

**FACILITY DESIGN PLAN
FOR
RENOVATION OF THE 1ST & 2ND FLOORS OF
BERG AGRICULTURAL HALL
RAVEN PRECISION AGRICULTURE CENTER (PHASE 2)
SOUTH DAKOTA STATE UNIVERSITY
November 2, 2020**

SDSU seeks approval of this 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 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 project was submitted to the 2018 legislative session and approved (HB 1264). The legislation authorized the entire project scope. 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 Raven Precision Agriculture Center has proceeded through design and bidding and is currently under construction. It is scheduled for completion in July 2021. The project delivery method utilized for the project is Construction Manager at Risk.

SDSU seeks to utilize the authority granted by HB 1264 to complete the remainder of the project, 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.

SDSU intends to proceed in the following manner. The design team will remain the same, with one exception. The mechanical/electrical engineering subconsultant has been changed from Farris Engineering to EAPC. Clark Enersen Partners will remain as laboratory design consultants. The second phase of the project will proceed using a project delivery method more suitable to the size and scope of the remaining work. We will utilize the Design-Bid-Build method. The cost of the project is more suited to this delivery method and we believe there will be good competition among general contractors for this project. We believe the additional costs that would be accrued by retaining the construction manager at risk are not justified nor would they be offset by utilizing this project delivery method. The project will be competitively bid and constructed by the general contractor submitting the lowest responsible bid.

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 were modified to minimize the amount of space to receive major renovations and maximize space to receive minor renovations. No laboratories or classroom spaces have been reduced significantly, and office space needs have been modified to suit the laboratories and retain the AES/Extension offices within the building.

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. This second phase will complete renovations to this 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.

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.
- 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 teaching and research laboratories as well as office space. This work will include new layouts and modernization of large portions 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 this new equipment and infrastructure. Specific benefits to the Plant Science portion of the Precision Ag curriculum will include:

- Seven new research laboratories and their associated support spaces focusing on Plant Pathology, Plant Virology, Arboriculture, Entomology, Weeds/Crop Extension, and Food Science.
- An upgraded Plant Pathology Diagnostic Service Laboratory suite
- Renovated teaching laboratories for Biology & Microbiology and Plant Pathology & Entomology and the associated preparation space.
- Upgraded Plant Science Faculty and Technician Offices
- New Plant Science Graduate Student Work areas to accommodate up to 36 students.

Attached are schematic floor plans of the project. These floor plans are color coded to show the areas of the building that will receive minor level, median level, and substantial renovations. Areas that will receive minor renovations will receive the following modifications:

- 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 non-research/teaching areas of the first and second floor as needed to accommodate the new lab configurations and provide other necessary spaces for the building including: a mother's room, custodial space, student collaboration space, conference room and other support rooms. 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

Areas that receive substantial work, will be gutted and completely renovated. Classroom laboratories and research laboratories plus their support spaces are the areas to receive this extensive work. 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.

In addition, all of the existing non-compliant doors will be replaced with 3'-0" or 3'-6" doors to meeting ADA requirements. 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 VRV systems serving many of the internal spaces will be removed, along with the old air handler providing 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 benchtops 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 and offices. 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 Program Plan

Much of the project scope remains unchanged from that described in 2017. The laboratories, classrooms, and much of the laboratory support space remain the same. 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.

The project authorized by the Board of Regents and subsequently, by the 2018 South Dakota Legislature included the new Precision Agriculture Center and renovation of the first and second floors of Berg Agricultural Hall. The budget of the project and approved spending authority is \$55,000,000.

In 2018, the funding appropriated for the project totaled \$46,100,000. The difference between the spending authority and the appropriated funding is the value of the Berg Agricultural Hall renovations. By statute, this value of \$8,900,000 can be adjusted for inflation and supplemented with other funding, but

should not exceed a value 25% higher than authorized. Using this measure, the allowable change in value would be a maximum of \$2,250,000, making the maximum spending authority of the Berg Agricultural Hall Renovations project \$11,150,000.

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 estimated project spending authority is \$11,150,000. The available project funding is shown below and is less than the inflated spending authority. The project costs are estimated to be less than the spending authority and the available funding. The project will be 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
State General Funds (FY22 one time allocation)	\$ 2,000,000
Estimated funds from Raven Precision Ag Center	\$ 100,000
Total	\$10,294,384

Project Estimate Summary

Construction Costs	\$ 7,081,893
Construction contingency (~5%)	\$ 354,095
Asbestos Abatement	\$ 165,175
Construction Costs Subtotal	\$ 7,601,163
Design/Professional Services/LEED Services	\$ 679,870
Construction Testing/Commissioning	\$ 49,491
Project Administration	\$ 424,683
Project Relocation Costs	\$ 150,000
Furnishings/Network/Technology/Signage/Equipment	\$ 558,000

Signage/Window Coverings/Custodial/equipment	\$ 50,000
Owner Contingency (~5%)	<u>\$ 362,353</u>
Non-Construction Costs Subtotal	\$ 2,274,397
 Estimated Project Cost	 \$ 9,875,560

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 & Tabulation of Space Needs

End of report 11/2/2020