

FACILITY DESIGN PLAN
FOR
PERFORMING ARTS CENTER
THEATRE AND MUSIC EDUCATION ADDITION
SOUTH DAKOTA STATE UNIVERSITY
DATE: September 8, 2016

SDSU requests approval of this Facility Design Plan for design and construction of a theatre and music education addition to the SDSU Performing Arts Center.

This project was included and authorized as part of the 2012 Board of Regents 10 year Capital Project Plan (HB 1051). The Preliminary Facility Statement (PFS) was approved at the May 2012 Board of Regents meeting. The building committee selected Architecture Incorporated as project architects in October 2012, with Holzmann, Moss, Botino as specialty consultants. A major gift of a pipe organ was approved by the Board of Regents at the April 2015 meeting. The organ will be installed in the new recital hall. The Facility Program Plan (FPP) was approved at the December 2015 Board of Regents meeting. The project was forwarded to the legislature to authorize revision of the funding authority of the project (HB 1016). Planning has recommenced and a construction manager at risk was selected by the building committee in June 2016. Project planning will continue to refine the design and update estimates of the project costs.

a. ARCHITECTURAL, MECHANICAL, AND ELECTRICAL SCHEMATIC DESIGN

Attached are floor plans illustrating the architectural design of the project. Features of the architectural, mechanical, and electrical design are described below.

The building project will consist of additions that wrap around the existing building. Minor remodeling of the existing facility will occur where the additions link to the existing building. Two performance spaces will be added to the building, an 800 seat proscenium style theatre, and a 200 seat music recital hall. Classroom, practice, and education spaces required of the Music Department will be added to the southwest end of the building. Classroom, practice, stage support, and faculty offices will be added to the northeast end of the building for the Theatre and Dance programs. A curved circulation spine will connect all classrooms, performance venues, and lobbies.

The Proscenium Theatre will have parterre and balcony seating with accessible seating at all seating sections. The stage will be trapped with a full fly section. The theatre will be acoustically isolated from the lobby, the exterior, and surrounding support spaces. Masonry wall construction and concrete roof construction with sound protected openings through this construction will provide the acoustical isolation required.

The Recital Hall will have balcony seating with accessible seating at all seating sections. The pipe organ will be integrated with the performance platform. There will be companion spaces adjacent to the recital hall for organ equipment, piano storage, and a green room. The space will be designed and constructed as a high quality acoustical enclosure that is acoustically isolated from the lobby and exterior.

The classroom and practice room spaces will also have specialized acoustical features. They are separated acoustically by virtue of the wall construction, acoustical doors, sound and light lock vestibules, and intervening spaces (storage rooms and corridors).

The circulation spine widens and narrows throughout its length to create separate lobby spaces for the performance venues, interaction spaces for students and patrons, vestibules, and access to support spaces (coat check room, restrooms, ticket rooms).

Architectural features of the building, the performance venues, and other spaces are described below. The 800 seat proscenium style theatre shell will be constructed of structural precast insulated concrete panels. The roof will be constructed of full span steel bar joists with a concrete deck. Balcony and parterre framing will be structural steel supporting a concrete deck. The walls and ceiling are to be finished in wood boards or paneling. Flooring will include concrete under the seating and carpeted aisles. The stage floor will be a sprung wood floor.

The 225 seat recital hall, will have the same wall construction as the theatre. The roof will be constructed of laminated wood beams and laminated wood decking. The balcony framing will be structural steel supporting a concrete deck. The interior walls will be painted gypsum board or painted precast concrete. The laminated wood will be stained and varnished. The ceiling construction will include a suspended acoustical 'cloud' over the stage. The platform floor will be wood. The finished floor will be concrete under the seating with carpet used in the aisles.

The band, chorus, multipurpose classrooms, and dance studio will have concrete masonry or precast concrete walls with steel bar joist and metal deck roof system. The ceiling finish of the room will include acoustical clouds adjusted to the sound reflective or absorptive requirements of the space. The band room and classrooms will have a hard surface floor, the chorus room a carpet floor finish, and the dance studio will be a sprung wood floor. Walls will be a painted finish. Each of these rooms will have adjustable acoustical wall curtains to allow the room acoustics to be modified to the activity and number of occupants.

All other spaces portions of the building will be steel framing and steel stud construction. Bar joist roof framing and steel deck with comprise the roofing system. Interior walls will be steel studs with a gypsum board finish with the exception of the circulation spine of the building. This will be granite veneer panels. Ceilings will be acoustical tile. Wall finishes will be painted. Floor finishes will vary on the use of the space.

The exterior materials will vary. The precast wall panels, where exposed, will have the same color and texture as the existing building. Dakota Granite will be used at ground level on most of the one story portions of the building that are facing public ways. An aluminum storefront and window system with high performance insulating glass or insulated spandrel panels will be used at the lobby and classroom areas. The roof material of the building will be white single ply membrane roofing on all portions except the recital hall. This roof will be metal panels.

The heating, ventilation, and air conditioning systems will be a combination of variable volume air handling systems to serve classrooms and offices and single zone air handling systems to serve the performance venues. Air distribution for the recital hall and theatre shall be designed with acoustical consideration including duct silencers at the air handlers, reduced distribution velocities, and thicker duct liner.

The existing heating system will be expanded to include two new boilers to provide additional capacity along with capacity redundancy. System water temperatures will be modified to increase the operating efficiency of the boiler system. Radiant heating systems along the wall and in-floor will be used in the performance venues to supplement air distribution systems and reduce the acoustical noise generated with air distribution.

The existing chilled water system will be upgraded to include both a new 350-ton centrifugal chiller and a 30 ton heat recovery chiller. The large chiller will be able to handle peak loads with the existing 150 ton chiller and 30 ton heat recovery chiller dedicated to low cooling load and spring/fall operations. The heat recovery chiller will reject heat into the heating system for summer reheat required in the air distribution systems.

All of the mechanical systems within the facility will require special design features to be acoustically suitable as not to affect adjacent performance venues and instructional spaces. Air handlers, pumps, and other mechanical equipment will be equipped with vibration isolation devices to eliminate vibration transmission through the building structure. All penetrations of the performance venues and instructional spaces will be treated to prevent noise transmission.

Humidification of the performance venues and instructional spaces will also be provided to ensure minimum comfort conditions are provided during the heating season. Humidification during the winter positively affects the daily operations and performances that the facility supports. Along with human comfort, humidity control positively contributes to instrument performance, longevity, and reduced maintenance.

The building electrical is currently served by two separate pad-mounted transformers. These transformers will be upgraded to support the additional electrical load that the addition will require. Additional main service panel and subpanels will be installed through the addition to support the electrical loads. A new emergency generator will be installed to support the added life safety electrical loads.

Existing smoke/fire detection and fire sprinkler systems will be modified and extended to provide coverage to entire facility.

Data and communication systems will be extended from the existing systems into the addition.

b. CHANGES FROM THE FACILITY PROGRAM PLAN

There have been no facility changes from the Facility Program Plan. All programmed spaces remain the same. There are minor changes related to the site and supporting utilities.

The floor plan of the building has been adjusted slightly to avoid a utility vault for telephone and computer cabling and the accompanying construction costs. Supplemental parking will need to be constructed that is needed by the new performance venues or replaces existing parking that is displaced by the new construction. A new parking lot across 11th Avenue to the south of the Performing Arts Center will be constructed.

c. IMPACT TO EXISTING BUILDING OR CAMPUS-WIDE HEATING/COOLING/ELECTRICAL SYSTEMS

Utilities serving the addition to the building will be extended to campus or municipal utilities. The facility will have no impact to the campus campus-wide steam distribution and chilled water systems. The facility will have standalone heating and cooling systems.

The Performing Arts Center is not served by the central heating plant or the central chiller plant, as the site is remote from available utility tunnels. New boilers and chillers will be required for heating, ventilation, and air conditioning. Modification and relocation of the building natural gas service will be required to serve additional heating loads.

The project will modify the existing sanitary service to serve the new facilities. The water service is also located along 11th Avenue. The service will be relocated around the addition and modified to meet required flow and quantity for both domestic service and fire protection. A part of this project is to install additional water main piping to create a loop that will improve fire protection service for this portion of the campus.

Existing building storm water service will be modified for the addition and routed to the existing drainage swale to the east of the facility.

The only campus utility affected by the project is the 15 kilovolt high voltage electrical loop. The medium voltage electrical loop has adequate capacity to handle the additional electrical load that the addition will require for operation. This utility will be relocated to the east to avoid the building footprint. The existing sectionalizing switch and building transformers will be installed outside of the footprint of the addition.

d. TOTAL CONSTRUCTION & PROJECT COST ESTIMATES

The budget for the project is \$48,391,807. The current project cost estimate is \$49,849,083. A detailed recap of the project cost estimate is as follows.

CONSTRUCTION COSTS	
Building Construction	\$29,531,533
Site, Utility, & Earthwork Construction	\$ 1,966,956
Theatre, Acoustical & Audio Visual Systems	\$ 3,520,000
CM@R Contingency (7%)	\$ 2,453,394
CM@R Overhead & Fees	\$ 2,725,985
SUBTOTAL - CONSTRUCTION COSTS	\$42,227,868
NON-CONSTRUCTION COSTS	
Design & Professional Fees	\$ 5,335,626
Project Management and OSE Fees	\$ 1,059,557
Furnishings, Owner Equipment, Signage	\$ 615,639
Parking Replacement and Expansion	\$ 599,000
Owner Project Contingency (5%)	\$ 2,011,393
SUBTOTAL – NON-CONSTRUCTION COSTS	\$ 9,621,215
TOTAL PROJECT COST	\$48,849,083

The project cost estimate includes a current estimate of construction costs from the Construction Manager at Risk. The project team is identifying various cost options to resolve the difference between

the current project cost estimate and the budget for the project. The current discrepancy is well within the project contingency allowance and considered achievable.

The estimated schedule and timeline of the project is attached.

The funding sources include \$13,000,000 of HEFF bonded funds (to be allocated in FY2020 or FY2021) and \$35,391,807 of donations and gifts to the project. \$6,000,000 of the gifts will be funds from the City of Brookings' allocation of sales tax revenues. Donated funds have been committed in advance of the HEFF bonded funds. The SDSU Foundation's commitment of gifted funds includes the ability to advance the project schedule to the current date. When the HEFF funds are made available, the HEFF will be used to reimburse the SDSU Foundation.

The organ to be installed in the Recital Hall is a gift separate from the project. The budget and cost for transportation, storage, and installation of the organ is separate from the project costs and will be funded via donations for this specific purpose.

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

The building design and floor area have only received minor adjustments since approval of the Facility Program Plan. Estimates for operational and M&R expenses remain unchanged from the estimates prepared for the Facility Program Plan.

End of Report

9/9/2016