



UNIVERSITY OF ALASKA  
ANCHORAGE

Total Project Cost	\$4,703,433 (Ph 2) \$5,680,415 (Total)
Approval Level:	Full Board

### SCHEMATIC DESIGN APPROVAL REQUEST

TO: Pat Gamble  
President

THROUGH: Kit Duke *[Signature]*  
AVP Facilities and Land Management

THROUGH: Tom Case *Tom Case*  
Chancellor

THROUGH: Elisha Baker *[Signature]*  
Interim Provost

THROUGH: William Spindle *[Signature]* 2/20/12  
Vice Chancellor, Administrative Services

THROUGH: Chris Turletes *[Signature]* 1/20/12  
Associate Vice Chancellor, UAA Facilities & Campus Services

THROUGH: John Faunce *[Signature]* 10/31/12  
Director, UAA Facilities Planning & Construction

FROM: Patricia Baum *[Signature]* Oct. 31, 2012  
Project Manager

DATE: October 31, 2012

SUBJECT: Project Type: R&R Project  
Project Name: UAA Allied Health Science Building Renovation, Phase 2  
Project No.: 11-0110-2

Cc:



UNIVERSITY OF ALASKA  
ANCHORAGE

## ***SCHEMATIC DESIGN APPROVAL***

**Name of Project:** UAA Allied Health Science Building Renovation, Phase 2  
**Project Type:** DM, R&R  
**Location of Project:** UAA Main Campus, Allied Health Building (AS114), Anchorage, AK  
**Project Number:** 11-0110-2  
**Date of Request:** October 24, 2012

<b>Total Project Cost:</b>	<b>\$ 4,703,433 (Phase 2)</b>	<b>\$ 5,680,415 (Total Project)</b>
<b>Approval Required:</b>	<b>Full Board</b>	
<b>Prior Approvals:</b>	<b>Preliminary Administrative Approval</b>	<b>June 2, 2011</b>
	<b>Formal Project Approval</b>	<b>September 28, 2012</b>

A Schematic Design Approval (SDA) is required for all Capital Projects with a Total Project Cost in excess of \$250,000.

SDA represents approval of the location of the facility, its relationship to other facilities, the functional relationship of interior areas, the basic design including construction materials, mechanical, electrical, technology infrastructure and telecommunications systems, and any other changes to the project since formal project approval. Unless otherwise designated by the approval authority or a material change in the project is subsequently identified, SDA also represents approval of the proposed cost of the next phases of the project and authorization to complete the design development process, to bid and award a contract within the approved budget, and to proceed to completion of project construction. Provided however, if a material change in the project is subsequently identified, such change will be subject to the approval process.

### Action Requested

**"The Facilities and Land Management Committee recommends that the Board of Regents approves the Schematic Design Approval request for the University of Alaska Anchorage Allied Health Sciences Building Renovation Phase 2 as presented in compliance with the campus master plan, and authorizes the University administration to complete construction bid documents to bid and award a contract within the approved budget, and to proceed to completion of project construction not to exceed a Total Project Cost of \$5,680,415. This motion is effective December 6, 2012."**

### Project Abstract

The Allied Health Science Building was constructed in 1982 and is in need of renovation. This project is being accomplished in two phases. Phase 1 renovated the Medical Technology Lab on the second floor vacated during relocation of previous functions to new space in the Health Sciences Building. This work was completed earlier this year.

Phase 2 will improve the building envelope and mechanical systems by replacing boilers, HVAC system and controls, and roofing. It will also replace lighting fixtures to improve energy efficiency and meet

current UAA standards. The project will also reconfigure and renovate first floor office space and common space throughout the building.

#### **RATIONALE AND REASONING**

It became apparent during the Phase 1 design that some mechanical system modifications would be necessary to accommodate the Phase 1 renovations. As a result a second project, identified as Phase 2, was initiated to provide for mechanical system upgrades for the entire building. As Phase 2 progressed, UAA concluded that it would be prudent to proceed with the renovation of the remainder of the first floor administrative spaces and the common areas throughout the building that were not renovated in the earlier Dental Clinic project or the Phase 1 work. This will ensure that all building renovations, including the mechanical and electrical system upgrades, will be fully coordinated. This work was originally identified as Phase 3, and is now consolidated with Phase 2 of the overall project to renovate the Allied Health Science Building.

According to the formula we now use to report to OMB, the replacement value for this building is \$18.525M. Based upon the investment of \$5.68M UAA needed for renovation, the building has a Facility Condition Index of 30.7%. This FCI is within acceptable bounds for making this investment.

#### **Background**

The Allied Health Science Building will be completely renovated and renewed when these phases are completed. The first floor Dental Clinic was renovated in 2007. This began an effort to address a series of discovered inefficiencies in the building concurrent with project development of the new Health Science Building which when occupied would create vacant space that other health programs would occupy.

The Medical Technology lab, which was formerly housed in the northwest corner of the second level of the Allied Health Sciences Building, relocated to the new Health Sciences Building in August 2011. A renovation of this AHS space was necessary in order to make the space functional for other Allied Health Science Programs to utilize the space. This initial project was identified as Phase 1 of the AHS Renovation Project and was completed in August 2012. This phase of the project reconfigured the space from a limited use medical technology laboratory space to a combination lecture/lab classroom that is functional for Radiologic Technology, Medical Assisting, Emergency Medical Technology and other allied health classes. The renovation also provided an Ultrasound Room necessary for teaching Diagnostic Medical Sonography.

#### **Programmatic Need**

Although some of the Allied Health programs will move to the new Health Science District when future facilities are constructed, it is likely that they will remain in AHS for the next six, or more, years. The existing Dental Clinic and possibly other Allied Health programs will remain in the current building even longer as a result of continuing growth of all Health Science programs at UAA. AHS is currently in need of renovation in order to accommodate current Health Science program needs. Classroom/labs are being designed for multi-purpose use and should be able to serve the University for many years to come.

#### **Project Scope**

Phase 1 space was completed and occupied on time and on budget by fall semester 2012. Project scope included the renovation of the 2nd floor classrooms and labs vacated when HSB opened.

The Phase 2 project scope includes: boiler replacement with energy efficient boilers; Building Automation System (BAS) upgrades; air handling system replacement/upgrades with new coils and variable frequency drives (VFD's); building air conditioning system upgrade (removal from the EM-1 cooling well and provided its own cooling well); installation of a fume extraction system/make-up air

unit(s) for the dental labs; remodel of the building air distribution system; and double thickness of building insulation to reduce energy consumption.

The Phase 2 scope also includes: renovate 1st floor administrative, instructional, and common areas; replace the existing windows with high performance, energy efficient windows; replace existing lights with high energy efficiency fixtures with occupancy sensors; replace aging, deteriorated furniture originally obtained from surplus; replace roof, wall, duct and pipe insulation; and upgrade fire alarm system and security access control system. The roof replacement will be done at the same time as the mechanical upgrades since an additional rooftop unit is part of the scope. A Hazmat survey will be implemented and it is anticipated that asbestos will be present due to previous tests performed on the roof mastic composition. This roof replacement is being planned as an adhered membrane roof.

#### Project Impacts

Building will be vacated during construction allowing for an aggressive schedule to be implemented by contractor. There are approximately seven contract staff members that will need to be temporarily housed elsewhere on campus during construction. Space has been identified in the PSB building with other campus health programs.

#### Variances

Since Formal Project Approval, an additional requirement to provide additional IT switches and data ports in the building has been identified. The Total Project Cost has been increased to cover this requirement.

#### Total Project Cost and Funding Sources

##### **Phase 1: (completed)**

UAA Dental Clinic Remodel	17043-564243	\$545,500
FY12 R&R	17195-564360	\$431,482

<b>Phase 1 Total Project Cost</b>		<b>\$976,982</b>
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##### **Phase 2:**

FY12 R&R	17195-564360	\$721,518
FY12 DM Bond (FY13 Sale—AHS)	TBD	\$1,637,432
FY08 Health Sciences Renewal	564249/564274	\$412,887
FY13 R&R (AHS)	17195-564384	\$1,600,000
FY13 R&R (Bldg Envelope &Roof)	17137-564385	\$300,000
FY13 R&R (Mech/Elec)	564386	\$31,596

<b>Phase 2 Total Project Cost</b>		<b>\$4,703,433</b>
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<b>Total Project Cost</b>		<b>\$5,680,415</b>
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#### Annual Program and Facility Cost Projections

No new costs anticipated.

#### Project Schedule

##### DESIGN

Conceptual Design	June 2012
Formal Project Approval	August 2012
Schematic Design	October 2012
Schematic Design Approval	December 2012
Construction Document completion	January 2013

##### BID & AWARD - Phase 2,3

Advertise and Bid	January 2013
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Construction Contract Award  
CONSTRUCTION  
Start of Construction  
Construction Complete  
Date of Beneficial Occupancy  
Warranty Period

March 2013  
  
April 2013  
August 2013  
August 2013  
1 yr.

Project Delivery Method  
Design-Bid-Build

Supporting Documents  
One-page Project Budget  
65% Drawings (Floor Plan only)  
35% Design Narrative

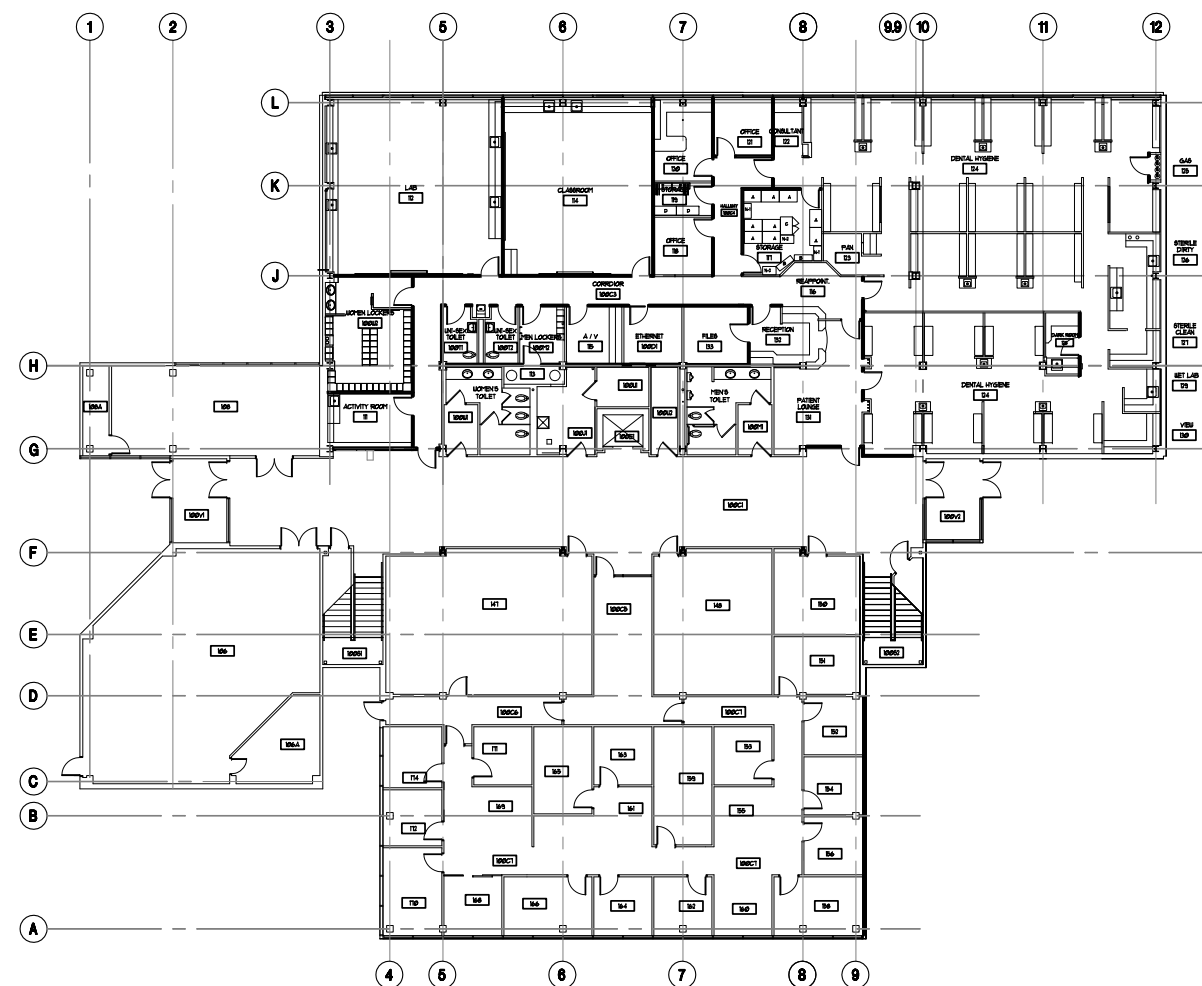
Affirmation  
This project complies with Regents Policy, the campus master plan and the Project Agreement.

Approvals  
The level of approval required for SDA shall be based upon the estimated TPC as follows:

- **TPC > \$4.0 million will require approval by the board based on the recommendations of the Facilities and Land Management Committee (FLMC).**
- TPC > \$2.0 million but not more than \$4.0 million will require approval by the FLMC.
- TPC > \$1.0 million but not more than \$2.0 million will require approval by the Chair of the FLMC.
- $TPC \leq \$1.0$  million will require approval by the AVP of Facilities and Land Management.

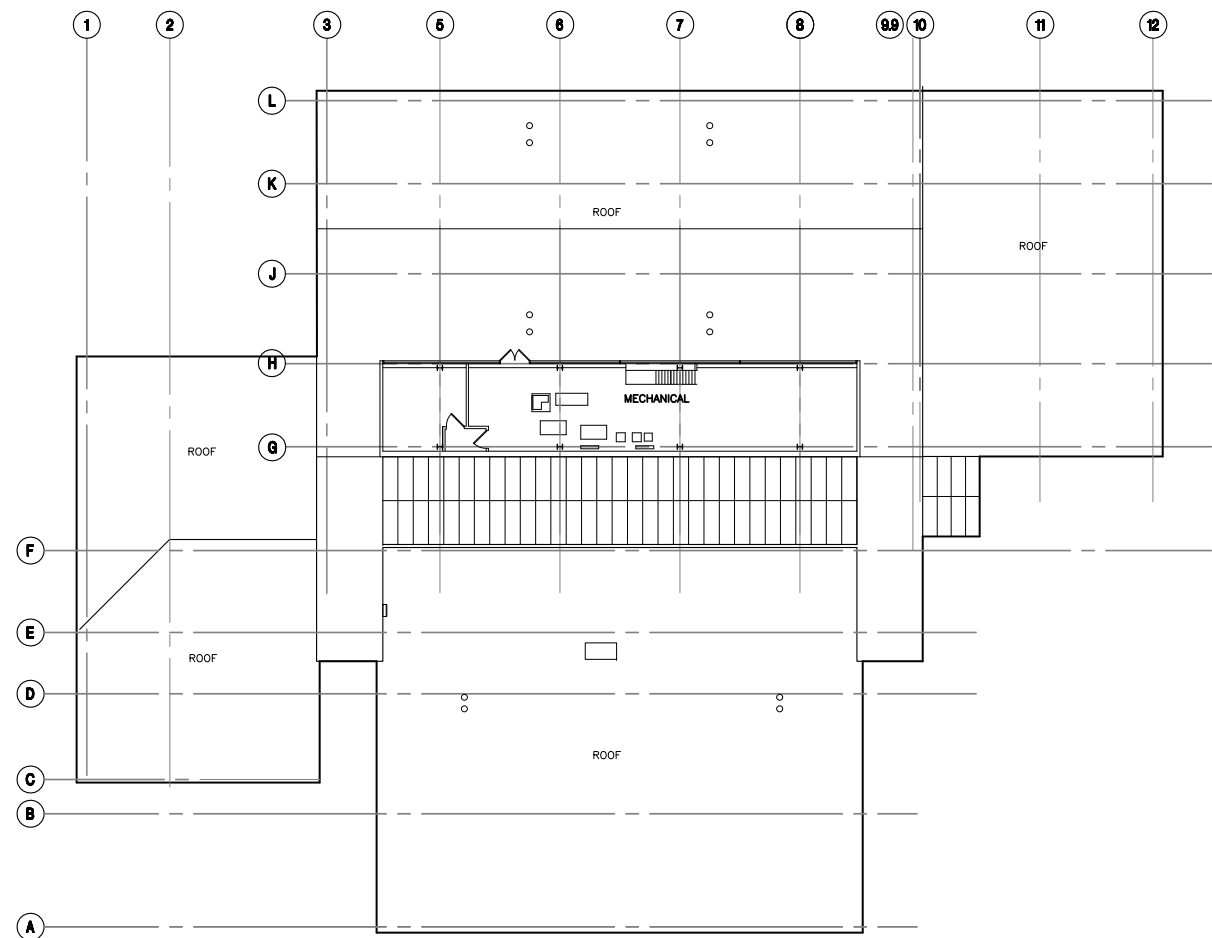
UNIVERSITY OF ALASKA			
Project Name:Allied Health Science Building Renovation			
MAU: UAA			
Building: AS114 Allied Health Building		Date:	10/25/2012
Campus: UAA Main Campus		Prepared by: P. Baum	
Project #: 11-0110		Acct #(s):Various	
Total GSF Affected by Project:		27,127	27,127
PROJECT BUDGET		FPA Budget	SDA Budget
A. Professional Services			
Advance Planning, Program Development			
Consultant: Basic Services (Arch)		226,734	226,734
Consultant: Extra Services (mech)		218,823	218,823
Consultant:Extra Services (survey)		18,013	18,013
HAZMAT fees			26,193
Soils Testing & Engineering		6,600	6,600
Plan Review Fees / Permits			
Other (Estimator)		3,002	7,258
Professional Services Subtotal		473,172	503,621
B. Construction			
General Construction Contract(s)		3,762,100	3,762,100
Interim space needs		56,500	56,500
Actual Remediation costs?			
Construction Contingency		376,450	376,450
Construction Subtotal		4,195,050	4,195,050
Construction Cost per GSF		155	155
C. Building Completion Activity			
Equipment		45,000	59,034
Fixtures			
Furnishings		530,000	530,000
Signage not in construction contract		8,000	8,000
Move-Out Costs			
Move-In Costs			
Art			
OIT Support			
Maintenance Operation Support			
Building Completion Activity Subtotal		583,000	597,034
D. Owner Activities & Administrative Costs			
Project Plng, Staff Support			
Project Management		327,500	327,500
Misc. Expenses: Moving, Maintenance, Surplus		57,210	57,210
Owner Activities & Administrative Costs Subtotal		384,710	384,710
E. Total Project Cost		5,635,932	5,680,415
Total Project Cost per GSF		208	209
F. Total Appropriation(s)		5,635,932	5,680,415





NO.	REVISION/ISSUE	DATE
DRAWN: LH		CHECKED: CB
DATE: 28 September 2012		
PHASE: 65% Design Development		
JOB NO: 21109.02 & 21109.03		
DRAWING TITLE: EXISTING PLANS 1ST & 2ND FLOORS		

2 ROOF EXISTING PLAN  
1/16" = 1'-0"



1 PENTHOUSE EXISTING PLAN  
1/16" = 1'-0"



NO.	REVISION/REUSE	DATE
DRAWING:	LH	CHECKED: CB
DATE:	28 September 2012	
PHASE:	65% Design Development	
JOB NO.:	21109.02 & 21109.03	
DRAWING TITLE:		
EXISTING PLANS PENTHOUSE & ROOF		
SHEET NO.:		



## **PROJECT OVERVIEW**

This project provides for interior remodeling of the administrative office area, classrooms and common areas in the Allied Health Sciences Building. In support of the remodeling is a full mechanical upgrade of the HVAC system, addition of a cooling well and fume hood, and a re-roofing of the entire building.

Narratives for each discipline involved follow in this order:

Civil

Architectural

Structural

Mechanical

Electrical

Mechanical Schedules

## **CIVIL SCHEMATIC DESIGN NARRATIVE**

### **BACKGROUND INFORMATION**

Cooling water for the Allied Health Sciences Building (AHSB) is currently provided by existing Well EM01, which serves a number of campus facilities. Because of problems with the well and distribution system, UAA decided to construct a new well dedicated to providing cooling water to the AHSB. In August 2011, M-W Drilling installed an 8" diameter by 260' deep well near the southeast corner of the building.

### **CIVIL DESIGN**

Civil design will be completed for the following work:

- Excavate around the existing well casing to a depth of 10 to 15 feet; cut off the well casing and install a pitless adapter (allows a water line to be connected to the well)
- Shut off the existing cooling water supply to the AHSB; excavate the supply line and cut out a section of pipe adjacent to the building wall.
- Install a new cooling water supply pipe from the well to the building, and connect to the existing supply pipe approximately 5' from the building wall. The pipe installation will be in an open-cut trench.

The drawing set will include:

- Legend, Abbreviations and General Notes (1 sheet)
- Site Plan (1 sheet)
- Plan and Profile (water line from well to building, 1 sheet)
- Details (1 to 2 sheets)

Specification will be per Municipality of Anchorage Standard Specifications.

## **END OF CIVIL NARRATIVE**

## **ARCHITECTURAL DESIGN NARRATIVE**

### **SCHEMATIC DESIGN – BACKGROUND INFORMATION**

The schematic design for the Allied Health Sciences Building includes the following:

- replacement of the existing roof system and insulation on the entire building (BU/IRMA) and replacement with double the thickness of insulation and an adhered membrane roof,
- Upgrades to the HVAC equipment
- Renovations for the common spaces on 1<sup>st</sup> and 2<sup>nd</sup> floors, renovations for the single story 1<sup>st</sup> floor Administration area, and classrooms

Interior materials and exterior roof and closure systems were selected based on systems that would match current themes and provide long term maintainability.

### **CODES AND STANDARDS**

Municipality of Anchorage adopted 2009 Codes will be followed, as amended. Local policies and handouts will also be followed as applicable.

### **DEMOLITION & HAZARDOUS MATERIALS -**

Due to the construction date (1982) of the existing structure a Hazmat survey is currently anticipated. Hazardous materials including Asbestos, Lead, and PCBs should be anticipated. The narratives describe only the general extent of demolition work.

The entire low roof (single story above Admin) and some mastics have been tested and shown to contain asbestos at a level requiring abatement.

### **GENERAL DEMOLITION**

#### Penthouse

Refer to Mechanical & Electrical Demolition narrative for equipment to be demolished. Demolish penthouse housekeeping pads, and concrete topping slab east of the stairwell. Demolish all wall louvers, and the pair of doors between the penthouse and the north roof.

#### Roof system

Demolish the existing roof system, drains and insulation on the entire building down to the structural roof decking (BU/IRMA)

#### Exterior Wall

A portion of the exterior wall system at the 2<sup>nd</sup> floor stair landing will be saw-cut out and removed for a new access door to the single story ("Low") roof. The exterior wall system in that location consists of approximately 6 inch thick precast concrete panels supported from steel structure, 2" metal channel studs, w/rigid insulation, 6 mil vapor retarder, and painted 5/8" GWB. The opening for the access door would be a step-through style, and be approximately 36" wide by 5 feet high, with the sill approximately 30 inches above the 2<sup>nd</sup> floor landing.

### Interiors

Interior demolition will consist of removing all doors, walls, flooring, base and the entire suspended ceiling grid and panels in the administration office area. Contractor shall retain all instances of existing modular wall systems for Owners re-use. In Workroom demolish countertop, plumbing fixtures and all associated pipes and drains, cap off plumbing for new casework and sink.

Common area, including both stairwells, will have acoustical glued-up ceiling tiles ceilings, floor finishes and base demolished. Existing gypsum soffits and skylight will remain unless noted otherwise. Public toilet rooms, off the lobbies, located on both the first and second floors shall have all ceramic tile, countertops and toilet partitions removed. Existing toilet plumbing fixtures and mirrors are to be retained and re-used. The elevator cab carpet flooring will be removed.

In both entry vestibules light fixture will be removed.

In Classroom 106 fixed student seating to be removed and retained by Owner.

Classrooms 106 and 108 and their respective storage areas will have existing flooring and base removed. Existing lighting will be removed and retained for Owners re-use elsewhere on campus. In Classroom 147 approximately 70% of existing walls, all flooring, base and the entire suspended ceiling grid and panels shall be demolished.

## **EXTERIOR RENOVATIONS**

### Roof

The existing IRMA roof on the entire building will be replaced with the following roof system over the existing steel structural decking:

- ½" glass mat gypsum sheathing
- 10 mil poly vapor retarder
- 2 layers rigid insulation R30 min. (+-6.5" total) and new tapered insulation crickets. (Extruded Polystyrene for all)
- ½" cover board
- Fully adhered 60 mil roof membrane – Two Alternates: #1 EPDM; #2 TPO

### HVAC Screen wall

The new roof top HVAC unit and return air cap are not expected to be visible from inside the 2<sup>nd</sup> floor due to the distance from the skylight, even given an approximate height of 8 foot for the HVAC unit with curb. A 3 sided louvered screen wall, approximately 8 feet in height, is currently planned with the open end on the north side facing the skylight. It will be located about 6 feet from the sides of the RTU to provide access around the unit.

The screen wall will be constructed of powder coated steel louvers attached to a steel structural frame. The structural frame is not yet designed, however for estimating purposes we assumed the following: Posts constructed of HSS 4"x4"x1/4" steel tubes, approximately 110 feet high; .Frames will include horizontal cross ties at top, bottom, and bracing at midpoint of posts. Posts will be spaced at 5 to 6 feet on center and fastened to the structural steel roof deck.

The louvered screen panels possible louver currently anticipated are: Grating Pacific "Orsogril" - Model Talia 80. Louvers will be mounted in an inverted position to eliminate all sight through from ground level. This product is steel with powder coat primer and powder coat finish.

#### Exterior Wall @ 2<sup>nd</sup> Floor Stair Landing

A new 32"x60" insulated hollow metal roof access door with an insulated hollow metal frame is expected at the 2<sup>nd</sup> floor landing of the west stairwell. Patch and repair existing pre-cast concrete, rigid insulation, vapor retarder, GWB & paint finishes as needed.

#### Penthouse North wall

Provide new wall louvers, and a new pair of insulated hollow metal access doors, including necessary flashings and sealants. Sizes of doors and louvers are expected to match existing.

### **INTERIOR RENOVATIONS**

#### Penthouse

The existing penthouse will receive a new 4" concrete topping slab with curb at the exterior walls in the portion east of the stairwell and new concrete housekeeping pads for new HVAC equipment. New topping slab will slope to floor drain. All concrete shall be finished with concrete sealer or epoxy paint.

The interior wall finish and exposed roof structure will be repainted a neutral color to match existing. All existing hollow metal doors/frames and steel railings remain and will be repainted with low VOC epoxy paint or enamel paint.

#### Administrative Office space

Suspended ceiling will be replaced throughout administration area with direct hung suspension system grid in 2'x4' configuration, and new acoustical panels. Gypsum board ceilings and soffits will be painted.

New walls will be demountable partition system basis-of-design will be DIRT, with majority of panels having glass transoms, with lower portion being a painted panel or wood veneer panel. Drawings of elevations have been provided. Remaining existing columns and GWB walls will be painted to match/coordinate with new finishes.

Doors: interior doors and hardware shall be of 2 varieties, sliding "barn-type" and pivot. All doors located within demountable wall system will be provided by same demountable wall system manufacturer.

Casework: New plastic laminate casework with solid surface countertops to be provided in Open Office area 148, Workroom 171 and Kitchen 170. Tall lockable plastic laminate cabinets will be provided in Corridor 100C7 and plastic laminate open shelving with drawers in Corridor 100C6.

Flooring: Commercial carpet tiles will be throughout, except for the kitchen and break/informal

conference where commercial Type 1 resilient flooring will be used.

Cove base: 4" rubber cove base, except where demountable wall system is located (it has integrated base).

#### Common spaces

Concealed spline acoustical ceiling system will be replaced throughout common area with similar 12 x 12 tiles. Gypsum board ceilings and soffits will be painted.

Remaining existing columns and gypsum walls will be repainted to match/coordinate with new finishes. An element constructed using the demountable wall system will protrude into the 1<sup>st</sup> floor Lobby to provide way-finding and signage for students and visitors. New walls made of demountable wall system will create "storefronts" on south side of lobby. They will have clear glass transoms, and lower panels will be "frosted" glass. Railings located at stairs and on second level will be repainted.

Existing doors to be refinished and frames repainted.

New lighting fixtures to be installed in each vestibule.

Casework: New solid surface countertop at student printing station located near Stair 100S1 and Classroom 147

Flooring: Commercial carpet tiles will be throughout, with a contrasting carpet tile delineating seating/study areas. Resilient flooring will be provided in the new vending area.

Cove base: New 4" rubber cove base, except where demountable wall system is located (it has integrated base).

#### Classroom spaces

Suspended ceiling will be replaced in classroom 147 with direct hung suspension system grid in 2'x4' configuration. Gypsum board ceilings and soffits will be painted.

Existing Walls will be repainted to match/coordinate with new finishes.

Cove base: 4" rubber cove base, except where demountable wall system is located, it has integral base.

#### Toilets and janitorial space

Gypsum board ceilings/soffits will be re-painted.

Existing walls will be repainted with a semi-gloss finish. Ceramic tile (12" x 12") will be full height in areas where toilet and urinal are located, and used as a wainscot near sink areas. New

stainless steel toilet partitions and urinal screens will be provided. Existing toilet accessories will be re-installed. Provide new toilet fixtures – See mechanical narrative.

Flooring in toilet rooms, including toilet entry areas, shall be ceramic tile (12" x 12"). Janitorial spaces will be provided with new commercial resilient flooring with self-coved base.

Casework: New solid surface countertops with backsplashes and integral solid surface sinks will be provided at each toilet room.

Ceramic tile base will be provided in all toilet rooms and toilet entry areas.

### **END OF ARCHITECTURAL NARRATIVE**

### **STRUCTURAL DESIGN NARRATIVE**

The only structural work on this project is to add angle reinforcing below the existing roof decking at the new duct openings. This occurs at two places beneath the new RTU and at the new Exhaust Hood. This level of work assumes that the pavers are to be removed from the roof. If the pavers are not removed, then the existing joists at the RTU will be slightly overstressed (~11% in shear and 13% in bending). This will require the addition of two new 32LH06 joists between grids A & D in the two joist spaces that do not contain duct openings.

There is a new opening to be cut into an existing precast concrete wall panel. This is an architectural panel, which does not resist structural loads (other than wind load perpendicular to its face). This may require some angle or channel reinforcing to ensure that the wind loads are delivered to the existing supports. If required at all, it will be minimal – something on the order of the deck reinforcing shown on the roof plan.

### **END OF STRUCTURAL NARRATIVE**

## **MECHANICAL DESIGN NARRATIVE**

### **SCHEMATIC DESIGN – BACKGROUND INFORMATION**

The UAA Allied Health Sciences Building central heating and ventilating equipment has been in operation since original building construction in 1984 and is nearing its end of useful service life. The installed systems are not very energy efficient and do not appear to meet current indoor air quality standards. This project will replace the existing central heating and ventilating equipment with new energy efficient systems that meet or exceed current Code and energy design standards.

Also included under this project is a renovation of the ventilation system for the single story administration area and classrooms for the Allied Health Sciences Building, as well as for the common spaces on 1<sup>st</sup> and 2<sup>nd</sup> floors, and replacing the roof.

### **CODES AND STANDARDS**

Municipality of Anchorage adopted 2009 Codes will be followed, as amended. Local policies and handouts will also be followed as applicable.

#### **Design Criteria – Weather**

Outside Winter Design Temperature (99.6%):	-23° F
Outside Summer Design Temperature (0.4%):	74° F D.B., 60 ° F W.B.
Maximum 100 Year 1 Hr. Rainfall (MOA Handout P.02):	0.7 inches
Heating Degree Days (65 °F Basis):	10,400 HDD

#### **Design Criteria – Indoor**

Temperature (summer)	75° F (+/- 2° F)
Temperature (winter)	70° F (+/- 2° F)

### **GENERAL DEMOLITION**

The existing central heating and ventilation equipment located within the existing penthouse boiler room (190 sq.ft.) and fan room (930 sq.ft.) will be demolished down to the floor penetrations with the exception of the medical air compressor serving the first floor dental classrooms and the medical vacuum systems. The penthouse louver wall, boiler stacks and water heater stack will also be demolished. Demolition of the louver wall will allow for removal and replacement of the equipment within the fan and boiler room.

Roof drains for the entire roof will be demolished. Storm drain piping to remain in place for reconnection. Plumbing vents will remain in place but will need to be extended due to the additional roof insulation. Vent pipe will be demolished back to the vent increaser (approximately 12" below roof deck) in order to accomplish the extension.

Ventilation equipment and ductwork routing through and serving the common areas on Levels 1 and 2 and the single story administration portion of the building will be demolished. The dedicated supply fan serving the main lobby and its associated outside air intake hood will also be demolished. This unit is currently located above the ceiling of the administration area.



Plumbing fixtures in the main lobby restrooms on both levels will be demolished. Plumbing piping will remain for reconnection.

### **CENTRAL HEATING**

Preliminary heating load calculations estimate a gross building heating requirement of 1,500 MBH under design heating day conditions. This estimate includes outside air ventilation requirements in accordance with current ASHRAE guidelines.

The new central heating plant will include two (2) high efficiency gas fired boilers as the heat source for the building. Each boiler will be sized for 60% of the peak heating load.

The central hydronic heating system will use water with rust inhibitor. A secondary glycol heating loop will be located in the penthouse fan room to provide freeze protection to the air handling heating coils. Duplex circulation pumps with variable speed drive (VSD) motors will be provided for system redundancy.

Zone heating will be controlled by duct mounted reheat coils to temper supply air temperature to meet space heating requirements. Existing perimeter fin tube located in rooms with exterior walls and windows will remain to provide additional heating.

### **CENTRAL COOLING**

A new well head is located approximately 45 FT from the well water cooling pipe point of entry along the east side of the building. A new submersible variable speed well pump will be provided. The existing well casing will be provided with a pit-less adapter and HDPE well piping will be run from the well head to the entry point below the existing buildings eastern stairwell. To provide building cooling, insulated 4" well water cooling piping will be routed to the penthouse fan room (approx. 120 ft) to serve the air handling unit cooling coil. A 2-1/2" branch (approx. 70 ft) will serve the rooftop air handling unit cooling coil. After leaving the cooling coils, the well water return piping will route back through the building (parallel to supply) to reconnect to the existing discharge piping below the buildings eastern stairwell. The existing discharge piping leaves the building and connects to the UAA storm drainage system, which open discharges into Chester Creek.

### **CENTRAL VENTILATION**

The building ventilation system will include two separate ventilation systems.

AHU-1 will be located in the existing penthouse fan room and will provide general building ventilation to the first floor Dental Health area and to the second floor Classroom areas. Air will be re-circulated (gravity return through return air chases) with minimum 30 percent outside air for proper indoor air quality. Estimated capacity is 16,000 CFM.

A rooftop mounted air handling unit (RTU-1) will provide general building ventilation to the single story Administration area of the building, including the Lecture Room 106 and Classroom 108. RTU-1 will also serve the common areas (entry lobby, main corridor on both levels and stairwells). Air will be re-circulated (gravity return) with at least 30 percent outside air for proper

indoor air quality. Estimated capacity is 15,000 CFM. Air will be relieved from the building through a roof hood.

Air handlers will be equipped with variable speed fan control to provide the flexibility to adjust airflows as needed for future remodels.

## **FIRE PROTECTION SYSTEM**

The existing automatic wet type sprinkler system will be modified as required to serve the remodeled areas. It is assumed that adequate water pressure is available and that a fire pump will not be required.

## **PLUMBING**

The existing domestic water system will be modified to support the newly remodeled floor plans and plumbing fixture locations. The toilet rooms off the main corridor/lobby on first and second level will remain in their current locations, but fixtures will be replaced.

It is assumed that adequate water pressure and gravity waste piping is available and that a domestic water booster pumping system and/or lift station is not be required.

Domestic water piping will be type L copper with soldered fittings. Vent piping aboveground will be DWV copper or cast iron. Sanitary and storm drain piping will be cast iron with no-hub connections.

The water heater will be indirect type and will be located in the boiler room.

Plumbing fixtures will be vitreous china and stainless steel as applicable. Wall hung toilets, urinals and lavatories will be specified based on American Standard or as approved.

Toilet and urinal flush valves shall be Sloan Royal or Zurn Aquaflush. Flush valves will be automatic infrared operated.

Floor drains will be replaced in remodeled restrooms, boiler room and fan room. One floor drain in the fan room will need to be relocated a few feet north to accommodate AHU-1 and its housekeeping pad.

Roof drains and overflow roof drains (15 each) will be replaced as part of the roofing replacement scope. They will be connected back to the existing rainleader piping. Plumbing vents will be extended to accommodate additional roof insulation. They will reconnect to the existing vent piping at the vent increaser (approximately 12" below roof deck).

It is assumed that additional exterior hose bibs will not be required.

## **FUEL GAS SYSTEM**

Existing natural gas piping will be modified and connected to the new boilers at low pressure.

## **BUILDING AUTOMATION SYSTEM**

The facility will be controlled using a new direct digital control (DDC) building automation system (BAS). The controls will operate the HVAC and lighting systems. The system will be equipped with remote control and monitoring capability through a PC interface. The system will be connected to the UAA campus wide BAS.

## **MECHANICAL ROOMS**

The penthouse boiler room will include a ventilation fan (SCF-1 @ 1,500 CFM) for cooling and a unit heater for heating. The boilers will have sealed combustion air.

The penthouse fan room will include two unit heaters for heating. A cooling fan is not required due to the fan room acting as a return air plenum.

## **END OF MECHANICAL NARRATIVE**

## **ELECTRICAL SCHEMATIC DESIGN NARRATIVE**

### **ELECTRICAL BACKGROUND INFORMATION**

The original Allied Health Sciences building was constructed in 1984. Recent major renovations to the building include; the 1<sup>st</sup> floor Dental Clinic Renovation in 2007 and the 2<sup>nd</sup> floor Health Science Renewal in 2012. A significant portion of the original electrical distribution system installed during the original construction remains and is in good condition. Since the original construction, there have been minor modifications and upgrades made to the electrical systems to accommodate renovations and program changes. Electrical distribution equipment is primarily located in the 1<sup>st</sup> floor Main electrical Room, 2<sup>nd</sup> floor Electrical Room, 2<sup>nd</sup> floor Mechanical Room/Penthouse Access and the Mechanical Penthouse. Telecom for the building is served from the Main Telecom Room (MTR) which is centrally located in the building on the 1<sup>st</sup> floor near the Dental Clinic.

The scope of the new electrical work will include necessary demolition and new electrical power, lighting, telecom and special systems in renovated areas. The renovated areas include the following:

1. 1st floor (south side) Administration area which includes a conference/classroom
2. Lecture room and to the classroom on the 1<sup>st</sup> floor (west side) of the building
3. Architectural refinish work scheduled in common spaces (corridors, entries and stairwells) on the 1<sup>st</sup> and 2<sup>nd</sup> floors with limited electrical demolition and new electrical work
4. Limited electrical demolition and new electrical work in the Mechanical Penthouse area.
5. Limited electrical demolition and new electrical work for the removal/reinstallation of roof mounted equipment under the new roof work scope.

Refer to the Architectural and Mechanical narrative and drawings for more specific information on the renovation scope and project limits. Refer to sections below for specific details regarding the electrical demolition and new electrical scope.

## **CODES, STANDARDS AND REFERENCES**

Applicable Codes References and Standards for the electrical work include the following:

- 2011 National Electrical Code (NEC)
- 2009 International Building Code (IBC)
- 2009 International Fire Code (IFC)
- 2009 International Mechanical Code (IMC)
- National Fire Alarm Code, NFPA 72
- Emergency and Standby Power Systems, NFPA 110
- National Electrical Manufacturers' Association, NEMA
- National Electrical Installation Standards, NECA
- Underwriters' Laboratories, UL
- Factory Mutual, FM
- Illuminating Engineering Society of North America, IESNA
- Institute of Electrical and Electronic Engineers, IEEE
- Electronic Industries Association/Telephonic Industries Association, TIA/EIA
- American National Standards Institute, ANSI
- Americans with Disabilities Act, Accessibility Guidelines, ADAAG
- Local and University Standards and Regulations

## **ELECTRICAL DEMOLITION**

Administration Area Renovation - 1st floor (south side): Electrical demolition will include demolition of all lighting and controls, electrical power distribution (branch circuits, receptacles) and telecom (telecom outlets, cabling) elements located in and on the existing walls and ceilings being demolished. Special systems (fire alarm and OFOI A/V related) elements located in and on the existing walls and ceilings being demolished will be removed for reinstallation /relocation with the renovation work or turned over to the Owner for other uses.

Lecture Room 106 and Classroom 108 Renovations - 1<sup>st</sup> floor (west side): Electrical demolition will be limited to lighting, lighting controls and circuits located in and on existing ceilings being demolished or scheduled for refinishing.

Common Areas (corridors, entries and stairwells) - 1st and 2nd floors: Electrical demolition will be limited to lighting fixtures located in and on the existing walls, ceilings and soffits which are scheduled for refinishing.

Mechanical Penthouse: Electrical demolition will be limited to electrical power distribution serving demolished mechanical equipment and necessary for reconfiguration of the space. Existing telecom (telecom outlets, cabling) will be demolished. Existing fire alarm elements associated with demolished mechanical equipment and reconfiguration of the penthouse space will be demolished. Existing motor control buckets in the existing MCC located in the penthouse will be partially demolished and reworked to serve the new equipment.

Roof: Electrical demolition will be limited to roof mounted equipment being removed under the roof replacement/new roof work scope.

## **ELECTRICAL POWER AND DISTRIBUTION**

General: Electrical distribution will be provided for new lighting, receptacles and mechanical loads in the renovated areas. Existing panelboards will be reworked and at least one new panelboard will be provided for serving new loads. Based upon the load calculations from the peak demand kW (Kilowatt) values recorded by UAA, the existing electrical service and main distribution will have adequate capacity for the new electrical loads associated with the renovation.

Administration Area Renovation - 1st floor (south side): Electrical branch circuits will be provided for new lighting, receptacles and mechanical loads. One new 208/120 volt 3-phase, 4-wire distribution panelboard will be provided in the Administration Area for locally serving the lighting, receptacles and mechanical loads in that area. The new branch circuits for lighting, receptacles, mechanical loads and other utilization equipment will be served from the new panelboard and from existing panelboards in the Main Electrical Room on the first floor. Receptacles will be located in walls, ceilings and floor boxes, appropriately placed to best serve the room configurations. It is understood that modular system walls will be specified for the administration area renovation. Installation of raceways, devices, device boxes and junction boxes in the modular walls will require coordination between the Contractor and the wall system supplier. Raceways, devices, device boxes and junction boxes provided shall be suitable for installation with the specified modular wall system.

Lecture Room 106 and Classroom 108 Renovations - 1<sup>st</sup> floor (west side): Electrical branch circuits will be provided for new lighting. The new branch circuits for lighting will be served from the existing panelboards in the Main Electrical Room on the first floor.

Common Areas (corridors, entries and stairwells) - 1st and 2nd floors: Electrical branch circuits will be provided for new lighting. The new branch circuits for lighting will be served from the existing panelboards in the Main Electrical Room on the first floor.

Mechanical Penthouse: Electrical connections will be provided for new mechanical equipment. Mechanical equipment will be served from existing panelboards and the existing MCC located in the penthouse. The existing motor controller buckets in the existing MCC will be reworked to serve the new mechanical equipment controllers. New mechanical equipment controllers will be predominately Variable Speed Drive (VSD) types, however standard line voltage starters are also anticipated for a number of mechanical loads. Refer to mechanical section for more information regarding VSDs and mechanical controls. A new cooling water well and pump are being provided under this project. New electrical will be provided for pump operation and controls. Standby power will be provided to specific mechanical equipment to keep equipment running at minimum required levels for building freeze protection during loss of utility electrical power.

Roof: New electrical power work for the reinstallation of roof mounted equipment placement under the roof replacement/new roof work scope.

## **LIGHTING**

General: The lighting will be high efficiency, architectural grade and appropriate for the application. The latest edition (10th) of the Illuminating Engineering Society of North America

(IESNA) Handbook will be used as the guideline for recommended horizontal and vertical illuminance levels. The national trend is to provide lower average lighting levels in spaces while providing specific task based illumination. This allows the lumen power densities (LPDs) to be reduced to meet increasingly stringent energy codes. Illuminance levels will be specified per the IESNA for Visual Age of Observers of 25-65 years. Multi-level switching and/or step-level dimming ballasts will be provided in areas as appropriate to provide multiple light levels. Occupancy sensors will be provided in classrooms, conference rooms, individual offices and normally unoccupied spaces such as storage rooms, etc. Light fixtures will include fluorescent type with linear or compact fluorescent lamps (CFL) and Light Emitting Diode (LED) types. Fluorescent fixtures will be selected to utilize standard lamp types. Lamps for fluorescent fixtures will be T8, T5, T5HO or CFL lamps with a high color-rendering index CRI and a 4100 degree K color temperature. Fluorescent fixtures will utilize high efficiency electronic ballasts. Light Emitting Diode (LED) fixtures will be specified with a high color-rendering index CRI and will comply with Illuminating Engineering Society (IES) LM-79 guidelines and have LM-79 photometric test report from an NVLAP accredited laboratory. LED fixtures will utilize components (i.e. LEDs, driver, fixture housing, etc) included in LM-79 test. Emergency egress lighting and exit signage will be provided to meet IBC requirements for light levels and uniformity. Emergency egress lighting fixtures and exit signs will include integrated battery ballasts for backup.

Administration Area Renovation - 1st floor (south side): New lighting will be provided throughout this area as follows:

Classroom/Conference room 147 will be provided with an integrated classroom lighting control system. The system will permit instructors to reconfigure the room easily for teaching with the smartboard, projector, for webinars, conferences or for distance learning applications. The lighting will include pendant mounted direct/indirect fluorescent fixtures which will provide general lighting to meet horizontal and vertical illumination levels. In addition, supplemental lighting and fixtures will be employed where warranted. The basis of design for the system will be the Finelite ICLS. Recommended illumination levels based upon the current IESNA Handbook: 40 fc horizontal/15 fc vertical.

Offices will be illuminated with direct/indirect linear pendant mount fixtures and recessed fixtures where feasible. Recommended illumination levels based upon the current IESNA Handbook: 30 fc horizontal, 15 fc vertical.

Entry/Corridors: Generally recessed linear fluorescent ceiling and surface wall-mounted linear or sconce style fixtures will be utilized in corridors and low ceiling traffic areas. Recommended illumination levels based upon the current IESNA Handbook: 15 fc horizontal.

Lecture Room 106 and Classroom 108 Renovations - 1<sup>st</sup> floor (west side): New lighting will be provided in these rooms. The rooms will be provided with an integrated classroom lighting control system. The system will permit instructors to reconfigure the room easily for teaching with the smartboard, projector, for webinars, conferences or for distance learning applications. The lighting will include pendant mounted direct/indirect fluorescent fixtures which will provide general lighting to meet horizontal and vertical illumination levels. In addition, supplemental lighting and fixtures will be employed where warranted. The basis of design for the system will be the Finelite ICLS. Recommended illumination levels based upon the current IESNA Handbook: 40 fc horizontal/15 fc vertical.

Common Areas (corridors, entries and stairwells) - 1st and 2nd floors: The general approach for these areas will be to replace existing linear fixtures in-kind with new high efficiency,

architectural grade fixtures appropriate for the existing installation location and application. Where warranted by the renovation, additional surface wall-mounted linear or scone style fixtures may be utilized in specific areas for supplementing existing lighting.

Mechanical Penthouse: Existing light fixtures will remain and be relocated as necessary with the mechanical equipment work. Where warranted; new light fixtures will be provided to ensure adequate illumination of work areas. The new light fixtures will be linear pendant hung fluorescent type which are similar to the existing fixtures.

## **TELECOMMUNICATIONS**

General: Horizontal cabling will be CAT 6a Unshielded Twisted Pair (UTP). The system will be capable of supporting all common network systems specified in the ANSI TIA/EIA 568-A standards, as well as analog and digital telephones, fax, modem, CATV, RS-232 and other protocols. UTP horizontal cabling will be terminated in rack-mounted patch panels in existing equipment racks in the Main Telecommunications Room (MTR) located near the Dental Clinic on the 1<sup>st</sup> floor. One new additional free-standing equipment rack will be provided for new patch panels, OFOI equipment and for future expansion. New horizontal cables will be routed to telecom outlets in the field via existing pathways from the MTR to new cable tray systems and supports above ceilings. Horizontal cabling and telecom outlets will be added to support other special systems such as OFOI A/V systems, the Building Automation System (BAS) or other equipment.

Administration Area Renovation - 1st floor (south side): New horizontal cabling and telecom outlets to support equipment and systems in the remodeled areas. The new telecommunications will support the new computer, IT, VoIP telephones and technology requirements and systems in the area. It is understood that modular system walls will be specified for the administration area renovation. Installation of cabling, telecom outlets/devices and device boxes in the modular walls will require coordination between the Contractor and the wall system supplier. Cable routing means, devices and device boxes provided shall be suitable for installation with the specified modular wall system. Classroom/Conference Room 147 will include OFOI equipment for the teaching technology systems. Equipment requirements for the rooms will include; digital overhead projectors, DVDs, VCRs, projecting equipment and wireless access coverage. Generally the source equipment will be housed in Instructor's desk or teaching lectern. Required cabling, telecom drops, connections and pathways will be provided to accommodate the Owner furnished equipment and to support technology at student tables and desks.

Lecture Room 106 and Classroom 108 Renovations - 1<sup>st</sup> floor (west side): Except for new ceiling mounted telecom outlets for new A/V and technology equipment, no new telecom work is anticipated for these rooms.

Common Areas (corridors, entries and stairwells) - 1st and 2nd floors: No new telecom work is anticipated for these areas.

Mechanical Penthouse: Except for new telecom outlets for BAS network connections, no new telecom work is anticipated for this area.

## **FIRE ALARM, A/V AND SPECIAL SYSTEMS**



Administration Area Renovation - 1st floor (south side): Existing fire alarm devices will be removed and re-installed with the architectural renovations in this area. Where warranted by space reconfigurations, new fire alarm devices will be provided to ensure adequate coverage per NFPA/Life Safety Code requirements. Existing OFOI A/V and other special systems equipment will be reinstalled by the Owner after the spaces have been renovated.

Lecture Room 106 and Classroom 108 Renovations - 1<sup>st</sup> floor (west side): Existing fire alarm devices will be removed and reinstalled with the architectural ceiling replacement and wall refinishing work. Existing OFOI A/V and other special systems equipment will be reinstalled by the Owner after the spaces have been renovated.

Common Areas (corridors, entries and stairwells) - 1st and 2nd floors: No new fire alarm or special systems work is anticipated for these areas.

Mechanical Penthouse: Existing fire alarm devices will be removed and reinstalled and be relocated as necessary with the mechanical equipment and penthouse rework. Where warranted, new fire alarm devices will be provided to ensure adequate coverage per NFPA, Life Safety and IMC Code requirements.

#### **ACCESS CONTROL SYSTEM**

No access control system is anticipated for this renovation project.

#### **CCTV VIDEO SURVEILLANCE**

No CCTV Video Surveillance system is anticipated for this renovation project.

### **END OF ELECTRICAL NARRATIVE**