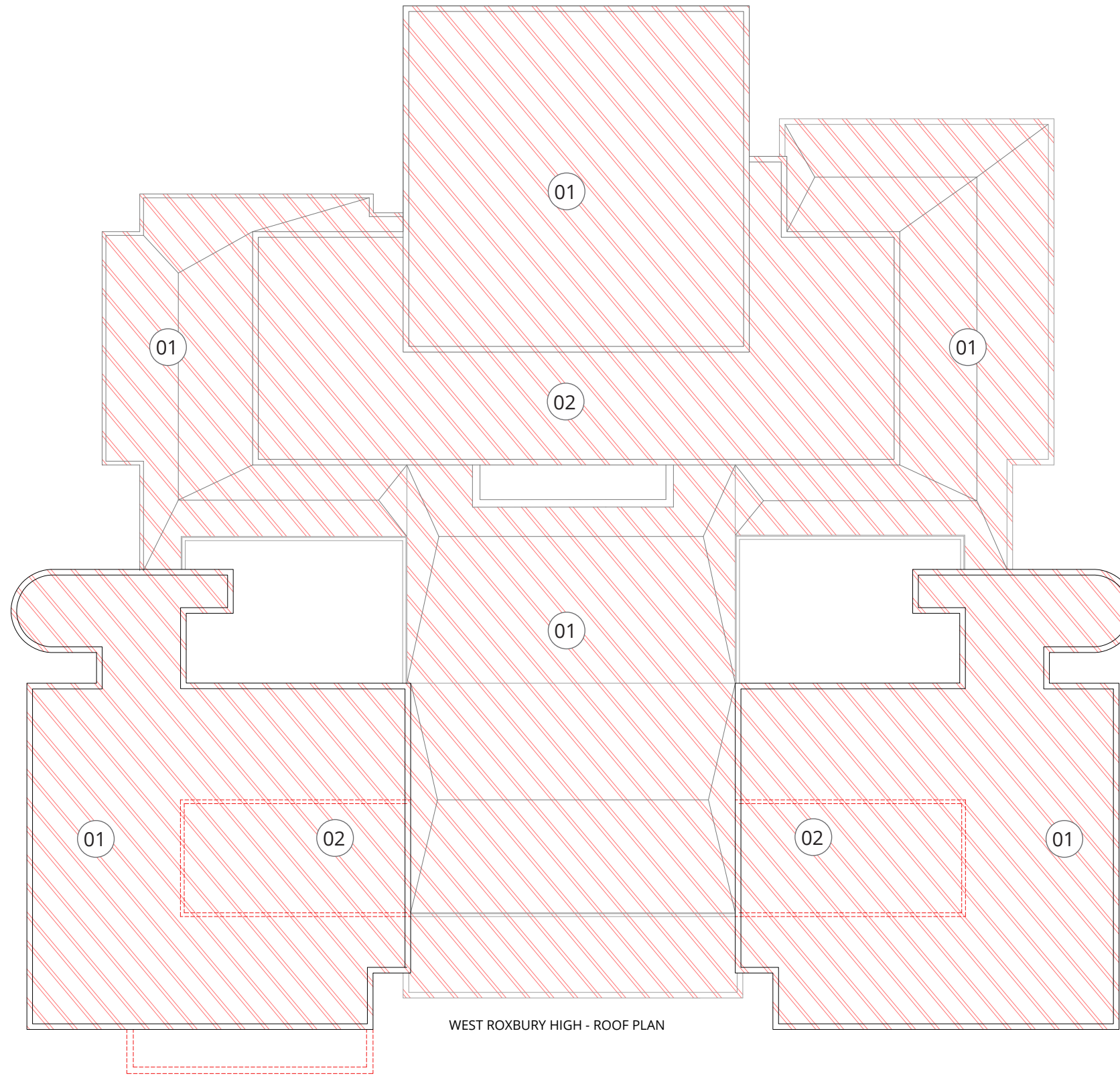
- \* Not shown: Remove 1,200 Existing Lockers
- \* Not shown: Remove existing stair handrails
- \* Not shown: Remove all ACT ceiling and VCT floor (classrooms, library, admin)

**Level 5 Floor Plan**

West Roxbury Demo Plans

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**REMOVALS LEGEND:**

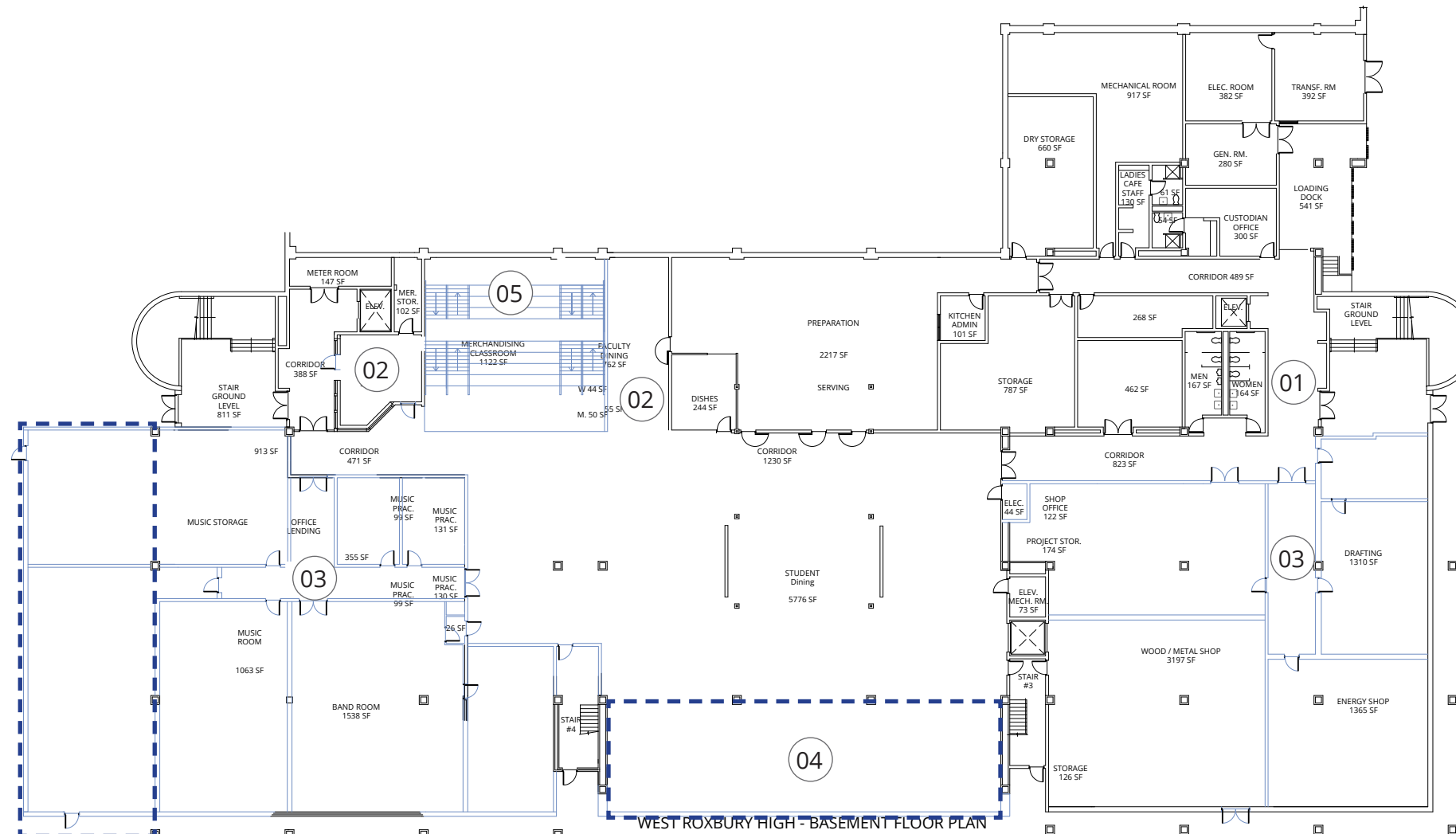
- REMOVE
- CUT OPENING IN FLOOR
- EXISTING WALL TO REMAIN

**KEYED REMOVALS NOTES:**

- 01 Remove all roofs, ballasts, and coping
- 02 Remove Mechanical Penthouse - walls, units, roof, doors, concrete pads

**Roof Floor Plan**

# Concept Plans - Annotated



**LEGEND:**

- NEW WALL
- EXISTING WALL TO REMAIN
- ZONE OF BUILDING ADDITION

**KEYED PLAN NOTES:**

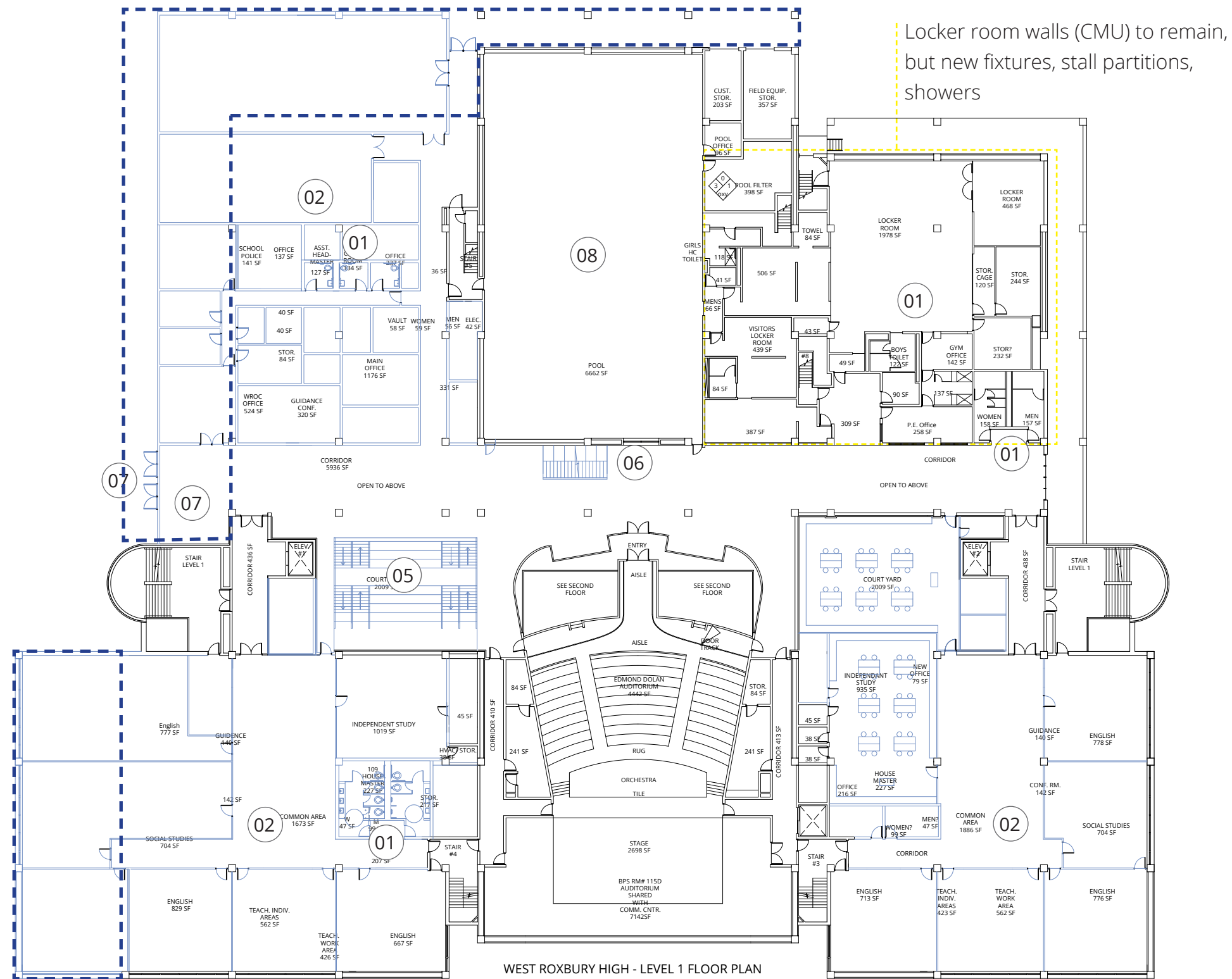
- 01 New plumbing fixtures
- 02 New partitions and doors
- 03 New sound attenuating acoustic partitions/doors
- 04 New polished concrete floor to match existing
- 05 New bleacher stair

\*New handrails at all stairs

**West Roxbury Proposed Basement Floor Plan**

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**LEGEND:**

- NEW WALL
- EXISTING WALL TO REMAIN
- ZONE OF BUILDING ADDITION

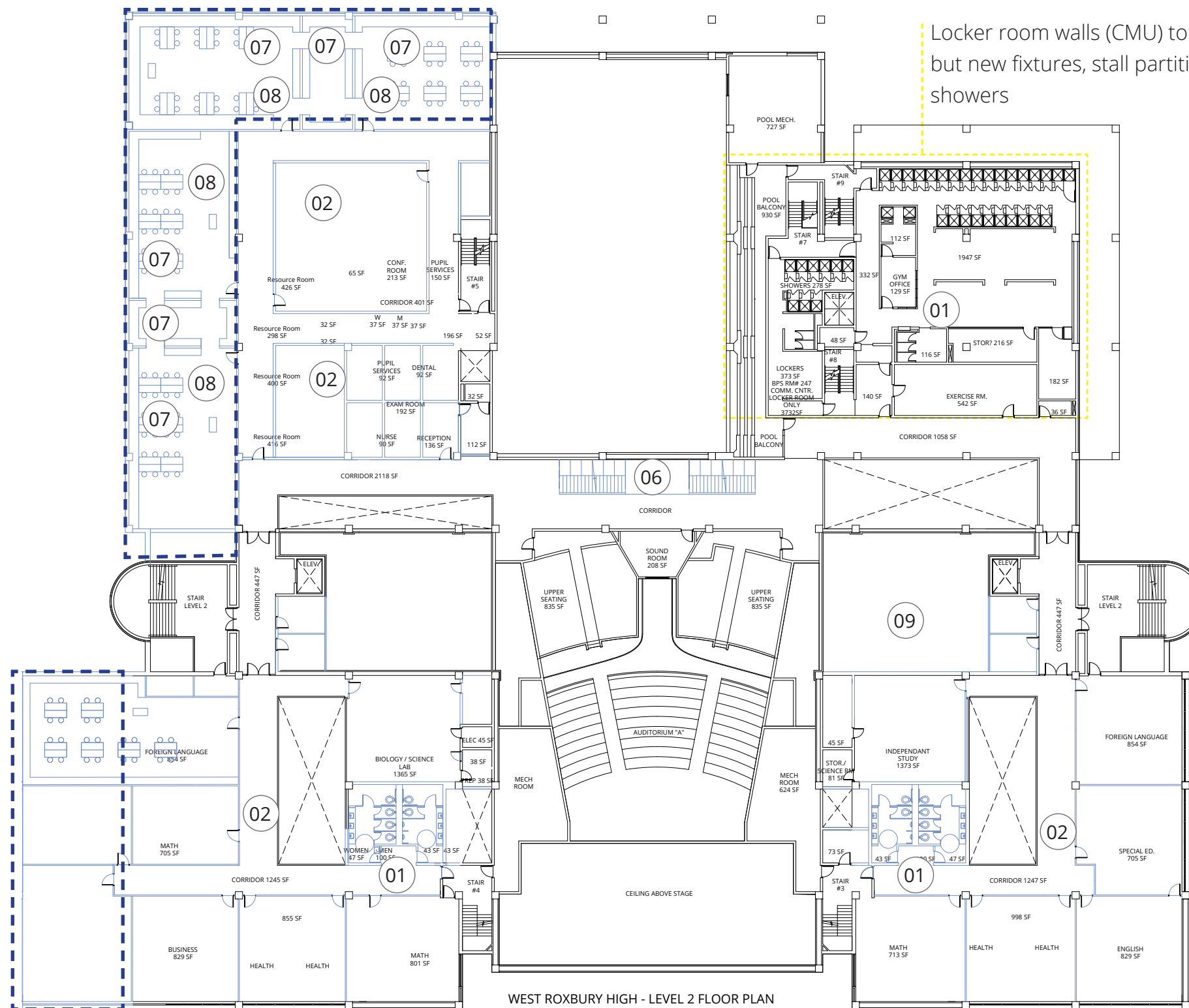
**KEYED PLAN NOTES:**

- 01 New plumbing fixtures
- 02 New partitions and doors
- 03 New sound attenuating acoustic partitions/doors
- 04 New polished concrete floor to match existing
- 05 New bleacher stair
- 06 New central social stair in existing opening
- 07 New storefront entrance
- 08 New pool (see owner-provided comparable)

\*New handrails at all stairs

# West Roxbury Proposed Level 1 Floor Plan

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Locker room walls (CMU) to remain, but new fixtures, stall partitions, showers

- LEGEND:**
- NEW WALL
  - EXISTING WALL TO REMAIN
  - ZONE OF BUILDING ADDITION

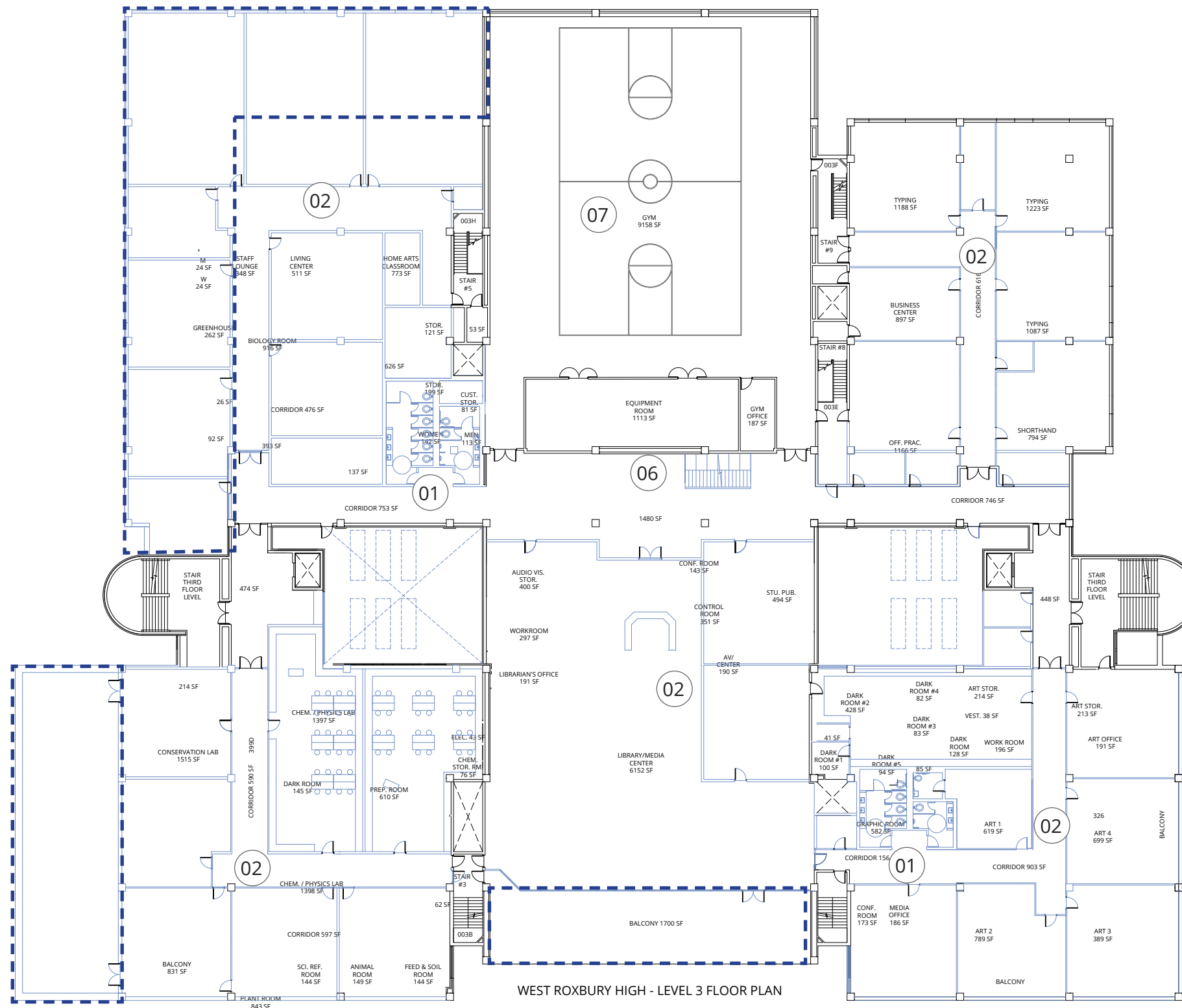
- KEYED PLAN NOTES:**
- 01 New plumbing fixtures
  - 02 New partitions and doors
  - 03 New sound attenuating acoustic partitions/doors
  - 04 New polished concrete floor to match existing
  - 05 New bleacher stair
  - 06 New central social stair in existing opening
  - 07 New built-in science lab counter and storage
  - 08 New fume hood
  - 09 New structure + floor infill + stepped lecture hall

\*New handrails at all stairs

WEST ROXBURY HIGH - LEVEL 2 FLOOR PLAN

# West Roxbury Proposed Level 2 Floor Plan

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**LEGEND:**

- NEW WALL
- EXISTING WALL TO REMAIN
- ZONE OF BUILDING ADDITION

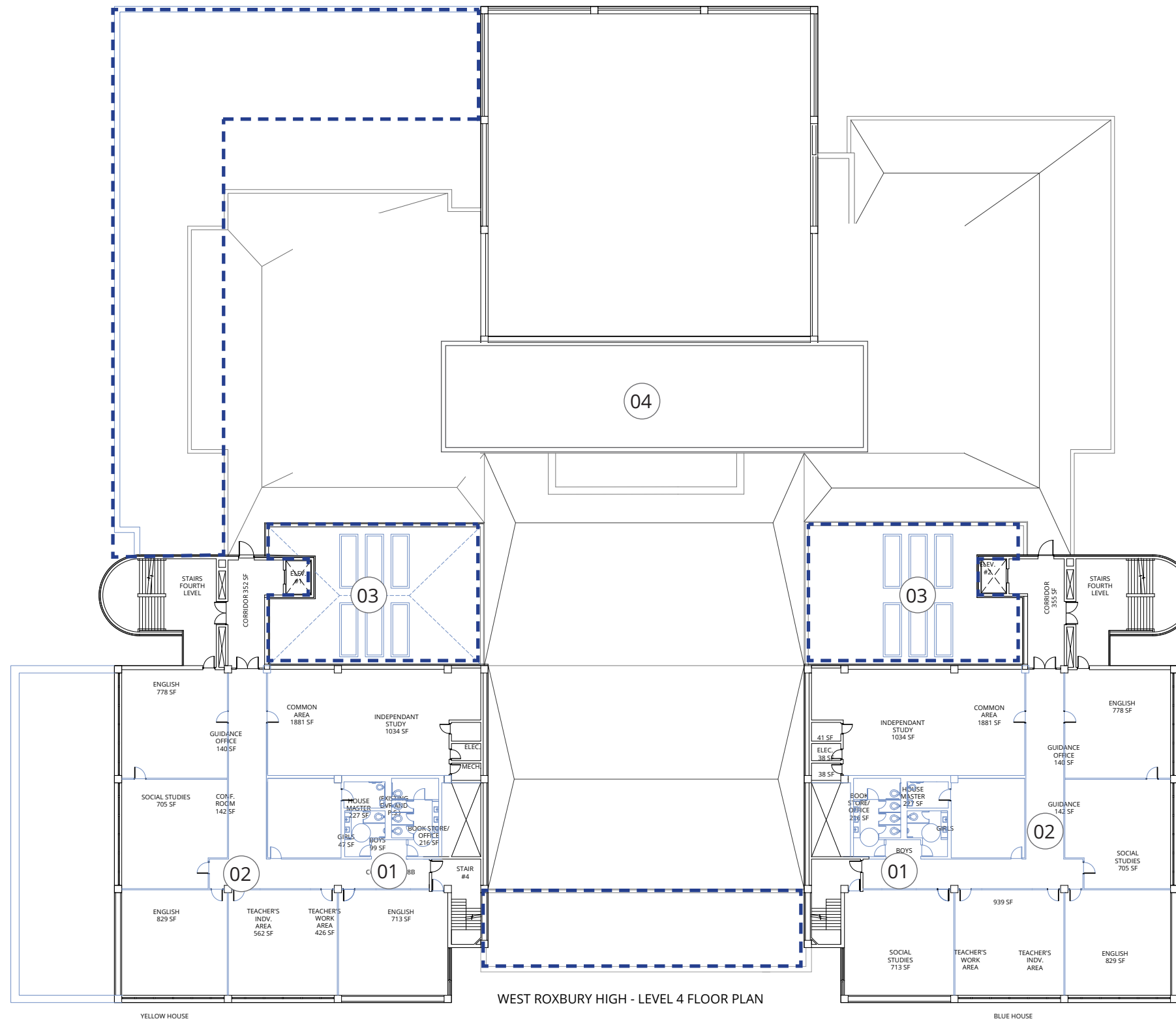
**KEYED PLAN NOTES:**

- 01 New plumbing fixtures
- 02 New partitions and doors
- 03 New sound attenuating acoustic partitions/doors
- 04 New polished concrete floor to match existing
- 05 New bleacher stair
- 06 New central social stair in existing opening
- 07 New wood floor 35% to match existing

\*New handrails at all stairs

**West Roxbury Proposed Level 3 Floor Plan**

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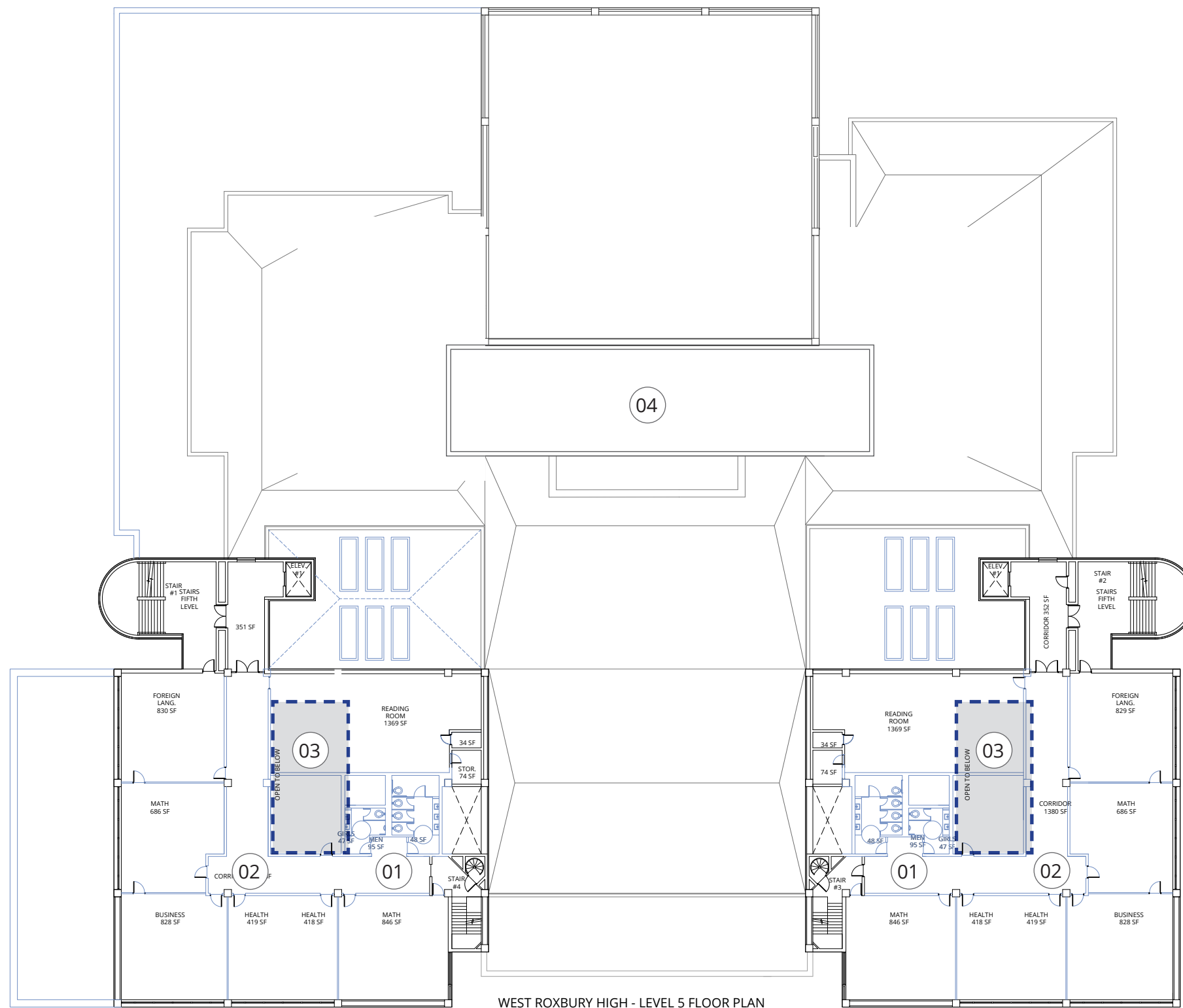


- LEGEND:**
- NEW WALL
  - EXISTING WALL TO REMAIN
  - ZONE OF BUILDING ADDITION

- KEYED PLAN NOTES:**
- 01 New plumbing fixtures
  - 02 New partitions and doors
  - 03 New roof and skylights to enclose atriums
  - 04 New mechanical penthouse
- \*New handrails at all stairs

# West Roxbury Proposed Level 4 Floor Plan

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**LEGEND:**

- NEW WALL
- EXISTING WALL TO REMAIN
- ZONE OF BUILDING ADDITION

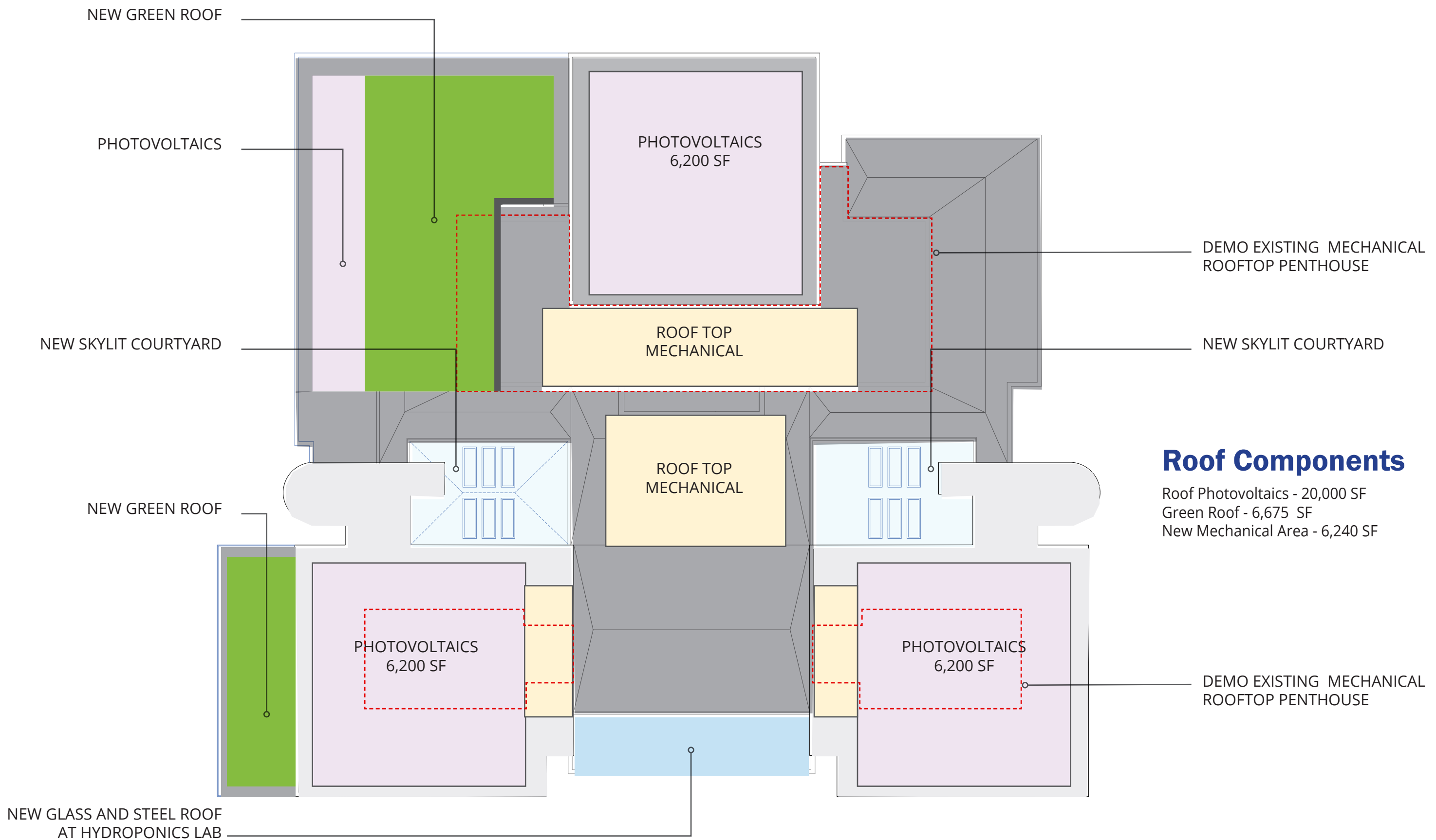
**KEYED PLAN NOTES:**

- 01 New plumbing fixtures
- 02 New partitions and doors
- 03 New structure + floor infill at previous mezzanine
- 04 New mechanical penthouse

\*New handrails at all stairs

**West Roxbury Proposed Level 5 Floor Plan**

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### Roof Components

Roof Photovoltaics - 20,000 SF  
 Green Roof - 6,675 SF  
 New Mechanical Area - 6,240 SF

## West Roxbury Proposed Roof Plan

Existing Building Program - Classrooms

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# Interior Finishes Narrative

## GENERAL CLASSROOMS

Flooring: VCT, Ceiling: concealed spline 2'x8' ACT, Walls: GWB, Lighting: 8' LED recessed/integrated into ceiling (3 zones) Audio Visual: Typical BPS Classroom allowance.

## LAB CLASSROOMS

Flooring: VCT, Ceiling: concealed spline 2'x8' ACT, Walls: GWB, Lighting: 8' LED recessed/integrated into ceiling (3 zones) Audio Visual: Typical BPS Classroom allowance, Millwork (Chemistry only): plastic laminate bases with phenolic resin counters

## ART CLASSROOMS/MAKERSPACE

Flooring: VCT, Ceiling: concealed spline 2'x8' ACT, Walls: GWB, Lighting: 8' LED recessed/integrated into ceiling (3 zones) Audio Visual: Typical BPS Classroom allowance, Millwork: plastic laminate bases with phenolic resin counters

## MUSIC AND PRACTICE ROOMS

Flooring: VCT, Ceiling: concealed spline 2'x8' ACT, Walls: GWB with acoustically separate wall construction and additional surface mounted sound attenuation, Lighting: 8' LED recessed/integrated into ceiling (3 zones) Audio Visual: Typical BPS Classroom allowance.

## OFFICES/ADMIN/ TEACHER'S WORKROOMS

Flooring: carpet tile, Ceiling: concealed spline 2'x2' ACT, Walls: GWB, Lighting: 8' LED recessed/integrated into ceiling.

## RESTROOMS

Flooring: epoxy, Ceiling: moisture resistant GWB, Walls: moisture resistant GWB and standard white subway tile to 48", Lighting: 8' LED, with alcove lighting at wall, electric hand dryers, trough sinks

## AUDITORIUM

Flooring: carpet(broadloom), Ceiling: acoustic panelized wood ceiling, Walls: 50% new acoustical wall treatment, Lighting: cost/sf for lighting, theatrical lighting, and audio visual

## CAFETERIA

Flooring: Grind + polish existing concrete, Ceiling: moisture resistant/kitchen grade concealed spline 2'x8' ACT, walls: GWB

## GYMNASIUM

Flooring: Sand and refinish existing wood flooring (assume 35% replacement), Ceiling: assume total repaint and acoustic treatment to 50% of exposed metal deck and trusses, Walls: repaint existing CMU block

## LOCKER ROOMS

Flooring: existing to remain, Ceiling: repaint, Walls: Existing CMU to remain, repaint

## Finishes Narrative

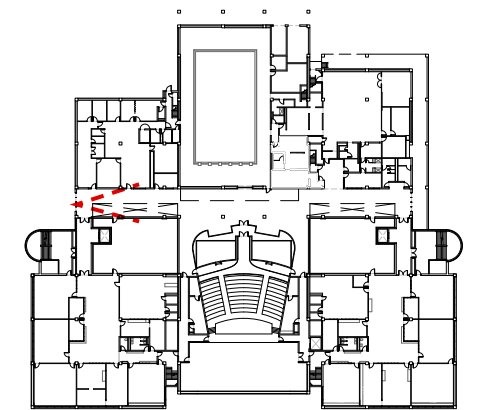
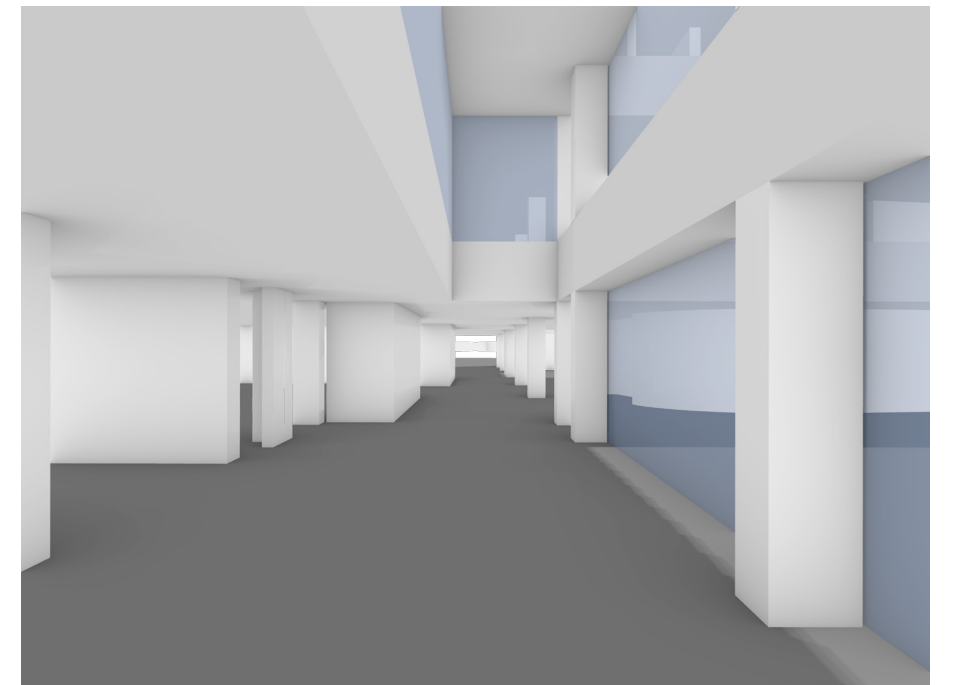
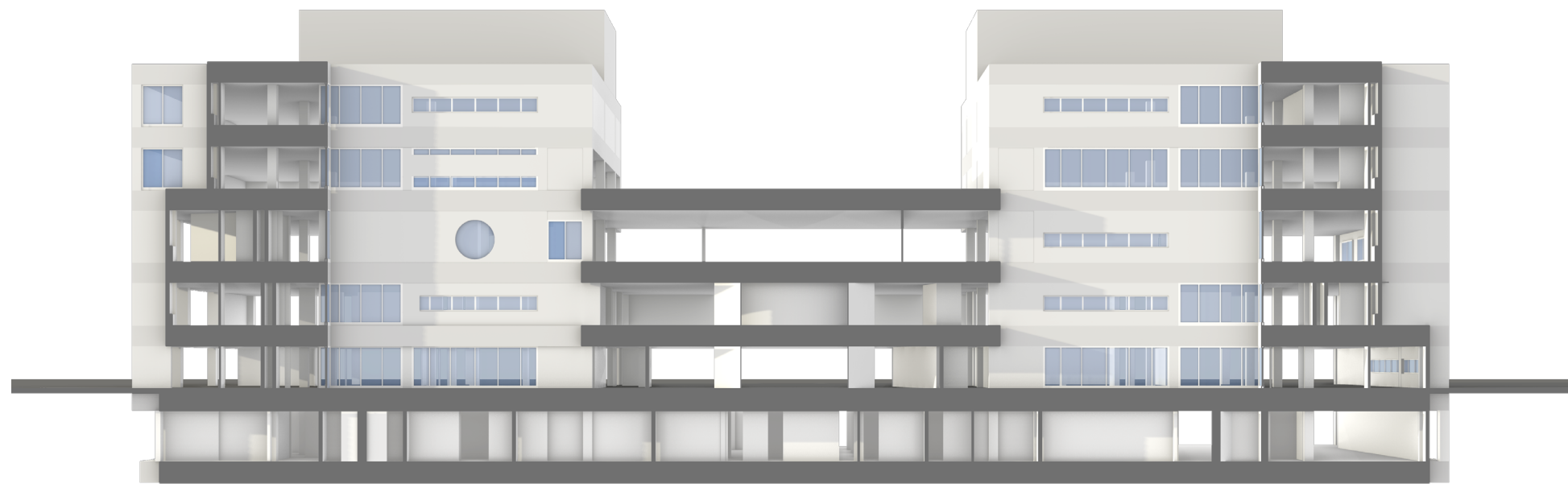
**DRAFT**

# Interior Finishes Narrative

- GENERAL**  
All classroom doors to be painted wood and all remaining doors to be painted hollow metal. All new guard rails to be painted perforated metal.
- EXISTING EGRESS STAIRS**  
Existing stairs to have new continuous handrails - to be painted metal, and new ADA striping.
- NEW BLEACHER STAIR AT SOUTH COURTYARD**  
Steel frame, oak finish, and stainless steel handrails
- NEW CENTRAL SOCIAL STAIR**  
Steel frame, oak finish, and stainless steel handrails
- NEW SCIENCE AMPHITHEATER STEPPED LECTURE HALL**  
Shallow stepped lecture hall with steel frame, oak finish, and stainless steel handrails
- WAYFINDING**  
New door signage on all doors and (2) directory wayfinding signs per floor
- ELEVATORS**  
New interior stainless steel wall panels and rubber floors

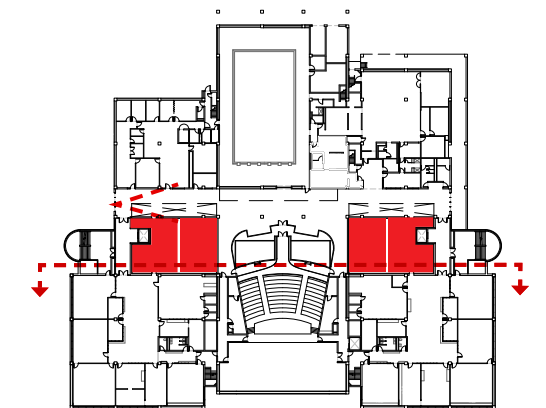
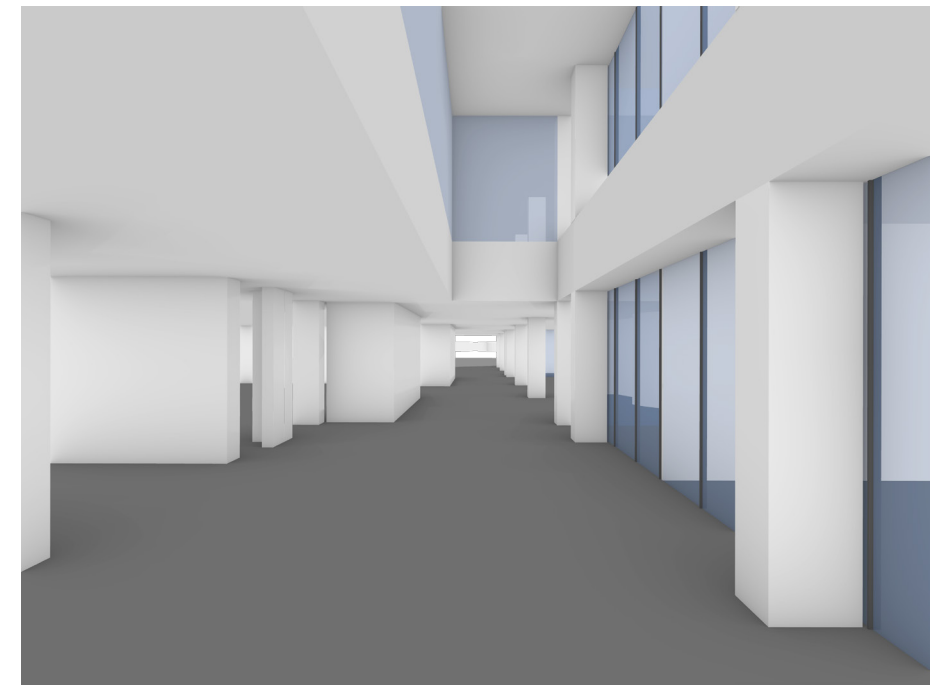
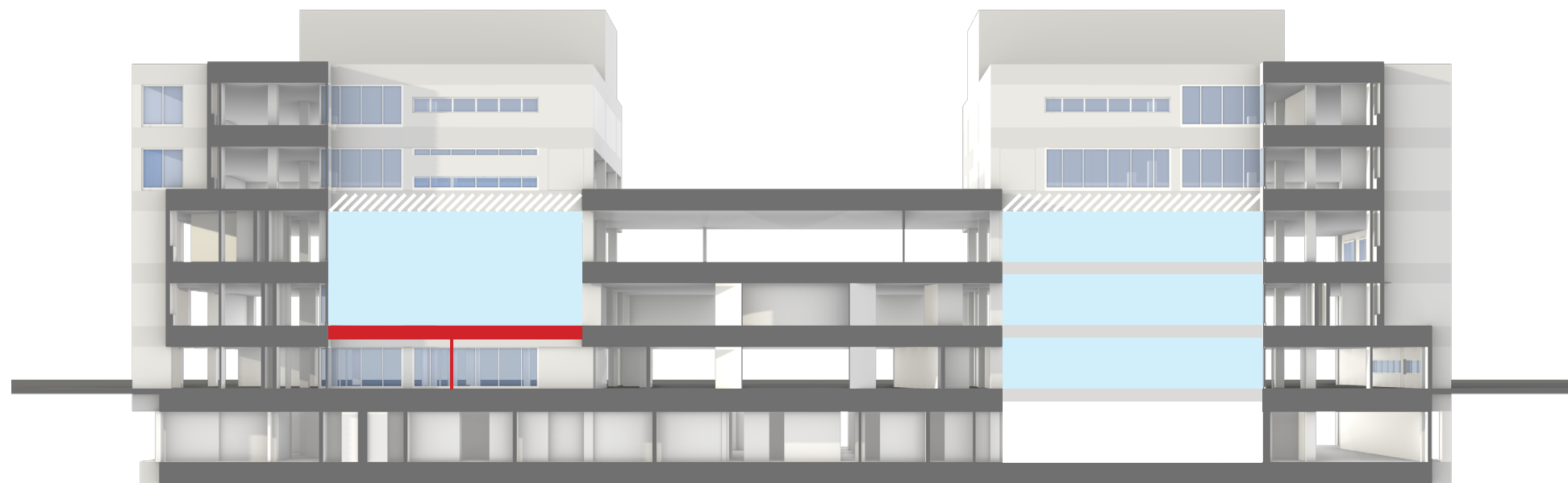


**Annotated Views + Exterior Narrative**



## Courtyard - Existing

View Test



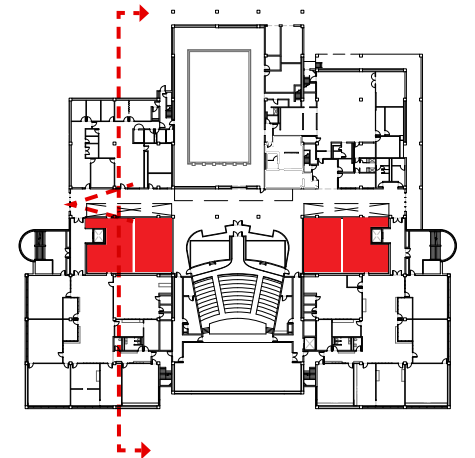
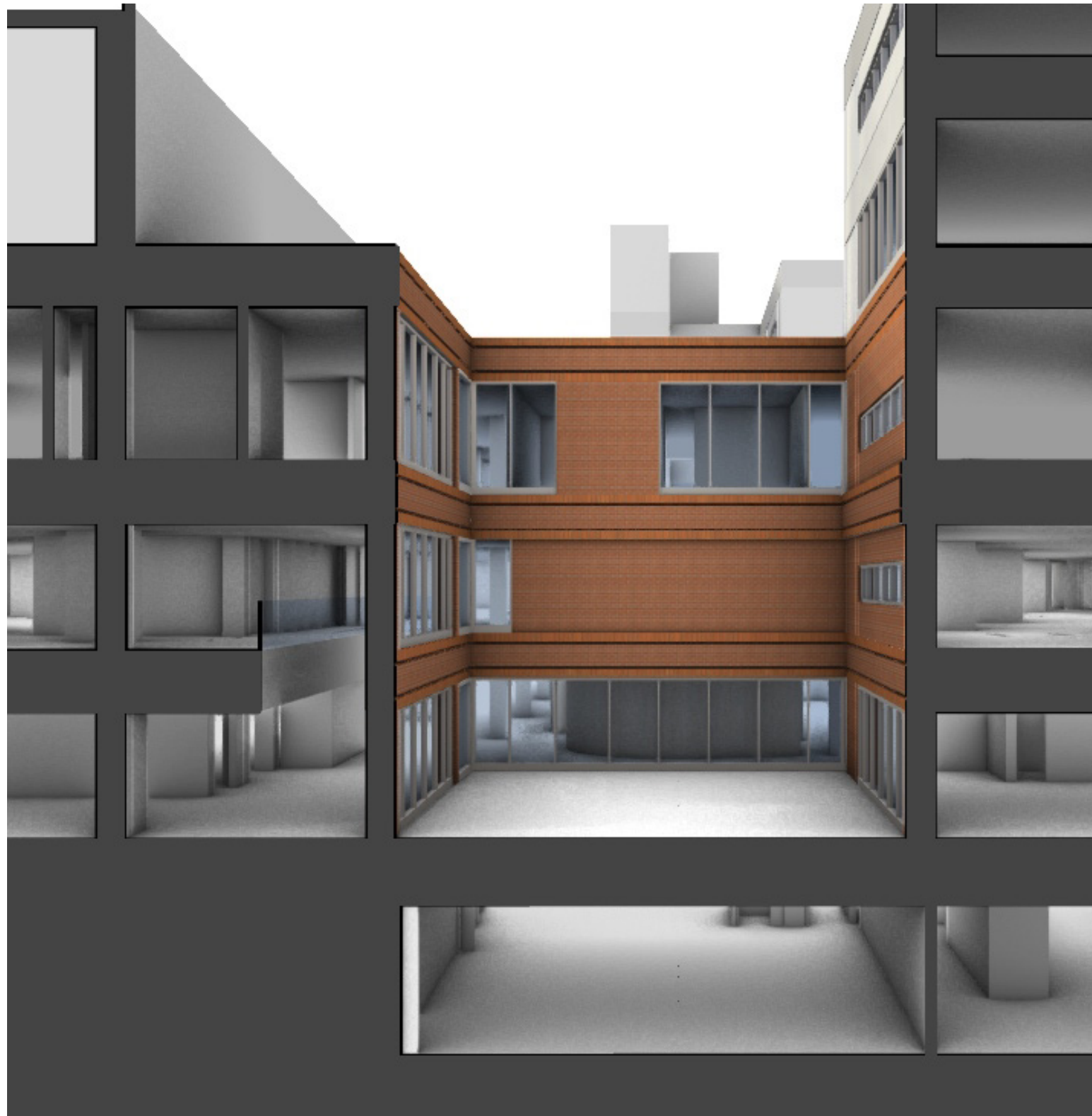
## Two Classrooms

View Test

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## South Courtyard Section - Existing

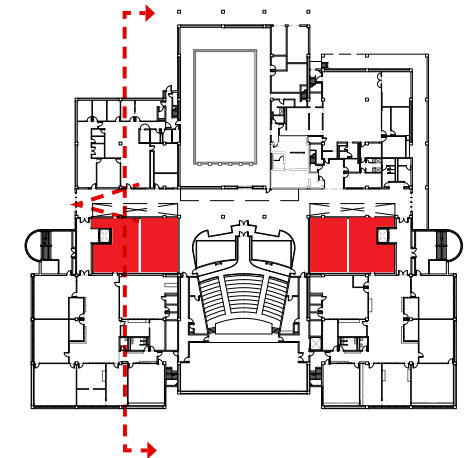
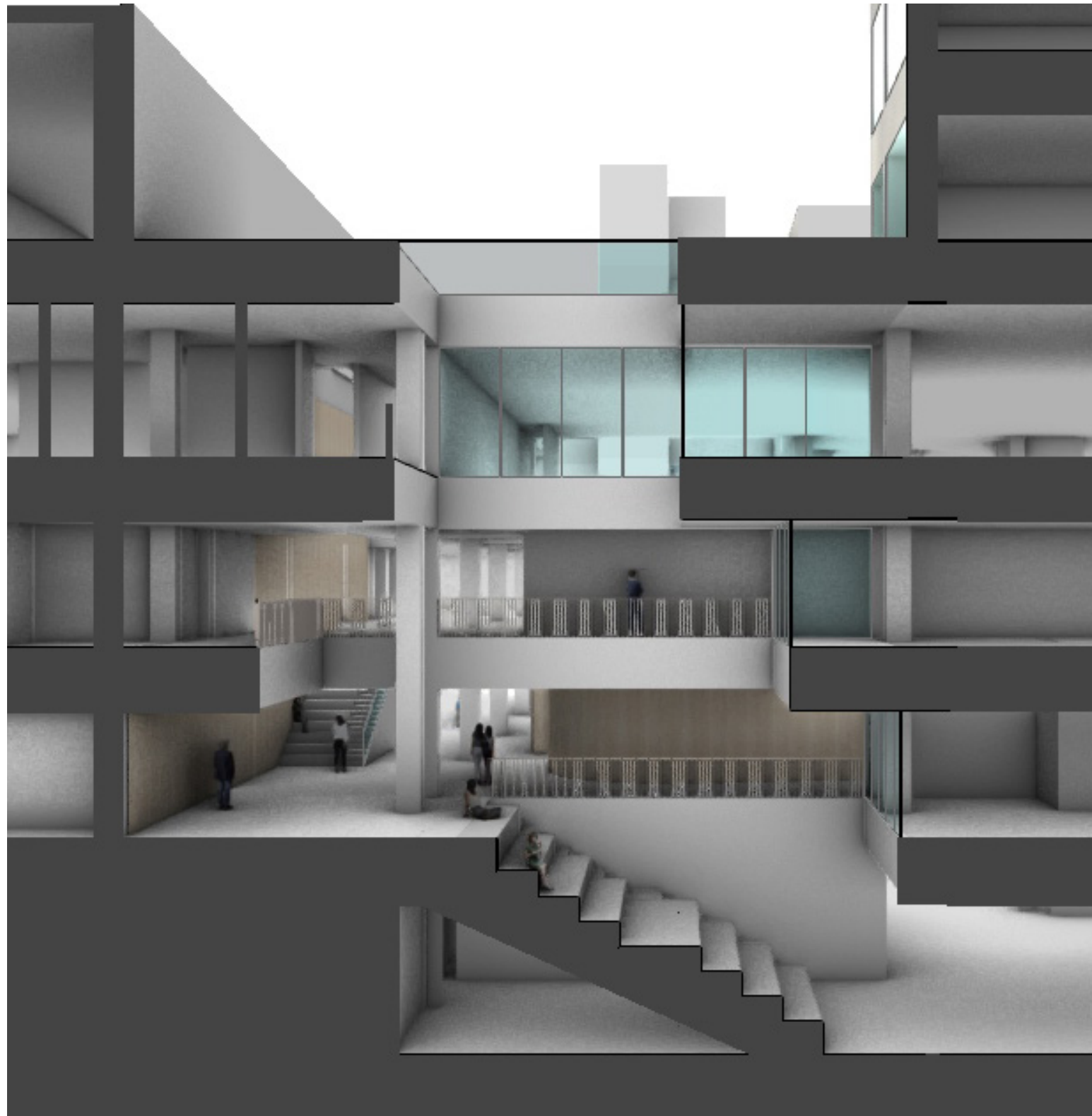
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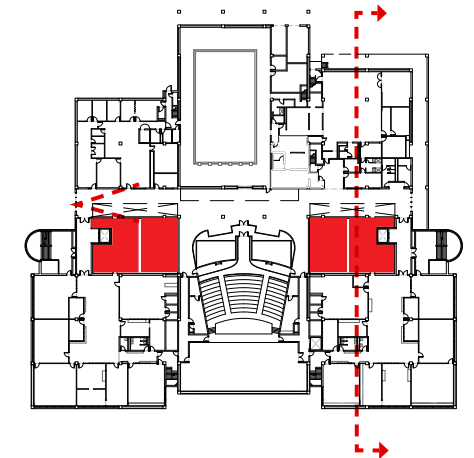
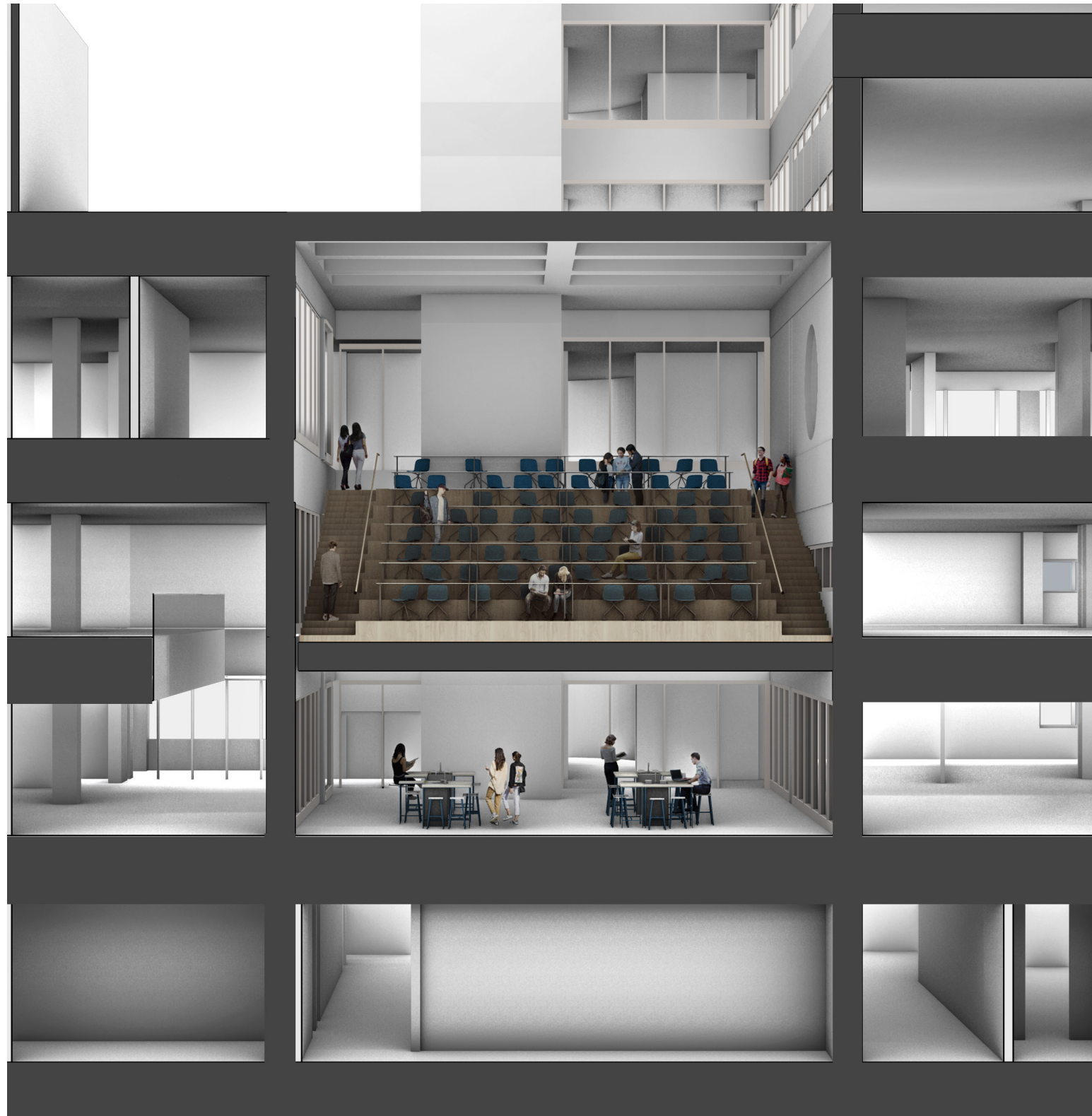
## South Atrium Section - Connect & Extend Cafeteria

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## North Atrium Section - Science Amphitheater

Addition & Renovation Studies

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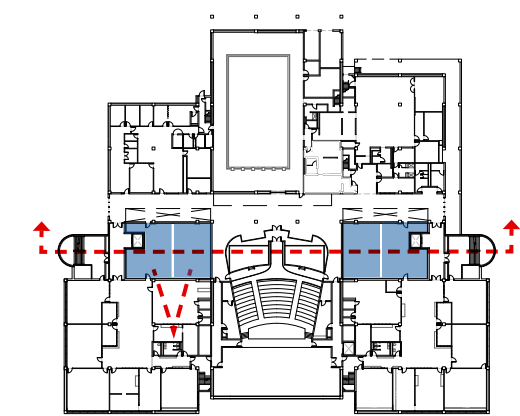
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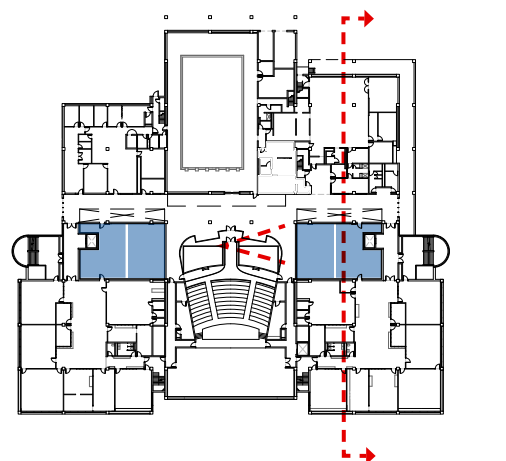




South Atrium Section - Connect & Extend Cafeteria



North Atrium Section - Science Amphitheater









RETAIN & REPAIR EX-  
ISTING WOOD SLAT  
CEILING

NEW LARGE-FORMAT  
ACT CEILING WITH  
INTEGRATED LIGHT-  
ING

RETAIN POR-  
TIONS OF EXISTING  
COURTYARD BRICK

NEW WAYFINDING  
THROUGHOUT

CLASSROOMS EXTENDING INTO  
ATRIUM WITH NEW STRUCTURE  
& GLASS



RETAIN EXISTING  
BRICK FLOOR

WOOD SOCIAL  
STAIR

NEW DRYWALL

NEW METAL PERFO-  
RATED HANDRAILS

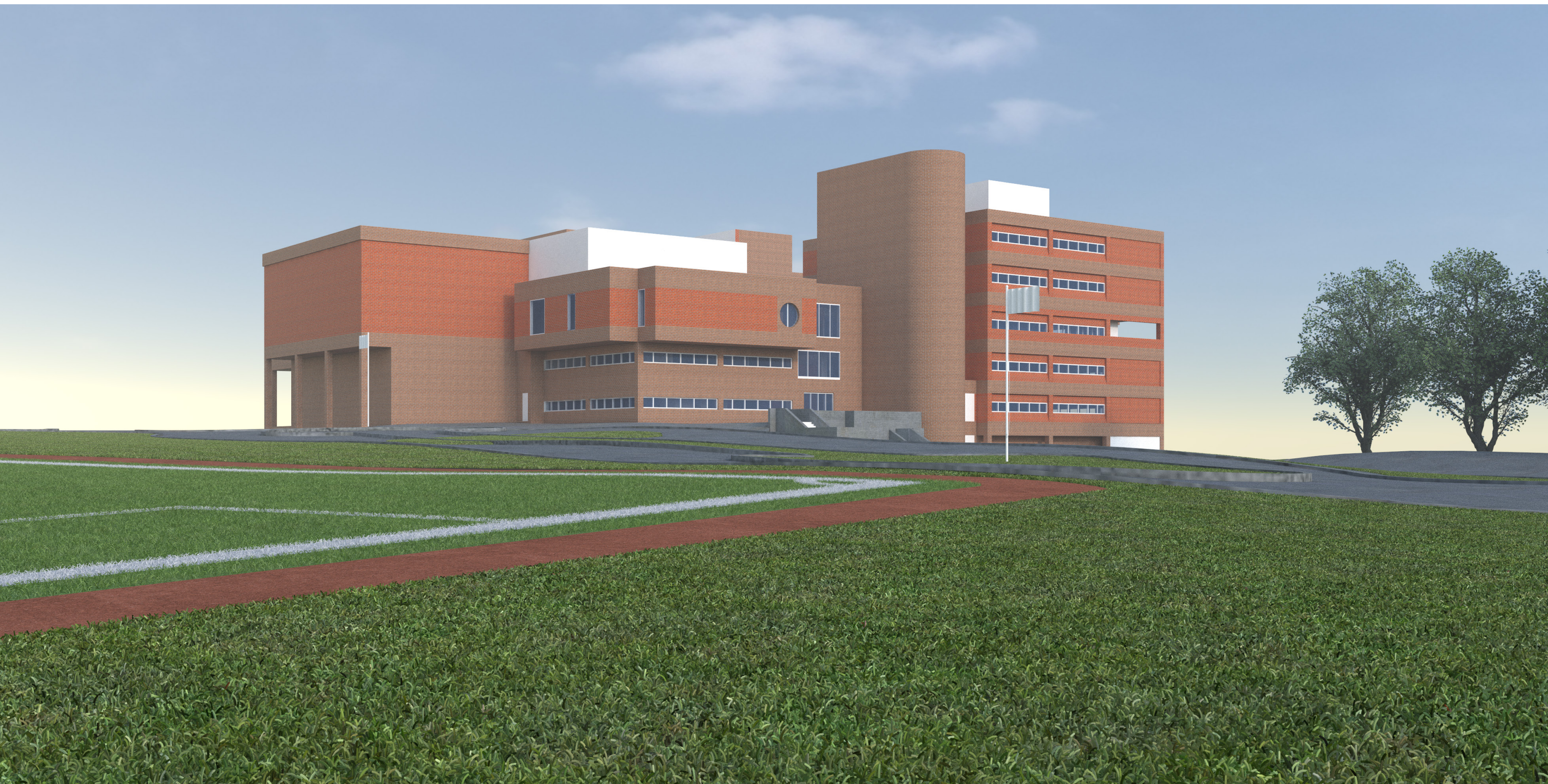
WOOD AMPHITHEATER  
STAIR & SEATING

ADDED SPACE &  
ACCESS TO  
CAFETERIA

VIEWS INTO LAB  
SPACES

## Courtyard View - Materials





## Exterior - Existing Entry View

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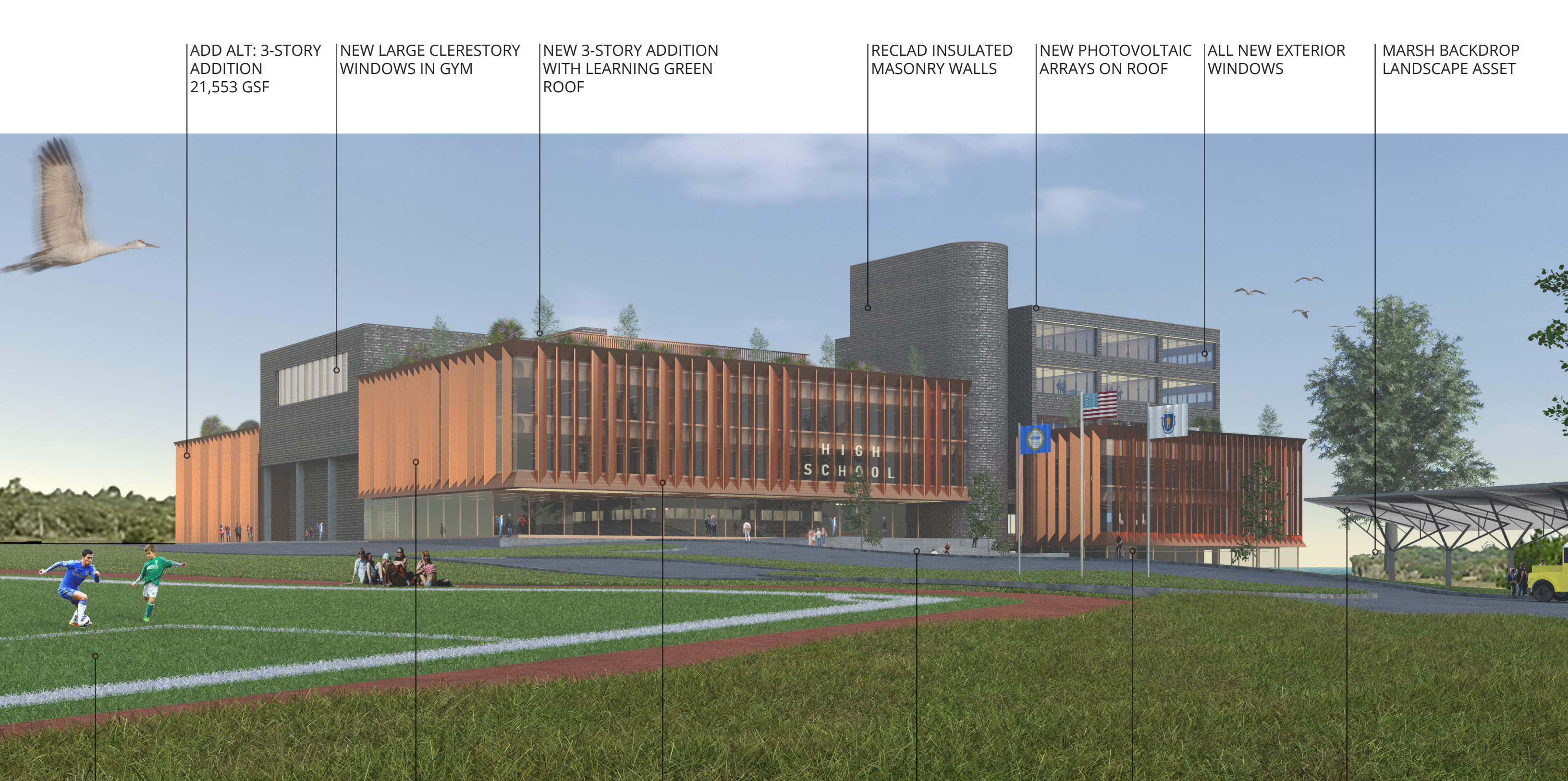
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ADD ALT: 3-STORY  
ADDITION  
21,553 GSF

NEW LARGE CLERESTORY  
WINDOWS IN GYM

NEW 3-STORY ADDITION  
WITH LEARNING GREEN  
ROOF

RECLAD INSULATED  
MASONRY WALLS

NEW PHOTOVOLTAIC  
ARRAYS ON ROOF

ALL NEW EXTERIOR  
WINDOWS

MARSH BACKDROP  
LANDSCAPE ASSET

RECENTLY RENOVAT-  
ED FIELDS & COURTS

NEW 3-STORY ADDITION  
24,249 GSF

NEW ENERGY EFFICIENT  
FACADE 20-30% WINDOW  
AREA AVERAGE

NEW LANDSCAPE RAMP  
AND ENTRY SEQUENCE

NEW 3-STORY  
ADDITION 8,642 GSF

PHOTOVOLTAIC  
PARKING CANOPY

## Exterior - New Entry View

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# Exterior Narrative

## 1. ENTRANCE ADDITION A: (24,249 GSF) LVLS 1-3

Three story addition at south entrance to school. (extended height parapet for guardrail height at PV and green roof) Addition to be structurally isolated from existing building. Extent of existing masonry and glass facade covered by new addition to be removed (see elevations). Exterior concrete landscape entrance stairs to be removed.

Level 1: 2,264 sf of thermally broken, triple glazed curtain wall (at maker space and lab classroom) and 1,000 sf total of solid rain screen 300 sf w thermally broken, triple glazed punched windows at admin/offices. Assume 333 sf of punched windows. Assume 367 sf of new storefront entrance.

Levels 2 and 3: 7,264 sf of thermally broken, triple glazed curtain wall with solid metal infill panels and custom fin extensions

Level 4: 2,454 sf of metal screening of mechanical equipment/penthouse

Assume 1 new flag pole and 6" high stainless steel letters for school signage.

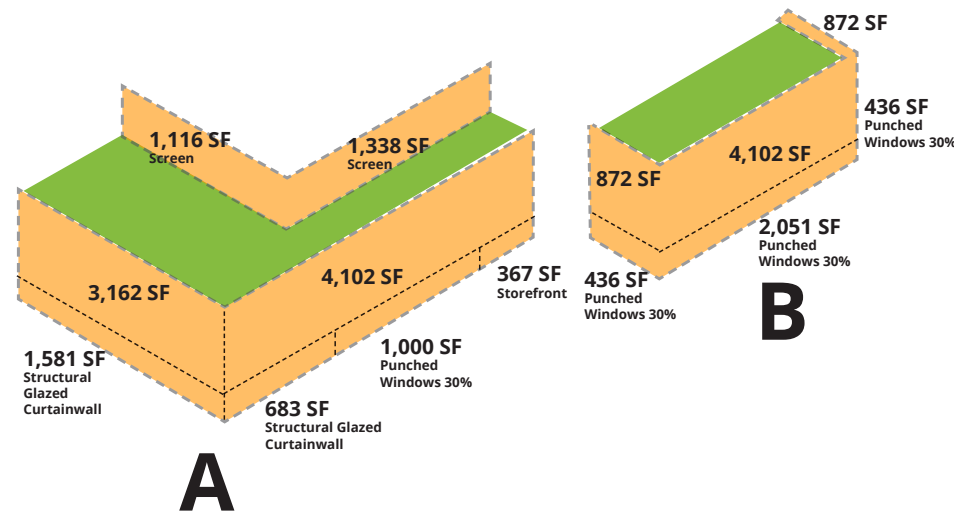
## 2. CLASSROOM WING ADDITION B: (8,642 GSF) LVLS B-2

Three story addition to the right of the south entrance to school.

Addition to be structurally isolated from existing building. Extent of existing masonry and glass facade covered by new addition to be removed.

Level B: 2,923 sf total of solid rain screen with 877 sf of thermally broken, triple glazed punched windows at music rooms.

Levels 1 and 2: 5,846 sf of thermally broken, triple glazed curtain wall with solid metal infill panels and custom fin extensions.



## 3. CAFETERIA ADDITION: (2,984 GSF) LVL B

One story addition to extend out beneath the overhang at cafeteria - metal panel with 25% punched windows

# Exterior Narrative

DRAFT



#### **4. HYDROPONICS LAB ADDITION: (2,736 GSF) LVL 3**

One story addition which infills the existing exterior balcony at library. Extent of existing masonry and glass facade covered by new addition to be removed. Addition to have fully glazed walls and roof. (Similar to a green house)

#### **5. BALCONY INFILL (1,750 GSF) LVL 3**

One story addition which infills the existing exterior balcony. Extent of existing masonry and glass facade covered by new addition to be removed. Addition to have new brick facade and new thermally broken triple glazed windows.

#### **6. SOUTH COURTYARD ENCLOSURE (2,009 GSF) LVLS B-3**

Four story enclosure of the existing exterior courtyard. Remove all existing masonry benches and plantings with level one slab. New opening at level one concrete slab. Existing masonry facades to remain and be cleaned) all existing exterior windows to be removed. All existing structural steel at east wall to be exposed and painted with fire protective coating. 1,600 sf of new structurally glazed curtain wall to be added at new opening along east wall. All new guard rails to be perforated painted metal. Roof to be constructed of steel and 8 glass skylights.

#### **7. NORTH COURTYARD ENCLOSURE**

Similar to item 6 South Courtyard enclosure with the exception that level one slab remains and level two new slab added for tiered science amphitheater classroom

#### **8. RE-CLADDING OF EXISTING MASONRY FACADE (SEE ELEVATIONS)**

Remove existing masonry and add new building insulation, barriers and masonry (see wall section detail 3 within building envelope narrative).

*ALTERNATE 01:* re-clad with metal panel instead of new masonry

#### **9. WINDOW REPLACEMENT (SEE ELEVATIONS)**

Remove all existing windows and replace with thermally broken, triple glazed windows.

#### **10. PHOTOVOLTAICS**

Assume an allowance for 20,000 sf of PV on the roof AND 20,000 sf of PV canopy structure at lower parking.

#### **11. GREEN ROOFS**

Assume an allowance for 6,675 sf of green roof at additions 1 and 2. Given sectional challenges - also assume allowance for raised planters for 8 small trees.

#### **12. ROOFS**

Remove existing roof and ballasts and re-roof the with 3-ply modified bit roofing with metal coping at parapets

#### **13. OTHER EXTERIOR SITE COMPONENTS**

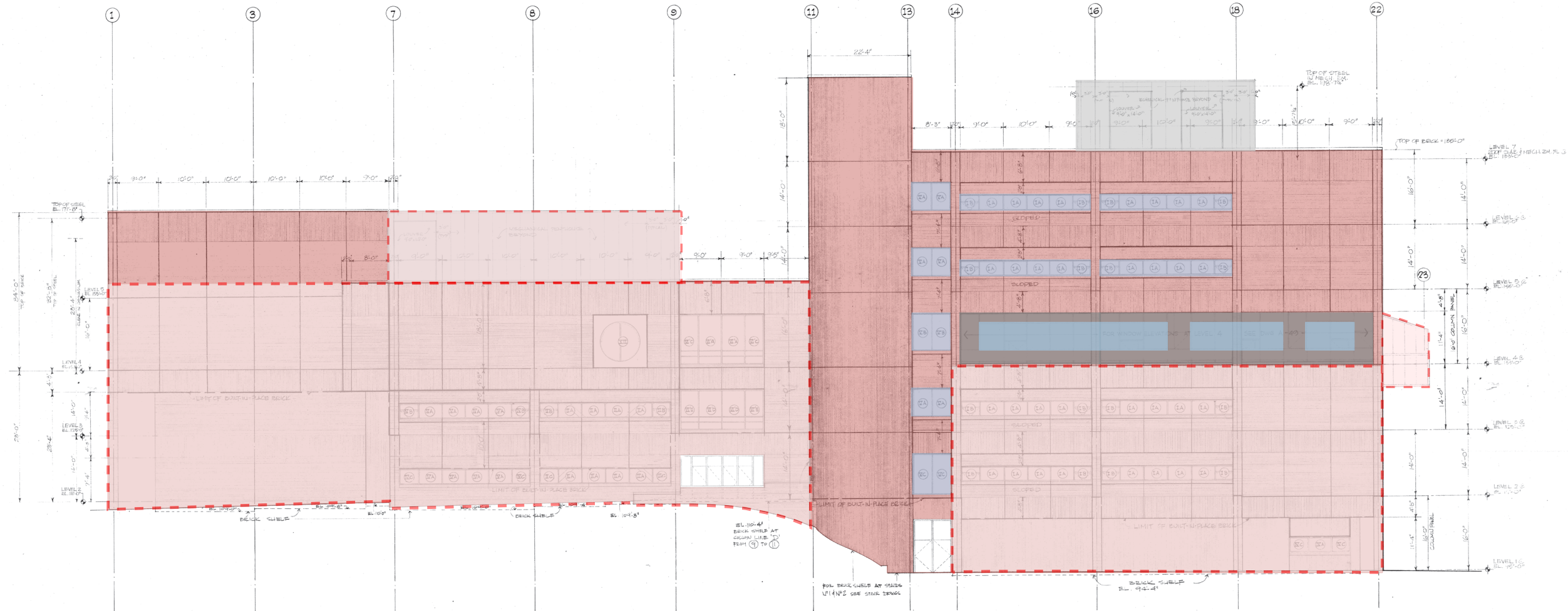
- assume allowance for concrete pad and 8' high screened enclosure for new electrical service. (See elec narrative)

- assume allowance for a % of site work disruption needed in order to provide new storm and groundwater management (given that we do not have civil engineer narrative, assume an allowance for this based on other projects) - we are in a 100 year flood plane and wetland and we are increasing the building student occupancy from 1200 to 2000.

## **Exterior Finishes Narrative**

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**Elevation Areas - Reclad + New Additions**



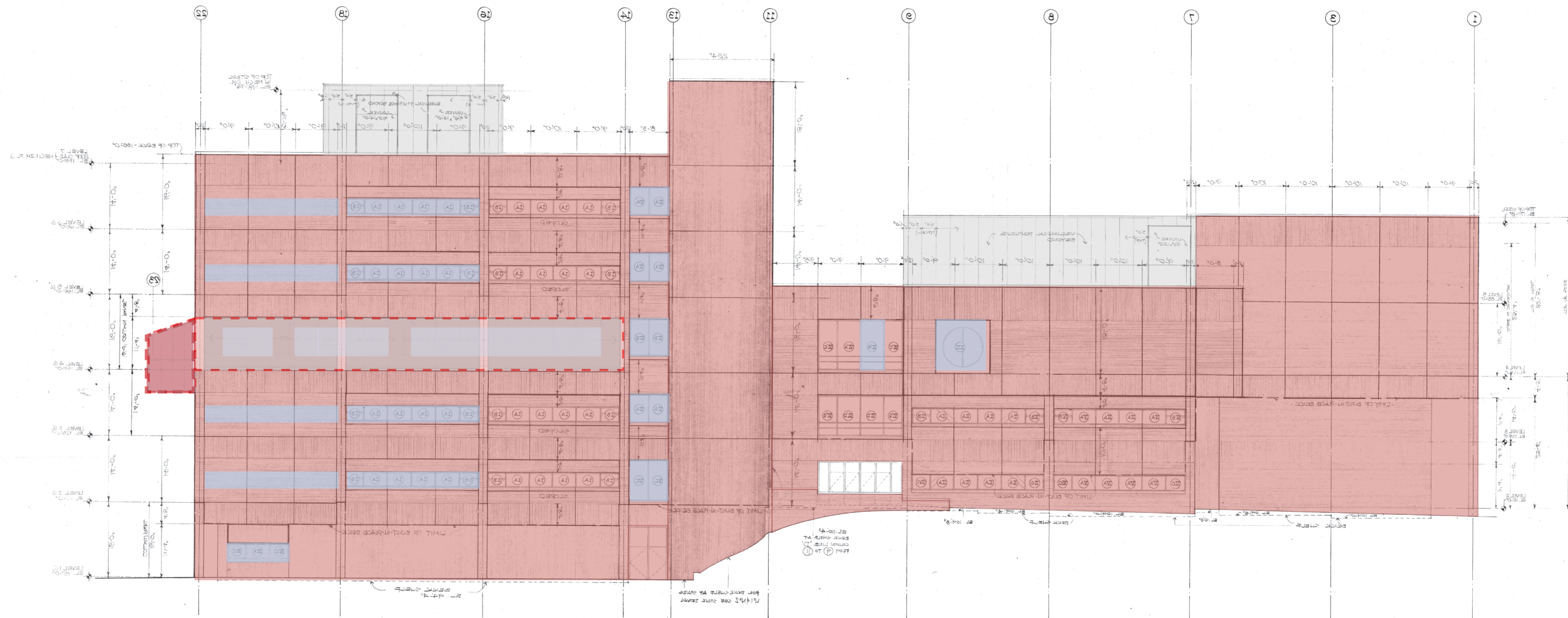
Area of southern facade: approx. 20,828 sq. ft.

- Type 1: Brick Pattern Facade**  
 Area of brick facade to be re-clad: approx. 6,473 sq. ft.  
 Area of brick removed for new addition: approx. 11,094 sq. ft.
- Type 2B: Metal Panels**  
 Area of existing metal panels: approx. 491 sq. ft.
- Type 4: Entry Points**
- Type 5: Demo for Addition**
- Type 2A: Metal Siding**  
 Area of metal siding: approx. 569 sq. ft.  
 Area of metal siding to be removed for new addition: approx. 1,338 sq. ft.
- Type 3: Windows**  
 Area of windows to be replaced on southern facade: approx. 1,082 sq. ft.  
 Area of windows removed for new addition: 1,345 sq. ft.

GLAZING SCHEDULE		
FLOOR	PART 'A'	PART 'B'
LEVEL 1	1/2" TEMPERED	1/2" TEMPERED
LEVEL 2	1/2" TEMPERED	1/2" TEMPERED
LEVEL 3	3/8" TEMPERED	1/2" TEMPERED
LEVEL 4	3/8" TEMPERED	3/8" TEMPERED
LEVEL 5	1/2" TEMPERED	1/2" TEMPERED
LEVEL 6	1/2" TEMPERED	1/2" TEMPERED

## South Elevation Window Calculations





Area of northern facade: approx. 20,828 sq. ft.

**Type 1: Brick Pattern Facade**  
Area of brick facade to be re-clad: approx. 17,024 sq. ft.

**Type 2B: Metal Panels**  
Area of existing metal panels: approx. 491 sq. ft.

**Type 4: Entry Points**

**Type 2A: Metal Siding**  
Area of metal siding: approx. 1,493 sq. ft.  
Area of metal siding to be removed for new addition: approx. 1,493 sq. ft.

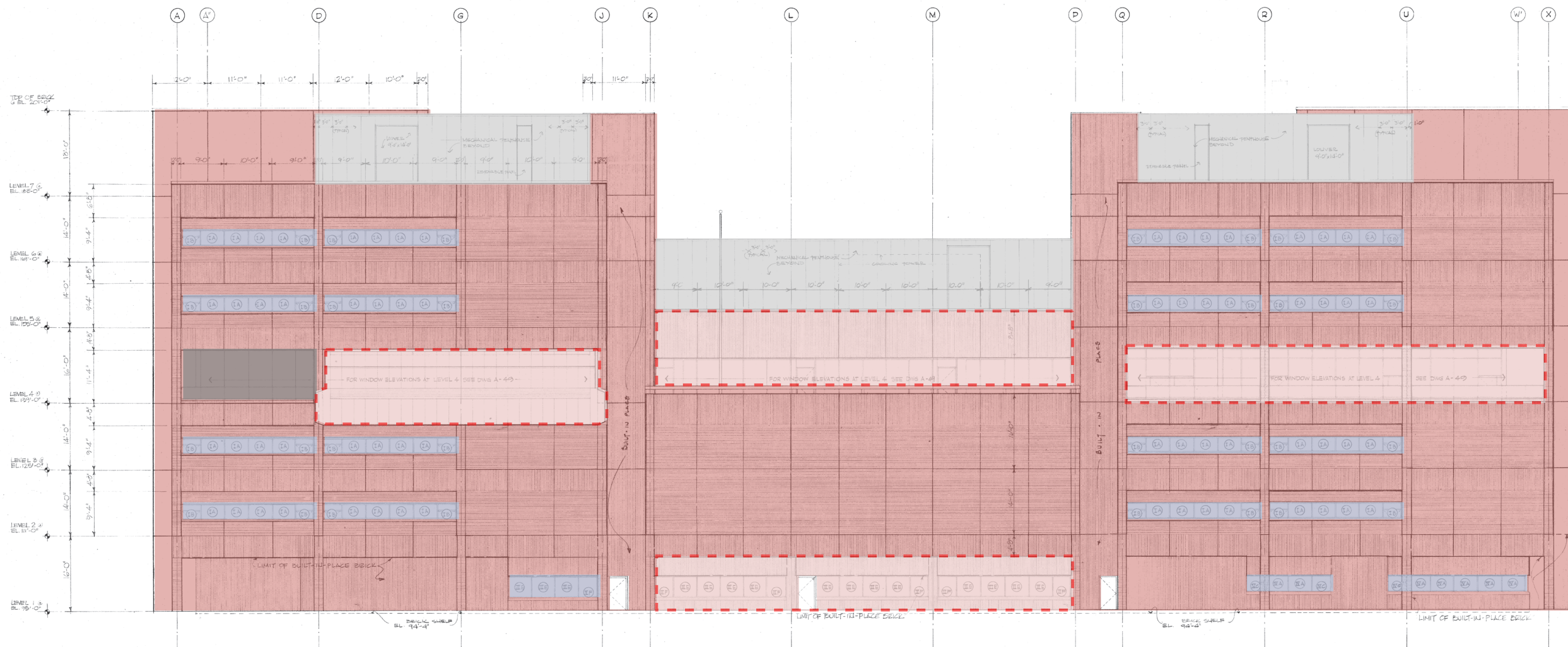
**Type 3: Windows**  
Area of windows to be replaced on southern facade: approx. 1,820 sq. ft.  
Area of windows removed for new addition: approx. 551 sq. ft.

**Type 5: Demo for Addition**

## Estimated North Elevation Window Calculations

**DRAFT**





Area of eastern facade: approx. 28,460 sq. ft.

**Type 1: Brick Pattern Facade**  
 Area of brick facade to be re-clad: approx. 19,682 sq. ft.  
 Area of brick removed for new addition: approx. 1,077 sq. ft.

**Type 2A: Metal Siding**  
 Area of metal siding: approx. 3,032 sq. ft.  
 Area of metal siding to be removed for new addition: approx. 0 sq. ft.

**Type 2B: Metal Panels**  
 Area of existing metal panels: approx. 292 sq. ft.  
 Area of existing metal panels to be removed for new addition: approx. 621 sq. ft.

**Type 3: Windows**  
 Area of windows to be replaced on southern facade: approx. 1,716 sq. ft.  
 Area of windows removed for new addition: 2,313 sq. ft.

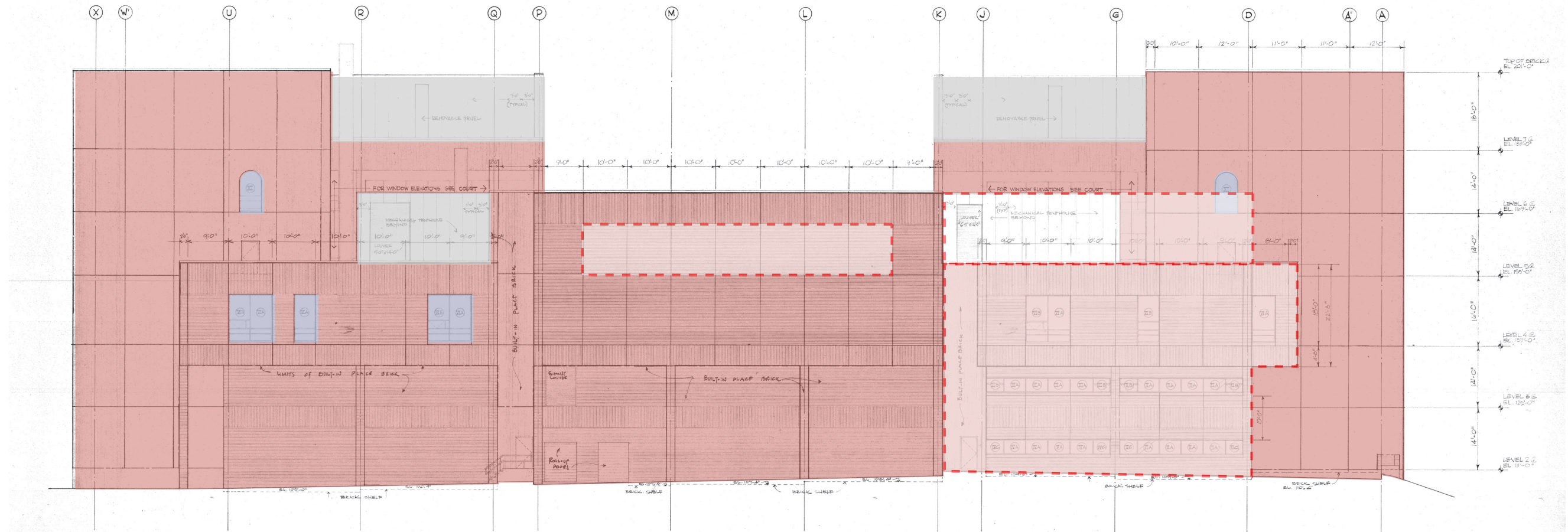
**Type 4: Entry Points**  
**Type 5: Demo for Addition**

GLAZING SCHEDULE		
FLOOR	PART 'A'	PART 'B'
LEVEL 1	1/2" TEMPERED	---
LEVEL 2	1/2" TEMPERED	---
LEVEL 3	3/8" TEMPERED	---
LEVEL 4	3/8" TEMPERED	---
LEVEL 5	1/4" TEMPERED	---
LEVEL 6	1/4" TEMPERED	---

\* EXCEPT AS NOTED  
 © GREENHOUSE

## East Elevation Window Calculations





Area of western facade: approx. 21,307 sq. ft.



Type 1: Brick Pattern Facade

Area of brick facade to be re-clad: approx. 17,939 sq. ft.  
 Area of brick removed for new addition: approx. 3,905 sq. ft.



Type 2A: Metal Siding

Area of metal siding: approx. 1,866 sq. ft.  
 Area of metal siding to be removed for new addition: approx. 640 sq. ft.



Type 2B: Metal Panels

Area of existing metal panels: approx. 0 sq. ft.  
 Area of existing metal panels to be removed for new addition: approx. 0 sq. ft.



Type 3: Windows

Area of windows to be replaced on southern facade: approx. 351 sq. ft.  
 Area of windows removed for new addition: 575 sq. ft.



Type 4: Entry Points



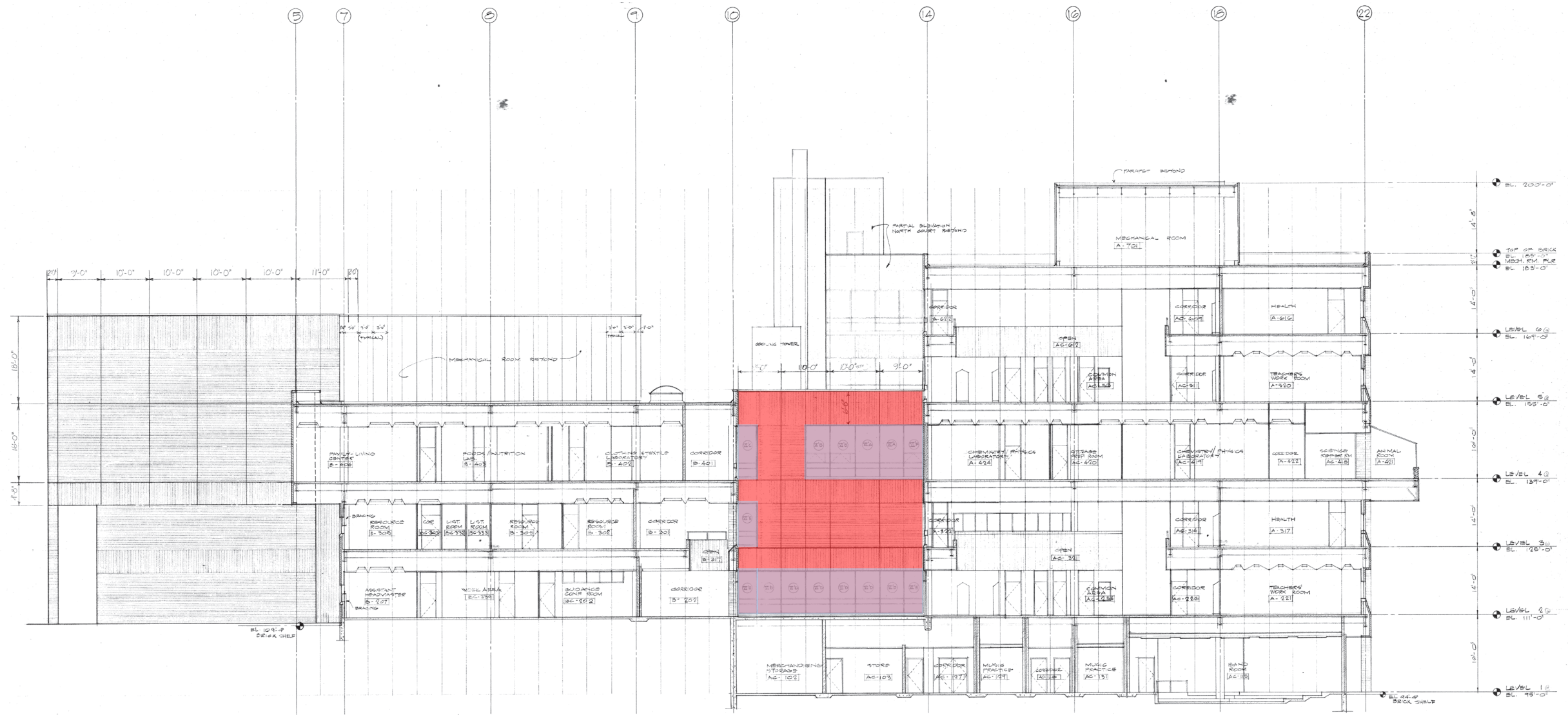
Type 5: Demo for Addition

GLAZING SCHEDULE		
FLOOR	PART 'A'	PART 'B'
LEVEL 1	---	---
LEVEL 2	---	1/2" TEMPERED
LEVEL 3	---	1/2" TEMPERED
LEVEL 4	---	3/8" TEMPERED
LEVEL 5	1/4" TEMPERED*	---
LEVEL 6	1/4" TEMPERED*	---

\* ALL INTERIOR COURT YARDS GLAZED WITH 1/4" TEMPERED GLASS.

## West Elevation Window Calculations





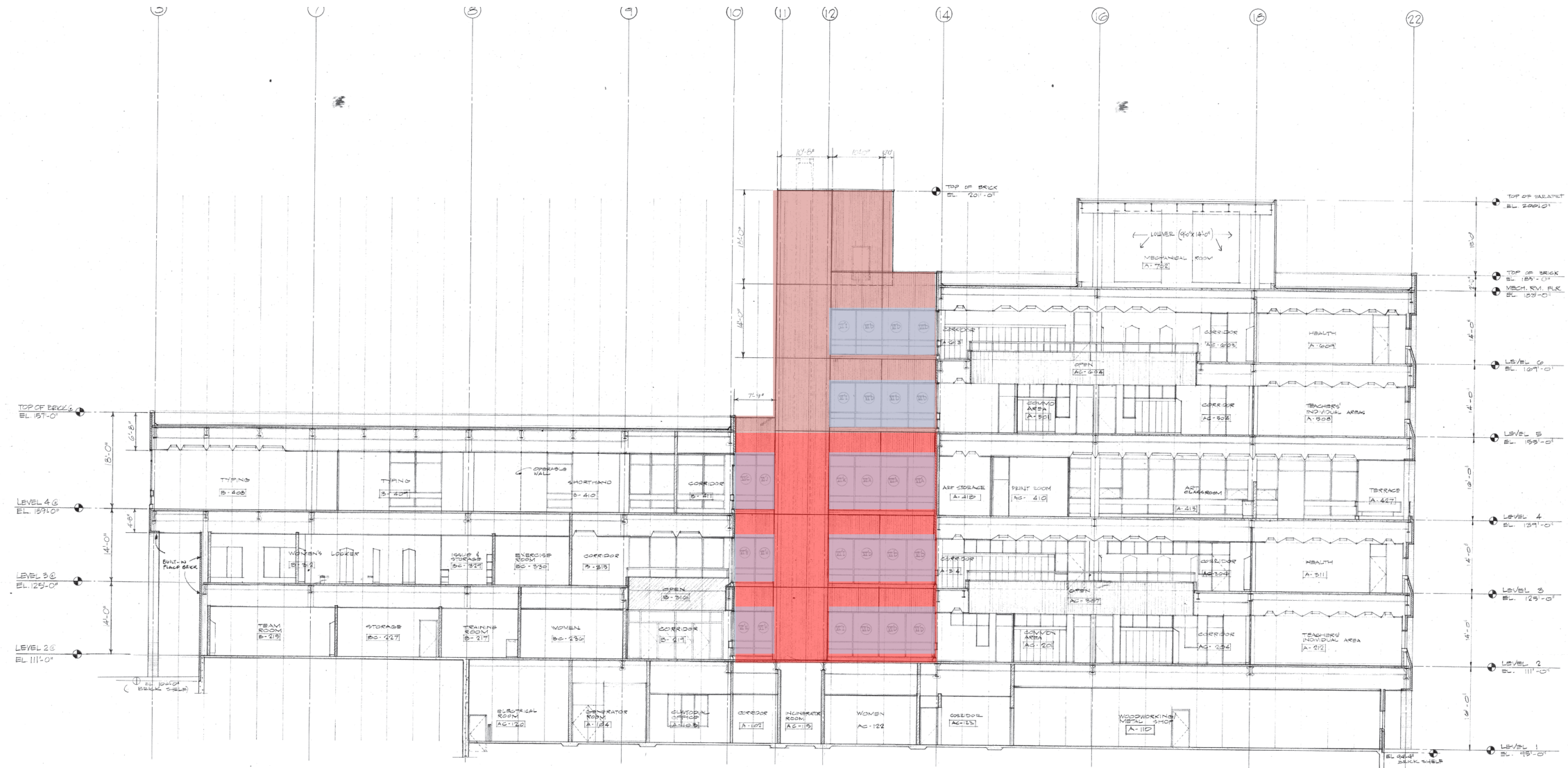
Area of southern courtyard north facade: approx. 1,760 sq ft.

- Type 1: Brick Pattern Facade
- Type 1A: Brick to remain  
Area of brick pattern facade to remain: approx. 1,058 sq. ft.
- Type 3: Windows  
Area of windows to be replaced on southern facade: approx. 1,082 sq. ft.  
Area of windows removed for new addition: 1,345 sq. ft.

## Southern Courtyard North Elevation Window Calculations

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Area of northern courtyard north facade: approx. 3,000 sq. ft.

- Type 1: Brick Pattern Facade**  
 Area of brick pattern facade to re-clad: approx. 935 sq. ft.
- Type 1A: Brick to remain**  
 Area of brick pattern facade to remain: approx. 937 sq. ft.
- Type 3: Windows**  
 Area of windows to replace on northern courtyard north facade : approx. 1,227 sq. ft.

## Northern Courtyard North Elevation Window Calculations

**DRAFT**





Area of courtyards' east facade: approx. 13,977 sq. ft.

**Type 1: Brick Pattern Facade**  
Area of brick pattern facade to re-clad: approx. 4,927 sq. ft.

**Type 1A: Brick to remain**  
Area of brick to remain: 3,628 sq. ft.

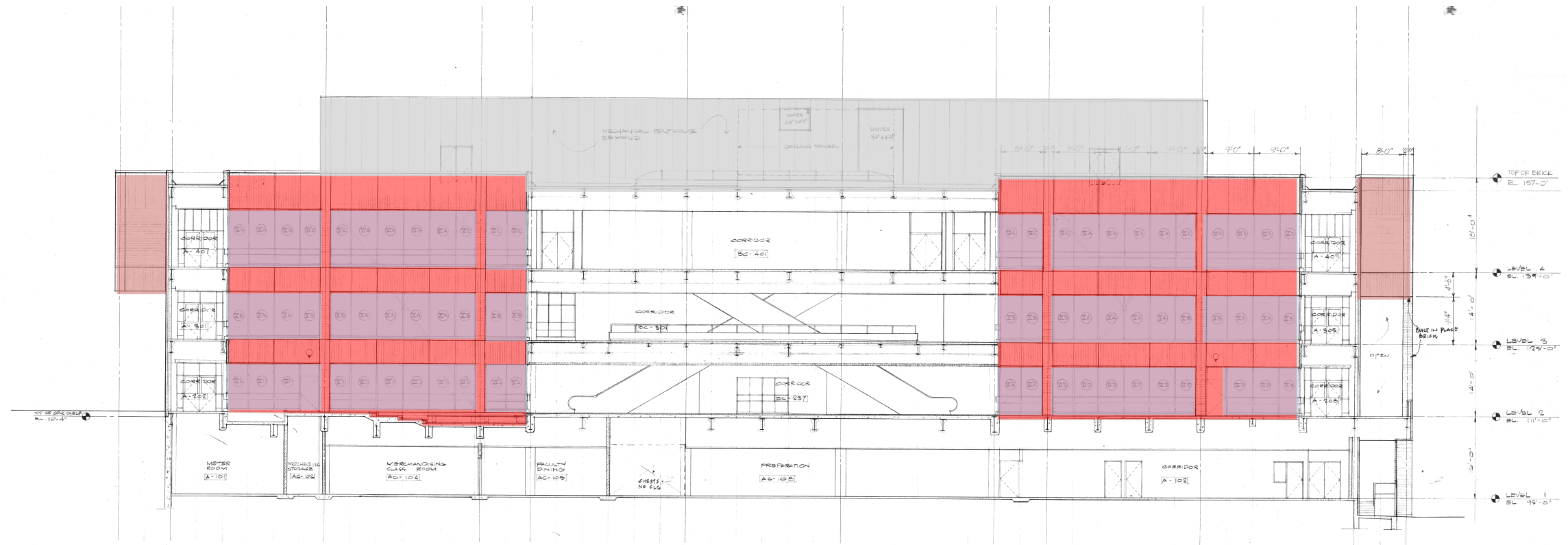
**Type 2: Metal Siding**  
Area of metal siding: approx. 2,223 sq. ft.

**Type 3: Windows**  
Area of windows to replace on courtyards' east facade: approx. 3,134 sq. ft.

## Courtyards' East Elevation Window Calculations

**DRAFT**





Area of courtyards' west facade: approx. 8,818 sq. ft.

Type 1: Brick Pattern Facade  
Area of brick pattern facade to re-clad: approx. 461 sq. ft.

Type 1A: Brick to remain  
Area of brick pattern facade to remain: approx. 2,483 sq. ft.

Type 2: Metal Siding  
Area of metal siding: approx. 2,870 sq. ft.

Type 3: Windows  
Area of windows to replace on courtyards' west facade: approx. 3,002 sq. ft.

## Courtyards' West Elevation Window Calculations

**DRAFT**



# Exterior Envelope Area Totals Including Courtyards

Total Area of Windows on All Facades: Approx. 19,543 sq. ft.

Total area of windows to be replaced: Approx. 13,414 sq. ft.

Total area of windows to be removed for the new addition: Approx. 6,129 sq. ft.

Total Area of Brick Pattern Facade: Approx. 97,752 sq. ft.

Total area of brick facade to be reclad: Approx. 67,441 sq. ft.

Total area of brick facade to be removed for the new addition: Approx. 16,076 sq. ft.

Total area of brick facade to remain: 8,106 sq. ft.

Total Area of Metal Siding on All Facades: Approx. 14,528 sq. ft.

Total area of metal siding to be removed for the new addition: Approx. 3,471 sq. ft.

Total area of metal siding to remain: 11,057 sq. ft.

Total Area of Metal Panels on All Facades: Approx. 1,895 sq. ft.

Total area of metal panels to be removed for the new addition: Approx. 621 sq. ft.

Total area of metal panels to remain: 1,274 sq. ft.



# Existing Conditions Documentation





## Building Envelope

Existing Conditions Initial Analysis

**DRAFT**

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## Building Envelope

Existing Conditions Initial Analysis

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## Building Envelope

Existing Conditions Initial Analysis

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## Building Envelope

Existing Conditions Initial Analysis

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## Building Envelope

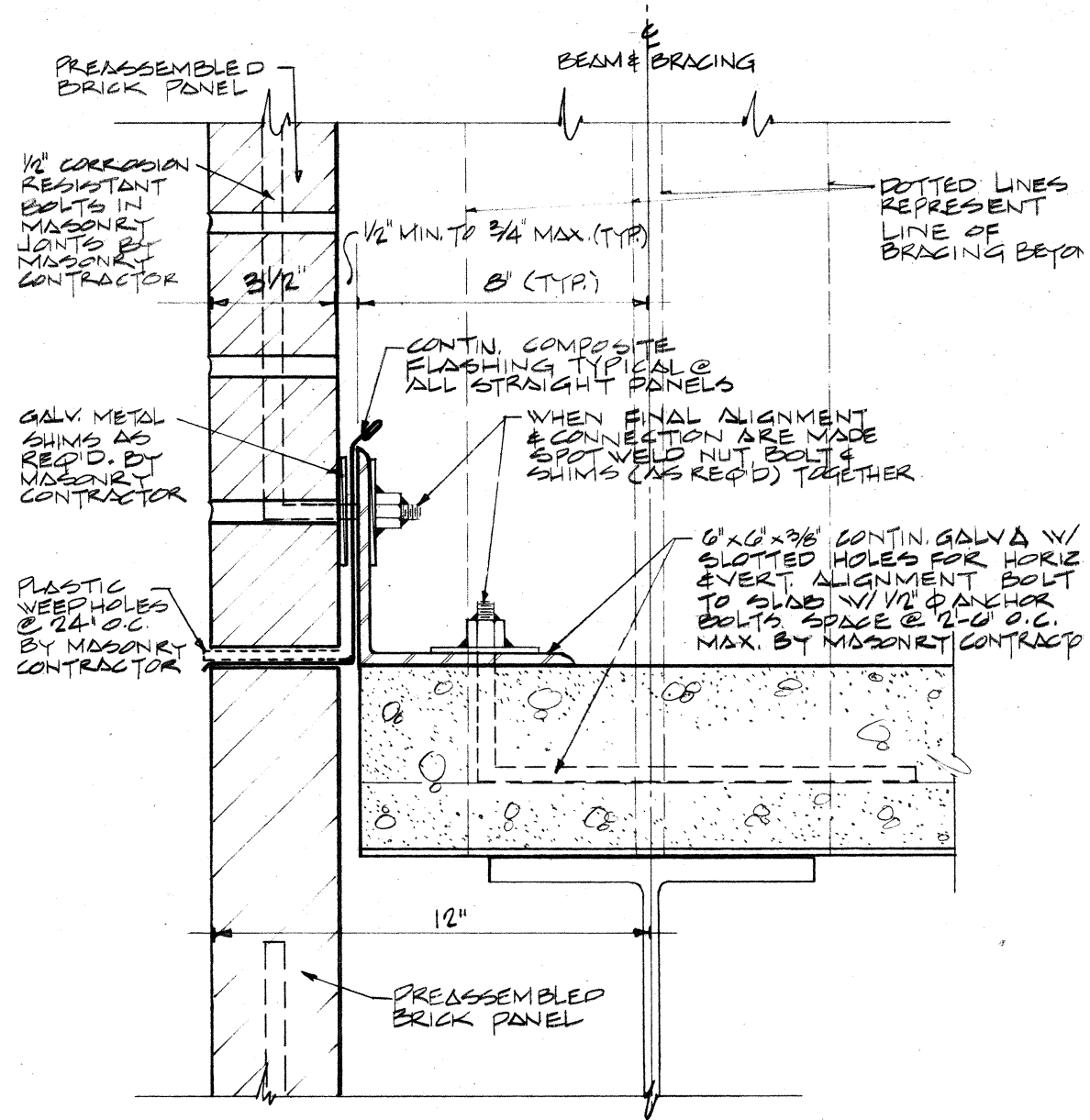
Existing Conditions Initial Analysis

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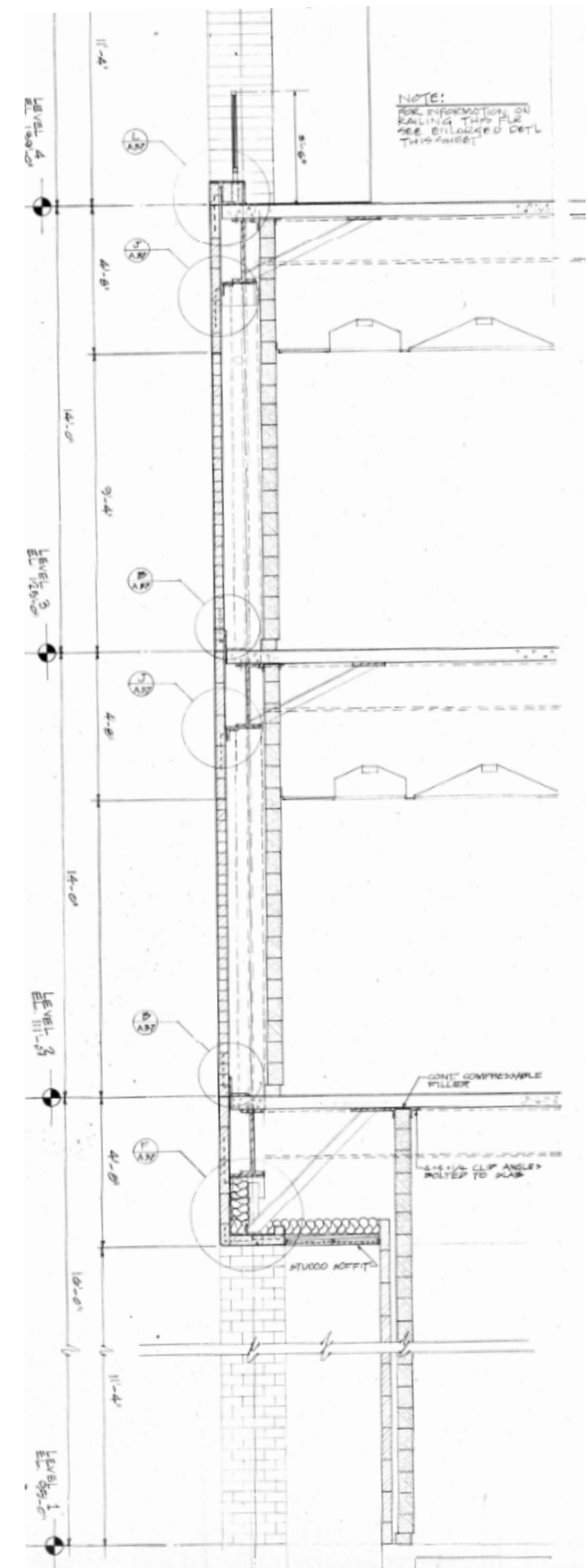
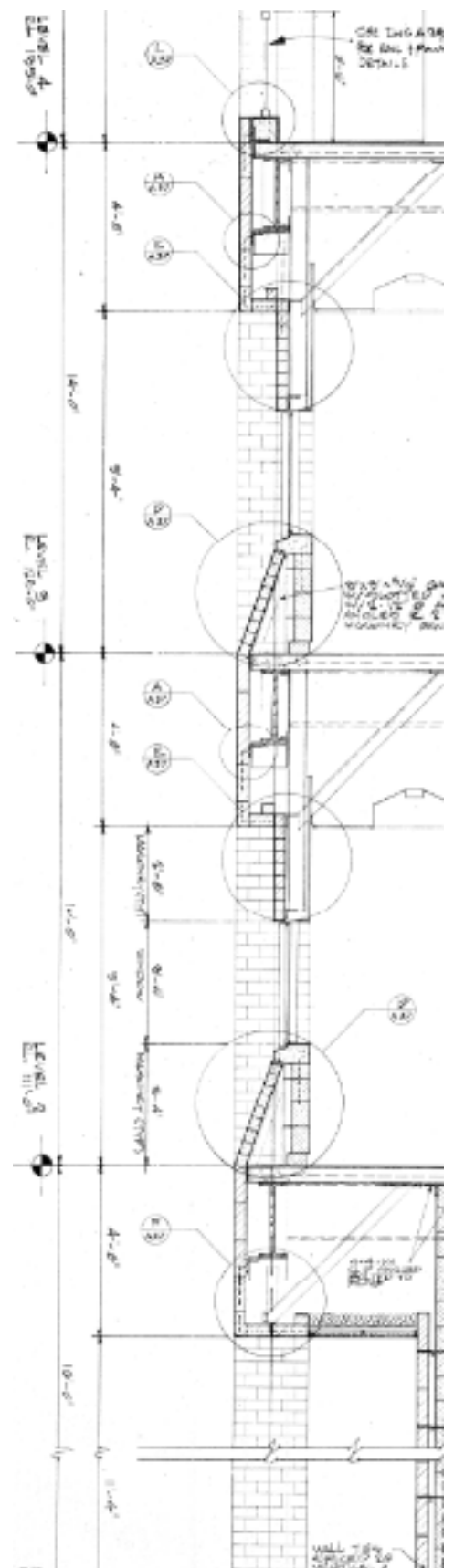
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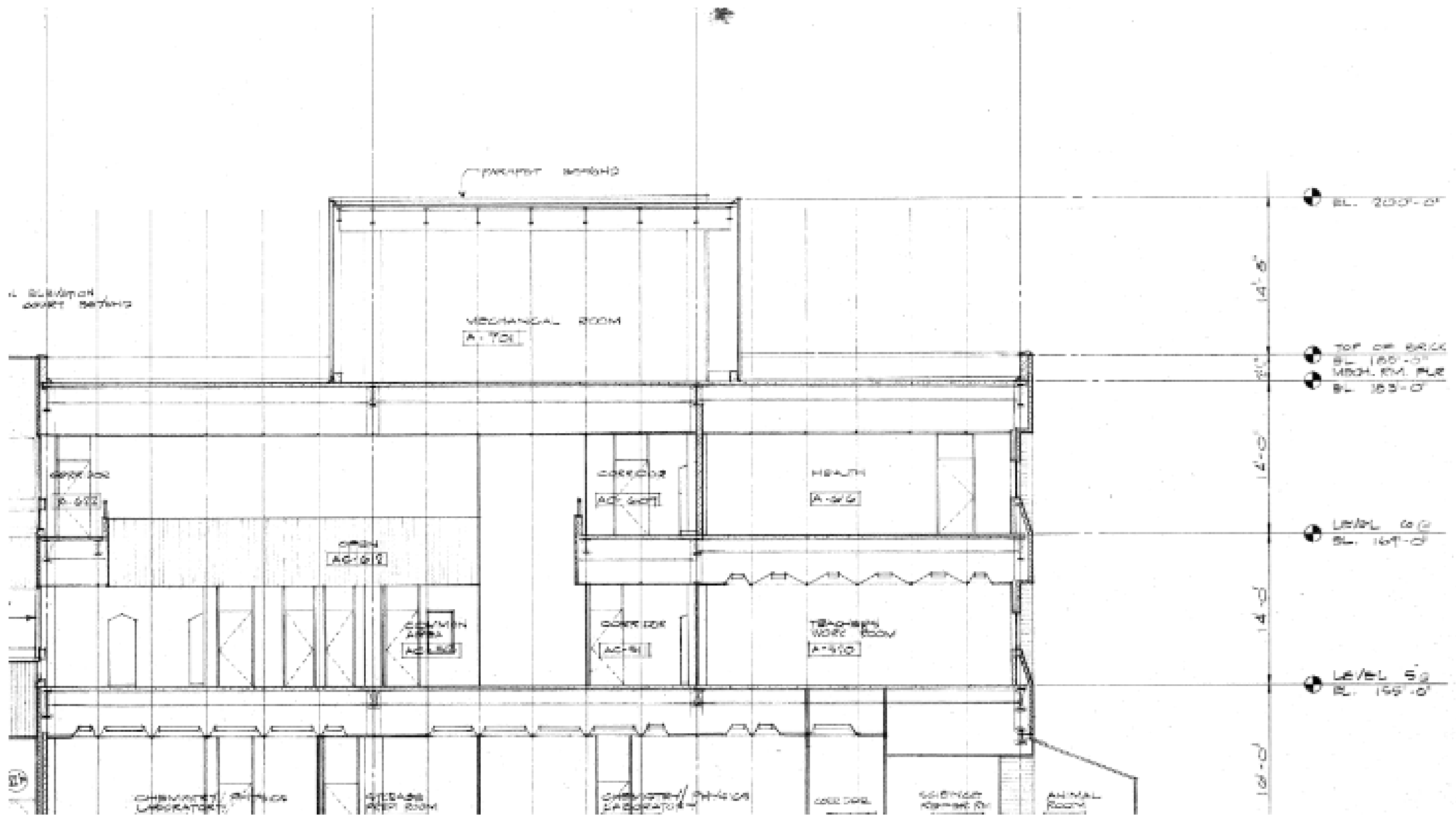


**DETAIL B**  
3" = 1'-0"



## Building Envelope - Lacking Continuous Insulation





Roof



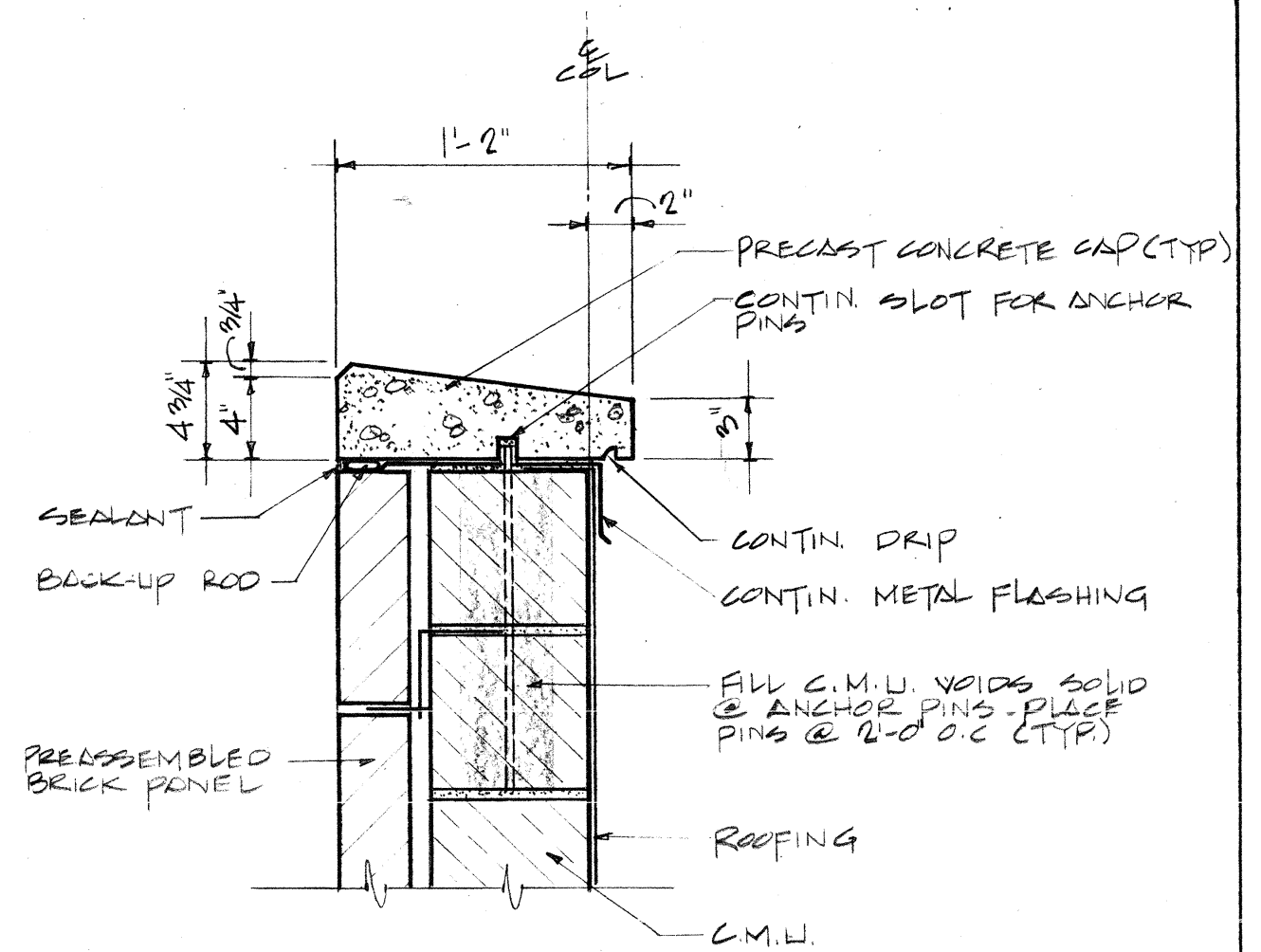


## Roof - Missing Coping

Existing Conditions Initial Analysis

**DRAFT**





TYPICAL PARAPET DETAIL

**Roof - Pooling - Needs Sloped Insulation**





## Interiors - Ceilings and Floors

Existing Conditions Initial Analysis

**DRAFT**





## Interiors - Classrooms & Library

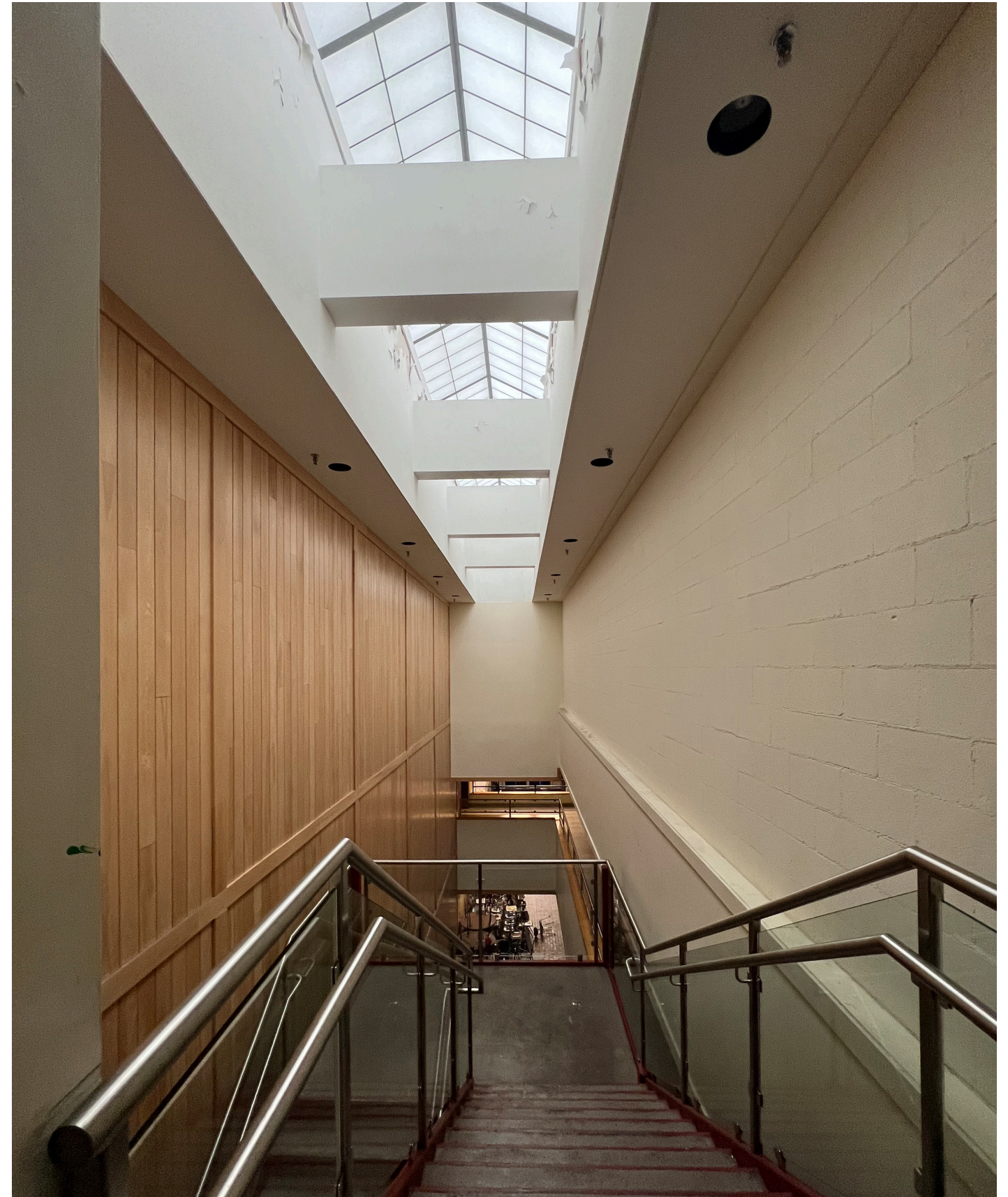
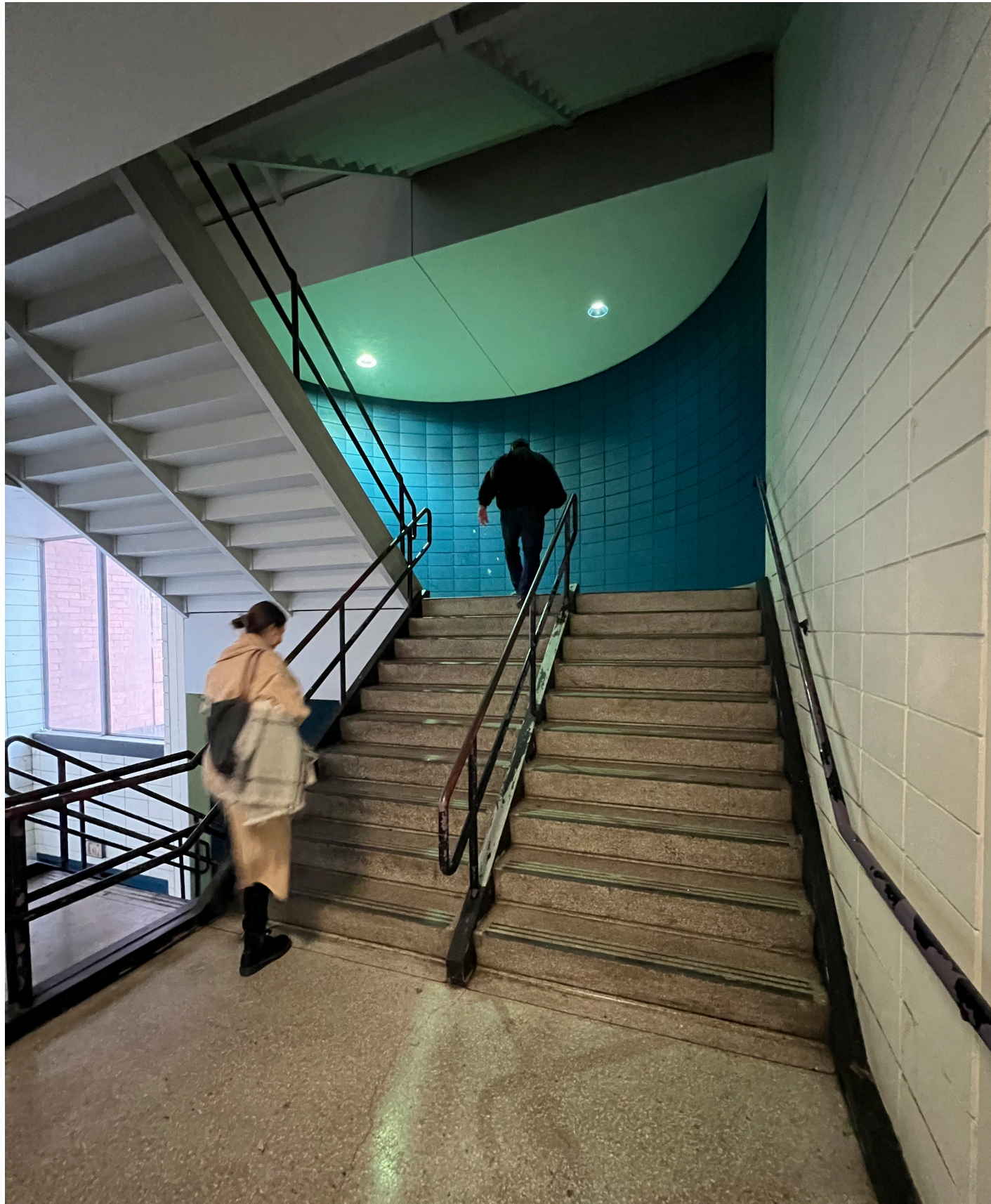
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## Interiors - Circulation

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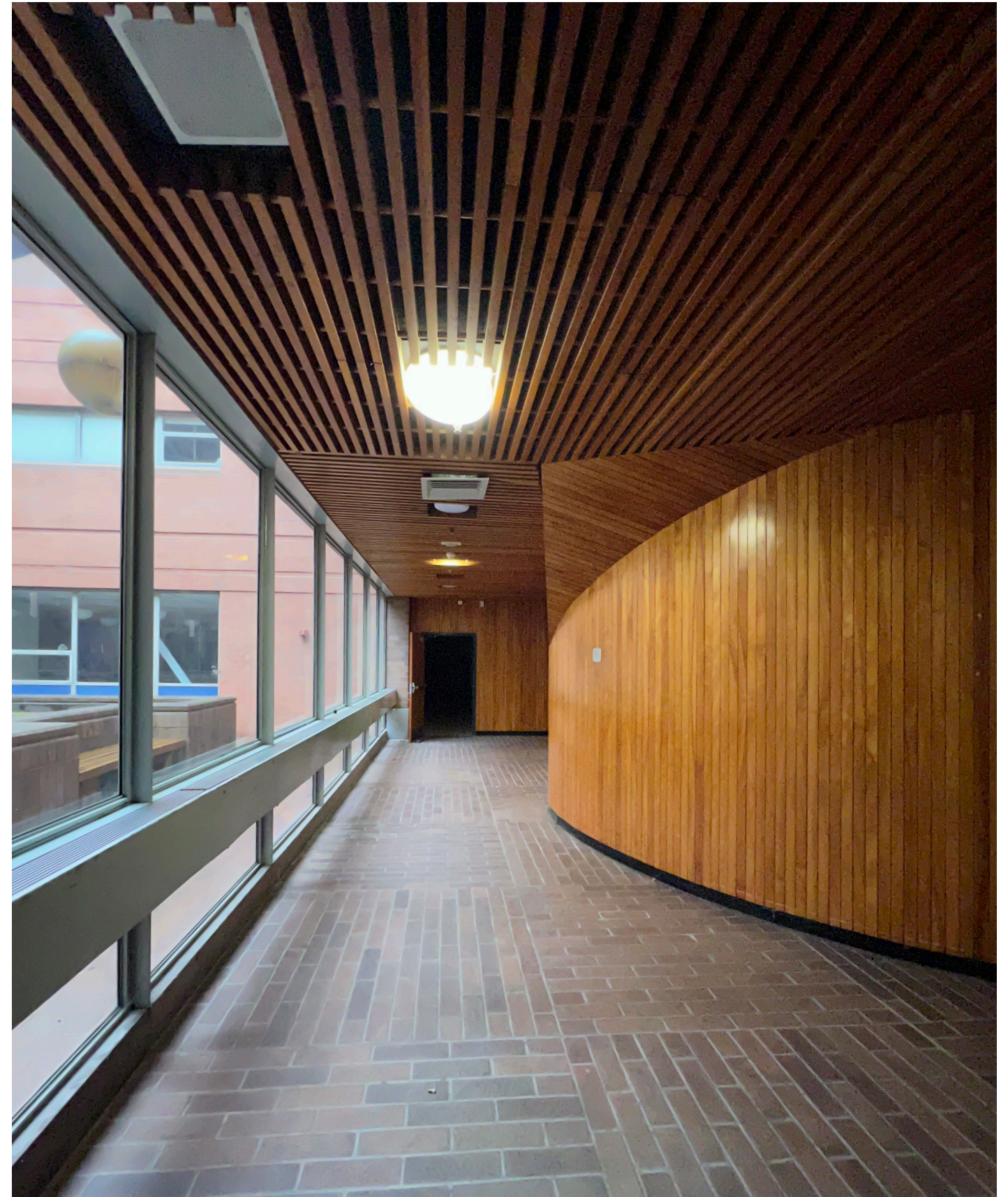


## Interiors - Gym & Pool

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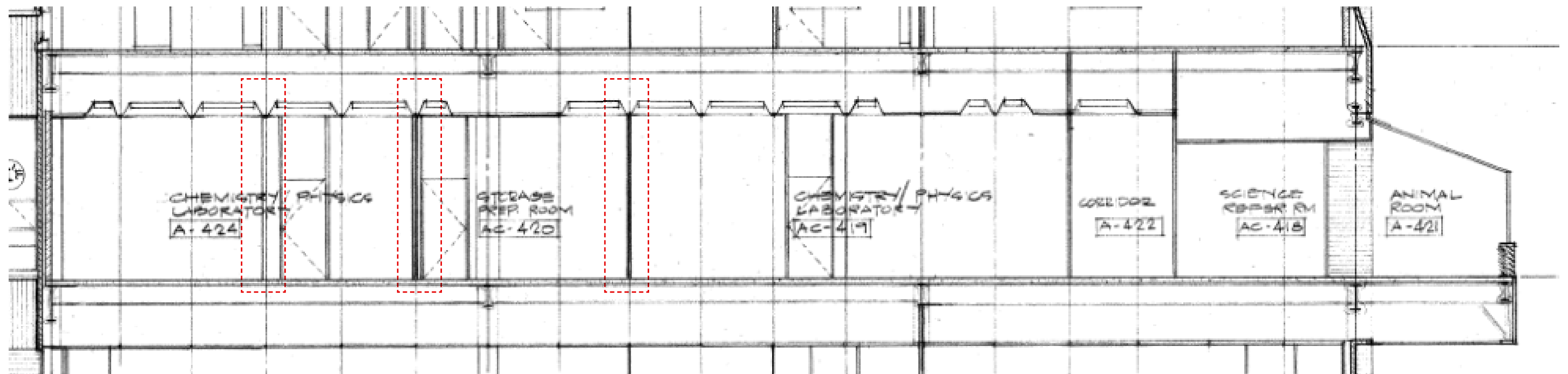


## Interiors - Auditorium

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## Interiors

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## Building Systems

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## Electrical Existing Conditions

Electrical distribution equipment and components are expected to have a useful life of 30 years. Switchboards, Panelboards, transformers, generators, and wiring systems are typically serviceable for 10 to 20 years beyond this time if properly maintained and not subjected to repeated overloading or short-circuiting conditions.

The equipment observed by BLW that has past its useful life expectancy can still function properly, however determining the event of equipment failure due to conditions of normal use is unpredictable.

## Recommendations

The main switchboard is original to the building, 47 years old and should be replaced.

The current plans for the building is anticipated to add to the building foot print, thus reducing the W/sqft available.

### Option #1:

If the proposed mechanical and kitchen equipment systems are intended to reuse the existing natural gas service on site, based on the billing demand, the existing electrical service will be adequate for the building.

*New design:* New 4000A switchboard with metering section and distribution sections.

### Option #2:

If the intent of the new design is creating an all-electric building, the service will approximate need to double to allow for 25 to 30W/sqft.

*New design:* (2) New 4000A switchboards with metering sections and distribution sections.



## Power Distribution Existing

All power distribution originates from the main switchboard and feeds distribution and branch circuit panels located throughout the building. Transformation from 480V to 120/208V happens in both the main electric room and satellite electrical closets. Existing electrical condition drawings were not available at the time of survey to verify all panel locations; The power distribution is routed to multiple areas within the facility as follows:

- Mechanical penthouse
- Emergency Generator Room
- Multiple electrical closets

In general, the electrical distribution equipment in the building is predominantly from the original build in 1974 and over 44 years old. Over the years there have been several panel additions made to accommodate growing technology needs. These newer panels are from a variety of different time periods.

## Recommendations

Approximately 75% of the buildings electrical panels including the motor control center is original to the building, 47 years old and should be replaced. Rather than band aid existing panels that still have some useful life remaining, it is recommended that for a complete building renovation, all panels and the motor control center be replaced.

Given the age of the building it is expected that cable and conduit throughout the building should be replaced as well.



## Emergency Power Existing

The facility is currently served by one diesel gas emergency generator which serves Life Safety equipment and is located in the first floor emergency generator room. This generator is manufactured by Demco and was installed in 1974. The corresponding Automatic Transfer Switches (ATS), manufactured by Russ Electric, is also located within this room. There does not appear to be proper separation of life safety and normal power panelboards though out the building. There is a remote tank located on the adjacent loading dock.

The generator has a continuous standby rating of 250kW/312.5kVA at 277/480V, 3 phase, 4 wire. Based on the kVA rating, this generator is capable of delivering 400A at 480V. The generator control panel indicates that generator has 638 hours of run time or approximately 13 hours per year. Which would be consistent with a system that has been exercised once a month.

The Russ Electric transfer switch is rated 400A and is of the same vintage as the generator, circa 1974.

## Recommendations

The generator and all associated panelboards are original to the building, 47 years old and should be replaced.



## Lighting Existing

The lighting system installed throughout the building consists predominantly of fluorescent lamp fixtures. There is a variety of utility strip, direct/indirect, pendant, and down light fixtures. Many fixture lenses were observed to be dirty, cracked and or missing.

In most cases lighting fixtures are controlled via wall toggle switches, and in some cases ceiling mounted occupancy sensors (mostly in corridors). Emergency lighting is fed from the emergency generator and has been supplemented by battery units with dual heads in select areas. Exit signage also appears to be fed from the emergency generator but many more supplemental battery backup exit units were observed.

Exterior lighting fixtures surface mounted to walls are visible lens type which offer poor visual quality. Garage and exterior fixtures utilize inefficient High Intensity Discharge lamps, with undesirable lamp color temperatures. With the exception of the building wide lamp replacement to a more efficient T8 (22W), and some small scale lamp replacements to LED style, there does not appear to have been any major renovations to the lighting fixtures.

## Recommendations

Dependent on PV/Sustainable Energy Strategies



Technology

<i>Power</i>	<input type="checkbox"/> Excellent	<input type="checkbox"/> Good	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> Deficient
<i>Wireless</i>	<input type="checkbox"/> Excellent	<input type="checkbox"/> Good	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> Deficient
<i>Interactive</i>	<input type="checkbox"/> Excellent	<input type="checkbox"/> Good	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> Deficient

Vision of 21st Century Digital Learning:

The building has internet infrastructure for all classrooms and public spaces, including fiber backbone, switches, and wireless access points. [The system is likely insufficient to support 1:1 or laptop based standardized testing](#) The building is flexible but not expandable. The building does not connect on multimedia platforms for cross disciplinary programming. Digital arts and media integral to more traditional STEM initiatives.

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SMMA, MGT, WSP



# Initial Assessment of Existing Conditions

Generally, *good structural condition with observed minor issues*, including (review of photos and site note is ongoing, so this list may increase):

- Minor cracking in concrete
- Minor cracking in the brick
- One large masonry crack in the library space.
- One location where we observed rusting of a steel beam.
- Potentially rusting of the metal deck above the gym space.
- “Squishy floor” at one balcony (most likely not structural)

We understand that the envelope has let some water into the building. We do not yet know the path of that infiltration and if it could have gotten to the existing perimeter steel (beams, cantilevers areas, hang lintels). Though we didn’t observe any issues, this condition could potentially stay hidden. I recommend that this be noted as a possible condition with an **allowance** and be further investigated in future design phases.

From the original drawings,

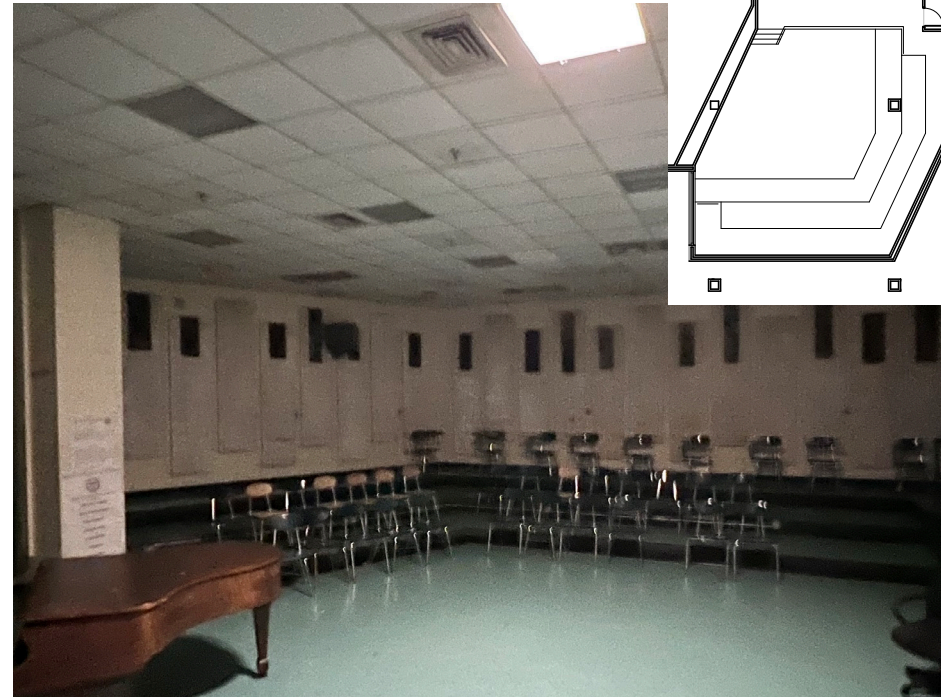
- We know the building is on pile. The pile construction was part of a separate set of drawings
- The existing floors are designed for 100psf live load



## Code: IEBC Work Area Level 3 Renovation

- Two primary lateral structural code triggers are if the renovation modifies more than 30% of the structure or increases the *lateral load* by more than **10%**. Practically, the second trigger is if the renovation increases the *building load* by more than **10%** or increase its *wind area* by more than **10%**.
- A **vertical addition would likely trigger these.**
- If these are triggered, the building needs to be analyzed for current code lateral loads, which would result in a **lateral upgrade.**
- This work is possible, though costly. It would most likely mean adding braces and reinforcement of the foundations (which is further complicated since we are on piles)
- Added roof load of insulation will need to be considered as well





## Accessibility

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## Building Image

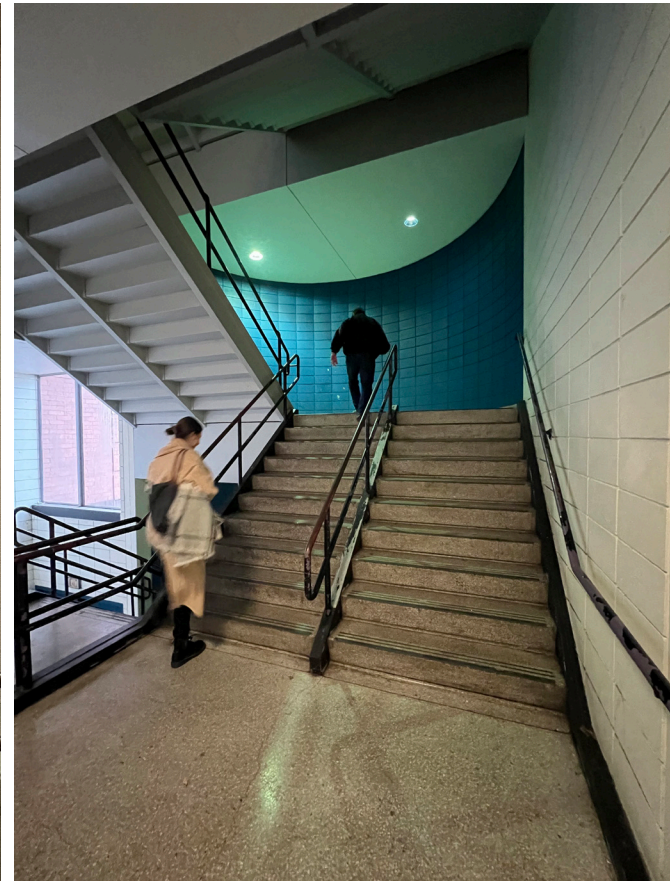
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## Building Assets

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