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APPROVAL OF THE AGENDA  

SDSU HEADHOUSE-GREENHOUSE FACILITY PROGRAM
PLAN AND FACILITY DESIGN PLAN  

EXECUTIVE SESSION  

ADJOURN

2754

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2756-2757
The Board of Regents convened in the BOR Conference Room in Pierre at 4:00 p.m. on September 18.

ROLL CALL:

Kathryn Johnson, President - PRESENT
Dean Krogman, Vice President - PRESENT
Randy Schaefer, Secretary - PRESENT
James Hansen, Regent - PRESENT
Randy Morris, Regent - PRESENT
Patrick Weber, Regent - PRESENT
Carole Pagones, Regent - PRESENT via teleconference
Terry Baloun, Regent - NOT PRESENT
Harvey Jewett, Regent – NOT PRESENT

Also present during all or part of the meeting were Jack Warner, Executive Director and CEO; Monte Kramer, System Director of Finance and Administration; James Shekleton, General Counsel; Janelle Toman, Director of Communications; Molly Weisgram, Executive Administrative Assistant; Mary Turman, Executive Administrative Assistant; President David Chicoine, Dean Kattelmann, SDSU.

Regent President Johnson called the public meeting of the Board of Regents to order and declared a quorum present.

APPROVAL OF THE AGENDA

IT WAS MOVED by Regent Hansen, seconded by Regent Weber to approve the agenda as published.

ROLL CALL:

Johnson - AYE
Krogman - AYE
Hansen - AYE
Jewett – not present
Morris - AYE
Weber - AYE
Pagones - AYE
Schaefer - AYE
Baloun – not present

The MOTION CARRIED.
SDSU HEADHOUSE-GREENHOUSE FACILITY PROGRAM PLAN AND FACILITY DESIGN PLAN

Dean Kattelmann explained that SDSU is seeking approval of the Facility Program Plan and the Facility Design Plan for the Headhouse-Greenhouse project. SDSU needs this approval since they would like to begin construction of the Headhouse as soon as possible. The reason for doing this outside of the regular meeting time is that the Building Committee cannot award bids until the Board approves the facility design plan.

He explained that the project is to be funded with $1.0M of HEFF money that will be bonded in FY14 and $3,785,000 from private gifts, Plant Science service fees, and Foundation Seed Stock funds. The funding would have to be borrowed internally and then repaid when the bond proceeds and private funds are available.

IT WAS MOVED by Regent Morris, seconded by Regent Krogman to approve the Headhouse-Greenhouse Facility Program Plan and Facility Design Plan. Funding to build the Headhouse portion will be limited to an internal loan of $1,100,000 to be repaid with $1.0M of HEFF bond proceeds with the remaining funds to complete the entire $3,785,000 Headhouse-Greenhouse project to come from private gifts, Plant Science service fees, and Foundation Seed Stock Funds.

Regent President Johnson asked if SDSU is using a construction manager at risk for the project. Dean Kattelmann explained that they are not using a CMR for this project. Further discussion ensued about the internal lending of monies.

ROLL CALL:

Johnson - AYE
Krogman - AYE
Schaefer - AYE
Hansen - AYE
Jewett – not present
Morris - AYE
Weber - AYE
Pagones - AYE
Baloun - not present

The MOTION CARRIED.

EXECUTIVE SESSION

IT WAS MOVED by Regent Krogman, seconded by Regent Weber that the Board of Regents Dissolve into Executive Session at 4:10 p.m. on Tuesday, September 18, 2012, in order to discuss personnel matters.
ROLL CALL:

Johnson - AYE
Krogman - AYE
Hansen - AYE
Schaefer - AYE
Jewett - not present
Morris - AYE
Weber - AYE
Pagones - AYE
Baloun - not present

The MOTION CARRIED.

IT WAS MOVED by Regent Krogman, seconded by Regent Weber that the Board of Regents come out of Executive Session.

ROLL CALL:

Johnson - AYE
Krogman - AYE
Schaefer - AYE
Hansen - AYE
Jewett - not present
Morris - AYE
Weber - AYE
Pagones - AYE
Baloun - AYE

The MOTION CARRIED.

Regent Secretary Schaefer reported that the Board met in executive session to discuss personnel matters, and no further action will be taken at this meeting.

ADJOURN

IT WAS MOVED by Regent Hansen, seconded by Regent Schaefer to adjourn the meeting of the full board at 5:00 p.m.

ROLL CALL:

Johnson - AYE
Krogman - AYE
Schaefer - AYE
Hansen - AYE
Jewett - not present
Morris - AYE
Weber - AYE
Pagones - AYE
Baloun - AYE

The MOTION CARRIED.
SOUTH DAKOTA BOARD OF REGENTS

Full Board

AGENDA ITEM: 2

DATE: September 18, 2012

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SUBJECT: South Dakota State University – Headhouse-Greenhouse Facility Program Plan and Facility Design Plan

The 2012 Ten-Year Plan included replacement of the Headhouse-Greenhouse at South Dakota State University. The project is to be funded with $1.0M of HEFF money that will be bonded in FY14 and $2,785,000 from private gifts, Plant Science service fees, and Foundation Seed Stock funds. At the March 2012 meeting, the Board approved SDSU’s Preliminary Facility Statement for this project allowing them to move forward with planning.

SDSU is seeking approval of the Facility Program Plan and the Facility Design Plan for the Headhouse-Greenhouse project. SDSU needs this approval since they would like to begin construction of the Headhouse as soon as possible. The Building Committee cannot award bids until the Board approves the facility design plan, so an emergency meeting of the Board was requested to approve the plans.

The immediate purpose of the Headhouse is to provide interim three dimensional art instruction studio space for the Department of Visual Arts. During the summer of 2013, the existing Industrial Arts building will be demolished to provide space for the construction of the Architecture, Math, and Engineering Building in August 2013. In order to have the space available for the Department of Visual Arts, the Headhouse facility needs to be ready before next summer. In order to complete the Headhouse portion of the project in adequate time, construction must begin this fall. Construction of the Headhouse will be designed and bid as two packages. The first will allow construction to be completed on the foundation and building shell of the building prior to significant cold weather that would impede construction efforts. The second bid package will be bid in the winter for the winter/spring construction. This second bid will include the interior walls, utilities, finishes, mechanical, and electrical systems. The Headhouse building is estimated to be 5,650 gross square feet.

(Continued)

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RECOMMENDED ACTION OF THE EXECUTIVE DIRECTOR

Approve the Headhouse-Greenhouse Facility Program Plan and Facility Design Plan. Funding to build the Headhouse portion will be limited to an internal loan of $1,100,000 to be repaid with $1.0M of HEFF bond proceeds with the remaining funds to complete the entire $3,785,000 Headhouse-Greenhouse project to come from private gifts, Plant Science service fees, and Foundation Seed Stock Funds.
The Headhouse portion of the project is estimated to cost $1,100,000. The funding would have to be borrowed internally and then repaid when the bond proceeds and private funds are available. SDSU has not completed the fundraising necessary to finish the project. Long-term, the Headhouse will be used to support attached greenhouses which will be built as Phase II of this project.

Additional project details can be found in SDSU’s attached Facility Program Plan and Facility Design Plan documents, schematic drawings, and perspective designs. Approval of this project request will allow the Building Committee to move forward with awarding bids for the construction of the Headhouse.
SDSU respectfully requests approval of this Facility Program Plan to continue planning and construction of New Headhouse and Greenhouses. The following actions are requested:

1. Approval of the site location, architectural program, and preliminary design of the Headhouse and Greenhouses.
2. Authorize the continued development of the design of the Headhouse, as a first phase of the project, and the development of plans for construction of the Headhouse. The intent is to develop construction plans for the Headhouse in two bidding packages. The foundation and building shell will be issued and awarded first, so that construction may begin fall of 2012. This will enable construction of the remainder of the Headhouse in the winter and spring of 2012/2013 and interim use of the facility by the Department of Visual Arts for three dimensional art in the fall semester of 2013.

The project proposed will be completed in two phases. Phase one will be the design and construction of only the Headhouse, which will provide interim space teaching three dimensional art (sculpture, ceramics, and three-dimensional design) which will be relocated from the Industrial Arts building. The Industrial Arts Building has to be razed by the summer of 2013, enabling the construction of the Architecture, Math, and Engineering Building. Phase two will be the design and construction of the Greenhouses attached to the Headhouse and any minor modifications to the Headhouse, from its interim use as the three dimensional art instructional facility.

The Preliminary Facility Statement (PFS) was approved at the March 2012 Board of Regents meeting. The PFS noted the Headhouse will provide interim space for the instruction of three dimensional arts, thus allowing the Industrial Arts Building (where three dimensional art is currently taught) to be razed, clearing the site for construction of the Architecture, Mathematics, and Architecture Building.

The PFS of the Architecture, Mathematics, and Architecture Building, approved in March 2012, notes that the Industrial Arts Building and Solberg Annex will be demolished, clearing the site for the construction of the Architecture, Mathematics, and Architecture Building. Upon approval of the PFS in March 2012, the process of acquiring professional design services for the Headhouse and Greenhouses commenced. The request for Statements of Interest to which design firms responded included information that the "Headhouse/interim
class lab space will need to be ready for occupancy by fall semester of 2013. Davis Design of Lincoln, Nebraska was chosen as the design firm for the project by the building committee on May 24th, 2012. Architectural programming and site selection were launched in June.

The purpose of the Headhouse and Greenhouse is to provide modern functional greenhouse laboratories for instruction and research purposes. The project replaces the dilapidated, unusable West Headhouse and Greenhouses west of the Northern Plains Biostress Laboratory and south of the Animal Science Complex. The Headhouse will provide interim studio space for three dimensional art instruction. Currently, three dimensional art instruction is taught in the Industrial Arts Building, which is scheduled for demolition prior to August 2013, clearing the site for construction of the Architecture, Mathematics, and Architecture Building. The design of the Architecture, Mathematics, and Engineering Building is proceeding as scheduled. Architectural programming and preliminary design should be completed by September 7, 2012. The intention is to submit the Facility Program Plan for this building for consideration at the October 2012 Board of Regents meeting. It is anticipated that private fund raising for the Architecture, Mathematics, and Architecture Building will be at least 80 percent complete by October and completed before the end of the first quarter of 2013. As scheduled, construction on the building will begin no later than August of 2013.

Since the first activity of construction will be asbestos abatement and demolition of the Industrial Arts Building and Solberg Annex, replacement space will be required for the three dimensional arts instructional studios and support functions housed in fall 2013. There is no instructional space suitable to teach three dimensional art on the campus once the Industrial Arts Building is razed. The basic mechanical and electrical requirements of the three dimensional arts instructional studios are similar requirements of a Headhouse, thus enabling the efficient and effective interim use of the Headhouse as the three dimensional art instructional studios.

At the beginning of the design process for the Headhouse and Greenhouse, work with the design consultants accomplished two primary goals:

a. Provide modern headhouse and greenhouses that support robust instructional and research work in the plant sciences.

b. Select an optimal site for the Headhouse and Greenhouses. If possible, this site should also provide reasonable access for students who enroll in three dimensional art courses. The site should provide space for expansion of both the greenhouses and supporting headhouse functions, and also allow for development of a future Seedhouse, which will be needed with the redeployment of the Seedhouse as part of the new Visual Arts facility.

Continuing goals for the University and the consultants are:
c. Design a headhouse that can be constructed and ready for occupancy by August of 2013 for interim use as a three dimensional art instructional studio.

d. Design a headhouse that can be readily repurposed efficiently and with minimal duplication of constructive efforts to its original intent, as a headhouse. This will allow the Department of Visual Arts to continue its instruction of three dimensional arts on an interim basis. Once the Department of Visual Arts moves to its future home (the future Visual Arts Facility which is beginning its design phase), the Headhouse can be converted into its permanent use as support and laboratory space for the Greenhouses.

e. Affirm that the basic spatial, mechanical, and electrical requirements of a headhouse are compatible with those needed for a safe functioning three dimensional arts instructional studio with appropriate mechanical support and safety systems.

The design consultants (Davis Design) evaluated all greenhouse and headhouse facilities that would continue in use going forward as a foundation for their design of the new facility. Facilities adjacent to the Plant Science Building were determined to be highly functional for research and classroom plant science and botany instruction. These facilities can support research and can support undergraduate instruction for the Departments of Plant Science, Biology/Microbiology, and Natural Resource Management. They are also near the classrooms and instructional space of the Northern Plains Biostress Laboratory, the Plant Science Building, and the Horticulture Forestry Buildings. The consultants also affirmed that the existing West Headhouse and greenhouses are in very poor condition, are obsolete for modern plant science instruction & research, and should be removed from service.

The consultants recommended that replacement greenhouse and headhouse construction be designed to support both research and classroom science laboratory use, so that all greenhouse facilities provide maximum flexibility and adaptability supporting both research and instruction.

The phased Headhouse and Greenhouse project enables both cost avoidance and risk mitigation. One risk is that phase one interim use of the headhouse as a three dimensional art instructional studio will add unnecessary repurposing costs to the permanent use of the headhouse as a part of the Headhouse and Greenhouses project. The design consultant has been tasked specifically to design the facility so that minimal duplicated or unnecessary utilities and space is constructed to accommodate the interim use supporting three dimensional art instruction. Included in the programmatic justification and attached floor plans are examples of how this risk is being mitigated.

Large three dimensional instructional studios with required safety and ventilation infrastructure is not available, and can only be provided with significant renovation costs that would be utilized only temporarily. We design of the Headhouse will mitigate and avoid these significant increased costs.
Phase-one of the Headhouse and Greenhouse project enables the advanced development of the headhouse as interim instructional space for the three dimensional arts is most cost effective and allows the Industrial Arts Building to be demolished and the Architecture, Math, and Engineering Building to proceed on schedule for completion by fall 2015. Delaying the start of construction of the Headhouse facility as phase-one of the project into spring 2013 will likely to have a “domino effect”, resulting in the headhouse not being available in fall 2013 as the three dimensional art instructional studios. Thus, the Industrial arts Building cannot be demolished, delaying the construction and occupancy of the Architecture, Math, and Engineering Building. With a 3 percent annual inflation of construction costs, a six month delay in constructing the headhouse could easily increase the construction costs of the Architecture, Math, and Engineering Building by $400,000 to $500,000. The designers have developed a schedule for design, bidding, and construction of the headhouse project, consulting with construction and premanufactured building resources. The optimal schedule requires construction of the foundation and building shell this fall to avoid the domino effect and keeping the Architecture, Math, and Engineering Building on schedule and providing the interim three dimensional art instructional studio in the headhouse for fall 2013.

One other potential risk is the possibility that the greenhouses will be completed and transition of the Headhouse from an interim three dimensional art instructional studio to a fully functional headhouse will be delayed because the Visual Arts building is not completed soon enough. This potential risk will be mitigated by planning interim dual use of the Headhouse. The loading and receiving areas can be shared for a time. Materials will have to be managed differently (in smaller unit quantities). The south corridor of the Headhouse and one or two plots of the greenhouse can provide necessary potting and storage required by the greenhouses. Although undesirable, growth chambers and vernalization can be accommodated on a temporary basis in the Northern Plains Biostress Laboratory.

The complicated sequencing has great potential benefits and avoided costs and foreseeable risks can be mitigated.

A. PROGRAMATIC JUSTIFICATION FOR DISCRETE SPACES:

Through architectural design programming, the architects/engineers have determined that greenhouse space of 10,000 to 15,000 gsf is desired. Headhouse space of 5,500 to 7,000 gsf would provide the support functions required for the greenhouse(s). Greenhouse space will be modular in design and construction to meet trial plot requirements. Modules that support greenhouse plots of 250, 500, 1,000, 2,000, and 3,000 gsf are common. Module size is partially determined by plant species. The recommendation of the designer is for plot sizes of approximately 500 and 1,000 gsf. Modular construction that is easily divided into 500 gsf plots will be provided. Greenhouse bay spacing will be selected so as to provide for this modular plot size, yet utilize standard sized construction framing.
The Headhouse program includes the following program spaces:
- Receiving and storage areas (for pots, trays, soils, soil amendments, autoclave for soil, unloading, and receiving) – 1,500 – 1,600 sf
- Wet lab (for plant specimen preparation prior to classroom or laboratory analysis) – 300 to 400 sf
- Potting area – 600 – 800 sf
- Vernalization chambers – 200 – 300 sf
- Growth chamber space – 400 – 500 sf
- Meeting/Class lab space – 500 – 700 sf
- Greenhouse manager office – 100 – 120 sf
- Chemical and fertilizer storage – 100 – 200 sf

The three dimensional art instructional studio program requirements are:
- Three dimensional art studios (2 required) – 3,600 – 3,800 sf total
- Faculty studio offices (2 required) – 310 sf total
- Receiving and storage areas (for raw materials of clay, wood, metal and for waste materials) – approximately 800 sf
- Kilns space (for 3 electric kilns and 2 gas kilns) – 240 – 300 sf

B. GROSS SQUARE FOOTAGE:
The facility is composed of two distinct sections. The Headhouse functions as support space for the Greenhouses. The current schematic design indicates the gross area of the Headhouse is 5,650 square feet. Greenhouses are built in divisible modular components. The estimated gross area of the Greenhouses will be 10,360 square feet.

C. SITE ANALYSIS:
Seven sites were analyzed. Criteria used to evaluate the sites included current solar access and right-of-way, future solar access and right-of-way, proximity to the Northern Plains Biostress Laboratory, access to campus utility systems, service traffic access, site development costs, space for future expansion, and master plan compatibility. Each criterion was scored from 0 (poor) to 3 (best).

Solar access (present and future) is a critical criterion, as the site must be free of shadows from nearby buildings or landscaping. Proximity to Northern Plains Biostress Laboratory will allow convenient access to complementary teaching and research facilities. Sites that would not occupy space of possible development of major future research or academic buildings were considered better. To a great extent a Headhouse and Greenhouse facility is a very utilitarian structure. Sites slightly removed from the main campus architecture were considered more desirable, as the construction of the new facility could be economized and not meet the more exacting campus aesthetic design requirements.
Sites 1 through 3 are in the vicinity of Foundation Seed Stock, Facilities and Services, and the new Motor Pool Building. Site 4 is northeast of the Animal Science Arena. Site 5 is west of Northern Plains Biostress. Site 6 is north of Briggs Library and east of the Horticulture Forestry Greenhouse. Site 7 is west of Medary Avenue north of the former Motor Pool facility.

Site 4 (site plan is included as Attachment A) is considered the most favorable. It offers excellent solar access and good access to associated teaching and research facilities. It offers reasonable access to sewer, water, and electrical utilities, but poor access to the steam utility. Site access is good. The site is large enough for doubling or tripling greenhouse and support space in the future as well as future relocation of the Seedhouse to the same vicinity. This site does not compete with any other sites for prominent campus facility development. Site development is considered poorer than some other locations in that site 4 will require fill material to bring the facilities to a proper floor elevation.

D. DESCRIPTION OF KEY BUILDING FEATURES:
The Headhouse will require loading dock access. The building itself will be designed as a premanufactured rigid frame metal building (highly economical construction). Exterior walls will be finished with metal panels or masonry. All exterior walls will be insulated to meet modern energy performance criteria. Windows will be provided in the north wall for the art studios, but have the benefit of providing excellent lighting conditions for seed sorting and plant germination inspection. Roof construction will be fully insulated, but be largely unfinished. The roof skin will be prefabricated metal panels. Interior partitions will be constructed of steel framing that is covered in gypsum board or cement board.

The schematic design has been prepared so a minimum number of walls will be affected when the building is converted from its interim use to a fully functional headhouse. Utilities and mechanical systems required for water, ventilation, and electricity will also be designed to support both activities with minimal modifications or duplicated efforts. Electrical service size requirements for vernalization chambers and growth chambers are similar to electrical service for the 3 kilns. The floor drains necessary for headhouse and studio use are similar in that all require soil traps to capture solid waste materials (i.e. potting clay, sawdust, potting soils, soil amendments, metal shavings). Both types of facilities have similar receiving dock requirements.

The greenhouses will be aluminum frame construction. Glazing will be a combination of double wall polycarbonate cells (wall glazing) and double pane tempered glass (roof). The greenhouse plots will include concrete floor and exposed dirt floor construction.

E. ILLUSTRATIVE FLOOR PLANS:
The following attachments are included:
  Site Plan
  Headhouse Floor Plan – 3d Arts (Interim Use)
Headhouse Floor Plan – Headhouse (Long Term Use)
Perspective Drawing

F. INITIAL COST ESTIMATES:
Estimated design and construction costs to develop the site, build the Headhouse, and construct site utilities are estimated at $1,100,000. The greenhouses are largely modular in construction. The area of greenhouse space that can be developed can be readily adjusted to the remaining project budget. The greenhouse scope and necessary Headhouse modifications will be adjusted to the remaining project budget of $2,685,000.

G. IMPACT TO M&R:
The proposed additional square footage will be recorded on SDSU’s facilities inventory as an academic/administrative building; therefore the square footage will be included in SDSU’s HEFF M&R allocation. Based on recognized industry standards, the annual funding for maintenance and repair/capital renewal funding should be equal to 1.5-3% of the project costs or the building replacement value. The annual M&R allocation should be between $16,500 and $33,000 based on the current cost estimate of $1,100,000 for the headhouse construction. At actual HEFF M&R funding levels, the annual M&R allocation for the building is $9,036.

H. BUDGET FOR ONGOING OPERATIONAL COSTS:

Operations and maintenance: For routine maintenance expenses, a minimum of $21,726 should be allocated each year.

Utilities: The additional utility expenses are estimated at $8,610. This represents only utility consumption and does not include the costs of utility connections.

I. PROPOSED FUNDING SOURCES FOR COSTS OF:

1. CONSTRUCTION
This project is included in the Capital Improvement Plan approved in December, 2011. Total project funding for the project is $3,785,000. $1,000,000 in HEFF was authorized for the project. $2,785,000 in funding will be provided from private gifts, Plant Science service fees, and Foundation Seed Stock funds that are in the SDSU accounts.

2. ONGOING OPERATIONS
The utility and operating costs of the facility will be funded from University operating budgets.

3. MAINTENANCE AND REPAIR
The maintenance and repair costs for this facility will be funded through HEFF.
Approval is requested for the Headhouse Facility Design Plan to continue planning and construction of the Headhouse, the phase-one of the Headhouse and Greenhouses project. The following action is requested:

Approve the preliminary design of the Headhouse and authorize preparation of construction drawings for bidding.

Construction of the Headhouse alone will be designed and bid as two packages. The first bid package will allow construction to be completed on the Headhouse foundation and building shell prior to winter 2012, which would significantly impede construction efforts. The second bid package will be bid during the winter for spring construction. It will include the interior walls, utilities, finishes, mechanical, and electrical systems. The immediate purpose of the Headhouse is to provide interim three dimensional art instructional studio space for the Department of Visual Arts. The long-term purpose of the Headhouse is to support the attached greenhouses constructed as phase-two as research and instructional laboratories for plant sciences.

This Facility Design Plan requests action on only the Headhouse. Request for approval of phase-two of the project, Greenhouse construction, will be sought later and an additional Facility Design Plan submitted for that purpose.

1. FACILITY DESIGN

a. Architectural, mechanical and electrical schematic design;

The schematic design includes 5,650 sf of Headhouse space and 10,360 sf of greenhouse space. Greenhouse space will be modular in design (625 sf/plot and 1,250 sf/plot). The size of functional spaces remains the same as shown in the Facility Program Plan. Attached to this report are the following drawings, illustrating the schematic design of the Headhouse (w/interim use for Visual Arts).

Site Plan
Headhouse Floor Plan – 3d Arts (Interim Use)
Perspective Drawing

The Headhouse will be approximately 50’ wide by 115’ long. It will have a loading dock on
the east end for unloading panel trucks and pickup trucks that would deliver materials used by students and faculty for the three-dimensional art instructional studios. Two overhead doors will be installed on the east end of the building.

The Headhouse shell will be designed as a premanufactured rigid frame metal building. Bay spacing of the rigid frame is planned at 22 feet. The rigid metal frames will span the full width of the structure. Non-load bearing steel stud construction will be used between rigid frame members to frame the exterior walls. Exterior walls will be finished with metal panels or masonry. All exterior walls will be insulated to meet modern energy performance criteria, and include vapor and air infiltration barriers. A ribbon of double glazed windows and translucent panels will be provided on the north wall of the building to provide natural light to all studio and kiln spaces. The height of the building will be 16 to 20 feet. This will provide proper headroom for the receiving dock and tall storage racks for materials and future storage of planting materials. It will also allow ample natural light to penetrate the depth of the building.

Roof construction will be steel purlins that span between the rigid frame members. The roof framing cavity will be fully insulated, but be largely unfinished. The roof skin will be prefabricated metal panels.

Any necessary interior partitions will be constructed of steel framing that is covered in gypsum board or cement board. Interior finishes will be a mixture of materials (reinforced gypsum board, masonry, ceramic tile) as fits the function of the space. A mezzanine will be constructed above the west end of the building for heating, ventilating, and air conditioning equipment. It may also contain some general light storage. Access to these rooms will be separate from the outside.

The plumbing systems provided for the building will include the adequate restrooms and custodial amenities. Floor drains will be provided in all studio (future potting areas, receiving area, future growth chamber and vernalization space). The floor drains will have sediment traps to capture solid waste materials before it has the chance to enter the waste stream. Fire sprinkler systems will be required as required by the International Building Code.

The heating system will utilize natural gas for the energy source. The mechanical engineers are examining possible use of a ground source heat pump system or a hot water boiler system to provide the heating needs of the Headhouse. Contributing factors to use of a ground source heat pump system will be its responsiveness to heating demand conditions in both the Headhouse and future Greenhouses. Energy consumption characteristics and payback of construction cost differences will also be used to factor in the final choice.
Ventilation systems will be required for exhausting excess heat from the kiln room and for filtering particulates from wood working, metal working, and clay mixing areas. Ventilation systems will also be required for exhausting fumes from chemical glazes applied to ceramics and for finishing/preserving wood. These systems will be designed to accommodate the future needs of exhausting excess heat in the growth and vernalization chamber spaces, fumes from chemical fertilizers, herbicides, and pesticides, and dust from plant potting and specimen preparation.

The electrical system will be a three phase 208V or 480V power system. The final voltage will be determined once an inventory of all electrical requirements of kilns, lighting, future vernalization chambers, drying ovens, and growth chambers is completed.

b. Changes from the Facility Program Plan:
There are no changes from the Facility Program Plan.

c. Impact to existing building or campus-wide heating/cooling/electrical systems:
The site is rather remote from the steam utility. Costs to provide steam service for heating requirements to this facility would be quite high for the size of this building (including future greenhouse development). Natural gas service is available and an appropriate energy source alternative for the building and future greenhouses.

There will be no impact to campus cooling systems. Cooling systems for this facility will be stand-alone (direct expansion or refrigerant chiller) as the central chilled water system is not available in this corner of the campus. The size of the Headhouse system will be rather small. A water cooled chiller is not efficient at this size. Cooling systems for the future greenhouses will be greenhouse specific, typically a variety of swamp cooler that offers humidification benefits.

The campus electrical loop is very close to the site, and readily accessible. Adequate capacity and switchgear are present. No particular system impact will result from this project.

The Brookings municipal sanitary sewer system is also close to the site and readily accessible. Sewer main size in this area is 15 inches, which offers generous capacity. No particular system impact will result from this project.

d. Total Construction Cost Estimates
Estimated design and construction costs to develop the site, build the Headhouse, and construct site utilities are estimated at $1,100,000.

e. Changes from Cost estimates for operational or M&R expenses
No changes are anticipated.
The South Dakota Board of Regents adjourned its special business meeting on September 18 and will meet again in regular session on October 10-11 in Vermillion, South Dakota.

I, Jack Warner, Executive Director and CEO of the South Dakota Board of Regents, declare that the above is a true, complete and correct copy of the minutes of the Board of Regents meeting held on September 18, 2012.

Jack Warner
Executive Director and CEO