Project Approval

East Campus Plant Growth Facilities Complex – Phase One

MU

Action Item:

The University of Missouri – Columbia requests Project Approval for the East Campus Plant Growth Facilities Complex – Phase One project. The total project budget of $30,000,000 is funded by Campus Reserves.

Prior Board Involvement:

None

Consultant Selection:

A Request for Qualifications (RFQ) was issued to seven (7) firms. Four (4) firms submitted Statements of Qualifications (SOQ). The following three (3) firms were selected for interviews: BSA Life Structures, Inc., St. Louis, Missouri; Cannon Design, Inc., St. Louis, Missouri; and Clark Enersen Partners, P.C., Kansas City, Missouri.

Selection Committee:

David Braun, Associate Professor, Interdisciplinary Plant Group

Michele Brooks, Operations Coordinator, Plant Sciences

Heiddi Davis, Director, Campus Facilities - Planning Design & Construction

James English, Director - Plant Sciences

Marc Linit, Senior Associate Dean, College of Agriculture Forestry Natural Resources

Robert Sharp, Director, Interdisciplinary Plant Group

John Walker, Director, Biological Sciences

Jude Wawrzyniak, Project Manager, Campus Facilities - Planning Design & Construction

Firm Ranking by Committee:

First: Cannon Design, Inc., St. Louis, Missouri

Second: Clark Enersen Partners, P.C., Kansas City, Missouri

Third: BSA Life Structures, Inc., St. Louis, Missouri

Recommended Consultant: Cannon Design, Inc., St. Louis

Cannon Design, Inc., is the recommended architect for this project. Cannon presented a well-balanced and experienced team. They included Rough Brothers, Inc., Cincinnati, Ohio, as a greenhouse specialty sub-consultant on their team. The interview was engaging and provided an in-depth discussion which particularly connected with the academic members of the selection committee. The project manager demonstrated a keen understanding of facility planning related to growth chamber modules and ability to maximize utility infrastructure flexibility. The Sears White Campus Greenhouse, which MU Biological and Plant Sciences faculty and staff continue to hold in high esteem as a successful and timeless facility was designed by Cannon. Cannon also highlighted several relevant projects they have completed such as the Monsanto Growth Room Expansion and New Imaging Lab, the Regulatory Building and Growth Chambers, and Danforth-Wexford Research Labs all in St. Louis. Their interview included an Experience & Key Themes interactive thought board whereby the committee could select from eight (8) topics and members of the team would cite more in-depth information and examples about a given topic. This resonated with the academic members of the committee confirming this firm has the capability to design a relevant and flexible facility.

Consultant Experience:

Project Construction Cost Completion Date

MU Sears White Campus Greenhouse $ 5,200,000 July 1999

Confidential Midwest Biotech Company, Research

Consolidation Master Plan & Greenhouse,

Chesterfield, MO $290,000,000 December 2012

Danforth Plant Science Center, Plant Growth Facility -

Phase II, St. Louis \* $ 1,747,000 December 2008

Iowa State University, Horticulture Greenhouse,

Ames, IA \* $ 3,258,800 June 2011

MU Life Sciences Incubator at Monsanto Place $ 8,700,000 November 2008

\*Project completed by Rough Brothers

Consultant Team:

Architect: Cannon Design, Inc., St. Louis, Missouri

Greenhouse Consultant: Rough Brothers, Inc, Cincinnati, Ohio

Interior’s Assist: WA Architects, St. Louis, Missouri (MBE)

M/P/FP Engineer: Cannon Design, Inc., St. Louis, Missouri

Electrical Engineer: Cannon Design, Inc., St. Louis, Missouri

Low Voltage Assist: Stahl & Ponder, St. Louis, Missouri (WBE)

Structural Engineer: David Mason & Associates, Inc., St. Louis, Missouri (MBE)

Civil Engineer: Civil Design, Inc., St. Louis, Missouri (WBE)

Fee Analysis:

The fee percentage was determined using the University of Missouri’s “Architectural and Engineering Basic Services Fee Estimating Guidelines.” The project is a Type IV – New Construction (more complex than average), and the maximum basic services calculated fee permitted is $1,312,000 based upon 6.4% of construction cost of $20,500,000. Additional services to the basic design fee include: Equipment Planning Services ($25,000); Planning and Accommodation of the Realignment of East Campus Drive ($18,000); Additional Energy Analysis and Alternative Considerations due to unique project type ($12,000); and Planning and Accommodation of Future Phases Configuration and Utility Provisions ($12,000). A total of $67,000 in additional services was added to the basic services fee amount to arrive at a total maximum fee of $1,379,000.

Second Ranked Consultant: Clark Enersen Partners, P.C.

Clark Enersen teamed with Greenhouse Engineering, Toronto Canada. Clark Enersen presented a number of similar yet smaller greenhouse projects completed for University of Nebraska and South Dakota State University that they had designed on their own. Greenhouse Engineering presented a much more in-depth and diverse greenhouse and growth chamber portfolio of work from around the country and beyond. The selection committee was impressed by the range of similar, and cutting-edge work examples presented by both firms but was disappointed to learn that these two firms had not completed a project together.

Third Ranked Consultant: BSA Life Structures, Inc.

While BSA was able to profile similar greenhouse project experience at Purdue University along with several confidential client projects in Oregon, Wisconsin, Indiana, and Puerto Rico, these were all completed by their Indianapolis office. The committee was concerned that the proposed project manager and balance of the St. Louis office, lacked plant science and greenhouse experience, and was more versed in health care and vivarium experience.

Project Justification:

The Interdisciplinary Plant Group (IPG) is recognized as one of the top plant research and training programs in the nation. In May 2008, a Blue Ribbon Team of scientists concluded that, “using any metric of success, the IPG is an exceptional program of research excellence ... that has succeeded in promoting excellence in research and teaching at MU.” Plant Sciences has a fundamental role in the University of Missouri’s (MU) Strategic Plan, Mizzou 2020.

While MU has many successes, the existing plant growth facilities are beyond capacity and many are inadequate to support modern, innovative research. This limits the research programs ability to expand and increases the potential to lose valued faculty and students. With improved facilities, expanded research avenues can be explored while enhancing external funding and faculty and student recruitment and retention. A study was completed in 2015 to further study the concept of a new East Campus Plant Growth Facility originally conceptualized in the 2006 Plant Growth Facilities Master Plan.

Proposed Improvements:

The East Campus Plant Growth Facilities Phase One project will be the first phase of a multiphase plant growth complex as identified in the 2015 study. This project will include a total of 62,050 gross square feet (GSF) of space including two new research greenhouses with 28 compartments and associated headhouse, and a controlled environment facility with up to 52 growth chambers with an ultimate capacity of 77 growth chambers. The new controlled environment facility will triple the growth chambers on campus and expand research potential with a wide-range of environmental characteristics including temperature, humidity, CO2, and extended growth heights. The new facility will be located near the intersection of Ashland Road and East Campus Drive. This area is allocated in the MU Master Plan as development area for one to two story buildings. Future phases can be incrementally constructed based on funding availability.

Space Summary:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | PHASE 1 | FUTURE PHASES | TOTAL |  |
| **Research Greenhouse** | |  |  | 89,200 asf |  |
|  | Range A | 12,600 asf |  |  | 14 compartments |
|  | Range B | 12,600 asf |  |  | 14 compartments |
|  | Range C |  | 21,600 asf |  | 24 compartments |
|  | Range D |  | 18,000 asf |  | 20 compartments |
|  | Range E |  | 24,400 asf |  | 28 compartments |
| **Headhouse** | | 3,600 asf\* | 6,600 asf | 10,200 asf |  |
| Non-Assignable | | 3,800 gsf | 9,400 gsf | 13,200 gsf |  |
|  | Subtotal | 32,600 gsf | 80,000 gsf | 112,600 gsf | 100 compartments |
| **Controlled Growth** | | 7,458 asf | 0 asf | 7,458 asf | 77 growth chambers |
| **Headhouse** | | 12,432 asf | 0 asf | 12,432 asf |  |
| Non-Assignable | | 9,560 gsf | 0 gsf | 9,560 gsf |  |
|  | Subtotal | 29,450 gsf | 0 gsf | 29,450 gsf | 77 growth chambers |
|  | |  |  |  |  |
| TOTAL | | 62,050 gsf | 80,000 gsf | 142,050 gsf |  |

\* Alternate: As design progresses, evaluate option to expand Phase 1 headhouse for additional support and storage space.

Project Schedule:

Project Approval (BOC) October 2016

Project Design Information Item (BOC) February 2017

Design Complete June 2017

Construction Contract Award August 2017

Construction Complete March 2019

Occupancy June 2019

Project Delivery:

The project will be delivered as a traditional design-bid-build project.

Project Cost Summary:

|  |  |  |
| --- | --- | --- |
| Construction Contract ($330/GSF) |  | $20,500,000 |
| Primary Scope (2 GH, 1 HH, Environ Bldg) $318/GSF | $19,750,000 |  |
| Storm sewer cost to Site | 550,000 |  |
| E. Campus Drive Realignment – Phase 1 work | 200,000 |  |
| Construction Contingency(approx. 4.2%) |  | 854,600 |
| Other Construction Costs |  | 786,000 |
| HVAC Testing & Balancing | 50,000 |  |
| Computerized Controls | 65,000 |  |
| Card Access | 15,000 |  |
| Keys & Locks | 2,500 |  |
| Landscaping – Staging Repairs | 75,000 |  |
| Telephone Plant (DoIT cabling, test & term) | 80,000 |  |
| Exterior Signs | 3,500 |  |
| Interior Signs | 3,000 |  |
| Material Testing (soil, concrete, structural) | 55,000 |  |
| Special Testing (exterior envelope) | 7,000 |  |
| Budget Protection (2.0% of $20,500,000) | 410,000 |  |
| Utility Locates – Construction Services | 10,000 |  |
| Other | 10,000 |  |
| Consultant Fee |  | 1,379,000 |
| Basic Services (6.4% of $20,500,000) | 1,312,000 |  |
| Additional Services (Equip Planning, Realignment E. Campus Dr., Add’l Energy Analysis, Future Phase Accommodation Planning Provisions ) | 67,000 |  |
| Other Consultant Costs |  | 132,800 |
| Code Consultant | 10,000 |  |
| 3rd-Party Cost Consultant | 15,000 |  |
| Site Survey | 35,000 |  |
| Geotech Report | 20,000 |  |
| Additional Site Visits budget | 15,000 |  |
| Other Design Costs (incl. LEED Certification fees) | 32,800 |  |
| Asbestos Testing (allowance for utilities testing) | 5,000 |  |
| Project Administration Costs |  | 706,644 |
| Design & Construction Mgmt (3.0%) | 666,594 |  |
| Reproduction | 40,000 |  |
| Advertising | 50 |  |
| Other Project Costs |  | 5,640,956 |
| Temporary Measures (Lot AV14, pedestrian access) | 50,000 |  |
| Start-up Costs | 20,000 |  |
| Furniture/Furnishings budget (growth chambers) | 2,000,000 |  |
| Parking Costs (250 x $3,000/ea) | 750,000 |  |
| Utility Infrastructure Charge (62,050 new GSF x $11.00) | 682,550 |  |
| Chilled Water Capacity Allowance (659 tons x $3,228) | 2,127,250 |  |
| Other | 11,156 |  |
| TOTAL PROJECT COSTS ($483/GSF) |  | $30,000,000 |

Funding Sources:

Campus Reserves $30,000,000

Total $30,000,000

MU Project Manager: Jude Wawrzyniak