

SOUTH DAKOTA BOARD OF REGENTS

Budget and Finance

**REVISED
AGENDA ITEM: 7 – H
DATE: December 13-14, 2023**

SUBJECT

DSU Applied Research Lab 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

Dakota State University (DSU) requests the Board of Regents’ approval of the Facility Design Plan (FDP) for the construction of a new Applied Research Lab located in Sioux Falls. The Preliminary Facility Statement (PFS) was approved at the January 27, 2022, BOR meeting. The Facility Program Plan was approved at the December 8, 2022, meeting. The estimated cost of the complex has increased from \$50 million to \$62.5 million but is within the legislatively authorized limit.

IMPACT AND RECOMMENDATIONS

This project will provide expanded Applied Research Lab facilities for Dakota State University located in Sioux Falls. The 3-story, 100,000 square foot facility will focus on creating a high-quality work environment by providing natural daylight, fostering indoor and outdoor relationships and views, and planning for a strong sense of campus between potential future structures.

The new facility would increase capacity for specialized laboratory, office, and data center space to support applied research in computer and cyber sciences. The current facilities in Madison enable DSU to have approximately 150 researchers. The new facility in the northwestern area of Sioux Falls would create capacity for +/- 400 new federal and private sector positions.

Due to the highly sensitive nature of the project, no floor plans can be publicly posted.

(Continued)

DRAFT MOTION 20231213_7-H:

I move to approve DSU’s Facility Design Plan for the Applied Research Facility at an amount not to exceed \$62,500,000 utilizing private funds.

Revised Cost Estimates

Description	Budget amount
Construction Costs (includes construction manager contingency)	\$55,567,650
Owner Contingency	\$250,000
Professional Fees	\$3,672,350
OSE Fee	\$ 75,000
FF&E	\$2,500,000
Commissioning	\$220,000
Geotechnical, Survey, and Construction Testing	\$ 115,000
Miscellaneous Fees	\$ 100,000
Total	\$62,500,000

Proposed Funding Sources

The DSU Applied Research Lab will be funded entirely from private dollars. Funds have been received for construction of the facility.

Ongoing maintenance and repair of the facility as well as operations, estimated to be approximately \$600,000 annually, will be funded through lease/rental income. Details of operations and responsible parties will be determined through future lease negotiations.

ATTACHMENTS

Attachment I – Dakota State University Applied Research Lab Facility Design Plan



DAKOTA STATE
UNIVERSITY

DSU Applied Research Lab

Facility Design Plan

Dakota State University requests approval of the Facility Design Plan to construct an Applied Research Lab Building located in Sioux Falls. The Board approved DSU's [Applied Research Building Preliminary Facility Statement](#) at the January 27th 2022 meeting and the [Facility Program Plan](#) was approved at the December 8th, 2022 meeting.

The estimated cost of the facility has increased from \$50 million to \$62.5 million. This increase is within the legislative limit, which is 125% of the original \$50 million budget. Funding for the project has been received by the university through private donations and a grant from the City of Sioux Falls. The university received additional funding in October 2023 from private donations to cover the increased costs.

A. Architectural, Mechanical, and Electrical Schematic Design

Architectural:

The Applied Research Lab will be a 3-story, 100,00 square foot facility. There has been an emphasis on creating a high-quality work environment. The work environment is enriched by providing natural daylighting throughout, fostering indoor and outdoor relationships, views and providing different working environments and spaces for the users. A master plan was conducted, and this first facility has been sighted to stand alone initially and foster a strong sense of campus between potential future structures as the area grows.

The Applied Research Lab facility will house research and office space for +/- 400 occupants and tenants along with the associated collaboration and support spaces. The building amenities include a facilities commons, training room with catering kitchen, conference rooms, and a variety of flexible working environments that can be utilized by the facilities occupants.

Mechanical:

The building will utilize hybrid water-source heat pumps as the primary means of handling zone-level heating and cooling loads. These terminal units will have ducted supply and return air from the ceiling plenum space. The water side of the heat pumps will be a condenser water core loop consisting of both supply and return piping which will facilitate the movement of heat to and from the condensers of the heat pumps, depending on the mode of operation. The core loop will be pumped by (2) base mounted pumps. The pumps will be sized to maintain 100% redundancy and will operate lead-lag. To maintain the core loop temperature when heat is primarily being rejected into the condenser water by the heat pumps (Cooling Mode), the pumped loop is routed to an exterior, grade-mounted adiabatic fluid cooler. There will be (2) fluid coolers, to maintain 100% redundancy. The coolers will operate in a lead-lag arrangement. To maintain the core loop temperature when heat is being removed from the condenser loop (Heating Mode), heat will be injected into the core loop via (3) high-efficiency, gas-fired boilers and associated base mounted pumps (N+1 redundancy). Ventilation air will be distributed to the spaces/ return air plenums of the heat pumps via supply ductwork routed from roof-mounted, Direct Outdoor Air System (DOAS) units. The DOAS units will utilize gas fired heating, direct expansion (DX) cooling, and hot gas reheat. These units will be equipped with energy recovery wheels. The exhaust side of the DOAS system will handle the relief air from the building as well as all general exhaust (i.e. janitor closets, toilet rooms, etc.). Ancillary spaces will be provided with heating via electric cabinet or unit heaters.

Plumbing System:

The domestic water system for the building will include a backflow prevention device at the service entrance (if required by the AHJ). A full system water softener will maintain an acceptable water hardness for both the cold & hot water systems. The domestic hot water for the building will be facilitated by (2) high-efficiency, gas-fired, tank-style water heaters. (N+1 redundancy). Plumbing fixtures (lavatories, water closets, urinals) will be porcelain type. The Owner and Architect will select final fixture styles and colors. Sensor-operated flush valves and sensor-operated faucets will be provided for restrooms. Counters with integral sinks will be provided by architectural trades. Trim will be provided by mechanical trades. Building roof drainage will be via primary roof drains piped within building and out to utility storm sewer system. Overflow roof drains will be piped to roof drain outlets at the exterior of the building and spill to grade.

Lighting:

Most of the building consists of office spaces and corridors with 2x4 direct/indirect fixtures. Office controls consist of dimming wall controllers and vacancy sensors. Corridors will be controlled via a time clock to turn lights off at a scheduled time with a few fixtures on “night light,” or on 24/7 for security purposes. Conference rooms will have linear suspended fixtures with dimming controls and ceiling mounted vacancy sensors. IT rooms (MDF, IDF, Data Center) will have 4’ suspended industrial style fixtures coordinated with the direction of data rack layout. All luminaires will have a Correlated Color Temperature (CCT) of 4000°K and a minimum Color Rendering Index (CRI) of 80.

Power – Mass Notification:

The building will be supplied by two exterior pad mount transformers provided by Xcel Energy at 277/480 volts and supply a single 3000A double ended substation located on the first level. Power will be distributed throughout the new facility at 480 volts to supply mechanical loads and stepped down through transformers in stacked electrical closets located through the facility for lighting, receptacles and other 120-volt loads. Emergency power will be provided by four 500 KW diesel fueled generators in weatherproof enclosures located outside by the north loading dock space and will provide emergency power backup for all secured and support spaces. Two 400 KW UPS in a N+1 configuration will be provided for DATA equipment loads. UPS will be in a dedicated room on the first level with 15 minutes of backup battery power. UPS will be fully backed up by the emergency generators. A mass notification system will be provided for fire alarm and security annunciation throughout the building.

B. Changes from Facility Program Plan

Changes include:

- Budget increase from \$50 million to \$62.5 million. The budget is funded through private gift funds and a grant from the City of Sioux Falls.

C. Impact to Existing Building or Campus-wide Heating/Cooling/Electrical Systems

The new building will be in Sioux Falls and will have stand-alone heating/Cooling/Electrical Systems, thus will not impact the current DSU Campus systems.

D. Total Construction Cost Estimates

Total project cost is approximately \$62.5 million including construction, fees, furnishings as identified in the following table. This is \$12.5 million greater than the original amount in the Facility Program Plan.

The Facility Design Plan budget is as follows:

Description	Budget amount
Construction Costs (includes construction manager contingency)	\$55,567,650
Owner Contingency	\$250,000
Professional Fees	\$3,672,350
OSE Fee	\$ 75,000
FF&E	\$2,500,000
Commissioning	\$220,000
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Total	\$62,500,000

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

There are no significant changes from the Facility Program Plan for operational costs estimates of the facility. M&R Expenses are anticipated to be a similar amount as estimated previously.

F. Planned Project Timeline:

Project Phase	Dates
Schematic Design	February 28 th , 2023
Design Development	December 22, 2023
GMP from Construction Manager	January / February 2024
Construction Documents *	February / April 2024
Construction (Building)	April / May 2024
Occupancy	October 2026

* Construction Documents to be released in two separate bid packages.