

Kansas State University
The College of Architecture, Planning & Design
Seaton Hall Renovation and Expansion

Schematic Design Report

December 3, 2014



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1.0 Project Summary

In late Fall of 2012, a team led by Ennead Architects, was selected by Kansas State University to provide programming, concept design and concept level cost-estimating services for the future renovation and expansion of the College of Architecture, Planning and Design (APDesign). At the end of the Concept Design phase, the project was conceived to be a multi-phase construction project with an estimated construction cost of approximately \$63 million. The documentation of this work was issued in the Summer of 2013 in the Concept Design Report.

In the Summer of 2014, Ennead Architects partnered with BNIM, Confluence, Eldorado and a team of consulting engineers, and was selected by Kansas State University to provide design services from Schematic Design through Construction Administration for the expansion and renovation of APDesign with a newly established construction budget of \$59 million to be completed in a single construction phase.

During the Schematic Design phase, the design team was tasked to develop and document a building design based on the program and concept design previously developed in 2012 and endorsed by APDesign, Campus Planning & Facilities Management, Campus Planning and Development Advisory Committee, the Provost and Vice President for Administration & Finance. Through the course of Schematic Design phase, the design team met with the APDesign Steering Committee and Campus Planning several times, to identify appropriate reductions in program and modifications to the building design to align with the new established budget.

This Schematic Design Report includes narratives, drawings and diagrams that document this process and describe the scope of the project for the purpose of establishing a schematic level cost estimate.

2.0 Code Analysis

The following code analysis has been prepared by FP&C Consultants.



Building Code Approach

Project No. 7944.00

December 3, 2014

**Kansas State University Seaton Hall Expansion /
Renovation
Manhattan, Kansas**



BNIM
1735 Baltimore Avenue
Kansas City, Missouri 64108
(816) 783-1500

BNIM
enneed

FP&C Consultants, Inc.
3770 Broadway
Kansas City, Missouri 64111
(816) 931-3377

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1 INTRODUCTION

1.1 SCOPE

This documentation outlines major fire and life safety issues affecting the design of the Seaton Hall Expansion / Renovation project at Kansas State University. Fire and life safety criteria are summarized from the 2012 International Building Code (IBC), except where noted otherwise. Refer to Section 1.5 of this Report for all applicable codes.

Seaton Hall is undergoing an expansion/renovation to the east side of the building, including connection to the existing Mechanics Hall. No work is being performed on the west side or central portion of the building.

The existing building uses the mixed use approach with occupancy separation between Groups A-2, B, F-1, H-3, and H-4. The current scope of work only includes Group A-3 (lecture hall in Mechanics Hall and large classrooms) and Group B (classrooms, offices, etc.); the other Groups are located outside this scope of work in existing areas to remain. Note that the workshop/labs in the basements are classified as Group B since the quantity of hazardous materials are below the amounts for Group H. Refer to Section 7.7 of this Report for more information on hazardous materials.

Refer to Section 2.2 of this Report for the required construction types of the renovated/expansion.

1.2 BUILDING DESCRIPTION

Seaton Hall is located on the south side of the Kansas State University campus as shown in the image below.

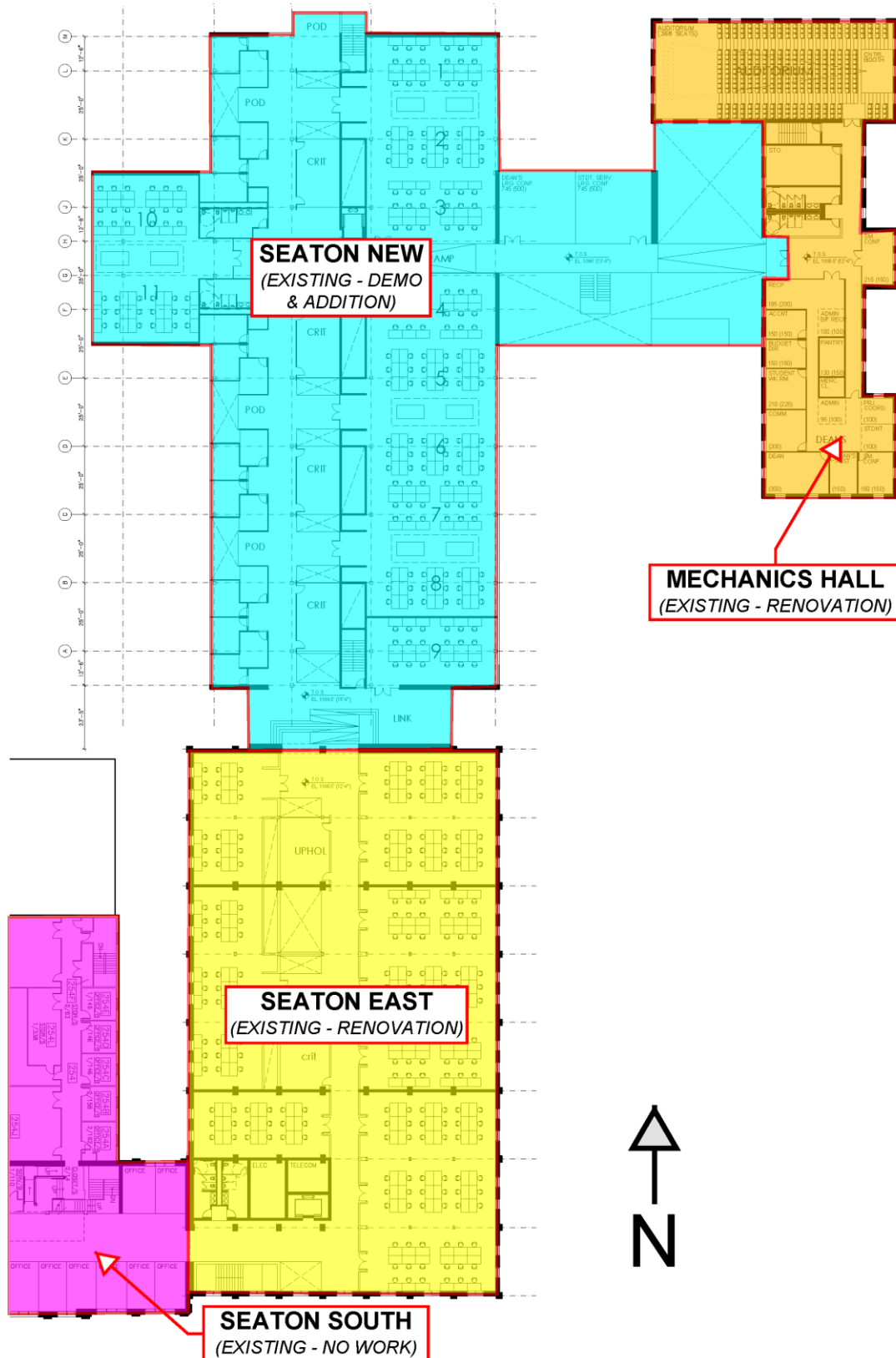
Figure 1.1
Aerial View of Seaton Hall and Surrounding Buildings (Photo Courtesy of Google Earth)



As shown in the image above, the expansion/renovation project is identified in three (3) different parts: Seaton East, Seaton New, and Mechanics Hall. Features of each floor level of each part are described in the table and figure below.

Floor Level	Description		
	Seaton East (Existing – Renovation)	Seaton New (Existing – Demo & Addition)	Mechanics Hall (Existing – Renovation)
Basement	Classrooms, new restrooms	Metal and wood lab areas, senior design project presentation areas, mechanical/electrical rooms, library with outdoor reading room, first level of 3-story lobby	N/A
First Floor	Classrooms, new restrooms, new floor openings	Offices, classrooms, conference rooms, gallery, second level of 3-story lobby	First level of auditorium, offices
Second Floor	Classrooms, new restrooms, new floor openings	Offices, classrooms, conference rooms, third level of 3-story lobby	Second level of auditorium, offices
Third Floor	N/A	Occupied roof terrace, interior gathering space	N/A

Figure 1.2
Plan View of Seaton Hall Showing Description for Each Part



1.3 CURRENT CODE ISSUES

The following is a list of the code issues that need to be resolved with the Design Team. Some of these items have been discussed and resolved with the Authority Having Jurisdiction (AHJ) and some may require an Alternate Methods and Materials Request (AMMR) to be submitted to the AHJ.

1. A three-story vertical opening exists at the lobby from the Basement Level to the Second Level. Three options have been presented to address this issue. Options #1 and #2 are per code; Option #3 requires approval. The Design team is currently pursuing Option #3.
 - Option #1: Protect the vertical opening with a shaft per Section 712.1.1. The vertical opening will be separated from the rest of the building by 1-hour fire barriers. The shaft walls will be located near the perimeter of the vertical opening.
 - Option #2: Protect the vertical opening with an atrium per Section 712.1.6. The atrium is allowed to connect to three floor levels and be unseparated.
 - Option #3: Protect the vertical opening using a two-story opening per Section 712.1.8. The Ground and First Floor will be open to each other, but the Second Floor will be separated by minimum one-hour construction per Section 712.1.8, Item 7. A combination of fire/smoke curtains and rated floor/wall assemblies would be used to satisfy the one-hour construction. A diagram of this option is shown in below.
2. A fire wall is required to separate Seaton New from Seaton East based on the allowable area for the occupancy and construction type. Three options have been presented to address this issue. Option #1 is per code; Options #2 and #3 require approval. The Design team is currently pursuing Option #3.
 - Option #1: Upgrade the existing exterior wall to a 3-hour fire wall. A fire wall is a structurally-independent 3-hour fire-resistance rated wall that will remain standing in the event that either building collapses.
 - Option #2: Two structurally separate fire barrier walls constructed directly adjacent to each other so that in the event that one wall collapses, the other will remain standing. Each fire barrier will be at least 3-hour rated which will satisfy the 3-hour minimum rating for fire walls. One of these walls would be the existing exterior wall. A diagram of this option is shown in Figure 1.4 below.
 - Option #3: Locate the two 3-hour rated fire barrier walls on either side of the link which connects the new building and the renovated portion. This essentially creates three separate structures; one for the renovated portion, one for the link, and one for the expansion. A diagram of this option is shown in Figure 1.5 below.
3. The building area of the existing building exceeds the allowable area for the occupancy and construction type. Per the existing code footprint (Poole Consulting Services, Inc. dated 12/14/2004), this existing condition was allowed to remain since the following equivalency items were provided:
 - Horizontal exits
 - Enclosed Stairs 02, 03, 05, 06, and 09
 - New stair enclosure in the north end of Seaton Hall East
 - Corridor smoke detection
 - Fire alarm system including manual pull stations and audible/visual devices

Two options have been presented to address this issue. Option #1 is per code; Option #2 requires approval. The Design team is currently pursuing Option #2.



- Option #1: Locate a 3-hour fire wall between Seaton South and Seaton East. This will separate the existing building (Seaton West and Seaton South) and the renovated building (Seaton East) into two separate buildings. The equivalency items will apply to the existing building, but not to Seaton East. The building area of Seaton East will comply with the allowable height and area for its occupancy and construction type for new construction. Under this approach, an assumed property line is required to be drawn between the two buildings (at the fire wall) which may affect the percent of allowable openings in the exterior walls.
- Option #2: Do not use a fire wall, but rather consider Seaton East the same building as the existing building (Seaton West and Seaton South). The equivalency items would then apply to Seaton East as well, which essentially means that smoke detectors will be required in the corridors of Seaton East. Under this approach, Seaton East cannot be considered fully sprinklered because Seaton West and Seaton South will not be fully sprinklered. Approval would be required for the following items:
 - Two-story vertical openings are proposed in Seaton East. This is allowed by Section 712.1.8 only if the floors open to the vertical openings are sprinklered. All the floors of the renovated portion will be sprinklered as part of the renovation, but the floors of the entire building will not be sprinklered because Seaton West and Seaton South will not be fully sprinklered. A 2-hour fire barrier is proposed to separate the sprinklered Seaton East from the non-sprinklered existing building that is outside the scope of this project, thus creating a fire area per Table 707.3.10.
 - Corridors are required to be 1-hour rated, unless the building is fully sprinklered. The sprinklered Seaton East is proposed to have non-rated corridors because it will be separated from non-sprinklered areas by 2-hour construction.

Figure 1.3
 Required Wall/Floor Separation and Exiting for Lobby at Second Floor – Option #3

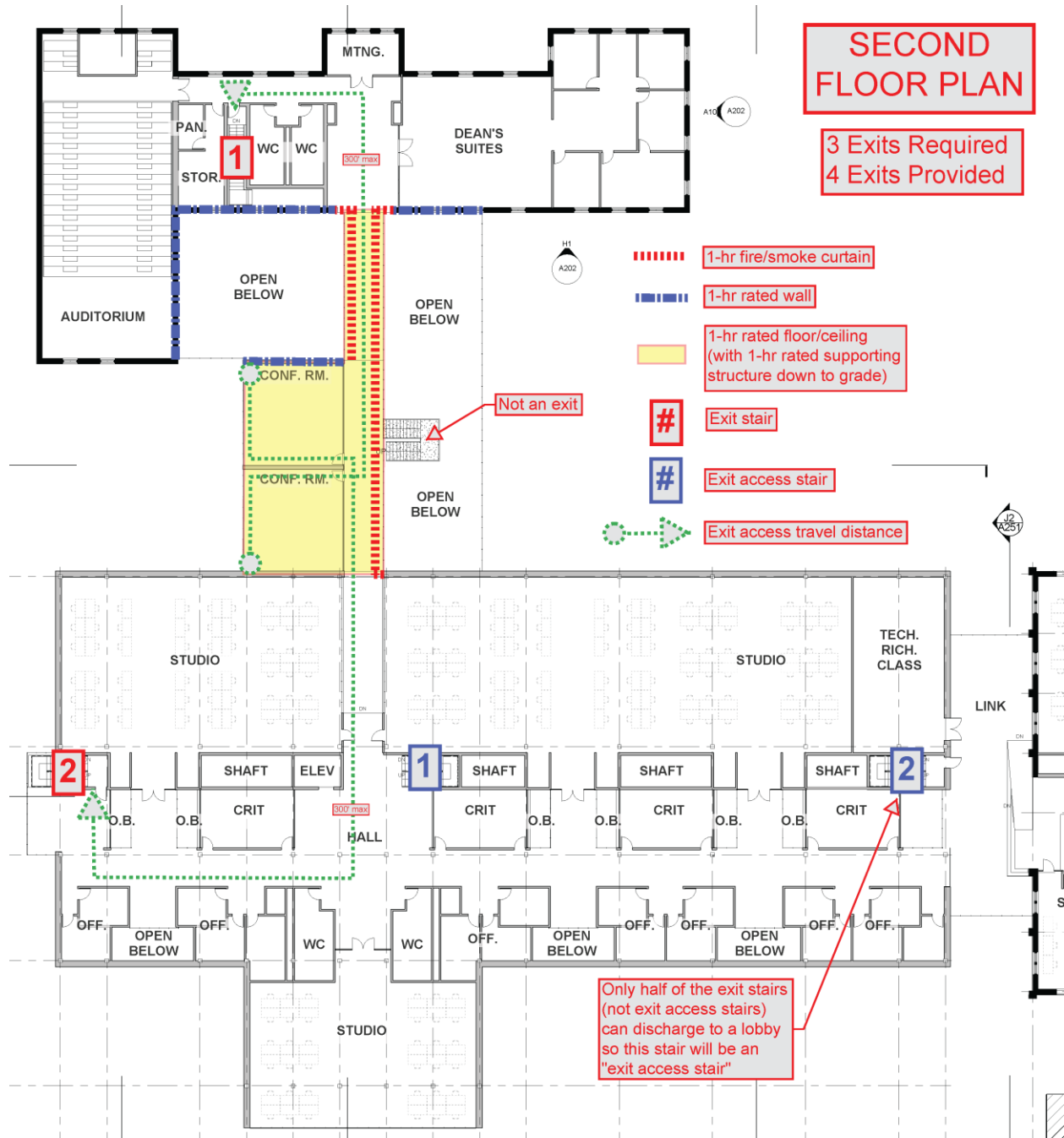


Figure 1.4
Fire Wall Between Seaton East and Seaton New – Option #2

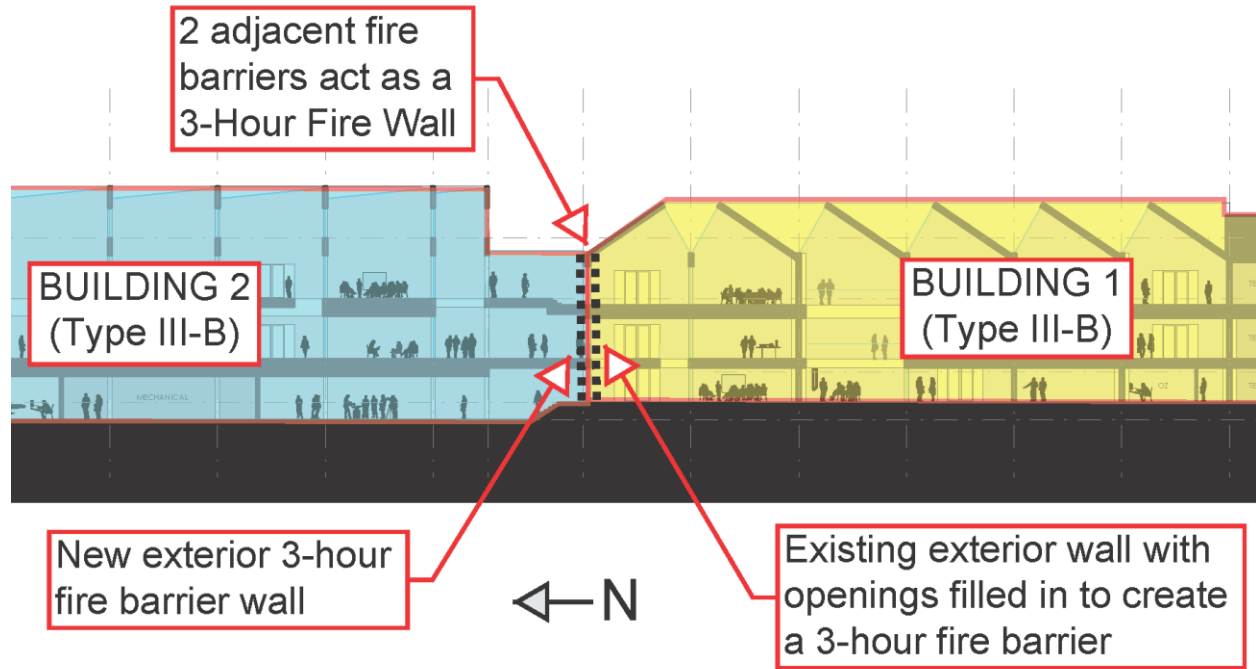
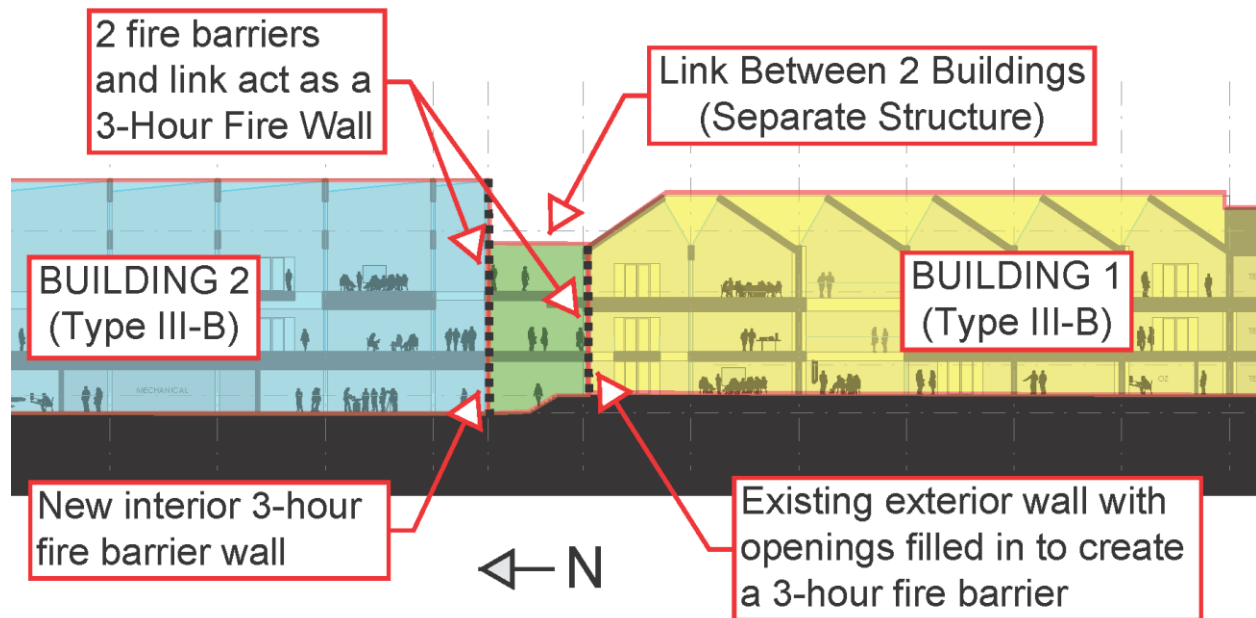


Figure 1.5
Fire Wall Between Seaton East and Seaton New – Option #3



1.4 AUTHORITY HAVING JURISDICTION

The Authority Having Jurisdiction (AHJ) for this project is as follows:

AHJ's	Contact Information
Kansas Department of Administration	Curtis State Office Building 1000 SW Jackson, Suite 500 Topeka, KS 66212-1300
State Fire Marshal	Office of the State Fire Marshal 800 SW Jackson St., Suite 104 Topeka, KS 66612-1216

1.5 APPLICABLE CODES

This project will use the currently adopted codes by the State of Kansas when the Construction Documents are submitted for permit (tentatively scheduled for August, 2015). The State of Kansas is currently enforcing the 2006 editions of the ICC codes, but is scheduled to adopt the 2012 editions in June, 2015. To anticipate this upcoming change, this report has been written based on the 2012 editions of the ICC codes. The following codes and standards apply to this project:

- 2012 International Building Code (IBC)
- 2012 International Existing Building Code (IEBC)
- 2012 International Fire Code (IFC)
- 2011 National Electrical Code (NEC)
- 2012 International Mechanical Code (IMC)
- 2012 International Plumbing Code (IPC)
- 2012 International Fuel Gas Code (IFGC)
- NFPA Standards:
 - 2010 NFPA 10 – Portable Fire Extinguishers
 - 2010 NFPA 13 – Installation of Sprinkler Systems
 - 2010 NFPA 14 – Installation of Standpipes and Hose Systems
 - 2008 NFPA 25 – Testing of Fire Sprinkler Systems
 - 2011 NFPA 70 – National Electrical Code
 - 2010 NFPA 72 – National Fire Alarm Code
 - 2009 NFPA 92B – Smoke Management Systems in Malls, Atria and Large Spaces
 - 2010 NFPA 110 – Emergency and Standby Power Systems
- 2010 ADA Standards for Accessible Design
- Kansas Fire Prevention Code
- Kansas State Boiler Code (K.S.A. 44-913 et seq)
- 2007 ASME A17.1 – Safety Code for Elevators and Escalators

All references to code sections in this Report are to the 2012 International Building Code (IBC), unless noted otherwise.



1.6 FIRE PROTECTION APPROACH

The fire protection approach for the project is to address compliance with the applicable codes. The program will meet the intent of the Code by providing systems capable of:

1. Exiting occupants in a safe manner
2. Providing firefighter access to standpipes and manual firefighting operations
3. Maintaining structural integrity in the event of a fire

This approach will address the type of construction (non-rated structural frame with rated exterior bearing walls), exiting systems, smoke control system (if provided), fire suppression systems, and fire alarm systems.

1.7 CODE APPROACH

The Building Code Approach for this project will use the “Prescriptive Compliance Method” as allowed by the 2012 International Existing Building Code (IEBC), Section 401.1. This method includes different requirements for Additions and Alterations. The following terms are defined by the IEBC. Each portion of the project will be treated as a separate entity and defined as either an addition or alteration.

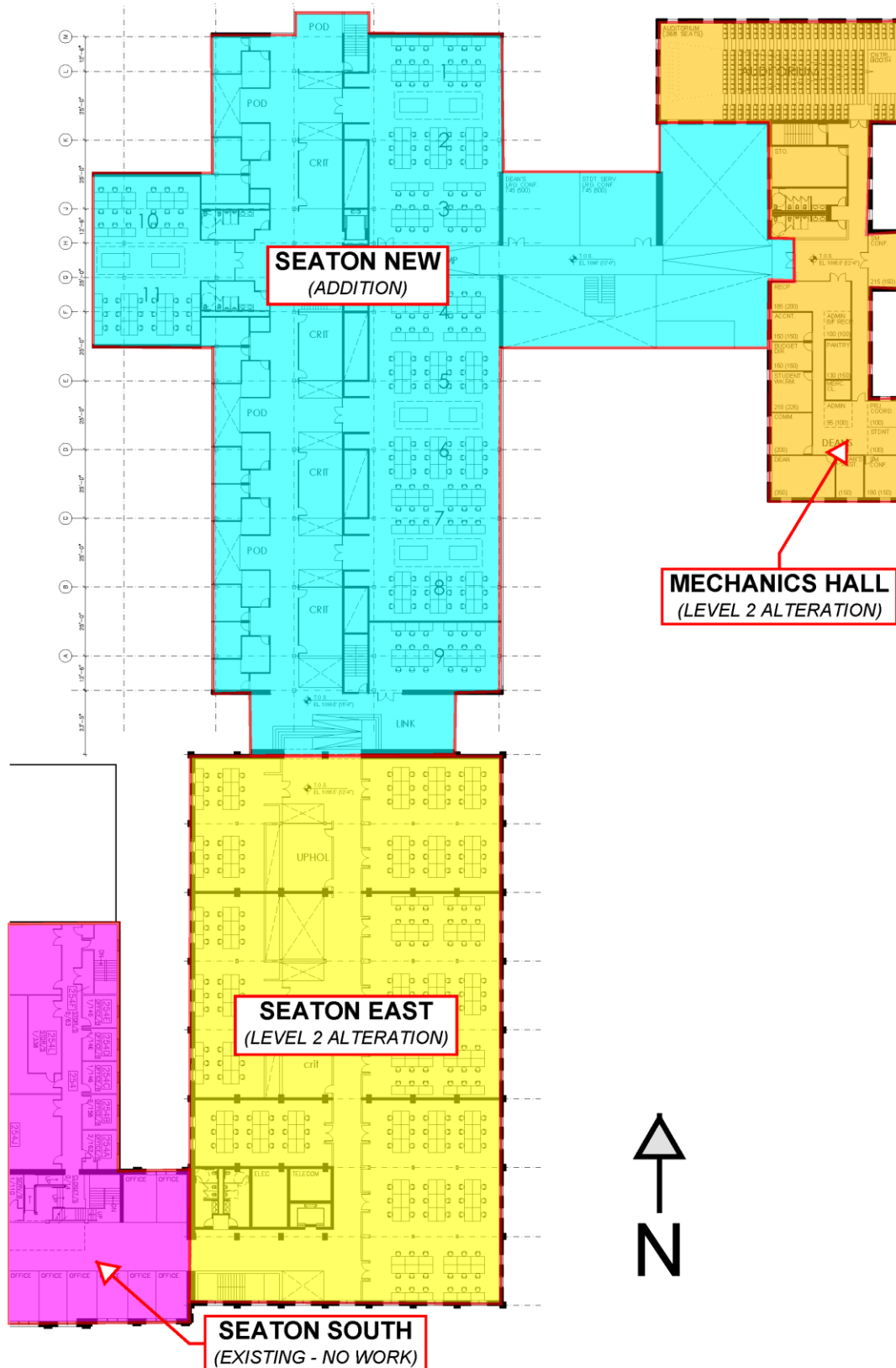
- *Addition*: An extension or increase in floor area, number of stories, or height of a building or structure.
- *Alteration*: Any construction or renovation to an existing structure other than a *repair* or *addition*. Alterations are classified as Level 1, Level 2, and Level 3.
 - *Alteration (Level 1)*: Includes the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose.
 - *Alteration (Level 2)*: Includes the reconfiguration of a space or system, the addition or elimination of any door or window, or the installation of any additional equipment
 - *Alteration (Level 3)*: Applies if the *work area* exceeds 50% of the total building area.
- *Repair*: The restoration to good or sound condition of any part of an existing building for the purpose of its maintenance.
- *Work Area*: That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work areas excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the Owner is specifically required by the IEBC.

Refer to the table below and illustration on the following page for a description of each portion of the project and which approach is being applied.

Portion of Project	Type of Renovation	Applicable Code Section(s)	Notes
Seaton East	Level 2 Alteration	IEBC, Chapter 7 (Level 1 Alteration) and Chapter 8 (Level 2 Alteration)	Work area is less than 50% of area of the building
Seaton New	Addition	IEBC, Section 1101.1	Designed as “new construction”
Mechanics Hall	Level 2 Alteration	IEBC, Chapter 7 (Level 1 Alteration) and Chapter 8 (Level 2 Alteration)	Work area is less than 50% of area of the building



Figure 1.6
Plan View of Seaton Hall Showing Approaches for Each Part



2 CONSTRUCTION CLASSIFICATIONS

2.1 OCCUPANCY GROUP CLASSIFICATIONS

The following table lists the occupancy group classifications included in this renovation/addition project as defined by Section 303.

Location	Occupancy Use Group
Classrooms, offices, student lab areas	Group B
Auditoriums, lecture halls, classrooms over 50 occupants	Group A-3

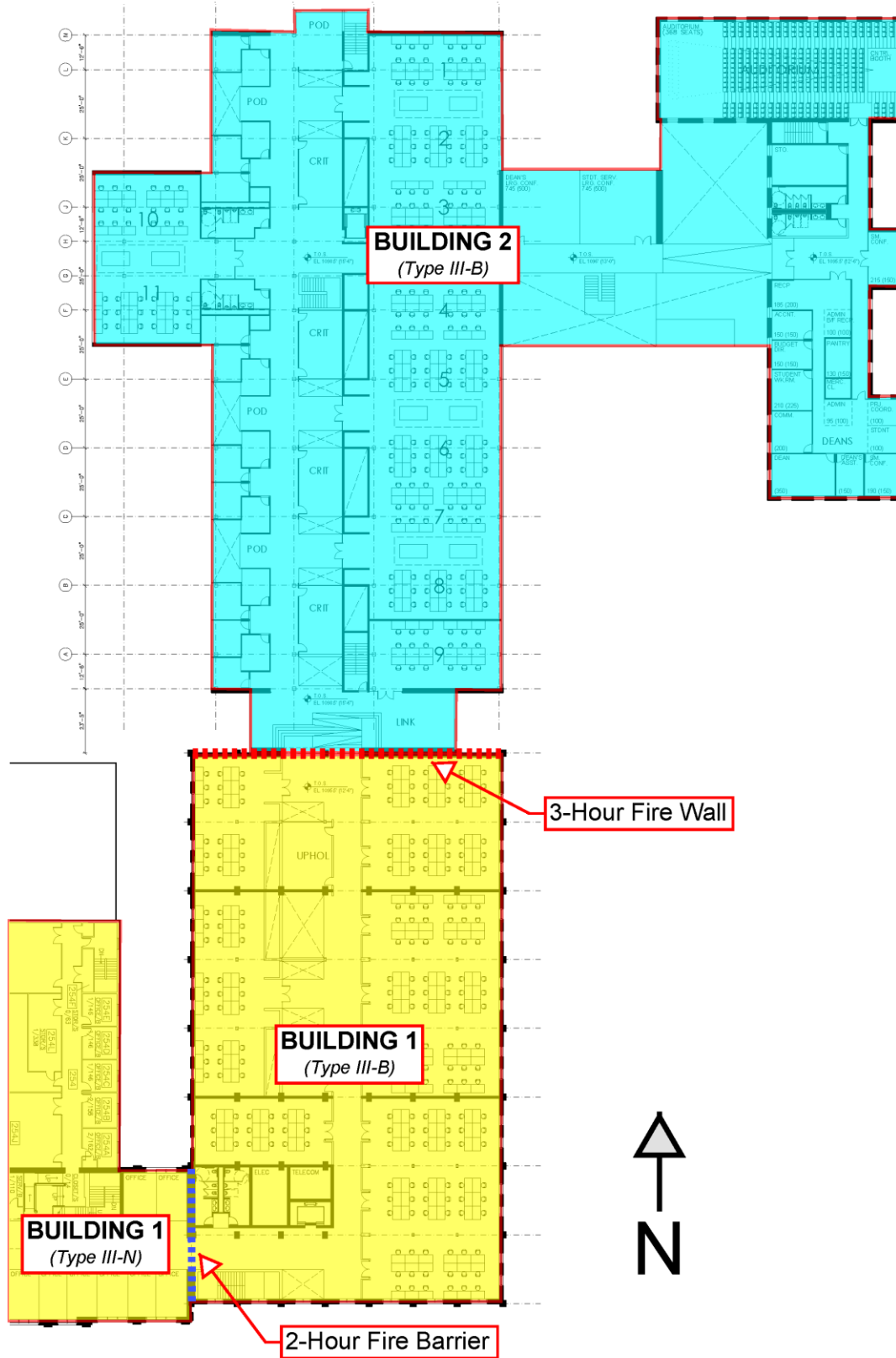
The IBC recognizes two approaches to address these mixed uses. Occupancy separations (fire barriers) may or may not be required between any two occupancies in a building of mixed occupancies depending on the separation approach taken. In addition, some specific use areas are required to be separated regardless of the approach chosen to address a mixed occupancy building (refer to Section 3 of this Report).

2.2 TYPES OF CONSTRUCTION CLASSIFICATION

The construction classification of each building is listed in the table below and diagrammed in the illustration below. Fire walls separate the overall building into separate building per Section 706.1.

Building	Construction Type
Seaton West and Seaton South (Building 1)	Type III-N (per Uniform Building Code), equivalent to Type III-B
Seaton East (Building 1)	Type III-B
Seaton New and Mechanics Hall (Building 2)	Type III-B

Figure 2.1
Plan View of Seaton Hall Showing Construction Type of Each Building



2.3 ALLOWABLE HEIGHT AND AREA

The following table summarizes the allowable height and area for each building per Table 503.

Criteria	Allowable		Actual	
Building 1 (Option #1 – Fire Wall) – Seaton East (Type III-B)				
Occupancy Use Group	A-3	B	A-3	B
Building Height (feet)	55 + 20 ^a = 75	55 + 20 ^a = 75	56 (measured from Basement Level to highest portion of roof)	
Number of Stories	2 + 1 ^b = 3	4 + 1 ^b = 5	3	
Building Area Per Floor (square feet)	32,680	69,730	22,718 (can use non-separated occupancy approach – refer to Section 3.3 of this Report)	
Building 1 (Option #2 – No Fire Wall) – Seaton West, Seaton South & Seaton East (Type III-B)				
Occupancy Use Group	A-3	B	A-3	B
Building Height (feet)	55 + 20 ^a = 75	55 + 20 ^a = 75	Exceeds allowable area but existing code footprint (Poole Fire Protection Services, Inc. dated 12/14/2004) allows existing condition to remain based on equivalency items.	
Number of Stories	2 + 1 ^b = 3	4 + 1 ^b = 5		
Building Area Per Floor (square feet) ^c	32,680	69,730		
Building 2 – Seaton New and Mechanics Hall (Type III-B)				
Occupancy Use Group	A-3	B	A-3	B
Building Height (feet)	55 + 20 ^a = 75	55 + 20 ^a = 75	56 (measured from Basement Level to highest portion of roof)	
Number of Stories	2 + 1 ^b = 3	4 + 1 ^b = 5	3	
Building Area Per Floor (square feet)	32,680	69,730	45,217 (requires separated occupancy approach – refer to Section 3.2 of this Report)	

^a Height increase for automatic sprinkler system per the IBC, Section 504.2.

^b Number of stories increase for automatic sprinkler system per the IBC, Section 504.2.

^c Refer to Section 3.2 of this Report for building area calculations.



3 FIRE RESISTIVE SEPARATIONS

The IBC does not require occupancy separations (fire barriers) between different occupancies in a building utilizing a non-separated use approach per Section 508.3.3. This approach means that the type of construction for the building is determined by the most restrictive height and area provisions for each occupancy and applies to the entire building. The most restrictive fire protection system requirements apply to each occupancy.

The IBC does require occupancy separations (fire barriers) between different occupancies in a building utilizing a separated mixed use approach per Section 508.4.4.

Section 508.1 permits the use of Section 508.2 for accessory occupancies, Section 508.3 for non-separated occupancies, and Section 508.4 for separated occupancies, or a combination of these approaches.

The separated occupancies approach is being used for this project:

3.1 ACCESSORY OCCUPANCIES

No accessory uses are provided.

3.2 SEPARATED OCCUPANCIES

The area per story of the separated occupancies (A-3 & B) shall be arranged so that the sum of the ratios of actual area over allowable area for each separated occupancy is less than 1.0 per Section 508.3.3.2. For Seaton New, the current configuration of the First Floor (worst-case story, has largest percentage of A-3) meets this requirement as shown below:

$$\begin{aligned} A - 3 & \left[\frac{14,121 \text{ ft}^2}{9,500 \text{ ft}^2 \times 200\%^d \times 144\%^e} \right] + B \left[\frac{31,096 \text{ ft}^2}{19,000 \text{ ft}^2 \times 200\%^d \times 167\%^e} \right] \\ & = A - 3 \left[\frac{14,121 \text{ ft}^2}{32,680 \text{ ft}^2} \right] + B \left[\frac{31,096 \text{ ft}^2}{69,730 \text{ ft}^2} \right] \\ & = A - 3 [0.43] + B [0.45] = \mathbf{0.88} < \mathbf{1.00} \end{aligned}$$

3.3 NON-SEPARATED OCCUPANCIES

If Seaton East is separated from Seaton South (Option #1), Seaton East will be considered a separate building and can utilize the non-separated occupancy approach because the building area per floor would be less than the allowable area of the worst-case occupancy (A-3).

^d Area increase for automatic sprinkler system per the IBC, Section 506.3.

^e Area increase for frontage (open yard) per the IBC, Section 506.2.



3.4 INCIDENTAL USES

In addition to the separations required between occupancies, Section 509.4 requires that incidental uses (ancillary functions within an occupancy group that generally pose a greater risk to that occupancy) be separated in accordance with Table 509. The combined area of all incidental uses on a given floor shall not exceed 10% of the area of that floor. The following table summarizes the required separation of incidental use areas.

Use/Occupancy	Requirement – Table 509
Furnace rooms where largest piece of equipment is over 400,000 BTU/hour input	1-hour or provide automatic sprinkler system
Boiler rooms where largest piece of equipment is over 15 psi and 10 hp	1-hour or automatic sprinkler system
Refrigerant machinery rooms	1-hour or provide automatic sprinkler system
Paint shops	2-hour or provide automatic sprinkler system
Laboratories and vocational shops	N/A (doesn't apply to Group B occupancies)
Laundry rooms over 100 square feet	1-hour or provide automatic sprinkler system
Stationary storage battery system greater than 50 gallons of liquid electrolyte capacity, or greater than 1,000 pounds of lithium-ion capacity for standby, emergency, or uninterrupted power.	1-hour

3.5 OTHER USE SEPARATIONS

The following table summarizes the required separations between other building uses.

Use/Occupancy	Requirement
Electrical transformer rooms	<p>1-hour fire resistive enclosures for rooms containing dry-type transformers more than 112.5 kVA – NEC Article 450.21 (B)</p> <p>1-hour rating not required for Class 155 or higher insulating systems for transformers that are completely enclosed except for ventilation openings – NEC Article 450.21, Exception 2</p> <p>The Electrical Engineer should note if this type of transformer is specified</p>
Electrical transformer vault	<p>Dry-type transformers rated over 35,000 volts are required to be installed in a vault - NEC Article 450.21 (C)</p> <p>Vaults not protected with an automatic sprinkler or suppression system are required to be 3-hour fire resistive enclosures (3-hour doors); sprinklered vaults may be 1-hour (45-minute doors) – NEC Articles 450.42 and 450.43</p> <p>Vaults in contact with the ground are required to have a minimum 4 inches of concrete slab for a floor – NEC Article 450.42</p>



Use/Occupancy	Requirement
	<p>Studs and wallboard construction are not permitted – NEC 450.42</p> <p>Doors are required to be locked with access to qualified people only, must swing out, and be equipped with panic bars or push pads – NEC Articles 450.43 (C) and 110.31</p>
<p>Service Conductors considered outside the building</p>	<p>Encased in 2 inches of concrete, listed 2-hour electrical circuit protective system, or in a vault – NEC Article 230.6</p>
<p>Emergency generator rooms for Level 1 emergency power</p>	<p>2-hour – NFPA 110, Section 7.2.1.1</p> <p>Emergency power system equipment shall not be installed in the same room with normal service equipment rated over 150 volts to ground and a current greater than or equal to 1,000 amps – NFPA 110, Section 7.2.2</p> <p>Ventilation and exhaust air shall be directly to/from outside using a 2-hour fire rated air transfer system – NFPA 110, Sections 7.7.2.1 and 7.7.2.2</p>
<p>Fuel storage for emergency generator</p>	<p>2-hour (1-hour if fully-sprinklered) if within the exempt amounts of Table 307.1(1) per Table 414.2.2; otherwise it will be considered an H-2 occupancy and 2-hour occupancy separation will be required using the separated mixed use approach (3-hour if separating from Group A occupancy).</p>
<p>Fire pump feeder conductors</p>	<p>Enclosed in 2 inches of concrete or listed 2-hour electrical circuit protective system – NEC Article 695.6 (A) (2) (c)</p>
<p>Fire Command Center (required if Atrium smoke control system is provided)</p>	<p>1-hour fire barriers and 1-hour horizontal assemblies – Section 911.1.2</p>

4 FIRE RESISTIVE BUILDING ELEMENTS

4.1 ACCEPTABLE MATERIALS

Structural elements of Type III-B buildings can be any material allowed by the IBC, noncombustible or combustible per Section 602.3. Fire-retardant-treated wood framing is permitted within exterior walls, except for exterior walls that are part of a fire wall.

4.2 STRUCTURAL, INTERIOR, AND EXTERIOR ELEMENTS

Passive fire resistance for the structural frame insures that stability of the building as a whole can be maintained during the anticipated fire condition. The structural frame is defined as columns, as well as trusses, girders, and beams having direct connection to columns. Beams and trusses not having direct connection to columns are considered secondary elements. Depending on where they occur, these secondary elements may be classified as an element of either a roof or floor assembly for purposes of determining fire resistance requirements.

Restrained versus unrestrained designations: all fire resistive assemblies should be viewed as unrestrained, except where the Structural Engineer has demonstrated otherwise.

Floors (including shafts) and exit enclosure walls provide interior compartmentation and means of egress protection.

Exterior walls provide exposure protection.

The following fire resistive requirements are documented from Table 601 and other applicable sections.

Building Element	Fire-Resistance
Primary columns and beams	0-hour – Table 601
Floor assembly, including secondary beams & trusses	0-hour – Table 601
Roof assembly, including secondary beams & trusses	0-hour – Table 601
Exterior bearing walls	2-hour – Table 601
Exterior non-bearing walls (distances measured to center line of street or assumed imaginary lot line between buildings)	1-hour (less than 10 feet) – Table 602 0-hour (10 feet or more) – Table 602
Interior bearing walls	0-hour – Table 601
Interior non-bearing walls	0-hour (unless noted otherwise in the Code) – Table 601
Shaft enclosures (including mechanical shafts, elevator hoistways, and exit stairs)	1-hour where connecting less than 4 stories; 2-hour where connecting 4 or more stories – Section 713.4 Shaft is required to extend from the lowest floor opening through successive floor openings & must be enclosed at the top & bottom with same fire-resistance rating as the lowest or topmost

Building Element	Fire-Resistance
	<p>floor through which the shaft passes, but not less than the rating required for shaft enclosure. (Sections 713.11 & 713.12):</p> <p>At the bottom: Bottom of shafts are not required to be enclosed when: The shaft terminates in rooms related to the use of the shaft and separated with fire barriers of the same fire-resistance rating as the shaft or when the shaft is protected by fire dampers at the lowest level – Section 713.11, Items 2 and 3</p> <p>At the top: Enclosure at the top is not required where the shaft extends through the roof or to the underside of the roof deck – Section 713.12</p>
Exit stair enclosures	1-hour where connecting less than 4 stories; 2-hour where connecting 4 or more stories – Section 1022.2
Exit passageways (i.e., connection of stair enclosures to the exterior)	Same rating as the stair it serves – Section 1023.3
Corridors	0-hour in buildings that are fully sprinklered – Table 1018.1
Elevator lobbies	Not required when building is fully sprinklered – Section 713.14.1, Exception 4
Roof covering	Class C – Table 1505.1
Stairs	0-hour, any material permitted by IBC – Section 1009.9
Projections (e.g., canopies)	<p>Frames of non-combustible materials, fire-retardant-treated wood, wood of Type IV size, or 1-hour construction – Sections 705.2.2 and 3105.3</p> <p>Covers shall be fixed, retractable, folding or collapsible and of combustible or non-combustible materials – Section 3105.3</p>
Penthouses	<p>The combined area of all penthouses cannot exceed 1/3 of the total roof area and each penthouse cannot exceed 18 feet in height above the roof; otherwise the penthouses are defined as a story – Section 1509.2</p> <p>Penthouse construction shall match the construction of building, except that exterior walls shall be 1-hour if located less than 20 feet from adjacent lot lines or center lines of public ways and interior framing shall be Type IV or non-combustible construction – Section 1509.2.1, Exception 2</p> <p>Ratings not required if penthouse only houses mechanical equipment and is located 20 feet or more from adjacent lot lines or center lines of public ways – Section 1509.2.1, Exception 3</p>

Building Element	Fire-Resistance
Fire walls	3-hour – Table 706.4 Continuous from footing to 30 inches above each room – Section 706.6 Stepped roofs will allow for some reduction in height of fire wall – Section 706.6.1 Each building is allowed to collapse without collapse of the wall for 3 hours – Section 706.2 Any approved non-combustible materials – Section 706.3

4.3 OPENINGS IN EXTERIOR WALLS

Openings in the exterior walls can either be protected or unprotected. Protected openings shall be rated per Table 716.5 for doors and Table 716.6 for windows. The maximum area of openings depends on the separation distance from the exterior walls and adjacent property lines or centerline of public ways (streets) as follows:

Distance (x) to Property Line or Centerline of Public Way	Protected Openings as Percent Area of Exterior Wall – Table 705.8
$x \leq 3$	0%
$3 < x \leq 5$	15%
$5 < x \leq 10$	25%
$10 < x \leq 15$	45%
$15 < x \leq 20$	75%
$20 < x$	100%

Unprotected openings are permitted, but in less percentage than protected openings as follows:

Distance (x) to Property Line or Centerline of Public Way	Unprotected Openings as Percent Area of Exterior Wall – Table 705.8
$x \leq 5$	0%
$5 < x \leq 10$	10%
$10 < x \leq 15$	15%
$15 < x \leq 20$	25%
$20 < x \leq 25$	45%
$25 < x \leq 30$	70%



Distance (x) to Property Line or Centerline of Public Way	Unprotected Openings as Percent Area of Exterior Wall – Table 705.8
30 < x	100%

4.4 OPENINGS IN INTERIOR WALLS

Openings in interior walls are required to be protected by a fire door, fire shutter, or fire window assembly as follows:

Building Element	Requirement
Openings in exit stairway enclosures	<p>2-hour stair enclosures require 90-minute wall assembly opening protection – Table 716.5</p> <p>2-hour stair enclosures are not permitted to have windows, except those tested as a fire barrier in accordance with ASTM E-119 – Table 716.5 and Section 716.3</p> <p>1-hour stair enclosures require 1-hour wall assembly opening protection and 45-minute window assembly opening protection – Tables 716.5 and 716.6</p> <p>Doors are not required to meet the 450°F temperature rise limitation in fully-sprinklered buildings – Section 715.5.5, Exception</p> <p>Doors shall be self-closing or automatic-closing by smoke detection – Sections 713.7 and 716.5.9</p> <p>No openings other than exit doors from normally occupied spaces allowed – Section 1022.1</p> <ul style="list-style-type: none"> • Examples of normally unoccupied spaces include restrooms, janitorial closets, and mechanical/electrical rooms <p>Penetrations limited to sprinkler piping, standpipes and electrical conduit for enclosure use only – Section 1022.1.2</p> <p>No HVAC duct penetrations are permitted except for pressurization ducts – Section 1022.1.2</p> <p>HVAC duct penetrations shall be protected by combination fire/smoke dampers – Section 717.5.3</p> <ul style="list-style-type: none"> • Dampers not required if opening is used for smoke control system (e.g. HVAC duct supplying make-up air to smoke control system zone) – Section 707.2.1
Openings in fire barriers	<p>Required assembly rating per Table 716.5:</p> <ul style="list-style-type: none"> • 1.5-hour for 2-hour fire barriers • 1.5-hour for 2-hour exterior walls • 1-hour for 1-hour shaft walls, exit enclosure walls, and exit passageway walls • 45-minute for other 1-hour walls

Building Element	Requirement
	<ul style="list-style-type: none"> • 45-minute for 1-hour fire partitions • 20-minute for 1-hour corridor walls
Openings in fire walls	Required assembly rating per Table 716.5: <ul style="list-style-type: none"> • 3-hour for 3-hour fire wall • Two 1.5-hour doors is equivalent to 3-hour rating • Area of each opening cannot exceed 156 ft² • Width of all openings in a given story cannot exceed 25% of the length of the wall in fire walls limited to 25% of the length of the wall; no maximum area per individual opening is stipulated where both the buildings on either side are considered fully sprinklered – Section 706.8

4.5 OPENINGS IN FLOOR/CEILING AND ROOF/CEILING ASSEMBLIES

Openings in floor/ceiling or roof/ceiling assemblies are permitted as follows:

Building Element	Requirement
Openings in ceilings	Where the ceiling is part of a fire-resistive floor/ceiling or roof/ceiling assembly, HVAC duct openings are required to be provided with ceiling type fire dampers – Section 717.6.2
Openings in floors	Each opening through a floor/ceiling assembly is required to be addressed by one of the following: – Section 712.1 <ol style="list-style-type: none"> 1. Shaft enclosure – Section 712.1.1 2. Two options for escalators: - Section 712.1.3 <ul style="list-style-type: none"> • If opening is less than twice the horizontal projected area of the escalator, protect opening with draft curtains and closely-spaced sprinklers • Protect openings with automatic shutters 3. Penetrations per Section 714 – Section 712.1.4 4. Duct penetrations per Section 717.6 – Section 712.1.5 5. Atrium – Section 712.1.6 6. Two-story space not part of the required means of egress – Section 712.1.8 7. Mezzanine per Section 505 – Section 712.1.10 8. Joints per Section 715 – Section 712.1.11

Building Element	Requirement
	<p>9. Unenclosed exit access stairways connecting two stories – Sections 712.1.12 and 1009.3, Exception 1</p> <p>10. Unenclosed exit access stairways connecting up to four stories where the opening is less than twice the horizontal projected area of the stairway and the opening is protected by draft curtains and closely-spaced sprinkler – Sections 712.1.12 and 1009.3, Exception 4</p> <p>11. Unenclosed exit access stairways in an Atrium – Sections 712.1.12 and 1009.3, Exception 5</p> <p>12. Horizontal floor fire door per Section 711.8 – Section 712.1.13</p> <p>13. Floor joints per 711.4.1 – Section 712.1.17</p>
Openings in roofs	Roofs may have unprotected openings – Sections 711.4 and 705.8.6

4.6 PENETRATIONS

Penetrations through fire-resistant rated elements are permitted as follows. Penetrations through non-rated wall or ceiling assemblies are not required to be fire-rated.

Building Element	Requirement
Penetrations through walls	<p>Penetrations are required to be sealed with a listed fire-stop assembly having an F-rating equal to the walls rating – Section 714.3.1.2</p> <p>Metal pipe or conduit (or smaller) penetrating concrete or masonry walls may be grouted solid – Section 714.3.1, Exception 1</p> <p>Membrane protection is not required for steel electrical boxes (16 square inches or smaller), separated by 24 inches horizontally and not exceeding 100 square inches per 100 square feet of wall – Section 714.3.2, Exception 1</p> <p>Alternatively, listed boxes may be used per their listing – Section 714.3.2, Exception 2</p> <p>Penetrations are not permitted to exceed 100 square inches per 100 square feet in assemblies tested and listed without penetrations; electrical boxes of any material are permitted, provided they are listed for this application – Section 714.3.2, Exception 2</p>

Building Element	Requirement
Penetrations through ceilings	Ceiling penetrations are required to be provided with a listed fire-stop system with F- and T-ratings – Section 714.4.1.1.2 Penetrations caused by sprinklers are permitted, provided the annular space is covered by a metal escutcheon plate – Section 714.4.1.2, Exception 5
Penetrations through floors	Floor penetrations are required to be fire-stopped with listed assemblies having an F and T-rating equal to the floor rating, but not less than 1-hour – Section 712.4.1.1.2 A T-rating is not required for floor penetrations located in the cavity of a wall or when used for floor drains – Section 712.4.1.1.2, Exception
Penetrations through roofs	Roofs may have unprotected penetrations – Section 711.4

4.7 FIRE AND SMOKE DAMPERS

Requirements for fire dampers, smoke dampers, and fire/smoke dampers are as follows:

Building Element	Requirement
Shaft enclosure (including exit stairwell enclosures)	HVAC duct penetrations are not permitted, unless dedicated to serve the stair enclosure – Section 1020.1.2 Fire and/or smoke dampers required – Section 716.5.3
Exit passageways	HVAC duct penetrations are not permitted, unless dedicated to serve the exit passageway – Section 1020.1.5 Fire dampers required – Section 716.5.2
0-hour corridor walls	No dampers required – Section 716.5.4.1 and 715.4.3
1-hour corridor walls	Smoke dampers required – Section 716.5.4.1
Fire walls	Fire dampers required – Section 716.5.1

4.8 CONSTRUCTION JOINTS

Requirements for construction joints are as follows:

Item	Requirement
Expansion joints	Joints used to accommodate wind, seismic, or expansion movement are required to be provided with the same fire-



Item	Requirement
	resistance of the wall or floor in which they are installed by the use of listed assemblies – Section 711.6
Vertical fire spread	Voids created at the intersection of the exterior curtain wall and the fire-resistive floor assembly are required to be sealed with an approved protective equal to the fire-resistance of the floor – Sections 713.4 and 711.6 Joints created between the floor and exterior wall required to be protected by an approved fire-resistant joint system – Section 713.4

5 INTERIOR FINISHES

5.1 WALL AND CEILING FINISHES

The classification of fire-resistive finishes are as follows:

Fire and Smoke Behavior	Minimum Flame Spread Class – Section 803.1
Flame spread 0-25, smoke development 0-450	A
Flame spread 26-75, smoke development 0-450	B
Flame spread 76-200, smoke development 0-450	C

The following table summarizes the requirements for wall and ceiling finishes permitted in specific areas within sprinklered buildings based on the occupancy group of that area per Table 803.5.

Occupancy Group	Exit Enclosures and Exit Passageways	Corridors and Other Exit Access Pathways	Rooms or Enclosed Spaces
A-3	B	B	C
B	B	C	C

The following table summarizes additional requirements for different interior finish materials in sprinklered buildings.

Material	Test Criteria
Textile (fabric) on walls	NFPA 286 Room Corner Test, NFPA 265 Room Corner Test, or Class A materials
Textile (fabric) on ceilings	NFPA 286 Room Corner Test or Class A materials
Expanded vinyl (wallpaper) on walls	NFPA 286 Room Corner Test, NFPA 265 Room Corner Test, or Class A materials
Expanded vinyl (wallpaper) on ceilings	NFPA 286 Room Corner Test, or Class A materials

5.2 FLOOR FINISHES

The requirements for fire-resistive floor finishes are as follows:

Location	Requirement
Rooms	Material complying with DOC FF-1 "Pill Test" (CPSC 16, CFR 1630) – Section 804.4.1
Exit enclosures, exit passageways, rated and non-rated corridors	Material complying with DOC FF-1 "Pill Test" (CPSC 16, CFR 1630) – Section 804.4.1

5.3 OTHER REQUIREMENTS

Additional requirements for miscellaneous items are as follows:

	Requirement
Plenums	<p>Plenums are defined as any enclosed space used for air movement – IMC, Sections 202 and 602.1</p> <p>Exposed materials within plenums are required to have a flame spread index of 25 or less and a smoke developed index of 50 or less – IMC, Section 602.2.1</p> <p>Gypsum board is limited in plenums to a 125°F maximum temperature and airstreams maintained above dew point – IMC, Section 602.2</p> <p>Additional requirements on wiring, plastic sprinkler piping, and pneumatic tubing installed in plenums – Sections 602.2.1.2 through 602.2.1.5</p>
Foam Plastics (e.g. rigid insulation)	<p>Required to have a flame spread rating of 75 or less and a maximum smoke developed index of 450 or less – Section 2603.3</p> <p>Foam plastic insulation within exterior walls is required to be separated from the building interior by 0.5-inch regular gypsum board or other material having a thermal barrier index of 15 or more – Section 2603.4</p> <p>Thermal barrier not required for masonry or concrete construction – Section 2603.4.1.1</p> <p>Foam plastic insulation under the roof assembly or covering is required to be separated from the building interior by 0.47-inch wood sheathing or equivalent</p> <p>Thermal barrier not required when tested as part of a Class A, B, or C roof-covering assembly – Sections 2603.4.1.5 and 2603.5.1</p>

	Requirement
	May be used as interior trim if covering is no more than 10% of walls or ceilings – Section 2604.2.3

6 EXIT REQUIREMENTS

6.1 OCCUPANT LOAD FACTORS

Room or Space	Occupant Load Factor – Table 1104.1.2
Offices	100 square feet per person
Classrooms	20 square feet per person
Workshops and Studios	50 square feet per person
Mechanical, Electrical and Storage Rooms	300 square feet per person
Assembly Areas	5 square feet per person (standing space) 7 square feet per person (chairs) 15 square feet per person (tables and chairs)

6.2 EGRESS WIDTH FACTORS

Egress width factors determine the required egress width along the entire means of egress (exit access, exit, and exit discharge). Egress width factors are represented in inches of egress width per person. As the egress width factor decreases, the required egress width also decreases. In other words, a lower egress width factor means more people can exit through the same width. Standard egress width factors apply to all portions of the project, except for the auditorium because it is an assembly occupancy group. However, since lower the egress width factor, less egress width. The exit width factors used for the project are as follows:

Exit Element	Exit Factor – Table 1005.1
Stairs	60 people per foot (0.2 inches per person)
Doors, Ramps and Level Exit Paths	40 people per foot (0.2 inches per person)

6.3 EGRESS CALCULATIONS

Preliminary occupant load calculations and exit capacities are summarized for each level of each building as follows:

Floor Level	Estimated Occupant Load	Estimated Exit Capacity	Excess Capacity People (Percent Excess)
Building 1 – Seaton East Portion Only			
Basement	241	-	-
First Level	271	-	-
Second Level	299	-	-
Third Level / Roof	N/A	N/A	N/A
Building 2 – Seaton New and Mechanics Hall			
Basement	442	1,000	558 (226%)
First Level	821	1,530	709 (186%)
Second Level	386	640	254 (166%)
Third Level / Roof	95	320	225 (337%)

Exit (egress) drawings will be provided in future versions of this Report.

6.4 NUMBER OF EXITS

The required number of exits from a room or space are as follows:

Room or Space	Criteria	Number of Exits Required
Boiler or furnace rooms	Equal to or less than 500 square feet or containing equipment equal to or less than 400,000 BTU (422,000 kJ)	1
Boiler or furnace rooms	Greater than 500 square feet and containing equipment greater than 400,000 BTU (422,000 kJ)	2
All other spaces	Serves 50 occupants or less	1
All other spaces	Serves more than 50 occupants	2



The required number of exits from a floor (story) are as follows:

Occupant Load (People per Floor)	Number of Exits Required
1 to 500	2
501 to 1,000	3
Over 1,000	4

6.5 ARRANGEMENT OF EXITS

Exits shall be arranged as follows:

Criteria	Arrangement of Exits
General	Exit access doors shall lead to separate exits – Section 1015.2
Where two (2) exits are required	Exit access doors shall be separated by ½ the overall diagonal dimension of the room or building; ⅓ diagonal if fully sprinklered – Section 1015.2.1, Exception 2
Where three (3) or more exits are required	Additional exit access doors shall be separated such that if one becomes blocked, the others remain available – Section 1015.2.2

6.6 COMMON PATH OF TRAVEL

The limitation on common path of travel applies to the exit access path (i.e. every occupied portion of the building leading to an exit). The maximum common path of travel depends on the type of room or space as shown in the table below. The common path of travel is measured from the most remote point (permitted to be taken at one foot off the wall) to the point at which an occupant has two distinct exit paths. The exit paths need to remain separate all the way to the separate exits.

Room or Space	Maximum Common Path Distance
Auditorium, classrooms over 50 occupants	30 feet – Section 1028.8
All other areas	100 feet – Table 1014.3



6.7 TRAVEL DISTANCE

The limitation on travel distance to an exit applies to the exit access path (i.e. every occupied portion of the building leading to an exit). The maximum travel distance depends on the type of room or space as shown in the table below. Travel distance is measured from the most remote point (permitted to be taken at one foot off the wall) to the closest “exit.” By definition, an “exit” is one of the following: an exterior door, a stair enclosure, an exit passageway, or a horizontal exit (i.e. a 2-hour wall subdividing a floor plate).

Room or Space	Maximum Travel Distance
Auditorium, classrooms over 50 occupants	250 feet to an exit – Table 1016.2 and Section 1028.7
All other areas	300 feet to an exit – Section 1028.7

7 FIRE PROTECTION REQUIREMENTS

7.1 SPRINKLER SYSTEM

The existing building is not fully-sprinklered.

As part of this renovation/expansion project, Building 2 (Seaton New and Mechanics Hall) will be fully sprinklered per Section 903.2.1.3 for Group A-3 occupancy. The Group B occupancy portions will also be sprinklered although not required per the IBC. The floor area of Seaton East is less than 50% of Building 2, which includes the existing portion of Seaton Hall that is outside this scope of work, and therefore is not required to be sprinklered per IEBC, Section 804.2.2, Item 2. However, in order to address the new floor openings, Seaton East will be a sprinklered fire area separated from the Seaton West by a 2-hour fire barrier per Table 707.3.10. Quick-response sprinklers are required in all light hazard (as defined by NFPA 13), sprinklered areas per Section 903.3.2.

7.2 STANDPIPE SYSTEM

The existing building is provided with standpipes.

Standpipes are used in buildings for fire fighters to supplement the protection afforded by the automatic sprinkler system. Standpipes are primarily located in rated stairwell enclosures that are accessible at grade (level of fire department vehicle access) so fire fighters have a safe area to connect to a hose connection prior to fighting the fire on the floor. On larger floors where portions of the floor cannot be reached by the hose connections in the stairwells, additional hose connections are required throughout the floor.

As part of this expansion/renovation project, the building will be provided with automatic wet standpipes with Class I hose connections since the highest floor is more than 30 feet above the lowest level of fire department vehicle access.

Additional hose connections are required on any floor where all areas cannot be reached from the hose connections in the stairwells (200 feet for sprinklered floors per Section 905.4, Item 6).

7.3 WATER SUPPLY

A single connection to the public water supply is required.

7.4 FIRE ALARM SYSTEM

The existing building is provided with a fire alarm system.

As part of this expansion/renovation project, the existing system will be extended to all portions of the building.

Only one manual pull station is required for Building 2 at a location determined by the AHJ since the building is fully-sprinklered per Section 907.2 and 907.2.1, Exception 1.

Visual and audible alarms will be installed per NFPA 72.

Sprinkler and standpipe valves controlling water supply and water flow switches will be connected to the fire alarm system and electrically monitored for alarm, supervisory and trouble signals per Section 903.4.

Detection is required at the following locations:

- Smoke detection for heating or cooling air systems having capacities greater than 2,000 cfm or systems serving more than one occupancy; detectors required to sound trouble signal per the IMC, Section 606.2.



- Smoke detection in elevator lobbies and machine rooms to initiate Fireman's Service (Phase I) recall per Section 3003.2.
- Heat detection with shunt trip device in sprinklered machine rooms per the 2007 ASME A17.1, Section 2.8.

7.5 PORTABLE FIRE EXTINGUISHERS

Fire extinguishers are required for all addition and renovation areas at the following locations per the IFC, Section 906 and installed per NFPA 10. They shall be conspicuously located along the normal paths of travel where they are readily accessible and immediately available in the event of a fire.

- Within 75 feet of all areas [IFC, Section 906.1, Item 1 and Table 906.3(1)].
- Within 30 feet of commercial cooking equipment (IFC, Section 906.1, Item 2).
- In areas where flammable or combustible liquids are stored (IFC, Section 906.1, Item 3).
- Other areas required by the code enforcement official (IFC, Section 906.1, Item 6).

7.6 SECONDARY POWER

Emergency power (as defined by NFPA 70) is required for the following connected loads simultaneously:

- Fire Detection and Alarm Systems
- Exit and Emergency Lighting

Standby power (as defined by NFPA 70) is required for the following connected loads simultaneously by an emergency generator:

- Smoke Control System (if provided)

A 2-hour full operating capacity fuel supply is required.

7.7 HAZARDOUS MATERIALS

Hazardous materials are allowed up to certain quantity within a control area per Table 307.1(1). If the hazardous materials exceed the limits in Table 307.1(1), additional control areas need to be established per Table 414.2.2. Control areas are required to be separated from other portions of the building by fire-resistant rated construction per Table 414.2.2.

For this project, the entire building will be considered one control area. Allowable quantities of hazardous materials expected in the building are permitted by Table 307.1(1) and the IFC, Table 5003.1.1(1). The requirements in the IBC and IFC tables are essentially the same.

In general:

- The aggregate quantity in use or storage shall not exceed the amount permitted in storage.
- Fuel in fuel tanks of motorized equipment does not count against the maximum amount permitted.

A 3,000 gallon storage tank for each generator is permitted per the IFC, 5003.1.1(1) and does not count against the maximum allowable quantity for generator diesel fuel (660 gallons).

The table below lists commonly used hazardous materials that could be used or stored in this building. The maximum allowable quantities are cumulative meaning that the sum of different hazardous materials of a certain class may not exceed the maximum allowable quantity for that class. For example, gasoline and isopropyl alcohol (75% concentration or greater) are limited to a total of 480 gallons for the building (in storage or in use) since they are all Class I flammable liquids.

Item <ul style="list-style-type: none"> Hazardous Material^f 	Maximum Allowable Quantities <ul style="list-style-type: none"> IBC, Table 307.1(1) and 307.1(2) IFC, Table 5003.1(1) and 5003.1.1(2)q
Gasoline <ul style="list-style-type: none"> Class IB flammable liquid 	480 gallons are permitted: <ul style="list-style-type: none"> Increased by 100% if building is fully sprinklered (note d) Increased by 100% where stored in approved storage cabinets (note e) Aggregate of other Class I liquids may not exceed the amount permitted in use or storage (note b)
Diesel Fuel <ul style="list-style-type: none"> Class II combustible liquid in stationary engines 	660 gallons are permitted: <ul style="list-style-type: none"> One or more fuel oil storage tanks are permitted inside so long as the aggregate capacity of all tanks does not exceed 660 gallons (note i which references the IFC, Section 603.3.2)] Each generator is permitted to have a 3,000 gallon storage tank located above grade that does not count towards the maximum allowable quantity of 660 gallons (IFC, Section 603.3.2)
Motor Oil <ul style="list-style-type: none"> Class IIIB combustible liquid 	Unlimited amount is permitted: <ul style="list-style-type: none"> Unlimited if building is fully sprinklered (note f)
Sulfuric Acid (4–12.6%) <ul style="list-style-type: none"> Corrosive 	2,000 gallons are permitted <ul style="list-style-type: none"> Increased by 100% if building is fully sprinklered (note e) Increased by 100% where stored in approved storage cabinets (note f) Aggregate of other Class I oxidizer may not exceed the amount permitted in use or storage (note b) The aggregate quantity in use or storage of other corrosives shall not exceed the amount permitted (note d)]
Nitric Acid (7–40%) <ul style="list-style-type: none"> Corrosive Oxidizer (Class 1) Irritant 	
Acetic Acid (≥ 36%) <ul style="list-style-type: none"> Corrosive 	
Phosphoric Acid (8–10%) <ul style="list-style-type: none"> Irritant 	No limit
Hydrochloric Acid (< 15%) <ul style="list-style-type: none"> Irritant 	No limit
Bleach, household <ul style="list-style-type: none"> Irritant 	No limit
Oxidizer <ul style="list-style-type: none"> Solid Liquid 	Unlimited amount is permitted if a Class 1 oxidizer <ul style="list-style-type: none"> Unlimited if building is fully sprinklered (note f) Increased by 100% where stored in approved storage cabinets (note e) 1,000 pounds are permitted if a Class 2 oxidizer

^f Source: HMEEx Chemicals Database



Item <ul style="list-style-type: none"> Hazardous Materialf 	Maximum Allowable Quantities <ul style="list-style-type: none"> IBC, Table 307.1(1) and 307.1(2) IFC, Table 5003.1(1) and 5003.1.1(2)q
	<ul style="list-style-type: none"> Increased by 100% if building is fully sprinklered (note d) Increased by 100% where stored in approved storage cabinets (note e) 40 pounds are permitted if a Class 3 oxidizer <ul style="list-style-type: none"> Increased by 100% if building is fully sprinklered (note d) Increased by 100% where stored in approved storage cabinets (note e) 1 pound is permitted if a Class 4 oxidizer <ul style="list-style-type: none"> If building is fully sprinklered (note g) Aggregate of other oxidizers may not exceed the amount permitted in use or storage (note b)
Isopropyl Alcohol <ul style="list-style-type: none"> Class IB flammable liquid (91%) Class IC flammable liquid (75-80%) Class II combustible liquid (50%) Class IIIA combustible liquid (25%) Irritant 	480 gallons are permitted (Class I): <ul style="list-style-type: none"> Increased by 100% if building is fully sprinklered (note d) Increased by 100% where stored in approved storage cabinets (note e) Aggregate of other Class I liquids may not exceed the amount permitted in use or storage (note b) 480 gallons are permitted (Class II): <ul style="list-style-type: none"> Increased by 100% if building is fully sprinklered (note d) Increased by 100% where stored in approved storage cabinets (note e) Aggregate of other Class II liquids may not exceed the amount permitted in use or storage (note b) 1,320 gallons are permitted (Class IIIA) <ul style="list-style-type: none"> Increased by 100% if building is fully sprinklered (note d) Increased by 100% where stored in approved storage cabinets (note e) Aggregate of other Class IIIA liquids may not exceed the amount permitted in use or storage (note b)
Methanol <ul style="list-style-type: none"> Class IB flammable liquid (99%) Class II combustible liquid (20%) Irritant 	480 gallons are permitted (Class I): <ul style="list-style-type: none"> Increased by 100% if building is fully sprinklered (note d) Increased by 100% where stored in approved storage cabinets (note e) Aggregate of other Class I liquids may not exceed the amount permitted in use or storage (note b) 480 gallons are permitted (Class II): <ul style="list-style-type: none"> Increased by 100% if building is fully sprinklered (note d) Increased by 100% where stored in approved storage cabinets (note e)



Item <ul style="list-style-type: none"> • Hazardous Material 	Maximum Allowable Quantities <ul style="list-style-type: none"> • IBC, Table 307.1(1) and 307.1(2) • IFC, Table 5003.1(1) and 5003.1.1(2)q
	<ul style="list-style-type: none"> • Aggregate of other Class II liquids may not exceed the amount permitted in use or storage (note b)
Acetonitrile <ul style="list-style-type: none"> • Class II combustible liquid (20%) • Irritant 	480 gallons are permitted (Class II): <ul style="list-style-type: none"> • Increased by 100% if building is fully sprinklered (note d) • Increased by 100% where stored in approved storage cabinets (note e) • Aggregate of other Class II liquids may not exceed the amount permitted in use or storage (note b)
Chlorine, compressed gas <ul style="list-style-type: none"> • Oxidizing Gas (liquefied) • Corrosive • Toxic 	600 pounds are permitted: <ul style="list-style-type: none"> • Limiting factor is the oxidizing gas • Increased by 100% if building is fully sprinklered (note d) • Increased by 100% where stored in approved storage cabinets (note e) • Aggregate of other liquefied oxidizing gases may not exceed the amount permitted in use or storage (note b)
Ammonia, liquid cleaning solution <ul style="list-style-type: none"> • Irritant 	No limit
Ammonia, anhydrous compressed gas <ul style="list-style-type: none"> • Corrosive • Liquefied Flammable Gas 	600 pounds are permitted: <ul style="list-style-type: none"> • Limiting factor is the liquefied flammable gas • Increased by 100% if building is fully sprinklered (note d) • Increased by 100% where stored in approved storage cabinets (note e) • Aggregate of other liquefied flammable gases may not exceed the amount permitted in use or storage (note b)
Iodine <ul style="list-style-type: none"> • Corrosive • Oxidizer Solid / Liquid (Class 2) 	1,000 pounds are permitted if a Class 2 oxidizer <ul style="list-style-type: none"> • Limiting factor is the Class 2 oxidizing solid • Increased by 100% if building is fully sprinklered (note d) • Increased by 100% where stored in approved storage cabinets (note e) • Aggregate of other Class 2 oxidizers may not exceed the amount permitted in use or storage (note b)

8 MISCELLANEOUS REQUIREMENTS

8.1 PLUMBING FIXTURES

Per the IEBC, Section 810.1, plumbing fixtures are not required to be increased in Seaton East because the occupant load of each floor is not being increased by 20%. However, plumbing fixtures will be provided in Seaton East based on the occupant load of Seaton East. This is more conservative since the occupant of Seaton West is not being considered, which would decrease the required fixtures allocated to Seaton East. Per the IBC, Section 2902.1 (or the IPC, Section 403.1), plumbing fixtures are required to be provided for Seaton New and Mechanics Hall since this building is new construction.

The required plumbing fixture counts are based on the calculated occupant load using the following factors in Table 2902.1 (or the IPC, Table 403.1).

Building Occupancy	Water Closets		Lavatories		Drinking Fountains	Service Sink ^g
	Men ^h	Women	Men	Women		
Group A-3	1 per 125	1 per 65	1 per 200	1 per 200	1 per 500	1
Group B	1 per 50 + 1	1 per 50 + 1	1 per 80 + 1	1 per 80 + 1	1 per 100	1

Based on the calculated occupant loads for each occupancy group and assuming half male and half female, the required plumbing fixture counts for the project are as follows. The rest of Seaton Hall outside the scope of this project will continue to utilize existing restroom facilities.

Building Occupancy	Occupant Load	Water Closets		Lavatories		Drinking Fountains	Service Sink
		Men	Women	Men	Women		
Building 1 – Seaton East							
Group A-3	202	1	2	1	1	1	1
Group B	608	8	8	5	5	7	1
Total Required	-	9	10	6	6	8	1
Total Provided	-	9	9	6	6	8	1
Building 2 – Seaton New and Mechanics Hall							
Group A-3	786	4	7	2	2	2	1
Group B	958	11	11	7	7	10	1
Total Required	-	15	18	9	9	12	1
Total Provided	-	20	20	14	14	12	1

^g Only one service sink is required for the building as long as each occupancy has access to it.

^h Two-thirds of the water closets in each restroom in assembly areas can be substituted for urinals per the IPC, Section 419.2. Half of the water closets in each restroom in non-assembly areas can be substituted for urinals per the IPC, Section 419.2.

One family or assisted-use toilet room is required to be provided per Section 1109.2.1. Fixtures located within this toilet room can be counted towards either the men’s or women’s required fixture counts.

Urinal partitions are required by Section 1210.3.2 (or the IPC, Section 405.3.5).

8.2 ACCESSIBILITY REQUIREMENTS

The following table summarizes the accessibility requirements. Updates to the accessibility of the existing facility are required to be made until compliance is achieved, or until the costs amount to 20% or more of the total cost of the expansion/renovation project per the 2010 ADA (Americans with Disabilities Act), Section 35.151 of 28 CFR Part 35, Item (b)(4)(iii)(A). The accessibility improvements can be limited to 20% of the total cost of the expansion/renovation project.

Item	Requirement
Number of exits	Two accessible exits are required when two or more exit are required – Section 1007.1
Areas of refuge	Not required in sprinklered building – Section 1007.3, Exception 2
Two-way communication	Required at every elevator landing of every accessible floor, except for at the First Floor – Section 1007.8
Areas not required to be accessible	At least 5%, but not less than 1, accessible storage elements (including lockers) are required to be accessible – Section 1109.8

8.3 MINIMUM ROOM HEIGHT

The following table summarizes the requirements for minimum room heights based on location.

Location	Requirement
Rooms and Corridors	7 feet, 6 inches – Section 1208.2
Bathrooms, kitchens, storage rooms, and laundry rooms	7 feet – Section 1208.2
Exit stairs (headroom)	6 feet, 8 inches – Section 1008.1.1

8.4 VENTILATION (OUTDOOR AIR)

General office ventilation is required to provide 5 cfm per occupant of outside air to all occupied spaces at the rate of 5 occupants per 1,000 square feet (or 200 square feet per person). Other spaces will be supplied with the airflow for the space listed in the IMC, Table 403.3 which most closely resembles the space in terms of occupant density, occupant activity, and building construction.

Toilet rooms without exterior openings are required to be supplied with mechanical ventilation. Mechanical exhaust capacity is required at 70 cfm per water closet or urinal (50 cfm during normal hours if the exhaust system is designed to operate intermittently).



8.5 ELEVATORS

The following table summarizes the requirements for elevators.

Item	Requirement
Hoistway vents	Not required in sprinklered buildings or when the elevator penetrates less than four stories – Section 3004.1 and Exception 1
Elevator lobbies	Not required – Section 713.14.1, Exception 4
Stretcher capable elevator	Not required – Section 3002.4
Accessible elevator	Not required – Section 909.11
Standby power	Required for smoke control system (if provided) – Section 909.20.6.2 Transfer from normal power in accordance with Section 3003.1

9 CONCLUSION

This Building Code Approach has outlined the major fire and life safety issues affecting the design of the expansion/renovation of Seaton Hall at Kansas State University. Fire and life safety criteria were summarized primarily from the 2012 IBC.



3.0 Civil Design Narratives

The following civil design narratives have been prepared by BG Consultants.



TECHNICAL MEMORANDUM – UTILITY RELOCATIONS

Project: Kansas State University School of Architecture, Planning & Design
Seaton Hall Expansion/Renovation

Project Number: 14-1118M

Date: December 3rd, 2014

To: Joe Keal, BNIM
Yu Inamoto, ENNEAD Architects

From: Thaniel Monaco, P.E.

REPORT OBJECTIVE

This report has been prepared by BG Consultants, Inc. in response to a request from BNIM and ENNEAD Architects for an engineering review regarding utility relocations as part of the Seaton Hall Expansion/Renovation. The primary objective of this report is to analyze the existing utilities in and around the site of Seaton Hall East, Seaton Court, and Mechanics Hall to determine which utilities will need to be abandoned, relocated, repurposed or otherwise modified as part of the proposed expansion/renovation. The contents of this memorandum include an analysis of the existing utilities with respect to surveyed and archived information provided by the University, as well as, proposed improvements by the BNIM/ENNEAD team and sub-consultant team. The purpose of this information is to provide focus on the preliminary issues at hand although final design components have not been developed.

WATER SYSTEM

1. 4" Chilled Watermains through A25 (West Alley)

The 4" chilled watermains entering Seaton Court from the west side will be abandoned during demolition activities. This will be accomplished by closing the existing valves and capping the lines at the location where the lines branch off to Seaton Court. It will not be necessary for these mains to be in service during construction, however after construction is completed it will be necessary to determine if the new building will be reconnected to the existing 4" lines or if it will be connected off of the 8" chilled watermains running to the east of the existing 4" lines. The remainder of the 4" chilled watermains on site will need to be protected during construction to maintain service to the north side of Seaton Hall at the south end of A25.

2. 4" Potable Watermain through A25 (West Alley)

It is currently understood that the existing 4" potable watermain running through A25 is a dedicated fire protection line which serves the existing fire hydrant located there. This watermain and associated hydrant will need to be protected during construction activities to maintain fire protection for this area of the existing buildings. It will need to be verified that no existing service line to Seaton Court branches off of this watermain. If it is determined that a





service line exists, it will need to be abandoned at the location where the service line connects to the existing 4" watermain. If such a service line exists, it will not be reconnected to the new building after construction.

3. 8" Chilled Watermains through A25

The existing 8" chilled watermains will need to be protected during construction to maintain service to the north side of Seaton Hall South as shown. It will need to be determined after renovations of Seaton Hall are complete if the 8" watermains will still serve the building from the same location or if modifications need to be made. Prior to the completion of the new Seaton Court improvements, it will need to be determined if the new building will similarly be served off of the existing 4" chilled watermains or if a new connection will be made to serve the building off of the 8" watermains.

4. 2" Water Service Line to Mechanics Hall

The existing 2" water service line serving Mechanics Hall comes off of an existing 6" watermain located north of the building and will be abandoned during demolition activities. This will be accomplished by closing the existing valve and capping the abandoned line south of the English and Counseling Services building. It will not be necessary to provide service to the building during construction of the proposed improvements. However, it will need to be determined if Mechanics Hall will be served through internal plumbing of the Jewel or if a new dedicated service line will need to be run from the existing 10" watermain east of the building.

5. 4" Potable Watermain currently serving Seaton Hall East

Seaton Hall East, which will be renovated, is currently served domestic water supply from a 4" watermain off of the existing 10" watermain east of the building. Seaton Hall East will not require water service during construction, however it needs to be determined if other parts of Seaton Hall are served from this 4" watermain internally through Seaton Hall East. There appears to be a watermain connecting the north part of Seaton Hall South with the west side of Seaton Hall East. If this connection is determined to exist, additional improvements may be required which could include keeping the 4" watermain in service throughout the entirety of the renovation activities in Seaton East or potentially needing to provide a new water service connection to this location. If so, it will be necessary to protect this watermain during construction, although any internal connections which serve Seaton Hall East or Seaton Court may be abandoned during construction. Another possibility could be to provide a new water service connection to this location, possibly from the existing 4" potable watermain located in A25.

A new 4" potable watermain will be installed to provide domestic water supply to the proposed improvements and will be laid similarly to the existing 4" watermain. Additionally, a new fire protection main will be installed parallel to the new SC 4" watermain to provide internal fire protection to the proposed improvements. A 6" watermain could provide approximately 1,200





gpm of internal fire flow with approximately 1,200 to 1,300 gpm available from fire hydrants east and 500 to 750 gpm from fire hydrants north and south of the proposed improvements. An 8" watermain could provide approximately 1,350 gpm of internal fire flow with approximately 1,100 to 1,200 gpm available from fire hydrants east and 500 to 700 gpm from fire hydrants north and south of the proposed improvements. For the purposes of this report, we would recommend installing an 8" fire protection line until actual fire demand requirements are determined for the building. The new 4" and 8" watermains will each be approximately 140 feet in length with associated 10" diameter connection and valving requirements.

SANITARY SEWER SYSTEM

1. Seaton Court Service (North)

Seaton Court currently maintains a 6" sanitary sewer service that extends north to an existing 6" sanitary sewer line located approximately between Mechanics Hall and the sidewalk to the north. This Seaton Court service line can be abandoned during demolition activities. We believe additional survey coordination/verification should be made on this line to determine exact location since it is not shown on the topographic survey to date.

As shown in the attached exhibit, the 6" sanitary service line located north of Mechanics Hall also serves the Power Plant so this line will need to be relocated prior to demolition activities to maintain sanitary sewer service from the Power Plant. We recommend that this relocation include a clean-out on the west change of direction and a manhole on the east side of the relocation with approximately 35' of new 6" sanitary sewer gravity main. This relocated line may provide an opportunity to service the new building expansion and possibly renovated Mechanics Hall for first floor and above.

2. Mechanics Hall Service and Seaton Court Service (East)

Currently Mechanics Hall has a sanitary sewer service that exits to the east and turns south to connect to another 6" sanitary sewer service line running east and west. This service line should not be adversely affected by demolition or construction activities. Future reuse/replacement of this service needs to be evaluated to determine if it is required.

The 6" service line to the south of Mechanics Hall continues west until meeting with the existing Seaton Court eastern service components. This Seaton Court east service will need to be abandoned during demolition activities. It is not feasible to maintain this eastern service with the proposed expansion improvements.

However, the service line coming from the east (Mechanics Hall) is also providing sanitary sewer service to Holtz Hall so there will need to be a relocation of this service line outside of the demolition activities. We recommend that a feasible location be found to the south of Mechanics Hall that will allow the installation of a new manhole to redirect the wastewater to the southwest to the existing manhole east of Seaton Hall East, requiring approximately 130' of new 6"



sanitary sewer gravity main. We also recommend that this existing manhole be replaced during the relocation activities. This relocated line could be utilized for the new 6" sanitary sewer service from the building expansion if the northern option is not utilized.

3. Seaton Hall Expansion – Basement Bathroom Service

The logical location for the basement service would be at the lowest point within the existing system. This would be at the existing manhole located east of Seaton Hall East. However, in review of surveyed elevations, proposed location of the basement bathrooms and floor slab elevations, it does not appear feasible that a gravity service would be available. A mechanical pumping consideration should be included to service these basement bathrooms with the forcemain traveling south and then east before entering the existing/replaced manhole location east of Seaton Hall East.

4. Seaton Hall South Sanitary Sewer Service (North)

There appears to be a sanitary sewer line connecting the north part of Seaton Hall South with the west side of Seaton Hall East. If this connection is valid and required, care will be required during the renovation activities of Seaton Hall East to maintain this service in the future or auxiliary service methods must be determined. This service needs to be verified by additional means.

STORM SEWER SYSTEM

1. Mechanics Hall Roof Drainage (North)

Mechanics Hall has two apparent locations of roof drainage discharge at this time. The north discharge location is routed to the west and through the open areas of Seaton Court and continues to the south. This roof drainage location will need to be relocated if it is to continue in use after the renovation. This relocation is due to all downstream piping being abandoned during the demolition activities.

There are a couple of potential options for future use in this location. The discharge could be routed to an existing 8" diameter storm main to the north of Mechanics Hall. Another potential option would be to reroute the drainage to connect to the east line.

2. Mechanics Hall Roof Drainage (East)

The east discharge location is routed to the south and then to the west connecting to the pipes coming through the open areas of Seaton Court. This roof drainage location will need to be relocated if it is to continue in use after the renovation. This relocation is due to all downstream piping being abandoned during the demolition activities.

There are a couple of potential options for future use in this location. The discharge could be routed to an existing 8" diameter storm main to the north of Mechanics Hall. Another potential



option would be to reroute the drainage to connect to the existing system to the east of Seaton Hall East, which is discussed in more detail in Item #7.

3. North Courtyard Sump

The north courtyard will exist in a sump condition that will require a pumping system to facilitate the removal of the collected storm water. It may also require the use of an underground storage system for detention needs. A duplex submersible pumping system is recommended for redundancy purposes. The preliminary calculations for the storage requirement are approximately 700 cubic feet of volumetric storage. This would equate to an approximate area 28' Long x 15' Wide. The discharge location of this pumped storm water could be north to the existing 8" storm water main or a connection to another piping/collection/pumping system incorporated in the new design.

4. Amphitheatre/Outdoor Classroom Sump

The Amphitheatre/Outdoor Classroom will exist in a sump condition that will require a pumping system to facilitate the removal of the collected storm water. It may also require the use of an underground storage system for detention needs. A duplex submersible pumping system is recommended for redundancy purposes. The preliminary calculations for the storage requirement are approximately 2,500 cubic feet of volumetric storage with an approximate area 40' Long x 23' Wide. The discharge location of this pumped storm water could be south to the existing 8" storm water main east of Seaton Hall East or a connection to another piping/collection/pumping system incorporated in the new design.

5. NW Corner Sump

The northwest corner of the expansion may exist in a sump condition such that the collected storm water could be piped to the south with gravity main. The discharge location for this area could also connect to another piping/collection/pumping system incorporated in the new building design.

6. Fab Shop Sump

The west Fab Shop entrance will exist in a sump condition that will likely require a pumping system to facilitate the removal of the collected storm water. It may also require the use of an underground storage system for detention needs. A duplex submersible pumping system is recommended for redundancy purposes. The preliminary calculations for the storage requirement are approximately 2,500 cubic feet of volumetric storage with an approximate area 40' Long x 23' Wide. The discharge location of this pumped storm water could be south to the existing 12" storm water main located at the northeast corner of Seaton Hall South, potentially requiring a new junction box. This system could potentially operate in a combined gravity/pumping system. There may also be a possibility of combining this with other underground storage conditions for the site.



7. Existing Seaton Court Drainage (East) and Relocation

As shown on the attached Exhibit, there are several storm water mains which will require abandonment to the east of the existing Seaton Court building. Unfortunately this abandonment will require the relocation of the existing roof drainage from Mechanics Hall. Item #1 addressed the northern discharge location. The other discharge option would be a 6” to 8” gravity main serving the Mechanics Hall roof drainage which could also be a collector for additional needs of the building expansion. This new gravity main would be installed to the point indicated which is an 8” gravity main to the south part of the campus system.

8. Additional Comments

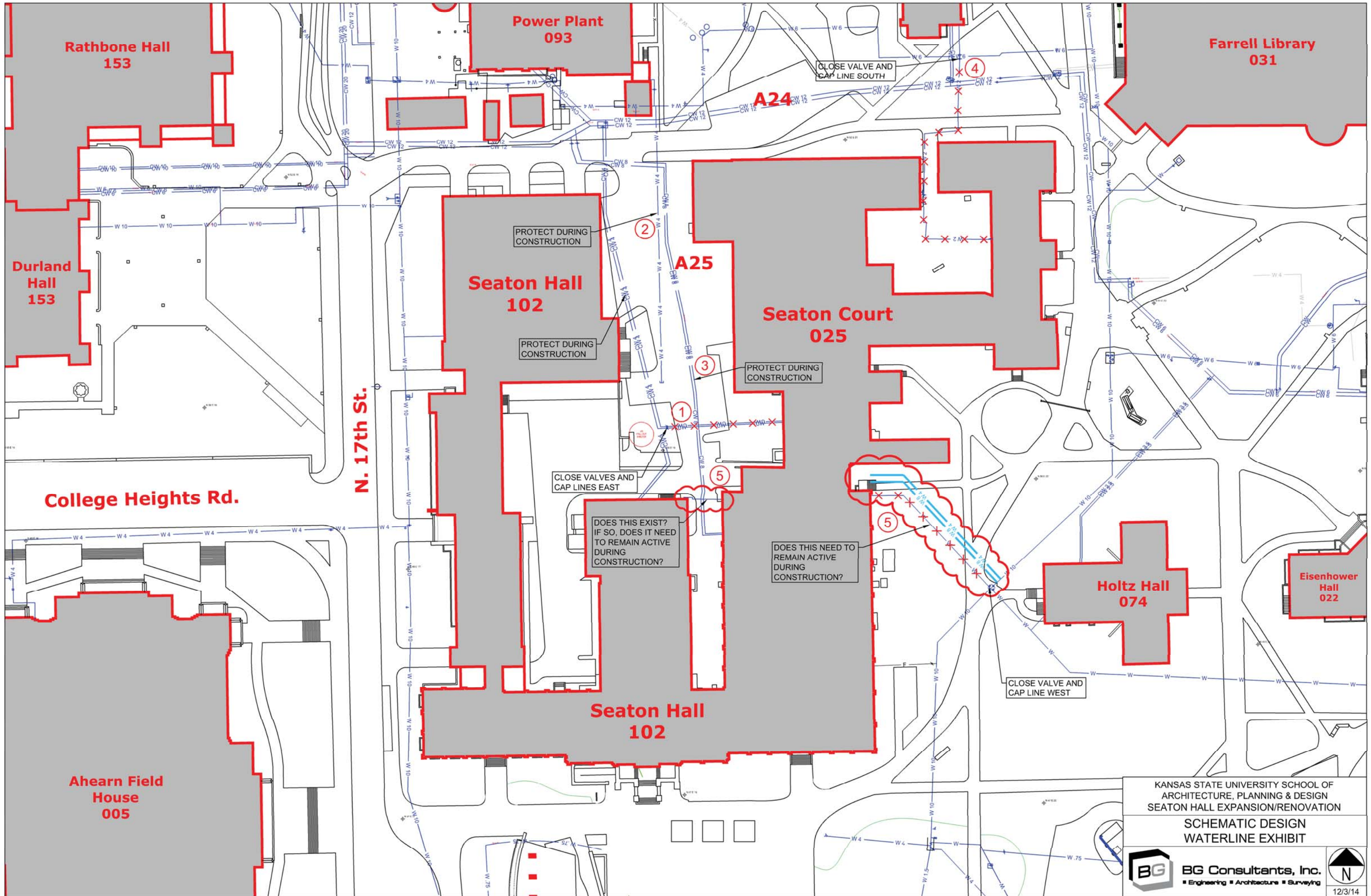
Another possible scenario could be combining one or more of the sump conditions together to reduce the number of pumping stations that would be required. Another option could be to remove all storage within the sump conditions and simply provide enough pumping capacity to remove the storm water from the sump areas. There will be a requirement for some underground storage within this project due to pre and post development conditions. There may be a need for additional survey/verification to determine the ability of the above proposals to work efficiently.

The underground storage components evaluated for these options were MC-3500 manufactured by ADS. Other sizes of storage systems may be evaluated upon final site storm water requirements.

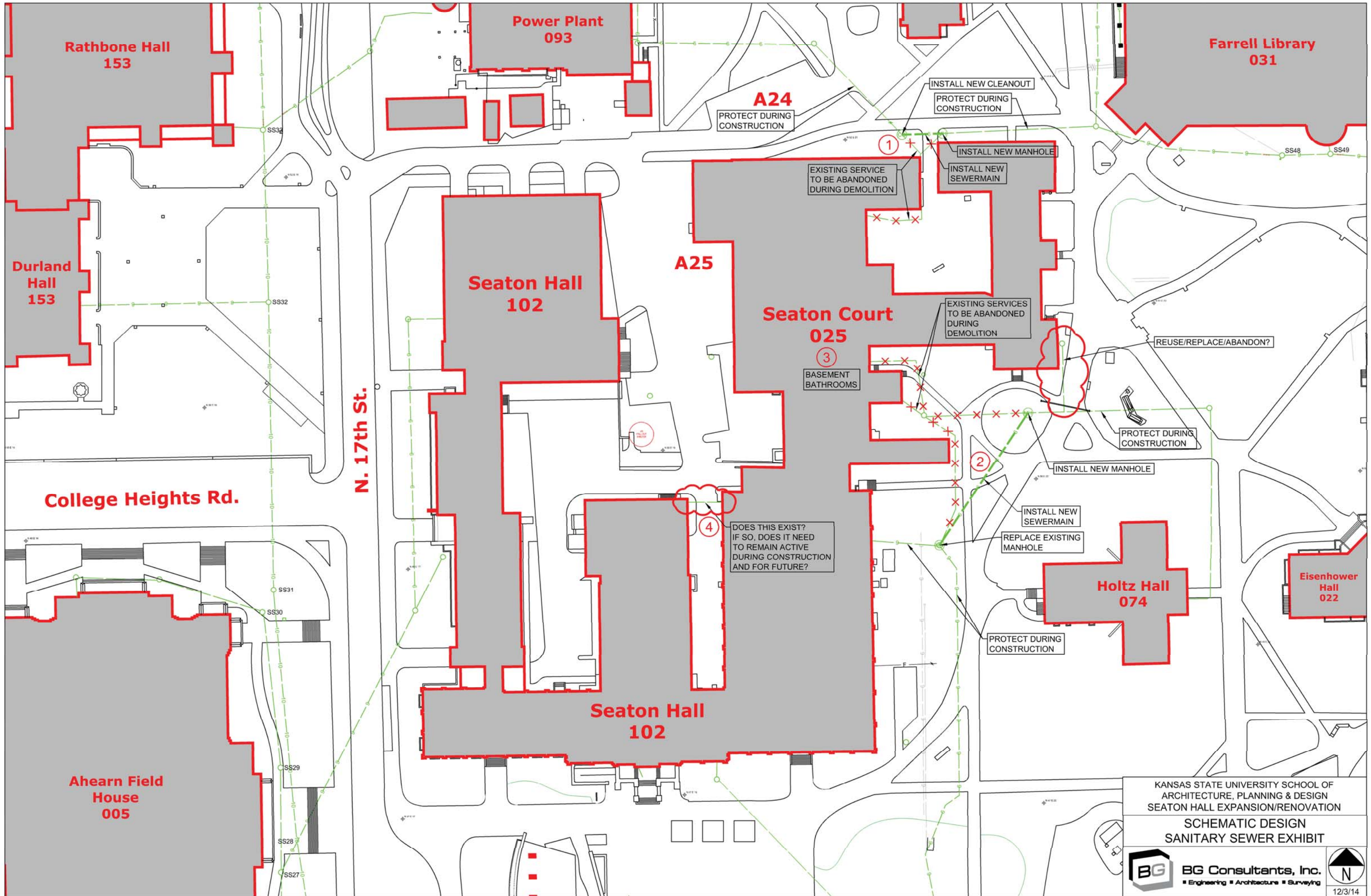
STEAM TUNNEL SYSTEM

No elevations were provided for the depth of the existing steam tunnel system during the completion of the topographic survey. However, the University has provided original Plan & Profiles for this system that currently serves Seaton Hall East and the Seaton Court Building. It would be beneficial to have the datum verified between the original drawings and the new topographic survey to further clarify potential conflicts.

Based on the very preliminary information provided, it appears that the existing steam tunnel system will be lower than the planned improvements for the building and site conditions. An evaluation should be made to determine the most feasible way to incorporate the existing steam system into the new building. Whatever is decided, it is recommended that a structural support system is constructed to protect the existing steam tunnel system from any potential stresses resulting from the new building or site development activities.



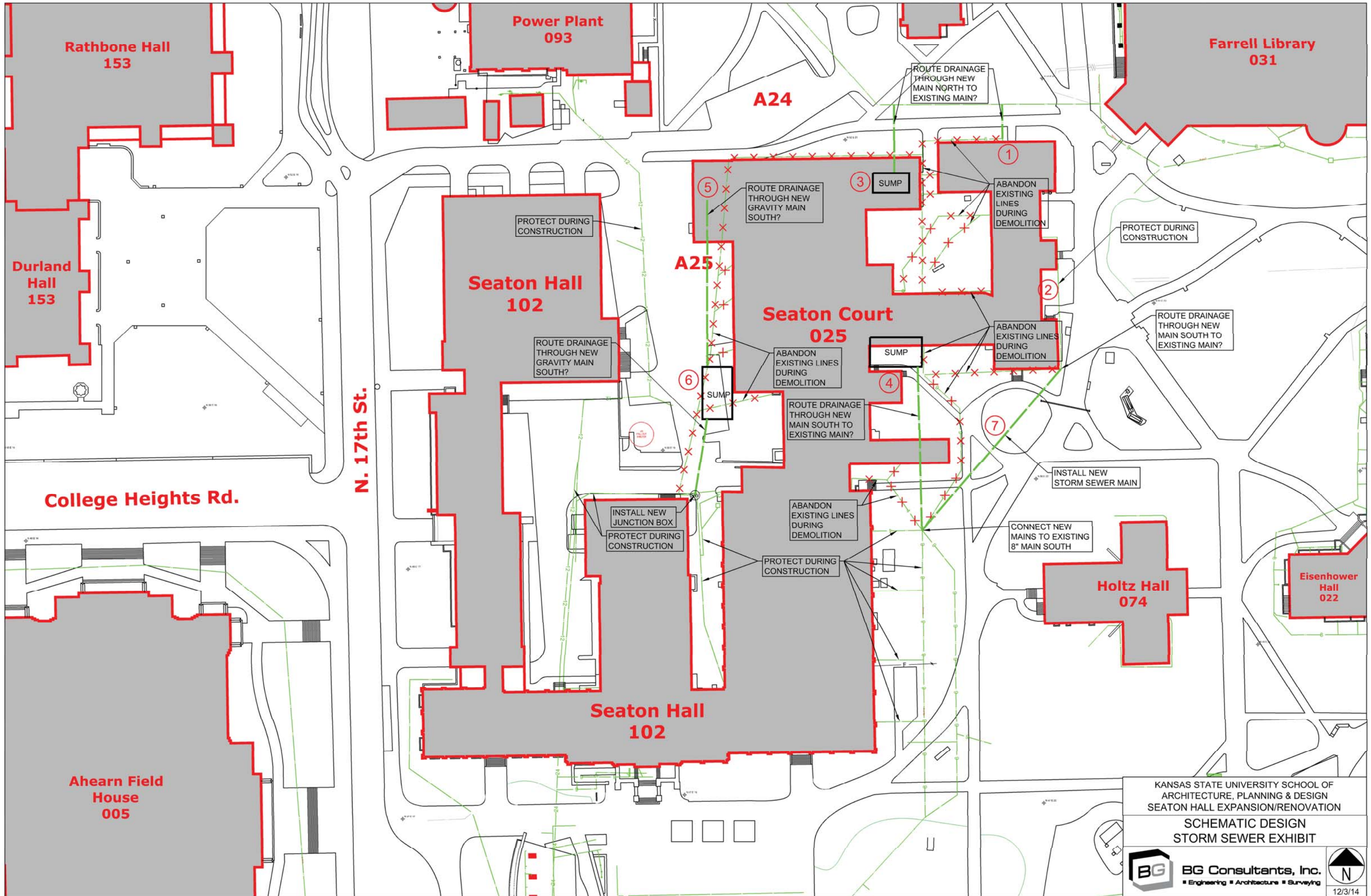
KANSAS STATE UNIVERSITY SCHOOL OF ARCHITECTURE, PLANNING & DESIGN
 SEATON HALL EXPANSION/RENOVATION
 SCHEMATIC DESIGN
 WATERLINE EXHIBIT



KANSAS STATE UNIVERSITY SCHOOL OF ARCHITECTURE, PLANNING & DESIGN
 SEATON HALL EXPANSION/RENOVATION
 SCHEMATIC DESIGN
 SANITARY SEWER EXHIBIT

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KANSAS STATE UNIVERSITY SCHOOL OF ARCHITECTURE, PLANNING & DESIGN
 SEATON HALL EXPANSION/RENOVATION
 SCHEMATIC DESIGN
 STORM SEWER EXHIBIT



4.0 Landscape Design Narrative

The following landscape design narrative has been prepared by Confluence.

Site Goals

The new Seaton Hall site improvements are anticipated to include a variety of spaces providing flexible programming to accommodate College of Architecture, Planning and Design needs. These improvements will also provide additional University gathering spaces for students utilizing this portion of the campus. The site design is intended to compliment the architectural character of the new Seaton Hall addition while also reflecting the aesthetic charm and character of the existing campus landscape surrounding the site.

The site is configured to allow for multiple levels of spaces, which maximizes opportunities for daylight to reach the lower levels of the building. The primary courtyard spaces will provide barrier-free student and faculty access either from adjacent areas of the site and/or through the adjacent buildings. These exterior spaces are intended to provide a variety of areas that can be programmed to accommodate student gatherings, outdoor classroom/presentation space, space for outdoor student work/project fabrication and exhibiting student work, quiet contemplation spaces, and flexible spaces in support of on-going alumni and recruiting outreach activities.

Design Intent

Mechanics Hall:

The existing Mechanics Hall structure is to be renovated and updated for College of Architecture, Planning and Design administration office and auditorium usage. The south entry will be removed, and an update to the eastern entrance into the building will be made to provide an accessible entrance. A new stair and ramp will be provided at the eastern entrance to compliment the architectural character and materials of the existing building. The landscape adjacent to each façade of this building will be removed and replaced with a combination of decorative shrubs, groundcovers, grasses, and turf.

Link, Jewel and South Courtyard Entries:

The southern side of the new Seaton Hall addition is to serve as the primary entry into the project. The entry plaza and courtyard spaces adjacent to the "Jewel" will be appointed with granite/stone paving in a linear pattern that highlights and accentuates the aesthetic character of the adjacent architecture. Within these plaza spaces, a series of matching low granite/stone walls and linear pavement accents reinforce a sense of motion and interaction with the landscape. Retaining walls located throughout the entry plaza and courtyard will be composed of poured in place concrete with veneer stone matching the building. Along the top of the retaining wall overlooking the courtyard, a 42" height stainless steel railing with a cable system will be provided for pedestrian protection, and all stair railings will be also be stainless steel. Two bicycle parking areas constructed with porous pavers are provided accommodating approximately 180 total bikes. Wider paved areas adjacent to the entry plaza and courtyard will be a mix of 30% granite/stone and 70% concrete in a complimentary linear pattern, with decorative saw cuts to create an enhanced pavement treatment. All pedestrian walkways that aren't part of the enhanced plaza paving areas will be constructed with a 6" thick concrete on 4" of aggregate to match KSU standards. These walkways include replacements of sections of the "I-70" pedestrian walkway.

A series of terraced ramps and retaining walls provide transition from the upper level plaza to the lower level courtyard space entering at the basement level. Retaining walls in this space will be a poured in place reinforced concrete, and will be clad with a series of lpe wood veneer to allow for seating opportunities. A series of concrete ramps and steps (along the east side of the courtyard)

will be provided for pedestrian access to the lower level courtyard space as well. A set of stairs entering the eastern entry "Link" between the existing renovated Seaton Hall building and the new Seaton Hall addition will be constructed cast in place reinforced concrete with Cottonwood limestone cheek wall veneer stone (to match the existing building façade) along the southern edge.

North Jewel Entry and Courtyard:

Along the northern façade of the new Seaton addition, a 12' concrete pathway runs east-west parallel to the building edge. This walkway will be replaced with a 6" thick concrete pavement on 4" of aggregate to match KSU standards. In addition to this, enhanced granite/stone pavers in the entry plaza and lower level courtyard space will be used to highlight the importance of these spaces (70% granite/stone, 30% scored saw cut concrete). As in the southern courtyard space, a poured in place reinforced concrete wall will be constructed with Ipe veneered bench terraces and limestone veneer covering areas where seating will not occur. A stainless steel cable railing matching the southern courtyard railing will also be included along the top of the walls separating the upper space from the lower level plaza space. Within the courtyard, a gas firepit feature with an automatic timer and emergency shut-off controls will be provided, complete with a low limestone wall and a decorative metal grate covering. This firepit feature is intended to serve as a focal point for this courtyard while also extending the use of this space.

FabLab Courtyard:

Within the FabLab Courtyard spaces, a north and south sunken courtyard are divided by a building extension creating two separate spaces. The south space will include a vehicular access ramp adjacent to the face of the building intended for the delivery of building materials for use by students and faculty. Minimal grading and new pavement will be required for access to this new space, however a series of poured in place concrete walls with 4" Cottonwood Limestone (or other to match building architecture) veneer will be needed to transition from the existing drive grades to the lower courtyard levels on both the north and south courtyard spaces. A stainless steel protective cable hand railing will be installed around the upper retaining walls where grade changes exceed 30". Low walls within the northern courtyard will be veneered with an Ipe wood façade to create seating spaces. Additional shrubs and groundcover will provide a working rain garden which will be connected to new drain inlets in the north and south courtyards and are intended to supply the underground detention cell. This detention cell will be used to irrigate the working green roof system placed on the rooftop of the FabLab extension described above.

Bid Alternate:

South of the ramp to the FabLab, a bike parking area accommodating approximately 42 bike spaces is to be placed with a set of pedestrian and one set of decorative aluminum vehicular access gates to a 8' height allowing for student key card access and emergency access. This area will not be repaved and existing paving in this alley area is to remain.

Site Strategies:

Pedestrian Circulation

Pedestrian Circulation on the perimeter walkways around the new Seaton site function as they currently exist on the site. Minimal disturbance occur along the "I-70" corridor walkway and the northern pedestrian walkway for the site in an effort keep site costs to a minimum. Primary adjustments to pedestrian access occur at the Northern, Southern, and Eastern entry points.

Mechanics Hall:

The walkways exiting the existing Mechanics Hall building will be highlighted by a new stairway and ramp flanked on both sides by cottonwood limestone veneer wing walls tying into the character of the existing building.

Link, Jewel and South Courtyard Entries:

Three points of access are located on the southeastern side of the project. This includes a new pathway to the first floor entry of "The Jewel", a first floor entry with stairs and ramp along the eastern face at "The Link" and a basement level entry highlighted by a series of stairs and ramped terraces. The series of terraces into the lower level courtyard space are intended to provide students with additional gathering spaces not found in other parts of campus. Additional bike parking will be located along the southern face of the Mechanics Hall per plans and a second set of bike rack parking is anticipated along the north-south axis leading from Union Plaza. The two areas of bike parking identified add approximately 180 spaces to the buildings current bike parking space. Paving under bike rack areas will be porous to reduce run off from excessive site hardscape.

North Jewel Entry and Courtyard:

Along the northern edge of the building, pedestrian access to enter the building is limited to the pathway entry entering "The Jewel" on the first floor level. This pathway connects to the existing campus pedestrian walkway and includes an exit out of the proposed auditorium located in the Mechanics Hall. Pedestrian circulation in the sunken courtyard is limited to access in and out from the Library gathering spaces.

FabLab Courtyard:

Spaces within the North and South FabLab courtyards are limited to pedestrian access in and out of the basement levels only. Vehicular access to the southern entry of the FabLab is provided as a convenience for materials deliveries. A 6.47% ramp is provided to allow forklifts to carry materials from the lower level courtyard space to the upper level alleyway access.

Bid Alternate:

South of the ramp to the FabLab, a bike parking area is to be placed with a set of pedestrian and one set of vehicular access gates allowing for student key card access and emergency access. This area will not be repaved and existing concrete in this alley area is to remain.

Materiality

Entry/Sunken Courtyard Paving:

Enhanced paving will be installed entering the north and south “Jewel” entry and will be constructed with a 3” thick granite paver placed on a 4” concrete slab. This treatment will also be used in the base levels of the north and south courtyard spaces.

Other Site Paving:

Walkways beyond the areas identified for enhanced paving will be constructed from a 6” concrete paving on a 4” aggregate sub-base. This methodology will be used primarily for walkways, stairs and ramps within the FabLab, eastern Mechanics Hall entry, eastern link entry, and connections to the I-70 pedestrian walkways and terrace ramps leading to the southern courtyard. A mixture of 80% stone pavers and 20% concrete placed in banding is also to be incorporated into the southern entry plaza.

Retaining Walls/Site Walls:

Within the main spaces of the FabLab, north and south entryways and eastern Mechanics Hall entry, a series of retaining and low walls will be used to transition grades and provide feature elements to the site design. On terrace walls within the north courtyard and transition walls into the lower level of the south courtyard, Ipe veneer will be constructed over reinforced concrete retaining walls. This treatment will also be carried through on the lowest retaining wall within the north FabLab courtyard. On larger poured in place concrete retaining walls within the north and south courtyards and FabLab Courtyard, a Cottonwood Limestone (or stone to match building façade) veneer will be applied to tie in with the character of the traditional campus walls. This veneer will also be used on low seat walls within the upper plazas of the north and south “Jewel” entries and stem walls at all stair locations.

Terrace Railings:

In locations where plaza and landscape zones are overlooking lower courtyard spaces, stainless steel cable railings will be used to provide safety railings around the top of the retaining walls. Panels will be constructed in 8’ sections at a 42” height. Cables will be spaced at approximately 4” on center.

Bike Racks:

Several bike rack locations can be found around the site, including 2 locations on the south side of the Seaton Expansion and one within a secured space south of the FabLab courtyard within the Seaton service alley area. The following campus standard bike racks will be used in the areas around the site - FS Industries Black Rubber Coated Hoop bike racks.

Water Flow/Drainage

The approach to drainage on the site will require a series of underground detention basins and pumps to move water into the existing storm drainage systems surrounding the site. Along the western edge of the building, a series of pick up drains are needed to collect water from the FabLab courtyards and place the water in underground detention cells within the southern courtyard space. This drainage will be accessible through pumps for irrigating green roof areas above the FabLab with a backup for larger storm events to pump overflow into the storm drainage system to the southern edge of the courtyard. Along the eastern side of the building, a second stormwater detention cell will be placed in the upper courtyard space of the southern entry. Water from the southern courtyard space will be picked up in catch drains and pumped into the upper holding cells. This water is also available for irrigation usage on site with overflow entering existing stormwater drainage systems. Water flowing down the ramp systems in the courtyard will enter rainwater plantings along the eastern face of the building for treatment and collection in the lower drainage collection before being pumped into the upper detention cells.

Planting

Proposed landscape for the Seaton Hall renovation and addition project will be composed of drought and cold tolerant planting common to the Central Kansas region. As the site limits of construction are limited to the edge of pavement along existing walkways, landscape areas will be limited with most of the landscape occurring along entries and in courtyard spaces. All landscape beds are to be prepared with a 6" depth mixture of topsoil and compost prior to planting allowing for establishment of newly installed landscape.

Mechanics Hall:

The historic character of Mechanics Hall creates the need for a unique landscape to the project tying in with the other historic buildings on campus. This landscape character includes larger shrubs around the foundation of the building. A 5 gallon deciduous shrub spaced at 5' on center is anticipated along the North, East and South faces of the building to restore what will be affected by renovation work.

Link, Jewel and South Courtyard Entries:

The area encompassed along the south side of the Seaton Hall addition is anticipated to be the highest intensity planting zones within the project area. Zones of new turf sod will be located in the lower level landing of the south courtyard, the area outside of the east entry and along the edges of new paving areas. One and three gallon shrub and perennial plantings will be placed along either side of the main "Jewel" entry walkway and along the I-70 pedestrian walkway. Additional perennials and grasses will be located along the eastern face of the Seaton expansion to filter rainwater prior to entering the stormwater detention holding tanks. (6) Six 6" caliper canopy trees will be placed along the east-west axis walkways to frame views of the "Jewel" entry with a small grove of (3) three ornamental trees placed in the planting area along the I-70 walkway area.

North Jewel Entry and Courtyard:

Along the northern "Jewel" entry, a mixture of one and three gallon perennials and shrubs will flank either side of the walkway within planting beds. This landscape will carry out into the entry plaza where shrubs and groundcovers will fill planters below two specimen 6" caliper canopy trees. Open areas between the northern face of the building and back of the existing campus walkway will be minimally planted with turf grass sod. Within a series of terraced planters in the sunken north courtyard, a combination of one and three gallon perennial, shrub and groundcover plantings will create a landscape with minimal maintenance requirements.

FabLab Courtyard:

Landscape along the FabLab Courtyard spaces is anticipated to be minimal. A functional landscape of 1 gallon potted grasses will be placed from the edge of retaining wall south to the edge of the southern ramp. Turf will be placed on the upper terrace adjacent to the walls where utility pads are not occupying space along the realigned service drive. Lower terraces will also be planted with 1 gallon grasses and perennials. A series of (5) five 6" caliper canopy trees will be placed along the western edge of the existing service drive south of the existing parking in and effort to soften views from the upper levels of the building.

Irrigation

Irrigation of the new Seaton Hall site will be limited. As mentioned in the water flow/drainage section, water will be collected within stormwater detention cells for use in irrigating green roof systems; however this minimal amount of water will require a supplemental irrigation line to make up any water that cannot be generated by the detention. Pumps will be required within the FabLab courtyard spaces and the South Courtyard space to generate enough pressure to irrigate upper roof garden areas.

Irrigation within the other portions of the site will be limited to drip irrigation in all new planting beds and spray irrigation in all lawn panel areas on the north and south sides of "The Jewel" including planted zones in lower courtyard spaces. All irrigation will be limited to the back of the existing walkways along the north and eastern edges of the building.

Lighting

Pedestrian Lighting:

Along the main pathways surrounding the site, the campus standard pedestrian light should be incorporated to tie in with the other lighting along pathways. There are currently 3 fixtures along I-70 that will need to be relocated to work with the new walkway alignments. 5 additional campus standard pedestrian pole lights are needed along the eastern curb of the service alley with one additional fixture to the north along the adjusted curb line for the English Services Building.

Tree Lights:

Within the site, 3 tree up lights in the northern entry plaza and 9 tree lights in the southern plaza in the locations identified highlighting the proposed trees. These fixtures would be mounted within the trees with adjustable tree straps to allow for adjustments to the fixture as the trees grow.

Column Bollard Lighting:

The column bollard lights are a taller bollard (8-12') meant to highlight the main north/south entryways. The north entry will be highlighted by 3 column bollards and there will be 5 column bollards of the same style as you exit the southern entry from "The Jewel"

Step Light:

The step light locations are meant to provide a clear pathway in all of the stair areas including the new eastern entry stairs to the existing Mechanics Hall, the stairs terracing into the south courtyard and the exit on the eastern side of the building. In addition to these fixtures, a lighted railing is proposed to highlight these pathways as well.

Strip Lighting:

Within the courtyard areas along the seat wall height walls, an inset in the wall would include an LED strip light placed along the edge of the wood veneer. This fixture could be color changing, but would provide lighting on the ramps walking down in the southern courtyard and provide some lighting to the walls in the Northern FabLab court, North Courtyard around the fireplace feature and the walls coming out of the East Entry of the Link.

Grading

Site grading efforts for this project are intended to be minimized as much as possible beyond the major excavations needed for the North, South and FabLab courtyards allowing for access to the basement levels of the building. As mentioned above, grading within these zones will allow for surface drainage to temporary detention facilities. Additional excavation to handle these structures will be detailed within the Civil Engineers scope of work addressing size and additional preparation needed to complete the required work. The conceptual site plan within the schematic design drawing package identifies the proposed grading changes and highlights areas where new grading is to take place.

5.0 Building Design Narrative

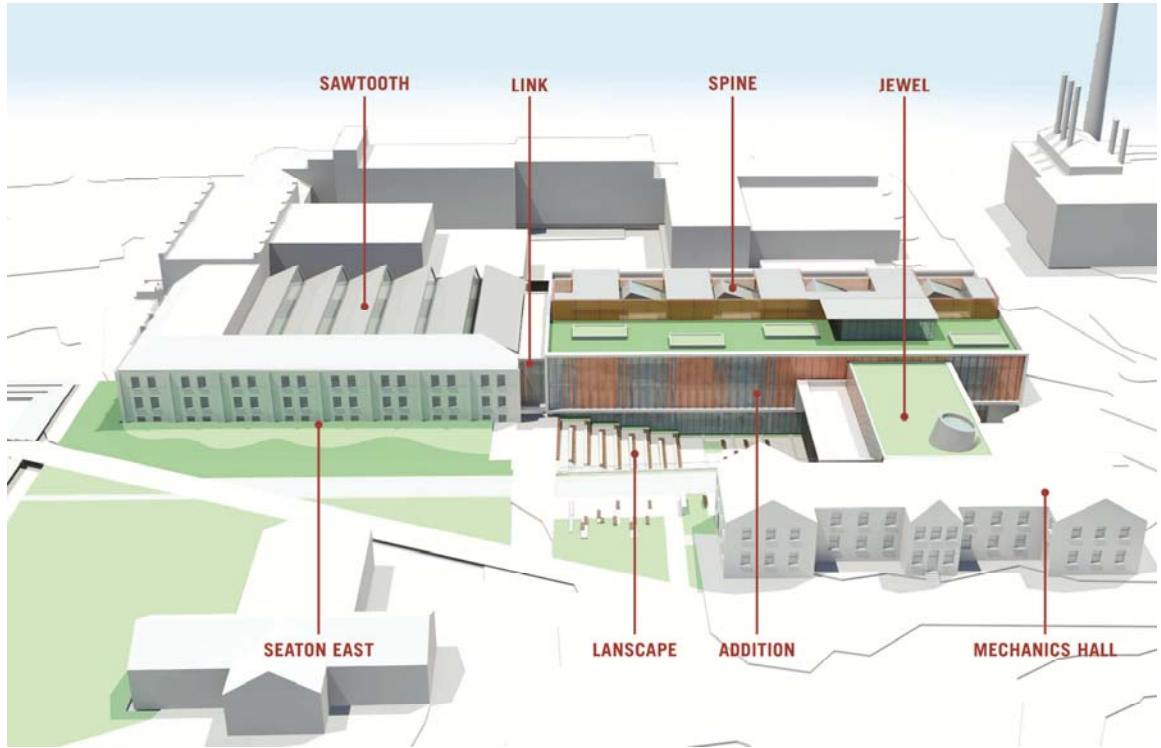
The following narrative describes the project's building design.

Building Design

Building on several design features established in the Concept Design phase, including the development of a clear and memorable plan with a highly rational distribution of programmatic elements, the Design Team commenced the Schematic Design in September 2014. Building on the concept level façade studies, the team sought to develop an exterior expression that creates a clear connection with the heavy limestone edifices of Mechanics Hall and Seaton Hall through material selection and harmonizes with the syncopation and rhythms of the existing building structure, yet distinguish itself to reflect the current aspirations of the College as a forward thinking, state of the art institution for design education.

Design Features

- The **Link**, connecting **Seaton East** to the **Addition** to create a smooth spatial transition between the existing and new building;
- Studios arrayed contiguously on two floors along the east façade, to create flexibility and encourage collaboration between studios, but most significantly to expose the workings of the College to the greater academic community walking along “I-70;”
- Faculty offices and “pods,” located on the west façade over two floors;
- An axial two-story **Spine**, capped by North facing light scoops running between the faculty offices and studios and bringing natural light into the “collaboration corridor.” Programmatically, this zone, houses the crit spaces for APDesign and the experience continues between old and new with renovating the original **Sawtooth** skylights in Seaton East;
- The **Jewel**, intended as a minimalist, taught and transparent cube, is intended to be the most contemporary component in the composition, and act as a magnet to attract the University into the heart of the APDesign Complex containing social spaces, the Gallery and Information Commons;
- **Mechanics Hall** as a “destination” housing public program, the Dean’s Suite, Student Services and the Auditorium;
- A depressed **Landscape** feature that descends towards the Jewel from “I-70” and acts as an outdoor classroom, social space, that also serves to bring natural light into the basement floor fabrication laboratories and the new library.



5.1 Interior Architecture Narrative

The following narrative describes the design intent of the project's interior architecture.

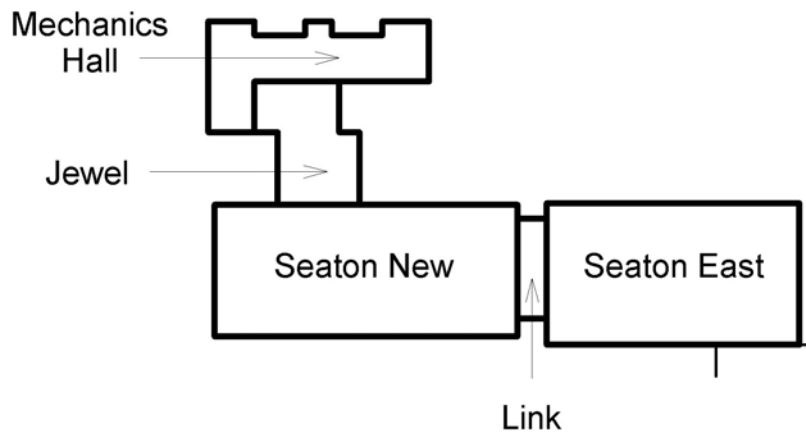
Interior Architecture

The project design process began with an in-depth programming phase developed by Kansas State University Campus Planning & Facilities Management, the College of Architecture, Planning, and Design and lead by Ennead Architects. This programming process helped to bring into focus and identify design principles, functional requirements, adjacency relationships and detailed space needs and resulted in the Architectural Space Program issued April 2013.

Using the program document and additional information gathered during Schematic Design from ongoing meetings with APDesign, BNIM Architects and Ennead Architects have developed the schematic design approach and plans included in this Schematic Design Report.

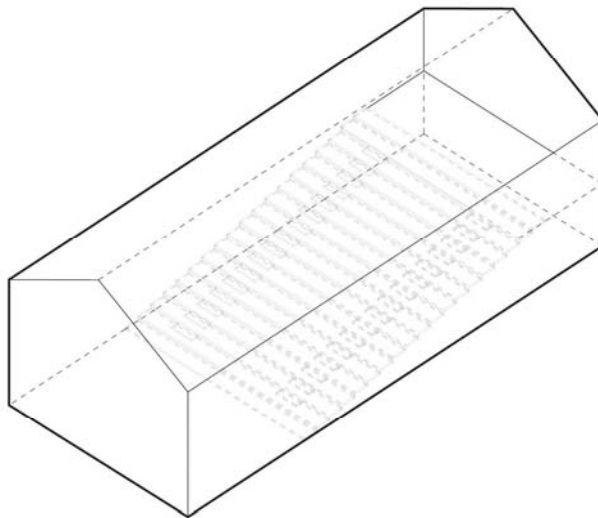
Schematic Design Space Layout

The following section is broken into five distinct building areas, Mechanics Hall, The Jewel, Seaton New, The Link, and Seaton East. Within Seaton New and Seaton East are the architectural studios. These studios are to be separated by an area referred to as the “Cross Grain”. This area typically aligns with entries to the studios and is simply an area denoting separation between studios. The interior layout approach for the building is to provide the users clarity and connection throughout the building while maximizing access to daylighting and views to the exterior. Longevity, functionality, good circulation, cleanliness and sustainability are driving factors when planning the layout and material selections. References to furniture, furniture layouts, Fab Lab equipment is for reference only. Furniture and equipment (FFE) is not included in this package.



Mechanics Hall

- **Auditorium:** This technology-rich, multipurpose academic space is intended to serve a capacity of 300 occupants with fixed seating for 120 and retractable seating for an additional 180. When retracted, the area can be used as a multipurpose room with banquet seating for 100+. This space has direct access to a public lobby/gathering space and is located adjacent to the catering kitchen/staging area. Refer to IT/AV, structural and mechanical narratives.



AUDITORIUM

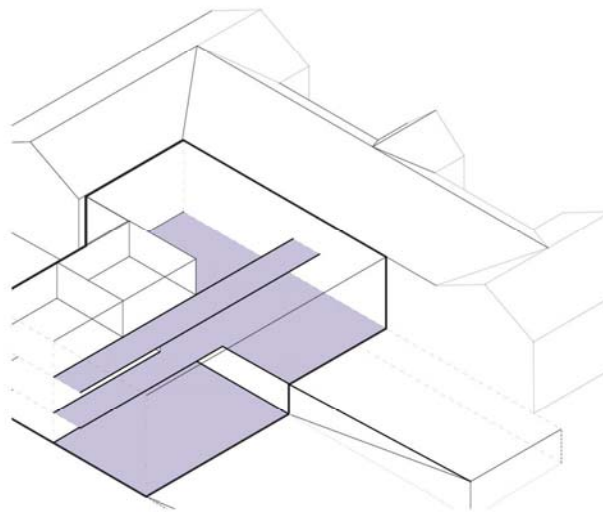
- Acoustics
 - Walls
 - Ceilings
- Lighting
 - Seating
 - Paths
 - Presenter
- IT/AV
- Seating
 - Fixed
 - Mobile
 - Tablet Arm
- Floor Finish
 - Durability
 - Acoustics
 - Maintenance
- All finishes relate to "Jewel"
- Exposed Structure (new perimeter columns and trusses above)
- Blackout and Shades

Diagram above illustrates key issues when planning for this space:

- **Auditorium Control Room:** This space serves the Auditorium with instructor-accessible media equipment controls. It is accessed from the upper seating area.
- **Auditorium Storage:** This space serves the Auditorium as storage space for podia and event related moveable furniture.
- **Catering Kitchen/Staging:** This space serves the entire College for event catering needs. This space is to be designed as a warming kitchen only, with ample space for layout, dedicated electrical outlets for full size refrigerator and warming boxes, a residential dishwasher, sink and garbage disposal. No cooking is to take place here therefore no grease traps or cooking equipment should be provided.
- **Administrative Offices**
 - **Deans Reception:** This space accommodates up to 4 occupants in a casual seating/lounge area while they wait to visit the department administrators.

- **Assistant to the Dean:** This office accommodates one occupant in a one person office setting.
- **Dean:** This office accommodates up to five occupants in a one-person office setting. It is organized to have a casual conversational area for up to five people, and a concentrated work area.
- **Budget Director:** This space serves as the primary workspace for part time student assistants. The office accommodates three occupants in a three-person office setting.
- **Accounting:** This space should accommodate two to three occupants in a typical one-person office setting.
- **Communications:** This space should accommodate two to three occupants in a two-person office setting.
- **Student Work Area:** This space accommodates up to three occupants in open office setting.

The “Jewel”



JEWEL

- Transparent/Translucent
- Prominent Materials
 - Glass Railings
 - Higher level floor finish
 - Higher level wall finish
 - Higher level ceiling finish
- Simplistic stair detailing
- Acoustics
- Glass and Solid Interior partitions
- Daylight Control
- Built in or fixed seating
- Display millwork
- Graphics
- Exterior Materials define edges of Jewel

Diagram above illustrates key issues when planning for this space:

- **Vestibule:** This space is a mechanical air lock, formal entry, and walk off mat area. This space will have handicap push button access and be the primary access control point for the building(s). All building entrances meet ADA accessibility standards.
- **Information Commons/Lobby:** These spaces are to be used for ingress and egress of building occupants through climate controlled vestibules, and their location in the building reinforces the clarity of the building layout. Digital way finding will be provided at all entrances. Lobby spaces are to accommodate informal all-school gatherings. Primary

vertical circulation is part of and adjacent to these spaces. These spaces encourage the greater University community to pass through the College. Space for the display of College projects including full scale mockups are provided.

- **Library**

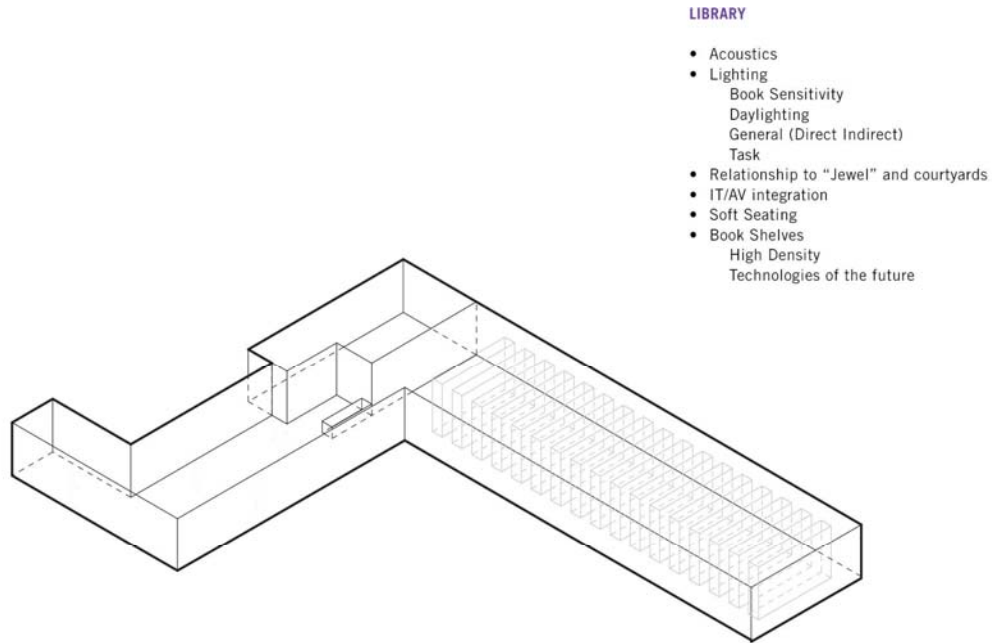


Diagram above illustrates key issues when planning for this space:

- **Special Collections:** This space is a conservation environment for sensitive and valuable Library collections. The space is secure and accessible only from the Library. 24 hour accessibility to the entire College is encouraged through digitization of the collection as well as physical transparency between the room and to the primary public circulation path. This area will have specialized climate and humidity control for preservation of the collection.
- **Quiet Reading Room/Group Study:** This space serves the needs of students and faculty who desire a collaborative study environment in which to conduct research, collaborate on presentations and meet with their colleagues. This space is located near the periodicals, circulation desk, and north courtyard and should be acoustically separated from the Stacks and Quiet Study Areas and Fab Labs. Furnishings should consist of a mix of worktables with recessed power and data outlets as well as soft seating with nearby power outlets.
- **Office:** This office serves as the only private workspace for the use of Library staff. It provides a quiet place to conduct sensitive meetings with staff, work in a quiet environment and conduct private business on behalf of the Library. The office is not "owned", but is shared between all Library staff. The office accommodates two to three occupants in a one-person office setting.
- **Reading Area:** This space serves the needs of students and faculty who desire a solitary, quiet study area in which to conduct research. Integrated within the stack environment, the quiet study area offers a mix of group study tables.

- **Periodicals:** This space serves as the primary collection of periodicals in Weigel Library. The periodical collection is updated regularly and is one of the most used areas of the Library, it is located in a highly accessible, both visually and physically, location within the Library.
- **Display:** This space is curated by the Librarians and serves as a way to connect Library holdings with College wide events, exhibits, and lectures. It is also a place for the Library to post announcements and other informational materials.
- **Circulation Desk:** This space is where all formal Library transactions occur and where users can meet with the Library staff. Ample under counter and back counter storage must be provided for supplies and library equipment.
- **Stacks:** This space serves as the primary collection of print based research material for the College. The library has daily hours of operation and user access is limited to these times. The library is ideally located along the primary public circulation path and should have a high degree of visibility and accessibility to all students and faculty.
- **Weigel Director:** This space accommodates one occupant in office seating with full view of Circulation Desk and entry to Special Collections.
- **Crit/Seminar Rooms/General Classrooms:** These 24-hour multipurpose academic spaces are intended to serve an average capacity of 30 occupants, with multiple sizes desired. Primary function is to accommodate formal and informal design reviews/pin-ups/critiques which can range in size from 2 to 20+ participants. Refer to IT/AV narrative.
- **Gallery (Chang):** This space is intended to serve the College and greater University communities as a venue for rotating exhibits, generated by the College and those travelling from other institutions/artists. The space may also be used as a critique space during mid and end of year reviews. The space must be a secure environment with lockable and alarmed doors. Security cameras must be provided. Moving partitions, model stands and other display cases are to be stored in an adjacent storage room (FFE). The space should be fit out for multimedia artworks. Digital signage should be provided at the entrance along the public corridor. Refer to IT/AV narrative.
 - **Gallery Storage:** This space serves the Chang Gallery as storage space for movable partitions, model stands and other display cases. It also stored shipping materials for travelling exhibits.

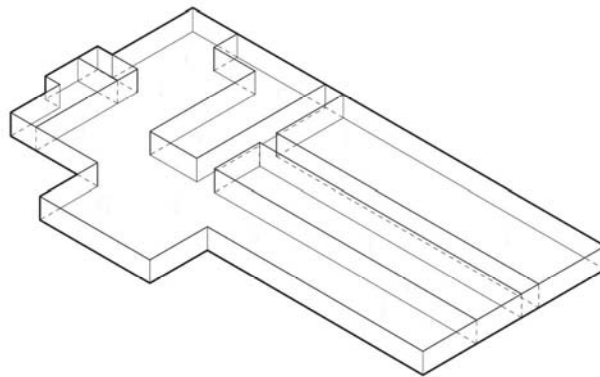
Seaton New

- **Design Studio:** These 24-hour multipurpose academic spaces are intended to serve a maximum capacity of 18 students at individual workstations (FFE). The design studios are the primary laboratory for all design students. Rooms must address the need for independent student research as well as formal and informal instruction. Flexible separation and furniture systems (FFE) are desirable. Rooms will have significant plug loads and bandwidth requirements as each workstation will be equipped with at least one power desktop computer.
 - **Alcoves Clean-Up:** These spaces provide centralized clean up spaces for the design studios. They are to be readily accessible for immediate cleaning needs 24 hours a day.
 - **Separation:** Between studios in the areas called "Cross Grain" that typically align with studio entries are large pieces of mobile millwork. These piece of millwork incorporate built-in tack surfaces, storage, IT/AV for display and presentation,

and flexibility/expandability for further visual and sound separation from studio to studio.

- **Technology Rich Classroom:** This technology-rich multipurpose academic space is intended to [size of this room has been reduced from 1,500sf to 1,193sf. At 25sf per person, the room accommodates 48 people.]be a teaching lab for technology instruction. It will also be available for students to use as a rendering farm. It should be located in the building in proximity to primary circulation routes within the building. Refer to IT/AV narrative.
- **“Collaboration Corridor” Crit/Seminar Rooms/General Classrooms:** These 24-hour multipurpose academic spaces are intended to serve an average capacity of 30 occupants, with multiple sizes desired. Primary function is to accommodate formal and informal design reviews/pin-ups/critiques which can range in size from 2 to 20+ participants. Crit Rooms are to be located along primary circulation routes within the building. All crit rooms will have integrate IT/AV and mobile technology carts. Movable partition will be incorporated in the design of these crit rooms to allow for subdivision.
- **Faculty Offices:** These spaces should be in groups near Design Studios and informal student gathering areas to facilitate interactions between students and faculty. They are to accommodate two to three occupants in a typical one-person office setting. In general, offices should be organized to facilitate a conversation zone at the door, a collaborative space for two to three people, and a concentrated work area.
- **POD:** These spaces are to be distributed throughout Seaton New adjacent to faculty offices, and generally situated along primary circulation paths. They are intended to provide informal space for individual students or small groups of students who are working on class projects, studying for exams or other academic activities. The spaces are to be comfortable and inviting, and include various amenities such as casual chairs, sofas, tables, (FFE) access to natural daylight, abundant power outlets and wireless data access. One Social Pod should have lockers for use by student organizations, and should be fit out with tables and chairs in lieu of lounge seating. One Social Pod should be provided with student mailboxes.
- **Penthouse:** This 24-hour multipurpose academic space primary function is to accommodate formal and informal design reviews/pin-ups/critiques which can range in size from 2 to 30+ participants. This spaces unique location accommodates flexibility for more formal events as a roof top lobby and event space for tables and chairs. The room opens to an outdoor roof terrace.
- **Roof Terrace:** Atop the new Seaton building will be a roof terrace that could accommodate up to xx occupants. The roof terrace can be accessed via a convenience stair from level 2 and two egress stairs are provided at the north and south ends of the terrace.
- **Fab Lab:** Refer to Fabrication Lab Narrative for more detailed information and requirements in this area. There are many pieces of equipment and unique requirements in this area. These spaces are for use by College students and faculty who have been formally trained on the equipment by the Fabrication Lab staff. These spaces accommodate a variety of functions and equipment including digitally controlled fabrication tools all of which are already owned by the college (FFE). Some spaces house flammable materials and must meet the stringent code requirements of high hazard occupancies (Metal welding). Most of the equipment is heavy and must be located at grade in a basement. The largest/heaviest equipment includes the 5,500# (approx.) CNC router, 4,000# (approx.) metal machining lathe and 3,500# wood milling machine. Space must be provided for servicing of large scale equipment and

loading/deliveries of large scale materials. Compressed air systems, dust collection systems and robust mechanical, electrical and fire suppression systems are anticipated. All laboratory equipment is existing, and will be furnished and installed by owner, see sheets A801 & A802 for specific information related to the existing equipment.



FAB LAB

- Walls
 - Abuse-resistance/high-durability
 - Minimize dust accumulation
 - Selective acoustical separation
 - Selective transparency of spaces
 - Tool and material storage
 - Display ability (finish or mockup work)
 - Presentation space
 - IT/AV tie-in areas
 - In-process work storage
- Floors
 - Abuse-resistance/high-durability
 - Easily re-finished or maintained
 - Floor drains
 - Supports equipment stabilization, reconfiguration, loading
 - Floor power distribution
- Ceilings
 - Acoustical barrier/absorption
 - Recessed lighting
 - Minimize dust accumulation
- Doors
 - Abuse resistance/high durability
 - Selective transparency (solid, glass or glass lights)
 - Combination of doors
 - Overhead
 - Swing
 - Selective security

Diagram above illustrates key issues when planning for this space:

- **Hallway & Vestibule:** Transition for Jewel's Information Commons/Lobby into Fab labs with Restrooms and Janitors Closet.
- **5th Year Thesis Design Studio/Product Design Mock up:** This 24-hour multipurpose space is intended to serve as a design studio for the thesis year of IAPD Furniture Design students and as an accessory space to the IAPD Design Studios for the fabrication of full scale mock-ups. This room should be located adjacent to the Fabrication Studios and should support up to 8 students at individual workstations (FFE). Rooms will have significant plug loads and bandwidth requirements as each workstation will be equipped with at least one power desktop computer
- **LARCP/ Fluvial Lab:** This 24-hour multipurpose academic space is intended to serve as research incubator space for faculty and/or student based projects. This space contains materials and equipment for the testing of landscape materials including both soft- and hardscape materials. A stainless steel double compartment sink is required.
- **Lighting Lab:** The Lighting Lab is both an instructional classroom as well as a research studio for the study of light sources and their impact on the built environment. The room must accommodate mockups, student research and formal instruction. The Lab will have multiple light sources installed along the perimeter walls and hung from the ceiling. Provision for re-lamping is required.

The Lab will require an above average number of independently circuited electrical outlets.

- **Printmaking Lab:** This space contains printing presses and is for student and faculty use. It should be located adjacent to the Glass Studio where the two spaces can share a common layout area. Provide secure storage for flammable solvents used in the printmaking process. Proper ventilation is required to address odors caused by the printmaking process. A stainless steel double compartment sink is required.
- **Glass Lab:** This space contains glass electric kilns for student and faculty use. It should be located adjacent to the Printmaking Shop where the two spaces can share a common layout area. Provide rated partitions as required by code.
- **Fabrication Lab Office:** This space is a single occupancy office for use by the Fabrication Lab Manager, Instructor, and Technician. Visual transparency between this office and the Fabrication Lab is desirable. This office is to accommodate two to three occupants in a typical one person office setting. The office layout should have contiguous workstations and a shared collaborative worktable (FFE).
- **3D Print Lab / Student Workstation:** This is a shared office for three full time staff and one part time assistant. The office layout should have contiguous workstations and a shared collaborative worktable (FFE).
- **Upholstery Lab:** This space is available for student use on a limited basis. This space contains industrial sewing machines and layout space for student projects.
- **Finishing Lab:** This space houses a finishing lab including a spray booth, vaccum former, steam bender, fire cabinets, glue clamps, and tables for layout space (FFE). Provide proper ventilation to control the fumes/odor generated by using the spray booth and the chemicals used in finishing processes. Spray booth is existing, and will be re-installed by Owner (FFE).
- **Wood Lab:** This room is for; unloading / loading of materials, storage of wood materials, rough cutting, routing, milling, shaping, thermoforming, and sanding of wood. It should also provide for staging, and for the storage / display of student projects. The space is intended to be a limited access lab for all students with supervision by either, the Fabrication Lab Manager, Instructor, or Technician. This space contains equipment and some light power tools.
- **Metal Lab:** This room is for; unloading / loading of materials, storage of metal materials, rough cutting, shearing, milling, shaping, bending, and grinding of metal. It should also provide for staging, and for the storage / display of student projects. The space is intended to be a limited access lab for all students with supervision by either, the Fabrication Lab Manager, Instructor, or Technician. This space contains equipment and some light power tools.
- **Model Making Lab:** The space is intended to be a limited access lab for all students with supervision by either, the Fabrication Lab Manager, Instructor, or Technician. This space contains equipment and some light power tools.
- **Staging / Pin-Up:** Small pin-up and crit review corridor.

- **Fabrication Lab Storage:** This space holds a Heliodon light simulator. The Heliodon is existing, and will be re-located by Owner. (FFE)
- **Fabrication Lab Mechanical:** This space contains primary air compressor and vacuum pump for the CNC machine. The equipment is existing, and will be re-installed by Owner. (FFE)

Link:

- **Commons:** On both level 1 and 2 a series of ramps and stairs form a gathering space for students to collect, socialize, and hold informal discussion similar in concept to the existing Pierce Commons in Seaton East. On level 1 the access connects the College to the greater university and is a part of a larger master plan connection to future buildings representing a critical piece of circulation through the campus. These areas are primarily circulation but will have areas of seating, technology and pin up areas for display.

Seaton East

- **Studio:** These 24-hour multipurpose academic spaces are intended to serve a maximum capacity of 18 students at individual workstations. The design studios are the primary laboratory for all design students. Rooms must address the need for independent student research as well as formal and informal instruction. Flexible wall and furniture systems are desirable. Rooms will have significant plug loads and bandwidth requirements as each workstation will be equipped with at least one power desktop computer.
 - **Alcoves Clean-Up:** These spaces provide centralized clean up spaces for the design studios. They are to be readily accessible for immediate cleaning needs 24 hours a day. Space should be provided for an industrial sized hand sink.
 - **Separation:** Between studios in the areas called "Cross Grain" that typically align with studio entries are large pieces of mobile millwork. These piece of millwork incorporate built-in tack surfaces, storage, IT/AV for display and presentation, and flexibility/expandability for further visual and sound separation from studio to studio. The divider does not extend to ceiling.
 - **Plotting:** This is a student run club that should be located proximate to the Design Studios. This secure environment will house several large scale color and black/white plotters for student use. Access is by programmable proximity card or keypad activated lock.
 - **Laser Cutting:** This is a student run club that is located proximate to the Design Studios. This secure environment will house several laser cutters for student use. Access is by programmable proximity card or keypad activated lock. Provide rated partitions as required by code and proper ventilation for odor control.
- **"Collaboration Corridor" Crit/Seminar Rooms/General Classrooms:** These 24-hour multipurpose academic spaces are intended to serve an average capacity of 20 occupants, with multiple sizes desired. Primary function is to accommodate formal and informal design reviews/pin-ups/critiques which can range in size from 2 to 20+ participants. Movable partition will be incorporated in the design of these crit rooms to allow for subdivision.
- **Department Office Suites**
 - **Reception:** This space is to accommodate 1-4 occupants in a casual seating/lounge area while they wait to visit the department administrators.

- **Shared Conference/Crit:** These spaces are to be used for formal meetings, training, and teleconference activities. The spaces are to be located along primary building circulation paths to permit additional use as seminar space. Smaller rooms should accommodate up to 12 occupants and larger rooms up to 20 occupants around a conference table. Additional seating along perimeter walls should be provided.
- **Admin/Professional Coor/Stdnt Internship Coor:** This space should accommodate one occupant in open office seating with full view of Reception and Departmental Office entrance.
- **Associate Head:** This space should accommodate two to three occupants in a typical one-person office setting. In general, offices should be organized to facilitate a conversation zone at the door, a collaborative space for two to three people, and a concentrated work area.
- **Department Head:** This space should accommodate two to four occupants in a typical one-person office setting. In general, they should be organized to facilitate a conversation zone at the door, a collaborative space for two to four people, and a concentrated work area.
- **Shared Copy/Files:** This space provides dedicated storage for departmental supplies and equipment.
- **Storage:** This space provides dedicated storage for departmental supplies and equipment. This space provides secure storage of student projects for departmental accreditation.
- **Oz Office:** This office serves as the primary workspace of the OZ Journal student editors. It provides a place to meet with staff, work in a quiet location and do business on behalf of the Journal. The office should accommodate two to three occupants in a two-person office setting. In general, offices should be organized to facilitate a conversation zone at the door, two individual workstations and additional seating for guests.
 - **Recep/Work:** These spaces are to accommodate up to 4 occupants in a small workroom environment. This room will serve as a reception area for guest as well as a flexible work area for production and sales. The OZ Journal office suite should be located proximate to primary paths of travel and nearby Design Studios.
 - **Storage:** This space serves the OZ Journal as storage space for files as well as current and past issues of the Journal.
- **IT Room:** This office is to accommodate four occupants in a collaborative workroom layout. Individual workstations should be provided for up to four individuals, with shared worktables in the center of the room (FFE). This office is both workroom for servicing equipment as well as a place to meet with students and faculty to discuss computing issues.
 - **Queuing:** A Dutch door or service counter should be provided to the IT Queuing area for service needs. This reception area is to accommodate 1-2 persons who are waiting for technology service from the Shared IT.
 - **IT Storage:** This space serves the Shared IT Workroom/Office Suite as secure storage space for shared technology equipment and service components.

General Building Support Spaces

- **Restrooms:** These paired spaces of men's and women's toilet rooms are centrally located in the building areas Mechanics Hall, Seaton New, and Seaton East. Actual numbers of fixtures determined by the occupancy per Code Approach Narrative.
 - **Single Stall restroom:** it is preferred that there be one of these at each restroom area if possible. They would be accessible restrooms.
 - **Lactation Room:** the requirements for this space are a small sink, a comfortable chair, a shelf, power, small refrigerator, and lockable door.
- **Janitors Closet:** This space provides centralized cleaning and equipment storage for the building. It is located adjacent Toilet Rooms in Seaton New and readily accessible for immediate cleaning needs throughout the day. This space accommodates an office desk, washer and dryer, utility sink, and separated lockable chain-link fence for protecting storage and supplies
- **Mechanical:** These spaces accommodate incoming services and the building HVAC, gas, tel/data and electrical power needs. All MEP equipment rooms should be acoustically separated from adjacent spaces.
- **IT Closets:** These spaces are to accommodate information technology switches for both hard-wired and wireless telecommunication. They are distributed throughout the building such that there is no more than 160 horizontal feet in a straight line to any data port being served by equipment in the closet. The closets are to have dedicated conditioning to maintain equipment temperatures.
- **Telecom:** This space is located in the basement adjacent to the Fab Labs and is the primary entrance for telecommunications technology from the campus network outside the building, feeding the Technology Closets for further distribution throughout the building. It is to accommodate servers, switches, back-up power, and other information technology equipment for both hard-wired and wireless telecommunication. The space is to have dedicated conditioning to maintain equipment temperatures.

Interior Environment

The design of the interior environment will be an extension of the building architecture and site context. The facility will feel welcoming, clean, timeless, comfortable, and natural. This will be achieved by utilizing natural daylight throughout, designing simple spaces that minimize distractions to support focus and foster collaboration at multiple scales, connecting users to each other and the environment, providing acoustical privacy to support the academic and personal needs of students, faculty, and staff, and through thoughtful selection and implementation of materials that are beautiful, durable, and easy to maintain.

Material Selections

The material selections will be made on the following principals:

- Performance and Appropriateness for application
- Aesthetics – clean, fresh, authentic and reflective of region and Kansas
- Environmental Impact and Stewardship
- Durability and Maintainability – “Long Life, Loose Fit”
- Cost Effectiveness

Following is a description for the conceptual approach to Interior finishes. The premise for level of finish in the project is split into 3 types per the diagram below. This should be an overlay basis of quality when assigning value and making selections.

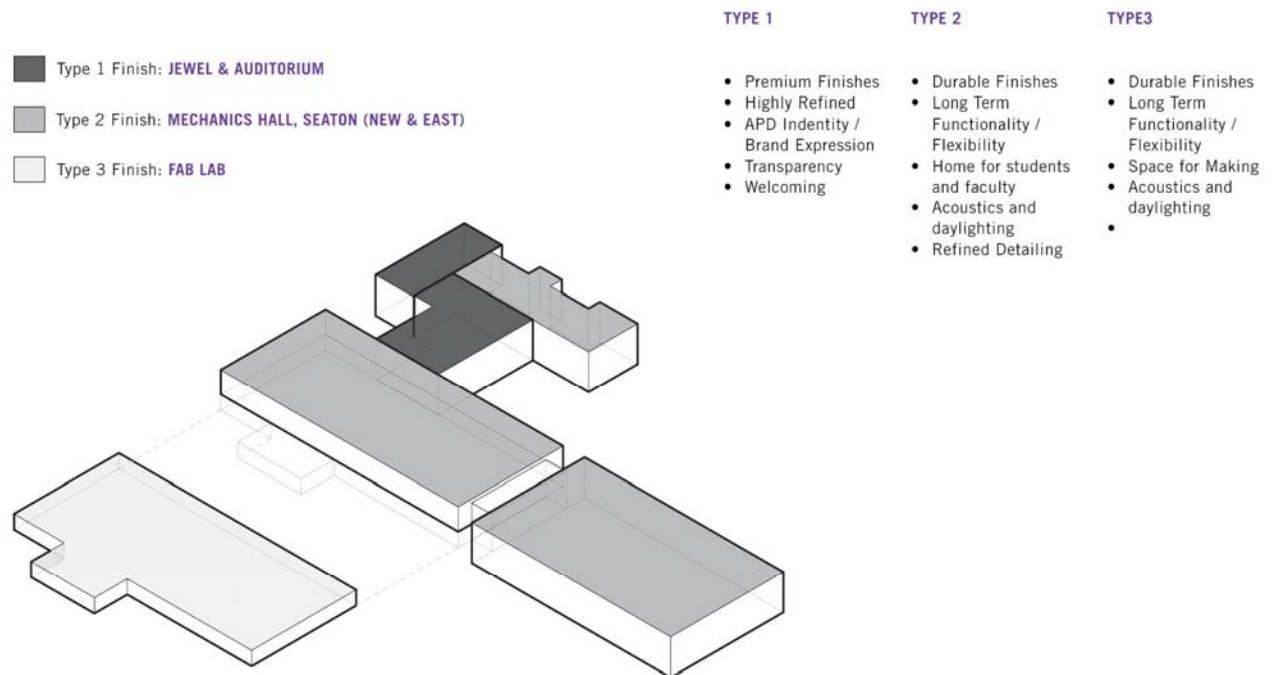


Diagram above illustrates key issues when planning for this space:

Flooring

The Majority of the building flooring will be continuous and end grain wood. Areas such as the Jewel, Library display and link will have a special finish relating to the exterior landscape patios and courts creating a dialog between interior and exterior lower courtyards stone pavers. The Fab lab and other building service spaces will have a utilitarian durable finish of concrete.

Typical floor finishes

- **End Grain Wood:** The primary floor finish for Seaton New & Seaton East Studio and Collaboration Corridor, Crit Rooms, Offices, POD, Mechanics Hall Administrative Offices and Seaton East Department office Suites. Basis of design 1" thick hard end grain wood, basis of design Oregon Lumber Doug Fir Fog <http://www.oregonlumber.com/end-grain-and-ply-floor-and-wall/worthwood-solid-end-grain-unfinished> The wood will be installed over ¼" cork on metal deck and concrete floor in new construction and on ¼" cork over existing floor substrates in existing conditions. Leveling underlayment will need to be utilized in order to allow for installation of level finish floor over existing floor.



- **Carpet Tile:** The Primary floor finish will be carpet tile for the Library Stacks, offices, and special collections and Auditorium. Provide a \$35 material cost/yd allowance for carpet. The carpet tile will be installed over metal deck and concrete floor in new construction and over existing floor substrates in existing conditions. Different patterns and colors may be selected for differing areas of the building. All carpet tiles will be specified with a cushion back to help the long term durability and to aid in acoustics. Rubber base at all carpet locations.
 - Provide Alternate price for carpet finish in Mechanics Hall Administrative Offices, Seaton New's Faculty Offices and Seaton East Department Office Suite.
- **Large format Tile or Stone:** The primary floor finish for the Jewel lobby, Information Commons, and Library display, and extending into the Fab Lab Hallway, Seaton New's east and west corridor on upper levels from Jewel, Mechanics Hall east and west corridor from Jewel, Roof Exhibit, and the Link. Basis of design large format stone or tile panels Crossville Laminam <http://crossvilleinc.com/products/i-naturali/> Provide metal reveal base at all locations adjacent to large format tile or stone.

- **Entry Mats:** Basis of design for all recessed entry mats at vestibules AMARCO A1-Track G Series extending door to door and wall edge to wall edge.
- **Tile Flooring:** Porcelain tile is planned for all toilet rooms. Basis of design matte porcelain tile.
- **Polished Concrete Floor:** Polished and sealed concrete floor at Fab Lab vestibule Fabrication Lab Offices, 3D Print Lab / Student Workstation, Design Build Studio/Center for Design Excellence, Product Design Mock up / 5th Year Thesis Design Studio, LARCP / Fluvial Lab, Lighting Lab, and Glass Lab. Provide rubber base at all locations of concrete floor.
 - Provide alternate cost for these areas to float and sealed finish per below.
- **Concrete Floor:** Basis of design Power-Float finish for SOG, sealed. Located in building service area, IT room, server room, storage rooms, and mechanical rooms and Janitor room, Finishing Lab, Upholstery, Wood Lab, Metal Lab, Model Making Lab, Staging / Pin-Up. Provide rubber base at all locations of concrete floor.

Typical wall base

- **Tile Base:** Basis of design Daltile ceramic subway tile base at all toilet rooms and wet locations.
- **Flush Wood Base:** 2 1/2" x 3/4" recessed flush hardwood base typical all locations
 - **Reveal base:** Provide alternate price for metal reveal base at all locations of Flush wood base. Basis of design Fry Reglet reveal base.
 - **Rubber base:** Provide alternate price for rubber base at all locations of flush wood base. Basis of design Johnsonite 2 1/2" vinyl base.
- **Rubber base:** Basis of design Johnsonite 2 1/2" rubber base at all building services locations and Fab Labs. (No base on CMU)

Wall Partitions and Finishes

The majority of the building interior walls will be gypsum board and metal stud wall partitions. Many of these partitions will be designed to extend from the floor deck to the underside of the floor deck above to assist with acoustical privacy. In selected locations such as mechanical rooms and assembly areas wall assemblies will be constructed to provide higher degrees of acoustical control and privacy. Below are typical interior partition finishes and assemblies that are planned for this project. All of the interior walls will be finished with durable wall finishes appropriate for the spaces use as follows:

Typical wall finishes

- **Painted surfaces:** The primary wall finish in the building will be a premium professional quality low or no VOC paint is specified with an eggshell or satin finish for most interior walls to provide a washable surface. A number of colors may be selected for use throughout the building. Some areas such as the catering/staff lounge, toilet rooms, and selected public areas, that require a higher degree of scrub ability will require a high performance epoxy coating/paint.
 - Paint all vertical exposed structure.
- **Glazed ceramic tile:** The primary wall finish for toilet room (all walls full height) and one wall full height of the catering/staff lounge (North Wall).

- **Exposed Concrete Finish:** Mechanical rooms and building services areas.
- **Wall Protection:** Protective stainless steel corner guards in all areas.
- **Auditorium Acoustical Wall Panels:** Acoustical wall panels will be integrated within special areas where additional sound isolation and noise control is needed. Basis of design will be fabric wrapped panels and perforated wood in Auditorium. In the Auditorium, a mixture of faceted planes will bounce sound to specific areas and will be either fabric wrap panels, wood, or gypsum all tuned and treated for acoustics. Lighting and AV will be integrated into faceted walls.



- **Existing Stone:** Existing areas of stone both interior and exterior of Seaton East, Jewel, and Link will have areas of exposed stone. These areas will need selective patching and repair, sealed, and or painted. Existing sheer walls in Seaton East will remain.



Typical Tack Surface & Additional Acoustical Wall Panels

Common to this building type is large amounts of tackable and or writeable surfaces for critiques and design review. Most wall surfaces in Studios, Crit Rooms, and one wall of Faculty offices will have floor to ceiling or floor to building 8' datum line tack surface. In Crit rooms of the collaboration corridor and Jewel, sliding recessed tack surfaces will be installed for layered pin up. Below are typical acoustic and tack surface.

- **Tack/Acoustical Surface:** Basis of design Decoustic Fabric wrapped acoustic and tackable wall treatment <http://www.decoustics.com/products/Fabric/High-Impact> installed floor to 8' tall datum in Gallery, Crit/Conference rooms in the Jewel and studios for acoustics.
- **Tack Surface:** Basis of design Tacwall by Wall Talkers healing tack surface. All accessories and trim pieces included for full functioning system <http://www.walltalkers.com/products/tac-wall.asp> Locations on one wall of Seaton New Faculty offices, Seaton East Department Suite Offices , and Mechanics Hall Administrative offices.
 - **Tack Surface:** Provide alternate price from Tackwall to alternate tack surface. Basis of design <http://robinreigi.com/?projects=tac-acoustical-panel>
- **Tack Surface:** Basis of Design unfinished Homasote panels in Fab Lab pin-up areas.
- **Glass Marker Board:** Provide a sqft unit price for back painted glass marker board. The Multi areas may require a large amount of marker boards located on each solid wall around the room to support the active learning layout.

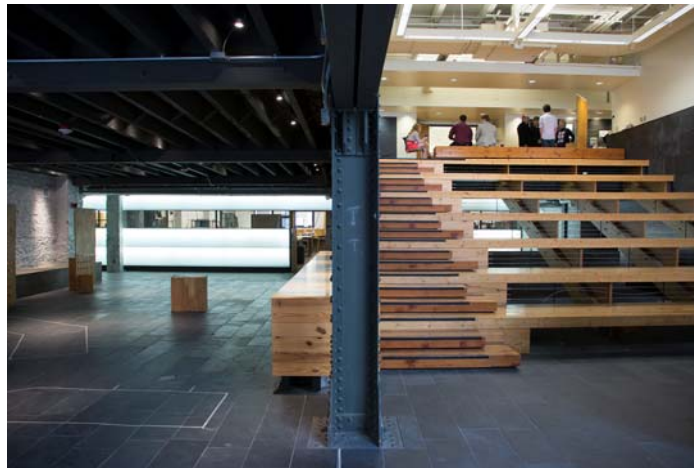
Specialty wall finishes

Selected walls in the Information Commons, Gallery, Conference Crit Rooms in the Jewel, and the Link will be considered for specialty finishes. The goal will be to create a sense of visual consistency of exterior materials upon entering the building at each floor above or below. These walls will have a formal design aesthetic and will likely incorporate metal, wood, stone and glass and other specialty finishes and feature lighting.

- **Interior Metal Wall panel:** At Gallery and conference crit rooms in the Jewel.
- **Jewel Walls:** Stone on Mechanics Hall will be cleaned, patched and repaired and tuck pointed as needed for a consistent exterior to interior finish. As well exterior stone and or concrete work (Fab Lab) from Seaton New will continue inside the Jewel for a consistent exterior to interior finish. Refer to Exterior Elevation drawings and exterior envelope narrative for exterior material information.
- **Reuse Wood Flooring:** Gallery and Crit/Conference rooms in the Jewel.



- **Reuse Pierce Commons Slate:** Gallery and Crit/Conference rooms in the Jewel.



Typical interior partition construction types

- **P-1:** Solid Wall - 1-layer each side 5/8 inch type X gyp.bd, 3-5/8 or 6" steel studs and 3-1/2 inch thick sound bat insulation.
 - Typical for offices, meeting/conference rooms, crit/conference, studio's, and storage rooms.
 - Full partition deck to deck.
 - 1 hour Fire rating TBD per location.
- **P-2:** Shaft Wall 2-layers each side 5/8 inch type X gyp.bd, 6 inch CH steel studs, 6 inch thick sound batt, 1 inch gyp bd. liner
 - Typical at elevators and vertical shafts
 - Full partition deck to deck.
 - 2 hour fire rating.
- **P-3:** Solid Walls - 8" CMU, 1 inch air gap, 3-5/8 inch steel studs, 3-1/2 inch thick sound bat insulation, 1-layer 5/8 inch gyp.bd.
 - Main Mechanical and electrical room Lower Level
 - Full partition deck to deck.
 - For Acoustic Isolation.
 - 2 hour Fire rated.
 - See ceiling requirements.
 -
- **P-4:** Acoustic Auditorium Walls: 2-layer each side 1/2" inch Fire Code C Core gyp.bd, 3-5/8 steel studs at 24" o.c., 3 Thermafiber SAFB inch thick sound bat insulation, RC-1 channel or equivalent one side spaced 24" o.c.
 - Auditorium Walls
 - Full partition deck to deck.
 - STC 55-60
- **P-5:** Solid Walls – 8" CMU over 8" concrete stem wall (1'-10" A.F.F.).
 - Full Partition deck to deck
 - Acoustic attenuation at base, head, and within CMU cavities.

- See floor plan for glazing locations.
- **P-5 Alternate:** Solid Walls - Metal Studs with impact resistant gypsum board, and / or 18Ga. sheet metal layered over gypsum board up to 4'-0" A.F.F., over 8" concrete stem wall (1'-10" A.F.F.).
 - Full Partition deck to deck
 - Acoustic attenuation at base, head, and within stud cavities.
 - See floor plan for glazing locations.
 - 3/4" Plywood backing panels behind gypsum board on lab side of wall only.
 - 1/2" Resilient horizontal channel @ 24" o.c., vertically, opposite side of lab side of wall.

Millwork

- **Millwork/built in storage shelves at faculty offices:** full height adjustable on one wall.
- **Millwork/built in storage:** Department office suites shared copy/files and storage counter
- **Fab Lab Shelving and Storage:** Basis of design shall be durable and constructed of Trespa or similar. Refer to Fab Lab drawings and narrative for locations and quantity.
- **Catering/Staff Lounge:** continuous wood and solid surface base and upper cabinets along north wall.
- **Restroom Counters:** provide solid surface at all restroom counters.
- **Separation:** Between studios in the areas called "Cross Grain" that typically align with studio entries are large pieces of mobile millwork. These pieces of millwork will incorporate built-in tack surfaces, storage, IT/AV for display and presentation, and flexibility/expandability for further visual and sound separation from studio to studio. This large piece of wood millwork will be mobile on castors. This divider does not extend to ceiling.
- **Reception Desk:** custom wood, steel, and glass desk with quartz tops at Library, Department offices, and Administrative Office Suite.
- **Information Commons:** custom wood, steel and glass kiosk for computers.
- **Shared Conference/Crit:** In Seaton East and the Jewel shared conference and crit rooms provide built in wood base credenza with quartz top along full west wall.
- **Gallery:** Provide wood shelving system full height adjustable on one wall.
- **Crit Spaces:** Provide full separation mobile wall partition in Crit spaces. The mobile partition will be clad with tack surface. The partition is suspended from the ceiling and glides in a concealed track similar to Hafele track systems. When not used the partition can be positioned against one wall of the crit space.

- **Custom seating/shelving (display):** Reuse of the wood stringers and other materials from the existing Pierce Auditorium will be reused in the Link, Information Commons (Jewel LVL 1) for custom seating and shelving.



Doors

All doors will be set at a datum height of 8' consistent through the project. See Hardware and Security Drawings for additional information. Typical door types will include:

Interior Doors:

- **Aluminum Frame and Glass Doors:** Narrow stile and rail aluminum and glass doors provided in interior aluminum storefront systems located at vestibules.
- **Solid Core Wood Veneer Hinged Doors with light and wood frames:** Book matched premium veneer door and frame with light at Mechanics Hall Administrative Offices, Seaton New faculty offices, Seaton East Department office suite.
- **Solid Core Wood Veneer Hinged Doors and wood frames:** Book matched premium veneer door at all toilet rooms, Stairs, Janitors Closets, Auditorium, and Catering/ Staff Lounge.
- **Hollow Metal Door & Frame:** Painted (High Performance Coating) HM door and frame with kick plates at all building service locations, Hallway & Vestibule, Product Design Mock up / 5th Year Thesis Design Studio, LARCP, Fluvial, Lighting Lab, Glass Lab, Finishing Lab, Wood Lab, Metal Lab, Model Making Lab, Staging / Pin-Up, and Heliodon Storage
- **Coiling Overhead Fire Doors:** Rated wall locations and Fab Lab exteriors.
 - **Provide alternate pricing for overhead garage doors at Fab labs:** Basis of design overhead door company.
- **All Glass Door:** Tempered Glass Door at Studios, Crit rooms, shared Conference/Crit rooms, Laser Cutter, Plotter, entry to Mechanics Hall Administrative Offices, and at

Reception entry to Seaton East Department Office Suite, and Fab Lab Fabrication Offices, 3D print Lab/Student workstation. Basis of design Blumcraft series 640

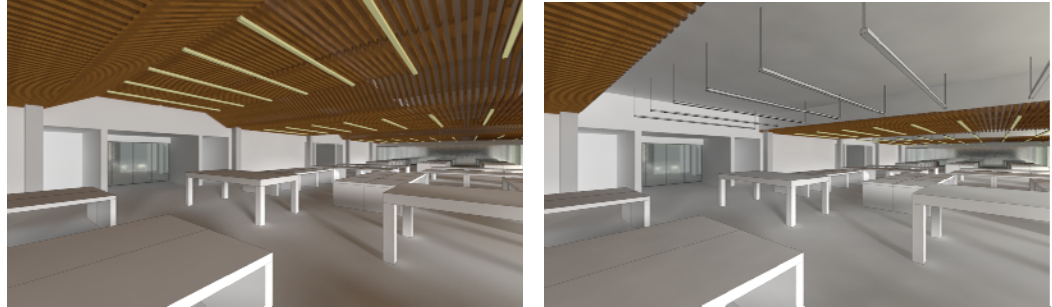
- Provide alternate cost for All Glass Doors to Aluminum Frame and glass doors as described above in item 1.

Ceilings

The approach to ceiling systems will be to reinforce the design intent of spaces throughout the facility while meeting the functional requirement of each space. Typical ceiling systems will include:

Typical Ceiling Finishes

- **Wood Ceiling with suspended Gyp and Acoustic Ceiling backup:** Basis of design wood backed Rulon Panel Grille Profile PG 8-12-32D in large clouds vertically faceted areas suspended from suspended gypsum ceilings covered in K13. Areas within the “Cross Grain” at studios eliminate wood ceilings and expose suspended gyp and K13 ceiling. Lighting and other systems will be integrated within wood slats. Areas Seaton New and Seaton East Studios, and Library Stacks



- **Wood Ceiling:** Basis of design 9 Wood 2300 Continuous Linear ceilings. Lighting and other systems will be integrated within wood slats. Seaton New and Seaton East Collaboration Corridor, Seaton New Level 3 exhibit space, Jewel lobby and information commons bridges, Library Display extending into Fab Lab Hallway and vestibule.



- **Acoustical Panel Ceiling:** A mineral fiber fine texture acoustic ceiling panel will be specified for Seaton New Offices and Crit Rooms, Mechanics Hall Administrative Offices, Seaton East Department Office Suites and Crit rooms, Library Offices. The 24” x 6” units will allow for easy maintenance integrated lighting and long-term flexibility. Basis of

Design: Armstrong Optima, 2'x6' panels Square Tegular 9/16" with Techzone grid system.

- **Auditorium Acoustical Ceiling:** Acoustical ceiling finish will be integrated within the auditorium for sound isolation and noise control as needed. Basis of design will be an acoustic plaster finish equal to Bawaphon or Fellert with areas of perforated wood. A mixture of faceted planes will bounce sound to specific areas. Lighting and AV will be integrated into gaps within the faceted ceiling areas.
- **Exposed Structure:** Concrete and steel structure will be partially exposed where possible to create in areas where a full ceiling is not required. This includes Janitors Closet, Heliodon Storage, I.T. Room, Mechanical Rooms, Electrical Rooms, and Telecom.
- **Painted Gypsum Board Ceilings, Soffits, & Bulkheads:** Various painted gypsum board ceiling systems are planned for the building. These may include painted gypsum board soffits, accenting the exposed structure, and other ceiling/bulkhead conditions. Areas that typically need moisture control, enhanced isolation and acoustic privacy such as toilet and locker changing rooms will be equipped with moisture resistant gypsum board ceilings. Library Special Collections, Fabrication Lab Offices, Vestibule, 3D Print Lab / Student Workstation, Product Design Mock up / 5th Year Thesis Design Studio, Design Build Studio / Center for Design Excellence, LARCP / Fluvial Lab, Lighting Lab, Glass Lab, and Staging / Pin-Up.
- **Gypsum Board Ceilings at Mechanical Rooms:** To enhance acoustical isolation at mechanical rooms they will be equipped with ceiling systems comprised of the following: 3-1/2 inch thick sound bat insulation, Neoprene and Spring Vibration Hangers, ceiling suspension system, 2-layers of 5/8" gyp.bd
 - Below the floor deck entire room.
 - Main Mechanical and electrical rooms
- **Durable Suspended Acoustic panel:** Basis of design suspended Tectum panels. Located in Finishing Lab, Wood Lab, Metal Lab, Model Making Lab, and Lab Mechanical.

Glazing Systems – Interior

All glass systems will be used for all interior locations such as Collaboration Corridor, Library and Information Commons, Studio Entries, and offices. Typical Glazing systems include:

All Glass Storefront and Entrance System

- **Interior systems only Basis of Design:** Systems comprised floor to ceiling channel capture at all 4 sides of 1/2" or 3/4" inch thick clear safety glass to meet loading requirements, butt glazed and sealed lights and sidelights, floating transoms. Doors shall be manual swing with recessed floor mounted closers. Door hardware shall be aluminum finished. Basis of Design Products: Blumcraft of Pittsburg 1301 series.
 - Provide alternate price for interior storefront: Basis of design Kawneer Trifab 400 1/2" glass infill for acoustical separation.
- **Fab lab Interior systems only Basis of Design:** Laminated Glass is butt-glazed with channel capture at all 4 sides. This will be double pane IGU for acoustic reasons. Fire rated as needed per code. Rooms: Finishing Lab, Wood Lab, Metal Lab, Model Making Lab, Staging/Pin-Up

- Interior Jewel Window Replacement Mechanics hall.

Specialty Systems

The facility has several specialty systems included in the interiors scope. Below is a list and descriptions of those systems.

Auditorium Seating

- Retractable Seating: Basis of design is 180 seat Kotobuki RSP telescopic seating chair type Espace S 628 T.

Operable Shading

- Auditorium: Operable blackout shades. Basis of design Mechoshades-Duoshade – sun & blackout; motorized
- Offices: Operable shades in Seaton New, Seaton East, and Mechanics Hall faculty offices, Administrative Office suite, and Administrative offices. Basis of design Mechoshades – sun; manual
 - Provide line item breakout for studios in Seaton New and East to have operable shades per above.

Guardrails and Handrail Systems Openings

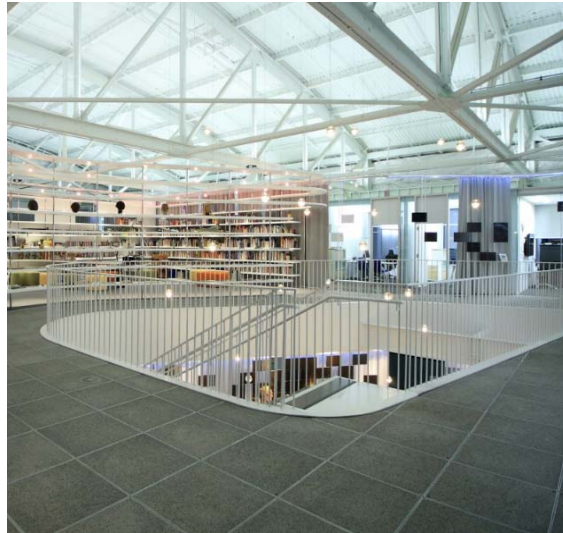
All glass systems will be used in Jewel and all other openings in Seaton New, Seaton East and Mechanics hall will be steel. Typical railing and guard systems include:

Typical Railings & Guards

- Glass Rail: Basis of Design is an all glass system with stainless steel top bar and stainless steel mounting channel. Suggested manufacturers, Livers Bronze or Blumcraft of Pittsburg.



- Steel Picket: guardrail will be constructed of 4" wide ½" thick top plate and bottom plate and ½" round bar stock vertical pickets at 4" o.c. finished with high performance paint coatings. Bottom plate embedded in finish floor for flush appearance and attachment.



Floor Finish Schedule_Summary

Floor Finish	Area
Carpet	8112 SF
Concrete	33449 SF
End Grain Wood	103351 SF
Stone	21025 SF
Tile	3821 SF
Grand total	169759 SF

Ceiling Finish Schedule_Summary

Ceiling Finish	Area
Gypsum	20100 SF
Lay-In	28256 SF
Open to Structure	27404 SF
Plank	58381 SF
Suspended Slat	46016 SF
Grand total	180156 SF

Partition Type Schedule_Summary

Type	Length	Area
Interior Glazing System	1398' - 4 1/16"	13199 SF
P-1	5162' - 6 7/8"	58744 SF
P-2	1581' - 0 9/16"	19109 SF
P-3	319' - 11 5/16"	3213 SF
P-4	148' - 4 1/16"	1513 SF
P-5	1152' - 2"	10937 SF
Grand total	9762' - 4 7/8"	106715 SF

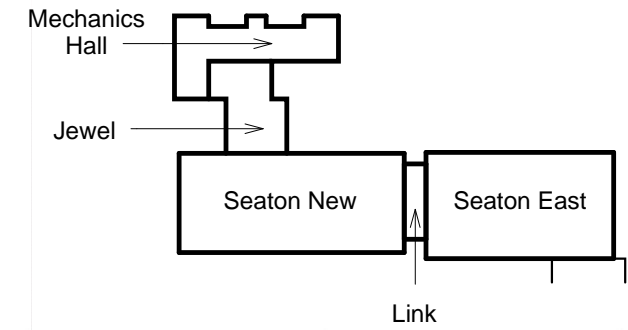
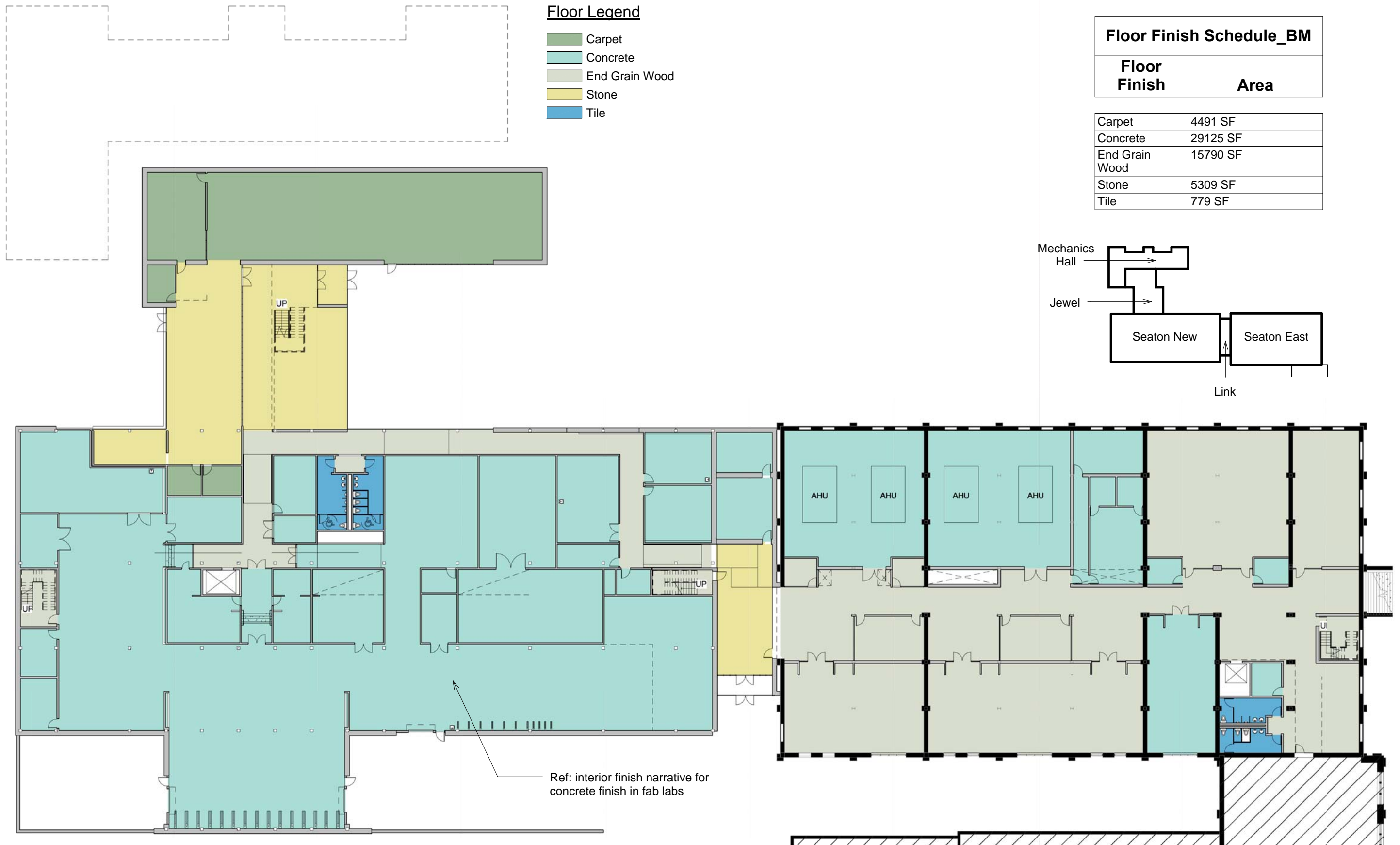
Floor Legend

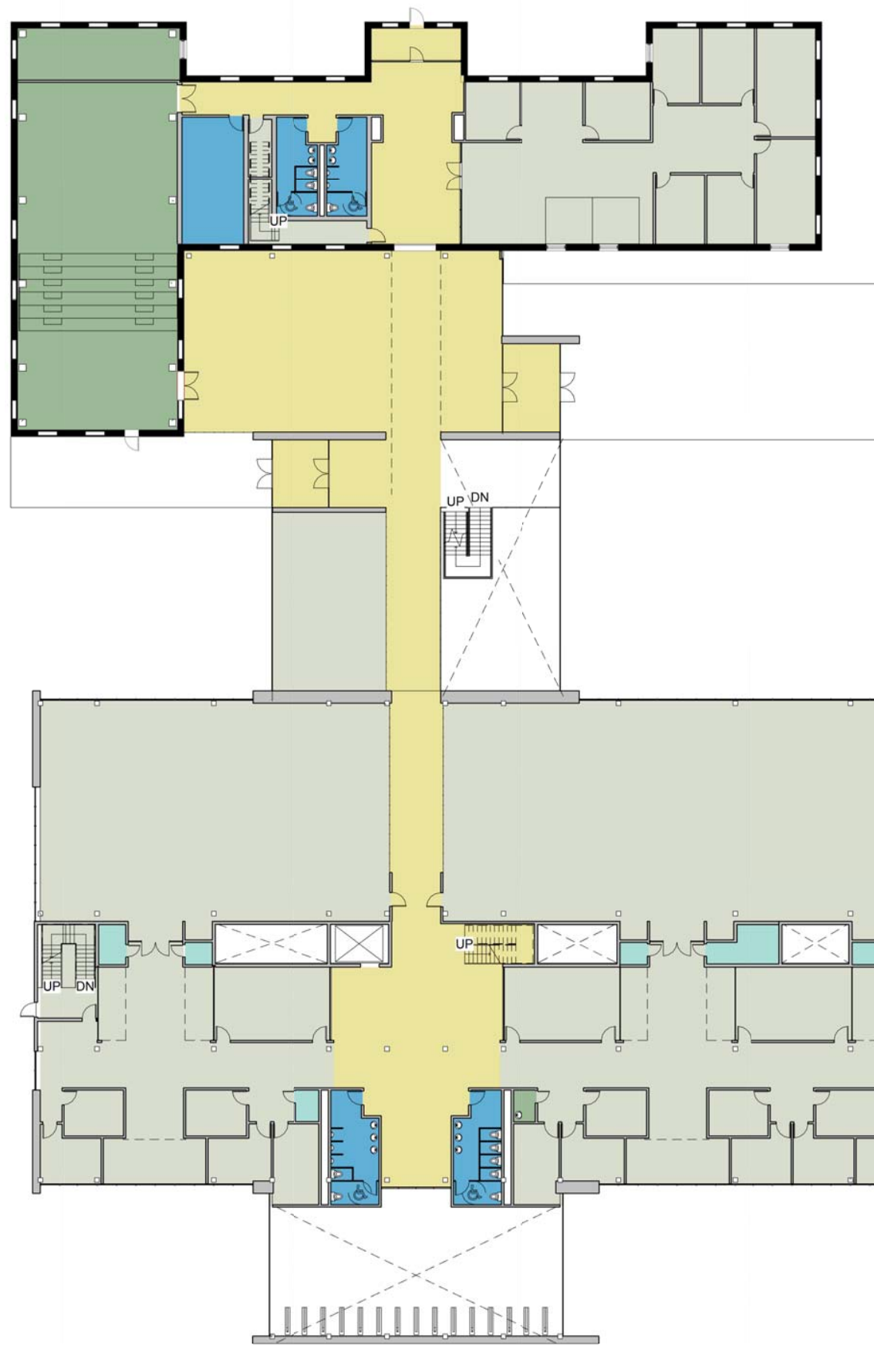
- Carpet
- Concrete
- End Grain Wood
- Stone
- Tile

Floor Finish Schedule_BM

Floor Finish	Area
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Carpet	4491 SF
Concrete	29125 SF
End Grain Wood	15790 SF
Stone	5309 SF
Tile	779 SF

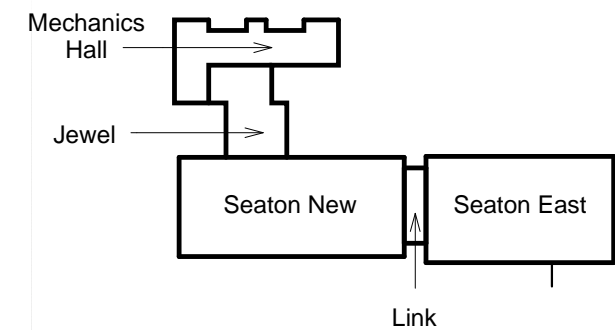


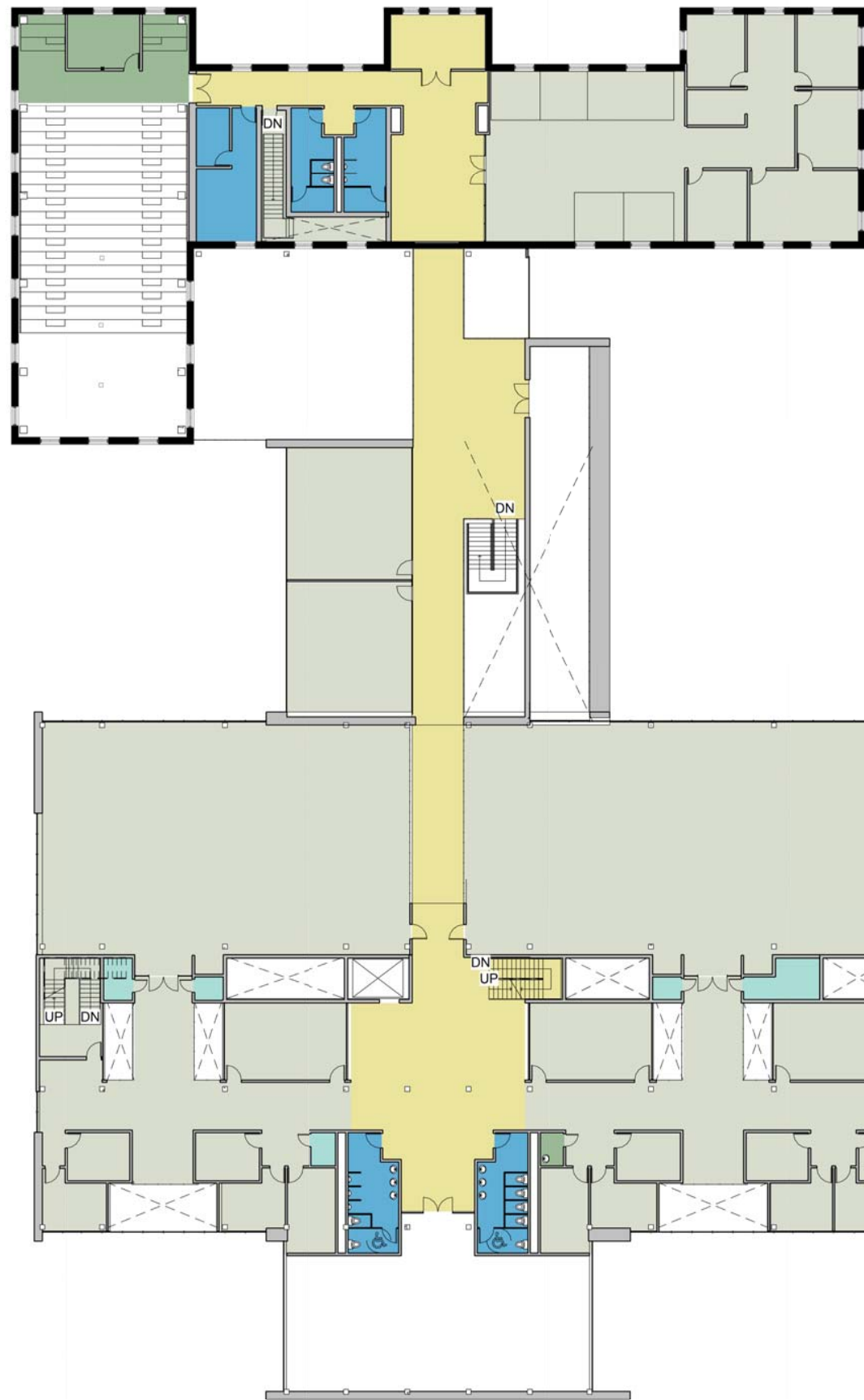


Floor Legend

- Carpet
- Concrete
- End Grain Wood
- Stone
- Tile

Floor Finish Schedule_L1	
Floor Finish	Area
Carpet	2980 SF
Concrete	407 SF
End Grain Wood	44148 SF
Stone	8668 SF
Tile	1488 SF



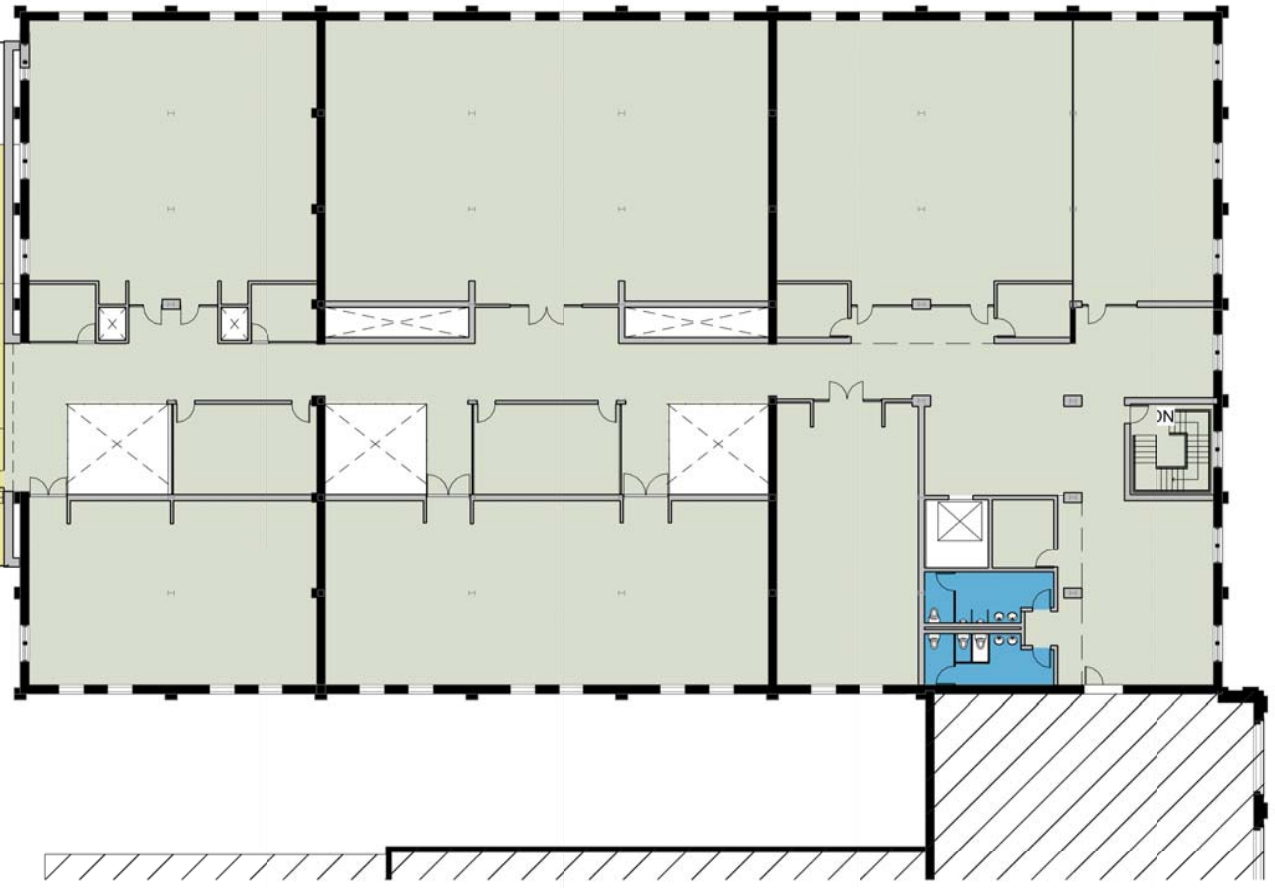
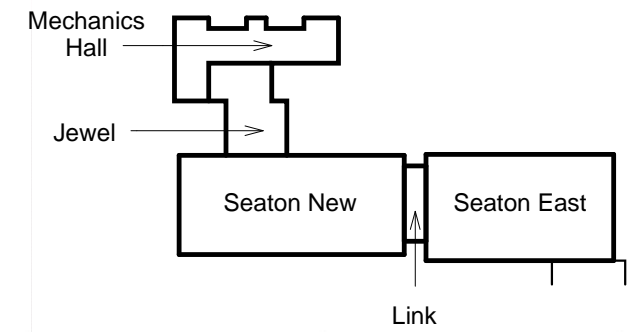


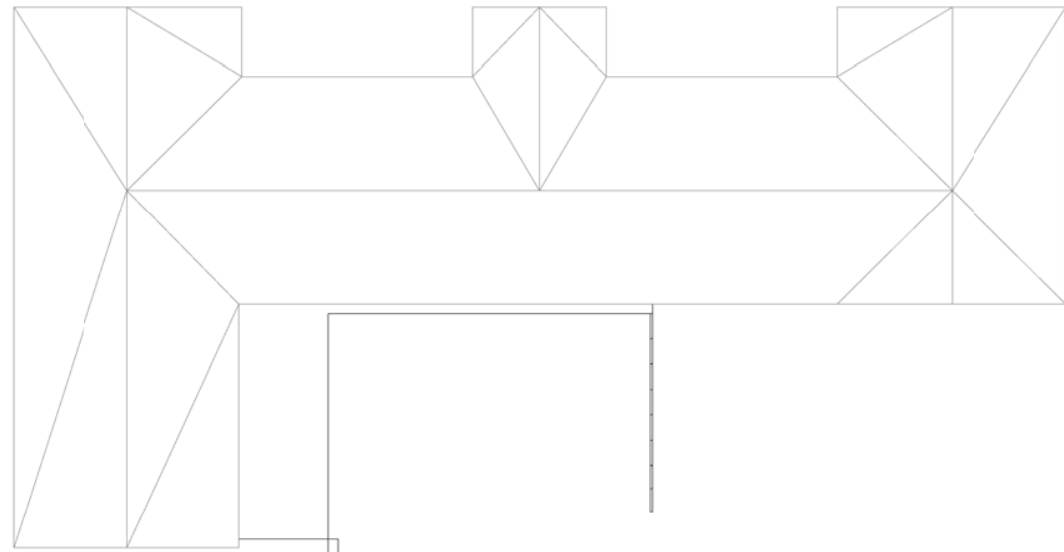
Floor Legend

- Carpet
- Concrete
- End Grain Wood
- Stone
- Tile

Floor Finish Schedule_L2

Floor Finish	Area
Carpet	607 SF
End Grain Wood	27664 SF
Stone	5997 SF
Tile	995 SF





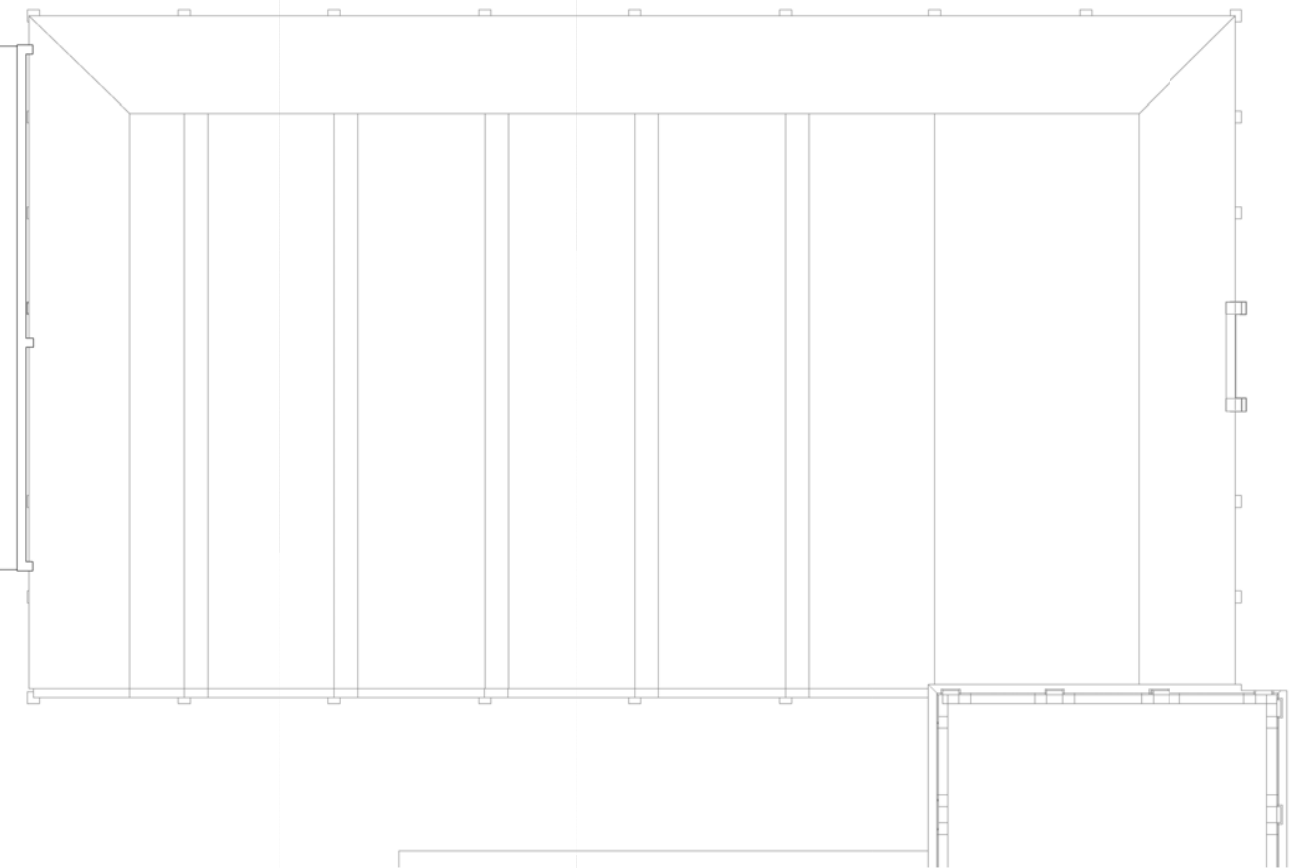
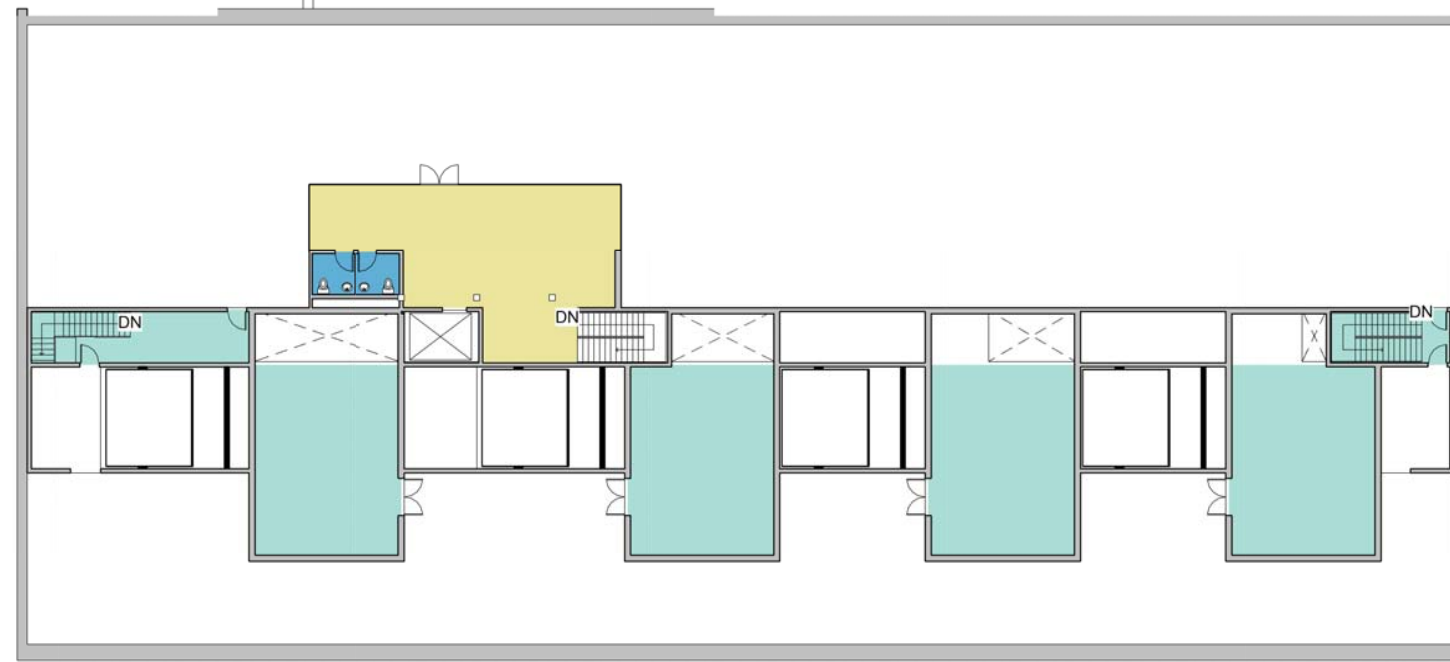
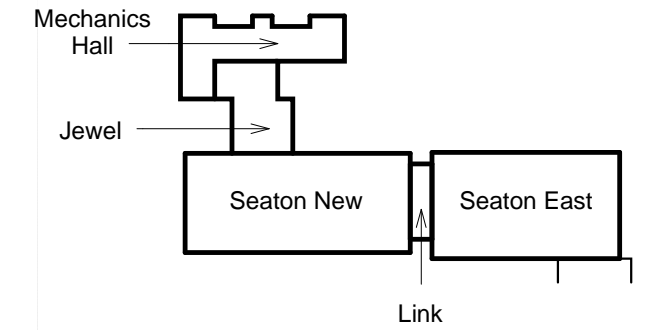
Floor Legend

- Carpet
- Concrete
- End Grain Wood
- Stone
- Tile

Floor Finish Schedule_L3

Floor Finish	Area
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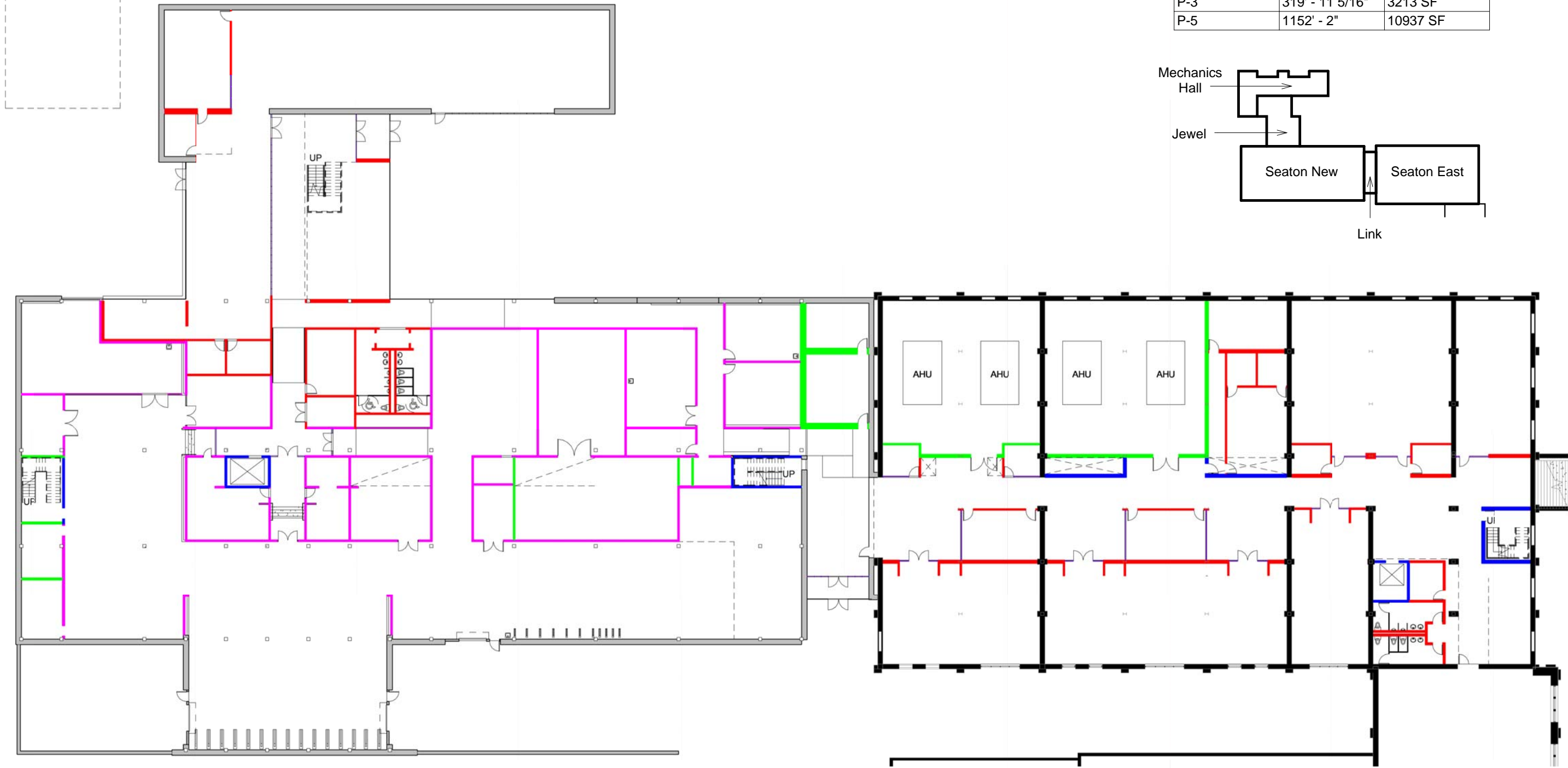
Concrete	3511 SF
Stone	1052 SF
Tile	97 SF



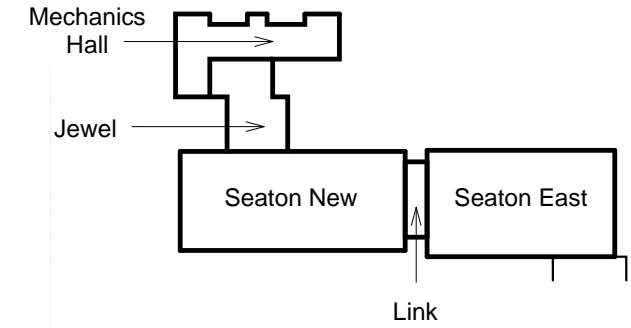


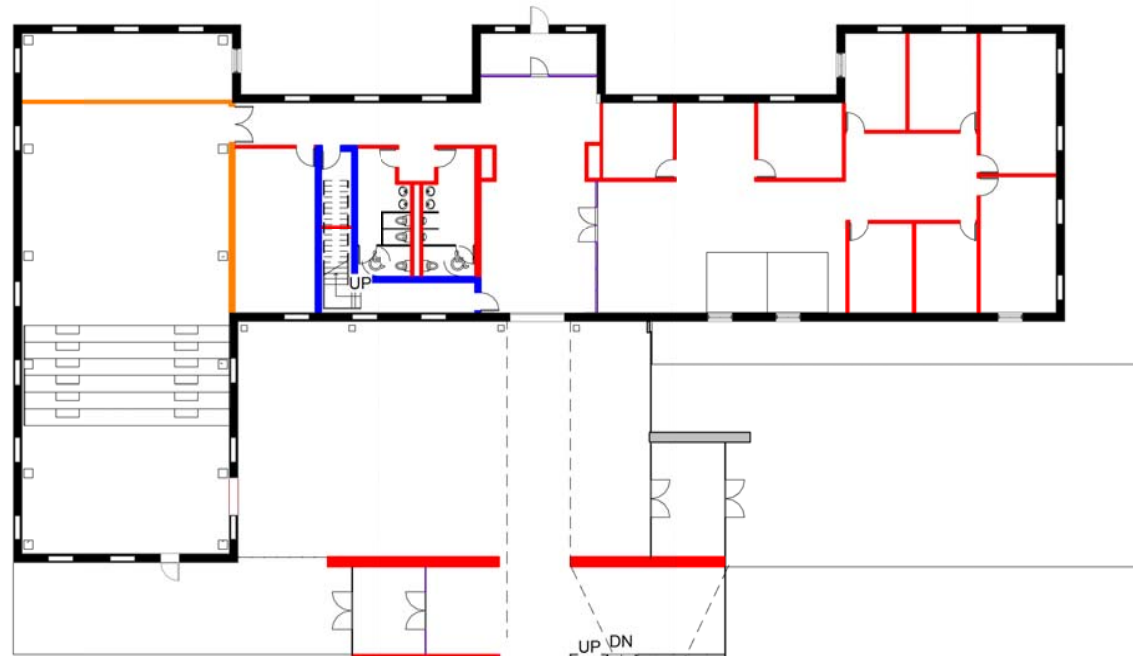
Partition Legend

- Interior Glazing System
- P-1
- P-2
- P-3
- P-4
- P-5



Partition Type Schedule_BM		
Style	Length	Area
Interior Glazing System	284' - 8 7/16"	2340 SF
P-1	909' - 2 1/2"	8851 SF
P-2	260' - 3 7/8"	2874 SF
P-3	319' - 11 5/16"	3213 SF
P-5	1152' - 2"	10937 SF

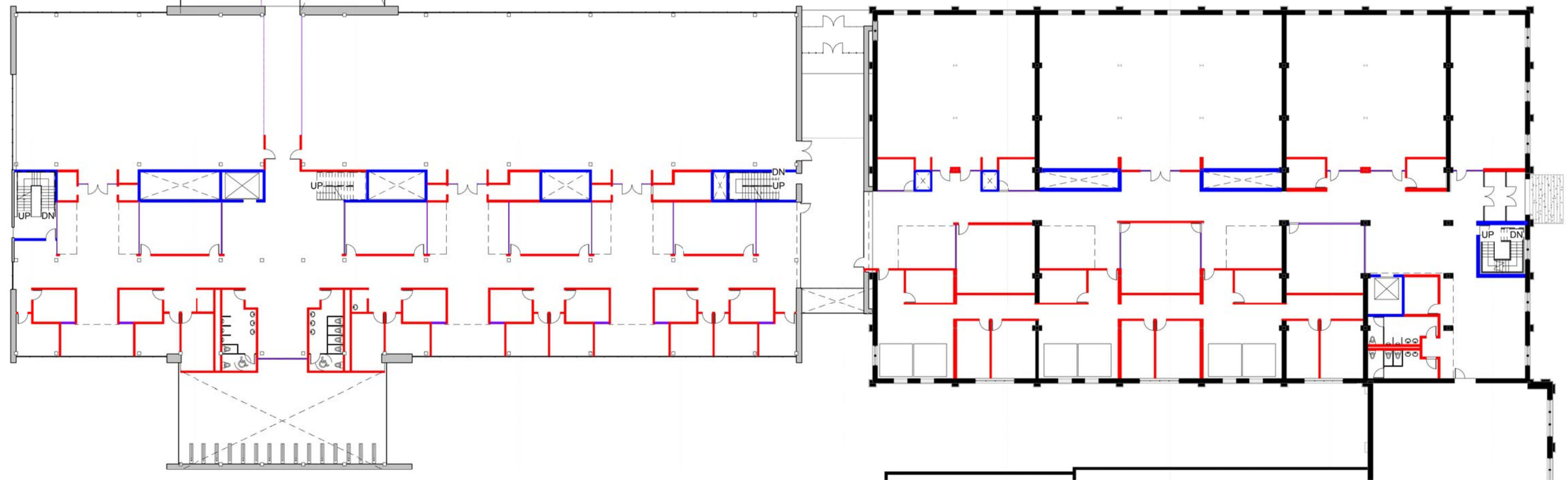
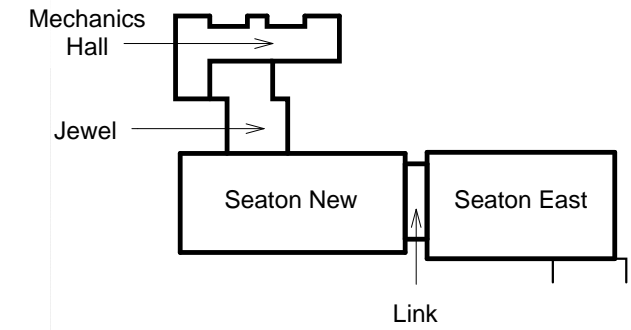


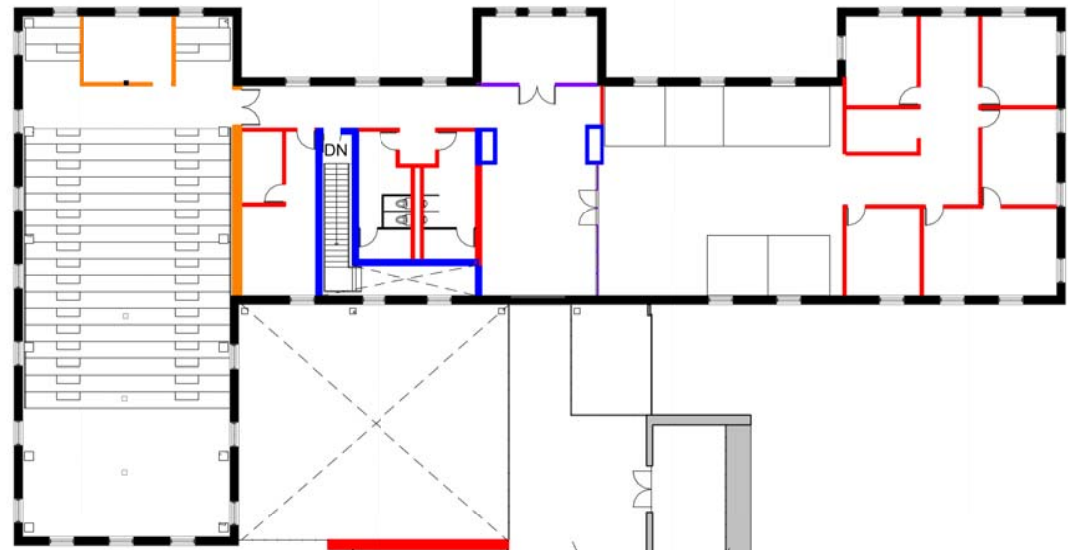


Partition Legend

- Interior Glazing System
- P-1
- P-2
- P-3
- P-4
- P-5

Partition Type Schedule_L1		
Style	Length	Area
Interior Glazing System	565' - 9 5/16"	5715 SF
P-1	2271' - 8 1/4"	26704 SF
P-2	644' - 0 3/4"	7972 SF
P-4	72' - 5 15/16"	847 SF

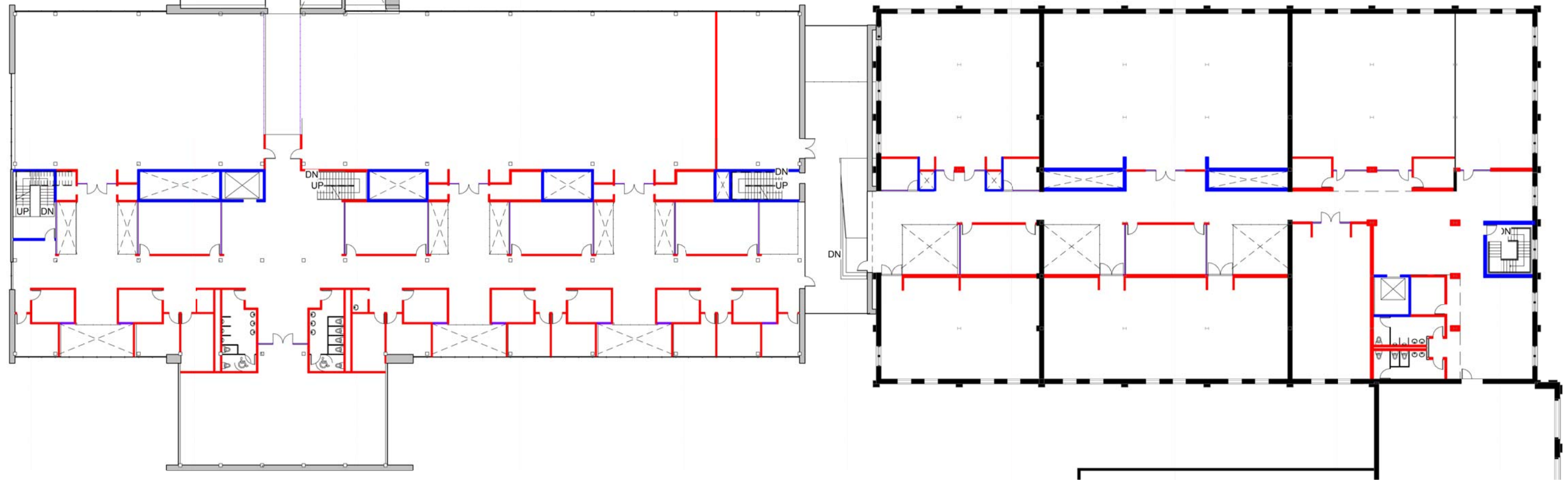
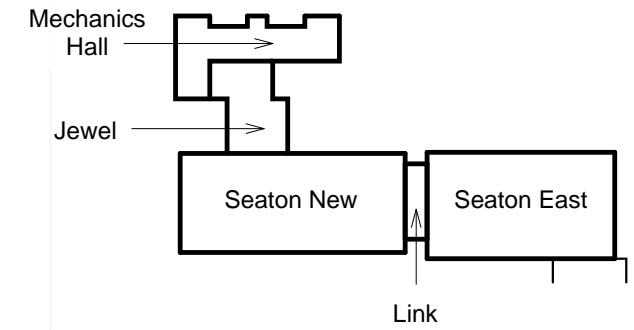




Partition Legend

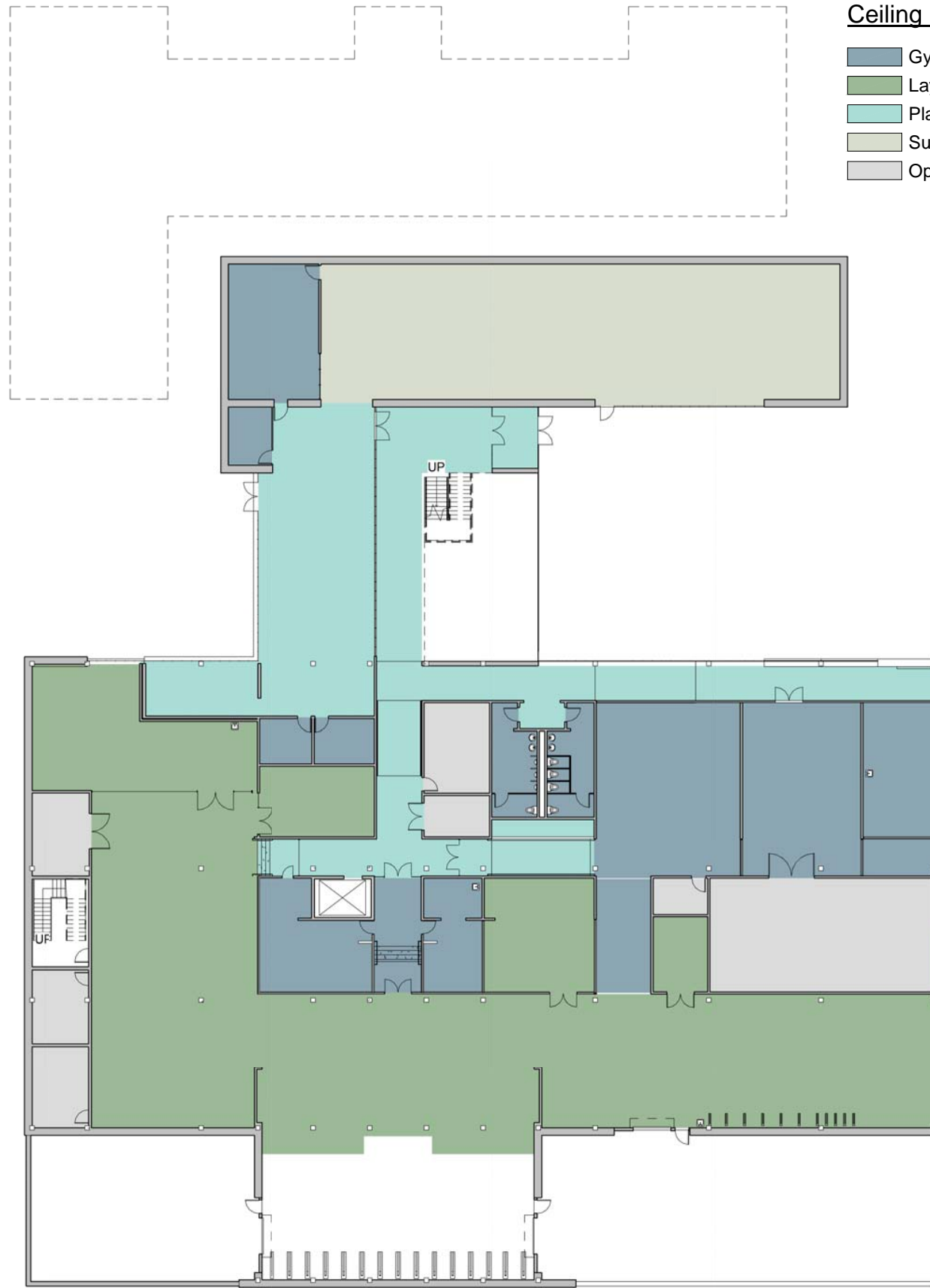
- Interior Glazing System
- P-1
- P-2
- P-3
- P-4
- P-5

Partition Type Schedule_L2		
Style	Length	Area
Interior Glazing System	547' - 10 5/16"	5143 SF
P-1	1981' - 8 1/8"	23188 SF
P-2	676' - 7 15/16"	8263 SF
P-4	75' - 10 1/8"	666 SF

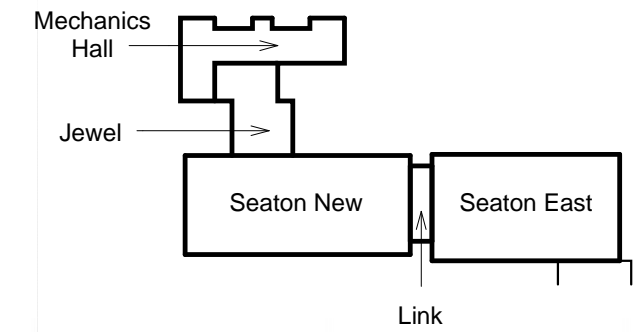


Ceiling Legend

- Gypsum
- Lay-In
- Plank
- Suspended Slat
- Open to Structure



Ceiling Finish Schedule_BM	
Ceiling Finish	Area
Gypsum	9370 SF
Lay-In	11532 SF
Open to Structure	8180 SF
Plank	13015 SF
Suspended Slat	11997 SF

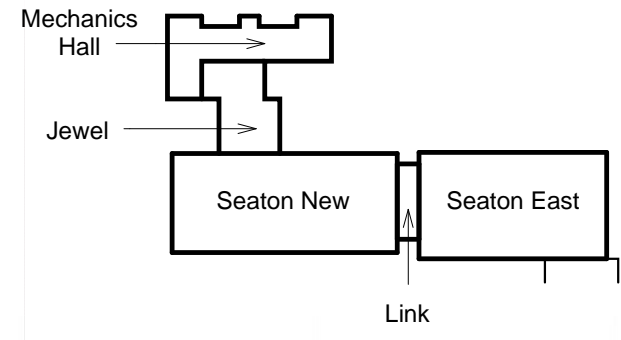


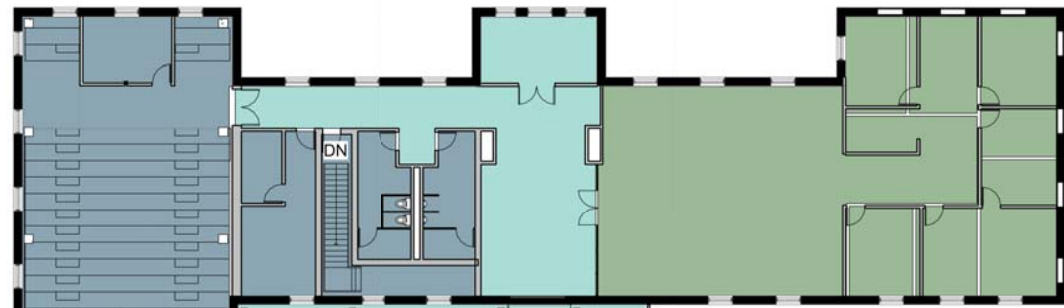


Ceiling Legend

- Gypsum
- Lay-In
- Plank
- Suspended Slat
- Open to Structure

Ceiling Finish Schedule_L1	
Ceiling Finish	Area
Gypsum	4445 SF
Lay-In	10797 SF
Open to Structure	552 SF
Plank	19431 SF
Suspended Slat	21249 SF

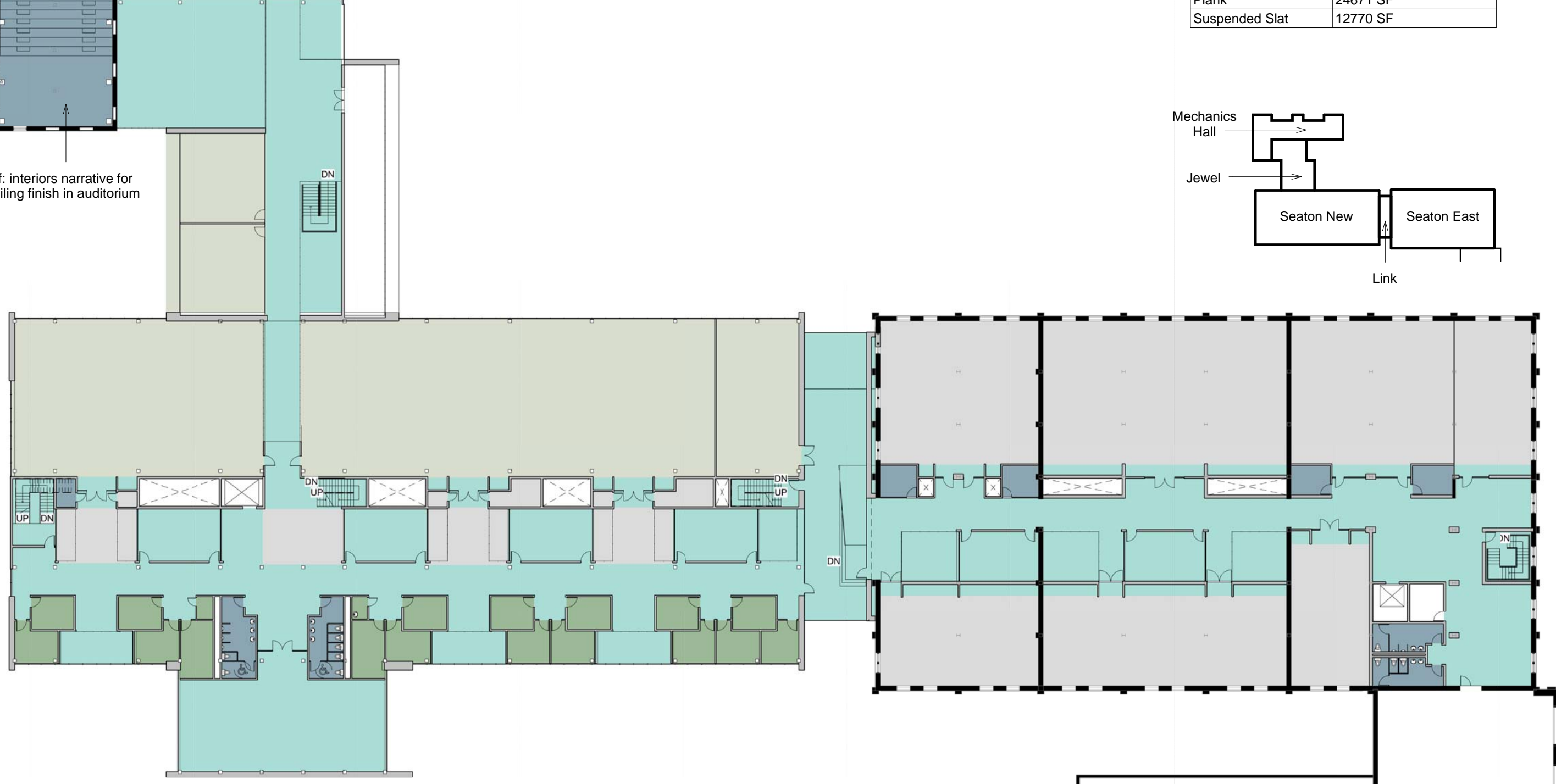




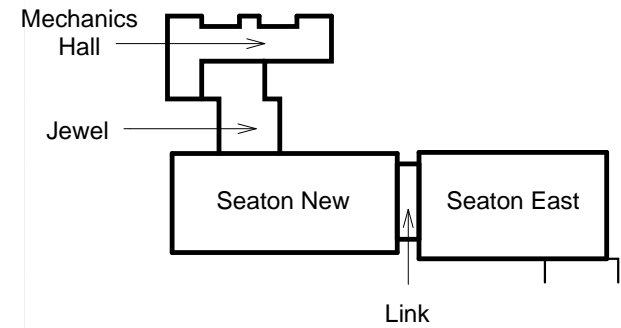
Ceiling Legend

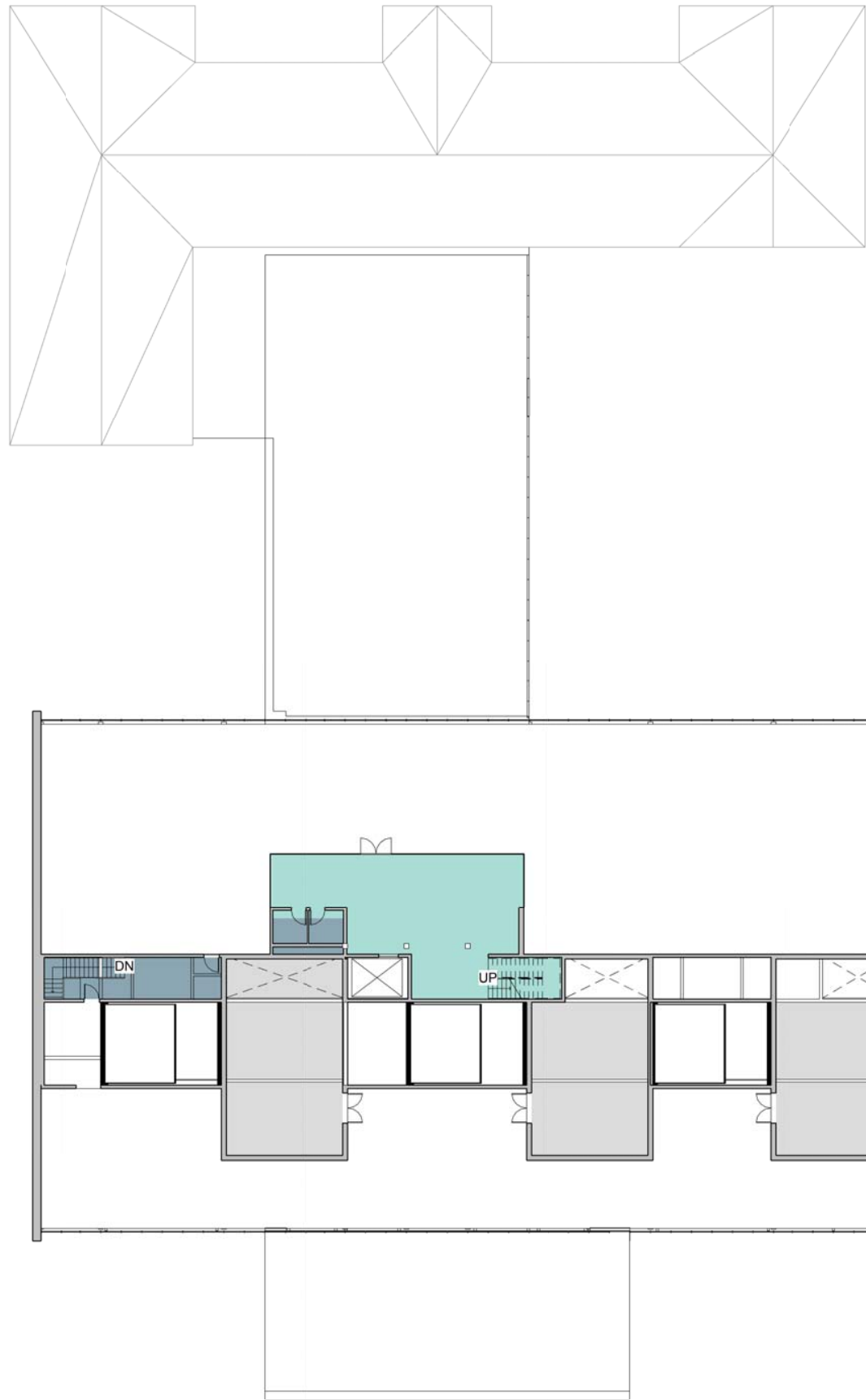
- Gypsum
- Lay-In
- Plank
- Suspended Slat
- Open to Structure

ref: interiors narrative for ceiling finish in auditorium



Ceiling Finish Schedule_L2	
Ceiling Finish	Area
Gypsum	5683 SF
Lay-In	5927 SF
Open to Structure	15426 SF
Plank	24671 SF
Suspended Slat	12770 SF

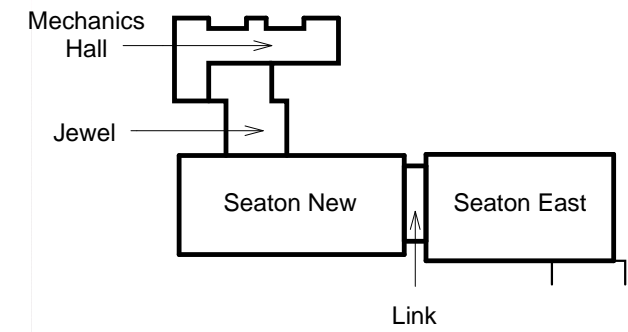




Ceiling Legend

- Gypsum
- Lay-In
- Plank
- Suspended Slat
- Open to Structure

Ceiling Finish Schedule_L3	
Ceiling Finish	Area
Gypsum	601 SF
Open to Structure	3246 SF
Plank	1264 SF



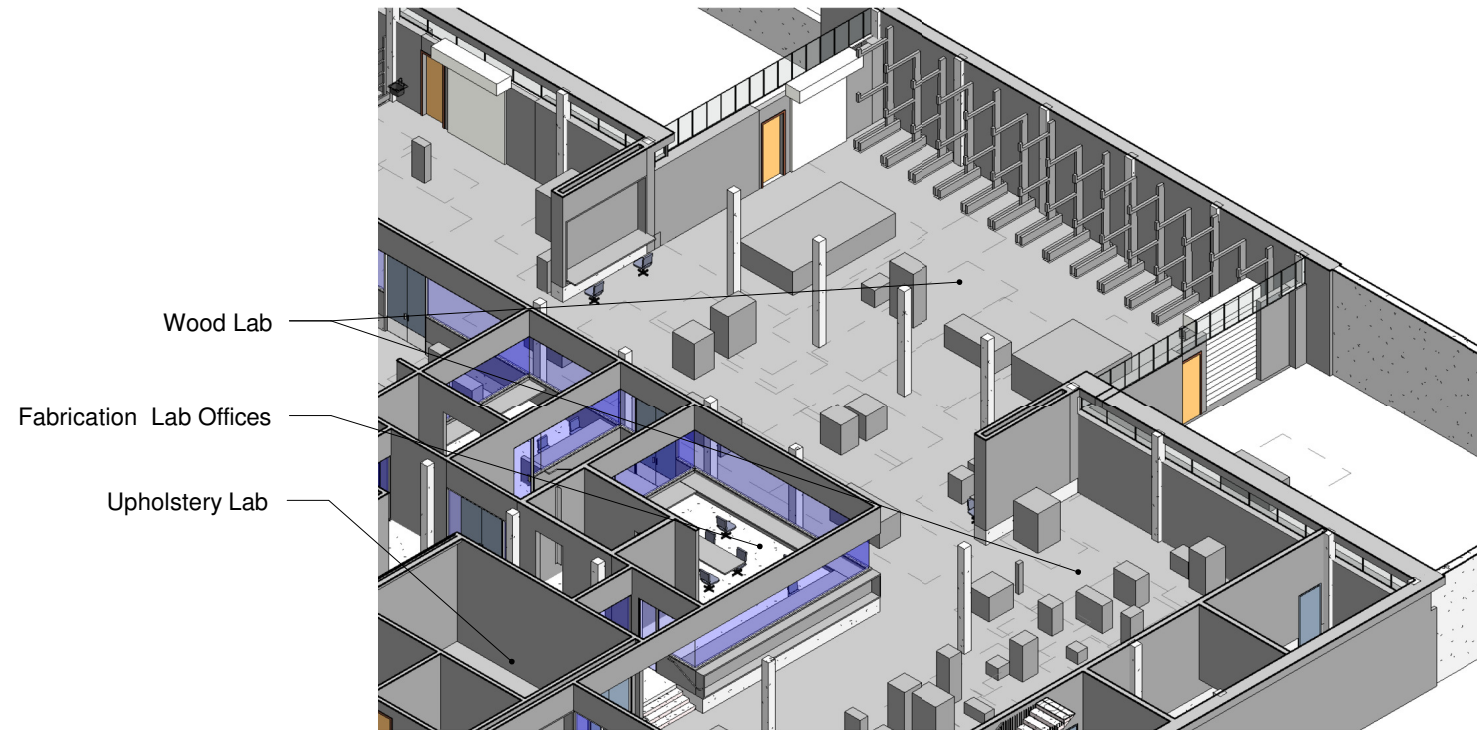
5.2 Fabrication Lab Design Diagrams

The following Fabrication Lab design diagrams have been prepared by el dorado, Inc.



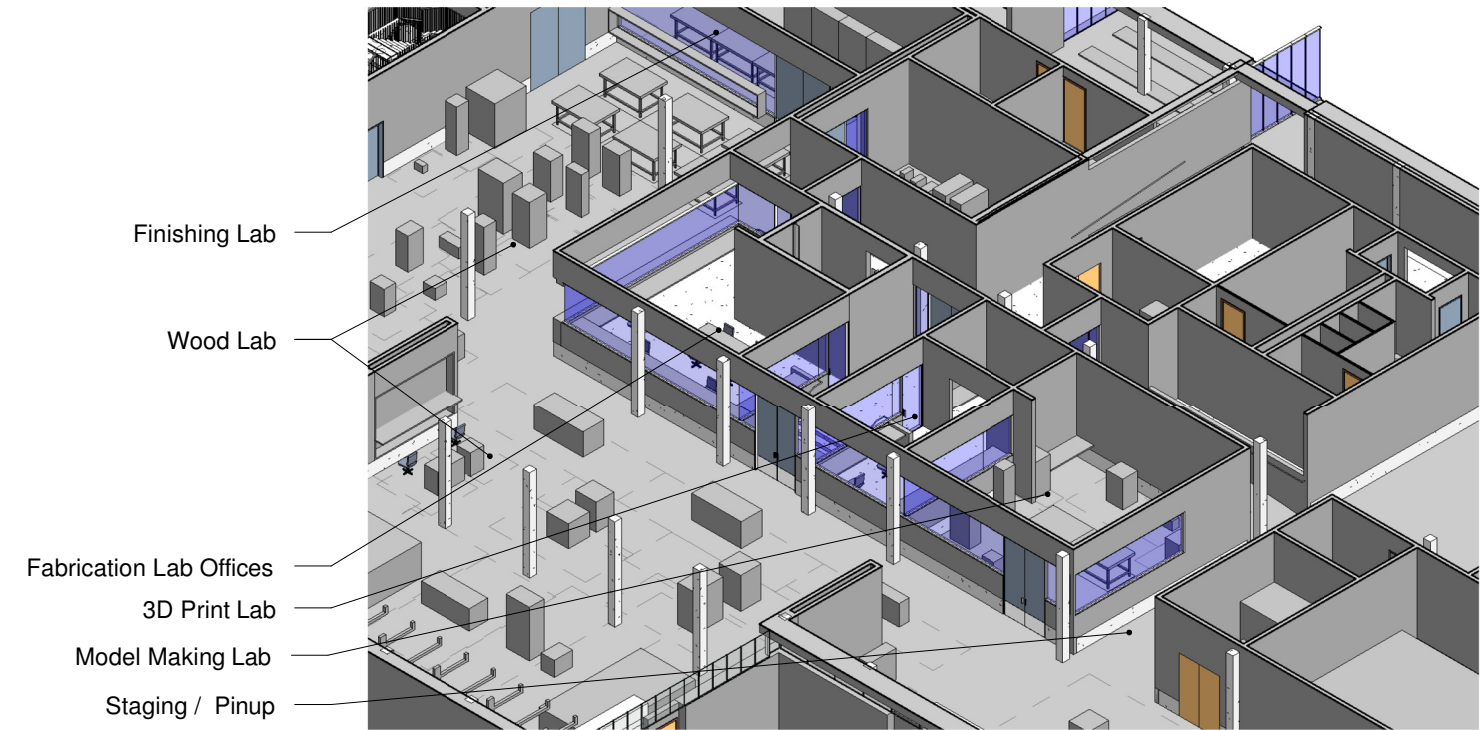
3D-Fab Lab Axo Overall

NOT TO SCALE



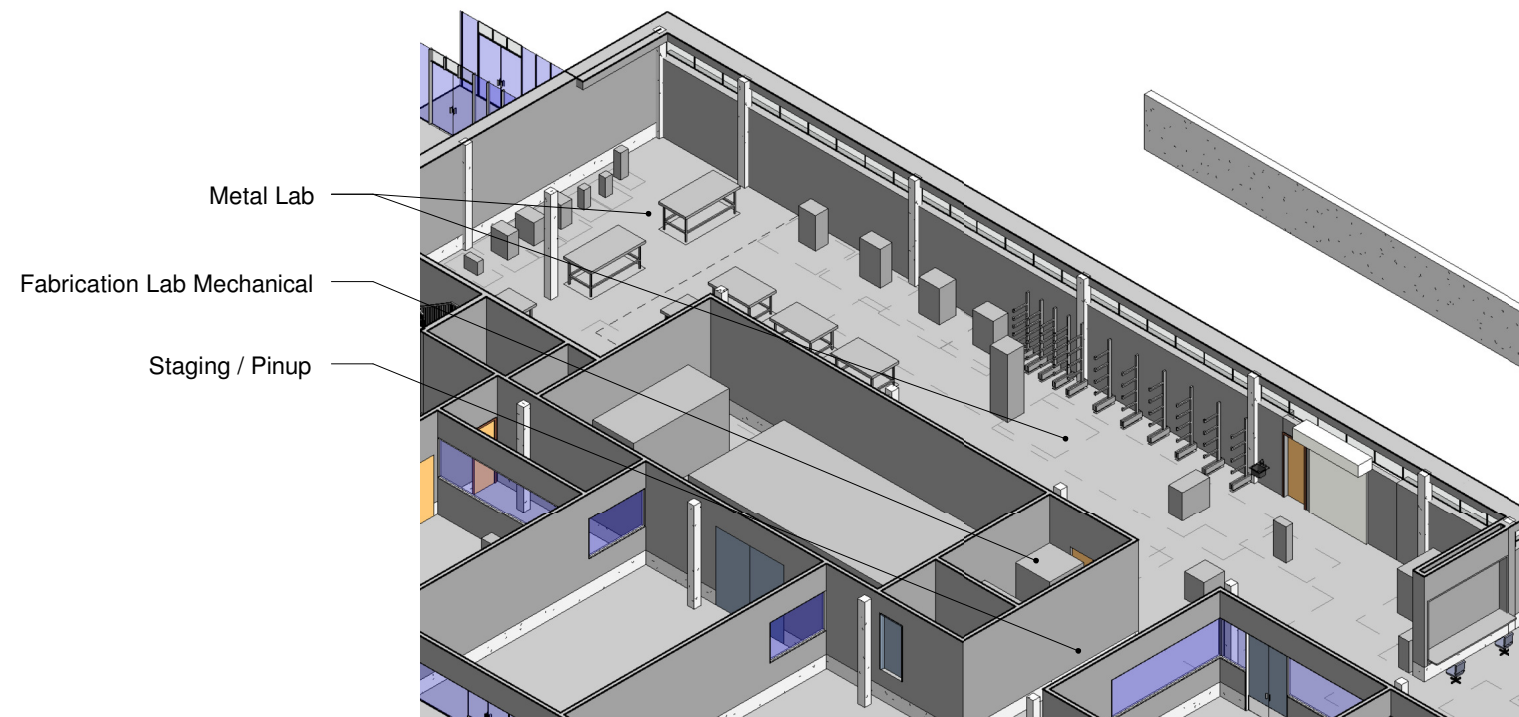
3D-Fab Lab Axo 03

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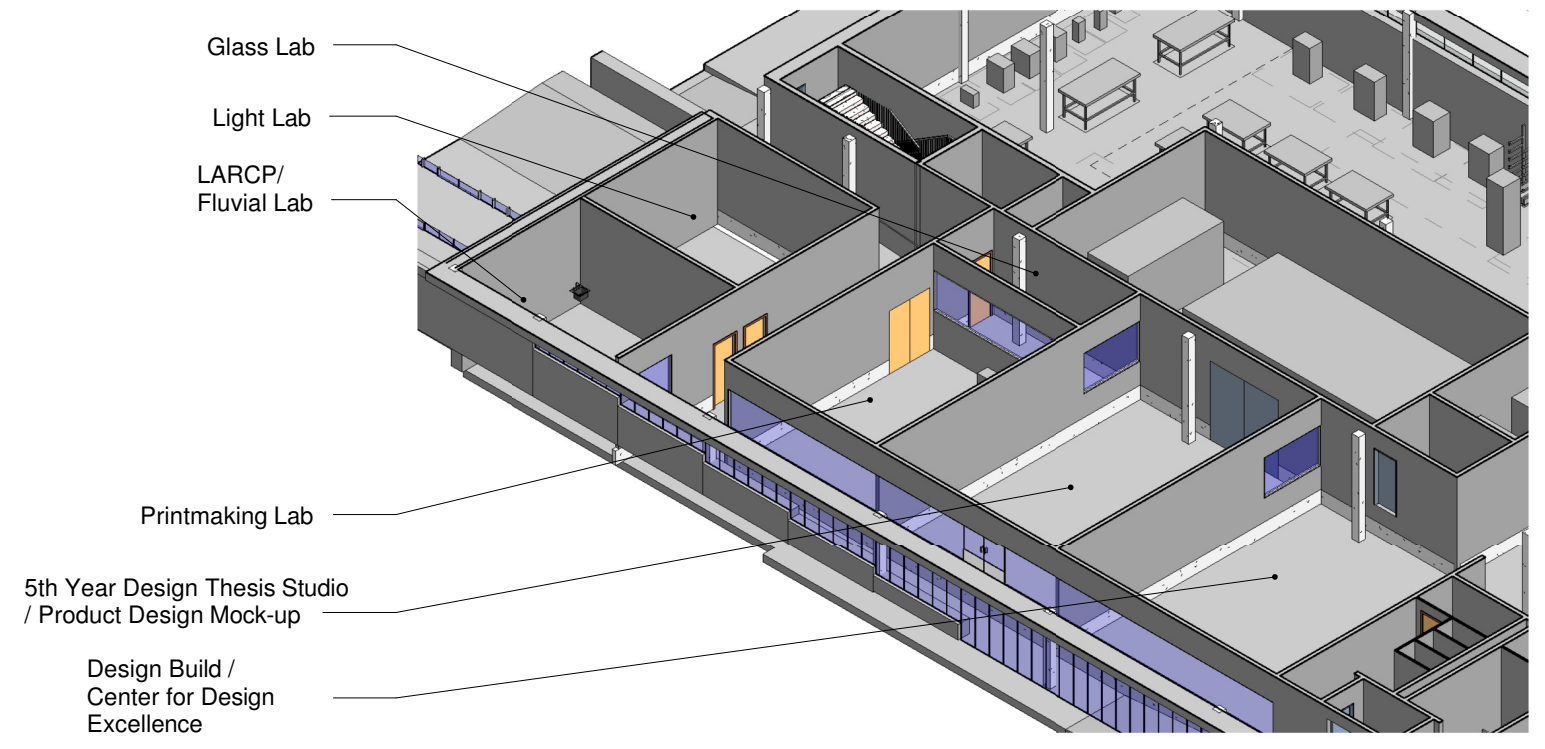
3D-Fab Lab Axo 02

NOT TO SCALE



3D-Fab Lab Axo 04

NOT TO SCALE



3D-Fab Lab Axo 01

NOT TO SCALE

5.3 Project Specifications

Architectural system descriptions have been prepared in Unifomat and include the categories listed below:

- A Substructure
- B Shell
- C Interior
- D Services
- F Special Construction & Demolition

Architectural Specifications – Element A – Substructure

A10 Foundations

- A. See structural narrative for cast-in place concrete foundation related inclusions.
 - 1. Footings
 - 2. Foundation Walls
- B. Extruded-polystyrene Board Insulation
 - 1. At all below-grade perimeter basement walls – 3” thickness and with a typical extension from structural footing to 6” below finish grade level.

A40 Slabs-On-Grade

- A. See structural narrative for cast-in place slab-on-grade related inclusions.
- B. Plastic Vapor Barrier (will need to be reviewed in relation to geotechnical report recommendations).
 - 1. Below Slabs-on-grade – 15 mil with maximum water-vapor permeance of 0.008 grains/h x sf x inches Hg. Include all standard manufacturer accessories (tapes and mastics).
- C. Bonded HPDE Sheet Waterproofing (if required per recommendation of geotechnical report)
 - 1. WR Grace & Co – Preprufe 300R
- D. Extruded-Polystyrene Board Insulation
 - 1. Below Slabs-on-grade - 1 ½” thickness at all perimeter wall locations. Typical extension of 4’-0” from perimeter wall towards interior of building.

A60 Water and Gas Mitigation

- A. Self-Adhering Sheet Waterproofing
 - 1. Modified Bituminous Sheet Waterproofing - WR Grace, Bituthene 3000/ Low Temperature with B2 LVC Primer
 - a. Modified Bituminous Sheet: Minimum 60-mil nominal thickness, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated on one side to a 4-mil- thick, polyethylene-film reinforcement, and with release liner on adhesive side; formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.
- B. Non-Woven – Geotextile-Faced Sheet Drainage Panel
 - 1. WR Grace Hydroduct 660 system (horizontal and vertical)
- C. Perimeter Drain – perforated and non-perforated, PE piping transitions and fittings, 6”. Pipe to be encased with sock-style geotechnical filter fabric.
- D. Radon Mitigation Piping Network
 - 1. Include a total of six capped (to and bottom) 4” PVC pipes (3 at Seaton East and 3 at Seaton New) to run from the basement level and vented at the roof level for necessary, future building radon mitigation strategies. Pipes will not be connected to any additional mechanical systems for this project.

END OF ELEMENT A

Architectural Specifications – Element B – Shell

General Notes

- A. All exterior surfaces not provided with factory finishes are to be field painted in custom colors as selected by architect.
- B. All exterior limestone cladding and mortar joints to be repaired where currently damaged or where damaged by demolition or new construction operations. Specific areas of consideration:
 - 1. Seaton East
 - a. South entry area
 - b. Roof to façade transitions
 - c. North connection to new link
 - d. At grade conditions
 - 2. Mechanics Hall
 - a. At grade conditions
 - b. Roof to façade transitions
 - c. Existing connections to Seaton Court (to be demolished) – to include patch and /or replacement of stone cladding to match surrounding and existing construction
 - d. All current exterior window and door openings

B10 Superstructure

- A. See structural narrative for steel framing superstructure
 - 1. Columns
 - 2. Beams
 - 3. Bracing
 - 4. Other miscellaneous framing members
- B. See structural narrative for Composite Metal Floor and Roof Decking
 - 1. Locations
 - a. Link (connection from Seaton East to Seaton New)
 - b. Seaton New
 - c. Jewel
- C. Building Structural systems are not required to be fireproofed – see building code narrative section.

B20 Exterior Vertical Enclosure

B2010 Exterior Walls

- A. AL1
 - 1. Access Ladders
 - a. Welded, galvanized steel access ladders, OSHA compliant, high-performance coating. Include (4)
 - 1) Seaton East to Link
 - 2) Seaton New to Link
 - 3) Seaton New to Jewel
 - 4) At Seaton New mechanical penthouse

B. ESC1

1. Exterior Stone Cladding (Limestone)

- a. System consists of cold-formed metal framing (8"), supported from the exterior structural floor slab, with 5/8" Dens Glass sheathing. Henry Blueskin Air and Vapor membrane system to cover exterior sheathing. Framing cavities to be spanned with 6" semi-rigid mineral fiber insulation and covered with a continuous layer of 2" aluminum-foil-faced closed-cell polyisocyanurate rigid board interior sheathing, with 5/8" type 'X' gypsum wall board interior finish.
- b. Limestone panel sizing to be determined. Panel thickness – 3". Open joint, rain screen system with steel backup and anchorage system as indicated stone cladding detail sheet (attached to end of spec section). Plug – anchor system-type anchorage at back of stone panel.
- c. Honed finish.
- d. Location- Seaton New solid cladding - indicated on exterior drawings and diagrams.

C. CW1

1. Curtainwall

- a. System consists of Kawneer Clear Wall, 4 Sided Toggle-Glazed curtain wall system. High thermal performance system or equal SSG aluminum curtainwall, with 2 1/2" x 6" mullions, fixed 1 1/8" insulated vision unit infills, and 3/8" spandrel/blankoff glass infills with shadowbox and backpan where indicated. Provide manufacturer's copings where required. Finish to be fluoreopolymer high-performance coating.

D. CW2

1. Curtainwall

- a. System consists of Kawneer 1600UT high thermal performance "System 2" or equal SSG aluminum curtainwall, with 2 1/2" x 6" mullions, fixed 1 1/4" or 1 1/2" insulated vision unit infills, and 3/8" spandrel/blankoff glass infills with shadowbox and backpan where indicated. Customizations include SSG horizontals and custom vertical mullion cap fin with 2'-6" continuous aluminum fin extension. Provide manufacturer's copings where required. Finish to be fluoreopolymer high-performance coating.

E. CW3

1. Skylight

- a. System consists of fixed 1 1/2" insulating glass units conventionally glazed onto thermally broken extruded aluminum framing with integral water and condensation gutters. Insulated safety glass units to consist of 3/8" tempered clear outer lite with low-e coating on the no. 2 surface, 5/8" air space with warm-edge spacers, laminated inner lite of 1/4" heat-strengthened clear glass with ceramic frit on no. 3 surface, clear .060 PVB interlayer, and 1/4" tempered clear glass.
- b. System location
 - 1) Seaton New skylights (roof monitors)
 - 2) Jewel skylights (roof monitors)

- F. CW4
 - 1. Curtainwall
 - a. System consists of Kawneer 1600UT high thermal performance, 4-sided capture with 2 1/2" x 6" mullions, fixed 1 1/4" or 1 1/2" insulated vision unit infills, angled construction for light monitor location. Finish to be flouropolymer high-performance coating.

Glass Types

Delineations are presented in drawings and diagrams in the following format:

"CW1" = Curtain Wall Framing
"A" = Glass Type

- A. Type A
 - 1. Provide 1 1/4" or 1 1/2" insulated glazing units in locations required by code, to consist of 3/8" tempered clear inner lite with low-e coating on no. 2 surface, 5/8" air space with warm-edge spacers, and 1/2" laminated outer lite of 1/4" heat-strengthened clear glass, with clear .060 PVB interlayer, and 1/4" tempered clear glass, with ceramic frit on no. 3 surface. All glass to be low iron.
- B. Type B
 - 1. Provide 1 1/4" or 1 1/2" insulated glazing units in locations required by code, to consist of 3/8" tempered clear inner lite with low-e coating on no. 2 surface, 5/8" air space with warm-edge spacers, and 1/2" laminated outer lite of 1/4" heat-strengthened clear glass, with clear .060 PVB interlayer, and 1/4" tempered clear glass, with ceramic frit on no. 3 surface. Airspace to include 2 layers of Okalux Kapipane T capillary slabs sandwiching one layer of Okalux SAB 45 fiber tissue (for translucent affect). All glass to be low iron.
- C. Type C
 - 1. Provide 1 1/4" or 1 1/2" insulated glazing units in locations required by code, to consist of 3/8" tempered spandrel inner lite, 5/8" air space with warm-edge spacers, and 1/2" laminated outer lite of 1/4" heat-strengthened clear glass, with clear .060 PVB interlayer, and 1/4" tempered clear glass. Airspace to include 2 layers of Okalux Kapipane T capillary slabs sandwiching one layer of Okalux SAB 45 fiber tissue (for translucent affect). All clear glass to be low iron. Any noted Spandrel cavities to be filled with 4" semi-rigid mineral fiber curtainwall insulation. Interior surface of backpans/blankoffs to be covered with 5/8" "X" gypsum wall board interior finish.
- D. EW1
 - 2. Exterior Windows
 - a. Kawneer 8400TL Series Architectural Windows
 - 1) Double Hung
 - 2) Glass Type A, Clear, Insulated
 - 3) Finish – manufacturer flouropolymer finish

- 4) 1 ¼" insulated glazing infill
- 5) Location – replacement windows for all existing wood windows at Mechanics Hall.

E. ECO1

3. Cast In Place Concrete Retaining Wall
 - b. Non-specialty finish
 - c. Locations as indicated in exterior drawings and diagrams.

F. ECO2

4. Board-Formed Cast-In-Place Concrete Finish
 - d. Form-Facing Panels for As-Cast Finishes: Provide a board finish acceptable as related to the above photo & drawing reference information. Use 1-1/2 inch wide wood strips ripped from 2 x lumber, butted tightly, and nailed to exterior grade B-B plywood backing with finish nails. Saw marks from ripping are acceptable. Provide slight random offsets in plane surface between adjacent strips of 0 to 1/4 inch (1/4 inch maximum). Provide continuous, straight, cast surfaces, free from visible bulges and indentations.
 - e. Locations as indicated in exterior drawings and diagrams.
 - f. Refer to images below for quality reference.



G. EMP1

5. Exterior Metal Wall Panel
 - g. VM Zinc Interlocking Wall panel (Anthra-Zinc Finish)
 - 1) System A consists of cold-formed metal framing (8"), supported from the exterior structural floor slab, with 5/8" Dens Glass sheathing at solid walls. Henry Blueskin Air and Vapor membrane system to cover exterior sheathing. Framing cavities to be spanned with 6" semi-rigid mineral fiber insulation and covered with a continuous layer of 2" aluminum-foil-faced closed-cell polyisocyanurate rigid board interior sheathing, with 5/8" type 'X' gypsum wall board interior finish. Metal panel backed by cold-formed, galvanized 1 ½" z-shaped furring members at exterior. Non-

- perforated panel at solid wall construction (see exterior elevations and diagrams).
- 2) System B consists of galvanized steel (with high performance coating) and cold-formed, galvanized 1 ½" z-shaped furring members at behind perforated metal panel areas (see exterior elevations and diagrams).
 - 3) System location
 - a) Seaton New roof area (mechanical penthouse wall cladding, solid and perforated).

Exterior Alternate 1 – Replace zinc interlocking walls panels (perforated and non-perforated) with custom formed aluminum wall panels of similar profile and dimension. Reminder of wall construction to stay the same.

H. EML1

1. Metal Louvers

- a. System consists of 4" stormproof, extruded stainless steel wall louver. Type 316. Provide bird and insect screens, blank-off panels as required and integral flashings

B2030 Exterior Doors

I. ED1

2. Entrance Door System (Exterior Entrances)

- a. Entrance door system consists of Kawneer Standard Entrance Series 350 aluminum "medium stile" type doors or equal, with custom 10" base, and single pane, insulated glass inserts, single or double leaf as drawn.
- b. System locations at exterior
 - 1) Exterior Jewel entrances (interior and exterior vestibule)
 - 2) South Entry at Seaton East (interior and exterior vestibule)
 - 3) East and west entries at the Link (interior and exterior vestibule)
 - 4) Exterior doors at Mechanics Hall
- c. See Hardware narrative sections for hardware data.

J. ED2

3. Exit/Utility Door

- a. Exit/utility door system consists of single leaf, flush, insulated core steel door. Provide clear vision panel where drawn. Finish to be rust-inhibitive primer. Frames to be single-rabbett, welded hollow steel, and grout filled.
- b. Locations at exterior
 - 1) Exterior swing doors at exterior fabrication yard
 - 2) Exterior egress door at west side of Auditorium (ground level).

c. See Hardware narrative sections for hardware data.

K. ED3

4. Fabrication Yard Rolling Garage Door

a. Door system consists of electric motor operated curtain, made of 3" x 15/16" 22 gauge galvanized sheet steel flush interlocking slats filled with urethane foam insulation. Provide all accessories to make a complete installation, including locks, guiderails, weatherseals, hood, counterbalance, motor, safety devices and controls. Finish to be rust-inhibitive primer with high performance coating. Provide structural steel jambs, head and threshold.

b. Locations at exterior

- 1) 3 at west Fabrication Yard area

B3010 ROOF COVERINGS

A. ELD1

5. Landscape Deck (green roof)

a. Siplast Extensive Green Roof.

- 1) Assembly Depth, Nominal: 4 inches, including growing medium.
- 2) Assembly Weight: Maximum 30 lb/sq. ft., including growing medium and plants and saturated with captured water, but not including weight of roofing system.
- 3) Perimeter Rock
 - a) Gravel shall be clean doublewashed crushed aggregate, free of rock dust, fines or soil particles and foreign material.
 - b) size: 1.5 to 2.5 inch.
- 4) Metal Edging (Soil Retainer): Assembly manufacturer's extruded-aluminum edging with drainage openings.
 - a) Configuration: L-shaped.
 - b) Color: Gray
- 5) Plants
 - a) Local sedum mix
 - b) Plug spacing: 6" on center.

b. Modified Bituminous Sheet Waterproofing membrane at green roof and roof paver areas.

- 1) Product: Siplast: Teranap Deck Waterproofing system.
 - a) Modified Bitumen Sheet: 160 mil thick fiberglass scrim/polyester mat composite impregnated and coated with styrene-butadiene-styrene (SBS) modified bitumen; top and bottom surfaces covered with silica parting agent.
- 2) Finish (at vegetated roof) – Sanded top and bottom
- 3) Molded Sheet Drainage Panels
 - a) Siplast, Paradrain
 - i. Woven-Geotextile-Faced, Molded-Sheet Drainage Panel: Composite subsurface

drainage panels consisting of a studded, no biodegradable, molded-plastic-sheet drainage core; with a woven-geotextile facing with an apparent opening size not exceeding No. 40 sieve laminated to one side of the core; and with a horizontal flow rate not less than 2.8 gpm per ft..

4) Roofing Insulation

- a) Inverted insulation system consists of 6" polyisocyanurate insulation, Overlaid upon roofing membrane and drainage panels. Provide all roofing details and accessories for a complete job and 30 year minimum guarantee. Note that structural slabs are to be sloped at 1/4" per foot to drain, however provide additional tapered insulation to account for miscellaneous drainage conditions.

b)

B. ELD2

6. Landscape Deck (Pavers)

a. Concrete Roof Pavers

- 1) Wausau Tile or similar Plank Pavers
- 2) 5 13/16" x 23 13/16" pavers, 2" in thickness
- 3) Manufacturer standard paver support assembly – adjustable or stackable pedestals, shims, and spacer tabs.

b. Modified Bituminous Sheet Waterproofing membrane at green roof and roof paver areas.

- 1) Product: Siplast: Teranap Deck Waterproofing system.
 - a) Modified Bitumen Sheet: 160 mil thick fiberglass scrim/polyester mat composite impregnated and coated with styrene-butadiene-styrene (SBS) modified bitumen; top and bottom surfaces covered with silica parting agent.
- 2) Finish (at roof pavers) – polyester film
- 3) Molded Sheet Drainage Panels

a) Siplast, Paradrain

- i. Woven-Geotextile-Faced, Molded-Sheet Drainage Panel: Composite subsurface drainage panels consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a woven-geotextile facing with an apparent opening size not exceeding No. 40 sieve laminated to one side of the core; and with a horizontal flow rate not less than 2.8 gpm per ft.

4) Roofing Insulation

- a) Inverted insulation system consists of 6" polyisocyanurate insulation, Overlaid upon roofing membrane and drainage panels. Provide all roofing details and accessories for a complete job and 30 year minimum guarantee. Note that structural slabs are to be sloped at 1/4" per foot to drain, however

provide additional tapered insulation to account for miscellaneous drainage conditions.

C. EMF1

7. Metal Flashing

a. System consists of all exposed flashings throughout the project.
Flashing material types are per location as indicated below.

- 1) Exterior curtain wall (base and jambs), storefront glazing and entries (base, head and jambs), stone cladding (base and openings within – Type 316 stainless steel, 0.050" minimum thickness; 2D finish; break-formed, fabricated, and joined per SMACNA guidelines.
- 2) Zinc Wall panels A and B (base, head or parapet, and at all openings) – flashing material and gauge to match wall panel makeup.
- 3) Zinc Roofing (transitions and terminations) – flashing material and gauge to match roofing panel makeup.

D. EMT1

8. Metal trim and Copings

a. System consists of 3/16" solid aluminum plates (type 6063-T52 minimum) with concealed connectors and fluoropolymer, high performance coating. Copings to have 2" overhang at exterior wall side and dadoed edges?

E. RF1

2. Asphalt Composition Shingles (campus standard)

a. Include all related underlayment components and fastening.
b. Location – Mechanics Hall Roof – entire roof.

F. RF2

1. TPO

c. System consists of fully adhered 6" polyisocyanurate insulation, fully adhered protection board, and fully adhered TPO single-ply membrane in white. Provide all roofing details and accessories for a complete job and 20 year minimum guarantee. Insulation to be built-up for a 1/4" per foot to drain ratio.
d. Basis of Design – GAF Everguard TPO 80
e. See exterior drawings and diagrams for locations

B. FPS1

1. Fall Protection System

a. Basis of Design System – Pro-Bel roof anchor fall protection system
b. Include at the following locations

- 1) Link – east and west sides of roof area
- 2) Seaton New – west side of roof area, including West Fabrication roof area of Seaton New.
- 3) Jewel – North and south side of roof area

B3030 EXTERIOR RAILINGS

A. EGR1

1. Exterior Guard Rails

b. System consists of 1/2" x 2 1/2" ornamental quality welded stainless steel flat bars and posts, with horizontal stainless steel cable infill.

c. System location

- 1) Garden Roof area of Seaton New
- 2) South Jewel entry promenade (atop of courtyard east wall).
- 3) North Jewel courtyard (atop east and north courtyard wall)

B. EHR1

1. Exterior Hand Rails

d. System consists of 1 1/2" ornamental quality welded stainless steel pipe rails, posts and returns. Type 316

B3040 EXTERIOR BUILDING SIGNAGE

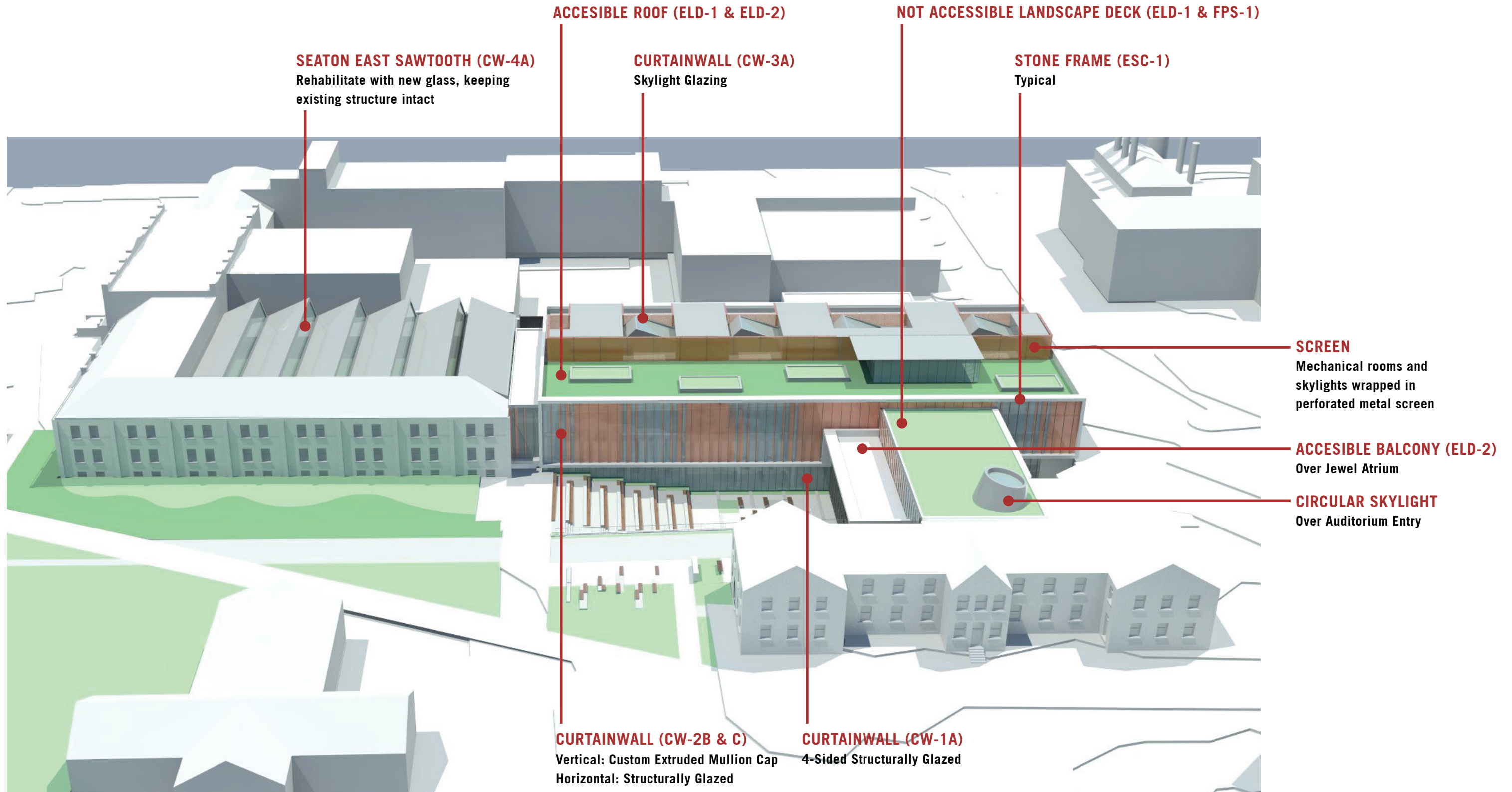
A. EBS1

1. Exterior Building Signage – see attached example signage construction. AP Design exterior signage to be of similar construction: perforated, custom coated metal panel with steel tube and channel backup structure. Match dimensions and base conditions of example signage
2. Include LED strip lighting at signage perimeter frame to light sign internally

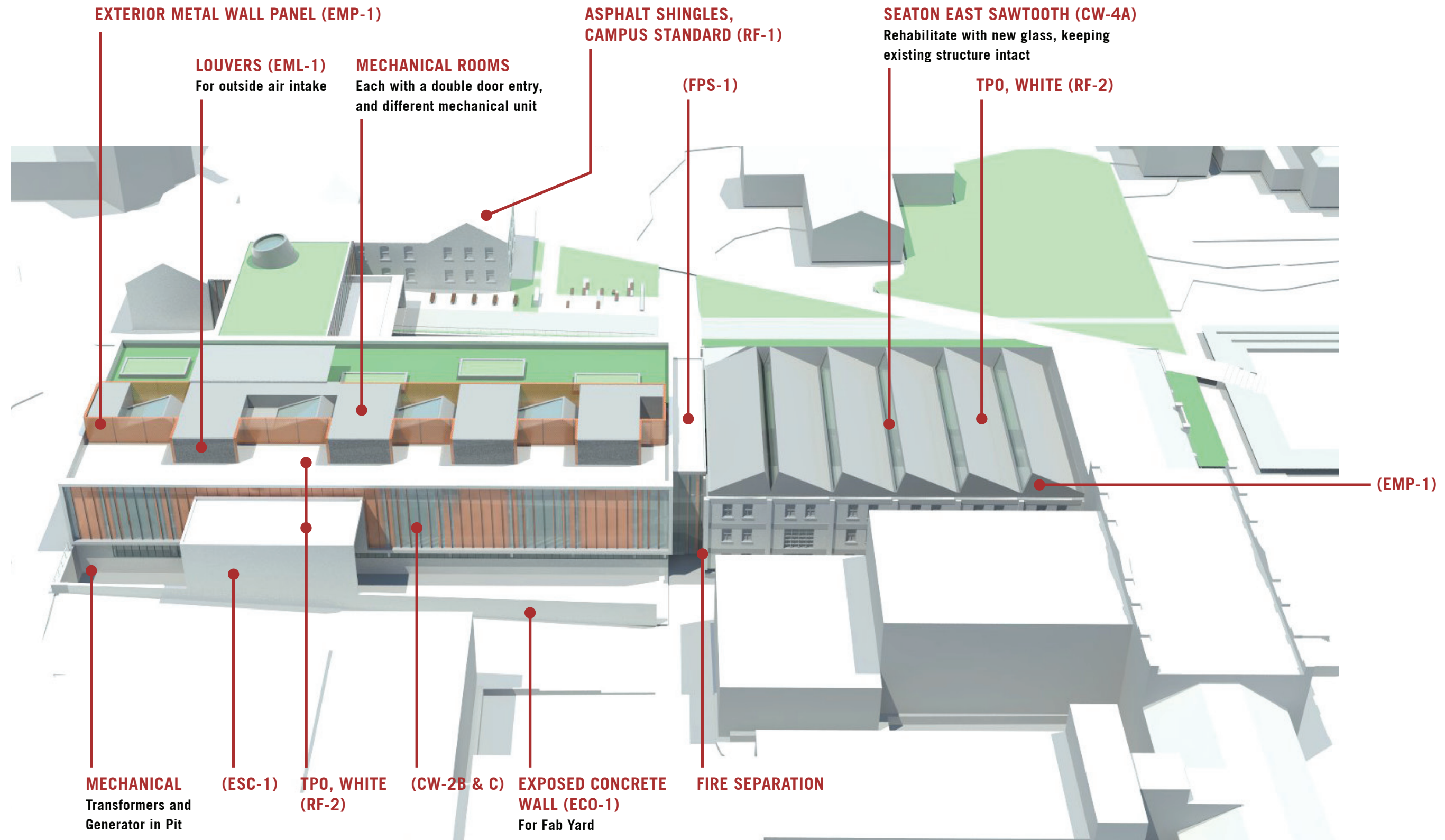
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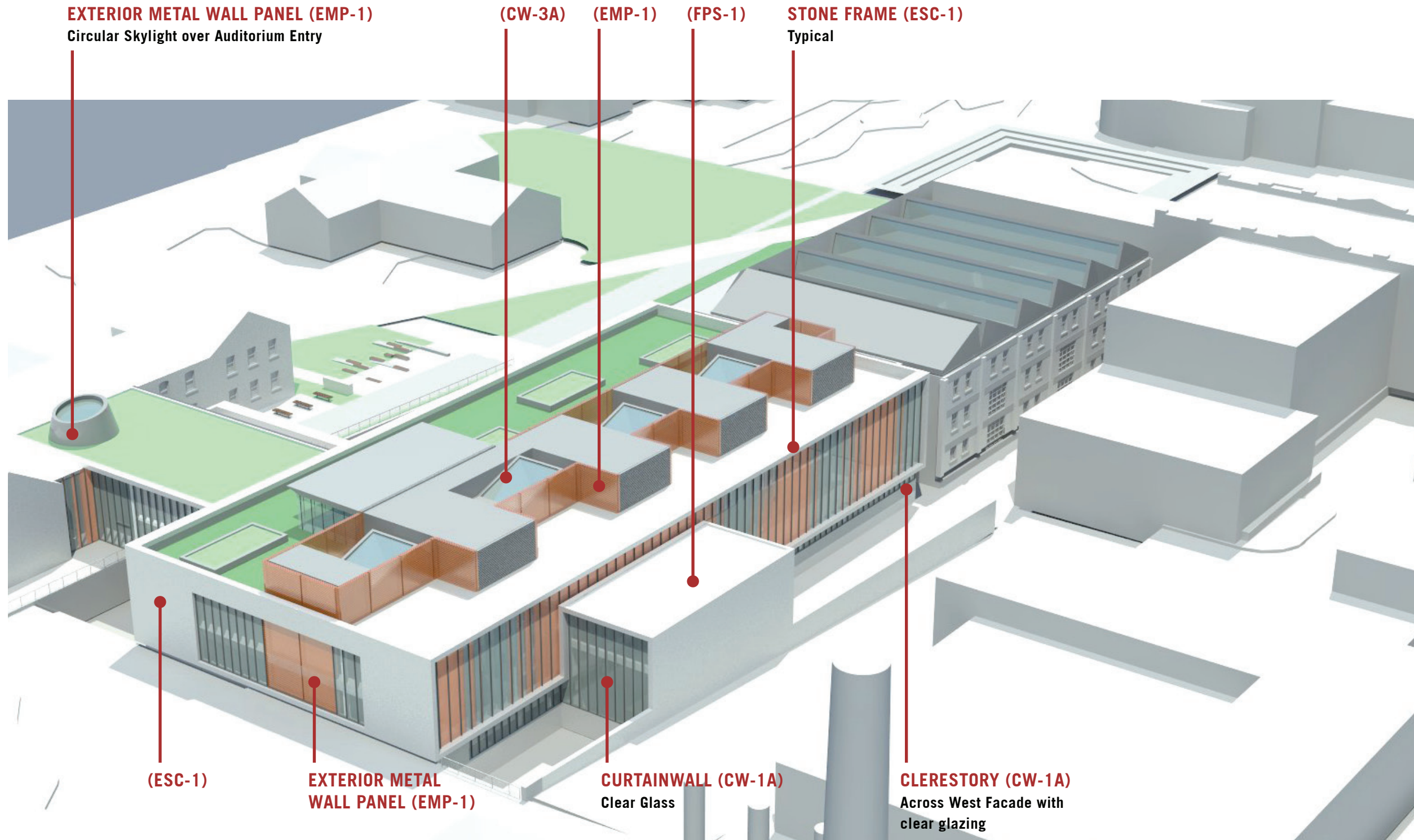
EXTERIOR RENDERS | EAST AERIAL



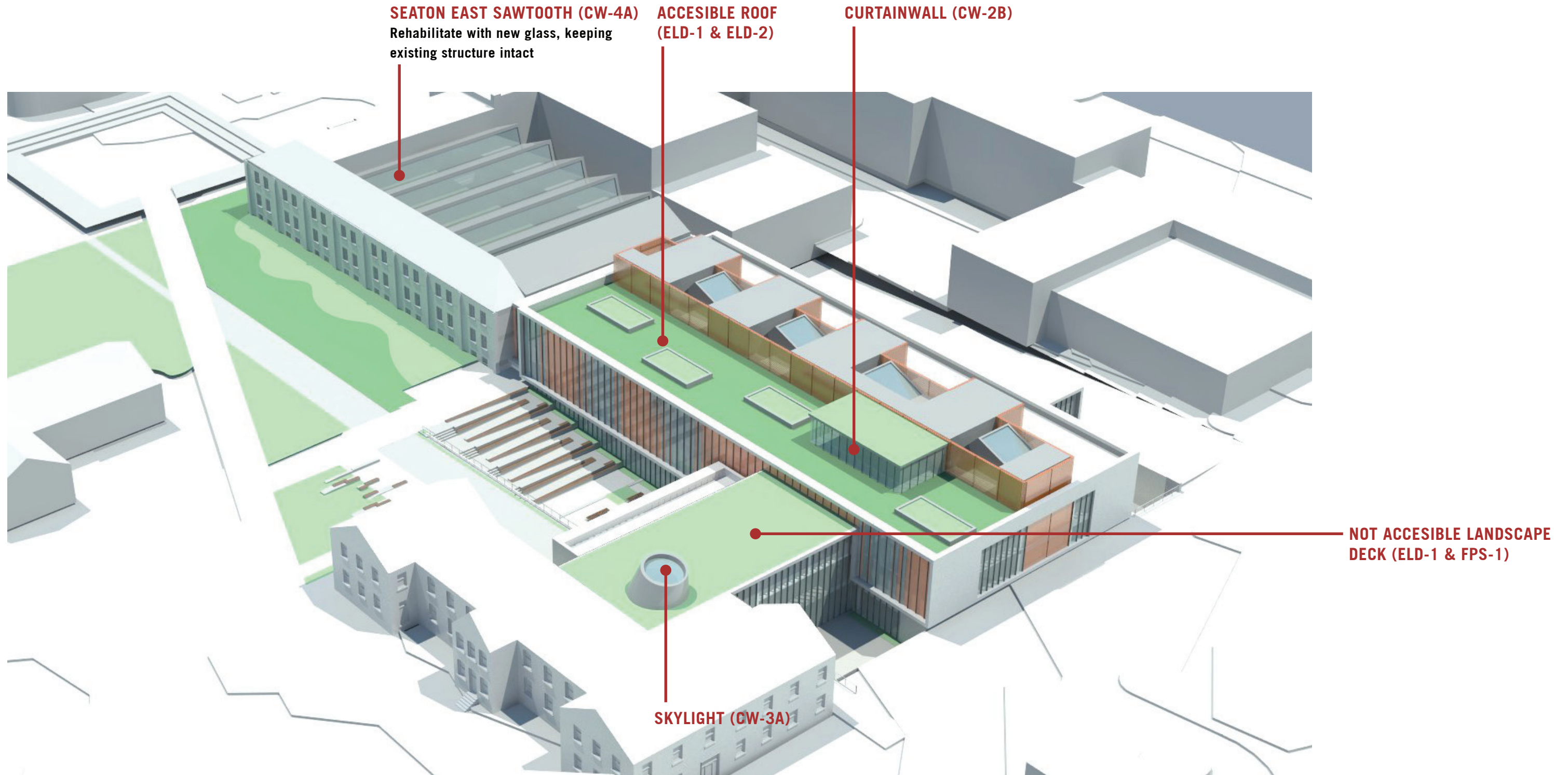
EXTERIOR RENDERS | WEST AERIAL



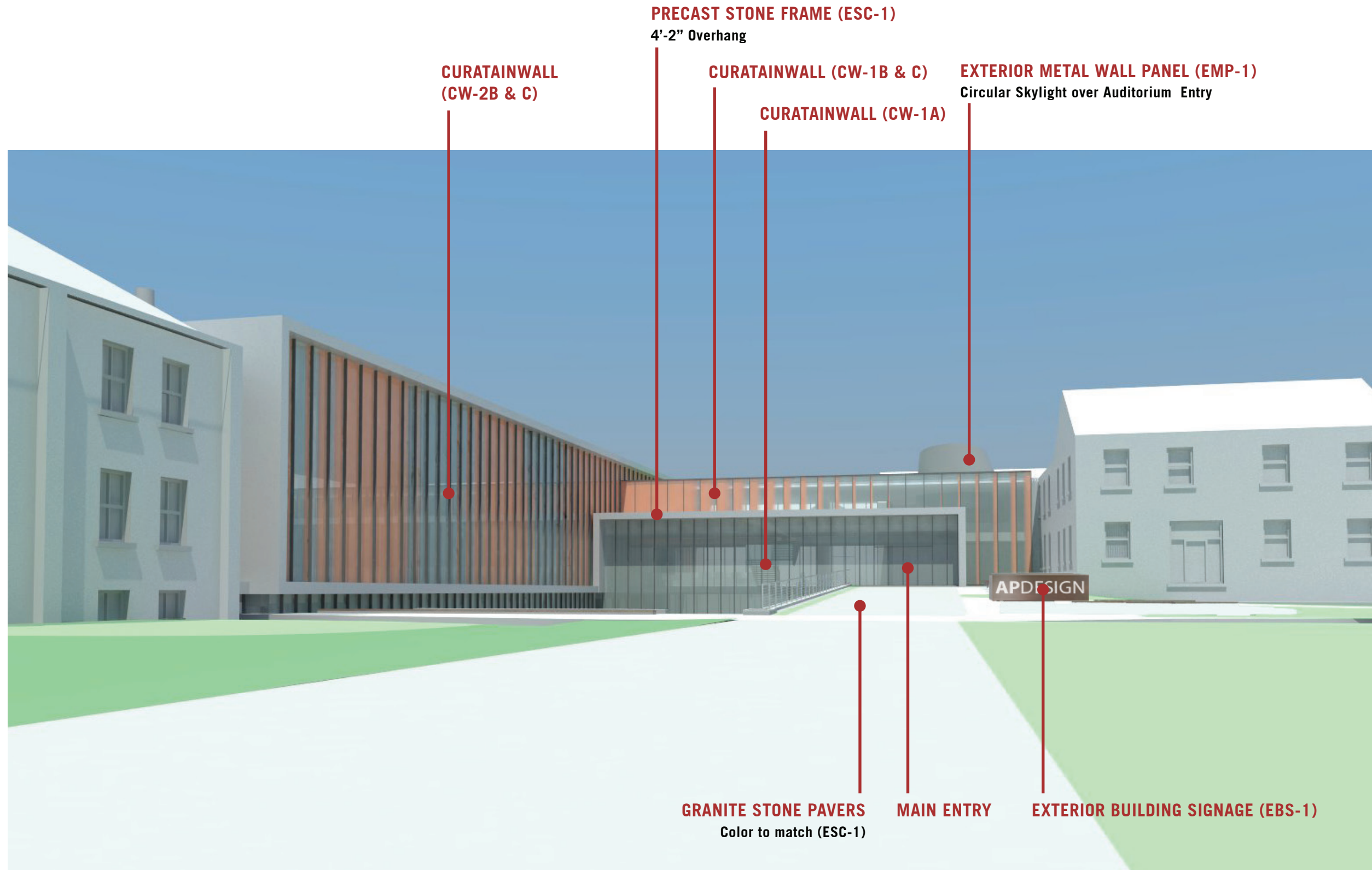
EXTERIOR RENDERS | NORTH WEST AERIAL



EXTERIOR RENDERS | NORTH EAST AERIAL

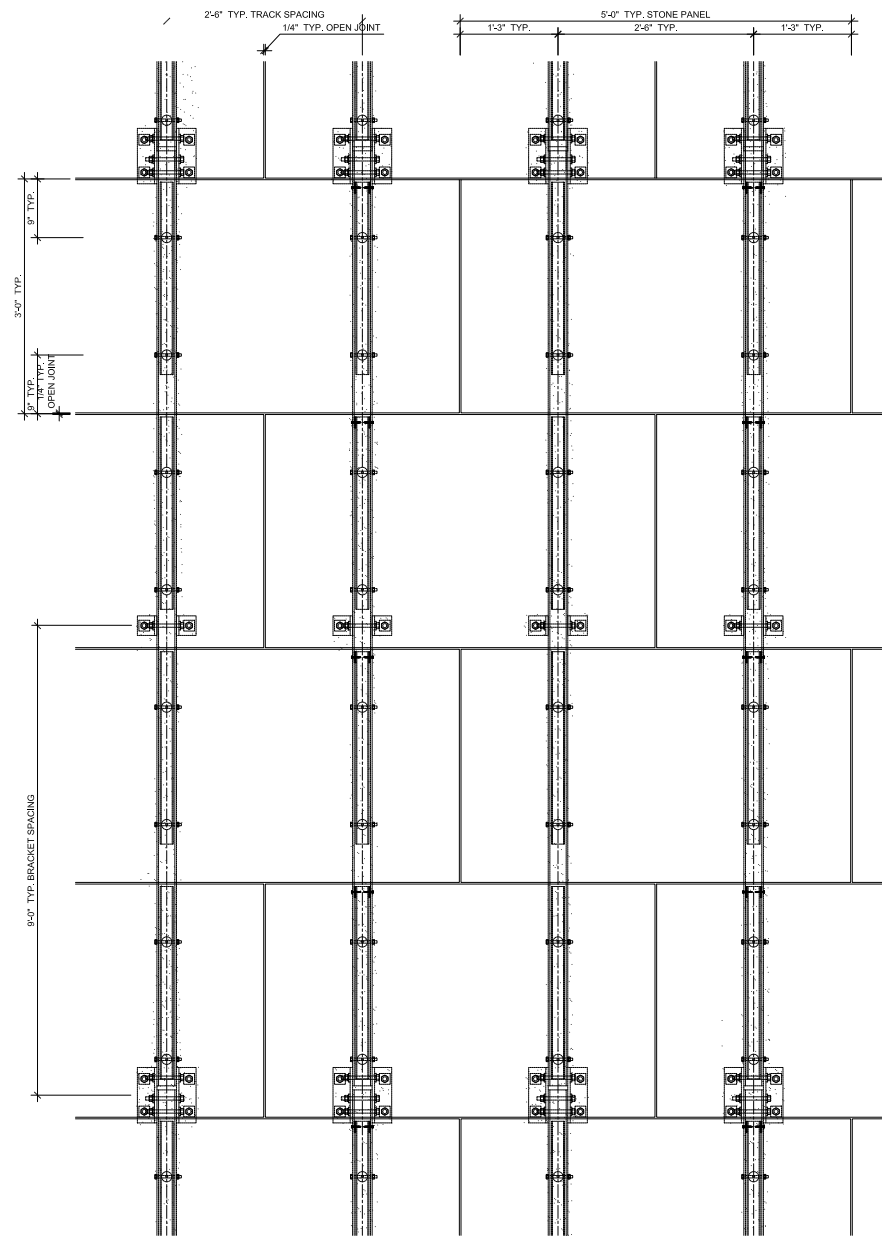


EXTERIOR RENDERS | SOUTH APPROACH

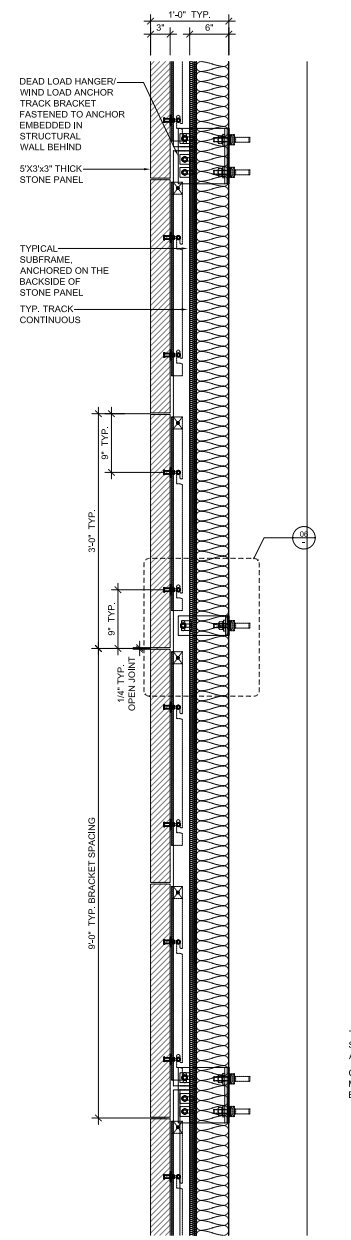


EXTERIOR RENDERS | NORTH WEST APPROACH



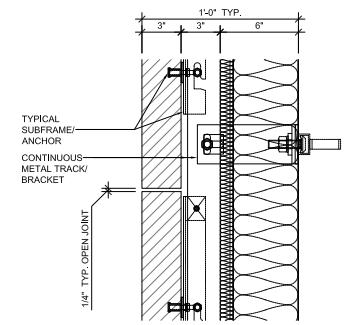


04 TYP. STONE WALL SYSTEM ELEV.
1/16" = 1'-0"
0 2' 4' 8' 14'

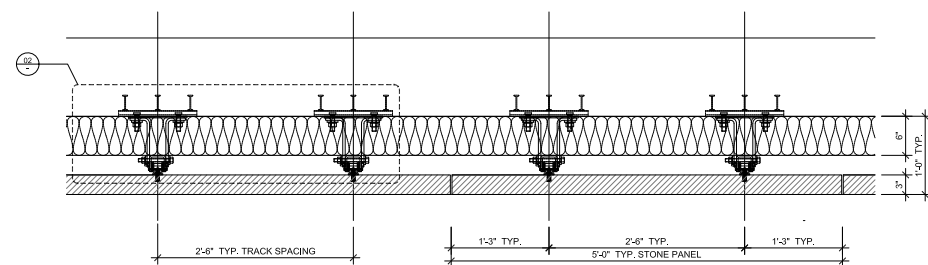


05 TYP. WALL SEC. @ INTERM. TRACK
1/16" = 1'-0"
0 2' 4' 8' 14'

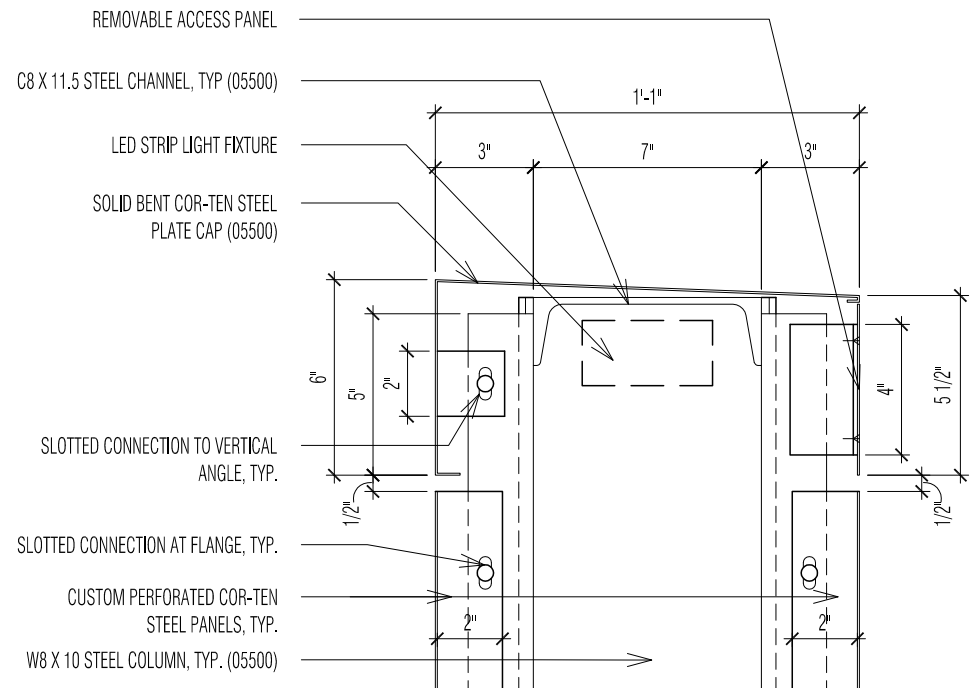
DETAIL TO BE REVIEWED FOR STONE FRAMING BACKUP AND PANEL CONFIGURATION - INSULATION CONFIGURATION IS NOT APPLICABLE TO PROJECT.



06 TYP. HORIZONTAL JOINT DETAIL
3/8" = 1'-0"
0 1' 2' 4' 8'

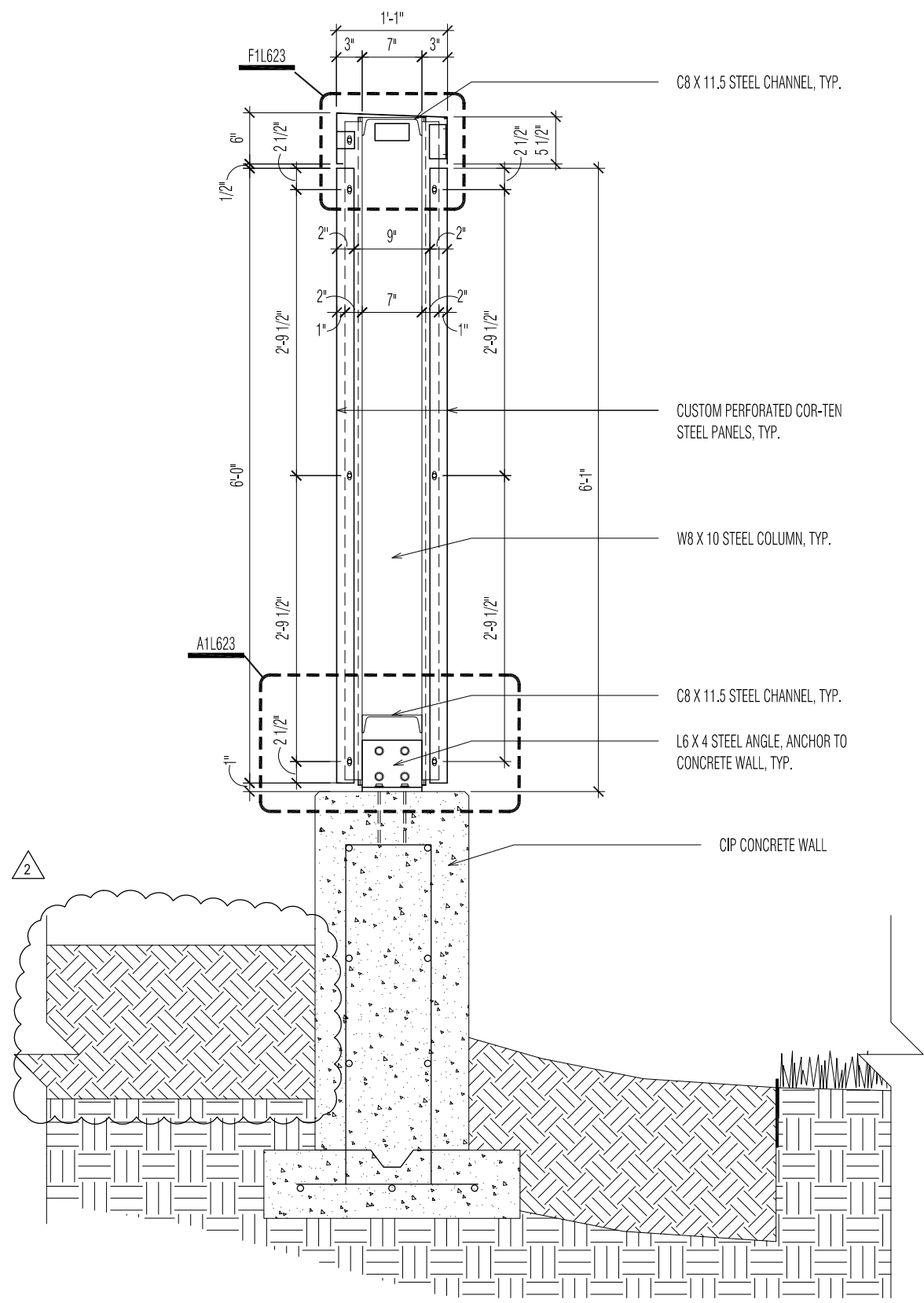
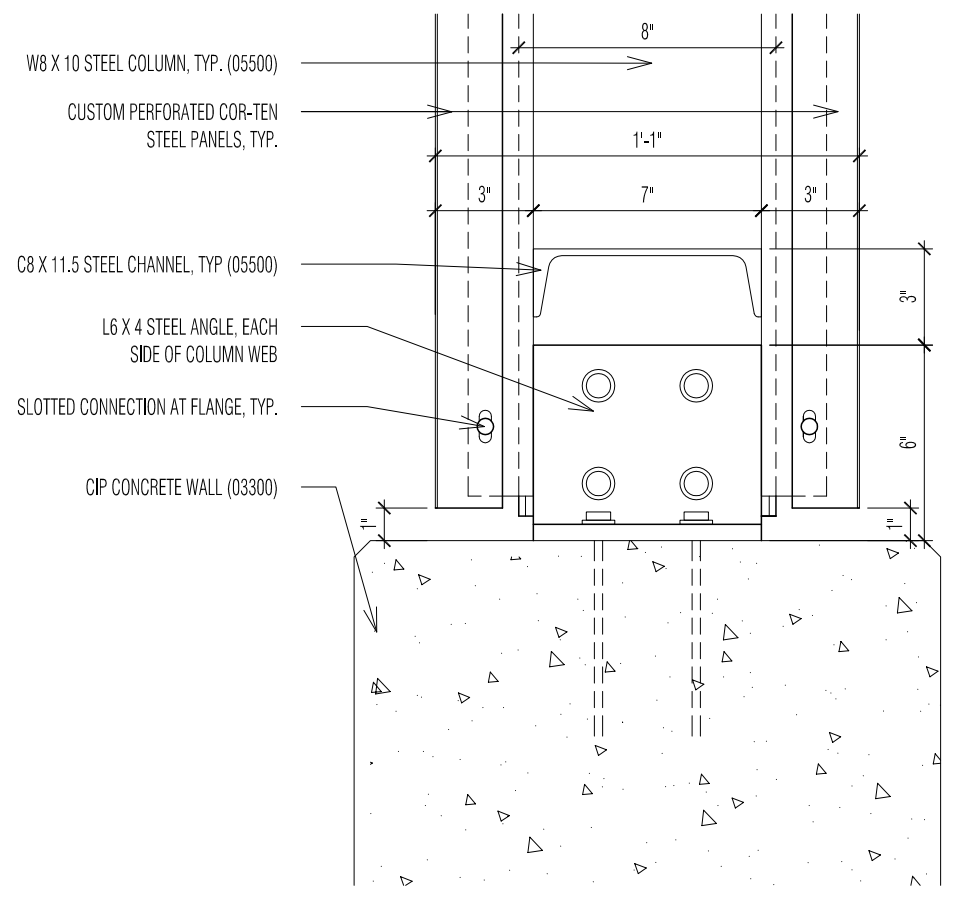


01 TYP. STONE WALL PLAN SEC.
1/16" = 1'-0"
0 2' 4' 8' 14'



F1 SIGNAGE CAP DETAIL

3" = 1'-0" RE:



Architectural Specifications – Element C - Interiors

ELEMENT C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 INTERIOR PARTITIONS

A. Interior Fixed Partitions:

1. Non-load bearing gypsum board partition assemblies:
 - a. Gypsum wallboard.
 - b. C-T shaftwall at elevators and shafts.
 - c. Impact resistant gypsum wallboard partitions at where utilized at mechanical, electrical, storage and fabrication lab locations
 - d. Studs: Minimum 20 gage studs. Maximum stud spacing 16" O.C. All studs shall extend to structure.
 - e. Acoustic Insulation: Unfaced Acoustic Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - f. Rated Interior Partitions:
 - (1) Provide firestopping in penetrations in fire-resistance-rated walls.
 - (2) Provide smoke seals at penetrations in smoke barriers.
 - g. Interior partitions and blocking to be engineered for non-structural seismic loads per requirements of ASCE-7 and State of New York Building Code.
 - h. Finishing of Drywall
 - (1) Level 5 skim coat at where utilized at Jewel area spaces
 - (a) Gallery and Conference Rooms, public space walls,
 - (2) All other areas, Level 4.
2. Masonry Systems
 - a. Masonry, Interior: Provide interior concrete masonry unit construction with the manufacturer's standard burnished CMU block (smooth uniform face textures). Masonry shall consist of standard and custom sizes and shapes, trims and other trims as indicated on the drawing.
 - b. Installation accessories including inserts, anchorages, reinforcements, mortar, grout, and sealants.
 - c. Mortar and Grout:
 - (1) Portland Cement: ASTM C 150, Type I or II.
 - (2) Hydrated Lime: ASTM C 207, Type S.
 - (3) Aggregate: ASTM C 144.

- (4) Colored Mortar Pigments: Iron oxides and chromium oxides.
 - (5) Latex Additive: Water emulsion type.
 - d. Anchors and Attachments: Stainless steel, ASTM A 666, Type 304.
 - e. ALTERNATE PRICING – Provide alternate pricing for standard, grey CMU block with painted finish
3. Glazing Systems
- a. Aluminum Framed Storefront Framing/Glazing System –Basis of Design is Kawneer Trifab 400 with ½” clear glass infill. See interiors narrative for locations.
 - b. All Glass Storefront System 1- comprised of floor to ceiling channel capture at all 4 sides of ½” or ¾” inch thick clear safety glass to meet loading requirements, butt glazed and sealed lights and sidelights, floating transoms. Doors shall be manual swing with recessed floor mounted closers. Door hardware shall be aluminum finished. Basis of Design Products: Blumcraft of Pittsburg 1301 series.
 - c. All Glass Storefront System 2 - Laminated Glass, butt-glazed with channel capture at all 4 sides. This will be double pane IGU for acoustic reasons. Fire rated as needed per code. Rooms: Finishing Lab, Wood Lab, Metal Lab, Model Making Lab, Staging/Pin-Up
- B. Interior Partition Supplemental Components
- 1. Interior Partition Sound Isolation Components
 - 2. Provide deflection head tracks at all non-rated partitions.
 - 3. Provide UL 2709 compliant dynamic head joints at rated partitions
 - 4. In wall blocking required at casework, railings, wall-mounted equipment and fixtures.
- C. Interior Partition Firestopping:
- 1. Joints in or between fire-resistance-rated constructions: Joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
 - 2. Penetration firestopping:
 - a. Firestopping that is produced and installed to resist spread of fire, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
 - 3. Penetrations in Smoke Barriers: Penetration firestopping with ratings determined per UL 1479.
- D. Interior Joint Sealants
- 1. Interior Joint Sealants:
 - a. Mildew-Resistant, Silicone Joint Sealant: ASTM C 920, acid-curing sealant.
 - (1) Type: Single-component.

- (2) Grade: Non-sag.
 - (3) Class: 25.
 - (4) Uses Related to Exposure: Non-traffic.
 - (5) Application: Sanitary applications, interior use
- 2. Latex Joint Sealant: ASTM C 834, acrylic latex or siliconized acrylic latex.
 - a. Application: Interior joints in vertical and overhead surfaces with limited movement.
 - 3. Acoustical Joint Sealant: Non-sag, paintable, nonstaining latex.
 - a. Application: Acoustical joints for sound rated partitions.
- E. General Requirements
- 1. Manually-operated roller shades at noted exterior locations (refer to interiors narrative) above ground level at departmental office locations, private offices.
 - 2. Electronically-operated roller shades (dual shade screen and blackout) at noted locations (refer to interiors narrative) at Auditorium, Jewel conference Rooms (2), Gallery (1) and Penthouse (roof terrace room at Level 3)..
 - 3. All interior wall partitions to extend from finish floor level to bottom of deck.
 - 4. All opaque interior partitions on all levels to be constructed of gypsum drywall systems as required for the specific location.
 - 5. Paint, clear coat or seal all visible surfaces throughout the building, except items with complete factory finish as specified.
 - 6. Reference acoustical schematic design report for additional information.
 - 7. Ceiling height at 10'-6" A.F.F. unless noted otherwise.
 - 8. Reference floor finish, ceiling finish and interior wall type plan sheets for interior finish description area designations and additional interior finish information.
 - 9. Reference interiors narrative for interior finish description area designations and additional interior finish information.
- F. Interior Partition Types
- 1. **P-1:** Solid Wall - 1-layer each side 5/8 inch type X gyp.bd, 3-5/8 or 6" steel studs and 3-1/2 inch thick sound bat insulation.
 - a. Typical for offices, meeting/conference rooms, crit/conference, studio's, and storage rooms.
 - b. Full partition deck to deck.
 - c. 1 hour Fire rating TBD per location.
 - 2. **P-2:** Shaft Wall 2-layers each side 5/8 inch type X gyp.bd, 6 inch CH steel studs, 6 inch thick sound batt, 1 inch gyp bd. Liner
 - a. Typical at elevators and vertical shafts
 - b. Full partition deck to deck.
 - c. 2 hour fire rating.

3. **P-3:** Solid Walls - 8" CMU, 1 inch air gap, 3-5/8 inch steel studs, 3-1/2 inch thick sound bat insulation, 1-layer 5/8 inch gyp.bd.
 - a. Main Mechanical and electrical room Lower Level
 - b. Full partition deck to deck.
 - c. For Acoustic Isolation.
 - d. 2 hour Fire rated.
 - e. See ceiling requirements.
4. **P-4:** Acoustic Auditorium Walls: 2-layer each side 1/2" inch Fire Code C Core gyp.bd, 3-5/8 steel studs at 24" o.c., 3 Thermafiber SAFB inch thick sound bat insulation, RC-1 channel or equivalent one side spaced 24" o.c.
 - a. Auditorium Walls
 - b. Full partition deck to deck.
 - c. STC 55-60
5. **P-5:** Solid Walls – 8" CMU over 8" concrete stem wall (1'-10" A.F.F.).
 - a. Full Partition deck to deck
 - b. Acoustic attenuation at base, head, and within CMU cavities.
 - c. See floor plan for glazing locations.
6. **P-5 Alternate:** Solid Walls - Metal Studs with impact resistant gypsum board, and / or 18Ga. sheet metal layered over gypsum board up to 4'-0" A.F.F., over 8" concrete stem wall (1'-10" A.F.F.).
 - a. Full Partition deck to deck
 - b. Acoustic attenuation at base, head, and within stud cavities.
 - c. See floor plan for glazing locations.
 - d. 3/4" Plywood backing panels behind gypsum board on lab side of wall only.
 - e. 1/2" Resilient horizontal channel @ 24" o.c., vertically, opposite side of lab side of wall.
7. See interiors narrative for additional information.

C1020 INTERIOR DOORS

A. Interior Swinging Doors:

1. Doors:
 - a. Solid core wood doors with wood veneer (refer to hardware section for door type notations).
 - b. Steel doors (refer to hardware section for door type notations)
2. Steel Doors:
 - a. Typical rated and non-rated 18 gage hollow metal doors; field painted.

- (1) Face sheets fabricated from metallic-coated steel sheet. Comply with ANSI/SDI A250.8 for level 3 physical performance level A (Extra Heavy Duty); full flush.
 - (2) Factory primed and field painted.
 3. Solid core wood doors with wood veneer:
 - a. Wood veneer rated and non-rated flush doors: 5-ply transparent finished Grade AA, veneer faces, solid core flush wood, AWS "Premium" grade. Doors shall be reinforced for hardware. Utilize FSC Certified wood veneers.
 4. Aluminum-Framed Entrance Doors
 - a. Medium Style
 - b. Design Basis: Kawneer Standard Entrance Series 350
 - c. ½" Clear Laminated Glass infill for acoustical separation.
 - d. Associated sidelight or transom framing to be Kawneer Trifab 400 system with ½" glass infill for acoustical separation.
 - e. Finish: manufacturer's fluoropolymer coating – color to be determined by architect.
 - f. ALTERNATE PRICING for All-Glass Storefront and Entrance System-
 - (1) Doors shall be manual swing with recessed floor mounted closers. Door hardware shall be aluminum finished. Basis of Design Products: Blumcraft of Pittsburg 1301 series.
 - (2) Storefront system comprised of floor to ceiling channel capture at all 4 sides of ½" or ¾" inch thick clear safety glass to meet loading requirements, butt glazed and sealed lights and sidelights, floating transoms.
 5. Side-Acting Type Fire Door with Integral Egress Swing Door
 - a. Design Basis – McKeon Series S9000 steel door with factory finished high performance coating. See hardware section for door locations at Link.
- B. Interior Fire Doors: At rated walls on hold opens where indicated on plans.
- C. Interior Door Supplementary Components
 1. Interior Door Frames
 - a. Typical Steel Door Frames: Hollow metal, 16-gage typical. One-piece welded. Grind all welds smooth and paint. Typically frames are factory primed and field painted. To be utilized at all interior Steel door locations.
 - b. Typical Wood Door Frames: Veneer-wrapped at rated and non-rated applications. Flat style with applied stop. AWS quality standards edition 1, premium grade. Wood veneer species and matching to match door construction. Factory finish, grade premium. Utilize FSC Certified wood veneers.
 2. Interior Door Hardware
 - a. All hardware provided shall be institutional grade.
 - b. Refer to Door Hardware design narrative for additional hardware information.
 3. Interior Door Glazing clear tempered glazing unless noted otherwise.
- D. Other Interior

1. Access Doors and Frames:
 - a. Non-rated access doors and frames to be taped into drywall or masonry for a concealed appearance, 18 inches by 18 inches in size. Rated access doors and frames, 16 inches by 16 inches in size. Ceiling and wall mounted configurations.
 - b. Fire-rated: Fabricated to fit flush to frame, with a core of mineral-fiber insulation enclosed in sheet metal. Self-latching door with automatic closer and interior latch release.

C20 STAIRS & RAILINGS

C2010 STAIR CONSTRUCTION

- A. Refer to Interiors Narrative for information.

C2020 GAURDRAIL AND HANDRAIL SYSTEMS

- A. Refer to Interiors Narrative for information.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

- A. Gypsum Board:
 1. ASTM C 1396/C, 5/8-inch, Type "X".
 2. Finishes: Per ASTM C 840.
 - a. Level 1: Plenum areas above ceilings, concealed areas.
 - b. Level 4: Surfaces scheduled for wall coverings, flat paints and surfaces that will be exposed to view, unless otherwise indicated.
 - c. Level 5: Surfaces with gloss and semi-gloss coatings and large surface areas flooded with artificial or natural lighting and all Jewel and Auditorium spaces (as indicated in element A, of C1010 Interior)
- B. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.
 1. Under tile in wet areas.
- C. Ceramic Tile ("CT"):
 1. Tile Materials: ANSI 118 series standard specifications.
 2. Tile Installation: ANSI 108 series standard specifications and Tile Council of America, Handbook for Ceramic Tile Installation.
- D. Interior Wall Painting:
 1. Concrete and Masonry: Provide the following paint systems over interior concrete and brick masonry substrates:
 - a. Semigloss Epoxy Finish: Two finish coats over a primer.

- (1) Primer: Interior concrete and masonry filler coat.
 - (2) Finish Coats: Epoxy enamel.
 - b. ALTERNATE PRICING - Provide painting of interior masonry as alternative to the Basis of Design Burnished CMU block.
 2. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
 - a. Flat Acrylic Finish: Two finish coats over a primer.
 - (1) Primer: Interior gypsum board primer.
 - (2) Finish Coats: Interior flat acrylic paint.
 - b. Semi-gloss Alkyd-Enamel Finish: Two finish coats over a primer.
 - (1) Primer: Interior gypsum board primer.
 - (2) Finish Coats: Interior semi-gloss alkyd enamel.
 3. Ferrous Metal: Provide the following finish systems over ferrous metal:
 - a. Semi-gloss Alkyd-Enamel Finish: Two finish coats over a primer.
 - (1) Primer: Interior ferrous-metal primer.
 - (2) Finish Coats: Interior semi-gloss alkyd enamel.
 4. Provide Low VOC paint systems.
 5. Provide one prime and two top coats.
- E. Wall and Partitions and Finishes
1. **Painted surfaces:** The primary wall finish in the building will be a premium professional quality low or no VOC paint is specified with an eggshell or satin finish for most interior walls to provide a washable surface. A number of colors may be selected for use throughout the building. Some areas such as the catering/staff lounge, toilet rooms, and selected public areas, that require a higher degree of scrub ability will require a high performance epoxy coating/paint.
 - a. Paint all vertical exposed structure with High Performance coating
 2. **Glazed ceramic tile:** The primary wall finish for toilet room (all walls full height) and one wall full height of the catering/staff lounge (North Wall).
 3. **Exposed Concrete Finish:** Mechanical rooms and building services areas.
 4. **Wall Protection:** Protective stainless steel corner guards in all areas.
 5. **Auditorium Acoustical Wall Panels:** Acoustical wall panels will be integrated within special areas where additional sound isolation and noise control is needed. Basis of design will be fabric wrapped panels and perforated wood in Auditorium. In the Auditorium, a mixture of faceted planes will bounce sound to specific areas and will be either fabric wrap panels, wood, or gypsum all tuned and treated for acoustics. Lighting and AV will be integrated into faceted walls.

6. **Existing Stone:** Existing areas of stone both interior and exterior of Seaton East, Jewel, and Link will have areas of exposed stone. These areas will need selective patching and repair, sealed, and or painted. Existing sheer walls in Seaton East will remain.
- F. Typical Tack Surface & Additional Acoustical Wall Panels (see interiors narrative for additional information)
1. Tack/Acoustical Surface: Basis of design Decoustics Fabric wrapped acoustic and tackable wall treatment <http://www.decoustics.com/products/Fabric/High-Impact> installed floor to 8' tall datum in Gallery, Crit/Conference rooms in the Jewel and studios for acoustics.
 2. Tack Surface: Basis of design Tacwall by Wall Talkers healing tack surface. All accessories and trim pieces included for full functioning system <http://www.walltalkers.com/products/tac-wall.asp> Locations on one wall of Seaton New Faculty offices, Seaton East Department Suite Offices, and Mechanics Hall Administrative offices.
 - a. Tack Surface: Provide alternate price from Tackwall to alternate tack surface. Basis of design <http://robinreigi.com/?projects=tac-acoustical-panel>
 3. Tack Surface: Basis of Design unfinished Homasote panels in Fab Lab pin-up areas.
 4. UNIT PRICE - Glass Marker Board: Provide a sqft unit price for back painted glass marker board. The Multi areas may require a large amount of marker boards located on each solid wall around the room to support the active learning layout.
- G. Specialty wall finishes(see interiors narrative for additional information)
1. **Interior Metal Wall panel:** At Gallery and conference crit rooms in the Jewel.
 2. **Jewel Walls:** Stone on Mechanics Hall will be cleaned, patched an repaired and tuck pointed as needed for a consistent exterior to interior finish. As well exterior stone and or concrete work (Fab Lab) from Seaton New will continue inside the Jewel for a consistent exterior to interior finish. Refer to Exterior Elevation drawings and exterior envelope narrative for exterior material information.
 3. **Reuse Wood Flooring:** Gallery and Crit/Conference rooms in the Jewel.
 4. **Reuse Pierce Commons Slate:** Gallery and Crit/Conference rooms in the Jewel.

C3020 FLOOR FINISHES

A. Flooring Finish Types

1. **End Grain Wood:** The primary floor finish for Seaton New & Seaton East Studio and Collaboration Corridor, Crit Rooms, Offices, POD, Mechanics Hall Administrative Offices and Seaton East Department office Suites. Basis of design 1" thick hard end grain wood, basis of design Oregon Lumber Doug Fir Fog <http://www.oregonlumber.com/end-grain-and-ply-floor-and-wall/worthwood-solid-end-grain-unfinished> The wood will be installed over ¼" cork on metal deck and concrete floor in new construction and on ¼" cork over existing floor substrates in existing conditions. Leveling underlayment will need to be utilized in order to allow for installation of level finish floor over existing floor.
2. **Carpet Tile:** The Primary floor finish will be carpet tile for the Library Stacks, offices, and special collections and Auditorium. Provide a \$35 material cost/yd allowance for carpet.

The carpet tile will be installed over metal deck and concrete floor in new construction and over existing floor substrates in existing conditions. Different patterns and colors may be selected for differing areas of the building. All carpet tiles will be specified with a cushion back to help the long term durability and to aid in acoustics. Rubber base at all carpet locations.

- a. Provide Alternate price for carpet finish in Mechanics Hall Administrative Offices, Seaton New's Faculty Offices and Seaton East Department Office Suite.
 3. **Large format Tile or Stone:** The primary floor finish for the Jewel lobby, Information Commons, and Library display, and extending into the Fab Lab Hallway, Seaton New's east and west corridor on upper levels from Jewel, Mechanics Hall east and west corridor from Jewel, Roof Exhibit, and the Link. Basis of design large format stone or tile panels Crossville Laminam <http://crossvilleinc.com/products/i-naturali/> Provide metal reveal base at all locations adjacent to large format tile or stone.
 4. **Entry Mats:** Basis of design for all recessed entry mats at vestibules AMARCO A1-Track G Series extending door to door and wall edge to wall edge.
 5. **Tile Flooring:** Porcelain tile is planned for all toilet rooms. Basis of design matte porcelain tile.
 6. **Polished Concrete Floor:** Polished and sealed concrete floor at Fab Lab vestibule Fabrication Lab Offices, 3D Print Lab / Student Workstation, Design Build Studio/Center for Design Excellence, Product Design Mock up / 5th Year Thesis Design Studio, LARCP / Fluvial Lab, Lighting Lab, and Glass Lab. Provide rubber base at all locations of concrete floor.
 - a. Provide alternate cost for these areas to float and sealed finish per below.
 7. **Concrete Floor:** Basis of design Power-Float finish for SOG, sealed. Located in building service area, IT room, server room, storage rooms, and mechanical rooms and Janitor room, Finishing Lab, Upholstery, Wood Lab, Metal Lab, Model Making Lab, Staging / Pin-Up.
 8. Refer to interiors narrative for additional information
- B. Wall Base Types:
1. **Tile Base:** Basis of design Daltile ceramic subway tile base at all toilet rooms and wet locations.
 2. **Flush Wood Base:** 2 1/2" x 3/4" recessed flush hardwood base typical all locations
 - a. **Reveal base:** Provide alternate price for metal reveal base at all locations of Flush wood base. Basis of design Fry Reglet reveal base.
 - b. **Rubber base:** Provide alternate price for rubber base at all locations of flush wood base. Basis of design Johnsonite 2 1/2" vinyl base.
 3. **Rubber base:** Basis of design Johnsonite 2 1/2" rubber base at all building services locations and Fab Labs where CMU partitions do not meet the finished floor
 4. Miscellaneous:
 - a. Waterproof membrane: Typical under tile in wet areas.
 5. Refer to interiors narrative for additional information

C3030 CEILING FINISHES

A. Ceiling Finish Types

1. **Wood Ceiling with suspended Gyp and Acoustic Ceiling backup:** Basis of design wood backed Rulon Panel Grille Profile PG 8-12-32D in large clouds vertically faceted areas suspended from suspended gypsum ceilings covered in K13. Areas within the "Cross Grain" at studios eliminate wood ceilings and expose suspended gyp and K13 ceiling. Lighting and other systems will be integrated within wood slats. Areas Seaton New and Seaton East Studios, and Library Stacks
2. **Wood Ceiling:** Basis of design 9 Wood 2300 Continuous Linear ceilings. Lighting and other systems will be integrated within wood slats. Seaton New and Seaton East Collaboration Corridor, Seaton New Level 3 exhibit space, Jewel lobby and information commons bridges, Library Display extending into Fab Lab Hallway and vestibule.
3. **Acoustical Panel Ceiling:** A mineral fiber fine texture acoustic ceiling panel will be specified for Seaton New Offices and Crit Rooms, Mechanics Hall Administrative Offices, Seaton East Department Office Suites and Crit rooms, Library Offices. The 24" x 6" units will allow for easy maintenance integrated lighting and long-term flexibility. Basis of Design: Armstrong Optima, 2'x6' panels Square Tegular 9/16" with Techzone grid system.
4. **Auditorium Acoustical Ceiling:** Acoustical ceiling finish will be integrated within the auditorium for sound isolation and noise control as needed. Basis of design will be an acoustic plaster finish equal to Baswaphon or Fellert with areas of perforated wood. A mixture of faceted planes will bounce sound to specific areas. Lighting and AV will be integrated into gaps within the faceted ceiling areas.
5. **Exposed Structure:** Concrete and steel structure will be partially exposed where possible to create in areas where a full ceiling is not required. This includes Janitors Closet, Heliodon Storage, I.T. Room, Mechanical Rooms, Electrical Rooms, and Telecom.
6. **Painted Gypsum Board Ceilings, Soffits, & Bulkheads:** Various painted gypsum board ceiling systems are planned for the building. These may include painted gypsum board soffits, accenting the exposed structure, and other ceiling/bulkhead conditions. Areas that typically need moisture control, enhanced isolation and acoustic privacy such as toilet and locker changing rooms will be equipped with moisture resistant gypsum board ceilings. Library Special Collections, Fabrication Lab Offices, Vestibule, 3D Print Lab / Student Workstation, Product Design Mock up / 5th Year Thesis Design Studio, Design Build Studio / Center for Design Excellence, LARCP / Fluvial Lab, Lighting Lab, Glass Lab, and Staging / Pin-Up.
7. **Gypsum Board Ceilings at Mechanical Rooms:** To enhance acoustical isolation at mechanical rooms they will be equipped with ceiling systems comprised of the following:
3-1/2 inch thick sound bat insulation, Neoprene and Spring Vibration Hangers, ceiling suspension system, 2-layers of 5/8" gyp.bd
 - a. Below the floor deck entire room.
 - b. Main Mechanical and electrical rooms
8. **Durable Suspended Acoustic panel:** Basis of design suspended Tectum panels. Located in Finishing Lab, Wood Lab, Metal Lab, Model Making Lab, and Lab Mechanical

C3040 INTERIOR MILLWORK

A. Millwork

1. Refer to Interiors Narrative for information.

C3050 SPECIALTY FINISHING SYSTEMS AND EQUIPMENT

A. Auditorium Seating

1. Refer to Interiors Narrative for information.

B. Operable Shading

1. Refer to Interiors Narrative for information.

C3060 SPECIALTY FINISHING SYSTEMS AND EQUIPMENT

C. Interior Identity Signage

1. Refer to Interiors Narrative for information.

END OF ELEMENT C

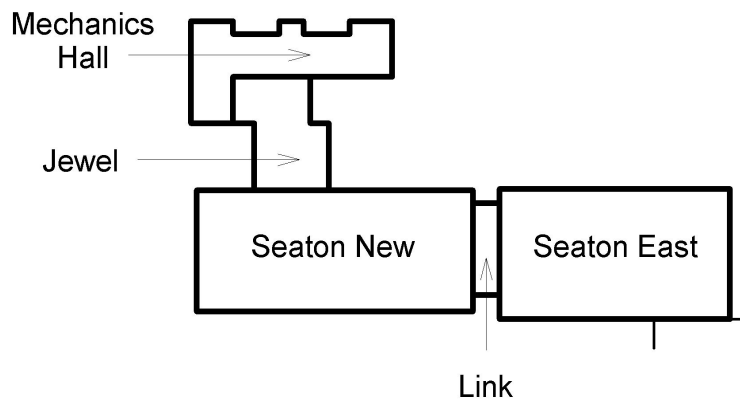
Architectural Specifications – Element D – Services

A10 Conveying

A. Elevators

1. Kone Ecospace (MRL) Elevator (Seaton New location)
 - a. 4000 lb. capacity
 - b. 10'-0" cab height
 - c. 4 landings – three front and 1 rear.
 - d. Kone EcoDisk machine configuration
 - e. Integrated-control cabinet at top floor.
 1. Provide maintenance-secured (key lock) for access door.
 - f. Elevator entry and cab finishes are to be brushed stainless steel with 1" thick end-gran wood flooring.
 - g. Hoist beam and pit ladder to be provided by elevator manufacturer.

2. Kone Ecospace (MRL) Elevator (Seaton East location)
 - a. 3500 lb. capacity
 - b. 8'-0" cab height
 - c. 3 landings – front opening only.
 - d. Kone EcosDisk machine configuration
 - e. Integrated-control cabinet at top floor.
 1. Provide maintenance-secured (key lock) for access door.
 - f. Elevator entry and cab finishes are to be brushed stainless steel with 1" thick end-gran wood flooring.
 - g. Hoist beam and pit ladder to be provided by elevator manufacturer.



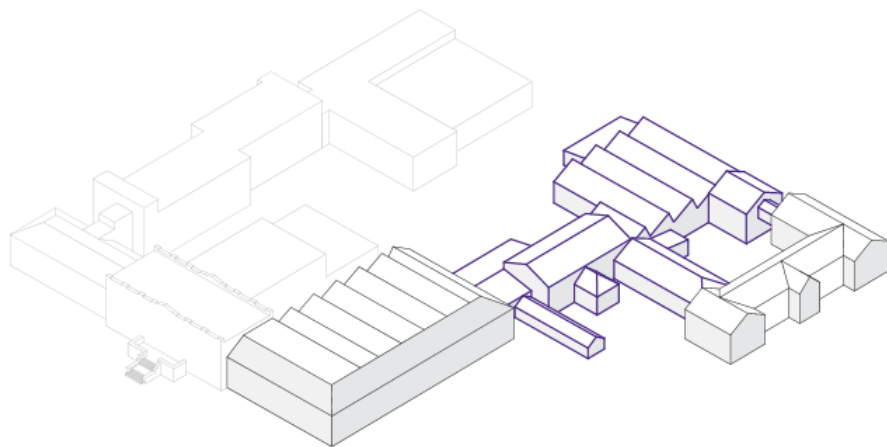
END OF ELEMENT D

Architectural Specifications – Element F – Special Construction & Demolition

F20 Selective Building Demolition

A. Structural Demolition

1. Refer to drawings D100, D101, D102 and D103 for extents of structural demolition of existing Seaton Court (complete demolition area indicated in purple below)



Demolition Area of Existing Seaton Court – complete removal of this portion of building

a. Complete demolition of structure to include deconstruction of the following building systems

- 1) All vertical and horizontal building enclosure (walls and roof) areas (including materials at openings-windows and doors)
- 2) All interior partitions, finishes, framing/backup walls, and openings
- 3) All floor and ceiling finishes
- 4) All primary, secondary and miscellaneous structural elements (above and below grade)
- 5) All mechanical, electrical and plumbing systems/fixtures
- 6) All other items and systems not listed for the entirety of Seaton Court
- 7) Surrounding site area extents and utilities – see Civil and Landscape design scope definitions.

b. Hazardous materials removal

- 1) KSU facilities has noted that lead-based paint is present in existing Seaton Court and Mechanics Hall facilities
 - a. Please include a separate cost line item for removal of hazardous material for lead based paint from Seaton Court prior to commencement of new construction operations.

- 2) It is currently not known if asbestos materials are present at Seaton Court.
 - a. Please include a separate cost line item for removal of hazardous material for lead based paint from Seaton East prior to commencement of new construction operations.

B. Selective Demolition

1. Refer to drawings D100, D101, D102 and D103 for extents of selective demolition of existing Seaton East and Mechanics Hall
2. Selective demolition at Seaton East
 - a. Interior partitions and ceilings, wall openings (doors and borrowed lights) and related construction assemblies – see drawings as indicated above
 - b. Existing south stair at Seaton East – see drawings as indicated above
 - c. Pierce Commons – remove and salvage for reuse in new construction
 - 1) Wood seating, stairs and counter displays
 - 2) All steel components
 - 3) Slate flooring and wall tiles
 - d. Wood finish flooring and any related sub-floor sheathing (wood decking to remain throughout)
 - 1) Tongue and groove finish flooring to be salvaged for re-use in new construction
 - e. Demo existing portion of masonry wall (all floor levels) at north end of Seaton East – see drawings as indicated above
 - f. Demo existing roof enclosure at Seaton East light monitors (include areas of roof sheathing as needed for repair).
 - g. Existing steel, timber, dimensional lumber, wood decking, masonry and roof structure to remain (repairs to occur as needed due to affects from demolition of adjacent systems and/or new construction operations)
 - h. All mechanical, electrical and plumbing systems/fixtures
 - 1) Remove below slab on grade systems as required – where in interference with new construction systems.
 - i. Surrounding site area extents and utilities – see Civil and Landscape design scope definitions.
 - j. Hazardous materials removal
 - 1) KSU facilities has noted that lead-based paint is present in existing Seaton Court and Mechanics Hall facilities
 - a. Please include a separate cost line item for removal of hazardous material for lead based paint from Seaton East prior to commencement of new construction operations.
 - 2) It is currently not known if asbestos materials are present at Seaton East.
 - a. Please include a separate cost line item for removal of hazardous material for lead based paint from Seaton East prior to commencement of new

construction operations.

3. Selective demolition at Mechanics Hall
 - a. Interior partitions and ceilings, wall openings (doors and borrowed lights) and related construction assemblies – see drawings as indicated above
 - b. Finish flooring and any related sub-floor sheathing (wood decking to remain throughout)
 - 1) Tongue and groove finish flooring to be salvaged for re-use in new construction
 - 2) All other finish flooring materials to be removed.
 - c. Demo existing portion of masonry wall (all floor levels) at west side of Mechanics Hall – see drawings as indicated above
 - d. Demo existing stair at Mechanics Hall
 - e. Demo existing roof framing and enclosure – see drawings as indicated above
 - f. Demo all existing window and door openings at exterior
 - g. Existing timber, dimensional lumber, wood decking, and masonry to remain (repairs to occur as needed due to affects from demolition of adjacent systems and/or new construction operations)
 - h. All mechanical, electrical and plumbing systems/fixtures
 - 1) Remove below slab on grade systems as required – where in interference with new construction systems.
 - i. Surrounding site area extents and utilities – see Civil and Landscape design scope definitions.
 - j. Hazardous materials removal
 - 1) KSU facilities has noted that lead-based paint is present in existing Seaton Court and Mechanics Hall facilities
 - a. Please include a separate cost line item for removal of hazardous material for lead based paint from Seaton Court prior to commencement of new construction operations.
 - 2) It is currently not known if asbestos materials are present at Seaton East.
 - a. Please include a separate cost line item for removal of hazardous material for lead based paint from Seaton East prior to commencement of new

END OF ELEMENT F

6.0 Sustainability Design Narrative

The following sustainability design narrative describes project sustainability goals.

Sustainability Overview

For the KSU APDesign program, where the students and faculty spend a great deal of time on site and in the facility, it is critical to create an interior and exterior environment that is supportive and enhancing of daily life and the pedagogical objectives of future design education.

An integrated, sustainable design approach is appropriate for environmental, comfort, cost, and educational objectives, among many others, for this building. Employing both passive and active systems, material selections and assemblies will be integrated to create an experience providing high quality outdoor and indoor environments while reducing energy and water consumption.

Energy

The building will aspire the goals of the Architecture 2030 Challenge. Building energy modeling and benchmarking will be utilized to determine energy consumption attributed to lighting, heating, cooling, fans and interior loads. The 2030 challenge sets a benchmark energy loads that we will compare to and re-evaluate targets as the project progresses (ref: MEP narrative) Preliminary LEED checklists show the aspiration of a certification based on LEED-NC 2009 standards, although the level of certification will be determined during project design.

Building energy performance will be publically tracked using a building monitoring system and dashboard, allowing users to become familiar with units of measure, performance patterns, and promote reduced energy usage at the individual occupant level. Similarly, a small PV array is to be included on the roof of Seaton New to be used as an instructional tool for students and faculty to understand the impact and application of integrated renewable energy sources.

Exterior Open Space and Water Efficiency

The site will integrate the existing flows inherent to the campus, encouraging alternate transportation methods and minimizing the vehicular dependence. The site is advantageous due to its centralized location and adjacency to multi-use facilities within the KSU campus and city of Manhattan.

Water efficiency will be achieved through a sub-grade water collection cistern, recycling rainfall to be used for various fabrication activities and green roof irrigation. The green roof above the jewel, new wing and pavers in the north and south courtyards adjacent the entry will reduce the impervious surfaces in order to manage storm water quality and runoff. Such approaches will also reduce the heat-island effect, replace parking and streets with programming for the college, aid in long term site-planning strategies for the future, and address the large ratio of building to site area. Ultimately, the goal of the project is to retain all storm water onsite for re-use.

Water use efficiency strategies used within the building will be focused on reduction of demand and the resultant waste water. This will be achieved through the use of low flow plumbing fixtures with electronic sensors and flush valves and optimizing the number of plumbing fixtures used in the facility.

Material Reuse

Utilizing the historic Seaton East and Mechanics Hall, the project strives to reduce the material usage and land disruption of the project scope while fostering an embracement of the historical campus building fabric. Regarding Seaton East, the building shell, saw tooth roof, and structure will be maintained and repaired where necessary. In Mechanics Hall's the historic shell of this oldest KSU campus building will be preserved, the stone treated and windows replaced.

The design approach calls for materials to be stored and reused as a result of the demolition to Seaton court and interior portions of Seaton East and Mechanics Hall. Wood flooring, casework, slate tiles and wooden seating from Pierce Commons will be reused in wall and ceiling applications where appropriate. Crushed limestone from the demolished walls of Seaton court may be reused in landscape efforts, roof edging, and site fill material. Additionally, the selection of materials will respond to local availability as well as having reduced environmental impact due to their composition and low or no VOCs to promote good indoor air quality.

Additionally, the design intends to utilize materials that promote an idea of "long-life, loose fit" while recognizing that they must contribute to a durable, usable and beautiful environment. Making obvious a material lifecycle whereby a previously used and demolished material may be refinished, reformed or reshaped to contribute to a "new" environment reinforces the notion of not only a sustainable pedagogical approach, but also a real, tactical implementation within the APDesign program.

Daylighting and Indoor Environmental Quality

The building will rely upon an optimized building envelope and sky lighting scheme which allows for maximum light penetration in order to minimize daytime mechanical lighting, particularly in basement areas. Operable windows will allow for on-demand thermal comfort adjustments as well as creating a draft to flush heat through outlets at the skylight during the summertime. During the winter, Seaton New will redistribute warm, solar heat admitted through skylights using a wall-plenum and low-velocity fan system.

Increased acoustical control will address one of the most obvious issues existing within the building today. Adjacencies that have otherwise been limited due to focus and noise restraints will establish new, exciting relationships that reinforce the notion that not all design work happens in only the studios

The design will actively attempt to capture a true interior/exterior relationship wherever possible. The intent is to advertise the activities within the building to the campus and enrich the major interior spaces (studios, offices, fab labs, jewel, library, conference spaces) with views of the beautiful KSU Campus and the kinetic energy it provides. Further, by designing the thresholds between the interior and exterior environments using the north and south courtyards, green roofs, and fabrication yards, the design achieves an enhanced program functionality, campus integration, and a reinforcement of the integral nature of Architecture and Landscape Architecture in both education and good building design.

Preliminary LEED 2009 Checklist

Ref. sustainability section of MEP narrative for more information.

Certified: 40 to 49 points		Silver: 50 to 59 points		Gold: 60 to 79 points		Platinum: 80 + points		Total Possible Points 110																																																																																																																																						
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Figure 6: Preliminary LEED 2009 Checklist

7.0 Structural Design Narrative

The following structural design narrative has been prepared by Walter P. Moore and Associates.

Introduction

The following narrative describes the structural design criterion and proposed structural framing systems for the new building and renovation to 2 existing buildings on the campus of Kansas State University in Manhattan, Kansas. The portion of the Seaton Hall complex known as Mechanics Hall and the portion known as Seaton East will be renovated. The portion of the Seaton Hall complex known as Seaton Court will be demolished and the new building will be constructed in its location. This new facility is anticipated to be a two-story structure with a penthouse level, on a generally uniformly sloping site, with the ground floor level partially below grade being a soil-supported slab on grade.

Codes and Reference

The provisions of the following codes and references will be used for both design and construction of the new building. These documents establish the minimum structural strength and serviceability requirements to be met in order to safeguard the public health, safety, and general welfare.

- International Building Code (IBC), 2006 Edition.
- American Society of Civil Engineers (ASCE) 7-05, Minimum Design Loads for Buildings and Other Structures.
- American Concrete Institute (ACI) 318-05, Building Code Requirements for Structural Concrete.
- American Institute of Steel Construction (AISC) 360-05, Specification for Structural Steel Buildings.
- American Forest and Paper Association, National Design Standard for Wood Construction (NDS) 2005 Edition.

Design Gravity Loads

- Roof Live..... 20 PSF
- Roof Snow..... 22 PSF
- Typical Elevated Floors in New Building.....100 PSF
- Mechanical Rooms in the New Building150 PSF
- Green Roof for the New Building.....100 PSF
- Studio Rooms in Existing Seaton East 40 PSF
- Office Areas in Existing Seaton East..... 40 PSF

- Corridors in Existing Seaton East..... 80 PSF
- New Attic Floor in Mechanics Hall.....150 PSF

Materials

Materials for the design and construction of the primary structural frame shall comply with the governing building code, design codes and manuals noted previously, and the following:

Cast-in-Place Concrete:

Structural cast-in-place concrete shall be designed and constructed in accordance with the requirements of the governing building code and applicable American Concrete Institute standards. Concrete materials and classes shall conform to the following:

- Reinforcing SteelASTM A615 Grade 60
- Deformed Bar Anchors ASTM A496
- Headed Stud Anchors..... ASTM A108
- Smooth Welded Wire Reinforcement ASTM A185
- Grade Beams4000 psi NWC
- Spread Footings4000 psi NWC
- Slabs-on-Grade4000 psi NWC
- Elevated Floors4000 psi NWC
- Pile Caps.....5000 psi NWC
- Augercast Piles 5000 psi grout

Structural Steel:

Structural steel shall be defined as that work prescribed in Section 2.1 of the AISC “Code of Standard Practice for Steel Buildings and Bridges”. All structural steel shapes shall be new steel as defined by ASTM A6 unless noted otherwise. Structural steel materials shall conform to the following:

- Wide Flange and WT ShapesASTM A992 Grade 50
- Channels..... ASTM A36
- Angles ASTM A36
- Structural Steel Plates and Bars ASTM A36
- Base Plates ASTM A36
- Hollow Structural Sections ASTM A500 Grade B

- High Strength Bolts..... ASTM A325 and A490
- Threaded Round Stock..... ASTM A36
- Anchor Rods ASTM F1554 Grade 55
- Steel Decking ASTM A1008 or A653

Heavy Timber Construction:

Heavy Timber includes structural framing of wood members with thicknesses of 5" (nominal) or more. Heavy timber framing shall conform to the following:

- Beams and Purlins Douglas Fir/Larch, No.1
- Solid Wood Decking Douglas Fir/Larch, Select Structural

Structural Systems – New Building

Roof Framing:

The portion of the roof designated as a green roof will consist of 3 1/2" of normal weight cast-in-place concrete supported by 2" deep galvanized steel composite floor decking, supported by conventional structural steel wide flange beams and columns. This framing will extend beyond the green roof into the areas supporting roof top mechanical equipment enclosed within penthouse structures. The penthouse roofs will consist of 1 1/2" deep galvanized steel roof decking supported by conventional K-series open web steel joists spaced at a maximum of 6 feet on center spanning to steel wide flange beams. The steel wide flange beams will be supported by HSS steel columns and laterally supported by concentrically loaded steel braced frames.

The portion of the roof consisting of open skylights will be framed with steel wide flange beams and girders spanning to wide flange steel columns. The remaining portion of the roof will consist of 1 1/2" deep galvanized steel roof decking supported by conventional K- and/or LH-series open web steel joists spaced at a maximum of 6 feet on center. Additional framing will be provided as required for any fans or minor equipment located on the roof. These open web steel joists will be supported by conventional structural steel wide flange beams and columns.

Elevated Floor Framing

The elevated floor framing will consist of 4 1/2" of normal weight cast-in-place concrete supported by 2" deep galvanized steel composite floor decking at the first floor, the additional inch of concrete for sound attenuation and 3 1/2" of normal weight cast-in-place concrete supported by 2" deep galvanized steel composite floor decking at the second floor. The composite slabs will be supported by conventional structural steel wide flange beams and columns. In mechanical rooms, we anticipate 4" cast-in-place concrete housekeeping pads to be located on top of the structural slab to support mechanical equipment that is to be isolated from the structure for vibrations.

Lateral Load Resisting System

Lateral loads due to wind and seismic will be transferred to the foundation level using conventional structural steel concentrically loaded braced frames designed as "*Steel Systems Not*

Specifically Detailed for Seismic Resistance” as defined by ASCE 7-05 and the governing building code. Steel bracing systems offer an efficient and economical solution for resisting lateral loads but also present challenges to the design team locating these frames throughout the building while attempting to accommodate the architectural layout. Below the first elevated floor, the basement walls will be engaged as ordinary reinforced concrete shear walls as required in order to supplement the lateral stability provided by the concentrically loaded braced frames.

Ground Floor Level

The ground floor level is anticipated to be a conventional normal weight cast-in-place concrete slab-on-grade over a vapor retarder on a granular base material over a prepared subgrade of low volume change material. Required subgrade preparation will be determined based on the borings taken on the site and the subsequent recommendations offered in the geotechnical investigation report. Since the lowest level will contain library storage racks, fabrication laboratory equipment and materials storage, the slab-on-grade will be 6-inches thick, reinforced with welded wire reinforcing.

Foundations

While we have not received a copy of the geotechnical investigation to date, we have discussed the site conditions with the geotechnical engineer and based on that discussion, we anticipate the building will be founded on drill reinforced concrete piers or grouted augercast piles supported on the existing bedrock.

The existing grade is approximately at or above the first elevated floor requiring foundation walls to extend around the perimeter of the lowest level of the new building. These walls will be 14” thick and span vertically between grade beams and deep foundations at the ground floor up to the first elevated floor. Along the northern wall, a small stem wall may be required to extend up above the first elevated floor if the final grades are higher than the first elevated floor at this location. The portion of the fabrication laboratory that is 2 stories in height where it is open to level 1 above will require a 14” thick cantilevered reinforced concrete wall with external counterforts. The basement walls will extend out beyond the first elevated floor to enclose areas on the west side of the building for exterior material delivery and storage area.

Adjacent to Mechanics Hall a tied back secant pile wall is required to be installed within approximately 3'-0” of the existing building. The piles will be approximately 24” in diameter and extend approximately 20'-0” to 25'-0” below existing grade to bedrock. We anticipate tie-backs being installed as the excavation to the basement level advances. A 12” thick concrete wall will be cast in front of the tied-back piles to form the finished basement wall. Deep wide flange steel girders will cantilever over the wall to support the columns that extend upward adjacent to Mechanics Hall.

Structural Modifications – Existing Seaton East Building

Roof Framing:

The existing Seaton East roof consists of wood decking that spans to steel channel purlins which are supported by steel trusses forming a saw tooth roof pattern. Where new skylights are to be installed, the existing wood framing is to be removed and new steel frames consisting of hollow structural sections are required to frame the skylights between the existing trusses. We do not

anticipate any other structural modifications to the roof as the existing roof is to be removed prior to the installation of the new roof materials.

Floor Framing:

The existing Seaton East floors consist of a variety of wood and steel framing spanning to built-up steel columns that are supported by stepped concrete spread footings. Some structural bays consist of wood decking supported by closely spaced wood joists while other areas consist of heavy timber beams spanning to steel beams and limestone walls. Due to the variety of framing conditions, several modifications are required to accommodate the new openings in the floors and for the existing framing to support the code loads for the studios, offices and corridors.

At the new openings in the existing floors for the new mechanical chases, steel framing is required to support the existing floor structure. At both level 1 and level 2 the existing framing does not have adequate capacity to support the code required corridor live load and the super imposed loads from hanging mechanical equipment, therefore we recommend replacing the corridor framing with new steel framing supporting new wood decking. At locations along the corridor where S15 beams exist, bottom flange cover plates are required to be welded to the beams in order to support the corridor live loads.

As the corridor turns west along the south side of the building, new floor framing is required because the existing interior limestone wall which currently supports the floor framing is to be removed and a new elevator opening is located adjacent to the corridor. 3 new structural steel columns supported on new reinforced concrete spread footings are required along grid B. The roof trusses will require temporary shoring during the demolition of the existing limestone wall and installation of the new steel columns and footings.

At other locations throughout both level 1 and level 2, removal and replacement of the existing framing is required or new members are required to be installed adjacent to the existing framing to provide additional support, these location are identified on the structural framing sketches that follow.

The existing hard wood flooring will be removed and a layer of 3/4" thick plywood will be connected to the new and existing wood decking with adhesive and screws. A cork underlayment will be located above the plywood and new end grain wood floor installed as the finished floor. This assembly is shown in the figure below. We also recommend that solid wood blocking be installed between the ends of existing timber hangers and existing wide flange beams in order improve the stiffness of the existing structural framing.

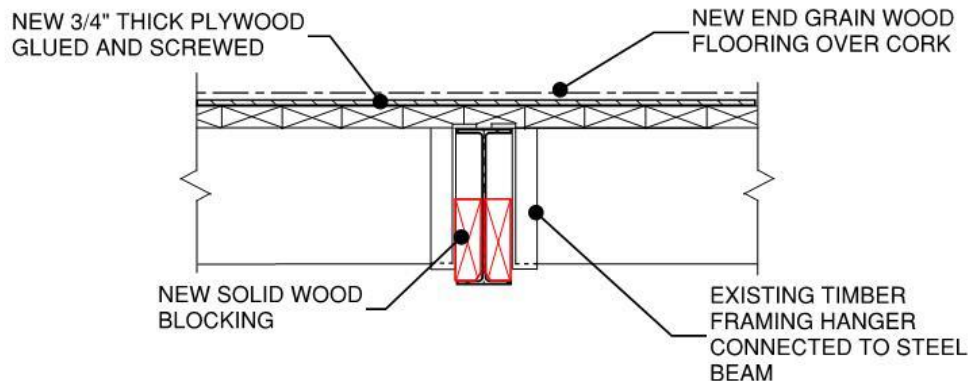


Figure 1. Section through Seaton East floor at timber connection to steel beam.

Structural Modifications – Existing Mechanics Hall Building

The new auditorium located in the northern portion of Mechanics Hall will require removing the existing second floor and interior columns to open the space into a 2-story volume. The existing roof is framed with braced wood rafters that span to a central beam that is supported by built up wood columns on spread footings. The existing roof will be required to be removed and replaced in order to span across the auditorium.

Roof and Attic Framing - Auditorium:

The new roof framing will consist of 1 1/2" deep galvanized steel roof decking supported by sloping conventional K-series open web steel joists spaced at a maximum of 6 feet on center supported by a central steel beam at the ridge of the roof. The ridge beam will span to vertical tube columns supported by 24" deep steel girders. The attic floor will consist of 1 1/2" steel roof deck unless this space is to be used to support mechanical equipment or storage. If storage or mechanical equipment is to be located in the attic space above the auditorium, a floor consisting of 4 1/2" of normal weight cast-in-place concrete supported by 2" deep galvanized steel composite floor decking, supported by conventional structural steel wide flange beams is required. The floor beams will be supported by heavy W18 wide flange steel columns located along the perimeter of the existing limestone walls that will not only support the attic and roof framing but will also provide lateral stability to the existing limestone walls. The spacing of the columns along the perimeter of the existing walls will be approximately 12'-0" on center. Locating the mechanical units above the auditorium is the preferred option in lieu of locating the mechanical units above the Deans' suite as new structural steel is required in order to create the auditorium space while structural steel would be required to be added to the remainder of Mechanics Hall as described below

Lateral Load Resisting System - Auditorium

Lateral loads due to wind and seismic will be transferred to the foundation level using conventional structural steel concentrically loaded braced frames and moment frames designed as "*Steel Systems Not Specifically Detailed for Seismic Resistance*" as defined by ASCE 7-05 and the governing building code. In the east west direction steel braces will be located near the center of the building on the north and south walls. Moment frames will be located in the north south direction formed by the steel wide flange attic girders and the steel wide flange columns.

The wide flange columns will also support horizontal wide flange girts that brace the existing limestone walls near the second floor level that is to be removed. The existing limestone walls will be connected to the new steel girts with threaded rods drilled through the existing exterior limestone walls. The threaded rods will be recessed behind the outer course of limestone by removing the exterior course, drilling the rods through the remaining wall thickness and replacing the exterior course of block chipping the inside face as required. This type of connection will occur near the existing second floor level and near the top of the wall at approximately 4'-0" on center around the perimeter of the auditorium.

Foundations

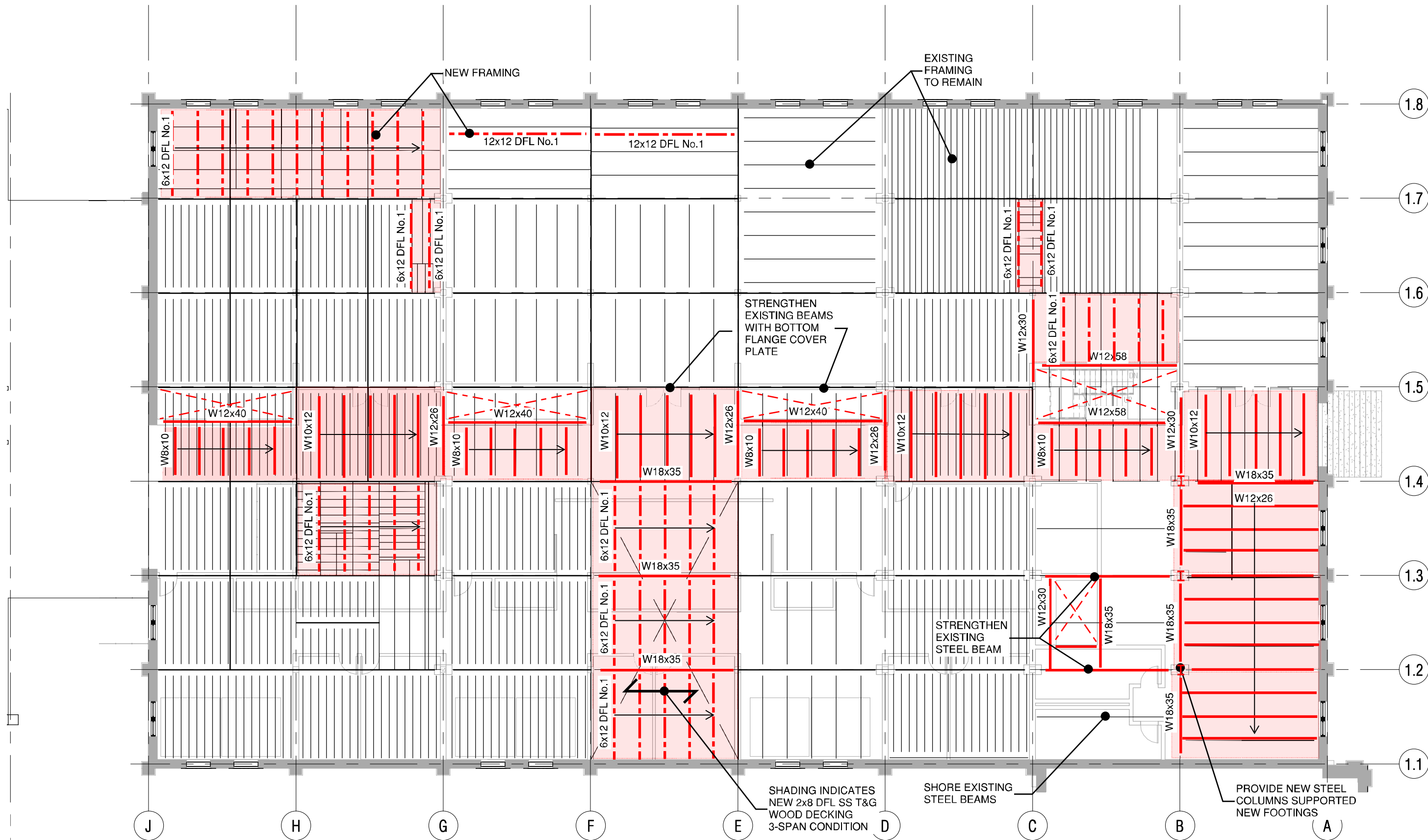
While we have not received a copy of the geotechnical investigation to date, we anticipate that the perimeter columns will be supported by reinforced concrete grade beams that cantilever from reinforced concrete spread footings extending over to the face of the existing limestone walls.

The existing slab on grade will be removed and a new slab on grade 5-inches thick, reinforced with welded wire reinforcing will be installed.

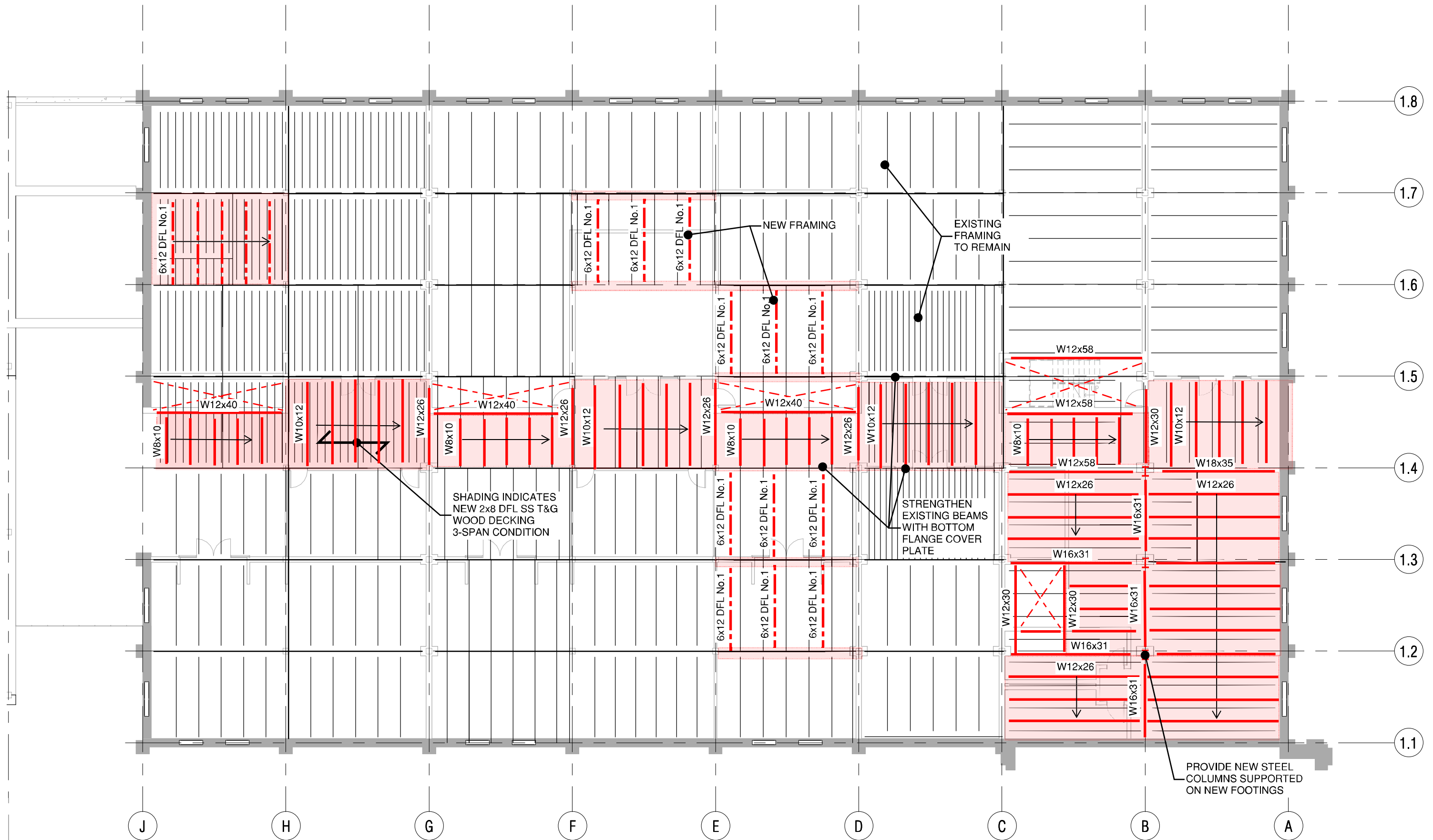
Dean's Office Suite – Roof and Floor Framing

We understand that one option being considered is to locate the new mechanical equipment in the attic space above the Dean's office suite. This will require removal and replacement of the existing roof and the existing framing similar to the modifications to the portion of the structure where the auditorium is located. The roof framing will be same as the auditorium with the exception that the attic floor supporting the new mechanical equipment will consist of 4 1/2" of normal weight cast-in-place concrete supported by 2" deep galvanized steel composite floor decking, supported by conventional structural steel wide flange beams.

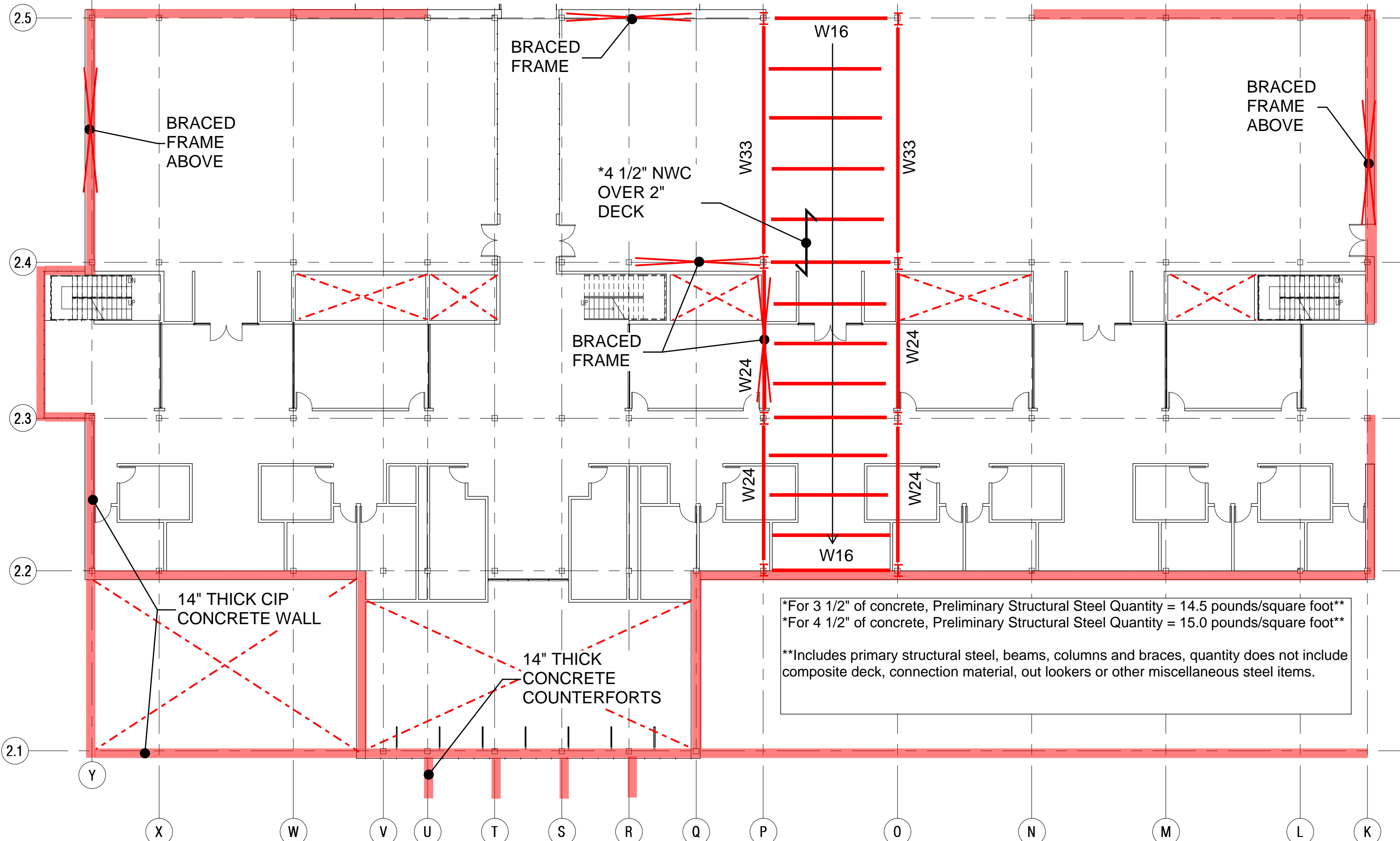
A new structural floor will be installed at the current elevation of level 2 to create a column free space consisting of 3 1/2" of normal weight cast-in-place concrete supported by 2" deep galvanized steel composite floor decking, supported by conventional structural steel wide flange beams and columns. The lateral system will be similar to the auditorium space with moment frames in the East-West direction and braced frames in the North-South direction. The exterior limestone walls will be supported at the new attic floor level and the new second level in a similar manner as at the auditorium.



EXISTING SEATON EAST LEVEL 1 FRAMING PLAN

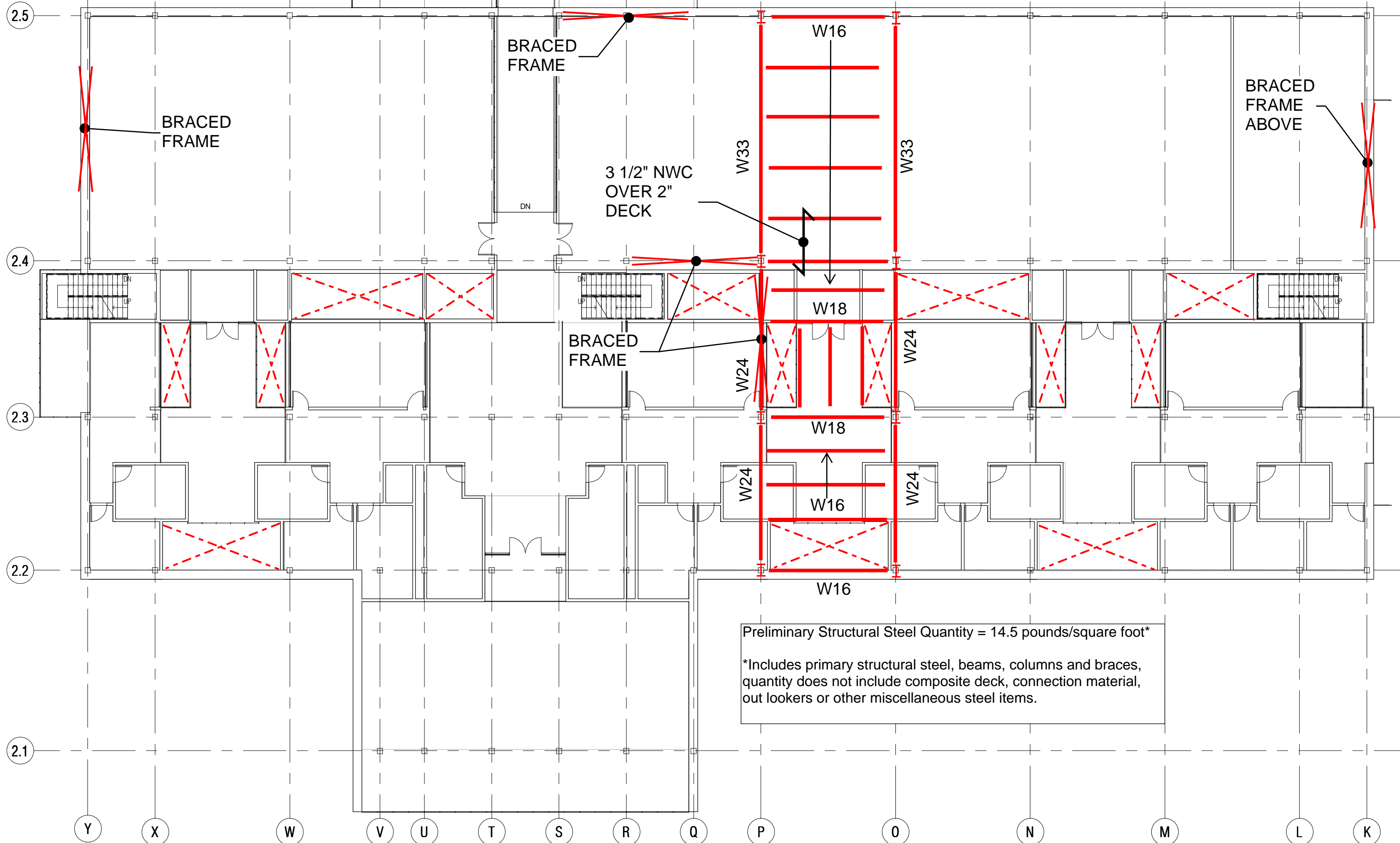


EXISTING SEATON EAST LEVEL 2 FRAMING PLAN



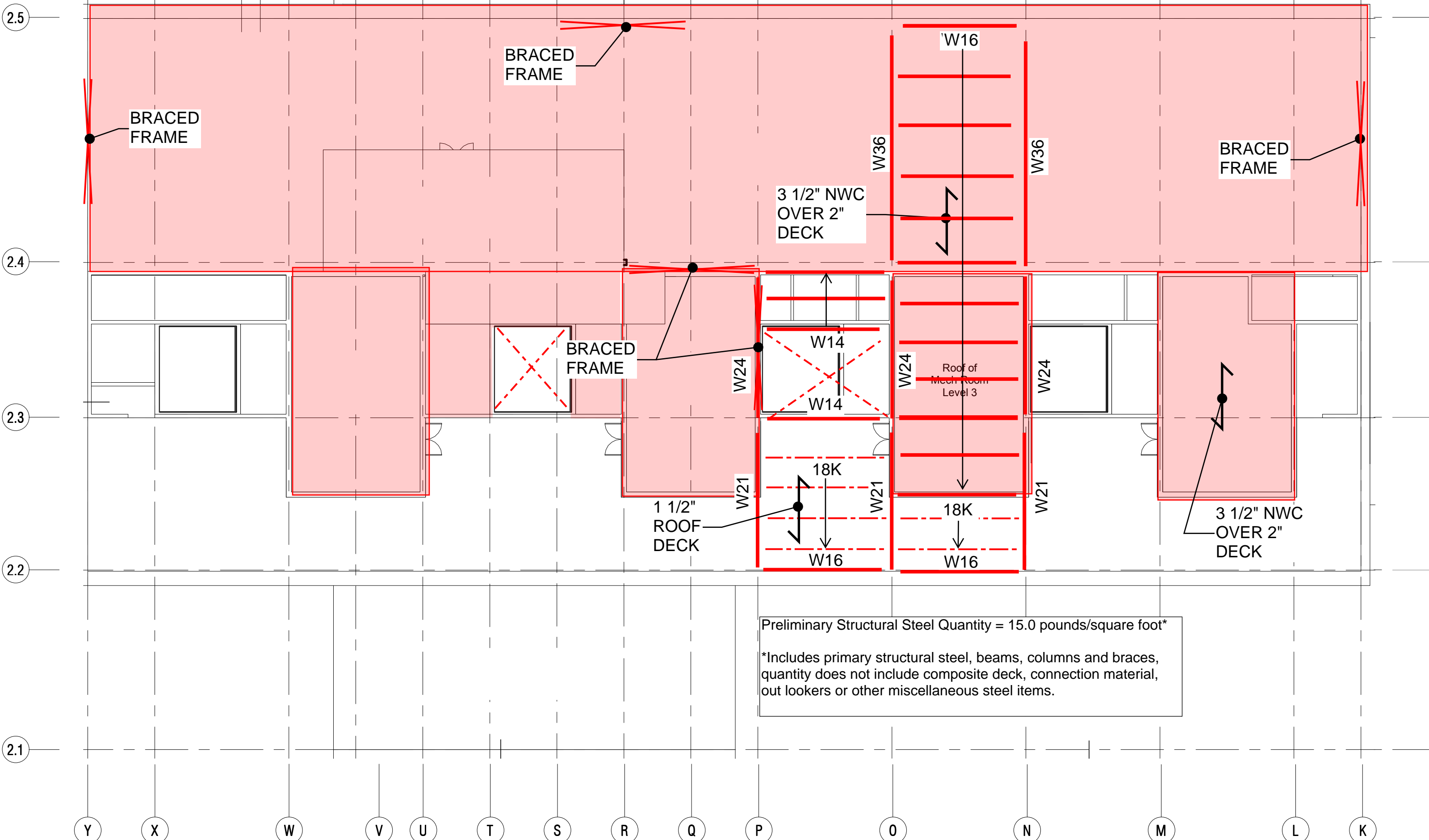
*For 3 1/2" of concrete, Preliminary Structural Steel Quantity = 14.5 pounds/square foot**
 *For 4 1/2" of concrete, Preliminary Structural Steel Quantity = 15.0 pounds/square foot**

**Includes primary structural steel, beams, columns and braces, quantity does not include composite deck, connection material, out lookers or other miscellaneous steel items.



Preliminary Structural Steel Quantity = 14.5 pounds/square foot*

*Includes primary structural steel, beams, columns and braces, quantity does not include composite deck, connection material, out lookers or other miscellaneous steel items.



2.5

2.4

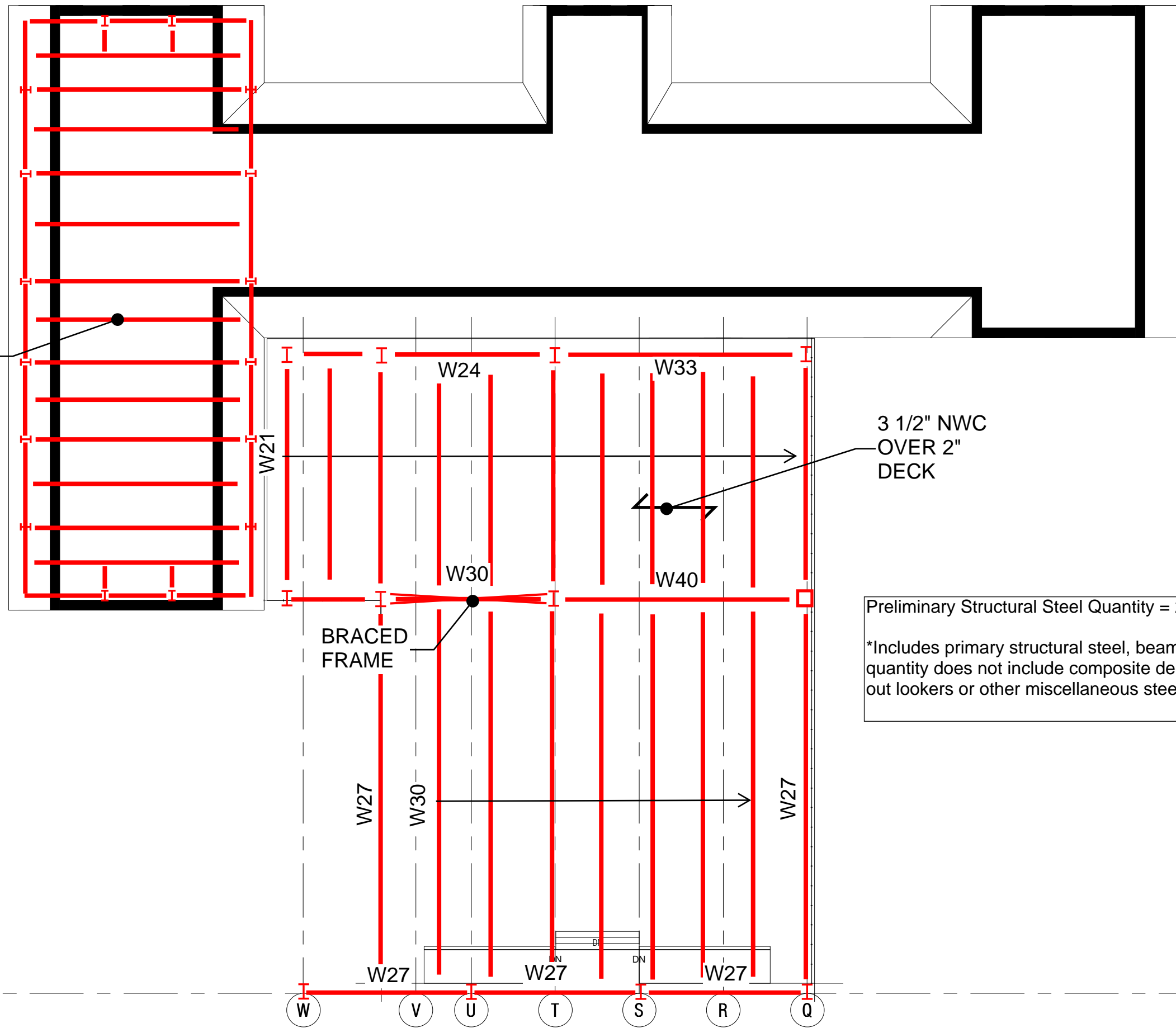
2.3

2.2

2.1

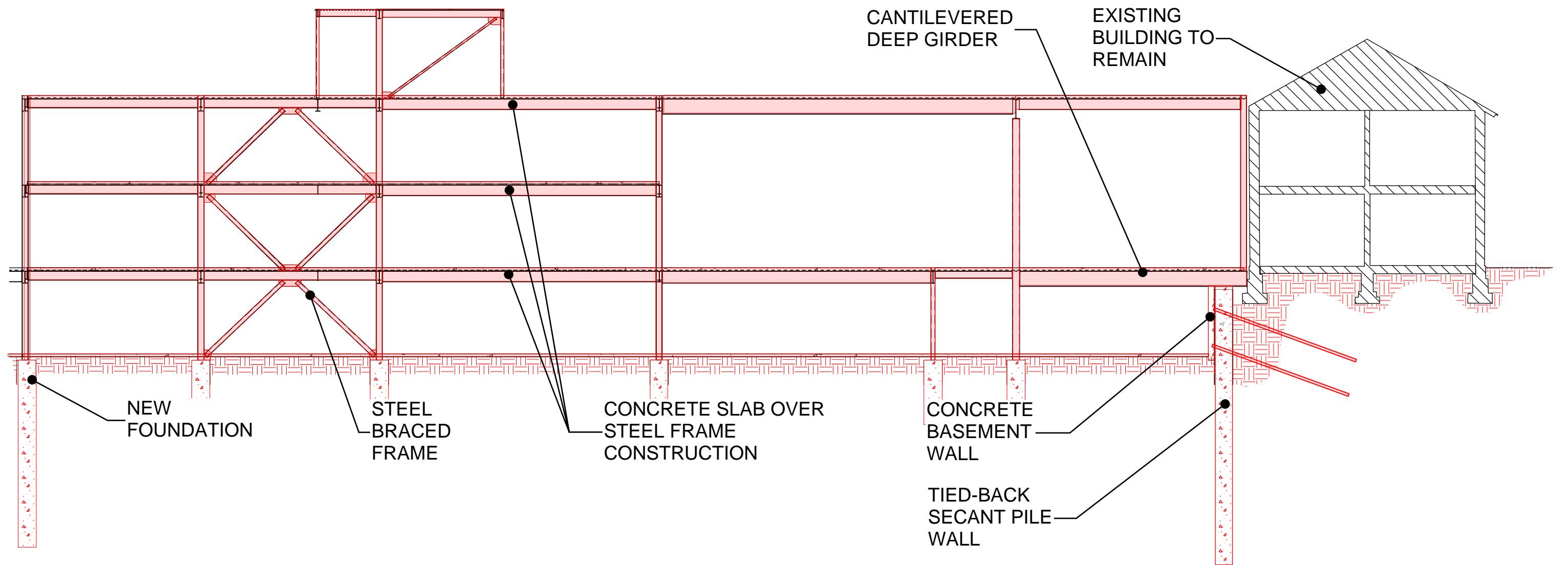
Y X W V U T S R Q P O N M L K

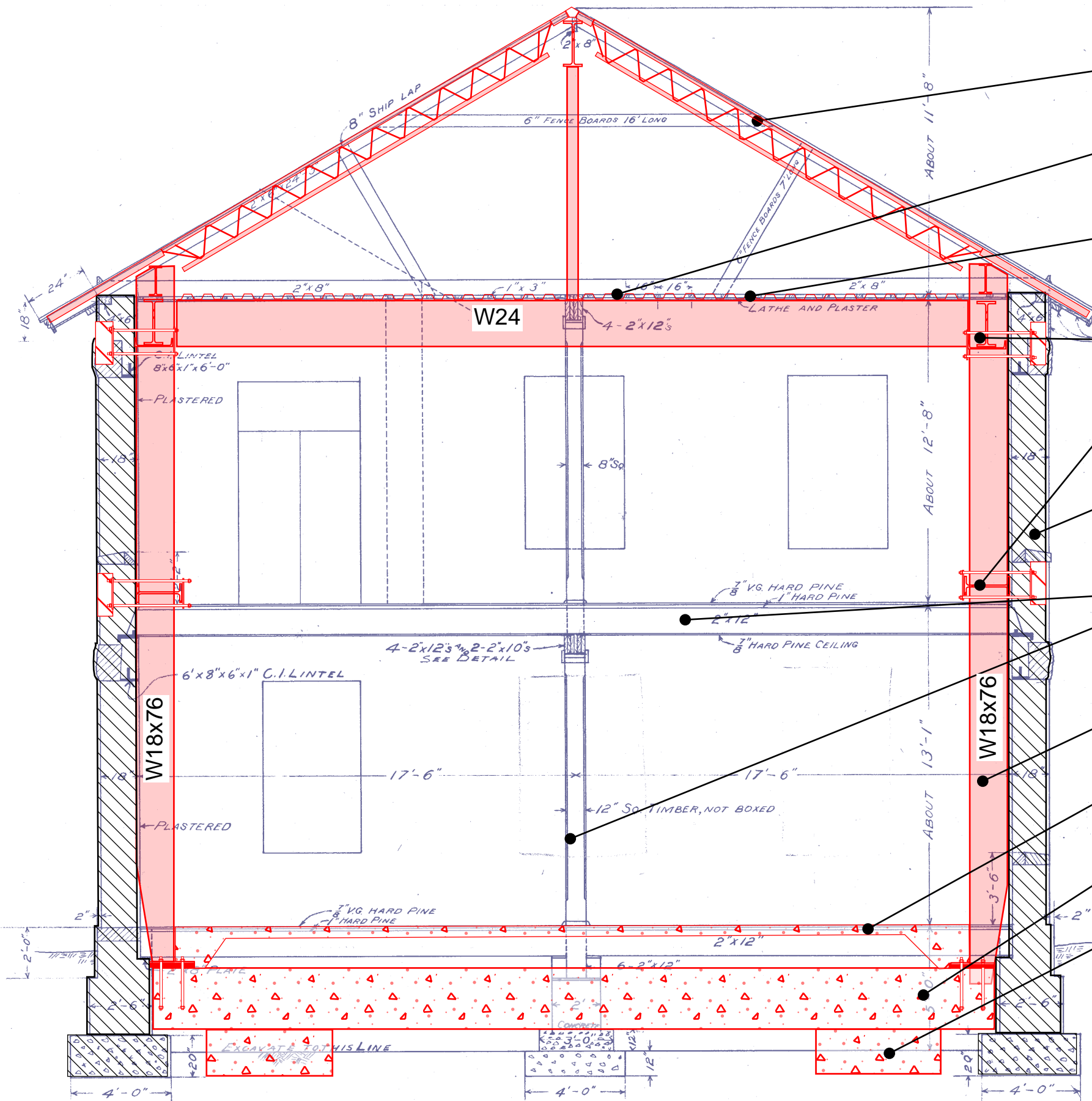
NEW STRUCTURAL FRAMING FOR AUDITORIUM



Preliminary Structural Steel Quantity = 20.0 pounds/square foot*
 *Includes primary structural steel, beams, columns and braces, quantity does not include composite deck, connection material, out lookers or other miscellaneous steel items.

2.5





REMOVE EXISTING ROOF AND
RAFTERS REPLACE WITH OPEN WEB
STEEL JOISTS AND STEEL DECK

NEW ROOF DECK AND STEEL
BEAMS - NO MEP SUPPORT

NEW CONCRETE DECK AND
COMPOSITE STEEL BEAMS FOR
MEP SUPPORT (ALTERNATE)

EXISTING LIMESTONE WALL LATERALLY
SUPPORTED BY A CONTINUOUS STEEL
GIRT AT ROOF AND SECOND FLOOR

EXISTING EXTERIOR
LIMESTONE WALL TO REMAIN

REMOVE EXISTING INTERIOR
COLUMN AND SECOND FLOOR

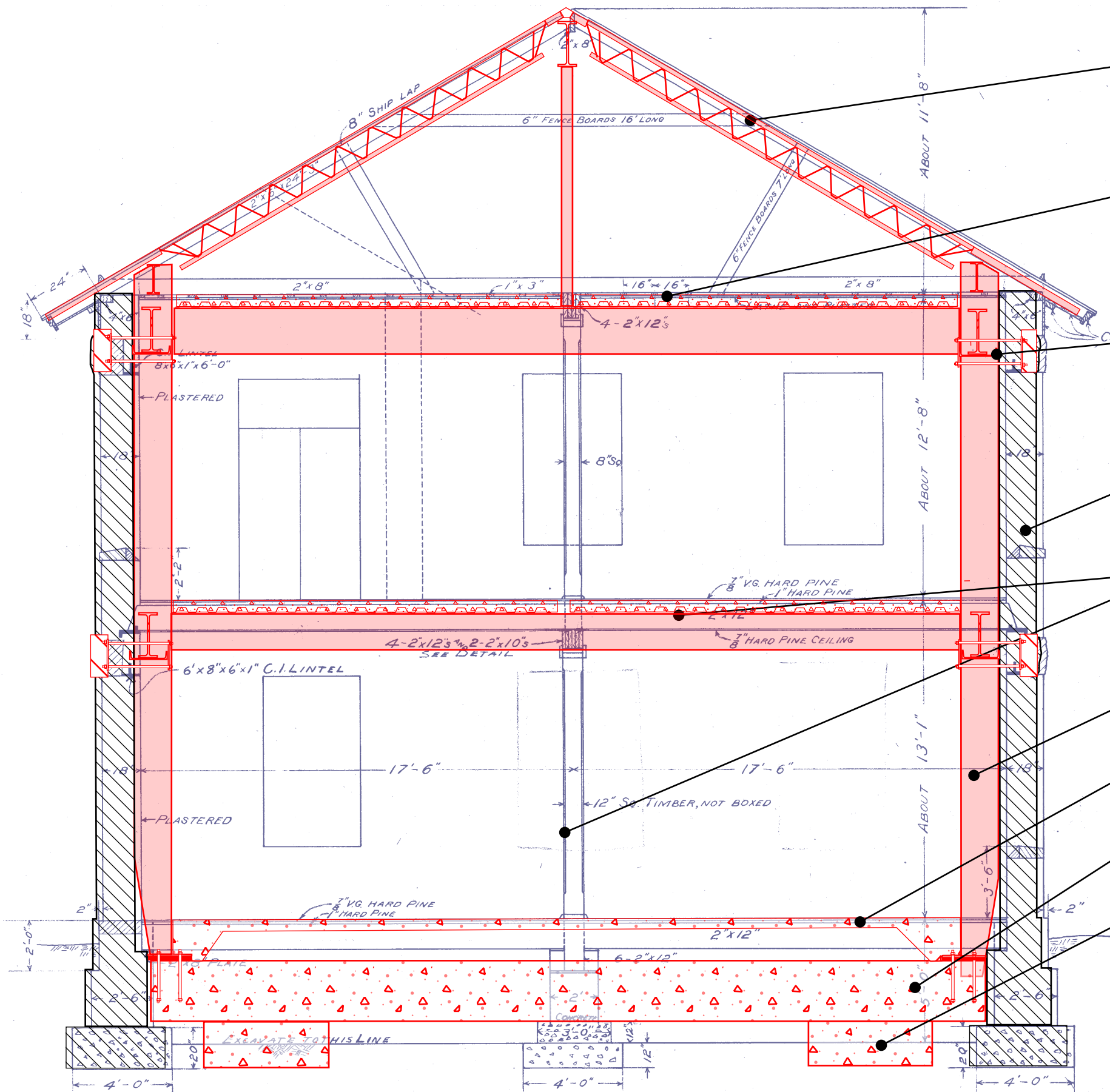
NEW STEEL COLUMN
WITH TAPERED BASE

NEW SLAB ON GRADE

NEW CANTILEVERED GRADE
BEAM AT EACH COLUMN

NEW SPREAD FOOTING AT
EACH GRADE BEAM

Preliminary Structural Steel Quantity = 35.0 pounds/square foot*
*Includes primary structural steel, beams, columns and braces,
quantity does not include composite deck, connection material,
out lookers or other miscellaneous steel items.



REMOVE EXISTING ROOF AND
RAFTERS REPLACE WITH OPEN WEB
STEEL JOISTS AND STEEL DECK

NEW CONCRETE DECK AND
COMPOSITE STEEL BEAMS
FOR MEP SUPPORT

EXISTING LIMESTONE WALL
LATERALLY SUPPORTED AT
ROOF AND SECOND FLOOR

EXISTING EXTERIOR
LIMESTONE WALL TO REMAIN

REMOVE EXISTING INTERIOR
COLUMN AND SECOND FLOOR
PROVIDE NEW COMPOSITE
STEEL FLOOR FRAMING

NEW STEEL COLUMN
WITH TAPERED BASE

NEW SLAB ON GRADE

NEW CANTILEVERED GRADE
BEAM AT EACH COLUMN

NEW SPREAD FOOTING AT
EACH GRADE BEAM

8.0 MEP&FP Design Narratives

The following MEP&FP design narratives have been prepared by Henderson Engineers, Inc.

Kansas State University School of Architecture, Planning & Design

Schematic Design Report

November 26, 2014



kansas city houston bentonville phoenix
dallas tampa las vegas manhattan

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APPENDIX A - MECHANICAL ROOM AND ELECTRICAL ROOM FLOOR PLAN

PART 1 - EXECUTIVE SUMMARY

The following design analysis is for the addition of and renovation to the Kansas State University School of Architecture, Planning & Design. The project includes demolition of Seaton Court, a new addition, and selective renovation of the existing Seaton Hall East and Mechanics Hall. This report includes mechanical, electrical, plumbing, and fire protection design direction for the new and renovated facility.

The addition and renovated areas will have new heating, ventilation, and air conditioning systems. Cooling will be provided from the central chilled water plant. The heating source will be the central steam plant. Steam will be converted to heating hot water in the building. New VAV air handlers and dedicated outside air units will be provided. Perimeter hot water heat will be included in areas with large amounts of glass. If the "Jewel" link between the Seaton Hall addition and Mechanics Hall is defined by code as an atrium, a smoke evacuation system will be included.

An energy benchmark has been included in this report based on ASHRAE Standard 90.1. This benchmark is not intended to demonstrate the exact energy breakdown of the building. The main purpose is to establish categories that represent energy savings opportunities for the project.

New domestic water, fire protection, sanitary sewer, natural gas, storm sewer, and electrical power utility services will be provided to the building. All existing services serving Seaton Court will be demolished, unless otherwise noted. All utilities serving Seaton central and west will remain active.

PART 2 - UTILITY SERVICES

2.1 BUILDING

A. Domestic Water Service:

1. A new domestic water service will be routed to a mechanical room in the basement of the addition. The water service will be sized to serve the addition and remodeled areas (estimated at a 4" ϕ service). The existing service to the renovated part of Seaton East and Mechanics Hall will be removed and the new service will be extended to serve the renovation. Existing service lines to Seaton central and west will remain active. A reduced pressure zone principle backflow preventer will be provided inside the building. The service will be metered per KSU standards.

B. Fire Water Service:

1. A new 6" ϕ fire protection service will be extended to serve the building addition and remodeled areas. The existing service to the renovated part of Seaton East and Mechanics Hall will be removed and the new service will be extended to serve the renovation. Existing service lines to Seaton Central and West will remain active. A double check detector type backflow preventer with monitored OS&Y valves will be installed in the fire service line inside the building. The OS&Y valves on the backflow preventer will be used in lieu of a post indicator valve. A 5" wall-mounted Storz type, rough brass fire department connection with drain will be installed. The location will be coordinated with the Manhattan (K-State) Fire Department.

C. Sanitary Sewer Service:

1. A new 6" ϕ sanitary sewer line will serve the addition and renovated Mechanics Hall. If feasible, the existing service will be reused to serve the renovated portion of Seaton Hall. Existing service lines to central and west Seaton Hall will remain active.

D. Storm Water Service:

1. A new storm water system will be necessary to transmit storm water from the roof to the existing below grade storm sewer. The existing service to the renovated part of Seaton East and Mechanics Hall will be demolished. Existing service lines to central and west Seaton Hall will remain active.

E. Natural Gas Service:

1. A new natural gas service will be installed to serve the emergency generator. The service will be metered per KSU standards.

F. Chilled Water Service

1. A new 6" chilled water line will be routed to the building from the existing central chilled water plant. The chilled water will be metered per KSU standards.

G. Steam Service

1. The existing steam service to the building will be retained to serve the new and renovation areas.

H. Electric Service:

1. Primary power will extend from the campus medium voltage loop to the northwest and will route to new transformers at the northwest corner of the site. Power will route underground. The new and renovated portions of Seaton Hall and Mechanics Hall will be served by new switchgear. Exterior transformers are anticipated for the building (480/277V, three-phase secondary service). They will be pad-mounted, with large concrete pads per campus utility

standards. Further discussions will be required to determine final size and exact location.

2. A new single service entrance will be provided. The electrical service entrance is estimated to be 4,000 Amps at 480Y/277V, three-phase, four-wire. Service size will be finalized during design development. Service will be metered per KSU standards. A new exterior transformer and underground primary feeder from the Campus 12.5KV utility loop will be installed. A secondary feeder will be routed underground from the transformer to a new main switchboard in the Electrical Room.
3. Removal of existing services to areas of the building being renovated or undergoing demolition will be coordinated with the University. Services to be removed are (2) 1600A 208Y/120V services (exterior switchgear and transformers). Other existing services to the portions of the building not being renovated will remain in place.

PART 3 - CODES AND REGULATIONS

3.1 GENERAL

The current adopted version of the following codes will be used in the design of this project:

- A. International Building Code with local amendments
- B. International Mechanical Code with local amendments
- C. International Plumbing Code with local amendments
- D. International Fuel Gas Code with local amendments
- E. International Fire Code with local amendments
- F. International Energy Conservation Code with local amendments
- G. National Fire Protection Codes
 - 1. NFPA (National Fire Protection Association) 13, "Installation of Sprinkler Systems"
 - 2. NFPA 14, "Standpipe, Private hydrant, and Hose Systems"
 - 3. NFPA 25, "Inspection, Testing and Maintenance of Water-Based Fire Protection Systems"
 - 4. NFPA 72 – "National Fire Alarm Code"
- H. NFPA 70, National Electric Code
- I. ASHRAE 55 Thermal Environmental Conditions for Human Occupancy
- J. ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality
- K. ASHRAE Standard 90.1 Energy Standard for Buildings- Except Low-Rise Residential Buildings
- L. ASME A17.3-1996, Safety Code for Elevators and Escalators
- M. Americans with Disabilities Act
- N. Kansas State University Design Standards
- O. State of Kansas Building Design and Construction Manual

PART 4 - CLIMATE

4.1 DRY BULB/WET BULB ANNUAL DATA

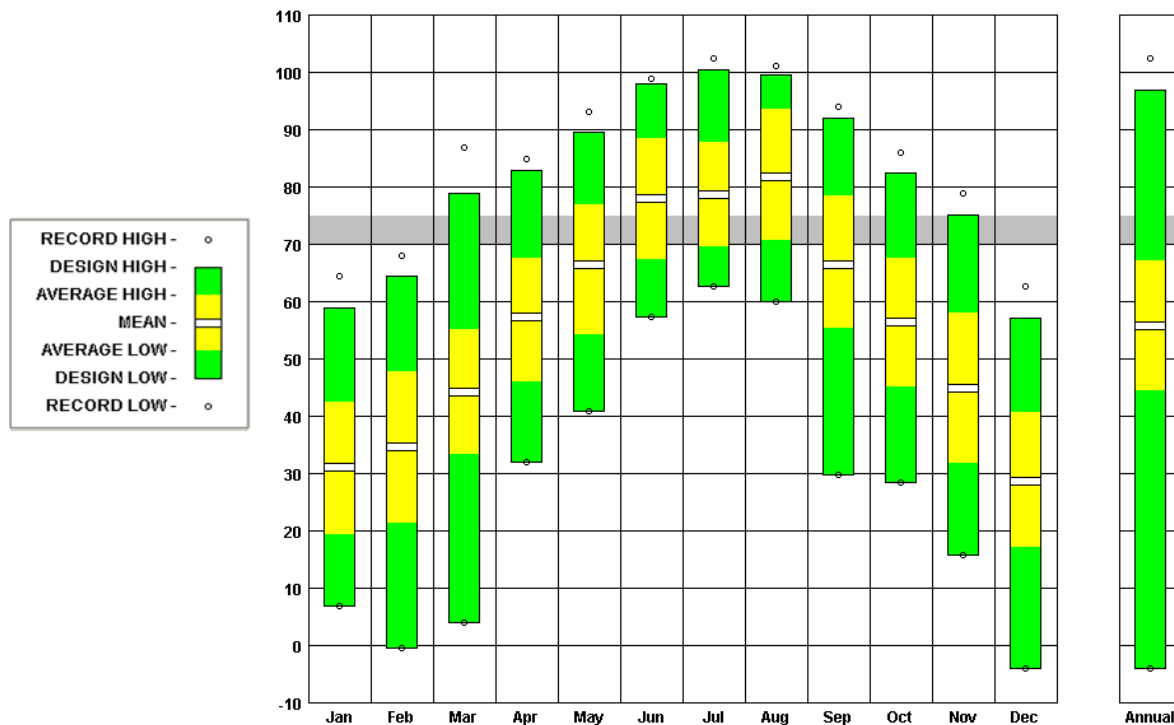


Figure 1: Annual Temperature Data for Manhattan Kansas

The graph above was derived from the widely-used TMY3 (Typical Meteorological Year version 3) weather files, accessed by many major energy modeling programs. TMY3 weather data provides designers with a reasonably sized annual data set that typify conditions at a specific location over a longer period of time, such as 30 years.

During that time mean temperatures, as well as average daily highs and lows are charted per month to give the user an idea of temperatures expected, but should not be used for predicting weather or weather extremes. Because of the smaller sample size, record highs and lows are determined only from the sample years. Thus, they do not reflect actual record highs and lows which tend more towards extremes.

Design temperatures derived from ASHRAE weather bin data will provide extreme conditions and should be used in conjunction with this data when determining loads for a given site. Nevertheless, TMY3 data is useful for determining typical conditions for energy reduction planning and strategy.

4.2 SOLAR PATH DIAGRAM

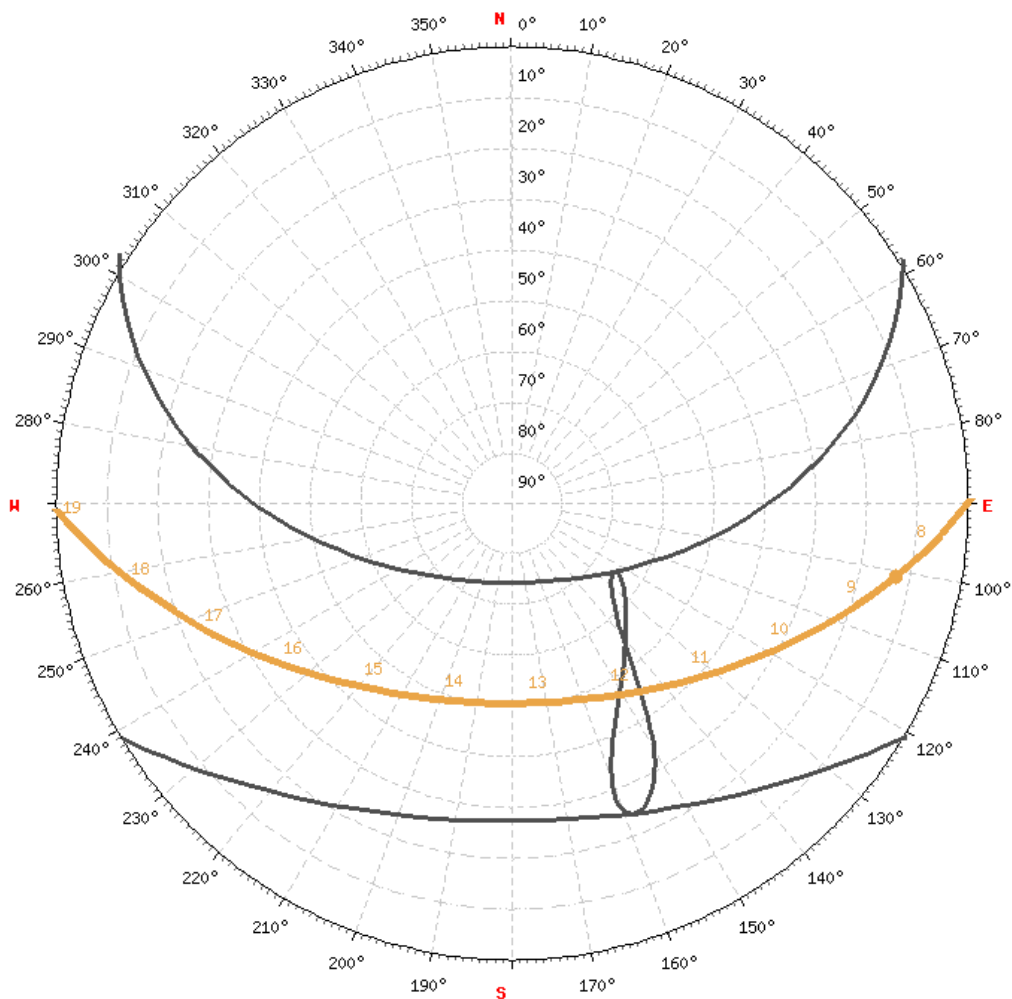


Figure 2: Solar Path Diagram for Manhattan Kansas

The solar path diagram above charts the path of the sun across the sky at three distinct times of year: Summer Solstice (above), Winter Solstice (below), and the Spring/Fall Equinoxes (orange, middle) for a given latitude – in this case Manhattan, KS at 39.19°N. The graph shows relative starting points for sunrise and sunset throughout the year. (Note: the sun rises in the northeast in the summer and sets in the northwest in the winter.) It also shows the azimuth of the sun with respect to the horizon. (Note: the sun peaks at 28° above the horizon during the winter solstice, yet peaks at nearly 82° during the summer solstice.)

This graph can be used for two purposes. Chiefly, it can be used as part of a passive solar strategy allowing the designer to create exterior shade structures that block solar radiation during the cooling season when the sun is high in the sky, but allow the sun to penetrate and warm the space during the heating season. It can also be used for building orientation, informing the designer of solar availability based on cardinal direction and at what time of the day solar energy is available for daylighting or passive solar heating. Figure 3 shows the solar path overlaid on the project site satellite image.

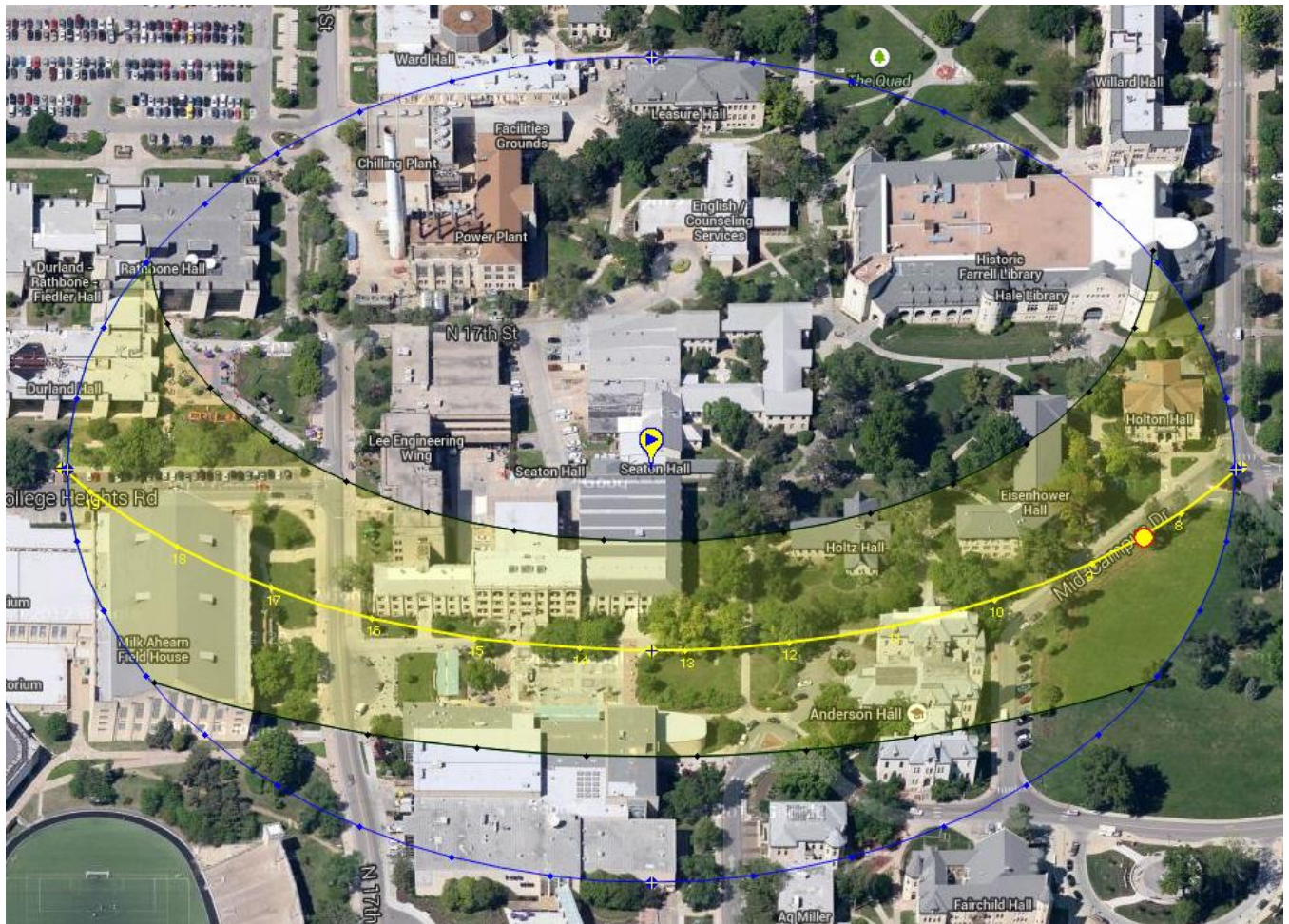


Figure 3: Solar Path Diagram for Manhattan Kansas

4.3 WIND ROSE DIAGRAM – COOLING SEASON

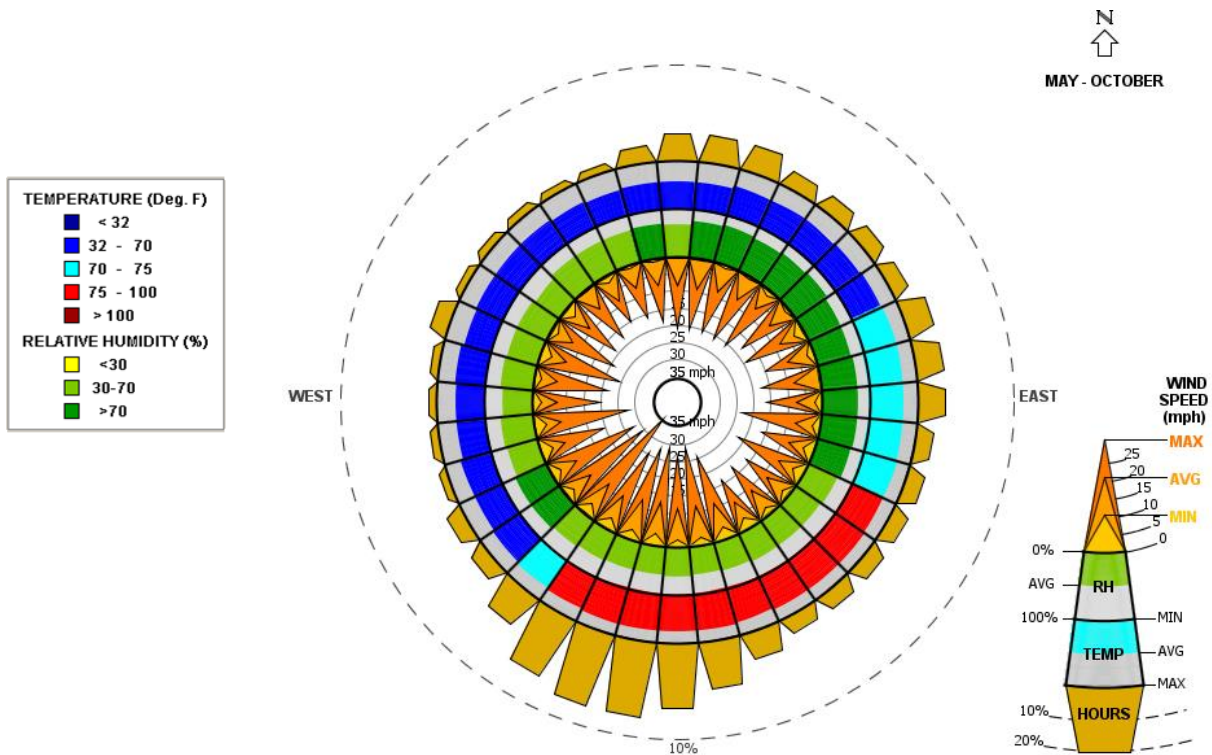


Figure 4: Manhattan Cooling Season Wind Rose Diagram

The diagram above depicts wind condition during the cooling season (May to October) and helps a designer take advantage of windward/leeward conditions when designing natural ventilation systems, exterior shell “cooling” systems, and locations of breezeways and courtyards.

The outer ring shows what percentage of hours per year the wind comes from a certain direction. In this diagram, the direction with the wind comes from the southwest approximately 75% of the time during the summer season.

The next ring shows wind temperature with the warmest wind coming on days where the wind arrives from the south and southeast (75°-100°) and the coolest wind coming on days where the wind blows in from the north, west and northwest (32°-70°).

The next ring depicts relative humidity. The most humid air arrives from the northeast.

The internal points show wind speed. Maximum wind speeds come from the southwest, but can be fairly strong in most directions showing that during the heating season gusts are common. This information is useful when determining areas of the site where wind turbines could be located. It is equally useful for designing areas of shelter for outdoor environments.

4.4 WIND ROSE DIAGRAM – HEATING SEASON

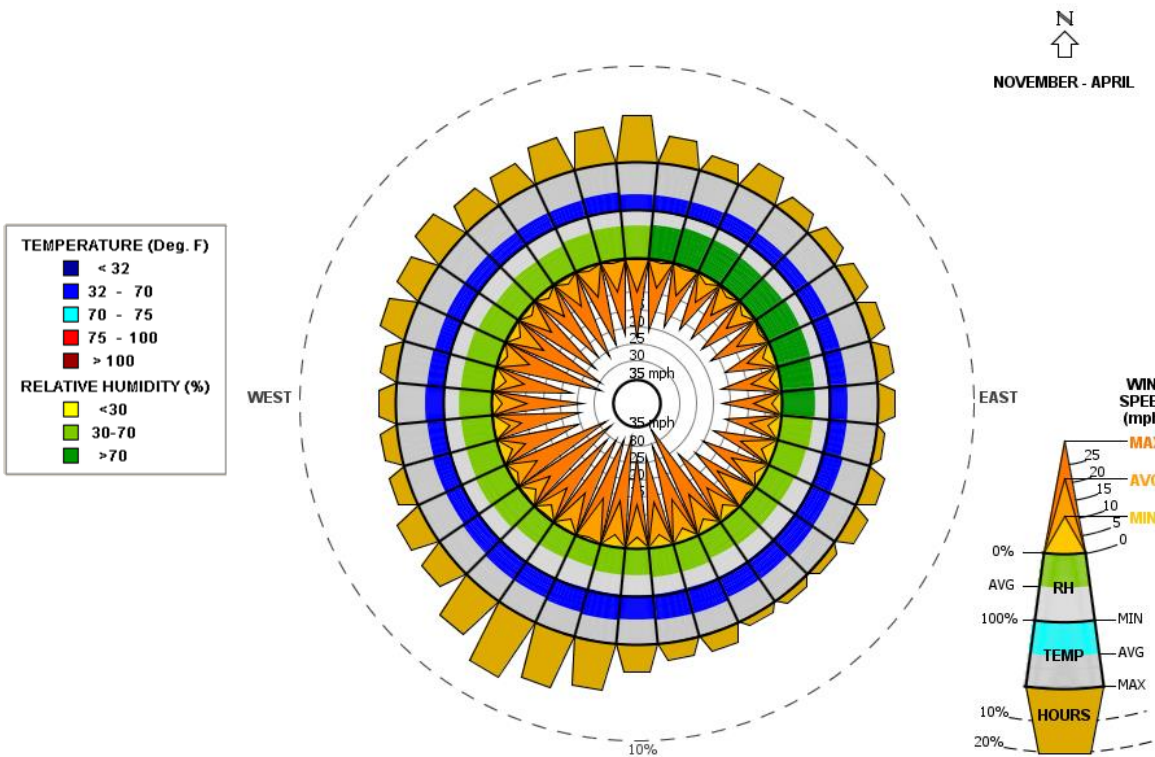


Figure 5: Manhattan Heating Season Wind Rose Diagram

The diagram above depicts wind condition during the heating season (November to April).

In this diagram, wind is more equally split but has a tendency to come from the northwest or southwest directions.

The next ring shows wind temperature. Throughout the heating season the average temperature falls within the 32° to 70° range. However, the thickness of the blue line increases in the south and southwest, indicating a modest increase in temperature on days where the wind comes from the south and southwest.

The next ring depicts relative humidity. Again, the most humid air/wind arrives from the northeast, the most dry from the west.

Winds occasionally top 35 miles per hour in the cooling season indicating that gusty winters are the norm for this climate.

4.5 WINDOW STUDY

EUI (kBtu/ft²/year) vs. Percent Glazing

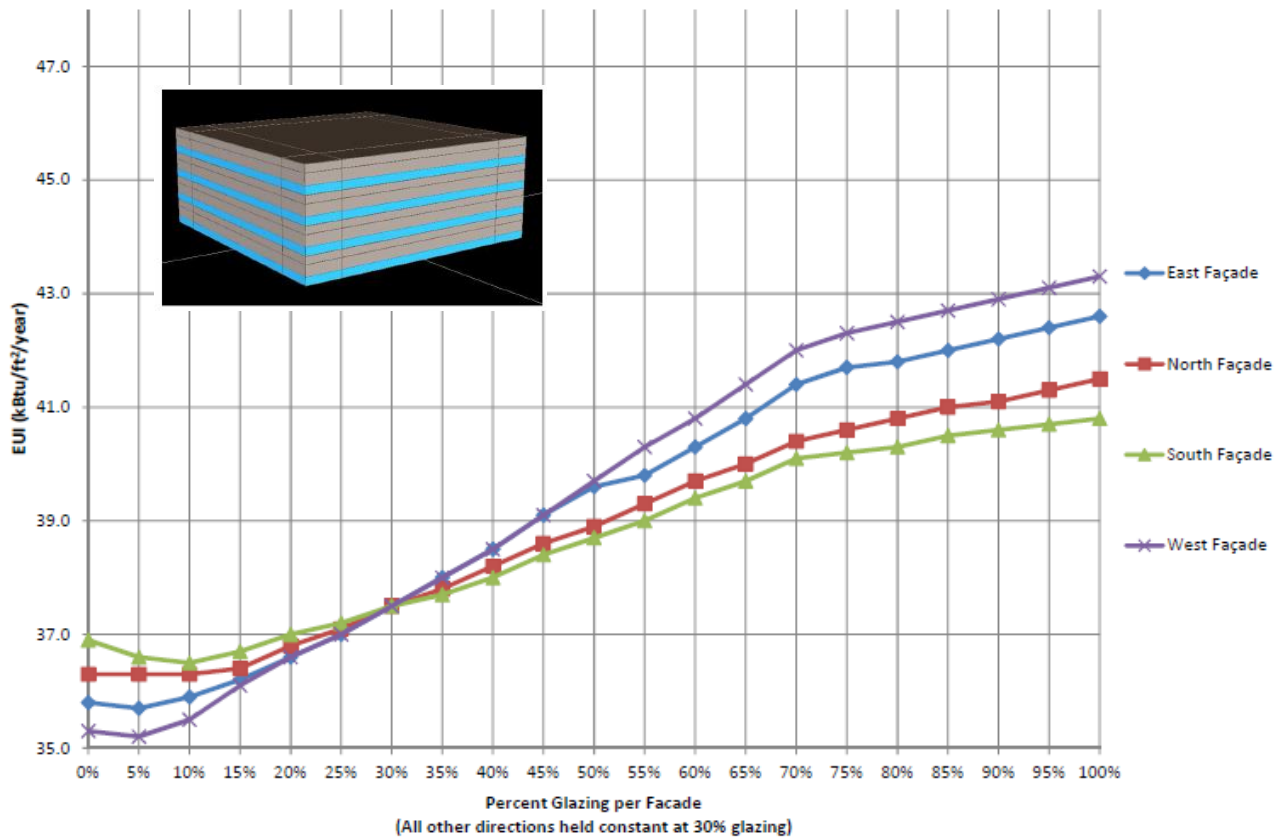


Figure 6: Generic glazing study results showing importance of minimizing west and east glass.

The graph above indicates the energy use intensity (EUI) of a “typical” office building using the ASHRAE 90.1-2007 Appendix G modeling guidelines. For each façade, the energy model was iteratively run, changing the percent glazing on that façade and holding all other building façades at a constant 30% glazing. Benefits from daylighting controls have been included in this model.

Designers can see from these results that maximizing glazing on a northern or southern façade yields the least amount of increase in energy consumption. Furthermore, it can be seen that the east and west façades begin to use much more energy than a comparative amount of glazing on the north or south façades when at 45% glazing and beyond. The building has a primary east/west exposure so careful attention to shading will be critical in managing energy consumption.

PART 5 - ENERGY

5.1 BENCHMARKING

By utilizing energy benchmarking methodology to study the overall energy consumption of similar buildings, we can set energy goals for our project. The most common sources for benchmarking data come from the CBECS 2003 Benchmarking Survey or the ASHRAE 90.1 Baselines models developed by NREL. The CBECS 2003 data represents a survey of building energy use that was conducted in 2003 and includes actual usage data for real buildings across the USA. It includes data from all building sizes, climate zones, and vintages. The ASHRAE 90.1 Baseline models are based on energy models developed by NREL that represent the expected energy use of an ASHRAE 90.1 Appendix G (LEED) baseline model. In this case the comparison was made to the 2004 version of 90.1. These represent a code minimum building's energy performance and consider building size, use type, and climate zone.

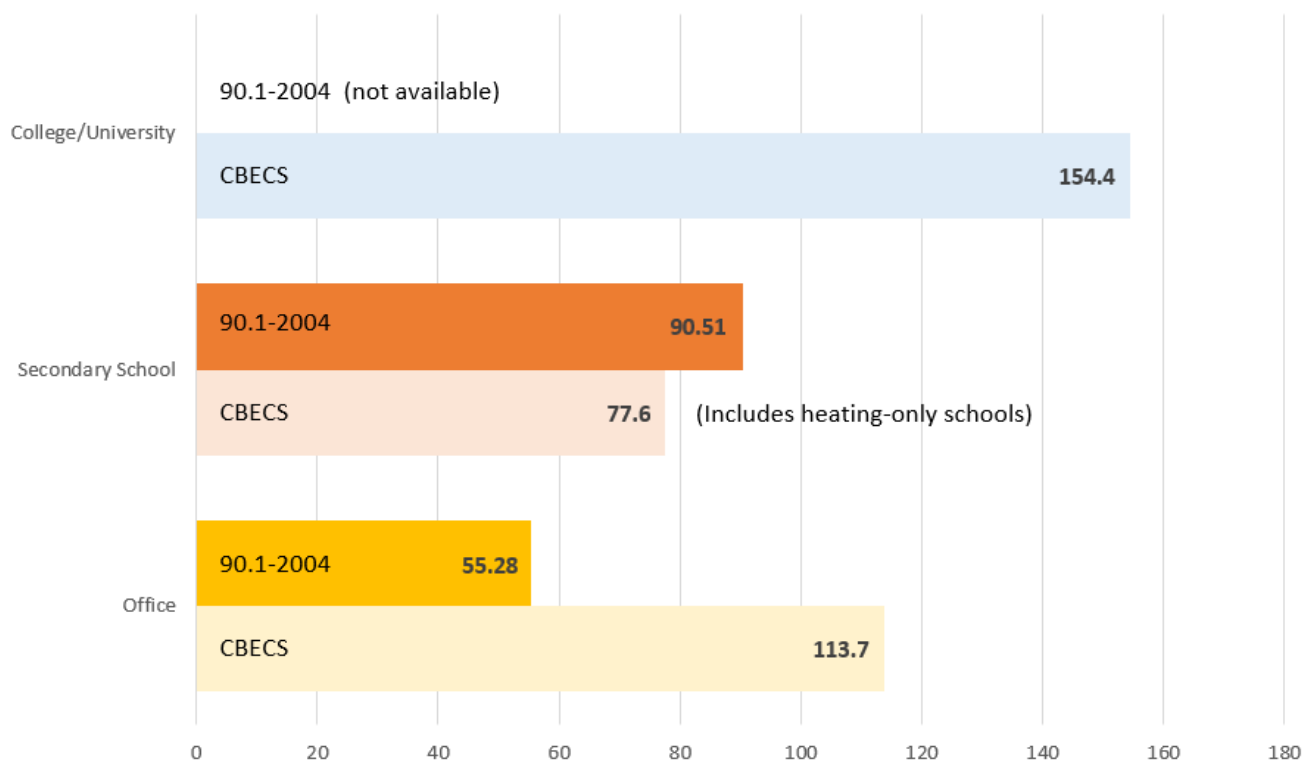


Figure 7: Total building energy use in terms of EUI (kBtu/ft²-yr) for several applicable building types.

Figure 7 displays the benchmarking information from the two sources for three building use types. We found that these use types were most closely related to the project. Unfortunately NREL did not conduct a study for College/University buildings in their 90.1-2004 baseline studies. Additionally the CBECS data for Secondary schools includes heating-only buildings in the survey so it is not useful for our benchmark.

During the sustainability charrette it was decided that the building would behave most similar to an office building but its use schedule would be much higher than the benchmarked values due to the 24/7 nature of the proposed building. It was also decided that the energy goal should follow the goals of the Architecture 2030 Challenge. The Architecture 2030 Challenge is a program that seeks to inspire building design teams to meet specific energy benchmarks as we strive to construct net-zero buildings by the year 2030. Figure 8 shows the 2030 Challenge goals.

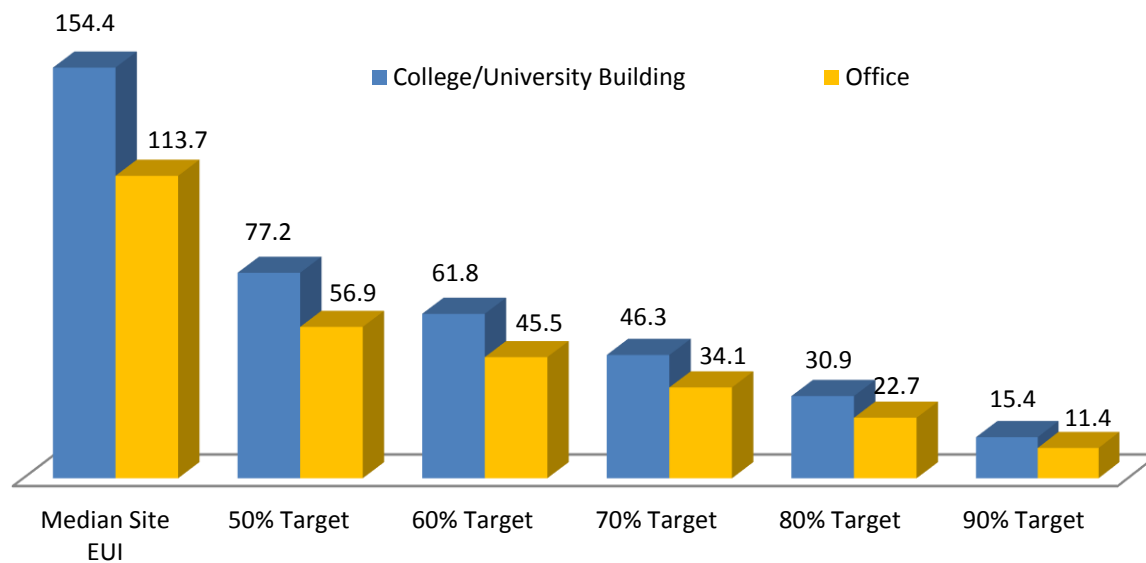


Figure 8: Architecture 2030 Challenge goals. Values are in terms of EUI (kBTU/ft²-yr).

Meeting the 2030 Challenge will require the project to attain the 70% target on the above graph. If we decide to classify our project as an office building it means our target EUI would be 34.1. If we decide to classify our project as a college/university building our target EUI would be 46.3. As design develops the project team will need to continuously re-evaluate this target and ensure that the project is on-track in meeting these goals.

The final study for benchmarking involved creating a simple block model that roughly represents the project. This model was made to have the correct floor area, number of floors, geographic location, and window/wall ratio. Note that the geometry was generic but mimicked the basic shape of the proposed building oriented on the N/S axis. Window placement was not considered and the window/wall ratio was applied uniformly to all surfaces. Figure 9 is the result of this study.

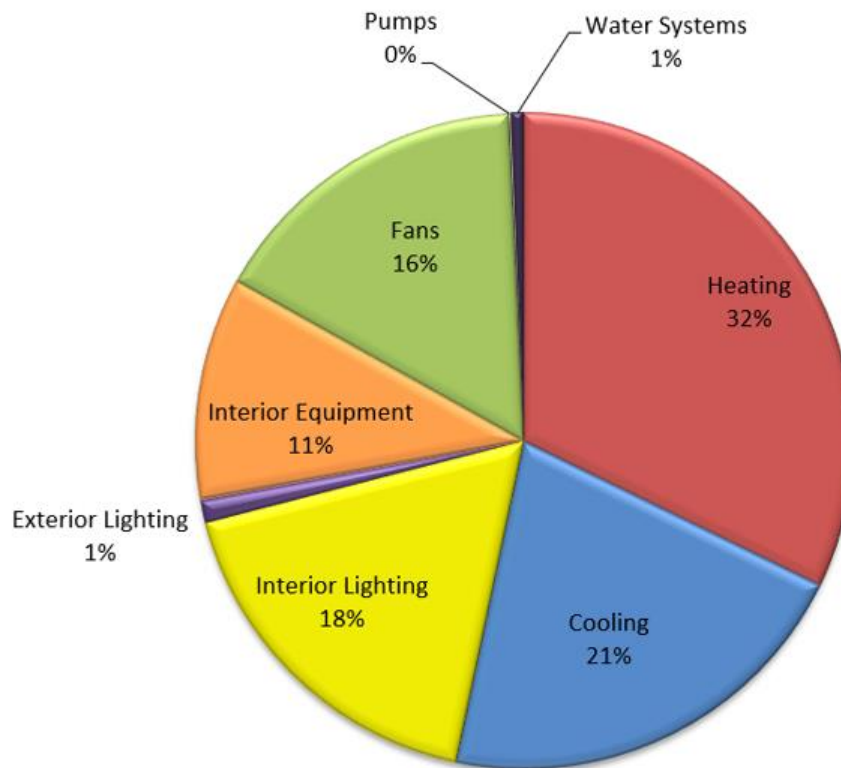


Figure 9: Results of benchmarking energy model shown in terms of end-use breakdown.

This benchmark model was created using the requirements of a 90.1-2007 Appendix G baseline model. It represents the baseline model our project will be competing against for LEED compliance and points. The results were a building with a EUI of 65.9 kBtu/ft²-yr. Figure 9 is useful in showing that most of our energy consumption comes from heating and cooling. Design features that target these areas will be most effective in realizing energy savings. It is important to use a strategy that first reduces load (envelope/glazing improvements), then focuses on energy efficiency (HVAC equipment, lighting systems, energy recovery).

PART 6 - LEED

6.1 GOALS SUMMARY

The project team will pursue LEED certification for the entire project scope based on LEED-NC 2009. The level of certification will be determined during project design.

6.2 PRELIMINARY CHECKLIST



**LEED-NC 2009 Annotated Scorecard
April 2014**

Certified: 40 to 49 points Silver: 50 to 59 points Gold: 60 to 79 points Platinum: 80 + points **Total Possible Points 110**

KSU School of APD - Seaton Hall
LEED Project #: Not yet registered

- 1 Minimum Program Requirements & Prerequisites (P) Due:
- 2 Design Credit Documentation (D) Due:
- 3 Design Credit Submission Date:
- 4 Construction Credit Documentation (C) Due:

60 37 13 Total Project Score

7	3	6	Sustainable Sites	Possible Points	26
Y	?	N			
Y			Prereq 1 Construction Activity Pollution Prevention Erosion & Sed. Cntrl Pin		
1			Credit 1 Site Selection		1
5			Credit 2 Development Density & Community Connectivity		5
		1	Credit 3 Brownfield Redevelopment - Phase II Env. Site Assessment		1
			Credit 4.1 Alternative Transportation, Public Transportation Access		6
	1		Credit 4.2 Alternative Transportation, Bicycle Storage & Changing Rooms		1
		3	Credit 4.3 Alternative Transportation, Low Emitting Fuel Efficient Vehicles		3
	2		Credit 4.4 Alternative Transportation, Parking Capacity		2
	1		Credit 5.1 Site Development, Protect or Restore Habitat		1
		1	Credit 5.2 Site Development, Maximize Open Space		1
	1		Credit 6.1 Stormwater Design, Quantity Control		1
	1		Credit 6.2 Stormwater Design, Quality Control		1
	1		Credit 7.1 Heat Island Effect, Non-Roof		1
	1		Credit 7.2 Heat Island Effect, Roof		1
		1	Credit 8 Light Pollution Reduction		1

7	3	Water Efficiency	Possible Points	10
Y	?	N		
Y			Prereq 1 Water Use Reduction, 20% Reduction	
4			Credit 1 Water Efficient Landscaping, Reduce by 50%, or no irrigation	2 - 4
	2		Credit 2 Innovative Wastewater Tech., 50% red	2
	3	1	Credit 3 Water Use Reduction, 30%, 35%, 40% Reduction	2 - 4

10	25	Energy & Atmosphere	Possible Points	35
Y	?	N		
Y			Prereq 1 Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2 Minimum Energy Performance: 10% New, 5% Exstg (90.1-2007)	
Y			Prereq 3 Fundamental Refrigerant Management	
5	14		Credit 1 Optimize Energy Performance, ASHRAE 90.1 - 2007	1 - 19
	7		Credit 2 On-Site Renewable Energy	1 - 7
	2		Credit 3 Enhanced Commissioning	2
	2		Credit 4 Enhanced Refrigerant Management	2
	3		Credit 5 Measurement & Verification	3
	2		Credit 6 Green Power	2

7	4	4	Materials & Resources	Possible Points	14
Y	?	N			
Y			Prereq 1 Storage & Collection of Recyclables		
	1	2	Credit 1.1 Building Reuse, Maintain Existing Walls, Floors & Roof		1 - 3
	1	1	Credit 1.2 Building Reuse, Maintain 50% of Interior Non-Structural Elements		1
	2		Credit 2 Construction Waste Management, 50%, 75% thresholds		1 - 2
	1	1	Credit 3 Materials Reuse		1 - 2
	2		Credit 4 Recycled Content, 10%, 20% thresholds		1 - 2
	2		Credit 5 Regional Materials, extract, harvest/recover & mfg. 500mi		1 - 2
		1	Credit 6 Rapidly Renewable Materials, 2.5% with 10-yr or shorter cycle		1
	1		Credit 7 Certified Wood, Minimum 50% FSC Certified; 95% Exemp.		1

10	2	3	Indoor Environmental Quality	Possible Points	15
Y	?	N			
Y			Prereq 1 Minimum IAQ Performance (ASHRAE 62.1, 2007)		
Y			Prereq 2 Environmental Tobacco Smoke (ETS) Control; 25'		
	1		Credit 1 Outdoor Air Delivery Monitoring		1
		1	Credit 2 Increase Ventilation (ASHRAE 62.1, 2007 or CIBSE 2005)		1
	1		Credit 3.1 Construction IAQ Management Plan, During Construction		1
	1		Credit 3.2 Construction IAQ Management Plan, Before Occupancy		1
	1		Credit 4.1 Low-Emit Materials, Adhesives & Sealants		1
	1		Credit 4.2 Low-Emit Materials, Paints & Coatings		1
	1		Credit 4.3 Low-Emit Materials, Flooring Systems		1
	1		Credit 4.4 Low-Emit Materials, Comp. Wd & Agrifiber Products; NAUF, CARB-Phase		1
	1	1	Credit 5 Indoor Chem & Pollutant Source Cntrl, MERV 13, Walk-off, separation		1
	1		Credit 6.1 Controllability of Systems, Lighting cntrl 90% & multi-occup		1
	1		Credit 6.2 Controllability of Systems, Thermal Comfort cntrl 50%, or oper window		1
	1		Credit 7.1 Thermal Comfort, Design - Comply with ASHRAE 55-2004		1
	1		Credit 7.2 Thermal Comfort, Verification		1
		1	Credit 8.1 Daylight & Views, Daylight 75% of Spaces		1
		1	Credit 8.2 Daylight & Views, Views for 90% of Spaces		1

6	Innovation & Design Process	Possible Points	6	
Y	?	N		
1			Credit 1.1 Innov. Dsgn: Exemp. Perf. SSc4.1	1
1			Credit 1.2 Innov. Dsgn: Env Ed-Educational Signage	1
1			Credit 1.3 Innov. Dsgn: Green Cleaning Policy (EBOM IEQp3)	1
1			Credit 1.4 Innov. Dsgn: Sust Purch-Reduced Mercury Lamps (EBOM MRC4)	1
1			Credit 1.5 Innov. Dsgn: Min Acoust Perf; ANSI S12.60-2002, ASHRAE Ch 47, STC (5	1
1			Credit 2 LEED® Accredited Professional	1

3	1	Regional Bonus Credits	Possible Points	4
Y	?	N		
1			Credit 1.1 Regional Priority: MRC2 - CWM, 75%	1
1			Credit 1.2 Regional Priority: Wec1 - Water Efficient Landscaping, No Potable Water	1
1			Credit 1.3 Regional Priority: Wec3 - Water Use Reduction, 30%	1
1			Credit 1.4 Regional Priority:	1

Figure 6: Preliminary LEED 2009 Checklist

PART 7 - HEATING, VENTILATION, AND AIR CONDITIONING

7.1 GLOBAL DESIGN CRITERIA

- A. Outdoor design temperature
1. The ASHRAE outside summer and winter design conditions for Manhattan, KS will be used for design purposes.
 2. Ambient Design Conditions:
 - a) Heating: 2.5°F db (99.6%)
 - b) Cooling: 97.2°F db (1.0%)/ 75.7°F wb (MCWB)
 - c) Dehumidification: 83.7°F db (1.0%)/ 73.2°F wb (MCWB)
- B. Inside Temperatures
1. The following temperatures (Winter/Summer) will be used for Thermal Comfort Design.
 - a) All areas unless otherwise noted 72°F / 75°F, 50%-60% RH summer
(No humidification in winter)
 - b) Elevator Machine Rooms 65°F / 85°F
 - c) Electrical Equipment Rooms 65°F/ 85°F
 - d) Mechanical Rooms 65°F/ 80°F
- C. Minimum Ventilation Requirements
1. The minimum ventilation requirements will be provided with mechanical ventilation subject to compliance with the International Building Code and ASHRAE Standard 62.1: Ventilation for Acceptable Indoor Air Quality. The minimum ventilation rates will be determined by using the ventilation rate procedure prescribed in ASHRAE Standard 62.1.
- D. Noise Criteria (NC) Guidelines for Air System Design
1. All areas unless otherwise noted NC 40 – NC 45
 2. Studios NC 25 – NC 30
 3. Office/Conference NC 25 – NC 30
- E. Occupancy
1. Occupancy for the project will be determined by the occupant densities listed in ASHRAE 62.1 for the most applicable categories.
- F. Temperature Setbacks
1. During unoccupied hours the Building Management System (BMS) will allow zones to drift to setback temperatures of 80°F summer (adj.) and 65°F winter (adj.).
- G. Energy Efficiency
1. The building will be constructed in compliance with ASHRAE Standard 90.1. The standard will be used for establishing the baseline efficiency for reporting energy cost efficiency improvements.
- H. Envelope Loads
1. The design envelope values established for the project will meet or exceed ASHRAE 90.1 indicated in the table below.

Table 4: Building Envelope Requirements for Climate Zone 4A

Opaque Elements	Assembly Maximum	Nonresidential Insulation Min. Value	R-Value
<i>Roofs</i>			
Insulation Entirely Above Deck	U-0.048	R-20.0 ci	
Metal Building	U-0.065	R-19.0	
Attic and Other	U-0.027	R-38.0	
<i>Walls, Above Grade</i>			
Mass	U-0.104	R-9.5 c.i.	
Metal Building	U-0.113	R-13.0	
Steel-Framed	U-0.064	R-13.0 + R-7.5 c.i.	
Wood-Framed and Other	U-0.089	R-13.0	
<i>Walls, Below-Grade</i>			
Below-Grade Wall	C-1.140	NR	
<i>Floors</i>			
Mass	U-0.087	R-8.3 c.i.	
Steel-Joist	U-0.038	R-30.0	
Wood-Framed and Other	U-0.033	R-30.0	
<i>Slab-on Grade Floors</i>			
Unheated	F-0.730	NR	
Heated	F-0.860	R-15 for 24 in	
<i>Opaque Doors</i>			
Swinging	U-0.700		
Non-Swinging	U-1.5		
Fenestration			
	Assembly Max. U	Assembly Max SHGC	
<i>Vertical Glazing</i>			
Nonmetal framing	U-0.40		
Metal Framing (curtain wall/storefront)	U-0.50		SHGC-0.40 all
Metal Framing (entrance door)	U-0.85		
Metal Framing (all other)	U-0.55		
<i>Skylight with Curb, Glass, % of Roof</i>			
0% - 2.0%	U _{all} -1.17		SHGC _{all} -0.49
2.1% - 5.0%	U _{all} -1.17		SHGC _{all} -0.39
<i>Skylight with Curb, Plastic % of Roof</i>			
0% - 2.0%	U _{all} -1.30		SHGC _{all} -0.65
2.1% - 5.0%	U _{all} -1.30		SHGC _{all} -0.34
<i>Skylight with Curb, All % of Roof</i>			
0% - 2.0%	U _{all} -0.69		SHGC _{all} -0.49
2.1% - 5.0%	U _{all} -0.69		SHGC _{all} -0.39

Table 2: ASHRAE 90.1-2007 Building Envelope Requirements for Climate Zone 4A

I. General HVAC Requirements

1. Specifications will require the Contractor to submit shop drawings for all major pieces of equipment and materials. Layout and coordination drawings will be required for piping, fire protection and sheet metal.
2. All motors will be built to NEMA standards and have high temperature winding insulation. All motors 1 HP and larger will be high efficiency type. Motors 1/2 HP and above will be 460 volt, three phase. Smaller motors will be 120 volt, single phase.
3. Variable frequency drives, where specified to be provided, will be U.L. listed and ETL or CSL certified. The drive will include the motor starter for the driven motor, all automatic controls and a manual or automatic by-pass switch. The drive will comply with the latest FCC regulations for radiated and conducted EMI and RFI.
4. Openings and sleeves will be provided for all piping and ductwork passing through construction. Openings will be sealed with an approved fire sealant in fire rated construction. Fire dampers or combination fire/smoke dampers will be installed where required by Code.
5. All duct systems will be cleaned prior to building occupancy.
6. All equipment furnished will be adjusted to operate properly. All bearings will be aligned. All safety devices will be tested. Major pieces of equipment will have factory personnel start-up. Any necessary adjustments will be made to the systems.
7. After the installing contractor has finished his final adjustments, the mechanical systems will be tested and balanced by an Owner approved independent Testing and Balancing Agency. The Testing and Balancing Agency will provide a complete report after all systems are functioning properly. Systems to be tested will include:
 - a. All air supply, return, and exhaust systems.
 - b. Domestic hot water recirculation system.
8. Access doors will be specified for installation in general construction where necessary to provide access for operation and maintenance. The minimum size of the access doors is to be 24" x 24".
9. Housekeeping pads will be installed under all major floor mounted mechanical equipment.
10. Duct Sizing Criteria
 - a. The aspect ratio for ductwork should be no more than three with a maximum of four only when required due to space constraints.
 - b. Friction Loss per 100 Feet
 - (1) All supply air ductwork will be sized for pressure drop range between 0.08" to 0.1" w.c. and a maximum velocity 2,000 fpm.
 - (2) Return air, outdoor air and exhaust air ductwork will be sized for a pressure drop range between 0.05" and 0.08" w.c. with a maximum velocity of 1,500 fpm.
 - (3) Transfer air ducts will be sized for minimal pressure drop (total pressure drop of 0.01" w.c.) and a maximum velocity of 700 fpm.
 - (4) Grilles, registers or screens installed on return air and/or transfer air ducts will be sized for a maximum pressure drop of 0.05" w.c. and maximum velocity of 500 fpm through the net free area.
11. Duct Insulation
 - a) Duct sizes shown on the plans indicate free area of duct required or clear inside dimensions.

- b) All outdoor air, return air and supply air ductwork will be insulated.
- (1) Outdoor air ductwork between an intake and an AHU will be wrapped. Conditioned outdoor air ductwork downstream of an AHU should be lined.
 - (2) Exposed rectangular supply or return air ductwork will be lined.
 - (3) Concealed rectangular or round supply air or return air ductwork will be wrapped.
 - (4) Exposed round supply air ductwork will be double wall, insulated.
 - (5) Exhaust air ductwork will not be insulated unless within 10' of an exterior wall or roof.
 - (6) Ductwork will be insulated per Table 6.8.2B in ASHRAE 90.1-2007 as is summarized below.

TABLE 6.8.2B Minimum Duct Insulation R-Value

Climate Zone	Exterior	Ventilated Attic	Unvented Attic Above Insulated Ceiling	Unvented Attic with Roof Insulation	Unconditioned Space (Crawlspaces)	Indirectly Conditioned Space (RA Plenum)	Buried
4	R-6	R-6	R-6	R-3.5	R-3.5	none	R-3.5
Return Ducts							
4	R-3.5	R-3.5	R-3.5	none	none	none	none

Table 3: ASHRAE 90.1-2007 Duct Insulation Requirements

12. Duct Pressure Classification

- a. SMACNA classifies ductwork based on static pressure (positive and negative). The static pressure classification is provided in the SMACNA HVAC Duct Design manual. Static pressure classifications range from 1/2" to 10" of w.c. of static pressure. Tables in the SMACNA HVAC Duct Construction Standards Metal and Flexible manual provide the minimum metal gauge, duct reinforcement and support spacing for all sizes of rectangular and round ductwork based on the duct pressure classification. All ductwork and supports will be constructed to meet these requirements.
- b. Duct static pressure classification will be determined using the following criteria:
 - (1) For systems with no blockage of flow between the fan and the outlets, the duct static pressure will be based on the expected static pressure in the duct.
 - (2) For systems that have dampers or some other device that could close resulting in a blockage of airflow, the duct static pressure class will be based on the static pressure that the fan can develop at no flow conditions, positive or negative.

13. Duct Leakage Class

- a. SMACNA provides recommendations for sealing ductwork to minimize leakage, with class 'A' being the most stringent.
 - 1) Seal Class A requires sealing the transverse joints, longitudinal seams and wall penetrations. All ductwork will be specified to be sealed to seal class 'A'.

14. Duct Fitting and Layout Criteria

- a. Galvanized steel ductwork and housings will be furnished as shown on drawings. Ductwork will be required to be in conformance with current SMACNA Standards relative to gauge, bracing, joints, etc. Minimum thickness of duct will be 26-gauge sheet metal.
- b. Radiused elbows, turns and offsets with a minimum centerline radius of 1-1/2 times the duct width will be specified.
- c. Mitered elbows less than 45 degrees do not require turning vanes. Mitered elbows 45 degrees and greater will have single thickness turning vanes of same gauge as ductwork, rigidly fastened with guide strips in ductwork. Vanes for mitered elbows will be provided in all supply and exhaust ductwork and in return and outside air ductwork that has an air velocity exceeding 1000 fpm.
- d. Ducts will be connected to fans, fan casings and fan plenums by means of flexible connectors. Flexible connectors will be neoprene coated glass cloth canvas connections and have a flame spread of 25 or less and smoke developed rating not higher than 50. Joints will be airtight and installed with minimum 1-1/2" slack.
- e. Provide balancing dampers wherever necessary for complete control of airflow. Damper leakage for outside air dampers will not exceed 4.0 cfm/sf in full closed position at 1" wg pressure differential across damper.
- f. Provide 45 degree rectangular/round side takeoff fittings with double bearing damper with insulation build out for round ductwork branch takeoffs to individual air devices.
- g. Where access to dampers through a hard ceiling is required, provide a cable operated volume damper with remote operator. Damper will be adjustable through the diffuser face or frame with standard 1/4" nutdriver or flat screwdriver. Cable assembly will attach to damper as one piece with no linkage adjustment. Positive, direct, two-way damper control will be provided with no sleeves, springs or screw adjustments to come loose after installation. Support cable assembly to avoid bends and kinks in cable.
- h. Flexible duct runs will not exceed 5 feet in length, and will be installed as straight as possible avoiding tight turns.

15. Diffuser Design Criteria

- a. All supply diffusers will be sized for a maximum NC rating of 25 and a maximum pressure drop of 0.1 in w.c.
- b. All return grilles will be sized for a maximum NC rating of 25 and a maximum pressure drop of 0.05 in w.c.
- c. All linear supply diffusers will be provided with a prefabricated insulated plenum.

16. Pipe Design Criteria

- a. The following piping materials should be used for HVAC piping systems:
 - 1) Hot and Chilled Water: Piping 2-inch and smaller may be Type L copper or Schedule 40, black steel. Piping 2-1/2" and larger will be Schedule 40, black steel.
 - 2) Typically, steel piping 2" and smaller is threaded. Steel pipe 2-1/2" and larger will be welded or grooved. For connection to valves and piping specialties, unions are used for 2" and smaller piping and flanges are used for 2-1/2" and larger piping.
 - 3) Steam piping will be schedule 40 carbon steel with threaded joints up to 2-1/2" and butt-weld joints for larger pipe.

- 4) Steam condensate will be schedule 80 carbon steel with threaded joints up to 2-1/2" and butt-weld joints for larger pipe.
- b. The following is general criteria for insulating HVAC piping:
 - 1) All chilled and hot water piping will be insulated.
 - 2) Steam and steam condensate piping should be 2" fiberglass with all service jacket.
 - 3) Piping will be insulated per Table 6.8.3 in ASHRAE 90.1-2007 as is summarized below (or currently adopted code).

TABLE 6.8.3 Minimum Pipe Insulation Thickness

Fluid Design Operating Temp. Range (°F)	Insulation Conductivity		Nominal Pipe or Tube Size (in.)				
	Conductivity Btu*in / (h*ft ² *°F)	Mean Rating Temp. (°F)	< 1	1 to < 1- 1/2	1-1/2 to < 4	4 to < 8	≥ 8
Heating Systems							
> 350	0.32 - 0.34	250	2.5	3.0	3.0	4.0	4.0
251 - 350	0.29 - 0.32	200	1.5	2.5	3.0	3.0	3.0
201 - 250	0.27 - 0.30	150	1.5	1.5	2.0	2.0	2.0
141 - 200	0.25 - 0.29	125	1.0	1.0	1.0	1.5	1.5
105 - 140	0.22 - 0.28	100	0.5	0.5	1.0	1.0	1.0
Cooling Systems							
40-60	0.22 - 0.28	100	0.5	0.5	1.0	1.0	1.0
< 40	0.22 - 0.28	100	0.5	1.0	1.0	1.0	1.5

Table 4: ASHRAE 90.1-2007 Pipe Insulation Requirements

17. Pipe Sizing Criteria

- a. Piping is typically sized based on two criteria, maximum velocity and maximum pressure drop per 100 feet of pipe, with limits as listed below.
- b. Pressure Drop Criteria
 - 1) For water systems, piping will be sized for maximum pressure drop of 4 feet per 100 feet.
- c. Velocity Criteria
 - 1) For water systems, piping 2-inch and smaller should be sized for maximum velocity of 4 feet per second and piping larger than 2-inches for maximum velocity of 10 feet per second.
 - 2) For steam systems, piping should be sized for a maximum velocity of 100 feet per second.
 - 3) For steam condensate return, piping should be sized for a maximum velocity of 10 feet per second.
- d. In general, the following is a range of water flow for a given pipe size. Minimum pipe size in HVAC piping should be ¾-inches.

HVAC Pipe Sizing Table

Water Flow (GPM)	Steel Pipe (In)	Water Flow (GPM)	Copper Pipe (In)
0 - 3.75	3/4"	0 - 3.5	3/4"
3.75 - 7.5	1"	3.5 - 7	1"
7.5 - 15	1-1/4"	7 - 12.5	1-1/4"
15 - 24	1-1/2"	12.5 - 20	1-1/2"
24 - 45	2"	20 - 43	2"
45 - 75	2-1/2"		
75 - 130	3"		
130 - 270	4"		
270 - 800	6"		
800 - 1,500	8"		
1,500 - 2,800	10"		
2,800 - 4,500	12"		

Table 5: HVAC Pipe Sizing Table

18. Pipe Layout Criteria

- a. Use long radius elbows, radius equals 1.5 times the pipe diameter. Maintain sufficient space between parallel pipes for the turns with the long radius elbows.
- b. Maintain adequate space to service valves, minimum 6 inches from adjacent piping.
- c. Verify adequate space is available for installation of elbows, tees, flanges, valves and piping accessories including insulation.
- d. Provide adequate pipe length for making connections. For threaded piping, need to provide minimum 3" pipe length between connections. For welded piping, need to provide minimum 6" pipe length between connections.
- e. Provide adequate spacing between pipes for pipe supports, unions on small pipes and flanges on large pipes. On insulated piping need to account for the thickness of the insulation.
- f. When laying out piping in a mechanical room, layer the piping such that piping running in the same direction is at the same elevation. Connect takeoffs to the top or bottom of the pipe and run the piping at the elevation of the appropriate layer.
- g. Pressure gauges should always be installed upstream of thermowells since thermowells stick into the pipe and cause turbulence that disrupts pressure readings if the gauge is too close to the thermowell.
- h. Support piping to meet requirements of MSS SP58-2009.

7.2 PROPOSED DESIGN ANALYSIS

A. General

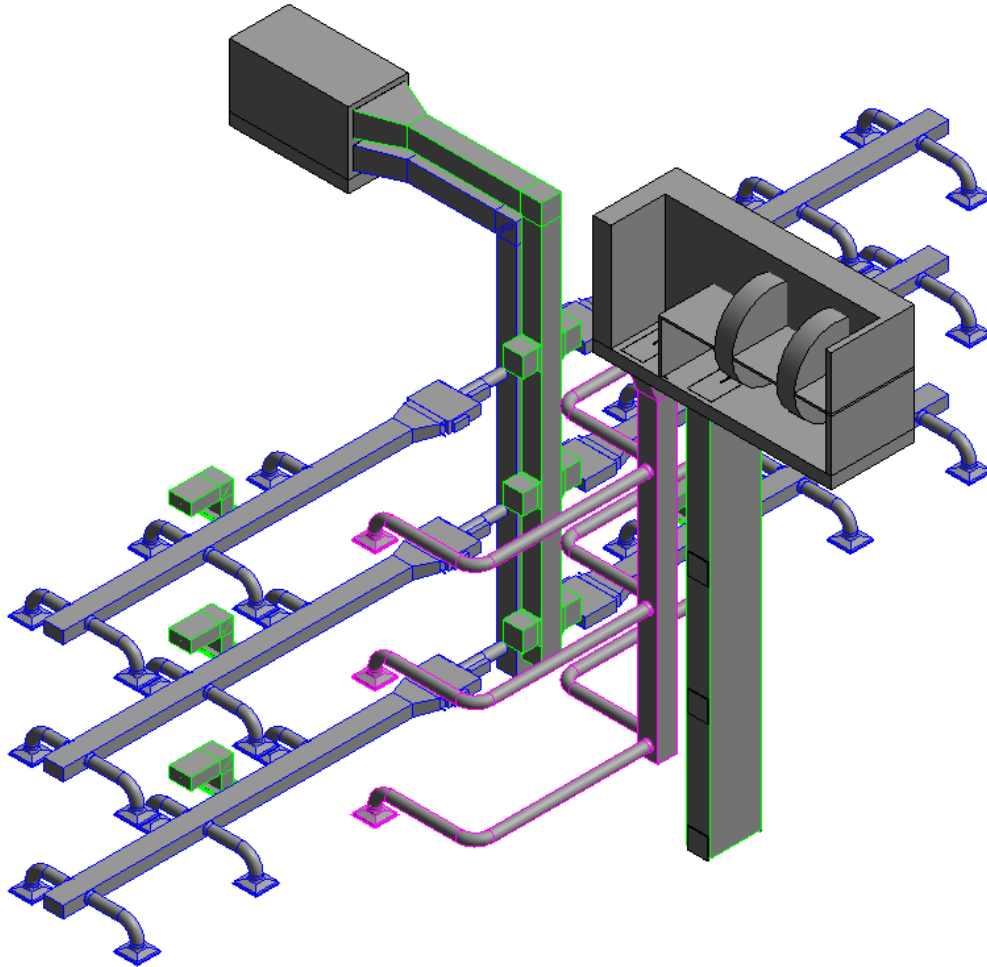


Figure 7: Schematic Diagram for VAV Air Handler with Dedicated 100% Outdoor Air Unit

1. Variable Air Volume System
 - a. Air-handling units will be utilized to heat and cool the main portion of the building. Units will be variable air volume. Air handling units will be double wall construction with spring internally isolated fans, mixing box, enthalpy economizer, supply fan with variable speed drive, MERV 7 pre-filters, MERV 13 final filters, chilled water cooling coils, and hinged access doors. Zones will be provided with single duct VAV boxes with hot water re-heat coils to provide thermal zone comfort control to the building. Return air to units will be a plenum return system.
2. Outdoor Air Units
 - a. 100% dedicated outdoor air units will provide treated outside air directly to occupied spaces. Units will be variable air volume. Units will be sized to condition the ventilation air to deliver neutrally conditioned air to the spaces. Units will be double wall construction with internal spring vibration isolation, supply fan with variable speed drive, relief fan with variable speed drive, MERV 7 pre-filters, MERV 13 final filters, hot water pre-heat coil, chilled water cooling coils, and dual energy recovery wheels. Units will be provided with

- single duct VAV boxes for demand controlled ventilation.
- b. Makeup air units will be provided to heat and cool the makeup air for the paint spray booth exhaust. Units will be double wall construction (perforated interior wall) with spring vibration isolation curbs, plenum type supply fan, MERV 7 pre-filters, MERV 13 final filters, chilled water cooling coils, heating hot water coil, and hinged access doors.
3. Central HVAC Systems
 - a. The building will be served from the campus chilled water and steam loops. The chilled water and steam service lines will enter the building in the basement of the Seaton Addition.
 - b. The existing 4" ϕ chilled water taps from the campus loop branch line to the building will be demolished and replaced with a new chilled water supply and return lines sized to accommodate the calculated load (estimated line size of 6" ϕ). The capacity of the existing branch line from the campus loop will be evaluated further during the design development phase of the project. New variable speed, flexible coupled, base mounted chilled water pumps will provide chilled water to the air-handling units. Chilled water service will be metered per KSU standards.
 - c. The existing steam entrance to the basement of Seaton East will be retained. A new pressure reducing station will be provided. A new shell and tube heat exchanger will be provided to produce heating hot water for the building. New variable speed, flexible coupled, base mounted pumps will provide heating hot water to the air-handling units and VAV box heating coils. Steam service will be metered per KSU standards.
 4. Miscellaneous Systems
 - a. Atrium Smoke Evacuation System (required if the Jewel is defined as an atrium)
 - 1) The atrium will be equipped with a smoke control system subject to the requirements of the International Codes and the NFPA 101 and 92B.
 - 2) The system will maintain the smoke layer above the highest walking surface required for egress with the use of multiple smoke exhaust fans on the roof.
 - 3) Make-up air will be provided for a minimum of 80% of the required exhaust air through a combination of automatic door opener/holders on exterior doors, louvers, operable windows and dedicated mechanical makeup air. All make-up air will be introduced to the space at a velocity less than or equal to 200 feet/minute at the perimeter of the space per NPFA 92B Section 4.6.4.
 - b. Exhaust Systems
 - 1) All restrooms and janitor closets will be continuously exhausted during occupied hours. They will be exhausted through the dedicated outdoor air system.
 - 2) All fans will be enabled and monitored through the Building Management System (BMS).
 - c. Vestibule /Entry Heating System
 - 1) Heating hot water cabinet unit heaters or an equivalent will be provided in vestibules, entries and stairwells for extra heating capacity during the winter months.
 - d. IT/AV Room System
 - 1) IT/AV rooms housing heat producing equipment will be served by dedicated cooling only units or transfer fans with transfer grilles depending upon heat load in the space.

- e. Elevator Equipment Room
 - 1) Elevator equipment rooms housing heat producing equipment will be served by dedicated cooling only indoor units or transfer fans with transfer grilles depending upon heat load in the space.
- 5. Noise and Vibration Control
 - a. Acoustical and vibration treatment will be provided to help control HVAC system noise.
 - b. Vibration isolators and flexible connections will be provided, as required, for air handling units, fans, etc.
 - c. Silencers may be required on the supply and return system serving the offices and conference rooms. Silencers will be located about three equivalent duct diameters away from fan discharges or inlets, duct fittings or other air-flow discontinuities.
 - d. All return/transfer air openings through walls to structure will have acoustical boots or some other acoustical treatment to prevent excessive sound transmission.
- B. Seaton Hall Renovation
 - a. One dedicated 100% outdoor air unit will serve the entire renovation and will supply conditioned, room-neutral, outdoor air.
 - b. (3) Air handling units will serve the renovation. Each of the air handling units will be dedicated to serve one floor. Air handling units will be sized to handle the space sensible and space latent loads as required by the mechanical code.
 - c. All air handling equipment will be located in the basement and will utilize wall louvers to deliver outdoor air and relief air.
 - d. Exhaust air will be exhausted through the 100% outdoor air unit.
 - e. Outdoor air, supply air, return air, relief air, and exhaust air will be delivered to the multiple floors through a centrally located mechanical chase.
 - f. Perimeter heating will be provided from heating hot water fin tube along exterior fenestrations.
- C. Seaton Hall Addition
 - a. One dedicated 100% outdoor air unit will serve the entire renovation and will supply conditioned, room-neutral, outdoor air.
 - b. (3) Air handling units will serve the addition. (2) Air handling units will serve the southern portion of the basement, 1st floor, 2nd floor, and 3rd floor. (1) Air handling unit will serve the northern portion of the basement, 1st floor, and 2nd floor. Air handling units will be sized to handle the space sensible and space latent loads as required by the mechanical code.
 - c. The 100% dedicated outdoor air unit and (3) air handling units will be located in penthouses on the roof.
 - d. All air handling equipment will utilize wall louvers to deliver outdoor air and relief air
 - e. Restroom exhaust air will be taken through the 100% outdoor air unit.
 - f. A dedicated exhaust fan for the studio spray rooms be located on the roof.
 - g. Outdoor air, supply air, return air, relief air, and exhaust air will be delivered to the multiple floors through a centrally located mechanical chase.
 - h. Perimeter heating will be provided from heating hot water fin tube along exterior fenestrations.

D. Fabrication Lab

- a. (1) Air handling unit will be located in a centrally located basement mechanical room and will be dedicated to serve the fabrication lab in the basement. The air handling unit will be sized to handle the space/ventilation sensible and latent loads as required by the mechanical code.
- b. (2) Makeup air units will be located in the basement, one for spray booth and one for welding.
- c. Dedicated exhaust fans for the spray booth and welding stations will be located on the roof.
- d. A dust collection system will be located outside on the basement level to serve all dust producing equipment.
- e. Outdoor air, supply air, return air, relief air, and exhaust air will be delivered to the basement through a centrally located mechanical chase.
- f. All air handling equipment will utilize wall louvers and/or roof hoods to deliver outdoor air, relief air, and exhaust air.
- g. Perimeter heating will be provided from heating hot water fin tube along exterior fenestrations.

E. Mechanics Hall Renovation

- a. (2) Air handling units will serve the renovation. (1) Air handling unit will serve the auditorium and (1) air handling unit will serve the rest of mechanics hall. Air handling units in Mechanics Hall will condition the space load and also deliver outdoor air to the space. Air handling units will be sized to handle the space/ventilation sensible and latent loads as required by the mechanical code.
- b. All air handling equipment will be located in the attic and utilize wall louvers and/or roof hoods to deliver outdoor air and relief air.
- c. Exhaust air will be taken through roof mounted fans or inline fans with roof hoods.
- d. Outdoor air, supply air, return air, relief air, and exhaust air will be delivered to the multiple floors through a centrally located mechanical chase.
- e. Perimeter heating will be provided from heating hot water fin tube heaters along exterior fenestrations.

F. Jewel Addition

- a. (1) Air handling unit will serve the addition. The air handling unit serving the Jewel Addition will condition the space loads and also deliver outdoor air to the space. Air handling units will be sized to handle the space/ventilation sensible and latent loads as required by the mechanical code.
- b. All air handling equipment will be located in the attic of Mechanics Hall and utilize wall louvers and/or roof hoods to deliver outdoor air and relief air.
- c. Outdoor air, supply air, return air, relief air, and exhaust air will be delivered to the multiple floors through a centrally located mechanical chase.
- d. Perimeter heating will be provided from heating hot water radiant heaters along exterior fenestrations.
- e. If the Jewel is defined as an atrium, a smoke evacuation system will be required for the Jewel atrium link between the Bar and Mechanics Hall. The system will consist of exhaust

fans, dampers and control panels. All equipment associated with this system will be U.L. 864 – UUKL rated. The system will be tied into the building fire alarm system.

PART 8 - PLUMBING**8.1 GLOBAL DESIGN CRITERIA**

The following outlines the general requirements for all plumbing systems.

- A. Domestic Cold Water
 1. Shutoff valves 3" and larger will be cast iron gate type with non-rising stems, 2-1/2" and smaller will be bronze body gate or ball valves. All valves will be 125psi SWP rated.
 2. Domestic cold water will be provided for all plumbing fixtures and devices that require potable water.
 3. The cold water distribution piping will be sized for a maximum velocity of 6 FPS.
 4. All domestic cold water piping will be insulated with 1" thick "all service jacket" fiberglass insulation.
 5. Minimum domestic cold water sizing will be 3/4" for any horizontal piping. Final runs to fixtures may be 1/2" minimum.
- B. Domestic Hot Water
 1. Temperature and pressure relief valve drains will be routed to a floor drain. An expansion tank will be provided.
 2. Domestic hot water will be delivered at 120 °F to individual fixtures and mixed down to suitable temperatures via means of a thermostatic mixing valve at each fixture (110 °F at lavatories).
 3. Domestic hot water will be recirculated by means of a pump. This recirculation pump will be provided with an aquastat and time switch.
 4. Shutoff valves 3" and larger will be cast iron gate type with non-rising stems, 2-1/2" and smaller will be bronze body gate or ball valves. All valves will be 125psi SWP rated.
 5. The hot water distribution piping will be sized for a maximum velocity of 5 FPS.
 6. All domestic hot and hot water return piping will be insulated with 1" thick "all service jacket" fiberglass insulation. Minimum domestic hot water sizing will be 3/4" for any horizontal piping. Domestic hot water circulation piping and final runs to fixtures may be 1/2" minimum pipe size.
 7. A water softening system will be provided to remove hardness for water heating only. The water softening system will be located in the Mechanical Equipment Room.
 8. A new steam to hot water heat exchanger will be provided for the hot water system.
- C. Sanitary, Waste and Vent System
 1. Floor drains will be provided with trap guards except where potential high flow rates require trap primers.
 2. Plumbing vents within six lineal feet of the roof outlet will be insulated with 1" thick "all service jacket" fiberglass insulation.
 3. Cleanouts will be added for sanitary risers on every level to facilitate maintenance.
 4. Access panels will be added at chase risers to facilitate maintenance.
 5. Size sanitary and vent piping per 2009 IPC requirements.
 6. Elevator sump pump will be provided in elevator shafts.
- D. Building Storm Water
 1. Cleanouts will be provided on storm risers to facilitate maintenance.

2. All new storm piping will meet acoustical requirements, will be properly insulated, and will meet code required sizing requirements.
 3. Access panels will be added at chase risers to facilitate maintenance.
 4. A gravity storm drainage system will be provided for the facility. The system will connect to each roof drain and area drains. The storm drainage system will be sized to remove rainwater from the roof of the building. The primary and overflow systems will be sized based upon the local rainfall rates. The secondary roof overflow system will consist of overflow roof drains hard piped to a downspout nozzle near grade at a conspicuous location as required by code.
 5. Storm piping will be insulated on all horizontal runs above floor and at the connection to the roof drain insulated with 1-inch thick "all service jacket" fiberglass insulation.
- E. Natural gas system:
1. Natural gas will be provided for all pieces of equipment that require fuel through an elevated gas pressure system. The location of the gas meter/regulator assembly will be coordinated with the architect and Kansas State University to decide where it should be located on the outside of the building. The distribution system will include all regulators, valves, vents, piping and fittings that are required for the facility. Currently the only planned user of natural gas is an emergency generator.
- F. Pipe Materials
1. Each plumbing fixture or group of plumbing fixtures will be protected from hydraulic shock with piston type water hammer arrestors sized for the fixture or number of fixtures served.
 2. Hot water temperature will be maintained with a piped return system with balancing valves at each branch and a "cartridge" bronze recirculation pump located at the water heater.
 3. Domestic Hot and Cold Water (above grade) – Type "L" copper with sweat joints and wrought copper fittings
 4. Domestic Hot and Cold Water (below grade) – Cement lined ductile iron pipe and fittings.
 5. Storm, Sanitary, Waste and Vent (below grade) – Cast iron with hub and spigot fittings below floor.
 6. Storm, Sanitary, Waste and Vent (above grade) – No-hub cast iron with approved stainless steel couplings above floor.
- G. General Plumbing Requirements
1. Isolation valves will be provided throughout the facility to enable servicing, expansion, renovation or construction of any part of the facility without interruption of plumbing services to adjacent spaces. Isolation valves will be included at each restroom, each floor and each riser.
 2. Condensate drains will be provided from air conditioning equipment to discharge indirectly to floor drains or mop basins located in mechanical rooms or janitor's closets.
 3. General purpose floor drains will be in each restroom, including restrooms with one water closet and lavatory, as well as in janitor closets and mechanical rooms.
 4. Equipment floor drains will be located near each water heater or piece of equipment requiring a floor drain.

8.2 PROPOSED DESIGN ANALYSIS

A. Domestic Water

1. Domestic cold and hot water systems will be sized per building requirements.

B. Plumbing Fixtures

1. Plumbing fixtures will be provided per Kansas State standards.
2. Water closets in public restrooms will be vitreous china, siphon jet, wall mounted flush valve type. Where shown on architectural plan, fixtures will be mounted at handicap elevation. Flush valves will be 1.28 gallons per flush, sensor type with turbine operation and battery backup with manual courtesy flush feature.
3. Lavatories in public restrooms will be under-counter vitreous china with faucets having 0.5 gpm flow restrictors using turbine operation and battery backup sensor faucets. Where indicated on the drawings lavatories will be equipped with ADA compliant faucets and insulation kits.
4. Urinals will be wall hung vitreous china flush valve type. Urinal flush valves will be "pint" 0.125 gallons per flush, sensor type with turbine operation and battery backup with manual courtesy flush feature.
5. Electric water coolers will be wall mounted fully recessed, stainless steel bowl type. Fixture will be mounted at handicap elevation unless more than one fixture is located in the building. Each water cooler will be provided with an integral cooling unit and bottle filling station.
6. Where general appliances such as dishwashers, refrigerators, ice machines, etc. are required they will be energy star rated residential type appliances unless otherwise indicated by the Architect during schematic design.
7. Janitor's mop sinks will be 24" x 24" x 10" terrazzo floor mounted type.
8. There will be recessed box type freeze-proof wall hydrants on the exterior of the building as necessary for maintenance or requested by Kansas State University.
9. Fixtures will be provided with chromium plated brass trim and individual stop valves.
10. Appropriate 'barrier free' fixtures will be provided in accordance with the "Americans with Disabilities Act" (A.D.A.).

PART 9 - POWER**9.1 DESIGN CRITERIA**

The following outlines the general requirements for all power systems.

A. General

1. Energy
 - a. ASHRAE 90.1 – will be used for lighting power density and voltage drop calculations.
2. Utility Services – Building
 - a. Refer to Part 2 – Utility Services
3. Demolition
 - a. Demolition work in existing Seaton Court and Seaton Hall will be coordinated per the program requirements. Field verification will be required to determine what equipment will be removed and when.
4. Power Distribution
 - a. Power will be distributed from the service equipment in the main electrical room throughout the building to electrical closets and major mechanical equipment. The distribution panels and panelboards will be located in dedicated electrical rooms or closets for code and safety reasons.
 - b. Large heating, air conditioning, and mechanical/plumbing equipment will be served at 480V, three-phase, 60 hertz.
 - c. LED, Fluorescent and High Intensity Discharge (HID) lighting will be served at 277V, single-phase, 60 hertz.
 - d. General purpose receptacles, computer equipment, and incandescent lighting (if needed) will be served at 120V, single-phase, 60 hertz.
 - e. Motors of 3/4 horsepower and larger will be served at 480V or 208V, three-phase, three-wire, 60 hertz. Motors less than 1/2 horsepower will be served at 277V or 120V, single-phase, two-wire, 60 hertz.
 - f. Fab Lab panelboards will be provided in the fabrication areas for distribution to fabrication equipment. Fabrication equipment will be served at 480Y/277V and/or 208Y/120V per manufacturer requirements.

B. Basic Materials

1. Conductors:
 - a. All branch circuit conductors and feeders will be copper.
 - b. The minimum size conductors allowed for branch circuits will be No. 12 AWG.
 - c. The minimum size conductors allowed for control wiring will be No. 14 AWG.
 - d. The minimum size conductors allowed for signal wiring will be No. 18 AWG.
 - e. Conductor insulation type will be THHN/THWN-2 for wire sizes No. 12-8 AWG, and THW or THHN/THWN-2 for wire sizes No. 6 AWG and larger.
 - f. Conductors for underground installation will have type THW, USE or RHW insulation.
 - g. Neutral conductors will be full size throughout system as a minimum. Oversized neutral

conductors will be provided in areas with potential high harmonic currents. No shared neutrals will be provided unless specifically noted.

2. Raceways:
 - a. A complete raceway system will be provided for all power conductors.
 - b. Rigid metal conduit, rigid aluminum conduit, intermediate metal conduit and/or electrical metallic tubing will be used within the building. Rigid metal conduit or rigid aluminum conduit will be used where conduit is installed both exposed and in a location that is susceptible to damage. RAC will not be used outdoors, below grade, imbedded in concrete or other areas corrosive to RAC.
 - c. Schedule 40 PVC conduit will be used where conduit is installed in soil or subjected to corrosive conditions and may be used in concrete slabs where allowed.
 - d. Flexible metal conduit will be used for connections to motors, transformers, miscellaneous vibrating/rotating equipment, and recessed light fixtures.
 - e. Minimum conduit size will be 3/4".
 - f. All exposed conduits installed in finished spaces will be painted to match surrounding areas.
 - g. Empty conduit raceway systems will be provided for any communication cables located in areas with non-accessible ceilings or exposed structure and coordinated with IT.
3. Outlet boxes:
 - a. Outlet boxes will be galvanized steel. Cast boxes will be used in areas where subject to physical damage.
4. Wiring Devices:
 - a. Switches will be 20 amp, 120-277 volt, a.c. only; toggle type, single pole, double pole, three-way or four-way; specification grade; quiet type; color determined by Architect.
 - b. Receptacles will be 20 amp, 125 volt a.c. single or duplex type with wrap-around steel strap, automatic grounding feature, with nylon or Lexan face; specification grade conforming to federal specifications; color determined by Architect.
 - c. Receptacles for maintenance and special equipment will be provided as required by code.
 - d. Receptacles will be provided in each space per program requirements. At a minimum, each regularly occupied space will have at least one receptacle per wall.
 - e. All receptacles in restrooms, utility rooms, janitor closets, and those serving counter tops with sinks will be GFCI type.
 - f. All receptacles in exterior locations will be in-use extra duty weatherproof with weather-resistant GFCI type receptacles.
 - g. A dedicated circuit will be provided for corridor receptacle circuits.
 - h. Mounting heights will be per ADA requirements.
 - i. Flush mounted floor boxes and ceiling mounted receptacles will be provided wherever necessary, such as Crit and Studio spaces.
 - j. Fab Lab receptacles will be provided per equipment layouts and equipment requirements.

5. Cover plates:
 - a. Flush mounted outlets will be provided with type 302 stainless steel cover plates with beveled edges.
 6. Concrete Pads and Sealing:
 - a. Concrete housekeeping pads will be provided for electrical equipment in the building and for the pad mounted utility transformers. Floors, walls and ceiling openings will be sealed to prevent air and noise transmission from floor-to-floor and from room-to-room.
- C. Electrical Distribution Equipment
1. Safety Switches:
 - a. Heavy duty, dead-front, NEMA Type 1, 3R or 4 as required, quick-make, quick-break, padlock feature, fusible or non-fusible will be provided as required with separate grounding bar.
 2. Motor Starter Equipment:
 - a. Motor control centers will be provided where a sufficient number of motors are located in the same area, otherwise, individual motor starters will be provided. All starters will be combination type with fused disconnect or circuit breaker capable of being padlocked in the off position.
 - b. All automatically controlled starters will have a local hand-off-auto switch to allow for individual testing of the motor. All starters will contain pilot lights to visually indicate operation.
 - c. A disconnecting means will be installed within sight of motors and other equipment where specifically indicated.
 - d. The Central Building Automation and Energy Management System (BMS), specified in Part 12, will be utilized wherever possible to reduce the amount of electrical energy consumption.
 - e. Variable frequency drives will be specified under Division 23 for any equipment requiring variable speed controllers.
 3. Combination Motor Starters:
 - a. Thermal magnetic molded case circuit breaker disconnect with externally operated, padlockable handle. NEMA 1, 3R or 4 enclosure will be provided as applicable.
 - b. Starter will be in accordance with magnetic starters above.
 4. Branch Circuit Panelboards:
 - a. 480Y/277 volt panel boards will be equal to Square D type "NF".
 - b. 208Y/120V panel boards will be equal to Square D type "NQOD".
 - c. Main breakers will be provided where required by code.
 - d. Panelboards will have a minimum of 42 poles, with spare circuit breakers and spaces filling the panelboard.
 - e. Bolt-on, fixed trip, molded case, thermal magnetic trip circuit breaker overcurrent protection devices rated to withstand the available fault current.

- f. Bussing will be copper and include separate neutral and ground buses.
 - g. Panelboards will be sized to allow minimum of 25% growth.
 - h. Panelboards will be surface or recessed mounted as conditions require.
 - i. Typed directories will be provided in each panelboard.
5. Distribution Panelboards - Circuit Breaker Type
- a. Distribution panelboards will be equal to Square D type "I-Line".
 - b. Bussing will be copper and include separate neutral and ground buses.
 - c. Breakers will be thermal magnetic type, quick-make, quick-break, trip-indicating, ambient compensated, bolt-in type.
 - d. Typed directories will be provided in each panelboard.
 - e. A minimum of three spare three-pole breakers will be provided in each panelboard.
6. Switchboard:
- a. The low voltage main switchboard(s) will be completely assembled NEMA Class 2, front accessible with copper bus bars, full neutral bus, and separate ground bus. All bus work will be braced to withstand available RMS symmetrical fault currents. Protective devices will be provided with approved barrier between sections and extended load terminals.
 - b. Ground fault relay will be provided on the service breaker.
 - c. Circuit breakers will be utilized as required to provide over-current protection, system coordination and interrupt available short circuit current.
 - d. Future provisions: All unused spaces provided will be fully equipped for future devices, including all appropriate connectors and mounting hardware.
 - e. Electronic metering will be provided at switchboard. The following metered data will be provided, at a minimum, at each switchboard:
 - 1) Phase Currents, Each Phase: Plus or minus 1 percent.
 - 2) Phase-to-Phase Voltages, Three Phase: Plus or minus 1 percent.
 - 3) Phase-to-Neutral Voltages, Three Phase: Plus or minus 1 percent.
 - 4) Megawatts: Plus or minus 2 percent.
 - 5) Megavars: Plus or minus 2 percent.
 - 6) Power Factor: Plus or minus 2 percent.
 - 7) Frequency: Plus or minus 0.5 percent.
 - 8) Accumulated Energy, Megawatt Hours: Plus or minus 2 percent; accumulated values unaffected by power outages up to 72 hours.
 - 9) Megawatt Demand: Plus or minus 2 percent; demand interval programmable from five to 60 minutes.
 - f. Current transformers and necessary contacts will be provided for interface with BMS.
 - g. Phase loss detection will be provided at switchboard including phase indicator lights for utility.

7. Transformers (480V, three-phase, three-wire primary to 208Y/120V, three-phase, four-wire secondary)
 - a. Dry type, ventilated, 200°C insulation system temperature class, with copper windings.
 - b. 115 degree C temperature rise
 - c. NEMA standard voltage taps.
 - d. NEMA standard low level sound ratings.
 - e. K-Factor rated will be provided for all data closet transformers.
 - f. Shielded and isolated type for audio equipment use.
 8. Surge Protective Devices (SPD) will be provided for switchboard. Distribution panelboards that serve significant electronic equipment and/or circuits for equipment located exterior to the building will be equipped with secondary level SPD protection. Branch circuit protection will be provided for panelboards serving IT loads and computer equipment loads.
- D. Generators and Transfer Equipment
1. A new exterior pad mounted, natural gas, emergency generator, interior automatic transfer switches, and emergency distribution will be provided. The generator will be located adjacent to the new service transformer and new main electrical room and will feed emergency lighting, exit signs, fire alarm system, and emergency communication
- E. Grounding:
1. The new electrical service and all electrical equipment will be grounded per NEC and additional project specific requirements.
 2. A ground loop will be provided around the perimeter of the building, installed and sized per the National Electric Code. The concrete reinforcing steel may be used for grounding in the new construction areas.
 3. A ground bar will be provided in the main electrical room for bonding of all required electrodes to the ground loop.
 4. All feeders and individual branch circuits will be provided with a separate grounding conductor.
 5. Ground busses will be provided in all electrical distribution equipment.
 6. All communication rooms will be provided with a ground bar and a minimum of a #6 copper ground conductor connected to the building grounding electrode system.
- F. Lightning Protection:
1. Lightning protection system will not be provided.
- G. Equipment Connections
1. Electrical power connections will be made to all elevators, electrically operated doors, etc., including furnishing of all electrically associated devices such as disconnect switches, lock-out switches, etc.
- H. Mechanical Equipment Connections
1. Electrical power connections will be made to all mechanical equipment, plumbing equipment, and fire protection equipment; including furnishing of all electrically associated devices such as disconnect switches, contactors, magnetic or manual starters, lock-out switches, etc., which are

not furnished under the Mechanical, Plumbing or Fire Protection sections.

- I. Security Systems:
 - 1. Security system rough-in provisions (boxes and conduit) will be provided at exterior, Studio, and Fabrication entrances.
- J. Photovoltaic power system:
 - 1. The design of Seaton New will contain a small photovoltaic power system on the roof. This will be a small PV array that will be used as an instructional tool for students and faculty.
 - a. This grid-connected PV system will consist of solar panels, a power inverter, a power conditioning unit, and grid connection equipment.
 - b. The inverter and power conditioning unit will synchronize with the grid waveform and produce safe and useable power to the electrical system.
 - c. The grid-connected inverter will monitor grid voltage, waveform, and frequency.
 - d. The inverter will prevent the passage of solar energy to the grid if the grid is dead or strays too far out of nominal specifications.
 - e. To prevent islanding, or sending electric power out to the utility grid during a utility power outage, the inverter will automatically disconnect in accordance with safety rules during a malfunctioning power line situation.
 - f. The system will be metered and will collect real-time electrical data as well as save historical data to aid in the educational value of the system.
 - 2. The design and scope of the system will be developed during design development.

9.2 DESIGN ANALYSIS

The following describes the electrical systems that will be utilized to serve the new building.

- A. Building
 - 1. Service
 - a. A 12.47kV-480Y/277V pad-mounted step-down transformer will be provided. Solomon dead-front type with copper windings and load break is University preferred.
 - b. Existing basement electrical room (re: Campus Elec. on Architectural Floor Plan) located in the renovated portion of Seaton will remain. This room serves as the medium voltage electrical service distribution to adjacent campus buildings, and also houses existing electrical equipment that serves Seaton Hall. Some equipment will be removed upon completion of renovation.
 - 2. Power Distribution
 - a. A new 4000A, 480Y/277V, three-phase, four-wire main switchboard (MDP) is estimated to serve the building, located within the main electrical room. Switchboard size will be finalized with contract document design. The main switchboard will in turn feed distribution panelboards in the main electrical room. Distribution panelboards will serve branch circuit panelboards located in electrical rooms on each floor of the building. New service is sized for the new construction and the renovated area. Existing portions of the building not being renovated will be served by existing electrical distribution system.

3. Emergency/Standby Power
 - a. A new exterior pad mounted natural gas type generator will be provided. Generator size is estimated at 300kW. Size will be finalized with contract document design.
 - B. Back-up power for code required emergency lighting, exit signs, fire alarm system, and emergency communication system, will be provided from the emergency generator.

PART 10 - LIGHTING

10.1 DESIGN CRITERIA

The following outlines the general requirements for all lighting systems.

- A. Code Requirements
 1. The minimum lighting feeder and panelboard capacity will be in accordance with the NEC.
- B. Light Levels
 1. ANSI/IESNA RP-1-04 for Office Lighting will be referenced.
 2. ANSI/IESNA RP-3-00 Lighting for Educational Facilities will be referenced.
 3. ANSI/IESNA RP-33-99 Lighting for Exterior Environments will be referenced.
- C. Reflectance
 1. RP-1-04 recommends the following:
 - a. Ceilings – 80% or more
 - b. Walls – 50-70%
 - c. Floors – 20-40%
 - d. Partitions – 40-70%
 - e. Furniture – 25-45%
 2. RP-3-00 recommends the following:
 - a. Ceilings – 70-90%
 - b. Walls – 40-60%
 - c. Floors – 20-40%
 - d. Whiteboards –70%
 - e. Furniture – 25-40%

D. Energy

ASHRAE 90.1 – 2007 will be used for lighting power density calculations.

Room/Area Description	Average Light Level (fc)	Fixture Type	Lamp Type	Control Method	Emergency Lighting Required
Jewel	20 fc	WM/RL/DN/C	CFL/MH	LRP/NL/ML/DS/OS	Y
Auditorium	35 fc	DN/WS	CFL	LRP/D/ML/OS	Y
Library	40 fc	RL/PID/TL	F	LRP/OS/ML	Y
Collaboration Corridor	15 fc	RL/DN/ T/LW	LED	LRP/NL/OS/LK	Y
Crit Spaces	50 fc	PID/T/LW	LED	LRP/ML/DS/OS/LV	Y
Studios	40 fc	PID/T/LW	LED	LRP/ML/DS/OS/LV	Y
Faculty Offices	40 fc	RIF /TL	F	LRP/OS/LS	N
Fab Lab	50 fc	RL/FT	F	LRP/ML/DS/OS	Y
Conference Rooms	30 fc	PID/DN/LW	LED	LRP/ML/D/OS	N
Restrooms	15 fc	DN/FS/WS	F	LRP/LK/OS	Y
Stair	15 fc	FW	F	LRP	Y
Janitor Closets	15 fc	FS/FT	F	LRP/OS/LS	N
Mech/Elec/Data Rooms	20 fc	FS	F	LRP/LS	Y
Large Storage Rooms	15 fc	FS/FT	F	LRP/OS/LS	N
Small Storage Rooms	10 fc	FS/FT	F	LRP/OS/LS	N
Pedestrian Walkways	0.5 fc	Pole Mounted	LED	LRP/P	N
Building Entrance	5 fc	FW/DN/WM	F/LED	LRP/P/ML	Y
Service Yard	5 fc	FW/Pole Mounted	CFL/LED	LRP/P	N
Exterior Terrace	5 fc	WM/WS	LED/LV	LRP/P	N
C	Custom Decorative	L	Local, single level		
CFL	Compact Fluorescent	LED	Light-Emitting Diode		
D	Dimmer	LK	Local, key switch		
DN	Down light	LRP	Lighting Relay Panel		
DS	Daylighting Sensor	LS	Local toggle switch		
F	Fluorescent	MH	Metal Halide		
FS	Fluorescent strip	ML	Multi-Level		
FT	Fluorescent troffer	OS	Occupancy sensor		
FW	Fluorescent Wall mount	P	Photocell		
RL	Recessed Linear fixture	RIF	Recessed Indirect Fixture		
IC	Incandescent can or track	T	Track Lighting		
PID	Pendant Indirect / Direct	WM	Wall-mount HID		
IF	Industrial Fluorescent	TL	Task Lighting		
LW	Linear Wall Wash	HB	High Bay		
WS	Wall Sconce	LV	Low Voltage		
Notes:					
Per IES Standards for maintained illumination based on task, use and occupants. Does not include daylight contributions.					

Table 6: Lighting Types by Space

E. Lighting Fixtures and Materials

1. Fluorescent Lamp and Ballast Specifications

- a. Lamps will be low mercury, TCLP compliant, for T-8, T-5, and compact fluorescent types with a 3500°K color temperature. In general, lamps will be provided by Phillips or equal. Where possible, 4'-0" 25W reduced wattage T8 lamps will be utilized.
- b. Ballasts will be the programmed rapid start electronic type for maximum energy savings, silent operation and rated for 277V, single-phase operation with a maximum of 10% total harmonic distortion.

2. High Intensity Discharge Lamp and Ballast Specifications

- a. Lamps will be low mercury, TCLP compliant.
- b. Ballasts in exterior fixtures will be rated for 277V, 120V, or 480V single phase operation, high power factor, and rated for -20°F.

3. White LED and Power Supply Specifications

- a. Manufacturer of LED will be evaluated based on the manufacturer's product literature and data. At a minimum the LED fixture will incorporate Lumileds, Nichia, Cree or Osram LEDs; additional manufacturers may be considered, however Architect or Engineer has the authority to reject other manufacturers for technical or aesthetic reasons if felt necessary or desirable.
- b. Comply with ANSI C78.377 for white light LED color range. Minimum 70% maintained initial-rated lumens at average rated life of at least 50,000 hours. Minimum of 72 and 85 color rendering index for exterior and interior white light LEDs, respectively. LED binning specification tolerance of within 3 McAdam ellipses or less for interior and color critical exterior application.
- c. Dimming driver technology will be determined based on the project lighting systems design and lighting controls strategies; possible technologies will include, 0-10V, digitally addressable or powerline/phase dimming.
- d. RoHS compliant.
- e. 3000K, 3500K, 4000K white light color temperature to be confirmed with client preference.

4. Quartz/ Halogen Lamp Specifications:

- a. Lamps will be rated for minimum of 4,000 hours. All quartz lamps to utilize HIR technology for increased efficiency.

5. Emergency Lighting

- a. Under emergency lighting conditions, a minimum average illumination of 1 foot-candle will be maintained along the defined egress paths as required by code.
- b. Exit signs will be low wattage LED type with green letters.

F. Light Switches and Cover plates

1. Lighting switches will be quiet type, toggle or key type, specification grade; color by Architect.
2. Cover plates for wall devices will be coordinated with lighting controls and will be provided with type 302 stainless steel cover plates with beveled edges. All plates for multiple gang requirements will be one-piece combination.

10.2 DESIGN ANALYSIS

The following describes the lighting systems that will be provided for the facility.

A. Building

1. Jewel

- a. Premium level wall mounted indirect metal halide fixtures, compact fluorescent down lights, recessed linear fluorescent and custom pendant fixtures will be provided for multiple levels of illumination.

The Jewel atrium will contain (8) large custom fabricated fixtures. The following images are meant only as a reference. A specific fixture for this project will be developed.



2. Auditorium
 - a. Premium level dimmable compact fluorescent down lights and wall mounted accent lighting. Specialty/stage lighting at presenter.
3. Library
 - a. Linear recessed fluorescent parabolic stack lighting type fixtures, pendant fluorescent indirect/direct fixtures, and task lighting.
4. Collaboration Corridor
 - a. Linear fixtures, recessed downlights, track lighting, and linear wall wash fixtures will be provided for multiple levels of illumination.
5. Crit Spaces
 - a. Aircraft cable hung linear fixtures (direct/indirect type), with track lighting and linear wall wash fixtures will be provided for multiple levels of illumination.
6. Studios
 - a. Aircraft cable hung linear fixtures (direct/indirect type), with track lighting and linear wall wash fixtures will be provided for multiple levels of illumination.
 - b. Seaton New and Seaton East studio spaces may require slightly different lighting control schemes due to differing levels of daylight.
7. Faculty Offices
 - a. General Lighting
 - 1) Recessed direct/indirect type or volumetric fluorescent light fixtures.
 - b. Task Lighting
 - 1) Task lighting will be provided by University on an as-needed basis.
8. Fab Lab
 - a. Recessed fluorescent fixtures will be provided to minimize dust accumulation. Switching for multiple levels of illumination.
9. Conference Rooms
 - a. Aircraft cable hung linear fixtures in combination with recessed down lights and linear wall wash fixtures will be provided for multiple levels of illumination.
10. Restrooms
 - a. Fluorescent linear light fixtures (staggered strip) provided in architectural coves on both stall and lavatory sides of restrooms.
 - b. Recessed down lights in restroom ceiling will be provided for general illumination.
 - c. Additional accent lighting at mirrors will be provided.
11. Stairs
 - a. Fluorescent wall mounted fixtures will be provided at each landing to provide required egress and emergency lighting levels.
12. Janitor Closets
 - a. Pendant or surface mounted fluorescent strip fixtures with wire guards.

13. Mechanical/Electrical/Data/Storage Rooms

- a. Pendant or surface mounted fluorescent strip fixtures with wire guards.

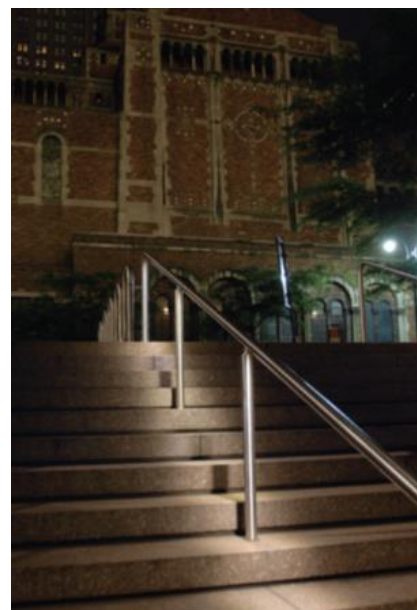
14. Storage Rooms

- a. Pendant or surface mounted fluorescent strip fixtures with wire guards.
- b. Fluorescent troffers in lay-in ceiling areas.

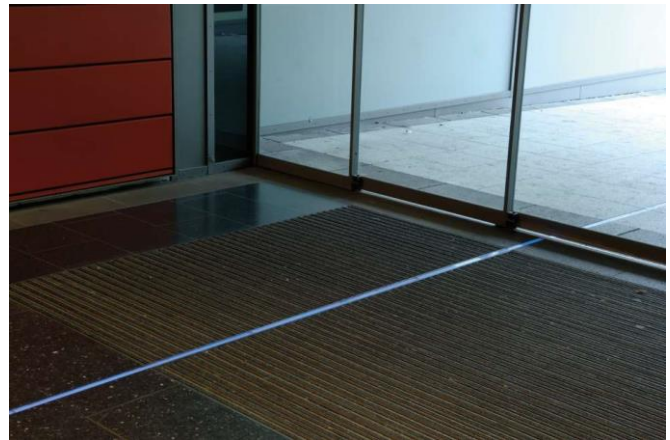
B. Site

1. General Requirements

- a. Exterior lighting will be designed to meet University criteria in conjunction with IESNA standards for security and area lighting.
- b. Exterior lighting will include pedestrian walkway lighting, building entrance lighting, service yard, exterior terraces, sign lighting, and landscape lighting.
- c. Lighted railing at the steps in the south courtyard and the entrance to Mechanics Hall similar to the following will be used:



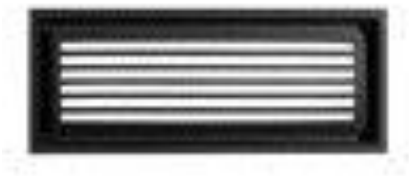
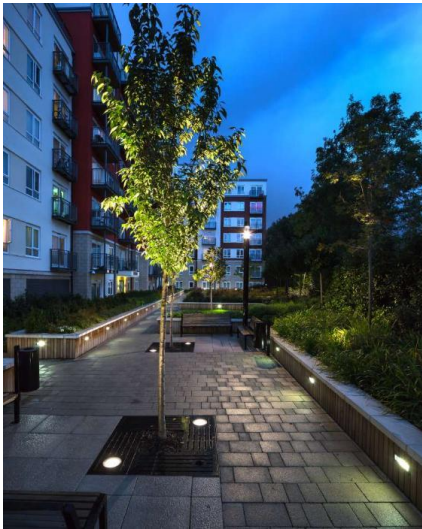
d. LED strip lights will be used in the north and south courtyards and the fab lab yard:



e. Column bollard lights will be used in the north and south courtyards:



- f. Tree up-lighting and step lights will be used in the north and south courtyards and step lights will be used at the entrance to Mechanics Hall:



10.3 LIGHTING CONTROLS

A. Building and Site

1. General

- a. In general, a relay based automatic central control lighting system consisting of lighting control relay panel(s) will be provided with timed automatic control of spaces. Crestron is the University preferred manufacturer. This automatic lighting control system will be tied to the BMS system. A zoned system (per energy code requirements) for interior lighting, exterior lighting, security lighting, and landscape lighting will be provided and coordinated to meet the requirements of the University operations. Local manual override switches will be provided in each privately occupied space. Public space local control and override switch locations will be coordinated with the Architect and University.
- b. Ceiling mounted and wall mounted occupancy sensors will be provided throughout for automated control of lighting based on occupancy. For small spaces where coverage area can be met by wall mounted switch type sensors, switch type is acceptable.

2. Lighting Controls

- a. Individual rooms will be equipped with either 2-button preset stations (Scene 1 and off) for small, non-A/V intensive type rooms, or 5 or 6-button preset station (4-scenes plus off or 4 scenes plus raise/lower) for larger rooms. Note: for rooms with automated window shades, shade control will not be integrated into lighting/AV controls.
- b. Interface modules for RS-232 or contact closures for communications with A/V systems will be provided for rooms or any space with a projector to synchronize the lighting control and A/V control. Where partitions are utilized, an additional partition control device will be implemented to allow one or both sides of the space to act independently or as one large room controlled by any of the remote preset control devices.

3. Occupancy Sensors

- a. Dual-technology type occupancy sensors will be provided in the following areas:
 - 1) Jewel
 - 2) Auditorium
 - 3) Library
 - 4) Collaboration Corridor
 - 5) Crit Spaces
 - 6) Studios
 - 7) Fab Lab
 - 8) Conference Rooms
 - 9) Restrooms
 - 10) Corridors
- b. Passive infrared type occupancy sensors will be provided in the following areas:
 - 1) Private Faculty Offices
 - 2) Closets/Storage Rooms
- c. In general, small utility closets and/or storage rooms will be reviewed for occupancy sensor application. Automatic shut-off means will be provided to meet code requirements; however timer and/or door jamb switches will also be evaluated.
- d. Auxiliary contact in occupancy sensor will be provided in spaces where mechanical system control is also tied to occupancy.

PART 11 - FIRE PROTECTION

11.1 PROPOSED DESIGN ANALYSIS

A. Fire Sprinkler System

1. The Seaton Hall addition, Seaton Hall Renovation, the Jewel and Mechanics Hall will be provided with an automatic fire sprinkler system and manual wet standpipes. The systems will be designed and installed in accordance with the requirements of the National Fire Protection Association (NFPA) Standards and the applicable Building and Fire Codes.
2. A dry-pipe or antifreeze fire protection system will be provided for non-heated spaces and other areas of building subject to freezing including the loading docks and canopies, mansards, and balconies. Portions of systems subject to freezing or temperatures below 40° F will be protected against freezing as required by NFPA 13. The Contractor will be responsible for repairs and for all costs incurred from damage caused by freezing of the fire protection system
3. Design Criteria
 - a. A minimum light hazard design criteria (0.10 GPM/SF over 1500 SF hydraulic remote area) will be applied throughout building unless required otherwise. A 100gpm hose allowance is to be included on base of riser.
 - b. A minimum ordinary hazard group 2 design criteria (0.2 GPM/SF over 1500 SF hydraulic remote area) will be applied throughout mechanical, wood working, metal fabrication, fabrication, book stacks and storage areas. A 250gpm hose allowance is to be included at base of riser.
 - c. A minimum ordinary extra hazard group 2 design criteria (0.4 GPM/SF over 2500 SF hydraulic remote area) will be applied throughout spray booths, areas utilizing flammable spraying and flammable liquid storage areas. A 500gpm hose allowance is to be included at base of riser.
 - d. Provide an additional twenty percent (20%) sprinkler heads to account for sprinklers to be centered in ceiling tiles.
 - e. If required, a fire pump will be provided to obtain the required pressures for the fire sprinkler system. The fire pump shall be located in a 1-hour fire resistant rated pump room. If a fire pump is required this will be determined during design.

B. Fire Alarm System

1. Acceptable manufacturers will be coordinated with Kansas State University standards.
2. The Seaton Hall Addition, the Jewel and Mechanics Hall will be provided with a new fully addressable fire alarm system utilizing a horn/strobe for notification. A fire alarm voice system may be required pending the code report detailing the fire separation of the Auditorium in Mechanics Hall and occupant load.
3. The Seaton Hall Renovation will be provided with a fully addressable fire alarm system utilizing horn/strobes for occupant notification.
4. The system will utilize manual pull stations, smoke detectors, heat detectors, duct-mounted smoke detectors, and water flow alarms for alarm initiation.
5. Manual pull stations will not be required at building or floor exits by exception due to the automatic sprinkler system. A single manual pull station will be provided in the Fire Alarm Control

Panel.

6. Duct mounted smoke detectors will be provided for air handling unit shutdown and fire/smoke damper activation in accordance with applicable Mechanical Codes.
7. Fire sprinkler system monitoring devices, including water flow alarm and valve supervisory switches, will be connected to the fire alarm system for electronic monitoring.
8. Door holds will be provided at rated fire doors that separate the addition and areas of renovation from the existing central and west areas of Seaton Hall.

PART 12 - TEMPERATURE CONTROLS

12.1 GLOBAL DESIGN CRITERIA

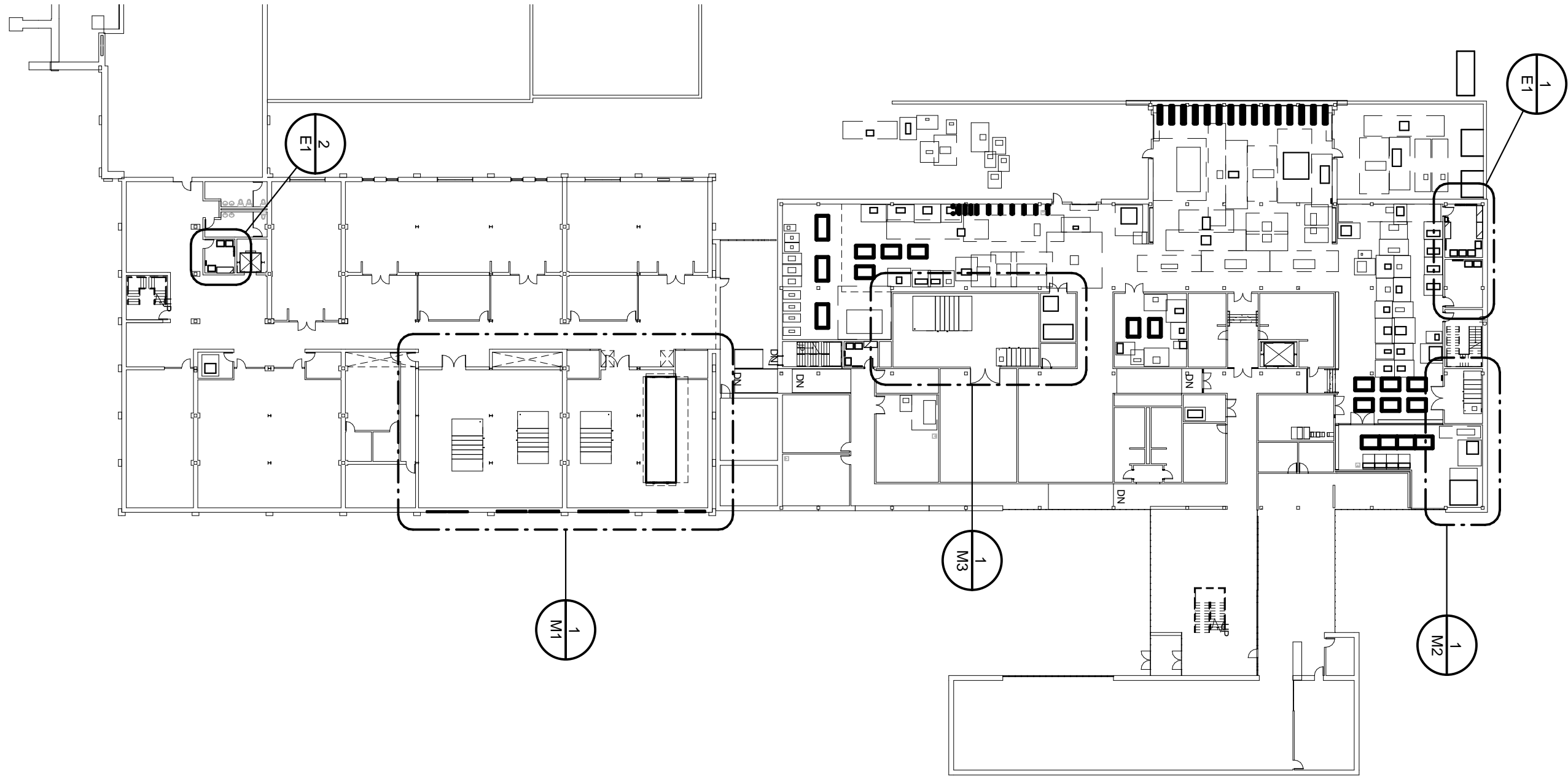
The following outlines the general requirements for the direct digital control (DDC) Building Management System (BMS).

- A. Campus BMS
 1. All controls will be compatible with the existing Honeywell Enterprise system on the KSU Campus. All controls will be tied to the existing campus backbone and front end.
- B. Web Based Network
 1. Communication: The web based network will use Ethernet IP communication technology to oversee a network such that communications may be executed directly to and between components.
 2. Data Access: All operator devices will be connected via internet protocol, will have the ability to access all point status and application report data on the network. Access to system data will not be restricted by the hardware configuration of the facility management system.
 3. General Network Design: Network design will include the following provisions:
 - a. Internet protocol technologies and IT standards.
 - b. Detection of single or multiple failures of the network.
 - c. Error detection, correction, and re-transmission to guarantee data integrity.
 4. Commonly available, multiple-sourced, networking components will be used.

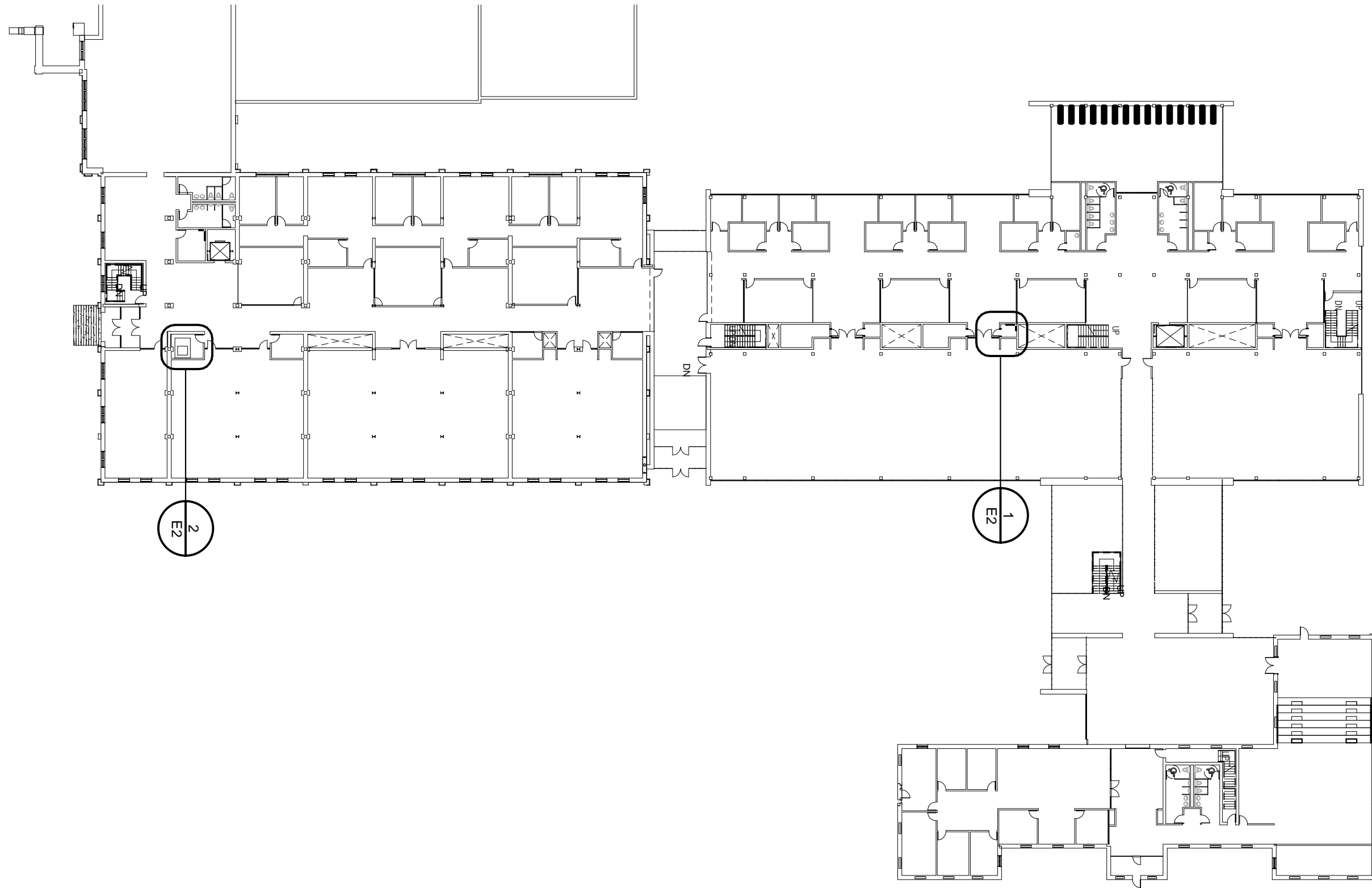
12.2 PROPOSED DESIGN ANALYSIS

- A. General Requirements
 - a. Provide a complete BMS with digital control. All new automation and control components will be integrated into a distributed network system communicating over a non-proprietary local area network and provide hardware consisting of field Stand-Alone Direct Digital Controllers (DDC), Smart Local DDC's and PC-based operator workstations. The BMS will include the automatic control of all system level and zone level equipment as well as power and water meters to meet the Measurement and Verification credit in LEED v2009.
 - b. BMS will have the ability to trend all the points in the system for a minimum of one full year and store all of that information for a minimum of one year.
- B. Sensors and Controllers
 - a. Carbon Dioxide (CO₂) sensor will be provided within densely occupied spaces to monitor the airflow delivery and minimize the amount of outside air needed to meet space needs while minimizing energy usage.

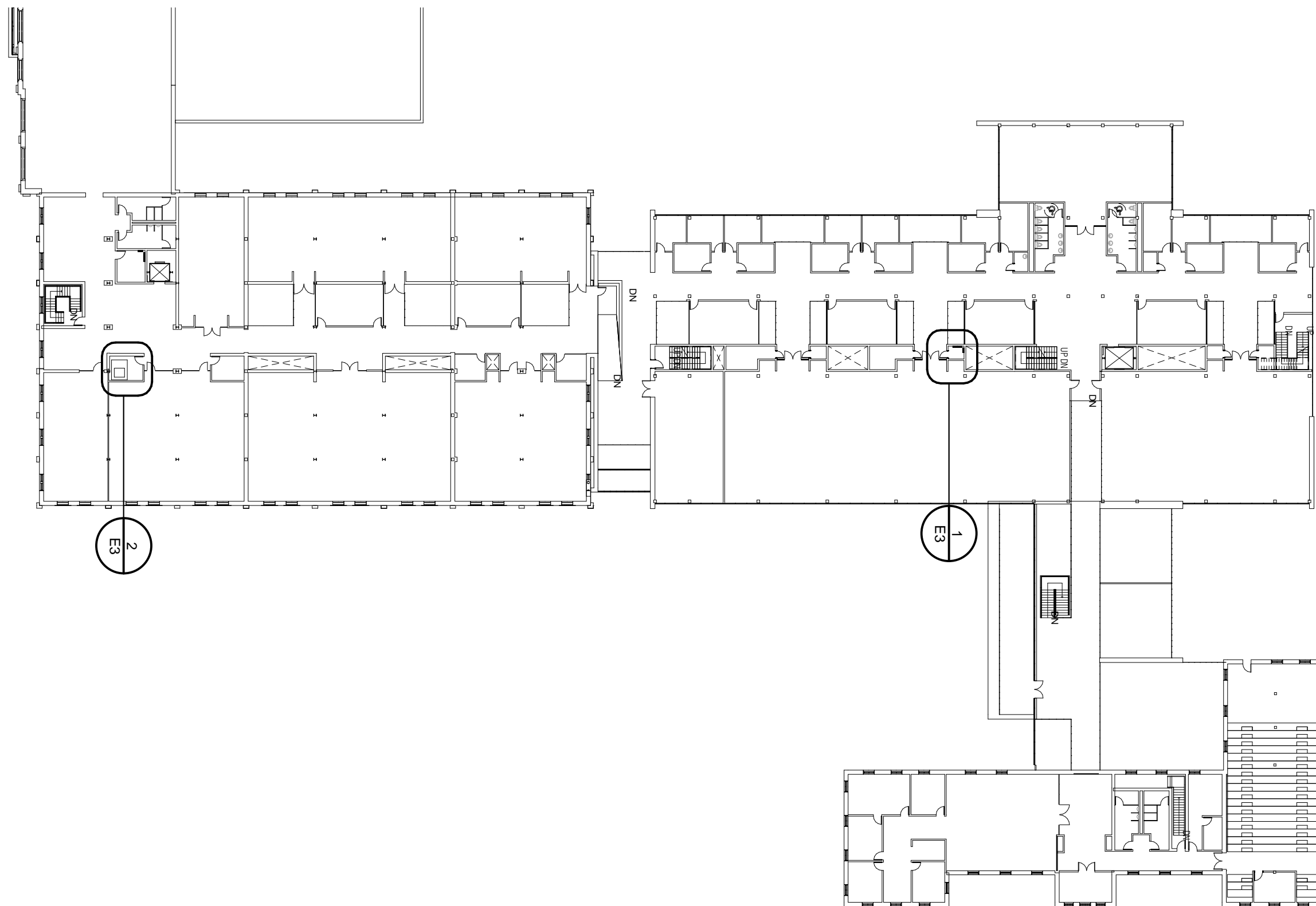
- b. Space temperature sensors will be provide within each thermal zone (minimum two private offices per zone).
- c. Space pressure sensors and control dampers will be provided for building pressurization control.
- d. Airflow measuring stations will be provided as required for LEED v2009 IEQ credit 1 requirements.
- E. Submetering devices will be provided as required for LEED v2009 EA credit 5 requirements.



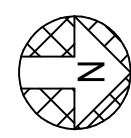
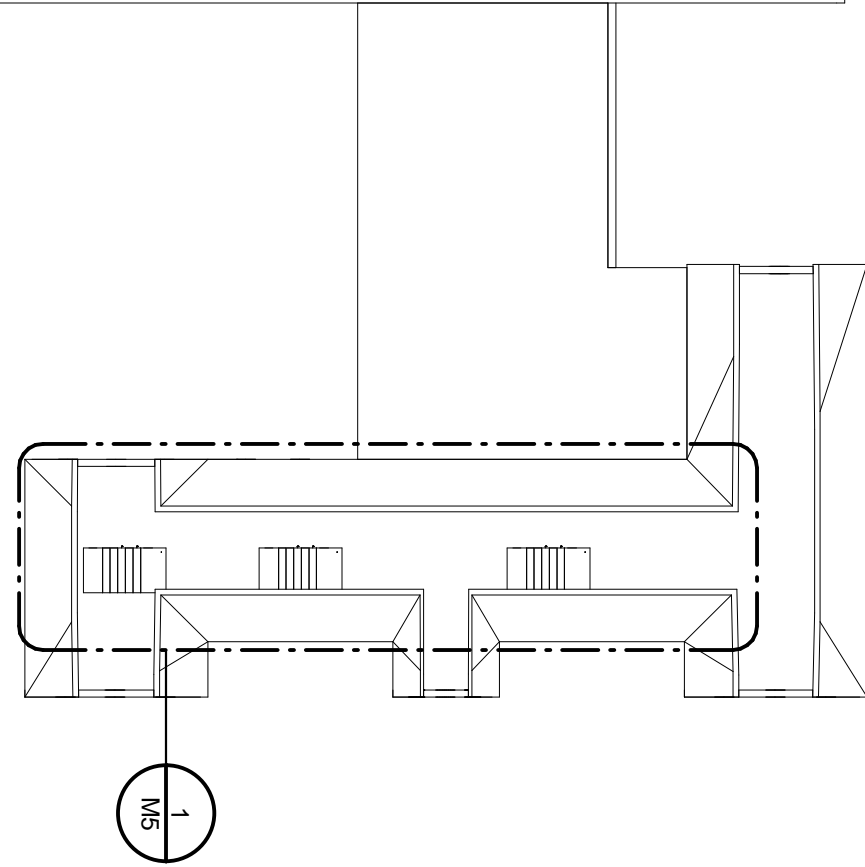
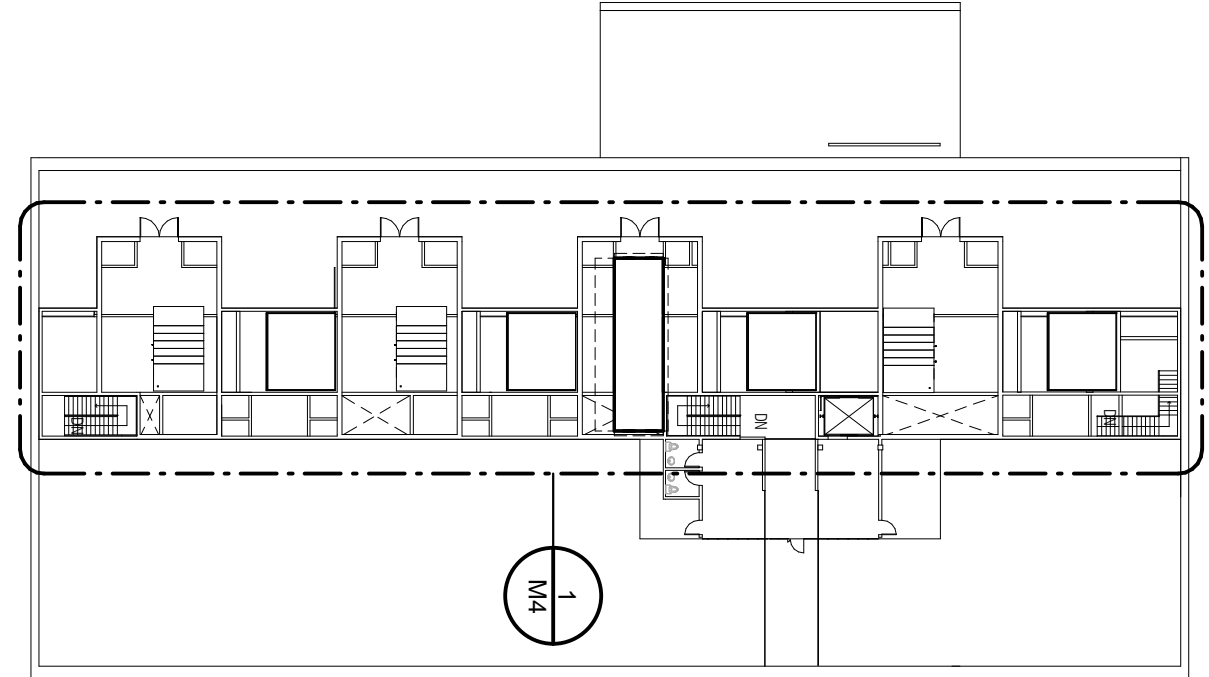
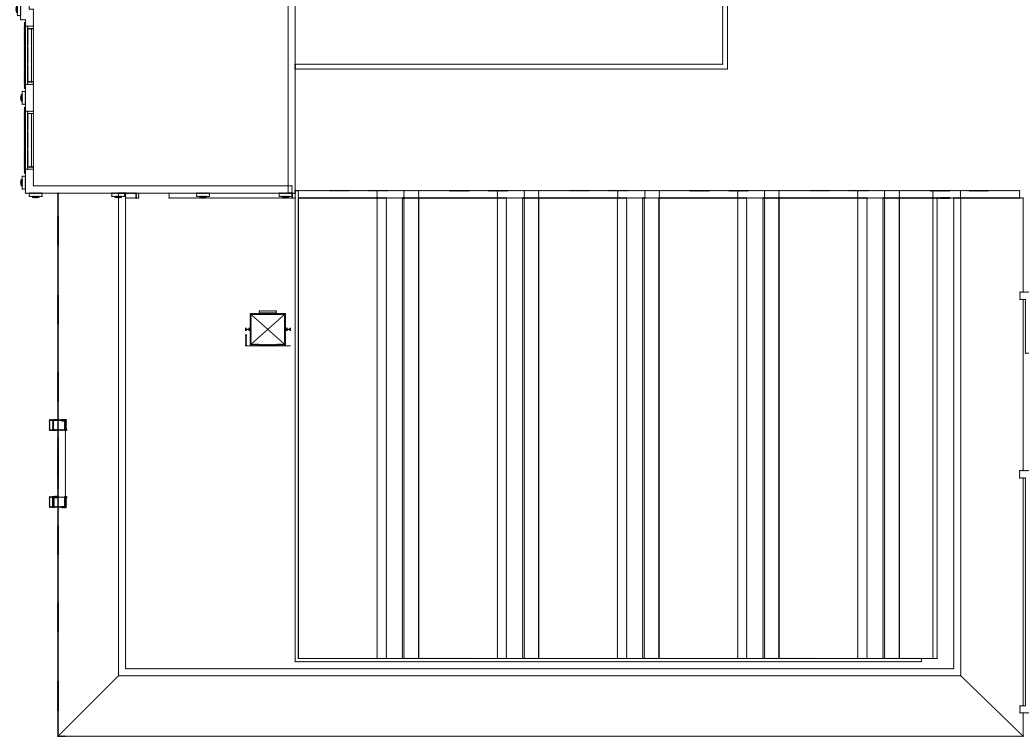
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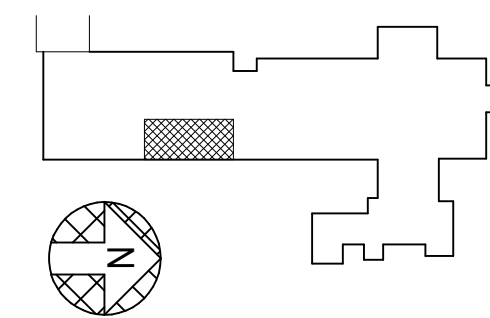
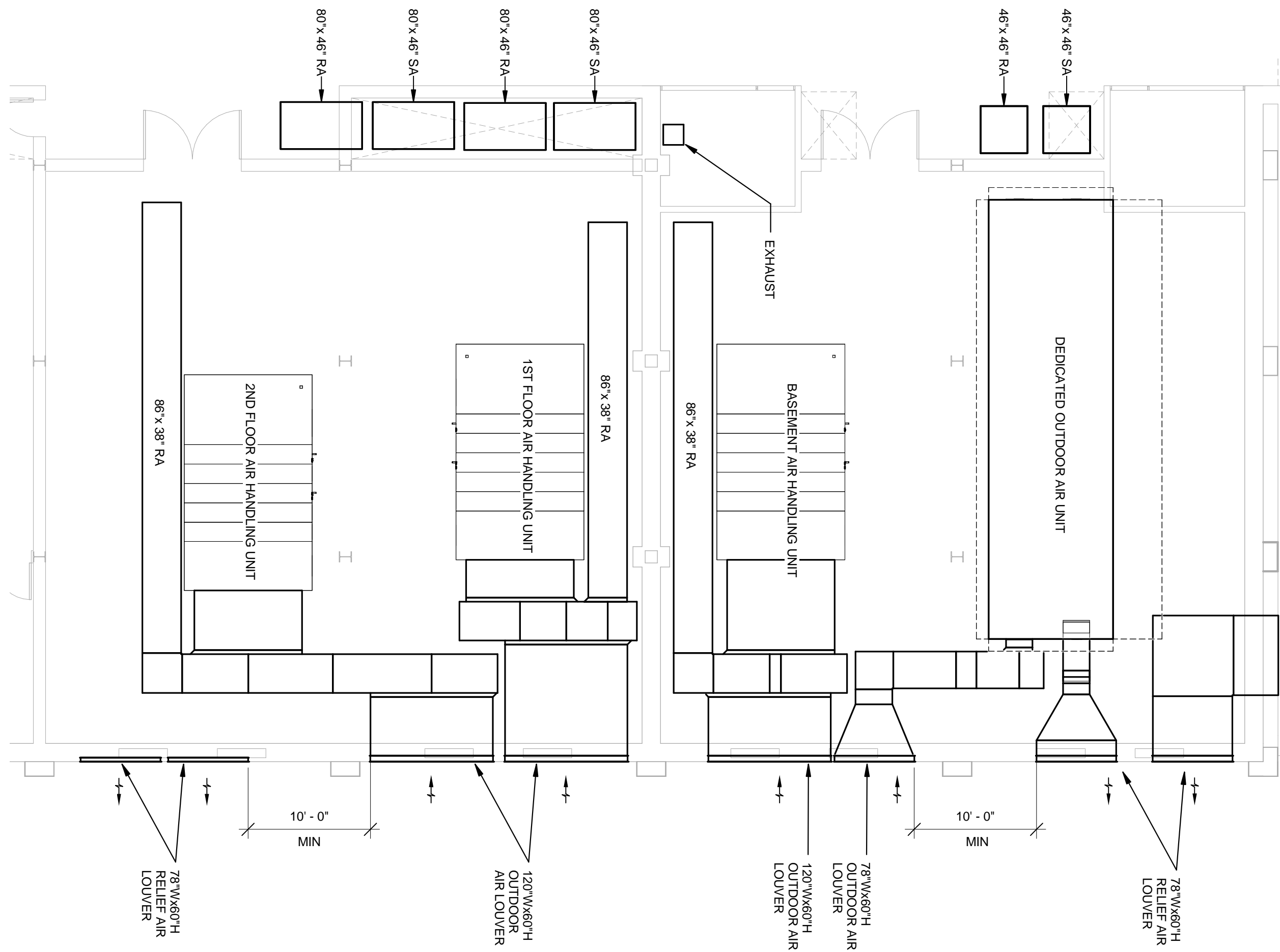
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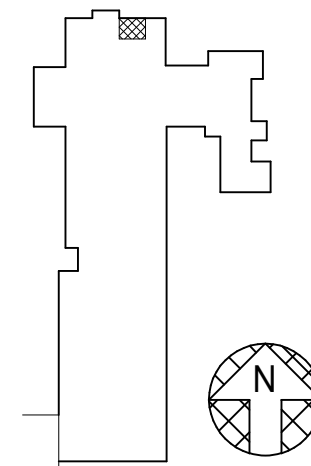
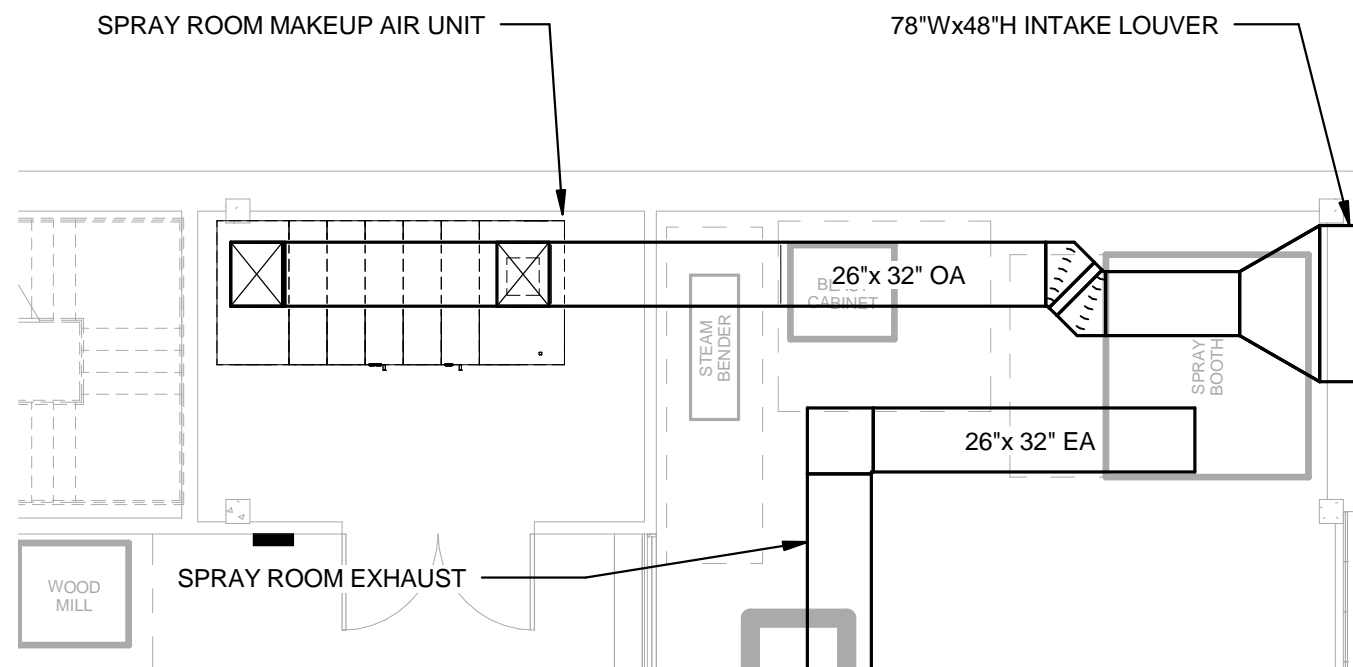


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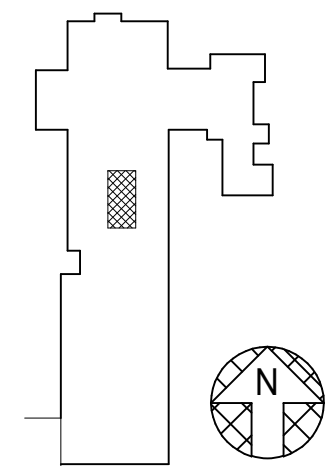
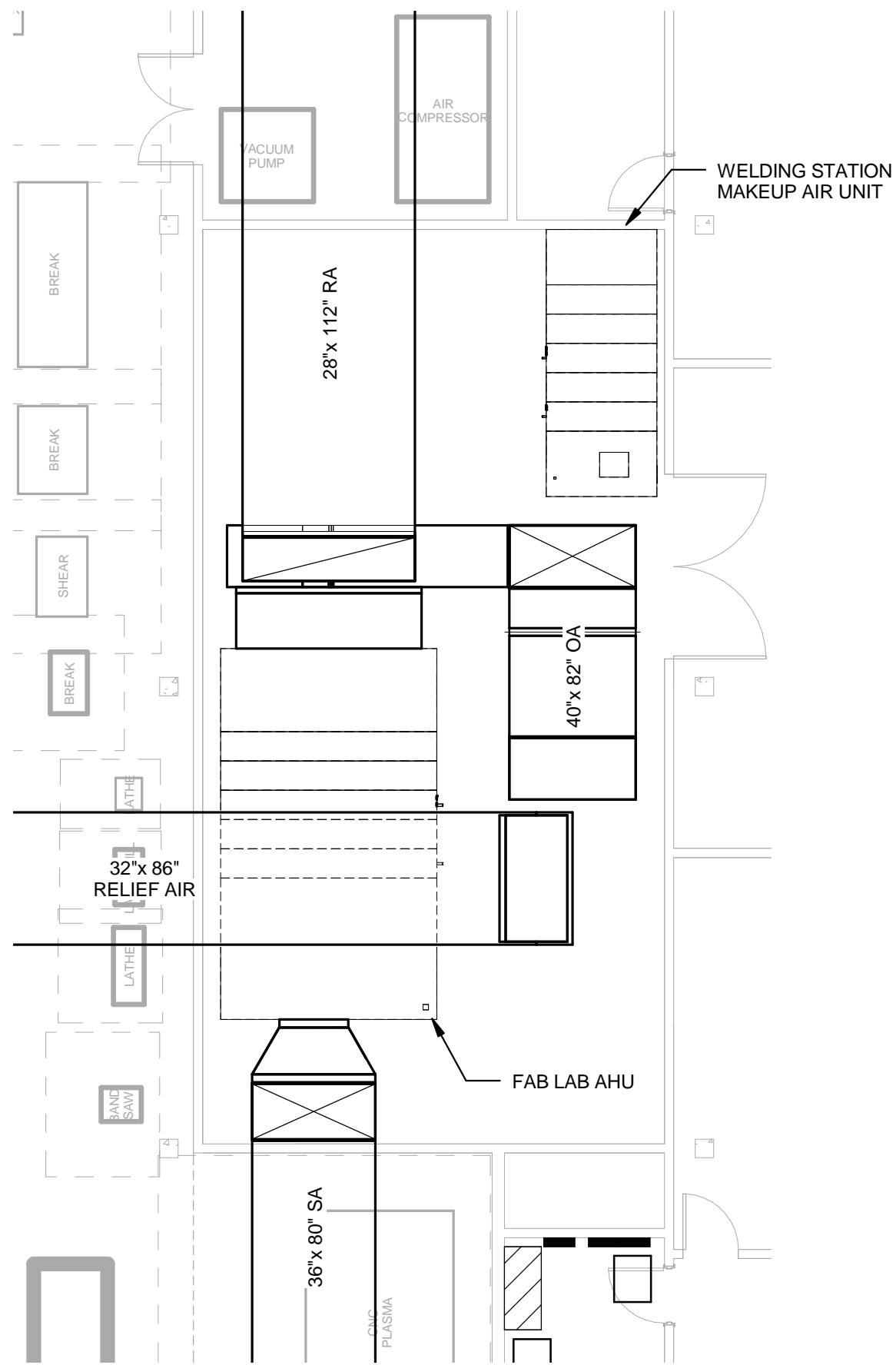
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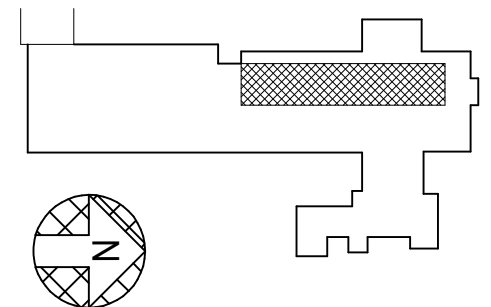
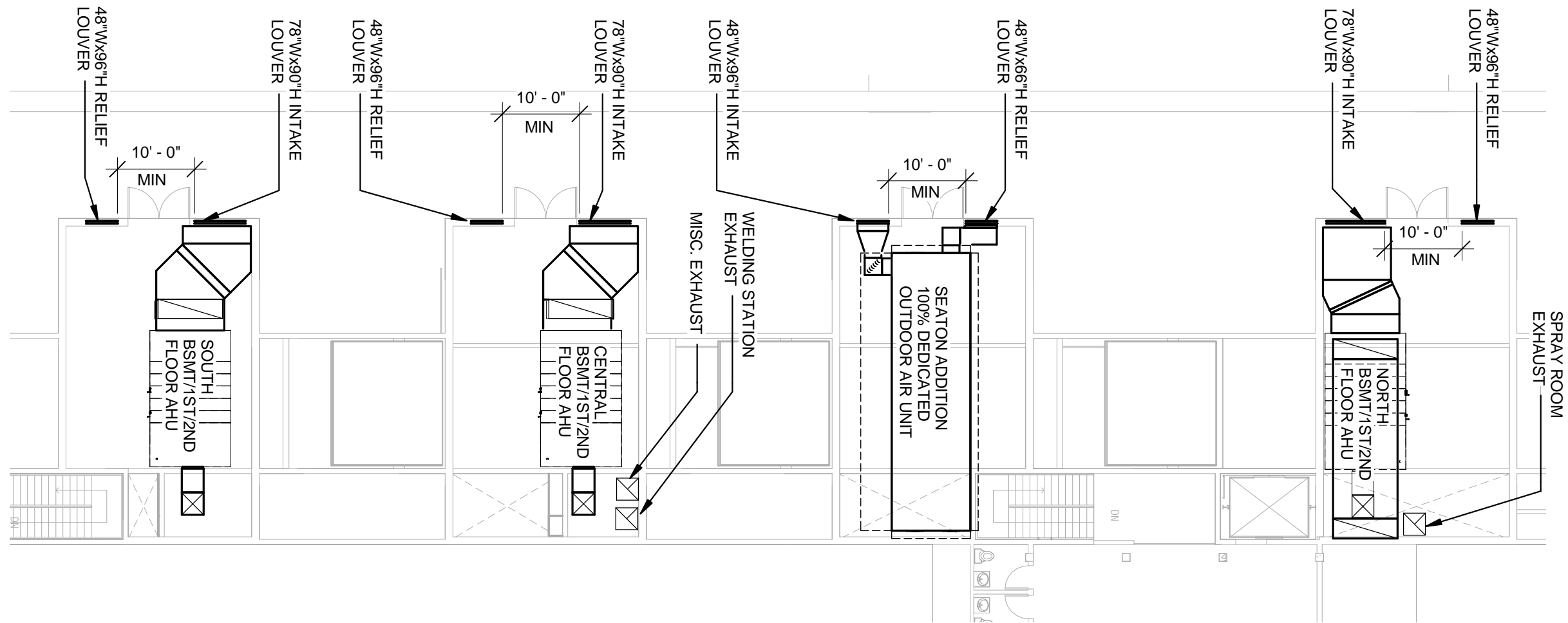
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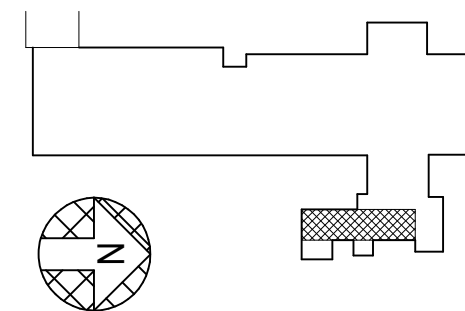
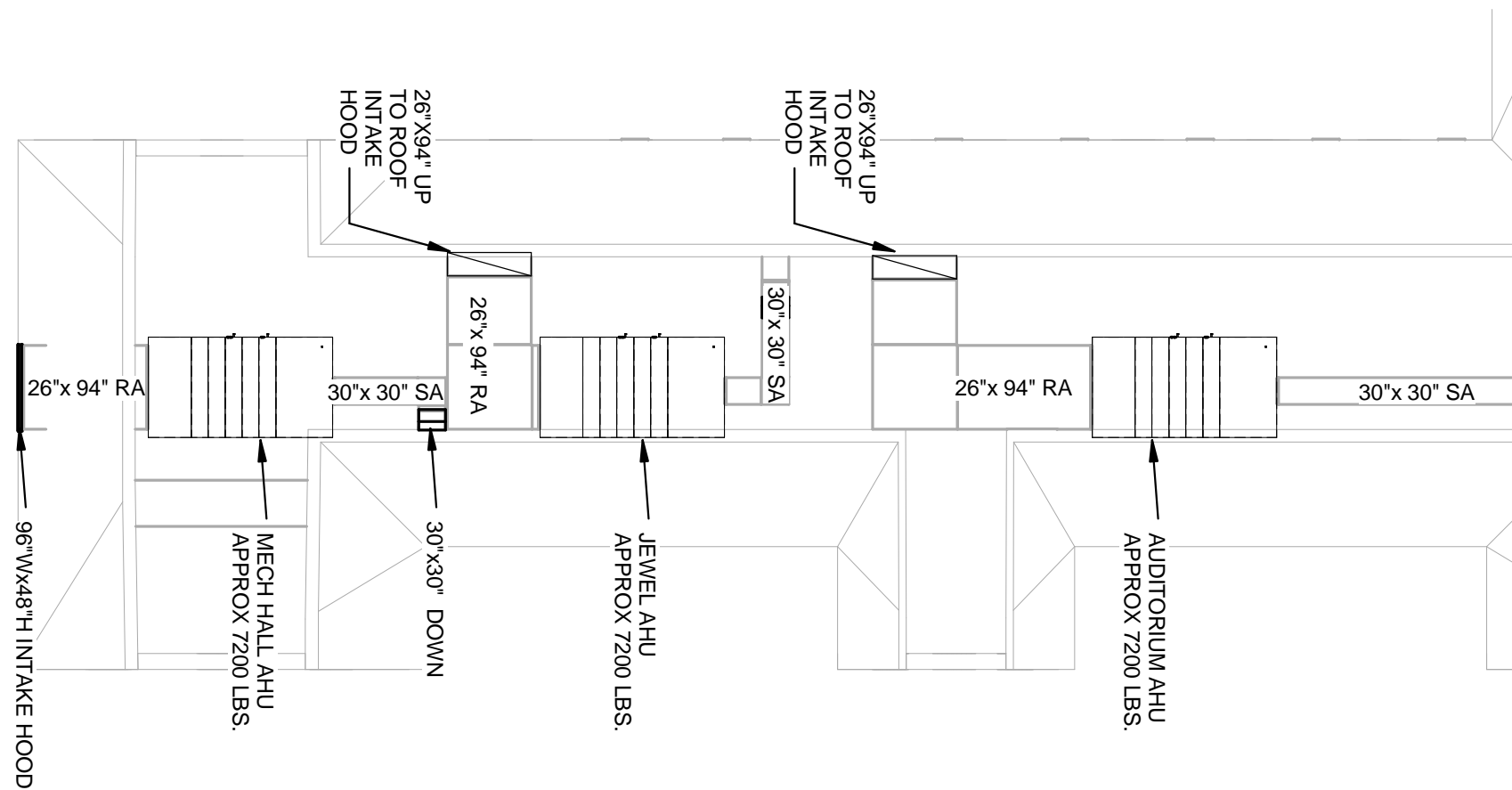
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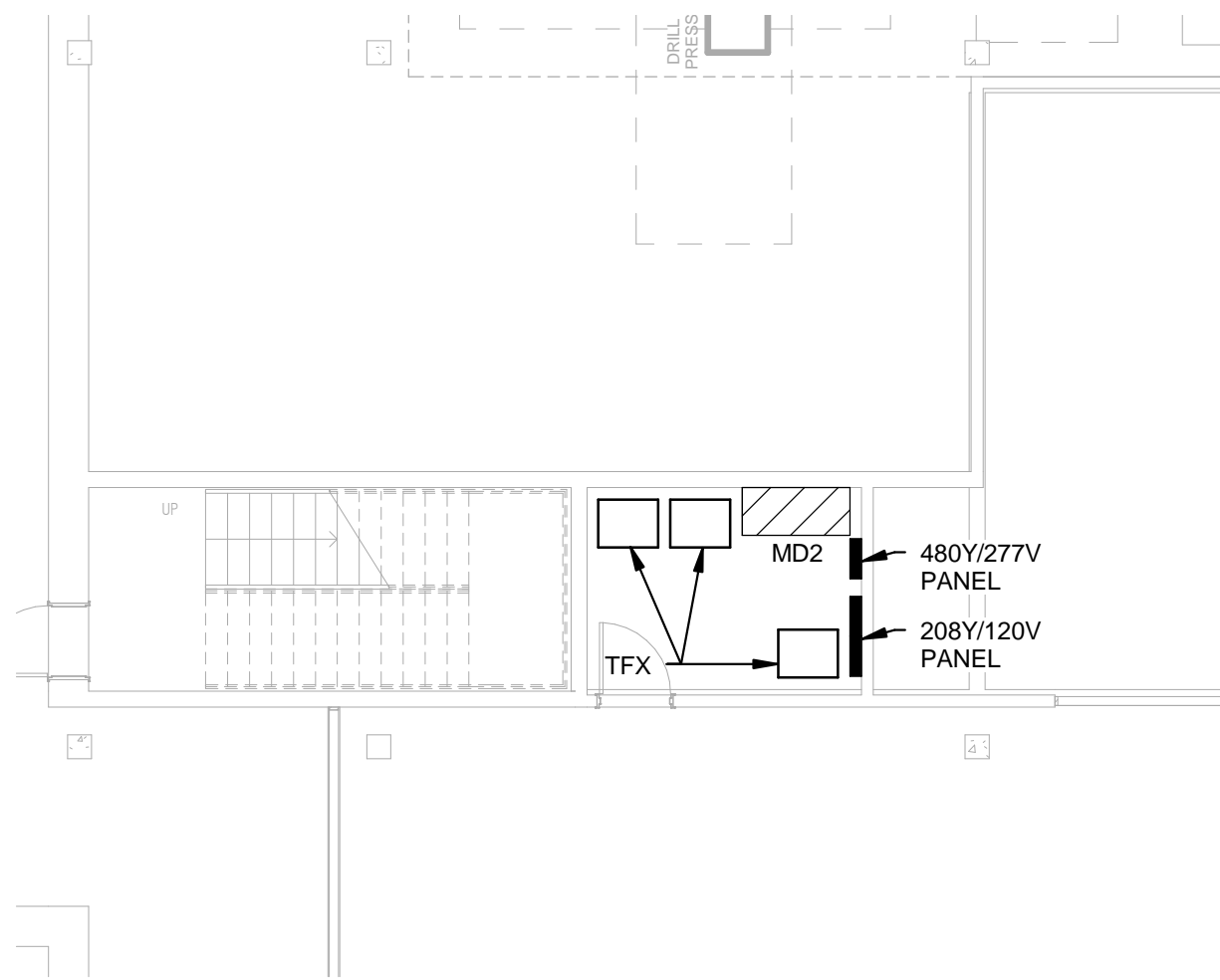
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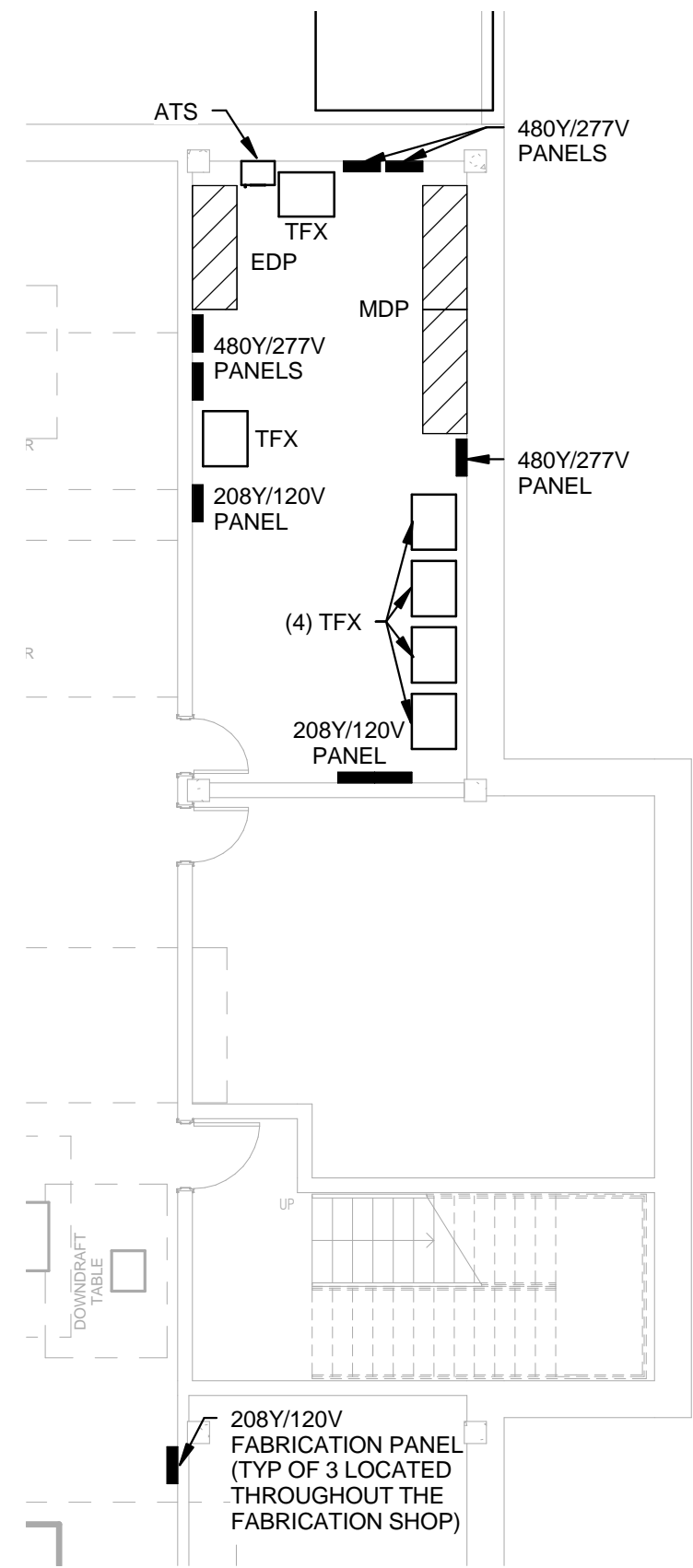


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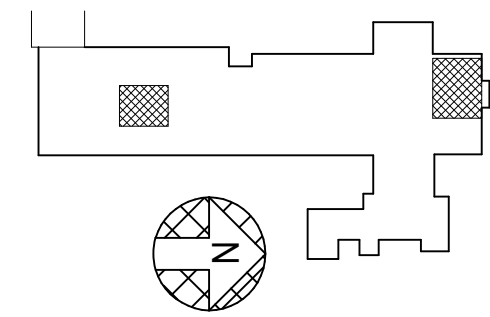
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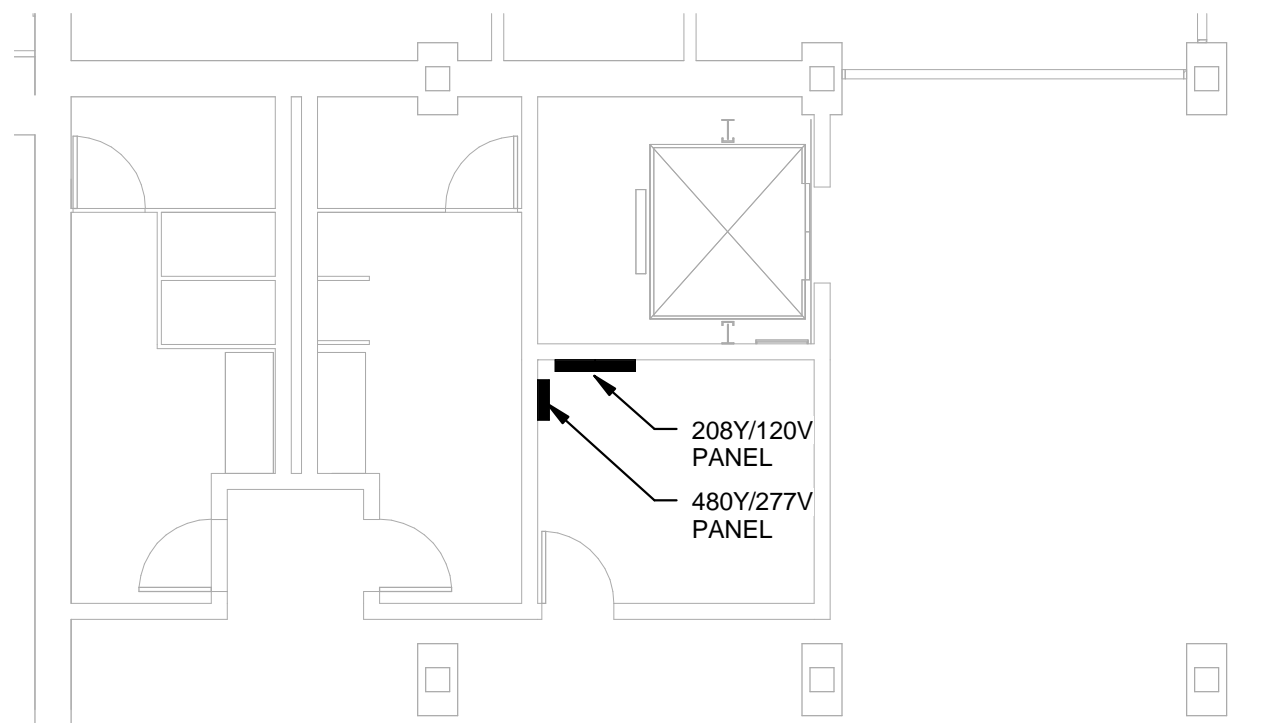
② BASEMENT ELECTRICAL ROOM
 1/8" = 1'-0"



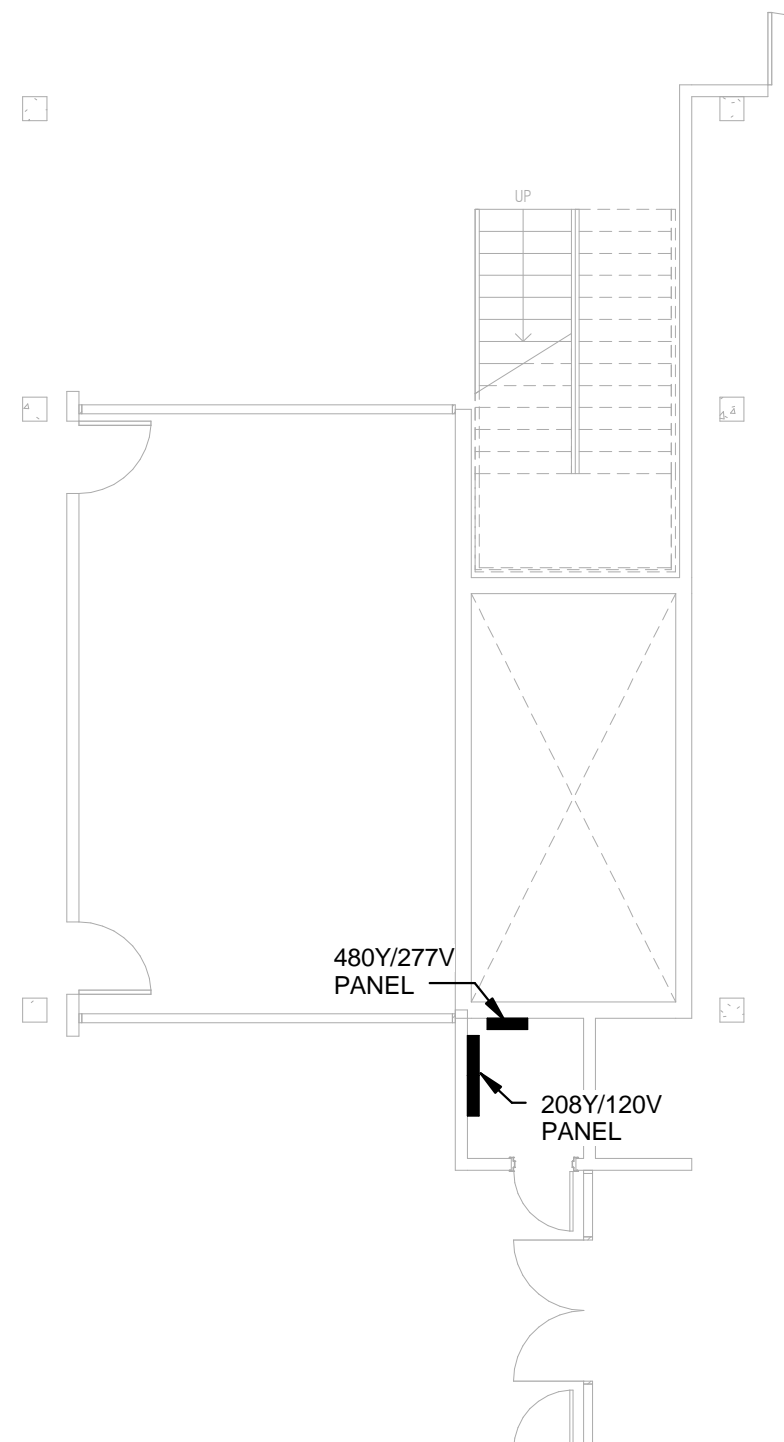
① MAIN ELECTRICAL ROOM
 1/8" = 1'-0"



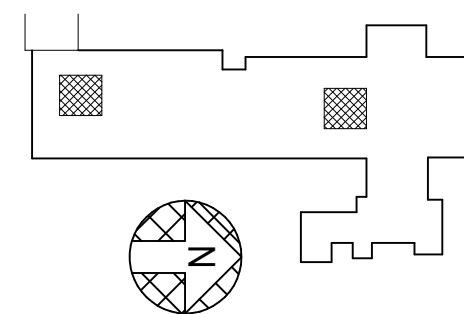
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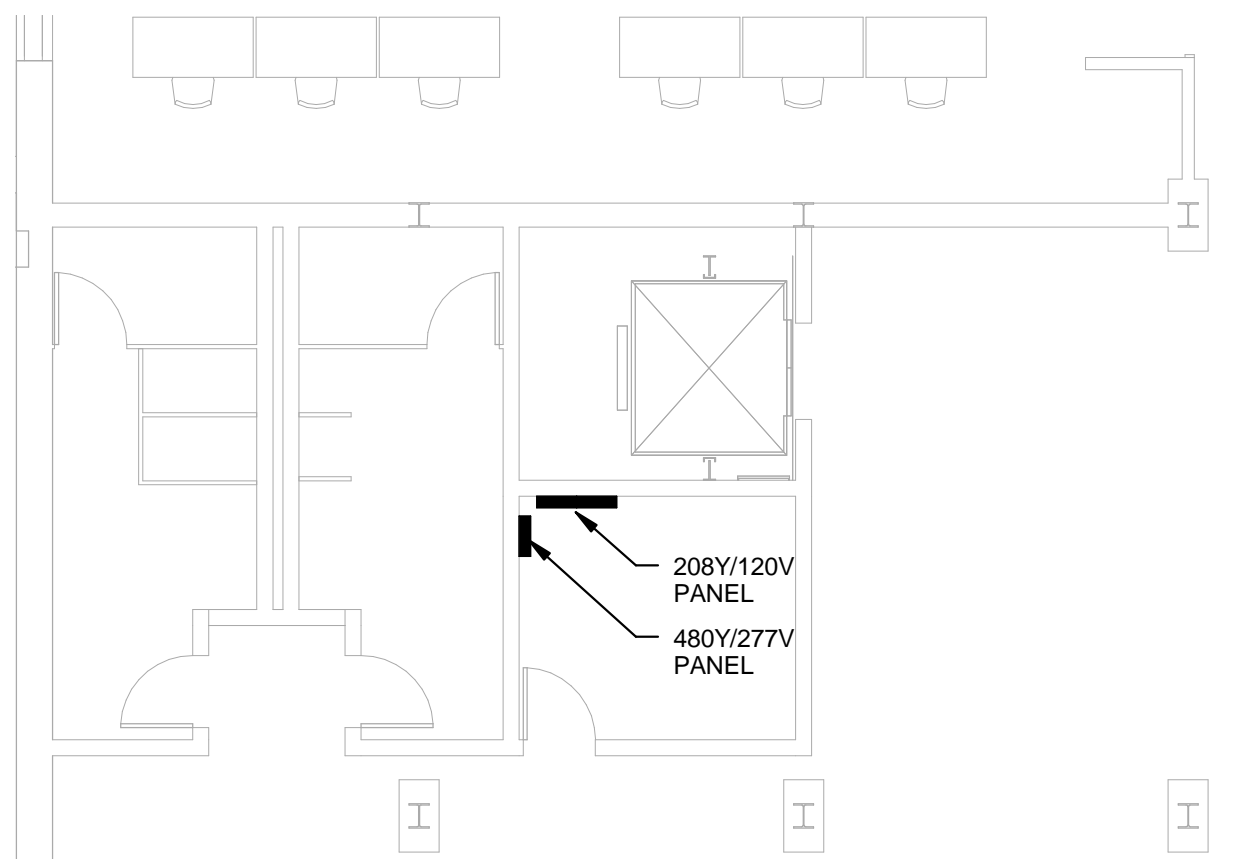
② 1ST FLOOR ELECTRICAL ROOM SOUTH
 1/8" = 1'-0" 



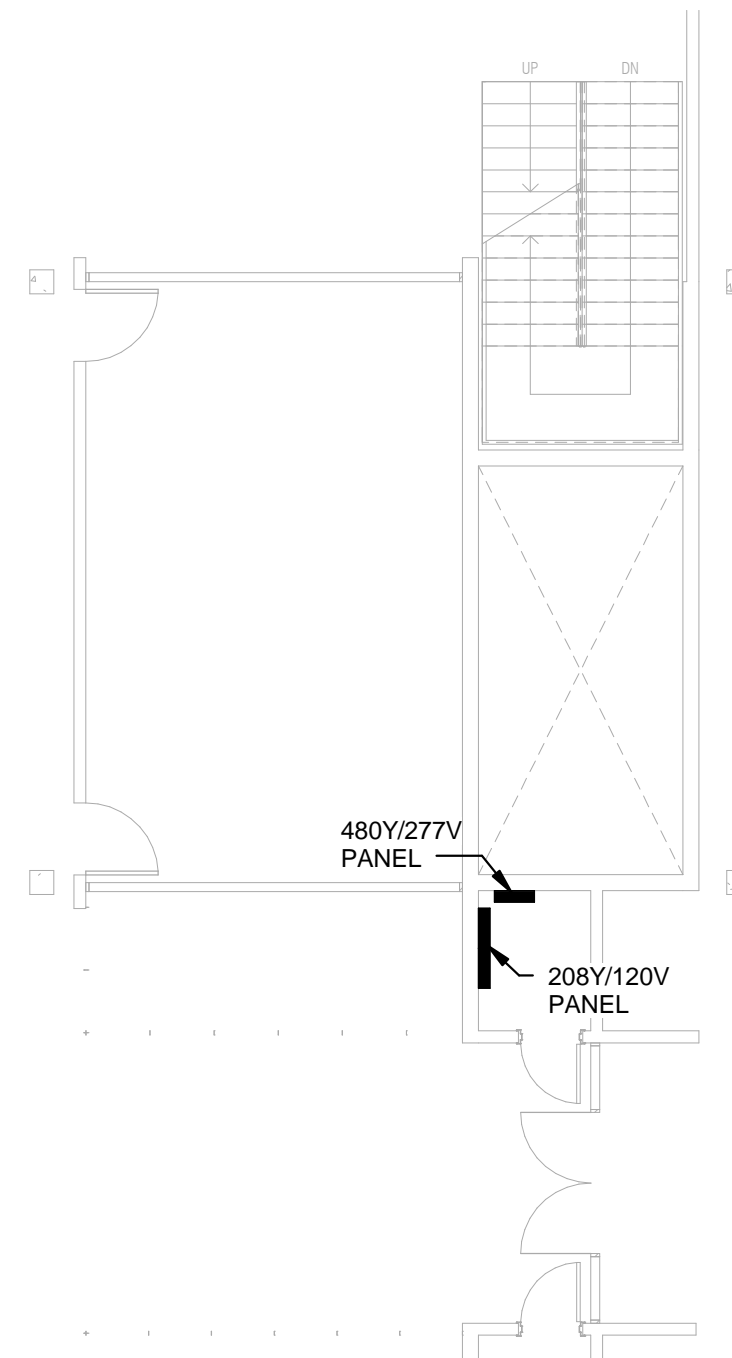
① 1ST FLOOR ELECTRICAL ROOM NORTH
 1/8" = 1'-0" 



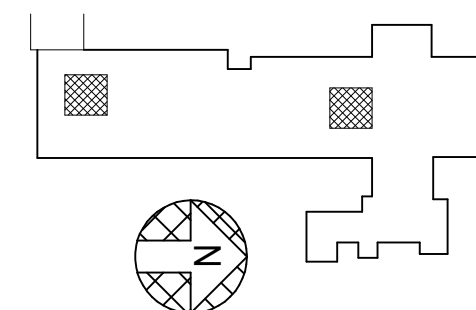
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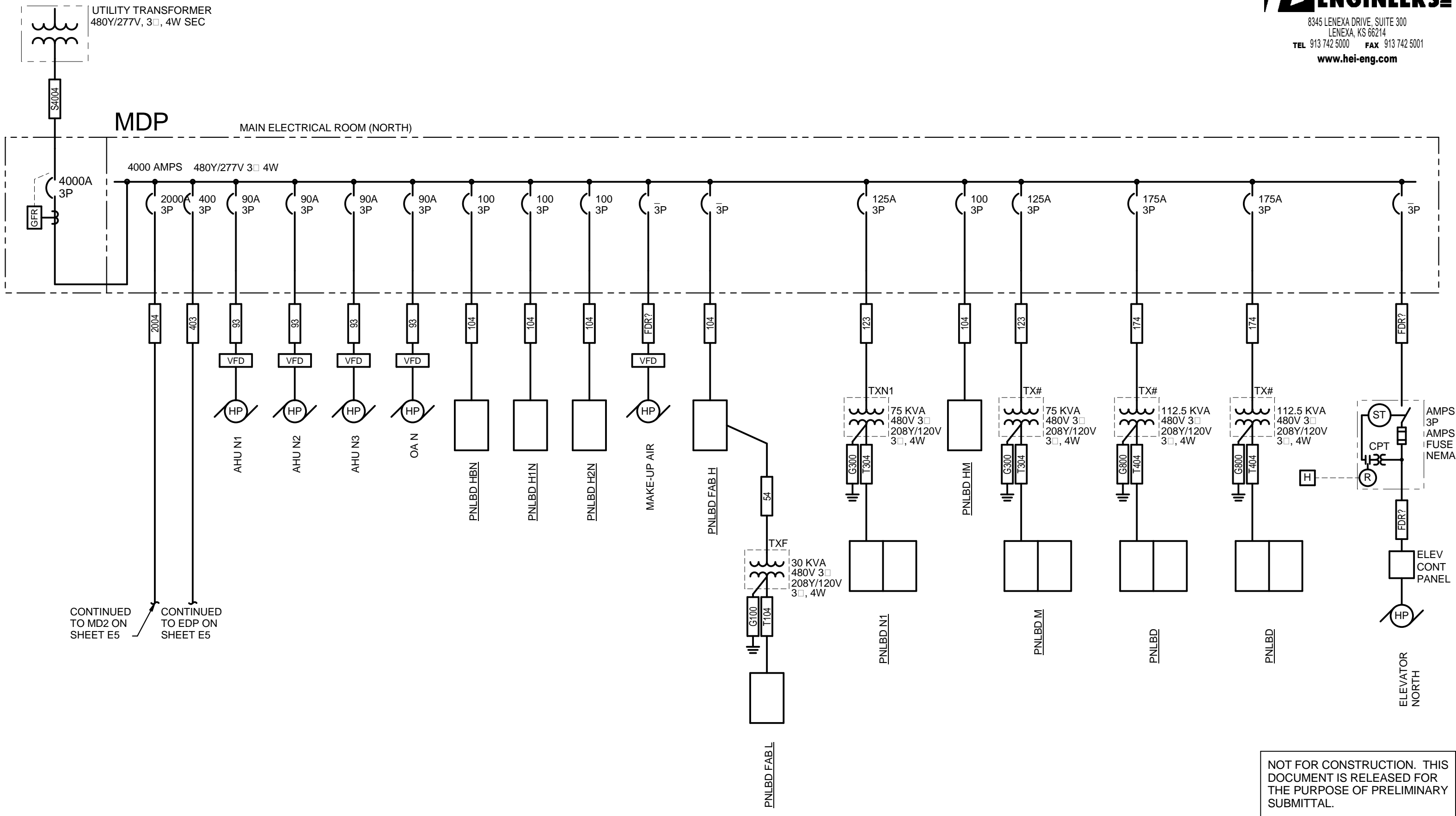
② 2ND FLOOR ELECTRICAL ROOM SOUTH
 1/8" = 1'-0"



① 2ND FLOOR ELECTRICAL ROOM NORTH
 1/8" = 1'-0"



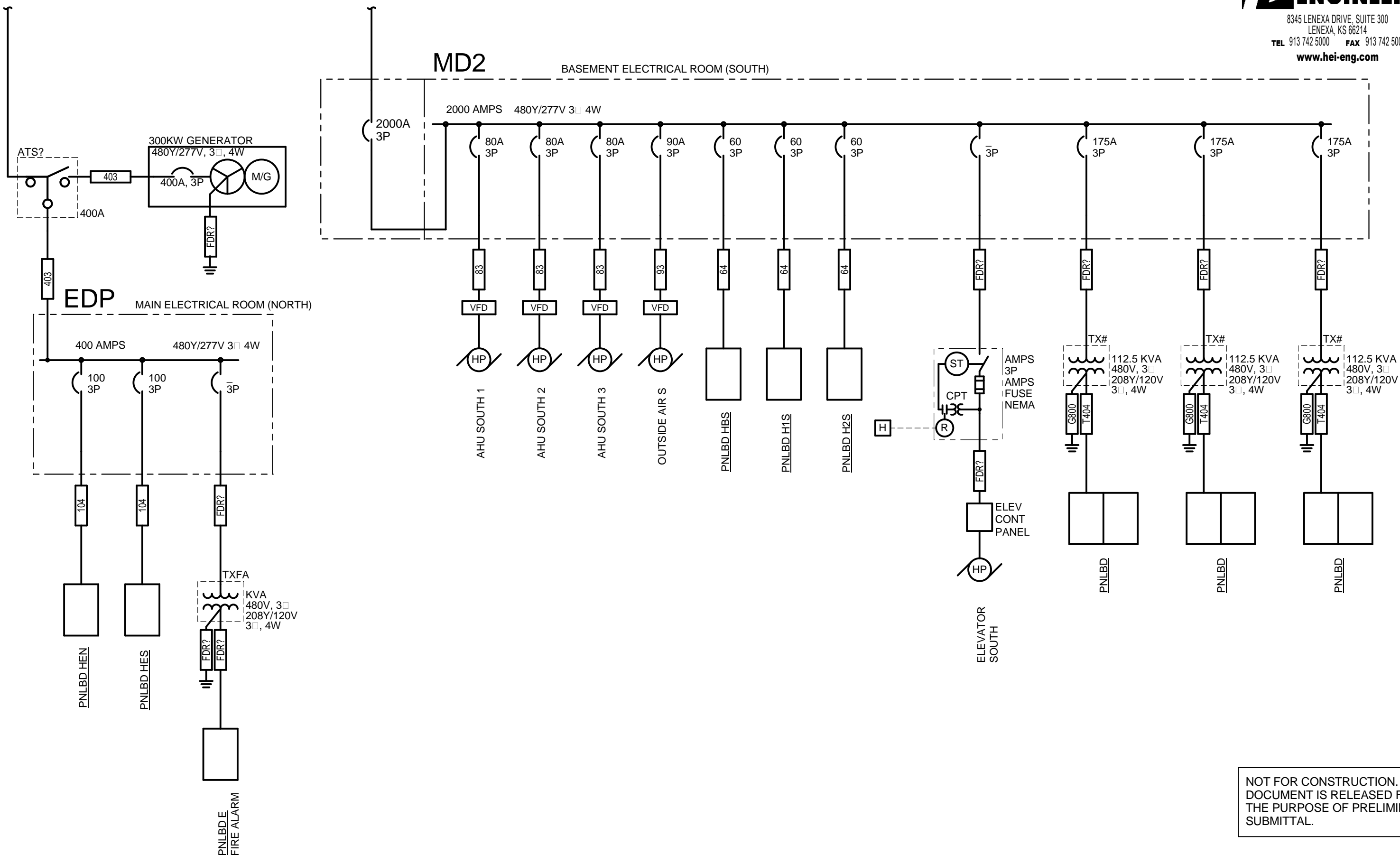
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9.0 AV Design Narrative

The following AV design narrative has been prepared by The Sextant Group, Inc.

General Contract Scope

As a part of the general contract power, and infrastructure to support the network and audiovisual connectivity will be required. The building will be equipped with cable pathway, back boxes, display backing, ceiling projector mounting unistrut, and projection screens. K-State or others will be responsible for all cabling, connectors, faceplates, flat panel displays, loudspeakers and audiovisual electronics.

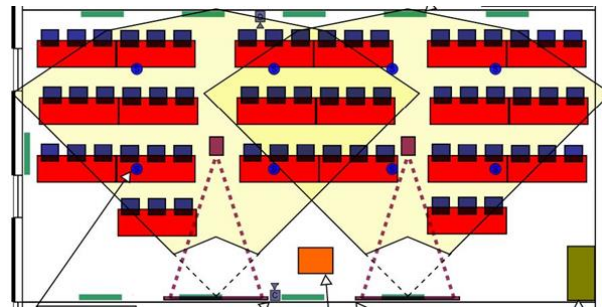
Room Specific Audiovisual Systems

Studio, Crit, Small Collaboration Spaces

The Studio and Crit areas will be served by large mobile carts with 80-90" flat panel display, with all audiovisual equipment for the room on the mobile cart. The small collaboration spaces around the faculty offices will also have their AV needs served with a similar, smaller cart with a 55" flat panel display.

Tech. Rich Classroom

The second floor Technology Rich Classroom will incorporate Active Learning concepts and utilize multiple flat panels around the room, along with dual projection screens. Multiple floor boxes will be required, both at the front of the classroom for instructor connections, as well as at each student seating table to allow for student AV connectivity.



Mechanics Hall Auditorium

The building will be equipped with a total of three elevators to provide vertical access, two passenger and one passenger service functions. The elevators will be designed in accordance with 2010 ASME A17.1 Safety Code for Elevators and Escalators. BNIM will be coordinating design and specifications with the University's elevator consultant.

Gallery

The first floor Gallery will be a highly flexible space. Two ceiling-mounted projectors will have multiple attachment points onto a structural mounting grid, plus two mobile flat panel displays with power and data connections throughout the room will give multiple configuration options.

Library

The basement Library will have a fixed projection screen with ceiling-mounted projector to use the space as a simple presentation space.

Conference Rooms

The two second floor conference rooms will be outfitted with large flat panel monitors, and have connectivity at the conference table via floor boxes. Video Conferencing cameras will be present, and the room shall have window shading and a higher level of lighting control to allow for proper illumination of conference participants.

Small Meeting Rooms

The meeting rooms outside of the Dean's Suite and within the Student Services area will be outfitted with a flat panel monitor, and have conduit to a central floor box under the furniture for AV connectivity.

Building-Wide Audiovisual Systems

Public Information Display

The building will be equipped with a total of nine wall-mounted flat panel displays that will require power and data to show public and space specific information. Lobbies, the Fab Lab, and Departmental Office entrances will be spaces that incorporate digital signage.

Room Scheduling

The building will be equipped with a total of 19 room scheduling displays at each of the schedulable spaces, including the Crit, Conference, and Small Meeting rooms.

10.0 IT Design Narrative

The following IT design narrative has been prepared by The Sextant Group, Inc.

General Contract Scope

As a part of the general contract, the building will be equipped with cable pathway, grounded equipment racks, and back boxes. K-State or others will be responsible for all cabling, connectors, faceplates, network switches / electronics, telephone equipment, wireless access points, and point-of-sale

Entrance Facility

The Entrance Facility is the demarcation point for incoming telecommunications services. Ideally, this space will be located close to the outside plant conduit entrance point. If the cable length from the service entrance point to the Entrance Facility space is less than 50 feet, a transition to plenum rated cable or rigid conduit can be avoided, saving cost.

As a baseline technology capability, the Entrance Facility space will provide:

- Proper surge protection modules for all copper telecommunications cables entering the building.
- Adequate plywood backboard wall space to mount service provider equipment.

Main Distribution Frame

The Main Distribution Frame (MDF) will be located on the Basement Level of the facility within a dedicated telecom room. This room will serve as the connection point for all network services to the rest of the facility.

Telecom Rooms

The Telecom Rooms (TR) will be the connection point for distribution for horizontal network services throughout the facility. All areas of the building will be equipped with cable tray to get cabling from end user spaces into and between Telecom Rooms. These Telecom Rooms will roughly be located with two on each floor of building, one in the existing Seaton East, and the other in the new Seaton North that would also serve Mechanics Hall. Individual drop locations will have conduit from the network drop location to accessible ceiling or the nearest cable tray.

As a baseline technology capability, the TRs will provide:

- Adequate floor space for necessary switching and routing systems.
- Vertical distribution technology consisting of fiber optic cable capable of supporting 10 gigabit Ethernet, with the ability to support future backbone data speeds.
- Copper cable distribution to support the data and telephone systems that takes advantage of the structured cabling patch field systems.
- A horizontal distribution system via overhead cable tray will house the CAT-6 and horizontal cables.
- Intermediate cross connect points to terminate voice circuits allowing patch field connectivity to the station side.
- Overhead racking system for management of flexible connection cabling and to provide additional structural support for the racks, cabinets and systems.
- Adequate floor space for auxiliary control systems.
- An independent grounding system that is connected to the building grounding system at the main panel.

- Environmentally controlled 24/7/365.
- UPS unit.

Communications Outlets

Each room with telecommunications needs will have one or more Communication Outlets (CO). A minimum of one CO will be placed for every 100 square feet of floor space in the expansion. Placement of the COs will take into consideration door openings, windows and potential desk areas within the entire facility. The addition of COs within the renovated areas will be carefully coordinated so that they meet the University's needs without extensive changes to the existing structure.

Considerations will be given to the placement of COs with respect to terminal equipment. Consideration shall also be given to present and anticipated utilization of each room. For example, offices and conference rooms generally require more COs than storage areas or corridors. It is The Sextant Group's recommendation that the final completion of the COs and related power outlets construction documents be based on a finalized furniture plan.

Communications Outlets will be equipped with Category 6 RJ45 jacks installed in a multi-port faceplate. Each jack will be served with separate 4 pair, UTP Category 6 cable extending to the MDF or IDF. All ports will be capable of being voice, data, or both.

In-Building Cellular System

It is assumed that existing cellular coverage will provide adequate service within the building. While this service is increasingly important as more people use cell phones for content delivery and other advanced functions beyond simple phone calls, we do not anticipate the building will require additional signal boosting or other processing.

No systems are planned to assist or otherwise improve cellular signals within the building.

11.0 Security Design Narrative

The following security design narrative has been prepared by The Sextant Group, Inc.

Physical Security

The physical security of the inhabitants and assets at this building requires special consideration in light of the following key design issues:

- The facility is expected to remain open for extended hours, possibly 24x7 in select areas
- Non-campus people will have easy access to the building
- The facility will have multiple entrance and exit points, including a loading dock
- Financial transactions, both hard currency and electronic, will occur in several locations throughout the facility
- Expensive and desirable items, such as projectors are planned for locations that will not have heavy usage
- The student-to-staff ratio (or student-to-faculty ratio) will be less favorable in this facility than in a typical academic building
- As in most student centers, the facility is planned to house large, open, visible spaces which may not be addressed adequately in existing emergency response plans for the campus

Security and access control systems are monitored and response from campus Police Services. We will require close coordination in order with these entities to complete our portion of the design work.

In general, building security systems are intended to control or monitor pedestrian flow throughout the building based on certain flexible criteria. Themes such as individual pass card holder permissions and time of day access control are key to the design. Access cards will be campus standard.

Surveillance devices in the form of remote controllable cameras (campus standard IP-based) will augment the access control system by linking door events with video footage. To complete the design, devices such as door and window position sensors provide the monitoring entity a snapshot of the buildings perimeter at any given time.

There is a growing awareness of the unique security challenges faced by many colleges and universities today. Like no other institutions, higher education campuses must balance an open environment inviting collaborative academic inquiry with real-life safety and security threats. The increasing hostile political environment is a particular threat to campuses, given the highly mobile, socially active and often international population of the student body and the surrounding community. This is particularly applicable to the new Seaton Hall project, where the facility is expected to be open for extended hours with minimal staff and have a mixture of students, faculty, and the local business community.

The security issues which all colleges face can be more difficult at K-State, due to the potentially conflicting desires to simultaneously enhance the feeling of engagement with the surrounding community as well as provide a higher level of security on campus. The campus setting naturally requires additional security measures to provide for both the actual security requirements as well as giving student and faculty a heightened sense of security than they would normally have. The security requirements also need to be balanced with the aim of providing an aesthetically pleasing and comfortable environment.

The new Seaton Hall will be offering an increasing number of campus events to support a student body expecting support for their 24 x 7 lifestyle. The unique programming of this project will also

extend the hours of the facility. A legal burden exists related to the concept of safety and security as well. While no predetermined levels of security technologies are mandated, our interpretation of the current security industry best practices and applicable standards is that institutions are required to exhibit reasonable care in enhancing the security of the environments in which students, faculty and staff live and work. Certainly, the expectations of “reasonable care” for most stakeholders are rising dramatically. Again, due to the urban environment this expectation is heightened.

Access Control System

An Access Control system will provide card access at certain non-public entry and exit points of the building or departmental perimeters or at any other area or space deemed a priority by the University team. It is likely that the only traditional keys given to faculty would be for their individual offices and any storage rooms that are under their control.

Architecturally-specified door hardware configurations detailed in the Architect’s Door Hardware Schedule require close integration with the access control system to ensure proper operation for normal and alarmed conditions. The door hardware schedule should include not only standard door hardware devices such as locksets and closers, but that it also detail electronic security devices and components to create a more comprehensive schedule.

The typical security door configuration will include a reader, interface to the electric locks, door position switches, and request to exit components. Emergency exit doors will employ door position switches and sounders (door open alarms). Delayed egress exit devices will be used on some of these doors. The typical door configuration will consist of a common pull box located above the door on the secure side for the interconnection of the various door control and signaling components.

Operation of the system will be such that time of day features may be utilized. Some doors may be unlocked by the system during regular business hours or for special events while others remain as pass card access only. Doors may go into an alarm state when opened immediately, such as in an emergency exit, or when a perimeter door is held open for an extended period of time.

In general, the access control system will seal off the building perimeter and restrict access to certain spaces at certain times. There may be a need to control access to elevators and stairwells based on occupants’ requirements and work schedules. Additional features of the system include holiday schedules, visitor credentialing, access groups, and database segmentation to name a few.

The access control system and the video surveillance system can be integrated, allowing for timestamp management of video records tied to entry and exit events by user. In addition, emergency call stations around the perimeter and at building entry locations will integrate with these systems to allow alarm and visual event recording. The access control system may incorporate an intrusion detection sub-system with glass break sensors, motion detectors, and door contacts to detect and report unauthorized after-hours entry in certain parts of the building. Since some areas in the facility may operate 24 hours a day or late into the night, the scope of intrusion detection systems including staff that will monitor alarms, is yet to be determined.

The card access system used for this building will conform to the current standards on campus and will be connected to the building LAN and the main campus LAN. The card key system used for this building will be connected to the building LAN and monitored by a third party contracted by the University. The card key systems will be housed in the Telecom Rooms.

Video Surveillance System

A system of fully integrated security cameras will monitor the public-use areas of the building. The camera type is standardized on IP-based units. Additional fixed cameras may also be used to entrances/exits, cash handling, and other locations.

These cameras will use motion sensing software to activate recording only when certain conditions are met such as human movement. Analytic software is also available to trigger alarms and people counting. Camera housings will be primarily domes with other housings provided based on environment, architectural goals, or space limitations.

Near Field Communication (NFC)

Near Field Communication (NFC) is the newest standard for providing active electronic identification via devices such as smart phones. By bringing these devices into close range with a proximity-type access control card reader, the user is able to access those locations that normally would have required a separate access card/ID. This enables a student to carry only one type of ID, all contained within their personal cell phone, to access security, payment programs, class schedules, etc.

In cases of higher security, where the concern of a lost phone is greater, the addition of a "personal pin number" or "biometric reader" gives the process a higher degree of reliability and security. This form of identification is enjoying an increase in popularity, and it is anticipated that NFC will become more prevalent on campuses in the future.

Intrusion Detection

Devices such as glass break detectors, panic buttons, tamper switches, and motion sensors may be employed in certain situations. These devices notify the security detail of an intrusion into a space, based on criteria established by the overall system logic. This system may be stand alone and integrated into the Access Control System.

Crime Prevention Through Environmental Design (CPTED)

CPTED is defined as a multidisciplinary approach to deterring criminal behavior through environmental design. CPTED strategies rely on the ability to influence offender decisions that precede criminal acts by affecting the built, social, and administrative environment. The basic CPTED strategies are Natural Surveillance, Natural Access Control, and Natural Territorial Enforcement.

Natural Surveillance

Natural Surveillance is the design principle, which calls for creating an environment where the occupant has an enhanced ability to observe the surrounding environment and the potential offender will have a heightened perception of their increased risk of being observed. The design principles involved include creating good sight lines and minimizing visual obstacles so that from a given location the occupant has a high degree of visual control. People will always feel safer when they can easily see and be seen. The architect and landscape architect are designing the building and site with these principles in mind. The wrought iron fence will be replaced by a combination of large gates, a series of thorned hedges, and other means of defining the campus boundary.

From the perspective of Natural Surveillance, these items are ideal in that they offer no real hiding places. They provide a level of deterrence but little to no visual obstruction, which raises the probability of detection for the potential intruder.

Proper lighting will also create an effective deterrent to crime, because good lighting (no areas of glare from lights and no dark areas) discourages criminal activity, improves visibility, and reduces fear. Visibility in design can also be enhanced by including windows that look directly out on public sidewalks and parking. The design team has created a high level of visibility through the use of glass around the perimeter of the building. Again, this maintains the high levels of visibility necessary to deter potential criminal activity.

Sidewalks, plazas and other pedestrian areas will be even lit by pole mounted lighting, providing no shadowed hiding places for a would-be criminal to use to their advantage. Sufficient lighting levels will enhance the capture and storage of evidentiary quality video, enabling recognition of perpetrators in covered areas. Steadily increasing lighting levels as one approaches the building will improve the sense of safety and the video quality at the appropriate locations.

Natural Access Control

Natural Access Control limits the opportunity for crime by clearly differentiating between public and private spaces. Location and design of entrances and exits, which tend to guide people in the appropriate direction, will provide Natural Access Control. Natural Access Control recommends that the facility have only one primary, clearly identifiable entry point, or at a minimum utilize the architectural design to route people to a central security location before they have access to stairwells and elevators.

Because the building will act as a student academic center, there will be several different entrances, but the conferencing center entrance will only be open during the hours when it is in use, and will have a manned security post during those hours. The academic portion of the building will be open on a 24/7 basis and will need to have a manned station at all times. Sidewalks, hedges and other landscape features, signage, and lighting will all be used to route traffic to the various entrances with the academic entrance as the primary suggestion.

Natural Territorial Reinforcement

Natural Territorial Reinforcement utilizes architectural design to increase the sense of ownership, which increases the likelihood that intruders will be challenged and reported. It creates an environment where strangers or intruders stand out and are more easily identified.

For the site building perimeter plan provides clear demarcation lines, along with the aforementioned high levels of visibility. Additionally, the current design incorporates the ability to block off the main avenue between the primary campus entry point, and the building by the addition of a series of sliding gates. This will accentuate the security of the building by providing an outer ring of barriers which will lessen public traffic during evenings and weekends, though not so much as to make it difficult to use the facility. Apparent intruders entering the campus from secured perimeter gates during late hours will be evident to students and other authorized pedestrians in the area, prompting a call to the campus safety department.

12.0 Acoustics Design Narrative

The following acoustics design narrative has been prepared by The Sextant Group, Inc.

The renovation and addition to Seaton Hall will house a number of noise sensitive spaces including classrooms, studios, and conference rooms. These spaces will require specific room finishes, a specific level of acoustic separation from adjacent spaces, and low background noise levels. There is a concern regarding the vertical sound isolation in the existing portion of Seaton Hall between studios. There is also a large Fabrication Lab in the basement that has the potential to create excessive levels of noise in adjacent spaces. These goals and concerns will be addressed with the application of special acoustic finishes, enhanced room envelope constructions and quiet MEP systems.

Acoustic Design Standards

As applicable, the acoustical design will be developed in accordance with Chapter 48 'Noise and Vibration Control' from the 2011 ASHRAE Applications Handbook.

Interior Finishes (Division 09)

Applying appropriate finishes will create acoustical environments that best serve the intended programming of each space. Specialty acoustic materials are needed to control speech intelligibility in the auditorium. In the remainder of the building, acoustical ceiling tile, carpet, and fabric-wrapped acoustical wall panels will be sufficient to generate speech intelligibility in classrooms and conference rooms and to control reverberant noise build-up in public circulation areas and fabrication spaces.

Auditorium	
Ceiling:	Painted Gypsum Wallboard, <i>Omni-Directional Ceiling Diffusers</i> , or Convex Hardwood Panels at the front and central portions of the room <i>Acoustical Ceiling Tile 3</i> in remaining areas.
Walls:	<i>Side Walls (Adjacent to Seating Areas):</i> <i>Diffusive Wood Plank System</i> install between chair rail height and 7' AFF. <i>2"-thick Fabric-Wrapped Absorptive Panels</i> install between 7' AFF and the finished ceiling. <i>Rear Walls:</i> <i>Absorptive / Diffusive Wood Plank System</i> install between chair rail height and 7' AFF. <i>2"-thick Fabric-Wrapped Absorptive Panels</i> install between 7' AFF and the finished ceiling. <i>Remaining Walls:</i> Painted gypsum wallboard or hardwood panels
Floor:	Carpet
Classrooms, Conference Rooms, Studios, and Review Rooms	
Ceiling:	Specific combination of 0.9 NRC Acoustic Ceiling Tile and lay-in gypsum wallboard tile or plaster.
Walls:	0.75 NRC Tackable-Acoustical Panels covering at least 50% of all exposed wall surfaces between chair rail height and 7' AFF.
Floor:	Carpet

Sound Isolation (Division 08 & 13)

Sound Isolation is a critical design element in the renovation and addition of Seaton Hall. The Auditorium will require a high level of sound isolation to limit disruptions from activities in adjacent area of the building and vice-versa. Classrooms, conference rooms, observation rooms, and even offices will have similar requirements, though the required acoustical treatments are more modest. Anticipate the following sound isolation provisions:

Building Layout

Use a corridor or a buffer zone to separate acoustically sensitive spaces (auditorium, classrooms, conference rooms) from noise producing spaces (lobbies, restrooms, mechanical equipment rooms, fabrication shops)

Classrooms, Conference Rooms, Studios, and Review Rooms

Classrooms, Conference Rooms, and Observation Rooms will require full-height walls with multiple layers of drywall and batt insulation.

Entry doors will be solid-core wood or hollow-metal and outfitted with full-perimeter acoustical gaskets.

Storefront glazing is to be avoided, though side-lights are acceptable. Glazing shall use insulated units with one laminated pane. Observation windows shall be STC-55 acoustic window units.

Due to the concern regarding existing vertical noise transmission between classrooms and studios and the weight restrictions of additional treatment, acoustic underlayment and acoustic barrier ceilings should be considered as options for these spaces.

Mechanical Equipment Rooms and Fabrication Lab

These loud spaces may require partial "Box-in-Box" construction and acoustical doors, pending their proximity to noise sensitive spaces and other occupied areas of the building.

Mechanical System Noise Control (Division 23)

Unwanted mechanical system noise and vibration needs to be controlled in the building. Noise of this nature can be detrimental to speech communication and can also pose considerable annoyance to occupants. Specific airflow velocities should be adhered to in order to control airflow generated noise. Appropriate vibration isolation treatments are necessary to control the transmission of mechanical equipment vibration into the building.

Background Noise Levels

The building's mechanical system shall be designed achieve the following background noise levels:

Space Name	Maximum Design RC(N) Rating	Maximum Field RC(N) Rating
Conference Rooms	30	35
Private Offices	30	35
Classrooms, Studios, Review Rooms	25	30
Auditorium	20	25

HVAC System

Airflow Velocities: In order to achieve the background noise levels listed above, the duct system in the Performing Arts Center will need to be oversized in order to maintain the the following airflow velocities with minimal balancing. Duct work serving the Auditorium and Black Box may not exceed

Duct Condition	Noise Level RC(N)	Maximum Air Velocity (fpm)					
		Rectangular Duct			Circular or Fabric Duct		
		Main Duct	Branch Duct	Final Run-out	Main Duct	Branch Duct	Final Run-out
In shaft or above Gypsum Wallboard	35	2500	2000	1250	3500	2800	1750
	30	2050	1650	1025	2960	2400	1475
	25	1700	1360	850	2500	2000	1250
	20	1400	1125	725	2075	1625	1075
Above Acoustical Ceiling Tile	35	1750	1400	875	3000	2400	1500
	30	1450	1150	725	2475	1975	1225
	25	1200	950	600	2000	1600	1000
	20	1000	800	500	1550	1300	825
Exposed	35	1450	1175	725	2600	2075	1300
	30	1175	950	600	2150	1675	1050
	25	950	775	475	1700	1350	850
	20	775	625	400	1300	1100	700

Air Diffusers, Grilles, and Terminal Units: Air diffusers and return air grilles must be chosen such that noise levels do not exceed the specified background noise limits. These devices may need to be oversized for spaces with background noise requirements of RC-30 or below.

Duct Lining: Anticipate 1"-thick internal duct lining in all supply and return ducts serving spaces with background noise requirements of RC-25 or below. As required, use an anti-microbial foam duct liner in lieu of fiberglass.

Duct Routing: High velocity main ducts may not pass over spaces with background noise requirements of RC-30 or below. Supply and return air shall be brought into occupied rooms via long branches from main air ducts in the corridors. Ducts should not be run directly between noise-sensitive spaces. Avoiding direct penetrations between rooms will maximize the sound isolation capabilities of their common partitions.

Duct Silencers: Anticipate 5'-7' duct silencers wherever duct enter or exit the spaces with background noise requirements of RC-25 or below. Duct silencers may also be necessary on the intake and discharge of the air handling unit that serves these spaces.

Resilient Hanger: Anticipate that some duct and pipe sections in the noise sensitive areas of the building will be suspended from neoprene and spring vibration isolation hangers.

Vibration Isolation

Air Handlers, Chillers, Cooling Towers, Fans, Pumps, Transformers, and Elevators typically require vibration isolation to prevent the sound and vibration they produce from traveling to other parts of the building. Typical equipment treatments include bases, vibration isolators, and flexible infrastructure connections. These elements should be selected according to Chapter 48 'Sound and Vibration Control' from the 2011 ASHRAE Applications Handbook. Isolator selection will be reviewed as the project progresses.

13.0 Hardware Narrative

The following hardware narrative has been prepared by Allegion, Plc.

13.0 Hardware

Refer to attached (11x17) door hardware/security diagrams for door/hardware type delineations.

DOOR TYPE: A (PAIR)

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	KEYED REMOVABLE MULLION	KR822	689	PRE
1	EA	ELEC PANIC HARDWARE	TS ELR2102 1702A	626	PRE
1	EA	ELEC PANIC HARDWARE	TS ELR2103 1703A	626	PRE
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	CONCEALED OVERHEAD STOP	100S	630	GLY
1	EA	CLOSER (WITH SPRING STOP)	4040XP SCUSH	689	LCN
1	EA	SURF. AUTO OPERATOR	4642	689	LCN
1	EA	PA MOUNTING PLATE	4040-18PA (IF REQ'D)	689	LCN
1	EA	CUSH SHOE SUPPORT	4040-30 (IF REQ'D)	689	LCN
2	EA	BLADE STOP SPACER	4040-61 (IF REQ'D)	689	LCN
1	EA	ACTUATOR, JAMB MOUNT	8310-818T	630	LCN
1	EA	ACTUATOR, WALL MOUNT	8310-853T	630	LCN
1	EA	BOLLARD POST	8310-866	AL	LCN
1	EA	WEATHER STRIP	BY ALUMINUM DOOR MANUF	AL	B/O
2	EA	DOOR BOTTOM SWEEP	345AV	AL	PEM
1	EA	THRESHOLD	171A	AL	PEM
2	EA	DOOR CONTACT	7764	628	SCE
1	EA	POWER SUPPLY	PS904 900-2RS 900-4RL	LGR	SCE
1	EA	NOTE	CARD READER BY SECURITY	BLK	

DOORS UNLOCKED (DOGGED) DURING DAYTIME HOURS BY ACCESS CONTROL SYSTEM. AFTER HOURS ENTRY BY BOLLARD MOUNTED CARD READER, WHICH MOMENTARILY RETRACTS EXIT DEVICE LATCHES, ALLOWING ENTRY. INSIDE PUSH PADS PROVIDE FREE EGRESS AT ALL TIMES. DOOR CLOSER EACH LEAF.

AUTOMATIC DOOR OPERATOR FOR ADA ACCESS BY PRESSING BOLLARD MOUNTED ACTUATOR AT EXTERIOR, OR JAMB MOUNTED ACTUATOR AT INTERIOR. WHEN DOORS ARE LOCKED AFTER HOURS, CARD MUST BE PRESENTED TO CARD READER FIRST, THEN PRESS ACTUATOR FOR AUTOMATIC OPERATOR.

DOOR TYPE: A (SGL)

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	TS ELR2103 1703A	626	PRE
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	CLOSER (WITH SPRING STOP)	4040XP SCUSH	689	LCN
1	EA	PA MOUNTING PLATE	4040-18PA (IF REQ'D)	689	LCN
1	EA	CUSH SHOE SUPPORT	4040-30 (IF REQ'D)	689	LCN
2	EA	BLADE STOP SPACER	4040-61 (IF REQ'D)	689	LCN
1	EA	WEATHER STRIP	BY ALUMINUM DOOR MANUF	AL	B/O
1	EA	DOOR BOTTOM SWEEP	345AV	AL	PEM
1	EA	THRESHOLD	171A	AL	PEM
1	EA	DOOR CONTACT	7764	628	SCE
1	EA	POWER SUPPLY	PS902 900-4RL	LGR	VON
1	EA	NOTE	CARD READER BY SECURITY	BLK	

DOOR UNLOCKED (DOGGED) DURING DAYTIME HOURS BY ACCESS CONTROL SYSTEM. AFTER HOURS ENTRY BY WALL MOUNTED CARD READER, WHICH MOMENTARILY RETRACTS EXIT DEVICE LATCH, ALLOWING ENTRY. INSIDE PUSH PAD PROVIDES FREE EGRESS AT ALL TIMES. DOOR CLOSER.

DOOR TYPE: B

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	2101 LD	626	PRE
1	EA	CLOSER (WITH SPRING STOP)	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	DOOR TOP DRIP	346C	AL	PEM
1	EA	DOOR GASKETING	290/2891AV	AL	PEM
1	EA	DOOR BOTTOM SWEEP	345AV	AL	PEM
1	EA	THRESHOLD	2005AV	AL	PEM

NO EXTERIOR TRIM. EXIT ONLY. INSIDE PUSH PAD PROVIDES FREE EGRESS AT ALL TIMES. DOOR CLOSER.

DOOR TYPE: C

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	2101 LD	626	PRE

1	EA	CLOSER (WITH SPRING STOP)	4040XP SCUSH	689	LCN
1	EA	PA MOUNTING PLATE	4040-18PA (IF REQ'D)	689	LCN
1	EA	CUSH SHOE SUPPORT	4040-30 (IF REQ'D)	689	LCN
1	EA	BLADE STOP SPACER	4040-61 (IF REQ'D)	689	LCN
1	EA	DOOR TOP DRIP	346C	AL	PEM
1	EA	WEATHER STRIP	BY ALUMINUM DOOR MANUF	AL	B/O
1	EA	DOOR BOTTOM SWEEP	345AV	AL	PEM
1	EA	THRESHOLD	2005AV	AL	PEM

NO EXTERIOR TRIM. EXIT ONLY. INSIDE PUSH PAD PROVIDES FREE EGRESS AT ALL TIMES. DOOR CLOSER.

DOOR TYPE: D (PAIR)

Qty		Description	Catalog Number	Finish	Mfr
1	EA	HERC BRACKET	HDB452	630	SCE
1	EA	MAGNETIC LOCK	M452P ATS/LED-2	628	SCE
2	SET	PUSH/PULL BAR	9103EZHD-10"-NO	630	IVE
1	EA	PUSHBUTTON	621GREX DP	629	SCE
1	EA	MOTION SENSOR	SCANII	WHT	SCE
1	EA	POWER SUPPLY	PS904 900-2RS 900-4RL-FA	LGR	SCE

DOORS UNLOCKED DURING DAYTIME HOURS BY ACCESS CONTROL SYSTEM. AFTER HOURS ENTRY BY WALL MOUNTED CARD READER, WHICH MOMENTARILY CUTS POWER TO MAGNETIC LOCK, ALLOWING ENTRY. FREE EGRESS AT ALL TIMES BY MOTION SCANNER ABOVE DOOR, OR SECONDARY RELEASE WALL-MOUNTED PUSHBUTTON. FLOOR CLOSERS AND HINGES EACH LEAF BY GLASS DOOR SYSTEM MANUFACTURER.

DOOR TYPE: D (SGL)

Qty		Description	Catalog Number	Finish	Mfr
	EA	HERC BRACKET	HDB450	630	SCE
1	EA	MAGNETIC LOCK	M450P ATS/LED	628	SCE
1	SET	PUSH/PULL BAR	9103EZHD-10"-NO	630	IVE
1	EA	PUSHBUTTON	621GREX DP	629	SCE
1	EA	MOTION SENSOR	SCANII	WHT	SCE
1	EA	POWER SUPPLY	PS904 900-2RS 900-4RL-FA	LGR	SCE

DOOR UNLOCKED DURING DAYTIME HOURS BY ACCESS CONTROL SYSTEM. AFTER HOURS ENTRY BY WALL MOUNTED CARD READER, WHICH MOMENTARILY CUTS POWER TO MAGNETIC LOCK, ALLOWING ENTRY. FREE EGRESS AT ALL TIMES BY MOTION SCANNER ABOVE DOOR, OR SECONDARY RELEASE WALL-MOUNTED

PUSHBUTTON. FLOOR CLOSER AND HINGES BY GLASS DOOR SYSTEM MANUFACTURER.

DOOR TYPE: E (PAIR)

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	KEYED REMOVABLE MULLION	KR822	689	PRE
1	EA	PANIC HARDWARE	2102CD 4902C	626	PRE
1	EA	PANIC HARDWARE	2108CD 4908C	626	PRE
4	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
2	EA	CLOSER	4040XP EDA	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
2	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	DOOR GASKETING	290/2891AV	AL	PEM
1	SET	BRUSH ASTRAGAL	18061CP	AL	PEM
2	EA	AUTO DOOR BOTTOM	4131CNBL - SURFACE MOUNT	AL	PEM

OUTSIDE LEVER OF ACTIVE LEAF CAN BE UNLOCKED OR LOCKED BY KEY. OUTSIDE LEVER OF INACTIVE LEAF ALWAYS FIXED. EXIT DEVICE PUSH PADS ON INSIDE PROVIDE FREE EGRESS AT ALL TIMES. DOOR CLOSERS EACH LEAF.

DOOR TYPE: E (SGL)

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	OFFICE LOCKSET	ML2051 LC LWA	626	COR
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

LATCHBOLT IS OPERATED BY LEVER EITHER SIDE, UNLESS OUTSIDE LEVER IS LOCKED OR UNLOCKED BY KEY OUTSIDE OR THUMBTURN BUTTON INSIDE. NO DOOR CLOSER.

DOOR TYPE: F (PAIR)

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	MANUAL FLUSH BOLT	FB358/FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ'D	626	IVE

1	EA	STOREROOM LOCKSET	ML2057 LC LWA	626	COR
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	SURFACE OVERHEAD STOP	90S	630	GLY
			(WHERE REQUIRED)		
1	EA	CLOSER (WITH STOP/HOLDER)	4040XP HCUSH	689	LCN
2	EA	ARMOR PLATE	8400 36" X 1" LDW B4E	630	IVE
2	EA	DOOR EDGE GUARD	DOOR EDGE		IVE
1	EA	DOOR GASKETING	290/2891AV	AL	PEM
2	EA	AUTO DOOR BOTTOM	4131CNBL - SURFACE MOUNT	AL	PEM

LATCH OPERATED BY LEVER INSIDE, OR BY KEY OUTSIDE. OUTSIDE LEVER ALWAYS LOCKED. DOOR CLOSER ON ACTIVE LEAF. MANUAL FLUSH BOLTS TOP AND BOTTOM OF INACTIVE LEAF.

DOOR TYPE: F (SGL)

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCKSET	ML2057 LC LWA	626	COR
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

LATCH OPERATED BY LEVER INSIDE, OR BY KEY OUTSIDE. OUTSIDE LEVER ALWAYS LOCKED. DOOR CLOSER.

DOOR TYPE: G (PAIR)

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	MANUAL FLUSH BOLT	FB358/FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP1/DP2 AS REQ'D	626	IVE
1	EA	STOREROOM LOCKSET	ML2057 LC LWA	626	COR
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	SURFACE OVERHEAD STOP	90S	630	GLY
			(WHERE REQUIRED)		
1	EA	CLOSER (WITH STOP/HOLDER)	4040XP HCUSH	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

LATCH OPERATED BY LEVER EITHER SIDE, UNLESS OUTSIDE LEVER IS LOCKED BY KEY OUTSIDE. DOOR CLOSER ON ACTIVE LEAF. MANUAL FLUSH BOLTS TOP AND BOTTOM OF INACTIVE LEAF.

DOOR TYPE: G (SGL)

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCKSET	ML2055 LC LWA	626	COR
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

LATCH OPERATED BY LEVER EITHER SIDE, UNLESS OUTSIDE LEVER IS LOCKED BY KEY OUTSIDE. DOOR CLOSER.

DOOR TYPE: H (PAIR)

Qty		Description	Catalog Number	Finish	Mfr
8	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	PUSH PLATE	8200 4" X 16"	630	IVE
2	EA	PULL PLATE	8305 10" 4" X 16"	630	IVE
2	EA	CLOSER	4040XP EDA (STOP ARM WHERE REQ'D)	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
2	EA	WALL STOP	WS406/407CVX	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

DOORS NEVER LOCKED. PUSH PLATE/PULL PLATE OPERATION. DOOR CLOSERS EACH LEAF.

DOOR TYPE: H (SGL)

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PUSH PLATE	8200 4" X 16"	630	IVE
1	EA	PULL PLATE	8305 10" 4" X 16"	630	IVE
1	EA	CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

DOOR NEVER LOCKED. PUSH PLATE/PULL PLATE OPERATION. DOOR CLOSER.

DOOR TYPE: I (PAIR)

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	KEYED REMOVABLE MULLION	KR822	689	PRE
1	EA	ELEC PANIC HARDWARE	TS ELR2102 4902C	626	PRE
1	EA	ELEC PANIC HARDWARE	TS ELR2103 4903C	626	PRE
3	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
2	EA	CLOSER (WITH SPRING STOP)	4040XP SCUSH	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	DOOR GASKETING	290/2891AV	AL	PEM
1	SET	BRUSH ASTRAGAL	18061CP	AL	PEM
2	EA	AUTO DOOR BOTTOM	4131CNBL - SURFACE MOUNT	AL	PEM
2	EA	DOOR POSITION SWITCH	679-05	WHT	SCE
1	EA	POWER SUPPLY	PS904 900-2RS 900-4RL	LGR	SCE
1	EA	NOTE	CARD READER BY SECURITY	BLK	

DOORS UNLOCKED (DOGGED) DURING DAYTIME HOURS BY ACCESS CONTROL SYSTEM. AFTER HOURS ENTRY BY WALL MOUNTED CARD READER, WHICH MOMENTARILY RETRACTS EXIT DEVICE LATCHES, ALLOWING ENTRY. INSIDE PUSH PADS PROVIDE FREE EGRESS AT ALL TIMES. DOOR CLOSER EACH LEAF.

DOOR TYPE: I (SGL)

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCKSET	ML2057 LC LWA	626	COR
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	ELECTRIC STRIKE	6210 FSE	630	VON
1	EA	CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA	DOOR POSITION SWITCH	679-05	WHT	SCE
1	EA	MOTION SENSOR	SCANII	WHT	SCE
1	EA	POWER SUPPLY	PS902	LGR	SCE
1	EA	NOTE	CARD READER BY SECURITY	BLK	

DOOR UNLOCKED DURING DAYTIME HOURS BY ACCESS CONTROL SYSTEM. AFTER HOURS ENTRY BY WALL MOUNTED CARD READER, WHICH MOMENTARILY RELEASES

ELECTRIC STRIKE, ALLOWING ENTRY. INSIDE LEVER ALWAYS FREE EGRESS. DOOR CLOSER.

DOOR TYPE: J

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCKSET	ML2057 LC LWA	626	COR
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	CLOSER (WITH SPRING STOP)	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	DOOR TOP DRIP	346C	AL	PEM
1	EA	DOOR GASKETING	290/2891AV	AL	PEM
1	EA	DOOR BOTTOM SWEEP	345AV	AL	PEM
1	EA	THRESHOLD	2005AV	AL	PEM

LATCH OPERATED BY LEVER INSIDE, OR BY KEY OUTSIDE. OUTSIDE LEVER ALWAYS LOCKED. DOOR CLOSER.

DOOR TYPE: K (PAIR)

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	KEYED REMOVABLE MULLION	KR822	689	PRE
2	EA	PANIC HARDWARE	2101 LD	626	PRE
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
2	EA	CLOSER	4040XP EDA	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
2	EA	WALL STOP	WS406/407CVX	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

NO EXTERIOR TRIM. EXIT ONLY. INSIDE PUSH PADS PROVIDE FREE EGRESS AT ALL TIMES. DOOR CLOSER EACH LEAF.

DOOR TYPE: K (SGL)

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	FL2114 4914C	626	PRE

(EXIT ONLY AT STUDIOS)

1	EA	CLOSER	4040XP RW/PA (STOP ARM WHERE REQ'D)	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	SMOKE SEAL	S88 X LENGTH AS REQ'D	BLK	PEM

OUTSIDE LEVER TRIM ALWAYS OPERATES LATCH. NO CYLINDER. INSIDE PUSH PAD PROVIDES FREE EGRESS AT ALL TIMES. DOOR CLOSER.

DOOR TYPE: L

Qty		Description	Catalog Number	Finish	Mfr
2	EA	PUSH/PULL PANIC BAR	H-110-F	630	BLU
2	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
2	EA	THRESHOLD RAMP STRIKE	VERIFY PART NUMBER	630	BLU

DOORS TO BE UNLOCKED (DOGGED) MECHANICALLY DURING DAYTIME HOURS. LOCKED (UNDOGGED) AFTER HOURS. INTERIOR PUSH BARS PROVIDE FREE EGRESS AT ALL TIMES. FLOOR CLOSERS AND HINGES EACH LEAF BY GLASS DOOR SYSTEM MANUFACTURER.

DOOR TYPE: M

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCKSET	ML2057 LC LWA	626	COR
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	ELECTRIC STRIKE	6210 FSE	630	VON
1	EA	CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA	DOOR POSITION SWITCH	679-05	WHT	SCE
1	EA	MOTION SENSOR	SCANII	WHT	SCE
1	EA	POWER SUPPLY	PS902	LGR	SCE
1	EA	NOTE	CARD READER BY SECURITY	BLK	

OUTSIDE LEVER ALWAYS LOCKED. ENTRY BY WALL MOUNTED CARD READER, WHICH MOMENTARILY RELEASES ELECTRIC STRIKE, ALLOWING ENTRY. INSIDE LEVER ALWAYS FREE EGRESS. DOOR CLOSER.

DOOR TYPE: N

Qty		Description	Catalog Number	Finish	Mfr
4	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCKSET	ML2030 LWA	626	COR
1	EA	CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

LATCH OPERATED BY LEVER EITHER SIDE, UNLESS OUTSIDE LEVER IS LOCKED BY THUMBTURN INSIDE. DOOR CLOSER.

DOOR TYPE: O

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC FIRE EXIT HARDWARE	TS FL E2108 4900C FSE	626	PRE
1	EA	CYLINDER	ASSA TWIN MAX - VERIFY KWY	626	ASA
1	EA	CLOSER	4040XP EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	WALL MAGNET HOLD-OPEN	SEM7850	689	LCN
1	EA	SMOKE SEAL	S88 X LENGTH AS REQ'D	BLK	PEM
1	EA	DOOR POSITION SWITCH	679-05	WHT	SCE
1	EA	POWER SUPPLY	PS902 900-4RL	LGR	VON
1	EA	NOTE	CARD READER BY SECURITY	BLK	

DOOR HELD OPEN BY WALL MAGNET DURING DAYTIME HOURS. AFTER HOURS ENTRY BY WALL MOUNT CARD READER, WHICH MOMENTARILY UNLOCKS OUTSIDE LEVER TRIM, ALLOWING ENTRY. INSIDE PUSH PAD ALLOWS FREE EGRESS AT ALL TIMES. DOOR CLOSER.

END OF HARDWARE SECTION



Kansas State University Owner
 Office of Campus Planning & Facilities Management
 202 Dykstra Hall
 Manhattan, KS 66506
 p/ 785.532.5373

Ennead Architects Architect
 320 West 13th Street
 New York, New York 10014
 p/ 212.907.7171

BNIM Architect
 1735 Baltimore Avenue, Suite 300
 Kansas City, MO 64108
 p/ 816.783.1500

El Dorado Inc. Architect
 515 Avenida Cesar Chavez
 Kansas City, MO, 64108
 p/ 816.474.3838

Confluence Landscape Architect
 417 Delaware Street
 Kansas City, MO 64105
 p/ 816.531.7227

Walter P. Moore Structural
 920 Main Street #10
 Kansas City, MO 64105
 p/ 816.701.2100

Henderson Engineers Inc. MEP
 1619 Walnut St.
 Kansas City, MO 64108
 p/ 816.863.8700

BC Consultants Inc. Civil
 4600 Du Lac Place
 Manhattan, KS, 66503
 p/ 785.537.4488

FP&C Consultants Code
 3770 Broadway
 Kansas City, MO, 64111
 p/ 816.631.5377

SECURITY/HARDWARE LEGEND	
A	EXTERIOR DOOR (STOREFRONT) OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME
B	EXTERIOR DOOR - HM-EGRESS ONLY
C	EXTERIOR DOOR - STOREFRONT-EGRESS ONLY
D	GLASS STOREFRONT DOOR OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME (#2 DOORS TO ROOM, ONLY 1 IS CARD ACCESS)
E	OFFICE/CONF/AUD DOORS (WOOD) - MECHANICAL LOCK
F	SECURED MECHANICAL/IT ROOM - MECHANICAL LOCK
G	SECURED STORAGE OR TECHNOLOGY ROOM - MECHANICAL LOCK
H	NON-SECURED DOOR
I	INTERIOR - HOLLOW METAL DOORS OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME
J	EXTERIOR - HOLLOW METAL DOORS SECURE - MECHANICAL LOCK
K	INTERIOR EGRESS - WOOD
L	GLASS STOREFRONT DOOR OPEN WEEKDAY BUS HOURS - LOCKED OUTSIDE OF BUS HOURS - MECHANICAL LOCK
M	STAFF LOUNGE - CARD ACCESS
N	INTERNAL MECHANICAL LOCKING
O	FIRE DOOR - ON HOLD-OPEN WEEKDAY BUS HOURS- CARD READER OUTSIDE OF THIS TIME

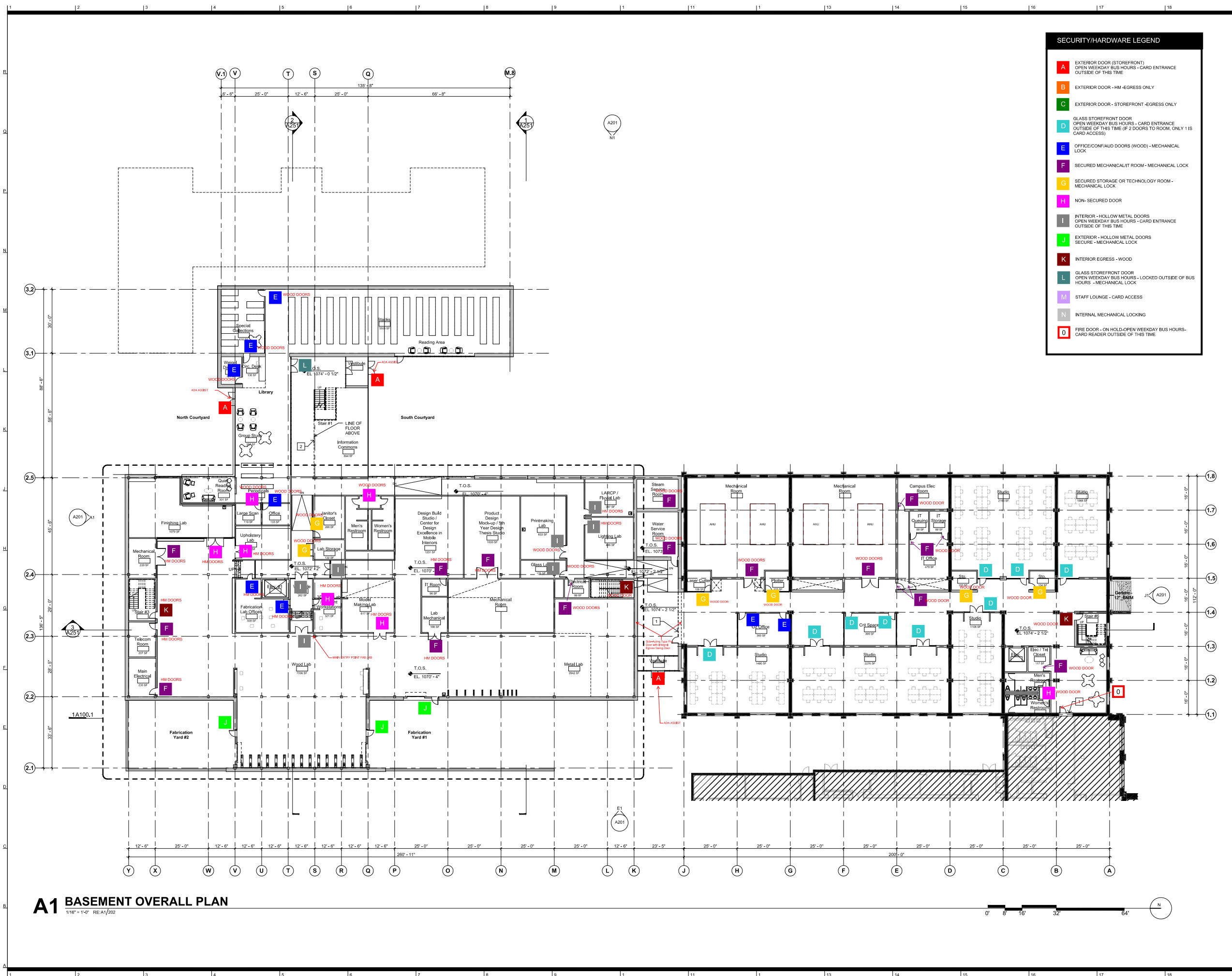
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 12.03.2014

BASEMENT SECURITY/HARDWARE

BNIM JOB NO: #14022	DRAWING NO:
EA JOB NO: #1014	



A1 BASEMENT OVERALL PLAN
 1/16" = 1'-0" RE: A1/202

**Kansas State University
Seaton Hall
Expansion/Renovation**

Manhattan, Kansas



Kansas State University Owner
Office of Campus Planning & Facilities Management
202 Dykstra Hall
Manhattan, KS 66506
p/ 785.532.3373

Ennead Architects Architect
320 West 13th Street
New York, New York 10014
p/ 212.907.7171

BNIM Architect
1735 Baltimore Avenue, Suite 300
Kansas City, MO 64108
p/ 816.783.1500

El Dorado Inc. Architect
310 Avenida Cesar Chavez
Kansas City, MO 64108
p/ 816.474.3638

Confuence Landscape Architect
417 Delaware Street
Kansas City, MO 64105
p/ 816.531.7227

Walter P. Moore Structural
920 Main Street #10
Kansas City, MO 64105
p/ 816.701.2100

Henderson Engineers Inc. MEP
1619 Walnut St.
Kansas City, MO 64108
p/ 816.863.8700

BC Consultants Inc. Civil
4800 Duane Place
Manhattan, KS 66503
p/ 785.537.4488

FP&C Consultants Code
3770 Broadway
Kansas City, MO, 64111
p/ 816.631.3377

SECURITY/HARDWARE LEGEND	
A	EXTERIOR DOOR (STOREFRONT) OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME
B	EXTERIOR DOOR - HM-EGRESS ONLY
C	EXTERIOR DOOR - STOREFRONT-EGRESS ONLY
D	GLASS STOREFRONT DOOR OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME (#2 DOORS TO ROOM, ONLY 1 IS CARD ACCESS)
E	OFFICE/CONFIDENTIAL DOORS (WOOD) - MECHANICAL LOCK
F	SECURED MECHANICAL IT ROOM - MECHANICAL LOCK
G	SECURED STORAGE OR TECHNOLOGY ROOM - MECHANICAL LOCK
H	NON-SECURED DOOR
I	INTERIOR - HOLLOW METAL DOORS OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME
J	EXTERIOR - HOLLOW METAL DOORS SECURE - MECHANICAL LOCK
K	INTERIOR EGRESS - WOOD
L	GLASS STOREFRONT DOOR OPEN WEEKDAY BUS HOURS - LOCKED OUTSIDE OF BUS HOURS - MECHANICAL LOCK
M	STAFF LOUNGE - CARD ACCESS
N	INTERNAL MECHANICAL LOCKING
O	FIRE DOOR - ON HOLLOW WEEKDAY BUS HOURS - CARD READER OUTSIDE OF THIS TIME

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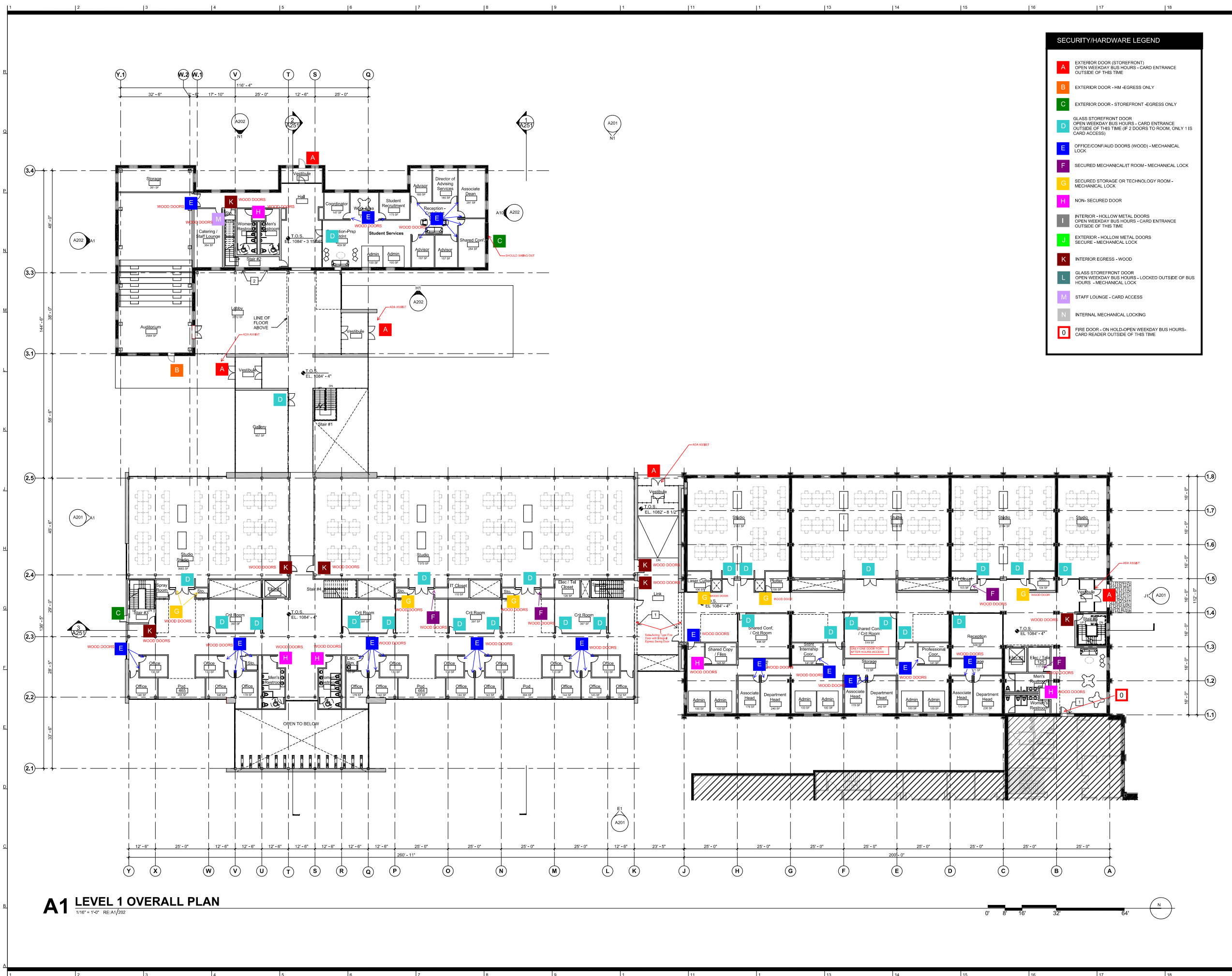
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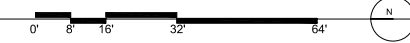
LEVEL 1 SECURITY/HARDWARE

BNIM JOB NO: #14022	DRAWING NO.:
EA JOB NO: #1414	

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A1 LEVEL 1 OVERALL PLAN
1/16" = 1'-0" RE:A1/202





Kansas State University Owner
 Office of Campus Planning & Facilities Management
 202 Dykstra Hall
 Manhattan, KS 66506
 p/ 785.532.5373

Ennead Architects Architect
 320 West 13th Street
 New York, New York 10014
 p/ 212.907.7171

BNIM Architect
 1735 Baltimore Avenue, Suite 300
 Kansas City, MO 64108
 p/ 816.783.1500

El Dorado Inc. Architect
 310 Avenida Cesar Chavez
 Kansas City, MO 64108
 p/ 816.474.3638

Confuence Landscape Architect
 417 Delaware Street
 Kansas City, MO 64105
 p/ 816.531.7227

Walter P. Moore Structural
 920 Main Street #10
 Kansas City, MO 64105
 p/ 816.701.2100

Henderson Engineers Inc. MEP
 1619 Walnut St.
 Kansas City, MO 64108
 p/ 816.863.8700

BC Consultants Inc. Civil
 4600 Du Lac Place
 Manhattan, KS 66503
 p/ 785.537.4488

FP&C Consultants Code
 3770 Broadway
 Kansas City, MO, 64111
 p/ 816.631.5377

SECURITY/HARDWARE LEGEND	
A	EXTERIOR DOOR (STOREFRONT) OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME
B	EXTERIOR DOOR - HI-EGRESS ONLY
C	EXTERIOR DOOR - STOREFRONT -EGRESS ONLY
D	GLASS STOREFRONT DOOR OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME (#2 DOORS TO ROOM, ONLY 1 IS CARD ACCESS)
E	OFFICE/CONF/AUD DOORS (WOOD) - MECHANICAL LOCK
F	SECURED MECHANICAL/IT ROOM - MECHANICAL LOCK
G	SECURED STORAGE OR TECHNOLOGY ROOM - MECHANICAL LOCK
H	NON-SECURED DOOR
I	INTERIOR - HOLLOW METAL DOORS OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME
J	EXTERIOR - HOLLOW METAL DOORS SECURE - MECHANICAL LOCK
K	INTERIOR EGRESS - WOOD
L	GLASS STOREFRONT DOOR OPEN WEEKDAY BUS HOURS - LOCKED OUTSIDE OF BUS HOURS - MECHANICAL LOCK
M	STAFF LOUNGE - CARD ACCESS
N	INTERNAL MECHANICAL LOCKING
O	FIRE DOOR - ON HOLLOW WEEKDAY BUS HOURS - CARD READER OUTSIDE OF THIS TIME

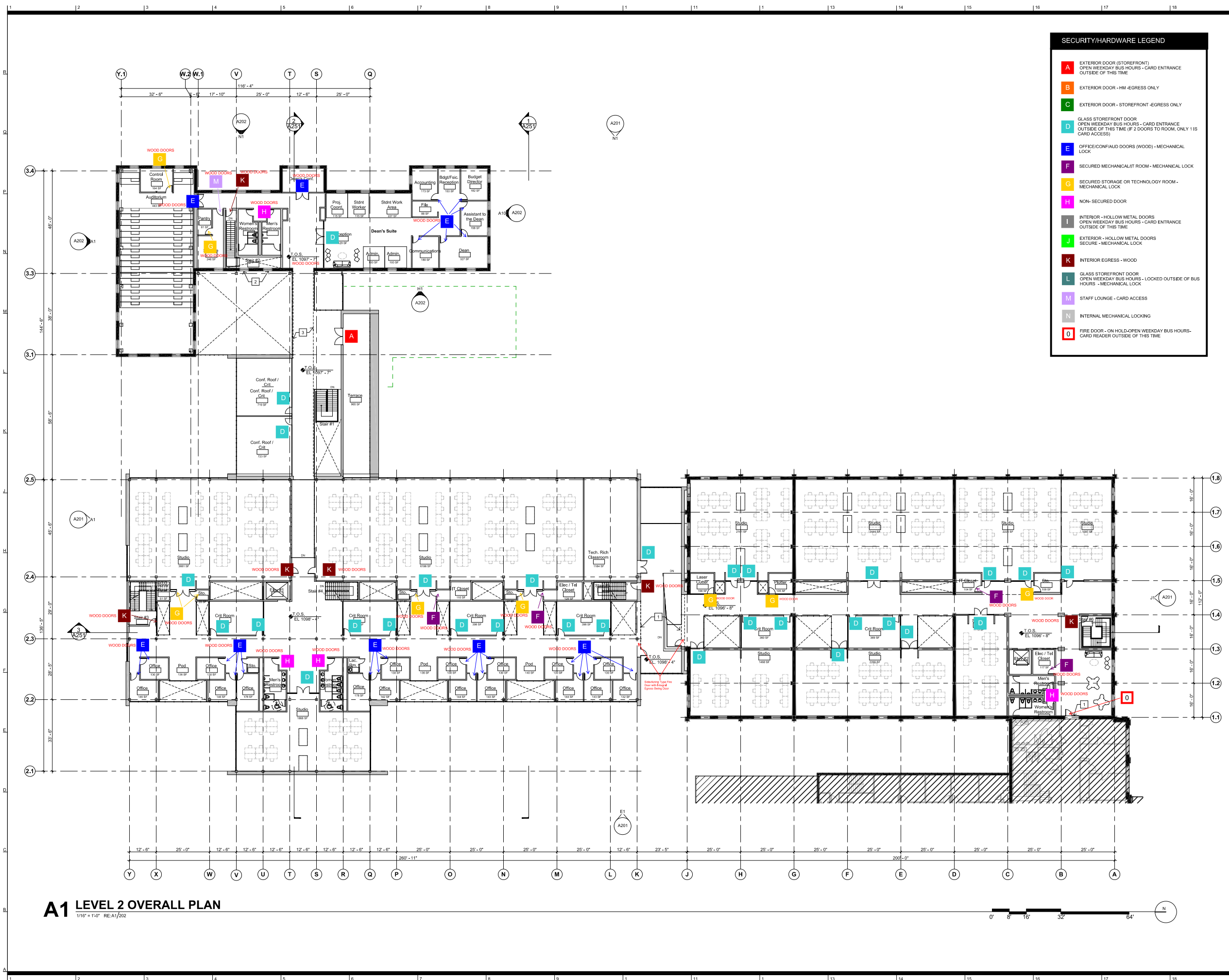
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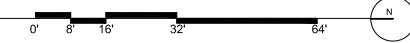
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LEVEL 2 SECURITY/HARDWARE

BNIM JOB NO: #14022	DRAWING NO.:
EA JOB NO: #1614	



A1 LEVEL 2 OVERALL PLAN
 1/16" = 1'-0" RE:A1/202



**Kansas State University
Seaton Hall
Expansion/Renovation**

Manhattan, Kansas



Kansas State University Owner
Office of Campus Planning & Facilities Management
202 Dykstra Hall
Manhattan, KS 66506
p/ 785.532.3373

Ennead Architects Architect
320 West 13th Street
New York, New York 10014
p/ 212.907.7171

BNIM Architect
1735 Baltimore Avenue, Suite 300
Kansas City, MO 64108
p/ 816.783.1500

El Dorado Inc. Architect
310 Avenida Cesar Chavez
Kansas City, MO 64108
p/ 816.474.3638

Confluence Landscape Architect
417 Delaware Street
Kansas City, MO 64105
p/ 816.531.7227

Walter P. Moore Structural
920 Main Street #10
Kansas City, MO 64105
p/ 816.701.2100

Henderson Engineers Inc. MEP
1619 Walnut St.
Kansas City, MO 64108
p/ 816.663.8700

BC Consultants Inc. Civil
4600 Du Lac Place
Manhattan, KS 66503
p/ 785.537.4488

FP&C Consultants Code
3770 Broadway
Kansas City, MO, 64111
p/ 816.451.3377

SECURITY/HARDWARE LEGEND	
A	EXTERIOR DOOR (STOREFRONT) OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME
B	EXTERIOR DOOR - HI-EGRESS ONLY
C	EXTERIOR DOOR - STOREFRONT -EGRESS ONLY
D	GLASS STOREFRONT DOOR OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME (IF 2 DOORS TO ROOM, ONLY 1 IS CARD ACCESS)
E	OFFICE/CONF/AUD DOORS (WOOD) - MECHANICAL LOCK
F	SECURED MECHANICAL/IT ROOM - MECHANICAL LOCK
G	SECURED STORAGE OR TECHNOLOGY ROOM - MECHANICAL LOCK
H	NON- SECURED DOOR
I	INTERIOR - HOLLOW METAL DOORS OPEN WEEKDAY BUS HOURS - CARD ENTRANCE OUTSIDE OF THIS TIME
J	EXTERIOR - HOLLOW METAL DOORS SECURE - MECHANICAL LOCK
K	INTERIOR EGRESS - WOOD
L	GLASS STOREFRONT DOOR OPEN WEEKDAY BUS HOURS - LOCKED OUTSIDE OF BUS HOURS - MECHANICAL LOCK
M	STAFF LOUNGE - CARD ACCESS
N	INTERNAL MECHANICAL LOCKING
O	FIRE DOOR - ON HOLLOW WEEKDAY BUS HOURS - CARD READER OUTSIDE OF THIS TIME

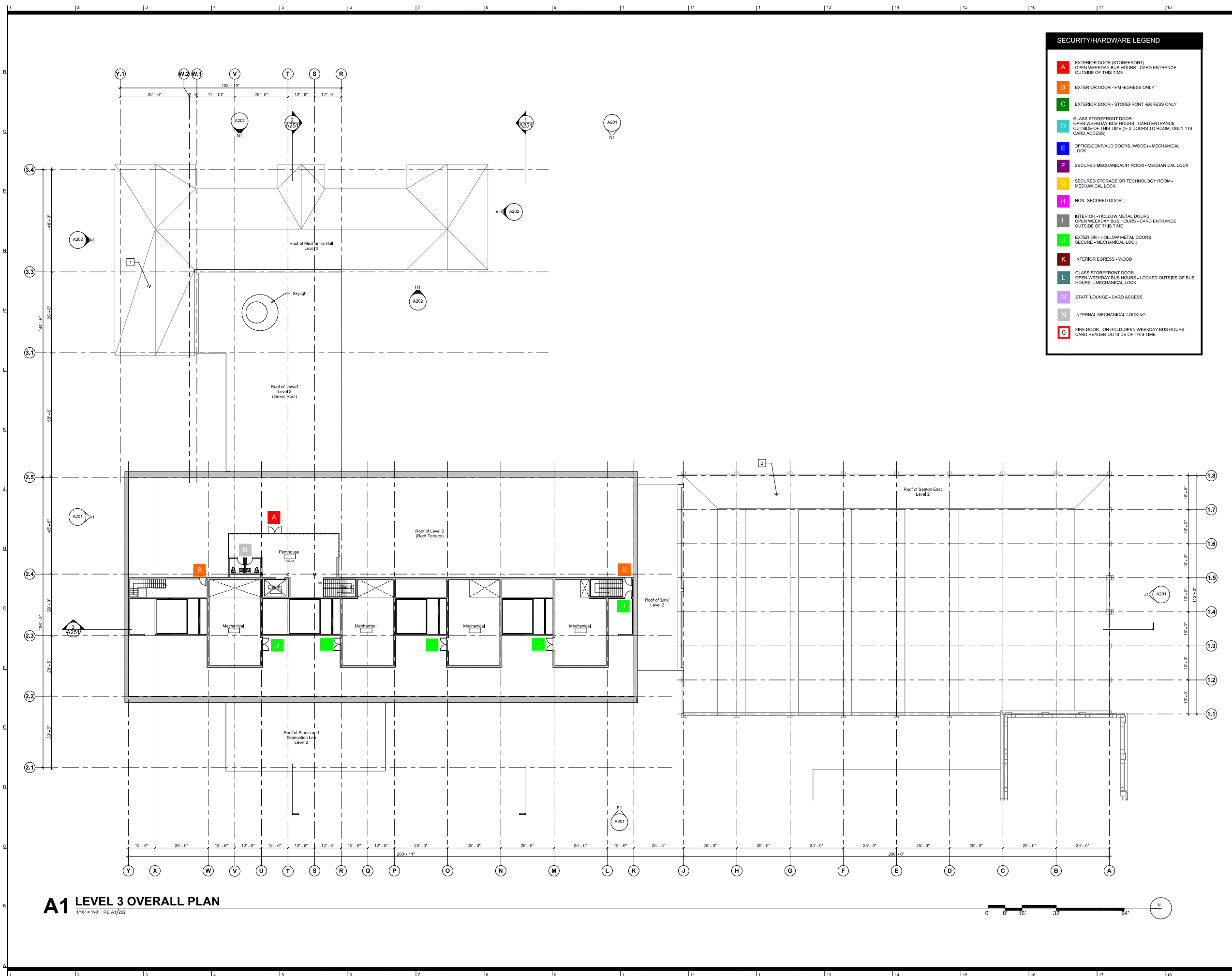
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LEVEL 3 SECURITY/HARDWARE

BNIM JOB NO: #14032	DRAWING NO:
EA JOB NO: #1014	



A1 LEVEL 3 OVERALL PLAN
1/16" = 1'-0" RE: A1/202

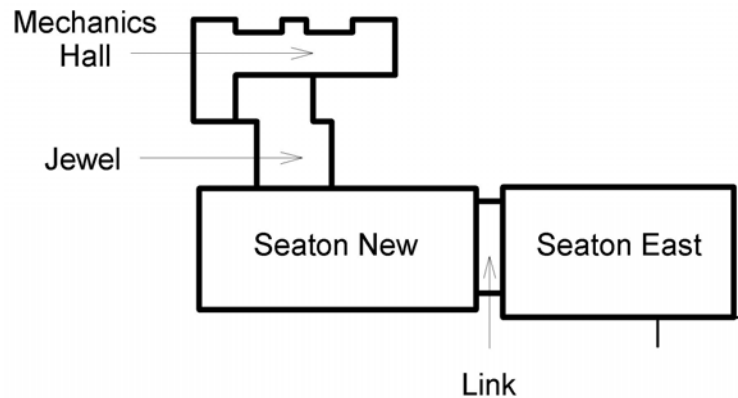
14.0 Vertical Circulation Narrative

The following is the vertical circulation narrative for the project.

Vertical Circulation Systems

Interior vertical circulation for the building will be provided in five distinct areas, Mechanics Hall, The Jewel, Seaton New, The Link, and Seaton East. Mechanics Hall will have one interior enclosed steel framed and concrete pan stair that will discharge into level one of Mechanics Hall. The Jewel will have one interior fully open feature stair serving the three story space. The feature stair will be of plate steel treads and risers appearing to be a continuous bent steel plate with glass guard rail. The finish of this stair will be a continuous high level finish common to the lobby bridging the interior to exterior and centrally connecting all levels within the Jewel. Seaton New will have three stairs and one MRL Elevator, two enclosed steel and concrete pan stairs at the north and south ends extending from the basement to the roof and one central semi open feature stair extending to the roof and ending at level 1. The lower fab labs will have multiple level changes within the space accommodated by several cast in place concrete ramps and a few cast in place concrete steps. The Link is similar to the Fab Lab with a few cast in place concrete ramps and steps. Seaton East will have one interior steel and concrete pan stair in the location of the existing stair and one new MRL Elevator. The existing stair will be demolished and size reduced. In addition to stairs and ramps there will be two elevators, one in Seaton New from basement to roof level and one in Seaton East from basement to level 2.

Exterior site vertical circulation will be accomplished with cast in place concrete stairs and ramps. Refer to landscape narrative for further detail. Exterior building vertical circulation will be accomplished with steel roof ladders in several locations; Seaton New to Jewel, Seaton New to Link, and Seaton East to Link, providing access to all roof areas, primarily for maintenance.



Stairs - Interior

Interior Access/Egress Stairs:

Mechanics Hall

The one central interior enclosed stair and enclosure are part of the building exit egress system and will be enclosed with two hour rated construction and ninety minute openings. The stair is L-Shaped and spans between level 1 and 2 of the existing mechanics hall. The second floor area of mechanics hall will be demoed and reframed for this stair. The stairs will be constructed of structural steel stringers and shapes

finished with high performance paint coatings typical of a steel and concrete pan stair. The stair tread will be concrete over steel pan with steel risers. Landings will be poured in place concrete slabs over metal deck. Stair guardrails and handrails will be constructed of round steel pipe and tubes finished with high performance paint coatings. The guardrail infill material will be vertical round bar stock steel 4" o.c. with high performance coatings.

The "Jewel"

The one interior open feature stair begins at the basement level in the Information commons and extends up to levels 1 and 2. The stair is a part of the exit egress system for level 1. The stairs are switchback stairs. The stairs will be constructed of structural steel plate stringers and shapes as a cantilevered stair without column support and with additional support from above as a suspended stair with steel rods and finished with high performance paint coatings. The treads, risers, and landings are constructed of continuous ½" steel plate finished with high performance paint coatings. Treads and landings are covered in 1" thick hard end grain wood, basis of design Oregon Lumber Doug Fir Fog <http://www.oregonlumber.com/end-grain-and-ply-floor-and-wall/worthwood-solid-end-grain-unfinished> Stair handrail will be constructed of stainless steel round pipe. Stair guardrail will be ½" clear tempered glass panel meeting loading requirements in stainless steel clad dry set pressure plate base shoe. Suggested manufacturers, Livers Bronze or Blumcraft of Pittsburg. Refer to case study images below for similar design direction:





At level 2 a fire curtain running east to west from ceiling above to finish floor of level 2 separates the stair in event of fire, basis of design Smoke Guard Model 2500 Fire + Smoke <http://smokeguard.com/products/m2500-smoke-fire/>

Seaton New

The two interior north and south enclosed stairs and enclosures are part of the building exit egress system and will be enclosed with two hour rated construction and ninety minute openings. The stairs are switchback stairs. The North stair will exit at grade on level 1. Both north and south stair extend from roof level to basement. The stairs will be constructed of structural steel stringers and shapes finished with high performance paint coatings typical of a steel and concrete pan stair. The stair tread will be concrete over steel pan with steel risers. Landings will be poured in place concrete slabs over metal deck. Stair guardrails and handrails will be constructed of round steel pipe and tubes finished with high performance paint coatings. The guardrail infill material will be vertical round bar stock steel 4" o.c. with high performance coatings.

The one central interior semi open feature stair begins at level 1 and extends up to level 2 and the roof level. The stair is not a part of the exit egress system. The stairs are switchback stairs. The stairs will be constructed of structural steel plate stringers and shapes as a cantilevered stair without column support and finished with high performance paint coatings. The treads, risers, and landings are constructed of continuous ½" steel plate finished with high performance paint coatings. Treads and landings are covered in 1" thick hard end grain wood, basis of design Oregon Lumber Doug Fir Fog <http://www.oregonlumber.com/end-grain-and-ply-floor-and-wall/worthwood-solid-end-grain-unfinished> Stair handrail will be constructed of steel round pipe finished with high performance paint coatings. Stair guardrail will be constructed of 4" wide and ½" thick top

plate and bottom plate and ½" round bar stock vertical pickets at 4" o.c. Attached bottom plate to finish floor.

Fab lab

The basement Fab Labs has several vertical floor height changes. Please refer to Fab lab drawings for floor elevations. Navigating those varied floor elevations are several poured in place concrete stairs and ramps. There are ramps along the east edge extending from the Information Commons to the Link and from the central circulation headed south within the Fab Lab. Stairs and ramps shall have steel pipe handrails on both sides with vertical supports core drilled and grouted into slab finished with high performance paint coatings.

Link

At level 1 at the east entry into the link is a series of cast in place concrete stairs, ramps, and benches in the form of a small amphitheater and gathering space. This space is thought to be similar in nature to the existing 2 story amphitheater space currently in Seaton East. Floor finish on both ramps and stair treads will be 1" thick hard end grain wood, basis of design Oregon Lumber Doug Fir Fog <http://www.oregonlumber.com/end-grain-and-ply-floor-and-wall/worthwood-solid-end-grain-unfinished>. Stairs and ramps shall have steel pipe handrails on both sides with vertical supports core drilled and grouted into slab finished with high performance paint coatings.

At level 2 centered in the Link along the south edge entering the Seaton East is a cast in place concrete stair and ramp. This stair and ramp occurs at a 2 hour fire wall. Coiling overhead fire doors create continuous separation during a fire event. The stair treads and ramp are covered in 1" thick hard end grain wood, basis of design Oregon Lumber Doug Fir Fog <http://www.oregonlumber.com/end-grain-and-ply-floor-and-wall/worthwood-solid-end-grain-unfinished>. Risers are exposed concrete with smooth finish. Stairs and ramps shall have steel pipe handrails on both sides with vertical supports core drilled and grouted into slab finished with high performance paint coatings.

Seaton East

The existing stair centrally located on the south exterior wall will be demolished and a new steel and concrete pan stair will be installed in its place. The stairs will be constructed of structural steel stringers and shapes finished with high performance paint coatings typical of a steel and concrete pan stair. The stair tread will be concrete over steel pan with steel risers. Landings will be poured in place concrete slabs over metal deck. Stair guardrails and handrails will be constructed of round steel pipe and tubes finished with high performance paint coatings. The guardrail infill material will be vertical round bar stock steel 4" o.c. with high performance coatings.

Stairs – Exterior

Exterior vertical circulation will be accomplished with cast in place concrete stairs and ramps. Refer to landscape narrative and drawings for further detail. Existing stairs at the east main entry to Mechanics Hall and south main entry to Seaton East are existing to remain.

Elevators

The building will be equipped with two passenger elevators to providing vertical access to all levels of the building. Both of the elevators will be electric traction MRL elevators. The elevators will be designed in accordance with 2010 ASME A17.1 Safety Code for Elevators and Escalators. Both elevators will be ADA compliant. The type of elevators selected will not require machine rooms or small control room, but will have integrated controls and control room closet a top floors. Elevator entry and cab finishes are to be brushed stainless steel and 1" thick end grain wood flooring.

Seaton New:

- 4000lbs
- 10' cab height – note: 8' & 9' cab heights are available. The clear overhead is reduced proportionate to the cab height selected.
- 4 landings – three (3) front, one (1) rear
- Integrated Control Solution – no separate control room required
- Control room closet at top floor.

Seaton East - Existing Building:

- 3500lbs
- 8' cab height due to limited overhead condition – once the available overhead is determined taller cab height may be considered.
- 3 landings – front opening only
- Integrated Control Solution – no separate control room required

15.0 Program Tabulation

The following is the complete program tabulation for the project.

Kansas State University - Seaton Hall Renovation and Expansion | Building Program

December 3, 2014

		12.03.14 Schematic Design			
		As Drawn			
		Qty.	Space Factor	ASF Total	
APDesign ADMINISTRATION					8,472
1.0	Dean's Administration	Bldg / Floor		4,666	Notes
	Dean's Reception Area	M.H. / 2	1 429	429	Seating for 4 and display
	Administrative Assistant to the Dean	M.H. / 2	1 100	100	Office Landscape
	Student Worker	M.H. / 2	1 115	115	Should be adjacent to Admin Asst. to the Dean
	Assistant to the Dean	M.H. / 2	1 198	198	Private Office
	Project Coordinator	M.H. / 2	1 115	115	Office Landscape
	Dean - APDesign	M.H. / 2	1 327	327	
	Associate Dean		1 0	0	
	Dean's Small Conference Room	M.H. / 2	1 211	211	4-6 people x 25sf per person
	Shared Workroom	M.H. / 2	0 225	0	3 student workers with desks for each.
	File/Records Room/Storage/Mail Room	M.H. / 2	1 88	88	
	Dean's Copy/Fax/Scanner/Pantry	M.H. / 2	1 81	81	Adjacent to Auditorium
	Dean's Coat Closet		0 15	0	
	Dean's Restroom		0 65	0	Shared Restroom in M.H.
	Dean's Large Conference Room	J / 2	1 719	719	Located in the Jewel. Also used as Crit space. 25 people x 25 sf per person
	Deans Storage	M.H. / 2	1 246	246	This replaces the existing third floor storage areas
	Budget/Fiscal Officer	M.H. / 2	1 182	182	Should be located proximate to Dean's Suite
	Accountant	M.H. / 2	1 173	173	
	Student Workstations	M.H. / 2	1 227	227	3 student workers with desks for each
	Budget/Fiscal Reception Area	M.H. / 2	1 153	153	Seating for 2
	Communications and Events Coordinator	M.H. / 2	1 180	180	Office includes space for part time student
	APDesign Merchandise Closet		1 80	80	Currently not drawn. To be identified in DD. To be Dean's Suites
	Information Systems Manager		- -	-	
	Web Database Developer		- -	-	
	Events Technologist		- -	-	
	Future IT Staff		- -	-	
	Shared IT Workroom/Office Suite	S.E. / B	1 479	479	Includes 3 desks for existing staff, 1 future staff and student worker (scanning)
	IT Queuing	S.E. / B	1 88	88	Dutch door or secure svc counter preferred
	IT Storage	S.E. / B	1 88	88	
	Faculty / Staff Break Room	M.H. / 1	1 337	337	Shared with Catering
	Faculty Mailboxes	S.E. / 1	1 50	50	Currently not drawn. To be identified in DD. To be part of Reception at Departmental Offices

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12.03.14 Schematic Design						
As Drawn						
		Qty.	Space Factor	ASF Total		
2.0	Oz			360	Notes	
	Office (2 student editors)	S.E. / B	1	360	360	Central Location (connection to younger students)
	Reception Area/ Workspace	S.E. / B	1	0	0	Included in Oz Office. Flexible work area for production and sales (included in Office)
	Merchandise Storage	S.E. / B	1	0	0	Included in Oz Office
3.0	Offices of Student Services			3,446	Notes	
	Reception Area - Prospective Students	M.H. / 1	1	409	409	Provide departmental pin up space in the corridor outside of the Offices
	Associate Dean	M.H. / 1	1	291	291	
	Administrative Assistant	M.H. / 1	1	100	100	
	Director of Student Recruitment	M.H. / 1	1	175	175	
	Dean's/Student Services Meeting Room	J / 2	1	717	717	25 people x 25 sf per person
	Reception Area - Current Students	M.H. / 1	1	320	320	Provide departmental pin up space in the corridor outside of the Offices
	Director of Academic Services and Academic Advisor	M.H. / 1	1	185	185	Director of Advising Services
	Coordinator	M.H. / 1	1	147	147	
	Professional Development Staff Coordinator	S.E. / 1	1	141	141	For all Depts. Located in Dept. Suites
	Shared Office	M.H. / 1	1	284	284	Shared Conference Room
	Office Storage	M.H. / 1	1	62	62	Under Stair #2
	Academic Advisor	M.H. / 1	3	158	474	Relocated from Departments
	Student Internship Coordinator	S.E. / 1	1	141	141	For all Depts. Located in Dept. Suites
						Space for 3-4 student workers Includes "secret closet" storage
ENVIRONMENTAL DESIGN STUDIES				0		
4.0	Studios & Departmental Admin			0	Notes	
	1st Year		0	1,200	0	Relocated to APDesign SHARED SPACE
	Departmental Accreditation Archive		N.I.C.	200	0	Not in contract
	Dedicated Clean-up Space		0	80	0	Relocated to APDesign SHARED SPACE

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		12.03.14 Schematic Design			
		As Drawn			
		Qty.	Space Factor	ASF Total	
ARCHITECTURE					904
5.0	Studios				Notes
	Architecture Studios				
	Addition	0	1,350	0	Relocated to APDesign SHARED SPACE
	Renovation	0	1,350	0	Relocated to APDesign SHARED SPACE
	Renovation	0	1,200	0	Relocated to APDesign SHARED SPACE
	Master of Science in Architecture				
	Addition	0	1,350	0	Relocated to APDesign SHARED SPACE
	Dedicated Clean-up Space	0	80	0	Relocated to APDesign SHARED SPACE
6.0	Department Administration				Notes
	Department Head	1	240	240	
	Associate Head	1	178	178	
	Academic Advisor	0	175	0	Relocated to Student Services
	Administrative Assistant	1	100	100	
	Office Manager	1	100	100	
	Reception Area	1	167	167	Central Reception (500 sf) in S.E. / 1. Shared between 3 Dpts
	Copy/Fax/Files/Supplies	1	48	48	Shared Copy / Files (145sf) in S.E. / 1. Shared between 3 Depts
	Departmental Conference Room - Arch	0	300	0	2 shared Conf. Rms (496sf + 519sf) in S.E. / 1 in SHARED SPACE
	Departmental Office Storage	1	71	71	
	Departmental Accreditation Archive	N.I.C.	250	0	Not in contract
7.0	Faculty				Notes
	Tenure Track Faculty T/TT				
	Addition	0	150	0	Relocated to APDesign SHARED SPACE
	Renovation	N.I.C.	175	0	Not in contract
	Term Faculty				
	Professor				
	Associate Professor				
	Assistant Professor				
	Visiting Assistant Professor				
	Instructor				
	Addition	0	150	0	
	Renovation	N.I.C.	175	0	Not in contract

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		12.03.14 Schematic Design			
		As Drawn			
		Qty.	Space Factor	ASF Total	
IAPD					907
8.0	Studios				Notes
	IAPD Studios				
	Addition	0	1,350	0	Relocated to APDesign SHARED SPACE
	Renovation	0	1,350	0	Relocated to APDesign SHARED SPACE
	Renovation	0	1,200	0	Relocated to APDesign SHARED SPACE
	MFA / MS in Interior Architecture				
	Dedicated Clean-up Space	0	80	0	Relocated to APDesign SHARED SPACE
	Lighting Lab	0	550	0	Relocated to Fab Lab
	Product Design Studio - Mockups	0	1,000	0	Relocated to Fab Lab
					Must accommodate 30 students Space for full scale mockups
9.0	Department Administration				Notes
	Department Head	1	242	242	
	Associate Head	1	178	178	Office does not need to be part of Departmental Suite
	Academic Advisor	0	175	0	Relocated to Student Services
	Administrative Assistant	2	100	200	
	Reception Area	1	167	167	Central Reception (500 sf) in S.E. / 1. Shared between 3 Dpts
	Copy/Fax/Files/Supplies	1	48	48	Shared Copy / Files (145sf) in S.E. / 1. Shared between 3 Depts
	Departmental Conference Room - IAPD	0	300	0	2 shared Conf. Rms (496sf + 519sf) in S.E. / 1 in SHARED SPACE
	Departmental Office Storage	1	72	72	
	Departmental Accreditation Archive	N.I.C.	250	0	Not in contract
10.0	Faculty				Notes
	Tenure Track Faculty T/TT				
	Addition	0	150	0	Relocated to APDesign SHARED SPACE
	Renovation	N.I.C.	175	0	Not in contract
	Term Faculty				
	Professor				
	Associate Professor				
	Assistant Professor				
	Visiting Assistant Professor				
	Instructor				
	Addition	0	150	0	
	Renovation	N.I.C.	175	0	Not in contract

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		12.03.14 Schematic Design		
		As Drawn		
		Qty.	Space Factor	ASF Total
LA / RCP		995		
11.0	Studio	0	0	Notes
	MLA:			
	NB (5 year masters) (80/100 students)			
	Addition	0	1,350	0 Relocated to APDesign SHARED SPACE
	Renovation	0	1,350	0 Relocated to APDesign SHARED SPACE
	Renovation	0	1,200	0 Relocated to APDesign SHARED SPACE
	PB (15/30 Students)	0	1,350	0 Relocated to APDesign SHARED SPACE
	MRCP:			
	2nd Yr (15 students)	0	720	0 Relocated to APDesign SHARED SPACE
	NB / PB (45 students)			
	Addition	0	1,350	0 Relocated to APDesign SHARED SPACE
	Renovation	0	1,350	0 Not in contract
	Renovation	0	1,200	0 Relocated to APDesign SHARED SPACE
	Dedicated Clean-up Space	0	80	0 Relocated to APDesign SHARED SPACE
	Community Development Program Outreach	0	50	0 Relocated to APDesign SHARED SPACE
				18 total desk = 16 students + 2 extra desks (40 sf per person). Existing studio houses all PB/NB MRCP students.
				Display
12.0	Department Administration	995		Notes
	Department Head	S.E. / 1	1 236	236
	Associate Head	S.E. / 1	1 173	173
	Academic Advisor	M.H. / 1	0 175	0 Relocated to Student Services
	Administrative Assistant/Office Manager	S.E. / 1	2 100	200
	Student Assistant		1 100	100
	Project Coordinator	S.E. / 1	0 150	0 Currently not drawn. To be identified in DD.
	Reception Area	S.E. / 1	1 167	167 Professional Coordinator. Shown in Student Services.
	Copy/Fax/Files/Supplies	S.E. / 1	1 48	48 Central Reception (500 sf) in S.E. / 1. Shared between 3 Dpts
	Departmental Conference Room - LARCP	S.E. / 1	0 300	0 Shared Copy / Files (145sf) in S.E. / 1. Shared between 3 Depts
	Departmental Office Storage	S.E. / 1	1 71	71 2 shared Conf. Rms (496sf + 519sf) in S.E. / 1 in SHARED SPACE
	Departmental Accreditation Archive	S.E. / 1	N.I.C. 250	0 Not in contract

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12.03.14 Schematic Design		
As Drawn		
Qty.	Space Factor	ASF Total

18.0	Classrooms		1,193	Notes
	40 Seat Flat Floor Flexible Classroom		N.I.C. 1,000 0	40 people x 25 sf per person.
	80 Seat Flat Floor Flexible Classroom		N.I.C. 2,000 0	80 people x 25 sf per person.
	60 Station Technology Rich Classroom		1 1,193 1,193	60 people x 25 sf per person
	Flex studio (Seaton 001)		N.I.C. 1,350 0	18 total desk = 16 students + 2 extra desks (75 sf per person)
	Distance Education Monitoring/Control		N.I.C. 150 0	2 people x 75 sf per person
	Online Content Recording Facilities		N.I.C. 150 0	MFA Program, could be shared with Media Studio
	Media Studio		N.I.C. 450 0	Sound stage, immersive environment, heliodon storage

19.0	Crit		4,488	Notes
	Crit (250)			All crit spaces should have full compliment of AV equipment for presentations and remote visualization
	Crit (420)	S.N./1&2, S.E./B,2	8 398 3,180	20 people x 20 sf per person
	Crit (600)	S.E. / 1	0 600 0	Shared with Dept. Conf. Rm. 30 people x 20 sf per person
	Crit (800)	J / 2	1 723 723	Shared with Conf. Rm. 40 people x 20 sf per person
	Crit (1000)			Collocated with Chang Gallery
	Crit Storage	S.N./1&2, S.E./B,1,2	10 59 585	

20.0	Fabrication Labs		18,729	Notes
	Metal - Welding		0 0 0	Originally 600 s.f., space re-allocated into "Metal Lab" See Existing Equipment Matrix for additional informaiton.
	Metal - Machining		0 0 0	Originally 900 s.f., space re-allocated into "Metal Lab" See Existing Equipment Matrix for additional informaiton.
	Metal - Storage		0 0 0	Originally 500 s.f., space re-allocated into "Metal Lab" See Existing Equipment Matrix for additional informaiton.
	Metal - Lab	S.N. / B	1 3,925 3,925	All spaces above contained within contiguous this line item.
	CNC Router/Digital Fabrication		0 0 0	Originally 1,500 s.f., space re-allocated into "Wood Lab" See Existing Equipment Matrix for additional informaiton.
	Digital Fabrication Control Room		0 0 0	Originally 100 s.f., space re-allocated into "Wood Lab" See Existing Equipment Matrix for additional informaiton.
	Fabrication - Shared / IAPD Woodshop		0 0 0	Originally 2,700 s.f., space re-allocated into "Wood Lab" See Existing Equipment Matrix for additional informaiton.
	Wood Storage - Shared / IAPD Woodshop		0 0 0	Originally 700 s.f., space re-allocated into "Wood Lab" See Existing Equipment Matrix for additional informaiton.
	Thermoformer		0 0 0	Originally not allocated in Final Concept program. See Existing Equipment Matrix for additional informaiton.
	Fabrication Lab Storage		0 0 0	Originally 300 s.f., space re-allocated into "Wood Lab" See Existing Equipment Matrix for additional informaiton.
	Wood - Lab	S.N. / B	1 7,022 7,022	All spaces above contained within contiguous this line item.
	Model Making	S.N. / B	1 617 617	
	Glue / Display / Vac. Form		0 0 0	Originally 700 s.f., space re-allocated into "Finishing Lab" See Existing Equipment Matrix for additional informaiton.
	Finishing Lab/Spray Booths		0 0 0	Originally 1000 s.f., space re-allocated into "Finishing Lab" See Existing Equipment Matrix for additional informaiton.
	Finishing - Lab	S.N. / B	1 1,087 1,087	All spaces above contained within contiguous this line item.
	Upholstery - Lab	S.N. / B	1 394 394	
	Professor (IAPD)		1 0 0	Originally 246 s.f. as existing condition, space re-allocated into "Fabrication Lab Offices" See Existing Equipment Matrix for additional informaiton.
	Fabrication Lab Manager		1 0 0	Originally 150 s.f., space re-allocated into "Fabrication Lab Offices" See Existing Equipment Matrix for additional informaiton.

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		12.03.14 Schematic Design			
		As Drawn			
		Qty.	Space Factor	ASF Total	
Collaborative Office / Workspace		1	0	0	Originally 450 s.f., space re-allocated into "Fabrication Lab Offices" See Existing Equipment Matrix for additional information.
Fabrication Lab Library		1	0	0	Originally 80 s.f., space re-allocated into "Fabrication Lab Offices" See Existing Equipment Matrix for additional information.
Fabrication Lab - Offices	S.N. / B	1	508	508	
Laser Club / Cutting	S.E. / B	1	636	636	Originally included 3D Print Lab. Space has been re-allocated to "3D Print Lab / Student Workstation". See Existing Equipment Matrix for additional information.
Plot Club		0	0	0	Originally 500 s.f., space re-allocated into "Plot Club / Storage" Located on all floors of Seaton East
Plot Club Storage		0	0	0	Originally 200 s.f., space re-allocated into "Plot Club / Storage" Included in Plot Club
Plot Club / Storage	S.E. / B,1,2	3	105	315	All spaces above contained within contiguous this line item.
Center for Design Excellence in Mobile Interiors		0	0	0	Originally 2,000 s.f., space re-allocated into "Design Build Studio / Center for Design Excellence" 2,000 with Aircraft / 1,050 without Aircraft
Design-Build Fabrication Studio		0	0	0	Originally 1,500 s.f., space re-allocated into "Design Build Studio / Center for Design Excellence"
Design Build / Center for Design Excellence	S.N. / B	1	1,231	1,231	All spaces above contained within contiguous this line item.
5th Year Design Thesis Studio / Product Design	S.N. / B	1	1,000	1,000	Originally 800 s.f., space combined with "Product Design Mock-Up".
Printmaking Lab	S.N. / B	1	633	633	Originally 400 s.f., and previously called "Printmaking Shop". See Existing Equipment Matrix for additional information.
Glass Lab	S.N. / B	1	176	176	Originally 150 s.f., and previously called "Glass Studio". See Existing Equipment Matrix for additional information. 100 kiln. Work area shared with print making.
Fabrication - Lab Storage	S.N. / B	1	133	133	Originally 150 s.f., space combined with "Mobile Heliodon". Stored with other Fabrication Lab equipment.
Fabrication - Lab Mechanical	S.N. / B	1	198	198	Originally part of "College Wood Shop" in existing Seaton. See Existing Equipment Matrix for additional information. Contains "primary air compressor" and "vacuum pump" for CNC.
LARCP / Fluvial Lab		1	408	408	Storage for surveying and fluvial equipment
Fluvial Trailer Storage		0	0	0	No interior space allocated. To be stored in "Fabrication Yard #1".
Interdisciplinary Material Library		0	0	0	Originally allocated in IAPD.
Lighting Lab	S.N. / B	1	446	446	Relocated from IAPD. Must accommodate 30 students
Exterior Fabrication Area	S.N. / B	0	0	0	No interior space allocated. Not included in ASF.

21.0	Research Based Centers			0	Notes	
	Mlab/Fluvial Geomorphic Survey Equip/Entrepreneurship Programs		0	1,200	0	Relocated to APDesign SHARED SPACE 18 total desk = 16 students + 2 extra desks (75 sf per person) Space designed as research incubator, could also support future studio section or provide flex space for design/build studio

22.0	Building Support Space			2,034	Notes	
	Server Room (IT Rooms)	S.N.&S.E. / B, 1, 2	5	105	523	Located throughout
	Elec/Tel Rooms	S.N.&S.E. / B, 1, 2	8	143	1,143	Located throughout
	Main Recycling Storage (LEED Req)					Currently not drawn.
	Lactation Rooms	S.N. / 1&2	2	35	70	
	Janitor's Closet	S.N. / B	1	298	298	

12.03.14 Schematic Design		
As Drawn		
Qty.	Space Factor	ASF Total

LIBRARY		5,880
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24.0	Weigel Library		5,880	Notes
	Stacks	J / B	1 3,509 3,509	Ideal adjacencies are Computer Lab and lounge seating/commons
	Periodicals	J / B	1 531 531	
	Quiet Study Area	J / B	1 306 306	6 people x 25 sf per person
	Group Study Area	J / B	1 350 350	3 worktables for groups of 4, locate separate from quiet study area
	Computer/Scanner Workstations	J / B	1 119 119	Could be located in adjacent computer lab
	Scientific Lab/3d Printing	S.N. / B	0 150 0	In Fab Lab Collocated with CNC in Fabrication Lab
	Exhibit/Display	J / B	1 50 50	
	Circulation Desk	J / B	1 146 146	Locked personal storage closet for librarian and staff sitting in open plan.
	Staff Workroom	J / B	1 126 126	Weigel Director Break room with kitchenette and worktable
	Shared Staff Office	J / B	1 133 133	
	Special Collections	J / B	1 610 610	New Special Collections double the size of existing.
	Library Restrooms	J / B	0 65 0	Adjacent to Information Commons Unisex HC accessible restrooms
	Secure Reading Garden	J / B	1 400 0	Exterior Space

UNIVERSITY ASSETS		0
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25.0	Instructional Space		0	Notes
	Seaton 063			Existing room NOT to be renovated if 120 seat College classroom provided (see Auditorium notes)
	40 Seat Flat Floor Flexible Classroom		N.I.C. 1,000 0	Exist. rooms to be demolished and replaced. 40 people x 25 sf per person

TOTAL ASF		114,036
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Qty.	Space Factor	ASF Total
As Drawn		
12.03.14 Schematic Design		

16.0 Project Schedule

The following is the complete design schedule for the project.

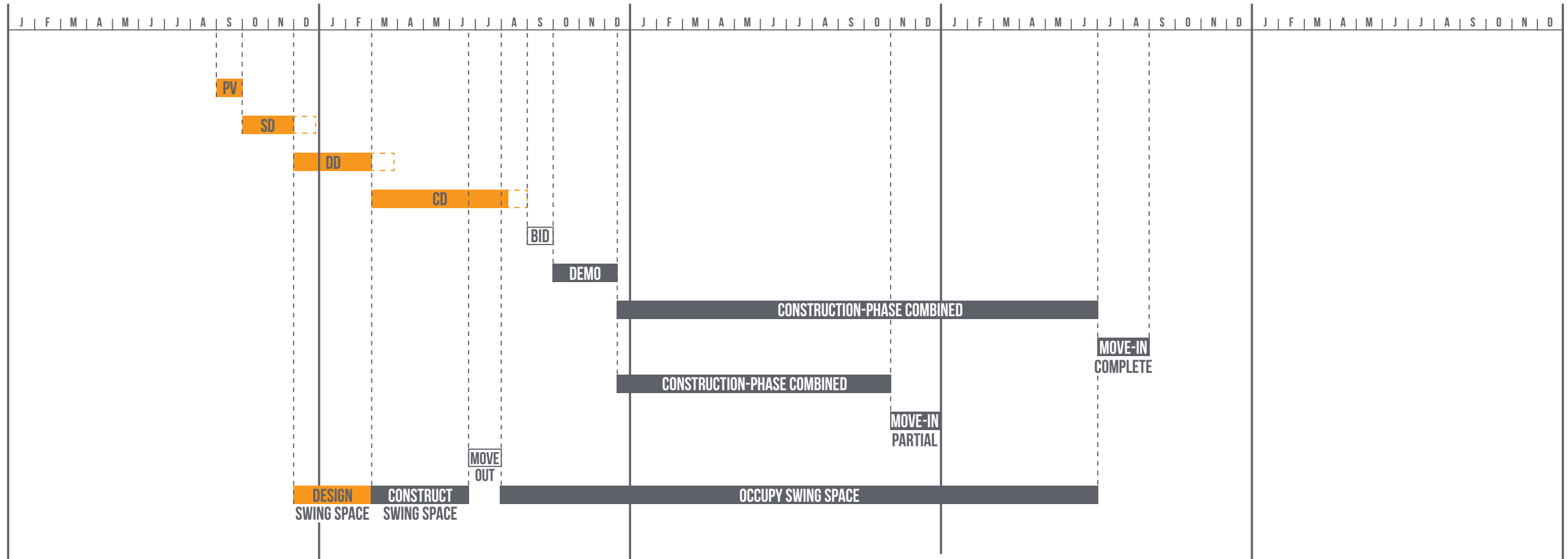
2014

2015

2016

2017

2018



KSU SEATON HALL RENOVATION & EXPANSION

ONE-PHASE CONSTRUCTION SCHEDULE

SEPTEMBER 2014						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1 University Holiday	2	3	4 PV: Kickoff Meeting	5 PV: Kickoff Meeting	6	7
8	9	10	11	12	13	14
15	16	17	18 PV: Meeting 2	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

OCTOBER 2014						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
29	30	1 SD: Begin Phase (Hold as extra meeting day)	2 SD: Meeting 1	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22 Search Committee Mtg (9-12pm)	23 Campaign Committee Mtg (10.30-12pm)	24 SD: Meeting 2 (or afternoon 10/23)	25	26
27	28	29	30	31	1	2

NOVEMBER 2014						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12 Backgrounds to Consultants	13 SD: Meeting 3 (afternoon start time de Noble am Meeting)	14 SD: Meeting 3 (potential switch to 11/14)	15	16
17	18	19 Backgrounds from Consultants	20	21	22	23
24 University Holiday	25 University Holiday	26 University Holiday	27 University Holiday	28 University Holiday	29	30

DECEMBER 2014						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3 100% SD Submission	4 DD: Begin Phase	5	6	7
8	9	10	11 DD: Meeting 1	12	13	14
15	16	17	18	19 Fall Term End	20	21
22	23	24 SD: End Phase KSU Approval to Proceed	25 Holiday	26 Holiday	27	28
29	30	31	1	2	3	4

JANUARY 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
29	30	31	1	2	3	4
5	6	7 Deans Retreat	8 Deans Retreat	9 DD: Meeting 2	10	11
12	13	14	15	16	17	18
19	20 Spring Term Begin	21	22 DD: Meeting 3 de Noble 2 pm Provost Mtg	23	24	25
26	27	28	29	30	31	1

FEBRUARY 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
26	27	28	29	30	31	1
2	3	4 Backgrounds to Consultants	5	6	7	8
9	10	11 Backgrounds from Consultants	12	13	14	15
16	17	18	19 DD: Meeting 4 de Noble 9 am Provost Mtg	20	21	22
23	24	25	26	27	28	1

MARCH 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
23	24	25	26	27	28	1
2	3	4 100% DD Submission	5 CD: Meeting 1 CD: Begin Phase	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27 DD: End Phase	28	29
30	31	1	2	3	4	5

APRIL 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
30	31	1 Nicole Dusso Lecture 4pm	2 CD: Meeting 2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29 (Hold as extra meeting day)	30 CD: Meeting 3	1	2	3

OFPM /DCC Project Reviews

- Program Verification Phase
- Schematic Design Phase
- University/State SD Review and Approval Period
Phase Cost Estimation & Reconciliation (not required)
- Design Development Phase
- University/State DD Review and Approval Period
Phase Cost Estimation & Reconciliation
- Construction Document Phase
- University/State CD Review and Approval Period
Phase Cost Estimation & Reconciliation
- Bidding/Negotiation

- Code Analysis/Code Footprint Review
- Accessibility Analysis
- Design Development
- Construction Separation & Temporary Egress
- In-Progress Construction Documents
- Permit to Build
- Bid Document Deliverables
- KSU Facilities Review
- Campus Planning & Advisory Committee

KSU Seaton Hall Renovation/Expansion Project Calender

MAY 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

JUNE 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

JULY 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

AUGUST 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

SEPTEMBER 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4

OCTOBER 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

NOVEMBER 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6

DECEMBER 2015						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

- Program Verification Phase
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Phase Cost Estimation & Reconciliation (not required)
- Design Development Phase
- University/State DD Review and Approval Period
Phase Cost Estimation & Reconciliation
- Construction Document Phase
- University/State CD Review and Approval Period
Phase Cost Estimation & Reconciliation
- Bidding/Negotiation

OFPM /DCC Project Reviews

- Code Analysis/Code Footprint Review
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