FACILITY DESIGN PLAN FOR
LINCOLN HALL RENOVATIONS – PHASE TWO
SOUTH DAKOTA STATE UNIVERSITY
DATE: September 2021

SDSU requests approval of this Facility Design Plan and authorization for the project to proceed to public bidding for phase two renovations in Lincoln Hall.

The Facility Program Plan was approved by the Board of Regents at the December` 2020 meeting. The Preliminary Facility Statement was approved at the August 2017 BOR meeting. A building committee was appointed, and the design team of Koch Hazard Architects was selected on December 4th, 2017.

1.A. ARCHITECTURAL, MECHANICAL AND ELECTRICAL SCHEMATIC DESIGN

The spaces are consistent with the program requirements and facility described in the Facility Program Plan. The following drawings are attached that illustrate the design:

Architectural and Structural Schematic:

As stated in the Facility Program Plan, SDSU is planning to continue upgrading Lincoln Hall for academic use. Phase one renovations were completed in August of 2020. Phase one renovations included exterior masonry and stone repairs, window replacements, lighting upgrades, and restroom renovations to improve accessibility. The proposed phase two renovations would address additional deferred maintenance items within the building, upgrade building systems, and create administrative offices, faculty offices, and service space on the main floor of the building. The work completed in phase two would prepare the building for the remaining programmatic changes required in phase three. Building service space would be created in the lower level to accommodate new air handlers, chilled water distribution equipment, and upgraded steam equipment. Three levels of the existing archives located in the core of the building would also be upgraded for the university archives in the base bid of phase two.

As described in the facility program plan, the University would like to accomplish as much work in phase two as the available funding would allow. Add alternates identified on the second floor include additional classroom space, large multi-purpose room, faculty offices, large reading room, and building service space. The third-floor alternates would include faculty office space. The lower-level alternates would include classroom, seminar room, student study space, storage, and building service space. The project team has

identified add alternates to accommodate budget flexibility and maintain a viable phase two project. The work not awarded in the phase two construction contract would be completed in phase three renovations. Phase three work would address programmatic modifications to accommodate the School of American & Global Studies. The alternates are diagramed in the floor plans included at the end of this report.

The program analysis performed by the University and Koch Hazard Architects identified space to accommodate the relocation and consolidation of the College of Arts, Humanities & Social Sciences administrative offices, the newly formed School of American & Global Studies, and the University Archives. Administrative offices for the College of Arts, Humanities & Social Sciences and School of American & Global Studies would be in the east wing of the main floor. Additional space on the first floor would be allocated to university classrooms, student support space, and shared office service space. The space function, use code and net square footages are detailed in the following table. The program is broken down into base bid and alternate portions of the project.

Lincoln Hall Space Program

Program Function	Space Use Code*	Net Square Footage (NSF)	Notes
Base Bid Administrative Offices & Archives			
Classroom	110	836	University and Department Scheduled Instruction (Classroom & Seminar)
Office	310	1,281	Department Head, Advising, Reception, Faculty Offices and Graduate Student Offices
Office Service	315	322	Waiting Area, File, Copy, and Break Room
Meeting Rooms	350	524	Conference Rooms, Workroom, and Collaboration.
Study Space	410	293	General Open Student Study Space (Not Restricted)
Storage	730	7,311	University Archives
Storage	780	311	General Building, Department, and Student Organization Storage.
Building Service	XXX	3,085	Restrooms, Custodial, Vending, IT, Electrical, & Mechanical
Circulation Space	WWW	3,314	General Building Circulation and Entrance Lobby
	Sub-Total NSF	17,277	
Alternate 01 Main Floor Classrooms			
Seminar Room	110	2,638	University and Department Scheduled Instruction (Classroom & Seminar)
Office Service	315	302	Waiting Area, File, Copy, and Break Room
Circulation Space	WWW	619	General Building Circulation and Entrance Lobby
	Sub-Total NSF	3,559	
Alternate 02 Faculty Offices & Classrooms			
Classroom	110	602	Digital Multi-Purpose
Office	310	3,312	Faculty Offices and Graduate Student Offices
Study Space	410	724	Study & Sound Booths
Storage	780	20	General Storage
Building Service	XXX	154	Restrooms, Custodial, Vending, IT, Electrical, & Mechanical
Circulation Space	WWW	3,669	General Building Circulation and Entrance Lobby
	Sub-Total NSF	8,481	
Alternate 03 Reading Room			
Classroom	110	700	University and Department Scheduled Instruction (Classroom & Seminar)
Meeting Rooms	350	460	Project Rooms
Study Space	410	4,265	Reading Room, General Student Study Space
Circulation Space	WWW	360	General Building Circulation and Entrance Lobby
	Sub-Total NSF	5,785	
Alternate 04 Lower Level			
Classroom	110	1,228	University and Department Scheduled Instruction (Classroom & Seminar)
Study Space	410	295	General Open Student Study Space (Not Restricted)
Building Service	XXX	145	Restrooms, Custodial, Vending, IT, Electrical, & Mechanical
Circulation Space	WWW	795	General Building Circulation and Entrance Lobby
	Sub-Total NSF	2,463	
	TOTAL NSF	37,565	

**Space use codes as defined by the National Center for Education Statistics Facilities Inventory and Classification Manual (FICM)*

The modifications and renovations would keep most of the original 1927 structure consisting of cast-in-place concrete floor slabs, steel beams, and interior columns with exterior load bearing masonry walls set on concrete spread footings intact. The new spatial configuration would work around existing interior steel columns and substructure. There would be two structural modifications made to accommodate additional program space needs and maximize the use of existing space. The first modification would be the removal of portions of the independent archive stack structure to accommodate a new structural floor that matches the floor elevation of the first-floor building level. The modification would create additional accessible program space in the building. Second, two pavilions would be constructed in the reading room to create seminar, study, and private work rooms. The existing structure would be augmented with new steel beams and columns to support the new spaces in the reading room. Additionally, vertical mechanical chases would be cut through the existing concrete slabs for new HVAC ductwork and hydronic piping.

Maintenance & Repair:
Phase one renovations completed in 2020 addressed maintenance and repair projects. The work included exterior masonry & stone repairs, window replacements, and ADA restroom renovations. The projects accomplished in phase one were planned for future maintenance & repair work to be accomplished in phase two of the project.

Phase two renovations would again focus primarily on deferred maintenance and system upgrades to the building. The projects include HVAC upgrades, connection to central chilled water, steam upgrades, plumbing repairs, accessibility alterations, additional building envelope improvements, energy efficiency upgrades, electrical upgrades, fire suppression, fire alarm, and life safety. The projects would be planned to setup future programmatic modifications to be accomplished in phase three renovations.

Asbestos Abatement:
All identified asbestos containing materials have been abated. Selective demolition has been performed to determine the extents of hazardous materials in the building and they have been abated. If additional hazardous materials are encountered during construction, a certified asbestos remediation contractor would be engaged to perform the abatement work.

Lead Paint Abatement:
All identified lead paint was abated in phase one renovations. If additional lead paint is encountered during construction, a certified lead remediation contractor would be engaged to perform the abatement work.

Mechanical Schematic:

The design of the building HVAC system would provide for the safe operation of the building as well as the health and comfort of the occupants. Code requirements would be the standard for the design of the HVAC systems. All spaces within the building would be upgraded to include ventilation air, heating, and cooling. An independent system capable of humidification would be provided to serve the university archive space. The HVAC system would be controlled and monitored by a direct digital control building automation system compatible with existing University automated controls.

The building is supplied with steam for heating from the Central Heating Plant. Existing steam piping and condensate returns would be replaced as part of the phase two renovations. The steam utility lines serving

Lincoln Hall would be replaced as part of a the chilled water & steam campus utility project. A new chilled water connection would be extended from the existing chilled water line located northwest of Morrill Hall. The new chilled water line would be sized to accommodate future connections to the Pugsley Center and Crothers Hall. The chilled water utility and steam utility lines would be planned and installed as a separate project. The final service connections to the building would be completed as part of the Lincoln Hall Renovation Phase Two project.

Heating

Heating would continue to be provided to the facility through campus steam. The steam utility serving the building would be upgraded as part of the campus chilled water and steam utility project. The existing steam piping and pneumatic controls within the building would be removed and replaced with hot water and digital controls. The existing lower-level mechanical room would be renovated to include steam to hot water heat exchangers, hot water circulation pumps, condensate pumps, and accessories. Additional mechanical space would be created to accommodate the dedicated outside air system units (DOAS). The system would provide tempering of fresh air to the building, perimeter radiant heating, and terminal heating through a four-pipe system. The four-pipe system pumps heated or chilled water through a piping system that is integrated with the fresh air supply system. As the tempered and dehumidified outdoor air passes over the heated or cooled coils of the terminal unit it is conditioned further to meet the desires of the building occupants. Variable speed pumps would be utilized to distribute hot water to the fan coil heating units. The existing air handlers that were installed in 2005 would be maintained and continue to serve the reading and digital seminar rooms.

Cooling

The building would be connected to a new chilled water utility service that would be installed as part of the campus chilled water and steam utility project. The service connection would be made as part of the Lincoln Hall Renovation Phase Two project. The chilled water would enter the building in the southwest corner and be integrated into the building side cooling system. Cooled air would be distributed through the facility with the existing air handler and three new constant volume dedicated outside air handling units. The air would be cooled with chilled water-cooling coils, energy recovery wheel, and mixing box. Fan coil units would be placed throughout the facility to provide heated and cooled air to building occupants. A thermostat would be installed to control the heated or chilled water supplied to the fan coil units. This would allow each unit to individually heat and cool the space being served. Fan coil units would serve no more than three individual offices or one shared/multi-occupant space.

Ventilation

The building is partially mechanically ventilated. The existing ventilation system would be maintained, and controls upgraded. In addition, the project would provide ductwork and equipment to distribute fresh air to all portions of the facility. Fresh air would be provided with three constant volume dedicated air handling units. The units would include MERV 8 prefilters and MERV 13 filters. The increased supply of fresh air and improved air filtration would result in improved indoor air quality. The system would not eliminate all pathogens in the building but would significantly reduce the risk of occupant exposure.

Dehumidification

An independent dehumidifier would be provided to serve the University archives. The unit would be sized to maintain consistent humidity levels within the archives.

Controls
The building automation systems shall be designed as a direct extension of the existing campus system. The system would contain all points and programming as required to allow for automated digital control and monitoring of the new heating, cooling, and ventilation system.

Plumbing Schematic:

Water Service
There is a four-inch cast iron water service for the building. Currently there is no fire protection service in the building. A new six-inch fire protection service would be provided from the 8" domestic water main located at the southeast corner of the building. It is also the intent of this project to replace the existing domestic water connection due to the age of the cast iron piping.

Domestic Piping
Copper piping would be used throughout the building per SDSU design standards.

Waste Piping
The existing roof drain would remain in place and not be modified. Rain leaders would be rerouted as needed due to programmatic modifications. Horizontal pipe runs would be relined and repaired.

Above grade waste, vent and storm piping would be cast iron piping with no-hub couplings. Piping below grade would be PVC, per SDSU design standards. Existing cast iron vent piping that is no longer in use would be removed.

Plumbing Fixtures
Plumbing fixtures were replaced in phase one renovations to meet ADA and water conservation standards. Additional utility sinks and drinking fountains to be installed in phase two work would meet ADA requirements.

Gas Service
Gas service would only be required for miscellaneous loads. Primary heating and cooling would be provided by the Central Utility Plants.

Fire Protection Systems
A new fire protection service line would be brought to the building. A complete automated, wet fire protection system per NFPA 13 would be provided throughout the building. Piping would be schedule 10 and/or 40 steel. Attention would be paid to the historic character of the building and pipe runs would be located to minimize the impact on the building.

Electrical Schematic:

The existing electrical service was recently replaced and would remain. The secondary electrical within the building would be replaced to upgrade the system, accommodate changes to the floor plan, and better meet occupant needs.

Site Lighting
Site lighting would not be impacted by the project.

Power Distribution
Switchboards: Existing 208 Volt switchboard would remain and serve mechanical equipment loads. New panelboards would be installed as required for plug loads and lighting throughout the building.

Emergency Power
An emergency generator would not be required.

Grounding
All grounded buses from switchboards and panelboards would be connected at a central ground system in the electrical room.

Security System
Rough-in for card readers at the main entrances and entrance to the university archives would be provided. Panic buttons would be provided at the central administration offices and coordinated with the University Police Department.

Lighting Systems
LED lighting fixtures would be utilized where possible. Motion detectors would be used to provide automatic on-off switching of lights in offices, storage rooms, bathrooms, and other selected rooms. Daylighting would be used to supplement electrical lighting where appropriate.

Emergency Egress Lighting
Interior light would have a battery backup installed in the fixture for emergency egress lighting. Exit signs would be LED with battery backup.

Data & Communications
Hardwired data ports would be provided in all offices, conference rooms, and classrooms. Wireless system access points would also be provided on the first, second, third floors, and archives.

Fire Alarm System
The addressable fire alarm system, main fire alarm control panel, smoke and heat detectors would be upgraded in accordance with NFPA 101 & 72 standards.

Energy Conservation
The phase one window replacement project dramatically improved the envelope performance of Lincoln Hall. The original windows were single pane steel frame windows with no thermal break. The new windows are double pane low-e glazing with thermally broken frames and insulated casing. In phase two there would be several strategies implemented to further reduce energy consumption within the building. The strategies would include variable frequency drives (VFDs) on all mechanical equipment, LED light fixtures throughout the building, occupancy sensors, optimizing daylight, and insulating the building envelope.

1.B. CHANGES FROM THE FACILITY PROGRAM PLAN

Program and Scope Changes
The Lincoln Hall Renovation has been planned as a multi-phase project. To accomplish as much work as possible in phase two work, the project team has identified additive alternates to be included in the phase two bid package. The University would like to award as much work in phase two as the available funding allows. The remaining portions of the project not awarded under the phase two contract would be accomplished in phase three renovations.

1.C. IMPACT TO EXISTING BUILDING & CAMPUS UTILITIES

Campus Utilities
No change is required to campus electrical, water, or sanitary sewer systems as part of this project.

Chilled Water Utility
A new chilled water line would be extended to the building. The line would be sized to include capacity for future building connections.

Domestic Water Utility
The domestic water connection serving the building would be upgraded to accommodate the new fire suppression system. The campus water main would not be impacted.

Network Service
A new fiber optic line would be run from Crothers Hall to Lincoln Hall through the campus tunnel system.

Steam Utility
The steam service and steam condensate return within the building would be replaced. The campus steam service would also be replaced under a separate campus infrastructure project. The campus steam utility serves Crothers Hall, Solberg Hall, and the Pugsley Center. The steam service capacity would not be impacted by the Lincoln Hall renovations.

Storm Sewer Utility
The existing storm water drainage pathways would be repaired to reduce the potential of water infiltration to the building from storm water runoff. The sump pumps within the building would be rerouted to the storm sewer from the sanitary sewer.

1.D. TOTAL CONSTRUCTION COST ESTIMATES

Total Probable Project Cost – Phase 01 Completed 2020	
Construction Cost	$ 2,035,000
Design/Professional Services	305,000
Project Administration	85,000
Furniture, Fixtures, & Equipment	600,000
IT/Networking	80,000
Miscellaneous	66,500
Lead Abatement	93,500
Asbestos Abatement	4,000
Project Cost	**Sub-Total: $ 3,269,000**

Total Probable Project Cost – Phase 02	
Probable Construction Cost	$ 4,625,000
Design Contingency	630,250
Owner Contingency	504,000
Design/Professional Services	431,792
Building Commissioning	120,000
Geotechnical & Construction Testing	62,000
Project Administration	275,000
Furniture, Fixtures, & Equipment	600,000
IT/Networking	80,000

Miscellaneous	286,100
Asbestos Abatement	100,000
Base Probable Project Cost	**Sub-Total: $ 7,714,142**
****Identified Add Alternates or Phase 03 Project**	
Alternate 01: Main Floor Classrooms	$ 492,000
Alternate 02: Faculty Offices	3,584,000
Alternate 03: Reading Room	1,273,000
Alternate 04: Lower-Level Build-Out	452,000
Alternates Probable Cost Phase Two	**Sub-Total: $ 5,801,000**
Probable Project Cost Phase Two w/ Alternates	**Total: $ 13,515,142**
Probable Project Cost (All Phases)	Total: $ 16,784,142

**Fundraising for the project is ongoing. Add alternates would be awarded based on funding available for phase two construction workthe project at the time bids are received.

Phase One (Complete) & Phase Two Construction & Design Funding Sources

FY17	Phase One - HEFF M&R Funds	108,765
FY18	Phase One - HEFF M&R Funds	100,000
FY19	Phase One - HEFF M&R Funds	150,000
FY20	Phase One - HEFF M&R Funds	1,861,460
FY21	Phase Two - HEFF M&R General Funds	210,000
FY22	Phase Two - Bonded HEFF M&R Funds (Construction)	10,000,000
	Total Funding Available:	**$ 12,430,225**
Phase Three Funding Sources		
FY22 to FY26	Phase Three - Private Donations	4,500,000
	Total Funding Available:	**$ 16,930,225**

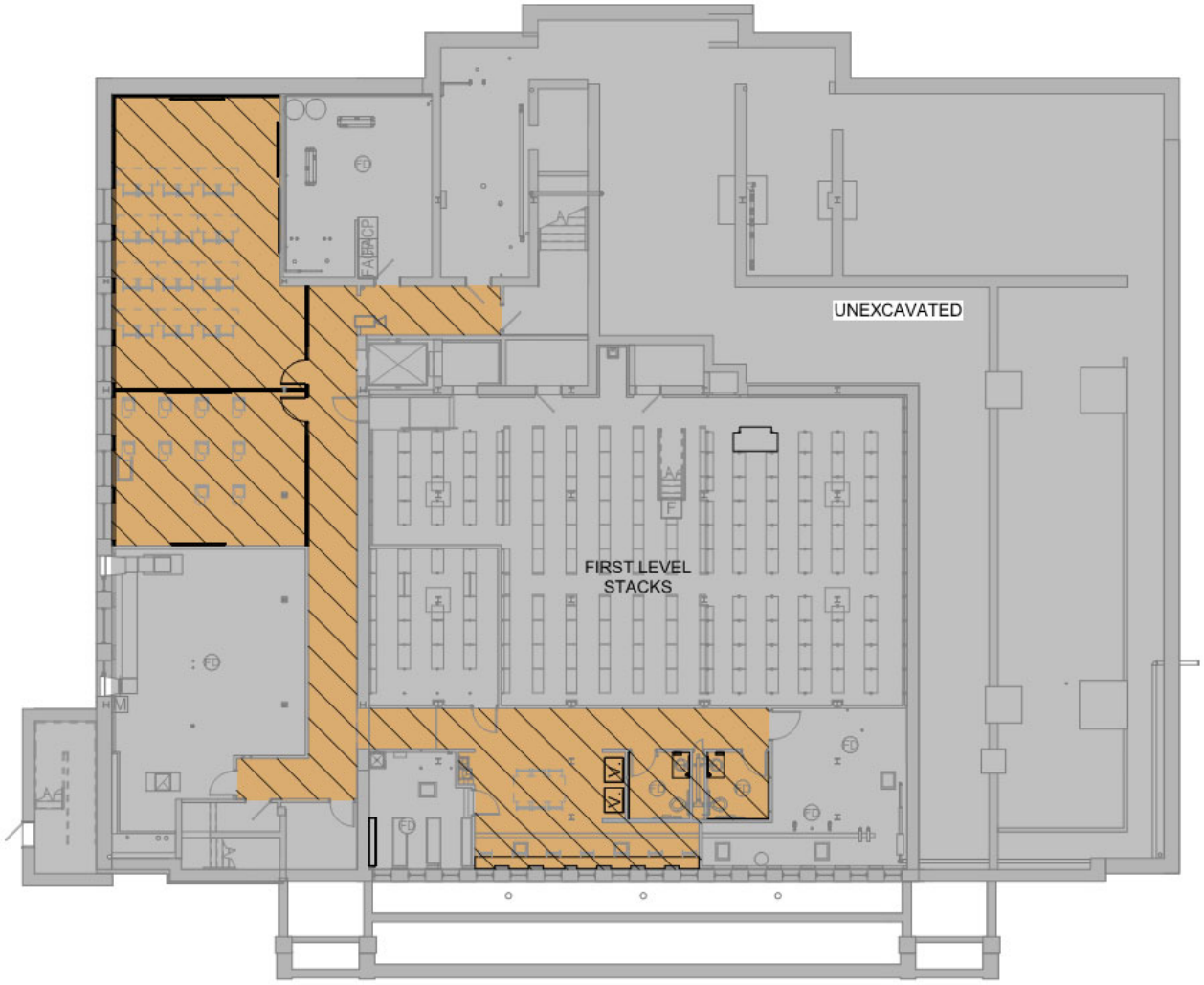
1.E. CHANGES FROM COST ESTIMATES FOR OPERATIONAL OR M&R EXPENSES

The M&R allocation would be $270,000 annually. Maintenance and repairs for this academic facility would continue to be supported by HEFF.

The university estimates routine maintenance expenses for Lincoln Hall to be 1.0% to 1.5% of the project costs or $170,000 to $255,000 annually. Maintenance funding needs for the building would increase from historic levels, due to increased monitoring related to energy management and additional mechanical equipment to be serviced within the building. In addition, the University estimates two custodial FTEs would be required to service the building when it is fully occupied.

Current utility expenses for Lincoln Hall are $74,000 annually. Utility costs for the building would remain relatively unchanged. After renovations are complete additional square footage would be fully cooled and ventilated. The associated cost of operations for cooling and ventilating the building would be offset by improvements to the thermal performance of the building envelope. The envelope upgrades include thermally broken double pane low-e windows and upgraded wall insulation where feasible. There would also be efficiencies gained by connecting to the central chiller plant and upgrading the central steam utility.

End of Report
Attachments: Floor Plans, Alternate Diagrams, & Three-Dimensional Renderings



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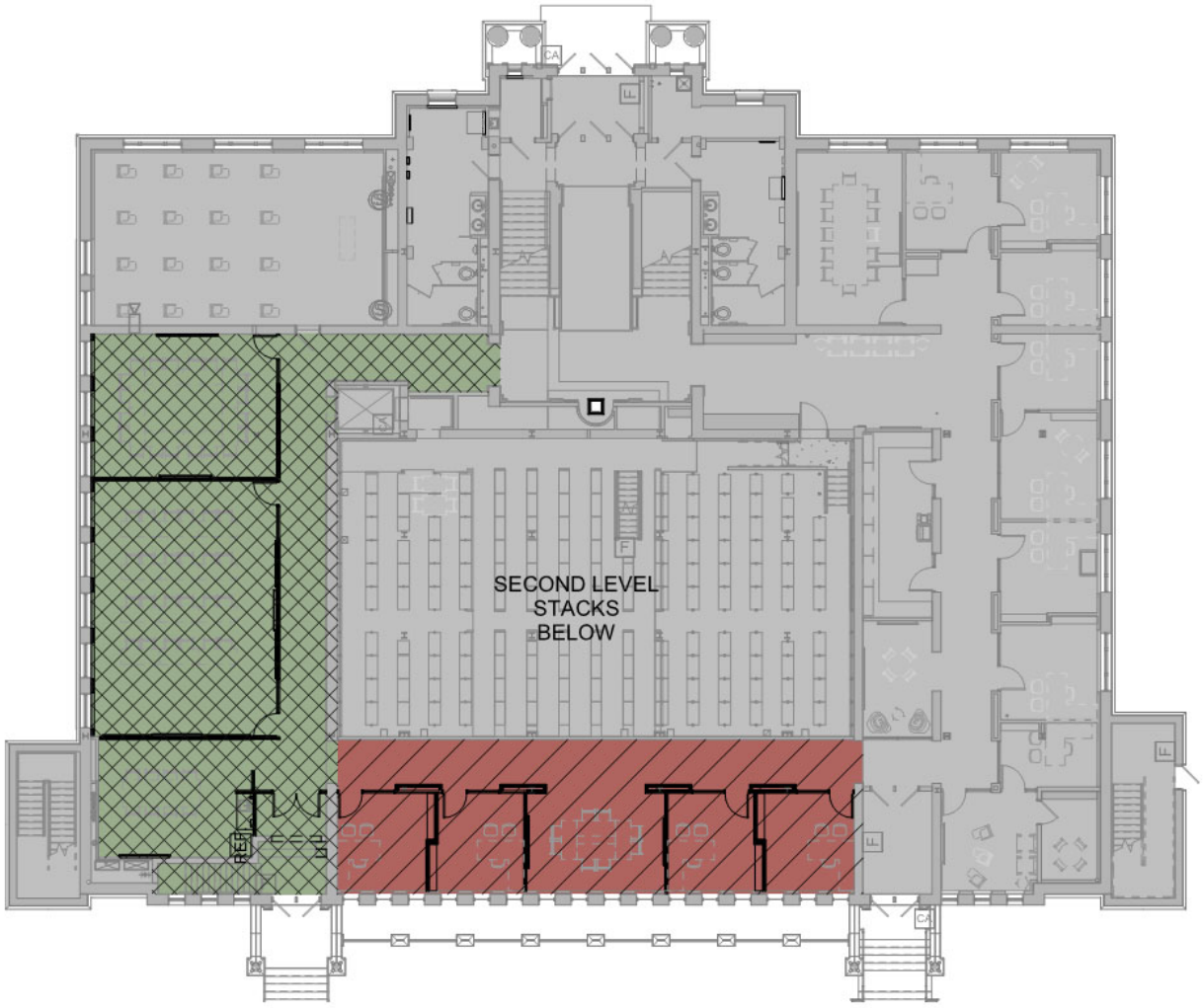
1 LOWER LEVEL FLOOR PLAN

1/16" = 1'-0"

LEGEND

- PHASE 1 / BASE BID
- ALTERNATE #1
- ALTERNATE #2
- ALTERNATE #3
- ALTERNATE #4



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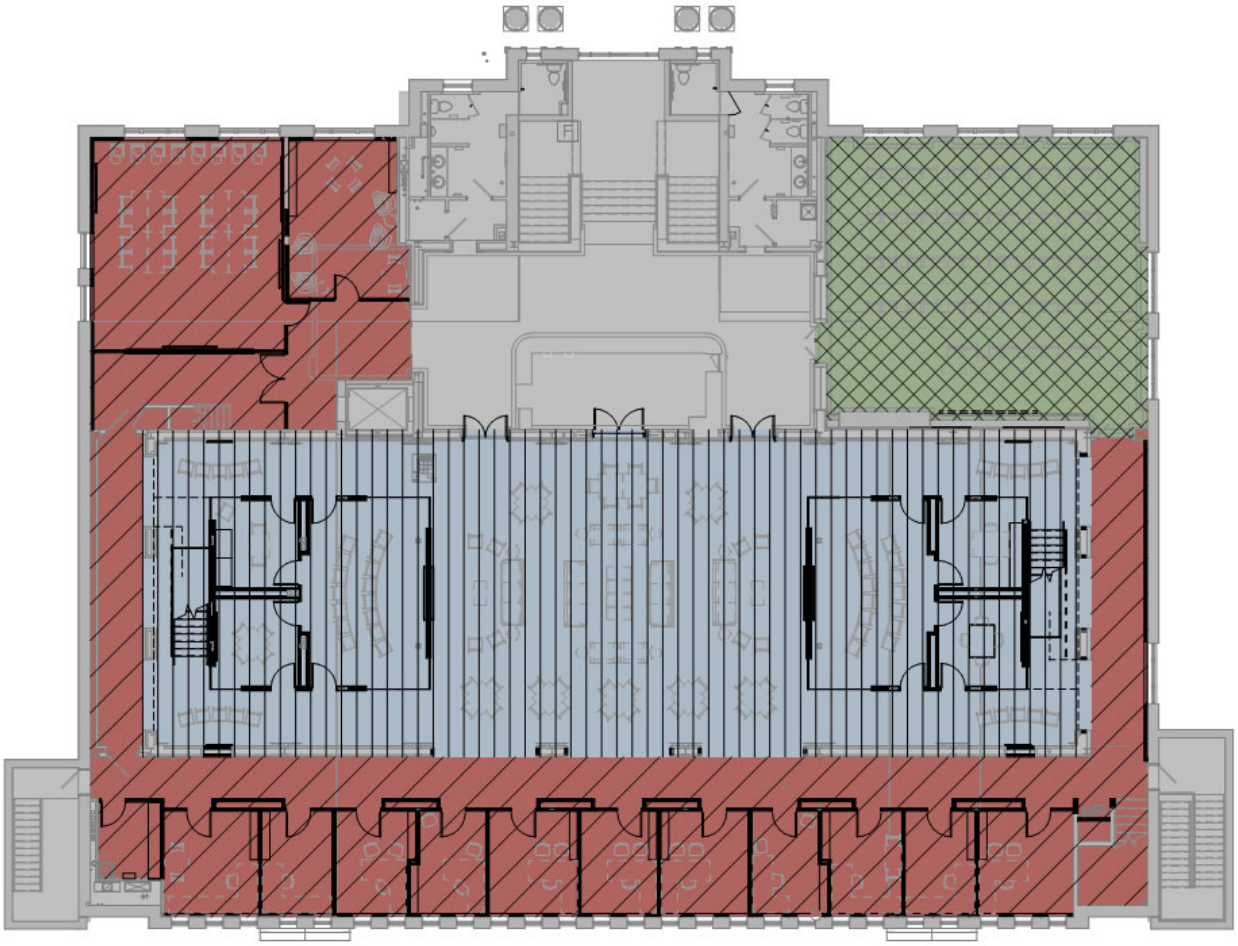
2 FIRST FLOOR PLAN

1/16" = 1'-0"

LEGEND

- PHASE 1 / BASE BID
- ALTERNATE #1
- ALTERNATE #2
- ALTERNATE #3
- ALTERNATE #4



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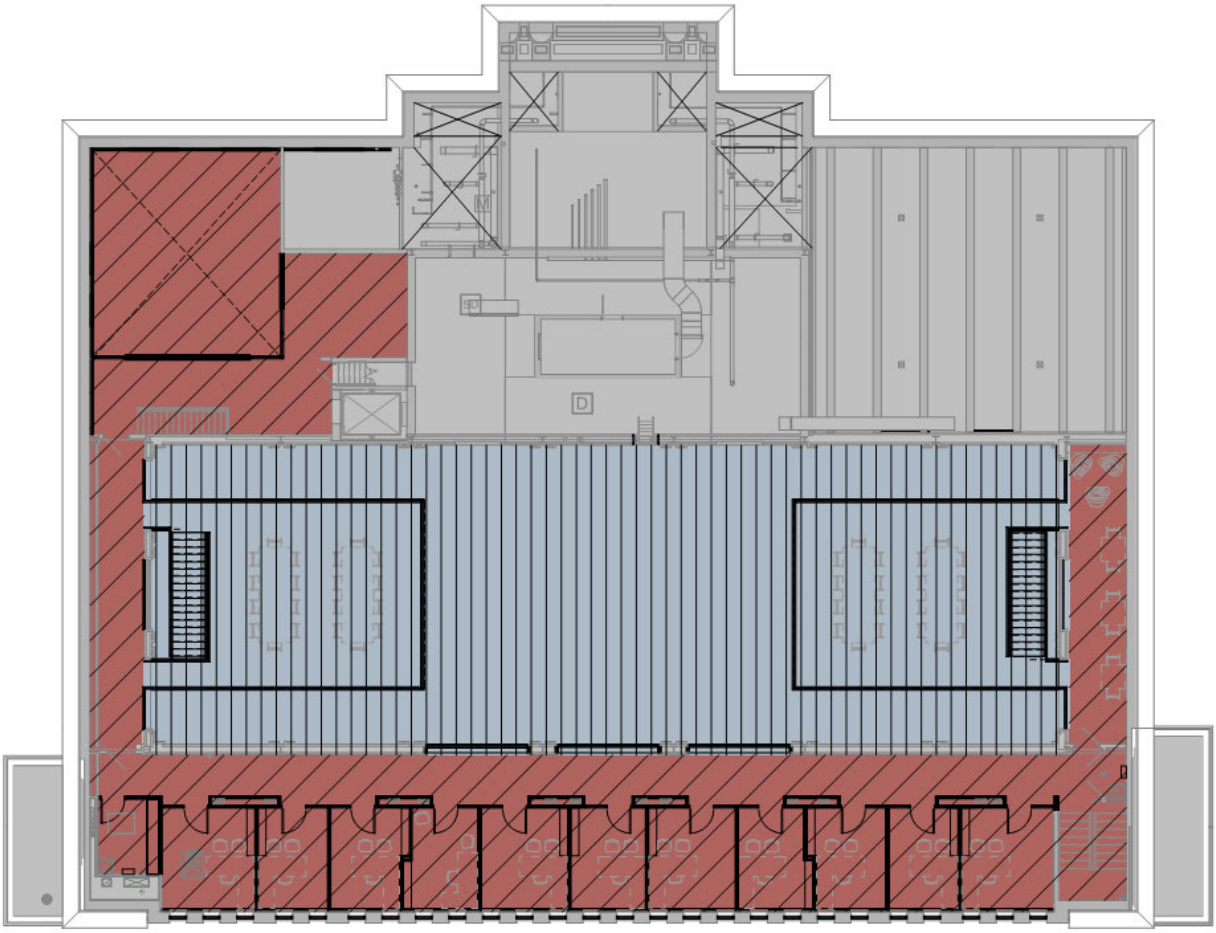
3 SECOND FLOOR PLAN

1/16" = 1'-0"

LEGEND

- PHASE 1 / BASE BID
- ALTERNATE #1
- ALTERNATE #2
- ALTERNATE #3
- ALTERNATE #4



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4 THIRD FLOOR PLAN

1/16" = 1'-0"

LEGEND

- PHASE 1 / BASE BID
- ALTERNATE #1
- ALTERNATE #2
- ALTERNATE #3
- ALTERNATE #4

Rendering of the historic periodicals room, upgraded to serve as a digital/distance learning classroom.

Rendering of the fully renovated reading room, depicting state-of-the-art digital work spaces to enable research and project work.

Rendering of the fully renovated reading room,
on top of one of two glass pavilions.