

**FACILITY DESIGN PLAN (REVISED)
FOR
RENOVATION OF THE 1ST & 2ND FLOORS OF
BERG AGRICULTURAL HALL
RAVEN PRECISION AGRICULTURE CENTER (PHASE 2)
SOUTH DAKOTA STATE UNIVERSITY
March 24, 2021**

SDSU seeks approval of this revised Facility Design Plan to construct the last phase of the Raven Precision Agriculture Center. The project is renovation of the 1st and 2nd floors of Berg Agricultural Hall.

SDSU requests that this revised Facility Design Plan be approved which will allow the second phase of the project to proceed to design development, construction drawings, bidding, and construction.

Project summary:

The Precision Agriculture Center Preliminary Facility Statement was approved by the Board of Regents in August 2015. A building committee was appointed and the design team of EAPC Architects, with the Clark Enersen Partners as laboratory design consultants, were selected to design the project. A Revised Preliminary Facility Statement was approved by the Board of Regents in December 2016. The Facility Program Plan was approved by the Board of Regents in October 2017. The scope of the project included construction of a new building and renovation of Berg Agricultural Hall. The Facility Design Plan for Renovation of the 1st and 2nd Floors of Berg Agricultural Hall was approved in December of 2020.

Funding authority for this project exists through approval of the Raven Precision Agriculture Center (HB 1264 – 2018 legislative session). Spending authority of \$55,000,000 was approved. The funding appropriated for the project was \$46,100,000 which allowed for construction of the new building, the Raven Precision Agriculture Center. The spending authority remained for the Renovation of Berg Ag Hall.

SDSU seeks to utilize the remaining authority granted by HB 1264 to complete the renovation of the first and second floors of Berg Agricultural Hall. We are utilizing EAPC, the design team selected by the building committee, to update the scope of the renovations and they will continue as the designers of this project.

The Facility Design Plan presented to the BOR in December 2020 included \$2,000,000 in appropriated general funds from the 2021 legislative session. The funding request was included with the 2021 BOR budget request to the governor's office as a special one-time request of funding. This was denied. During the legislative session HB 1240 was introduced to provide \$2,000,000 in general funds for the benefit of this project. HB 1240 was eventually deferred to the forty-first day, effectively denying this request. As a result, the project scope needed to be reduced to fit the available funding.

We have described planned changes to the scope of the project below and on the attached drawings. An updated project schedule is also provided.

a. Architectural, Mechanical, and Electrical Schematic Designs

The program space requirements and scope of the project were developed in 2017. The renovated space in Berg Ag Hall will include research laboratories, laboratory support space, two classroom laboratories, and office space. The plans have been modified to further minimize the amount of space to receive major renovations and maximize space to receive minor renovations. One, possibly two laboratories will be constructed as shelled space to reduce project costs. One classroom, in lieu of two will be upgraded. Minimal office space modifications will be made.

The basement and third floor were renovated in 2009-2010 with the 2007 BOR Critical M&R Bond Issue. That project provided the infrastructure (sprinkler system, electrical transformer upgrade, electrical switchgear upgrade, mechanical space, and elevator) that will support the necessary renovations to the remainder of the building.

The space needs remain consistent with the programmatic needs described in the Precision Ag Project Facility Program Plan from 2017. The spaces to be included in the renovations are included in an attachment to this Facility Design Plan. A goal for development of precision agriculture is to provide modern classroom and laboratory space and assist in developing a workforce of agronomists and engineers. This goal remains and is the continued focus of the project.

The Berg Agricultural Hall phase of the Raven Precision Agriculture Center includes:

- Specialized laboratories (e.g. plant pathology, plant disease research, and crop pest management) to support cross disciplinary collaborative research in crop production and pest management. The following laboratories will be

provided as part of the project; Entomology Labs, Plant Pathology Lab, and Plant Virology Lab. The Plant Pathology Diagnostic Lab and the Arboriculture Lab will be designed as shell space for future outfitting and construction. Both of these laboratories will be included as add alternates to the plans to be fitted out as the funding allows.

- Space for scientists, faculty, extension specialists, students, and administrative personnel.

Architectural

The first and second floors of Berg Agricultural Hall will be renovated under the scope of the project to provide updated research laboratories and improved office space. This work will include new layouts and modernization of a large portion of the first and second floors as well as complete mechanical, fire protection and electrical upgrades in all affected areas. The mechanical shell spaces built as part of the 2010 renovations and located at each floor will be used to accommodate new equipment and infrastructure. Specific benefits to the Plant Science portion of the Precision Ag curriculum will include:

- Four new research laboratories and their associated support spaces focusing on Plant Pathology, Plant Virology, Entomology. One research laboratories focusing on Arboriculture will be constructed as shell space and included as bid alternates.
- The Plant Pathology Diagnostic Service Laboratory suite will be constructed as a shell space and included as a bid alternate.
- One teaching laboratories for Plant Pathology & Entomology will be renovated in a current Food Science Research Laboratory space. A Biology Laboratory will receive only infrastructure modifications.
- Reassigned Plant Science Faculty and Technician Offices
- Reassigned Plant Science Graduate Student Work areas to accommodate up to 36 students.

All space on the first and second floors will receive the essential infrastructure improvements. These include all offices, conference rooms, storage spaces, and classrooms. These modifications include:

- Heating system replacement
- Asbestos containing materials abatement
- Central system air conditioning
- Fire sprinklers
- New ceilings and upgraded lighting systems
- Enlarged doorways as needed to provide ADA access

- New vinyl composition tile floor
- Painting will be limited to new walls and patching

This project will also include moderate renovations to one non-research/teaching area of the first floor as needed to accommodate the new lab configurations and provide a replacement plant science classroom. Areas that receive median level renovations will receive all the previously noted modifications, but will also include:

- Additional electrical modifications
- Refinishing all walls
- Relocation of one or more walls

Laboratories on the second floor will receive substantial work. These will be gutted and completely renovated or constructed as shell space. The labs will include all new finishes along with wood laboratory casework, epoxy resin or phenolic countertops, stainless steel fixtures, built-in equipment, and other finishes appropriate to each lab space. Attached are schematic floor plans of the project. The second floor labs to be fully renovated or included as bid alternates are highlighted on the floor plans.

The existing corridor walls are a dated glazed green block and the current plan is for these to remain, but covered with gypsum board and painted to match the aesthetics of the 2010 renovations.

Mechanical

The 2010 project constructed the space that will be utilized as mechanical rooms for the building. The first and second floors each have a mechanical room that will contain the air-handling units, laboratory exhaust systems, circulation pumps, and controls to serve the climate control needs of each floor. The mechanical systems throughout the first and second floors of the building will be upgraded for better occupant comfort, health, & safety. The existing through the wall air conditioners and multi split systems serving many of the internal spaces will be removed, along with the old air handler providing minimal ventilation. This equipment will be replaced with new air handling units to provide a central variable air volume system for each floor. Standalone humidification devices will be integrated with the air handlers to control humidity in the building. The heating, ventilating, and air conditioning systems will be installed to serve the entire floor, regardless of the extent of architectural remodeling.

New laboratory exhaust fans will be installed on the roof and ducted from existing

and new mechanical chases to the areas they serve. Where laboratory areas may contain harmful chemical vapors, particulate, & biological aerosols, exhaust fans will discharge these harmful chemicals at least 10 feet above the roof of the building. Redundant exhaust fans will be provided for the exhaust system. For laboratories, air handling units will provide once through air flow utilizing 100% outside air for laboratory ventilation.

Plumbing system utilities upgrades will include domestic & reverse osmosis water, compressed air, vacuum, and sanitary and chemical waste piping to serve the lab and research spaces. Areas within each laboratory will be provided for containerized laboratory gases (e.g. carbon dioxide, nitrogen) and piping from the tanks to benches or fume hoods. The existing fire suppression system will be expanded to serve the first and second floors.

Electrical

The electrical infrastructure of the existing building (120/208V 3 phase, 3,000 ampere service) will be expanded to serve the renovated laboratories. LED lighting systems and lighting controls will be used throughout the facility. Fixtures that require emergency egress shall be provided integrated battery packs in similar design to existing remodeled spaces. Receptacle layouts will support lab equipment and general-purpose needs. Raceways will be provided for all computer and telecommunications needs. Key card access security system will be provided at all necessary laboratories for secure controlled access. Addressable fire alarms will be utilized where detection is required to supplement the fire suppression needs.

b. Changes from the Facility Design Plan

The design of the project has been changed as described above to meet the reduced budget. A substantial portion of the project scope remains unchanged. The primary goals of this project also remain unchanged.

The laboratories, most classrooms, and much of the laboratory support space remain the same as presented in December 2020. Faculty and research office space will be reduced slightly to retain the agriculture extension and 4-H offices within the building. The building will continue to retain the administrative offices for the College of Agriculture and Food Sciences, as well as offices for the SDSU Agricultural Experiment Station.

c. Impact to Existing Building or Campus-Wide Heating/Cooling/Electrical Systems

The renovations will have no effect on campus heating, cooling, or electrical utility systems. The building infrastructure (steam, chilled water, water service, fire sprinkler, sanitary sewer, and electrical services) were upgraded by the renovation project completed in 2008-2010. No further upgrades are anticipated.

d. Total Construction Cost Estimates

The available project funding is shown below and is less than the spending authority. The project is being designed to the funding that can be provided to the project.

The project funding sources are summarized as follows:

Donations	\$ 1,000,000
HEFF (FY2018, 2019, 2021)	\$ 4,856,141
HEFF General (FY2020 & FY2021)	\$ 2,234,243
HEFF Fee (FY2021)	\$ 104,000
Estimated funds from Raven Precision Ag Center	\$ 100,000
Total	\$ 8,294,384

Project Estimate Summary

Construction Costs	\$ 6,290,623
Asbestos Abatement	\$ 165,175
Construction Costs Subtotal	\$ 6,455,798
Design/Professional Services/LEED Services	\$ 686,870
Construction Testing/Commissioning	\$ 38,735
Project Administration	\$ 345,385
Project Relocation Costs	\$ 150,000
Furnishings/Network/Technology/Signage/Equipment	\$ 125,000
Signage/Window Coverings/Custodial/equipment	\$ 50,000
Owner Contingency (~7%)	\$ 451,906
Non-Construction Costs Subtotal	\$ 1,847,896
Estimated Project Cost	\$ 8,303,694

e. Changes from Cost Estimates for Operational or M&R Expenses

Impact to M&R: The project is for building renovations to an existing building. We do not anticipate any changes to maintenance and repair needs.

Budget for ongoing operations: Berg Ag Hall is not fully air conditioned on the first and second floors. The existing laboratories are not ventilated to the same

standards as modern facilities. We anticipate the fully renovated laboratory space will use more electrical energy, as the density of power outlets will be greater. Some of the additional utility costs will be offset by the energy efficiency of a modern HVAC system. We estimate the additional electrical utility costs to be \$12,000.

There will be costs for purchasing custodial equipment and stocking the building with maintenance supplies that will serve the renovated space. This equipment will replace outdated existing equipment. The cost of this equipment is included in the budget of the project. We do not anticipate any additional costs for routine maintenance expenses. The floor areas and uses of the building to be served by custodial services and routine minor maintenance will be unchanged.

Annual M&R impact - none

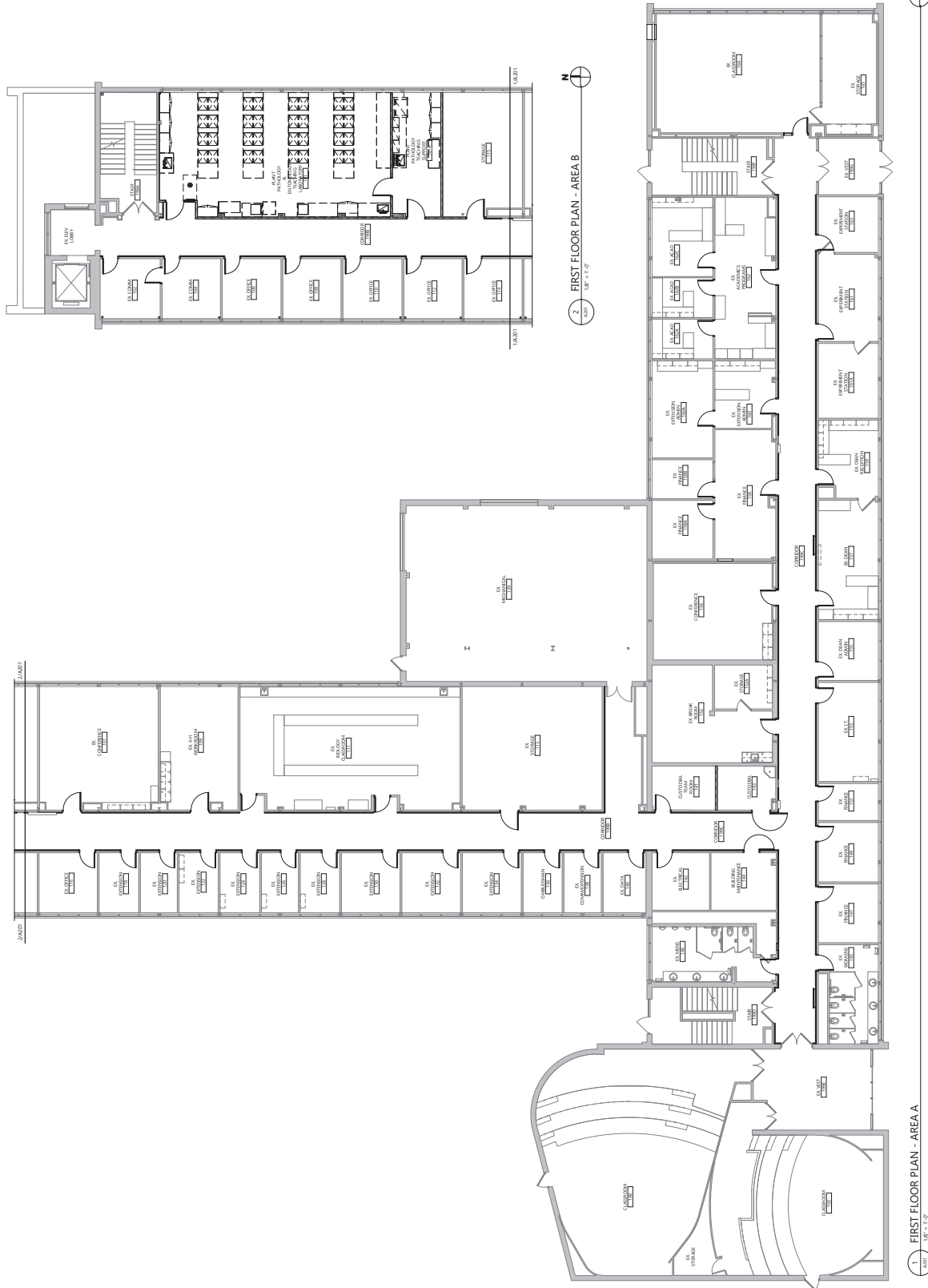
Utility Costs - \$12,000/year estimated

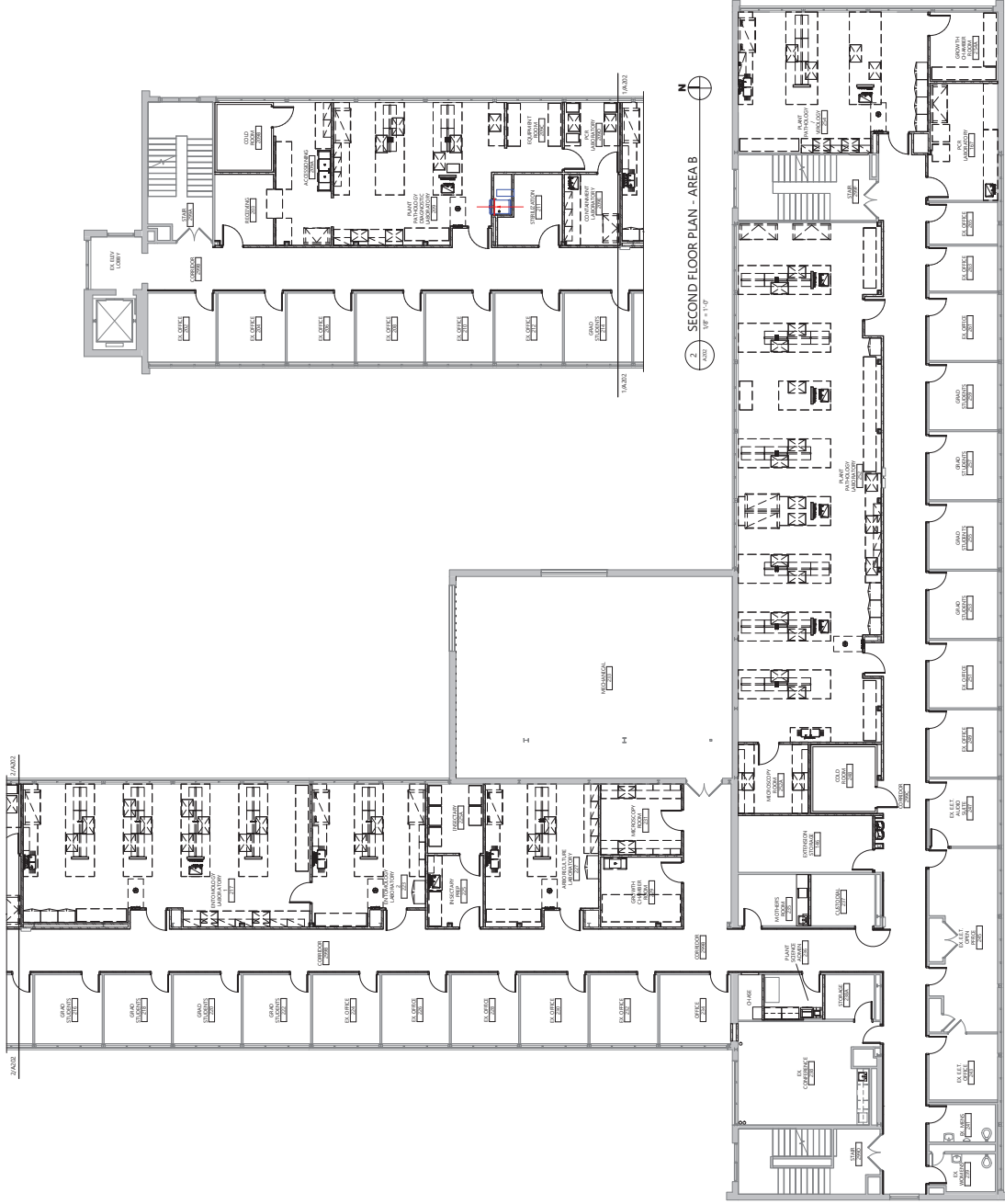
One-time maintenance equipment costs - \$30,000

Custodial and simple maintenance costs - unchanged

Attachments: Architectural Floor Plans, Project Milestone Graph

End of report 3/24/2020





1 SECOND FLOOR PLAN - AREA A
 1/8" = 1'-0"

2 SECOND FLOOR PLAN - AREA B
 1/8" = 1'-0"



PRECISION AGRICULTURE BERG AG HALL RENOVATION

03/25/2021

BERG AGRICULTURAL HALL RENOVATIONS
 South Dakota State University
 UPDATED SCHEDULE (3/24/2021)

