

SOUTH DAKOTA BOARD OF REGENTS

Budget and Finance

AGENDA ITEM: 7 – B
DATE: May 13-15, 2024

SUBJECT

SDSU McFadden Biostress – Facility Program Plan (FPP) and Facility Design Plan (FDP)

CONTROLLING STATUTE, RULE, OR POLICY

- [SDCL § 5-14-1](#) – Classification of Capital Improvements
- [SDCL § 5-14-2](#) – Supervision by Bureau of Administration of Capital Improvement Projects – Payment of Appropriated Funds
- [SDCL § 5-14-3](#) – Preparation of Plans and Specifications for Capital Improvements – State Building Committees – Approval by Board or Commission in Charge of Institution
- [BOR Policy 6.4](#) – Capital Improvements
- [BOR Policy 6.6](#) – Maintenance and Repair

BACKGROUND / DISCUSSION

South Dakota State University (SDSU) requests approval of this Facility Program Plan for McFadden Biostress Lab Exhaust Upgrades. The Preliminary Facility Statement was approved by the Board of Regents at the March 2023 meeting. A building committee was selected and granted approval for the continuation of West Plains Engineering (WPE) design services through the remainder of the project. WPE was selected through a competitive selection process under statutory requirements. The project will be competitively bid on in May of 2024 following the State of South Dakota procurement laws.

IMPACT AND RECOMMENDATIONS

McFadden Biostress Lab was constructed in 1993 of a durable concrete sub-structure, with concrete and steel super-structure. The exterior cladding consists of concrete split face block and brick masonry units. Interior finishes include ceramic tile, vinyl composite tile, steel stud and gypsum board walls, and suspended acoustical ceiling tile ceiling systems. The building includes four stories which consist of a basement, two above grade floors, and a mechanical penthouse.

(Continued)

DRAFT MOTION 20240513_7-B:

I move to approve the combined Facility Program Plan and the Facility Design Plan for the SDSU McFadden Biostress Lab exhaust upgrades to be funded with a combination of general fund and HEFF M&R.

The floor-to-floor height within the building is between 14’ and 16’ which is customary in laboratory buildings. The overall building is in good condition but needs maintenance and repair to maintain the overall building integrity and improve performance.

The building has received several renovations throughout its history. Most renovations in the building consisted of programmatic modifications of classroom and laboratory space. The significant maintenance and repairs in the building included HVAC and control upgrades in 2017, 2018, and 2019.

McFadden Biostress is one of SDSU’s largest consumers of energy as it is one of the largest facilities on campus and includes a significant amount of laboratory space. The current lab spaces have constant volume, individual exhaust fans for each lab and fume hood, with no energy recovery system. The combination of these creates an opportunity for significant energy savings and operational improvements through an exhaust upgrade project. The project will not modify space use types, programmatic needs of building occupants, or overall assignable square footage.

The exhaust upgrade project should not have a significant impact on the overall maintenance and repair budget for academic facilities. The building would continue to be supported by HEFF.

PROPOSED FUNDING SOURCES

Total costs are estimated to be near \$11.9M, with funding provided through FY23 supplemental General Funds and a series of HEFF M&R allocations, as outlined below.

Laboratory Exhaust Upgrades & Roof Replacement		\$9,832,500
Project Administration		465,812
Miscellaneous (includes 5% contingency)		608,625
Design/Professional Services		942,000
Probable Project Cost		\$11,848,937
FY23	Supplemental General Funds	\$6,000,000
FY19	3H1903 HEFF M&R	280,000
FY20	3G2007 HEFF M&R	100,000
FY24	3G2402 HEFF M&R	1,000,000
FY25	3G2505 HEFF M&R	3,380,000
FY26	3H26XX HEFF M&R	1,240,000
Total Funding Available		\$12,000,000

ATTACHMENTS

Attachment I – SDSU McFadden Biostress FPP and FDP

FACILITY PROGRAM PLAN
MCFADDEN BIOSTRESS LAB EXHAUST UPGRADES
SOUTH DAKOTA STATE UNIVERSITY
DATE: April 2024

South Dakota State University requests approval of this Facility Program Plan for McFadden Biostress Lab Exhaust Upgrades.

The Preliminary Facility Statement was approved by the Board of Regents at the March 2023 meeting. A building committee was selected and granted approval for the continuation of West Plains Engineering (WPE) design services through the remainder of the project. WPE was selected through a competitive selection process under statutory requirements. The project will be competitively bid on in May of 2024 following the State of South Dakota procurement laws.

a. Programmatic justification for discrete spaces

McFadden Biostress is one of SDSU's largest consumers of energy as it is one of the largest facilities on campus and includes a significant amount of laboratory space. The current lab spaces have constant volume, individual exhaust fans for each lab and fume hood, with no energy recovery system. The combination of these creates an opportunity for significant energy savings and operational improvements through an exhaust upgrade project. The project will not modify space use types, programmatic needs of building occupants, or overall assignable square footage.

b. Gross square footage

McFadden Biostress Lab contains 115,970 assignable square feet and the overall gross building area is 128,244 square feet. Space use within the building consists of 8% classroom, 49% classroom and non-classroom laboratories, 9% office, 4% student study space, and 30% building service area (circulation, custodial, restrooms, & mechanical spaces). The renovation will not change the overall assignable square footage of the building but will add approximately 1,968 square feet of gross area for mechanical space that will house exhaust fans and energy recovery units.

c. Site Analysis

McFadden Biostress Lab is located on North Campus Drive east of Raven Precision Agriculture and south of the Animal Science Complex. The main entrance is oriented to the west across from Raven Precision Agriculture and there are secondary entrances and small parking lots to the south and east. There is a loading dock that serves the building on the east side which is accessed from North Campus Drive. The parking lot on the south side of the building will be used for construction staging and access. Access for building occupants will remain open throughout construction.

Existing utility connections will not be impacted by the project.

d. Description of key building features

McFadden Biostress Lab was constructed in 1993 of a durable concrete sub-structure, with concrete and steel super-structure. The exterior cladding consists of concrete split face block and brick masonry units. Interior finishes include ceramic tile, vinyl composite tile, steel stud and gypsum board walls, and suspended acoustical ceiling tile ceiling systems. The building includes four stories which consist of a basement, two above grade floors, and a mechanical penthouse. The floor-to-floor height within the building is between 14' and 16' which is customary in laboratory buildings. The overall building is in good condition but needs maintenance and repair to maintain the overall building integrity and improve performance.

The building has received several renovations throughout its history. Most renovations in the building consisted of programmatic modifications of classroom and laboratory space. The significant maintenance and repairs in the building included HVAC and control upgrades in 2017, 2018, and 2019.

The roof is the original ballasted EPDM that was installed in 1994. There have been minor repairs to the roofing system in 2013 and it needs to be replaced. The roof will be replaced as part of the lab exhaust project upgrade project.

e. Illustrative floor plans

The schematic roof plans for the exhaust upgrade project are attached.

f. Initial cost estimates

Cost projections include the scope of all maintenance, repairs, renovations, and alterations. The project scope includes renovation work pursuant to paragraph 1c and 1d of BOR policy 6.6.; which allows M&R higher education funds to be allocated to the project. The cost estimate includes contingency allowances for the design and construction phases, consultant service fees, project management costs, and other miscellaneous costs associated with construction projects.

Maintenance & Repair Construction

Laboratory Exhaust Upgrades & Roof Replacement	\$ 9,832,500
Project Administration	465,812
Miscellaneous (includes 5% contingency)	608,625
Design/Professional Services	942,000
Probable Project Cost	\$ 11,848,937

g. Impact to M&R

The exhaust upgrade project should not have a significant impact on the overall maintenance and repair budget for academic facilities. The building would continue to be supported by HEFF.

h. Budget for ongoing operational expenses

Current utility expenses for McFadden Biostress Lab are \$295,000 annually. Utility costs for the building would decrease because of the efficiency gained by this project. The conservative estimate of utility cost savings is 5%. The specific opportunities for savings include variable speed exhaust fan motors and reduction, on-demand controls, and consolidation of the lab exhaust fan system to reduce the number of overall fans.

Routine maintenance expenses will also be reduced due to the upgraded equipment and the reduction in the overall quantity of exhaust fans that require maintenance.

i. Proposed funding sources for costs of

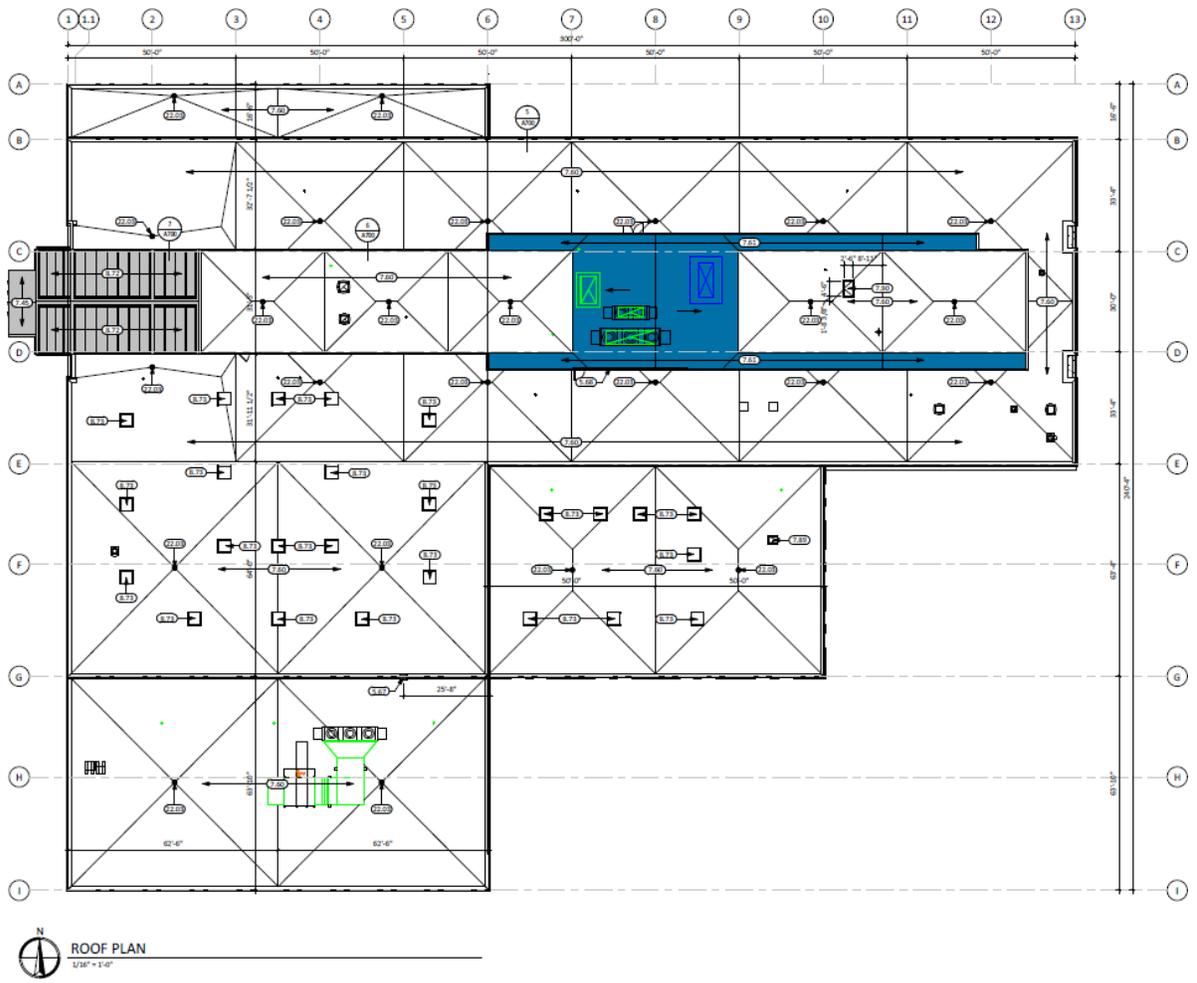
1. Construction & Design Funding Sources:

The following resources would be used to fund the maintenance, repair, and alteration work:

FY 23	Supplemental General Funds	\$	6,000,000
FY 19	3H1903 HEFF M&R		280,000
FY 20	3G2007 HEFF M&R		100,000
FY 24	3G2402 HEFF M&R		1,000,000
FY 25	3G2505 HEFF M&R		3,380,000
FY 26	3H26XX HEFF M&R		1,240,000
Total Funding Available		\$	12,000,000

- a. Utility Costs – funded from the state utility allocation pool.
- b. Operating Costs – funded through university operating budgets.
- c. Maintenance and Repair – funded through HEFF & Supplemental General Funds.

End of report
04/22/2024



**FACILITY DESIGN PLAN FOR
MCFADDEN BIOSTRESS LAB EXHAUST UPGRADES
SOUTH DAKOTA STATE UNIVERSITY
DATE: April 2024**

SDSU requests approval of this Facility Design Plan and authorization for the project to proceed to public bidding for McFadden Biostress Lab Exhaust Upgrades.

The Facility Program Plan is being submitted concurrently with this Facility Design Plan. The Preliminary Facility Statement was approved at the March 2023 meeting. A building committee was appointed, and the design team of West Plains Engineering was selected and granted approval for the continuation of design services.

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:

Drawing Title	Page No.
Roof Plan	4
Elevations	5

Architectural and Structural Schematic:

As stated in the Facility Program Plan, SDSU is planning to upgrade the laboratory exhaust system that serves McFadden Biostress Labs. Modifications will include upgrades to the exhaust system, expansion of the mechanical penthouse, ductwork replacement, ceiling repairs, and roof replacement. The modifications to the existing mechanical penthouses will require modifications to the existing building structure. Additional beams and bracing for roof joists will be installed to support the additional enclosed space. Steel construction will be used to tie into the existing steel structural components and minimize disruption to building occupants. The work will be bid under a single prime contract and completed over the course of two years. The project will not significantly impact the architectural characteristics of the building.

Maintenance & Repair:

The project will upgrade the existing laboratory exhaust system. As part of the work the ductwork serving the system will be replaced, ceilings impacted by the work will be replaced, HVAC equipment & controls will be upgraded, and the roof will be replaced.

Mechanical Schematic:

The exhaust upgrades will consolidate 58 exhaust fans into three sets of high-plume strobic exhaust fans. Each exhaust system will consist of three individual laboratory exhaust fans which will allow for individual control and redundancy in the exhaust system. The equipment will be in the new mechanical penthouse on

the three-story portion of the building and on the rooftop above the single-story portion of the building. Ductwork will be replaced and extended from the new equipment to laboratories throughout the building.

The new centralized exhaust systems will include energy recovery systems to reclaim the energy from the exhausted air. Energy recovery coils will be placed in each of the exhaust systems airstreams. Each energy recovery unit will be matched to an exhaust fan system. The consolidation of equipment and additional energy recovery will create significant energy savings for the building.

The project will replace air handling units two and three with more efficient equipment. The units will include variable frequency drives, thermal recovery coils, preheating coils, filtration, and humidification. The work will also upgrade control valves and coils serving the units.

The project will also modify the existing mechanical penthouses and create additional penthouse space to allow for equipment to be moved off the rooftop. Relocating the equipment to the enclosed penthouse will improve the equipment's operation and longevity. It will also make a better condition for continued planned preventative maintenance.

The building areas impacted by the renovation will function the same after the project as they do today. The project will upgrade and simplify the systems. This will create operational efficiency and reduce energy consumption. The upgrades will also upgrade the laboratory exhaust to current standards.

Plumbing:

There are no planned disruptions or modifications for the work associated with this project.

Electrical Schematic:

The McFadden Biostress Lab Exhaust Upgrades project will include upgrades to lighting in mechanical service areas to accommodate modifications to existing piping and ductwork. The project will also provide new electrical connections to laboratory exhaust fans, energy recovery pumps, and variable air volume boxes. Equipment controls will also be upgraded as part of this project.

Data & Communications:

Hardwired data ports will be provided for all equipment sensors and building automation systems.

Fire Alarm System:

The addressable fire alarm system will be modified as required to allow for new ductwork and mechanical piping.

1.B. CHANGES FROM THE FACILITY PROGRAM PLAN

Program and Scope Changes

There are no significant changes to the project scope.

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.

1.D. TOTAL CONSTRUCTION COST ESTIMATES**Total Probable Project Cost**

Laboratory Exhaust Upgrades & Roof Replacement	\$ 9,832,500
Project Administration	465,812
Miscellaneous (includes 5% contingency)	608,625
Design/Professional Services	942,000
Project Cost	Sub-Total: \$ 11,848,937

Funding Sources

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FY 25	3G2505 HEFF M&R		3,380,000
FY 26	3H26XX HEFF M&R		1,240,000
			Total Funding Available: \$ 12,000,000

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

The M&R allocation would be \$605,000 annually. Maintenance and repairs for this academic facility would continue to be supported by HEFF.

The university estimates routine maintenance expenses would not change because of the project.

Current utility expenses for McFadden Biostress Laboratory are \$295,000 annually. Utility costs for the building are projected to be reduced to \$281,000 when the project is complete. Reducing the quantity of fans, improving efficiency, controls, and energy recovery will all contribute to the improved energy efficiency of the building.

End of Report

Attachments: Roof Plan, Elevations

