

**BOARD OF REGENTS**  
EASTERN MICHIGAN UNIVERSITY

SECTION: 29

DATE:

September 19, 2006

**RECOMMENDATION**

**MARK JEFFERSON SCIENCE COMPLEX PROJECT**

**ACTION REQUESTED**

It is recommended that the Board of Regents approve the Program Statement for the renovation of the Mark Jefferson Science Building and construction of an additional 161,600 square foot building on the west side of the Mark Jefferson Science Building.

**STAFF SUMMARY**

The University has worked for the past several months with DSA Architects, who teamed with SmithGroup for laboratory programming, Integrated Design Solutions for mechanical and electrical engineering, and The Sextant Group for technology programming to evaluate the University's science facility needs. The attached Executive Summary from the comprehensive program statement highlights the project summary, project vision and goals, methodology, preliminary design, technology, project schedule and estimated cost of the project.

In addition, a preliminary draft Capital Outlay Request for the Mark Jefferson Science Complex Project is included for Board review. A Capital Outlay Request document is required by the State of Michigan for a project to be considered for state funding.

**FISCAL IMPLICATIONS**

Total expenditures of \$105 million will be required for the Mark Jefferson Science Complex Project. Of this total, 25 percent, or \$26,250,000 in matching funds, may be required from the University. The University has the financial capability to borrow the required matching funds, which would be repaid using the four percent tuition and fee increase that was approved by the Board of Regents beginning in FY 2006 for addressing long-term building needs on EMU's campus.

**ADMINISTRATIVE RECOMMENDATION**

The proposed Board action has been reviewed and is recommended for Board approval.

University Executive Officer

Date

## Project Summary

Eastern Michigan University (EMU) retained DSA Architects (DSA), teamed with SmithGroup for laboratory programming, Integrated Design Solutions (IDS) for mechanical and electrical engineering and The Sextant Group for technology programming, to evaluate the changing nature of the University's science facilities needs, from an instruction and research viewpoint, and develop a Program Statement that quantifies the needs for the entire College of Arts & Science (CAS), including space, technology and infrastructure.

The Science Departments included in this Study comprise:

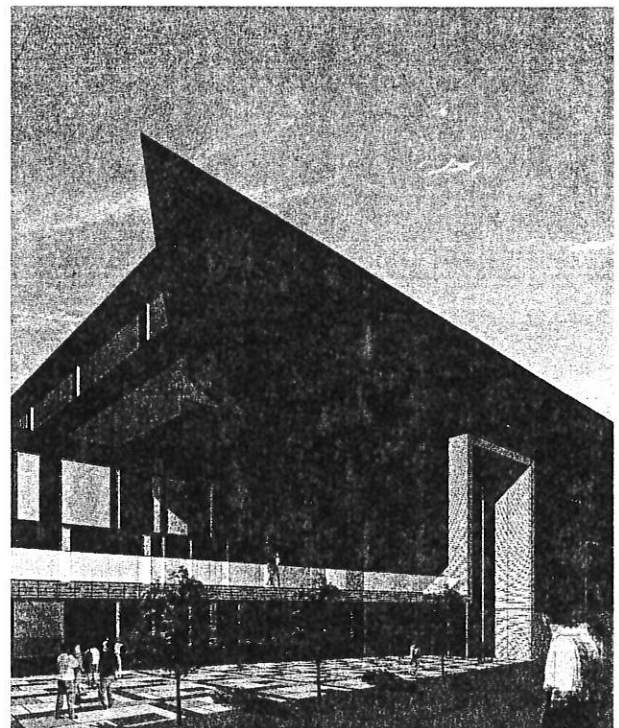
- Biology
- Chemistry
- Geography & Geology
- Physics & Astronomy
- Psychology

The project team also considered other groups in the programming process, including the College of Technology (COT) and the College of Health & Human Services (CHHS). However, as the project moved forward, the future organization of the COT and CHHS were not as strongly connected in terms of their relationship to the CAS, and so the Executive Committee<sup>1</sup> directed the design team to not include these programs into the CAS Program Statement.

At the same time, DSA assessed the condition of the existing Science buildings, including the 180,800 square foot Mark Jefferson Science Building and the 80,700 square foot Strong Hall, to determine their overall state of use and repair, and to make recommendations for upgrading these existing facilities to continue to accommodate portions of the CAS program requirements. The attached reports indicate, by building system, the existing condition and recommended repairs for both buildings, along with anticipated costs for the immediate repair needs. Proposed building renovation in Mark Jefferson to meet the future use needs were taken into consideration when developing cost models for overall Mark Jefferson renovation costs.

No renovation dollars were allocated to Strong Hall as part of this project, other than to identify Deferred Maintenance items that must be done to keep the building operational and meet current code requirements. The space renovation effort required to modernize and reorganize space within Strong Hall to support the CAS' needs will be considered in the future.

The Programming process, projected through 2014, indicates an overall space need of 233,085 Net Assignable SF for the CAS departments. Considering reuse of both the Mark Jefferson and Strong buildings, EMU has a demonstrated need of 90,485 Net Assignable, or 161,600 Gross, SF of new space for the Science Complex.



## Project Vision & Goals

The DSA Team began the Programming effort based on a review and update of a 1998 Program Study conducted by another architectural team. The 1998 study set out Science Education project goals that continue to have relevance, and they are included here for reference<sup>2</sup>:



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*The role of the Sciences in the Community:*

- Forge a strong identity in the New Facility that expresses the Centrality and Importance of Science.
- Make the practice of science evident.
- Make the Institutional commitment to science evident.
- Reinforce educational links with the community.
- Reinforce official/industrial links with the community.

*Incorporate the latest thinking in Undergraduate Science Education:*

- Create a facility that encourages interaction between science disciplines.
- Create a facility that encourages trans-disciplinary endeavors.
- Incorporate and celebrate new approaches to teaching (discovery-based learning).
- Integrate undergraduate research in teaching.
- Plan for an increasing role for research.
- Incorporate the new outlook of the next generation of faculty.
- Celebrate new approaches to teaching and research.

*Planning Aspirations:*

- Encourage the intellectual engagement of the students.
- Foster Serendipity.
- Support intra-department identity and culture.
- Build as much new science space as possible.
- Build the best quality space that is possible.
- Support and integrate the Science Education K-12 Mission.
- Incorporate fundraising opportunities.

*Essential Qualities:*

- A safe and healthy building for Scientific pursuits.
- Build flexible spaces (short-term adaptability).
- Build adaptable spaces (long-term adaptability).
- Support changes in programs.
- Adhere to State guidelines.

*Process:*

- Collegial
- Based on Consensus.

At the project kick-off meeting for the DSA Team's Program Statement effort, held on April 26, 2005, the overall team discussed the University's and College's critical success factors for this updated Science Complex Program Statement project. This team was made up of members of the Dean's office and Department Heads for all CAS Departments, representation from the College of Technology, representatives from the Provost's office, and the DSA Team. In addition to the Vision and Goals defined seven years ago, some new goals were added and others were given special emphasis:

- EMU is seeking a flexible design response that encourages interdisciplinary sharing of space, and "ownership" of space will be discouraged.
- All programmed spaces for the College of Arts & Sciences should be considered specialized spaces, dedicated to the science program.
- The new interdisciplinary science expansion should be laboratory- and research-focused, while renovated spaces in Mark Jefferson should center on classroom/instruction, Departmental and office spaces.
- The square footage of the new interdisciplinary science expansion should be maximized within the defined project budget.
- Modern, state-of-the-art technology must be integrated in all programmed spaces, whether new or renovated construction.
- Programming and budgeting should occur simultaneously, to confirm alignment.

**Project Methodology**

The team followed a 13-stepp process to gather information and lead the decision making required for this Program Statement. This process included defining the project organization & schedule, and goals and objectives, as well as conducting



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ARCHITECTS  
A member of SMITH GROUP  
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## Eastern Michigan University Science Complex Program Statement

stakeholder interviews and developing analyses and strategies for the project. In addition, the team

conducted facility assessments for the existing EMU Science buildings, and developed several alternate design schemes for consideration to meet the needs of the program and fit the University and site constraints.

### Preliminary Design

The DSA-led design team studied multiple schemes for a new building to accommodate this space, including a new 5-story rectangular "box" directly adjacent to Mark Jefferson; a lower but longer building that extends beside and along both Mark Jefferson and Strong; and a third scheme that organizes biology, chemistry and psychology department spaces adjacent to their existing spaces in Mark Jefferson and geography & geology and physics & astronomy spaces adjacent to their existing spaces in Strong Hall. At the same time, this design solution reaches out toward Halle Library and provides a "pass through" and "resting place" for destinations east of the Science Complex. The project also provides visibility to the Science Complex and the University as a whole when approaching the campus from the west, and works to tie campus elements together along pedestrian travel patterns.

### Technology

The EMU physical plant and information technology staffs worked together to provide the DSA Team with information regarding the University's standards, as well as future movement or thoughts toward the integration of technology in the classrooms, labs and overall building. Section 5 provides a Technology Program, along with an anticipated budget to fit the outlined recommendations.

### Project Schedule

The need to maintain science instruction and research, at a minimum, at the current levels, requires the project be phased. Some portion of

## EXECUTIVE SUMMARY

the proposed new building is designed as growth space, and it is anticipated that some of this space (once built) can serve as surge space as the Mark Jefferson and Strong Hall (future) buildings are renovated.

The University is seeking approval to proceed with this project based on the following approximate schedule:

University & State Approval	3 <sup>rd</sup> Quarter 2006
RFP for Architectural/ Engineering Services	3 <sup>rd</sup> Quarter 2006
Design Phase	2007
Bid & Award	1 <sup>st</sup> Quarter 2008
Construct New Building	through Summer 2009
Renovate/Backfill existing buildings	Future

### Estimated Costs

The full project budget, as outlined in this report, is in the range of \$105 million, including construction of a new 161,600 GSF science building, renovating Mark Jefferson to accommodate the revised space layout to meet the program, and addressing the critical Deferred Maintenance items outlined in the reports for Mark Jefferson and Strong Hall. More detail regarding these costs can be found in Section 7.



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Notes:

1. The Executive Committee was made up of the following individuals:
  - a. Anthony Catner
  - b. John Dugger
  - c. Hartmut Hoft
  - d. Steve Holda
  - e. Robert Holkeboer
  - f. Don Loppnow
  - g. Robert Neely
  - h. Aaron Preston
  - i. Wade Tornquist
2. Planning Vision & Goals from the Quinn Evans/Architects and Einhorn Yaffee Prescott team's "Science Complex Expansion & Upgrade, Eastern Michigan University" report, dated October 23, 1998.



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FY 2008 CAPITAL OUTLAY REQUEST  
MARK JEFFERSON SCIENCE COMPLEX PROJECT  
TOTAL PROJECT COST \$105,000,000 (2008 ECONOMICS)

<i>Is the Project a Renovation or New Construction?</i>	<i>Ren</i> (X)	<i>New</i> (X)
<i>Is there a 5-Year Master Plan available?</i>	<i>Yes</i> (X)	<i>No</i> ( )
<i>Are Professionally-Developed Program Statements and/or Schematic Plans Available Now?</i>	<i>Yes</i> (X)	<i>No</i> ( )
<i>Are Match Resources Currently Available?</i>	<i>Yes</i> (X)	<i>No</i> ( )
<i>Has the University Identified Available Operating Funds?</i>	<i>Yes</i> (X)	<i>No</i> ( )

**A. Project Description Narrative**

The College of Arts and Science (CAS) programs at Eastern Michigan University are housed in the Mark Jefferson Building and Strong Hall, constructed in 1969 and 1957 respectively, with some additional instructional space located in Rackham Hall. Mark Jefferson is an 180,802 gross square foot, five-story facility housing the Departments of Biology, Chemistry, and Psychology. This facility was programmed and designed when science education, experiential learning and the nature of student/faculty research were significantly less sophisticated and less reliant on technology. Mark Jefferson has not undergone any major renovations/updates since it was built 37 years ago.

Today, EMU's science facilities lack the specialized spaces, building systems and laboratory features necessary for modern science education and research. Mark Jefferson's mechanical systems are among the most diverse and complex of building systems. Expensive and labor-intensive preventative and predictive maintenance programs are needed to keep these delicate systems in equilibrium and to provide a safe, quality-learning environment. Failures in any one of the multiple sub-systems create reactive deficiencies in other sub-systems and can seriously detract from the quality of the learning environment, cause indoor air quality issues, lead to premature deterioration of the facility and increase operating costs. Additional space and renovation of existing space is needed for: general instruction, specialized instructional laboratories, specialized research laboratories for faculty and student research, integrated technology, specialized equipment, and building systems and infrastructure.

Deficiencies in Mark Jefferson include the following:

- Inadequate technology infrastructure
- Antiquated HVAC systems
- Inefficient and/or inoperable fume and exhaust hoods
- Electrical system is taxed/obsolete and operating at maximum capacity
- Original windows are energy inefficient and building envelope maintenance issues
- Accessibility and life-safety issues
- Overcrowded classrooms and laboratory space
- A roof system that is past its useful life and in need of replacement
- Exterior wall enclosure and foundations are subject to substantial water infiltration
- Lighting systems are outdated and inefficient
- Storm and sanitary drain system failures
- Domestic and heating water piping systems are deteriorated and failing
- Many of the existing mechanical system components are at or nearing the end of their useful lives.



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The scope of the Mark Jefferson Science Complex Project will address building infrastructure deficiencies and will renew a mix of laboratory and classroom spaces appropriate in size, configuration, technology, accessibility, and equipment to conduct general education/basic studies curriculum, undergraduate and graduate programming, and faculty/student research. The programming process projected through 2014 has identified an overall space need of 233,085 net assignable square feet for the CAS departments, which will also require EMU to construct a new 90,485 net-assignable or 161,600 gross square foot addition to the 180,802 square-foot Mark Jefferson Science Building. The new 161,600 square foot addition would physically connect to the existing Mark Jefferson and Strong Science Buildings and provide new multidisciplinary research and teaching laboratories for all science disciplines. The new facility would also serve as a landmark gateway to the west entrance of campus. Some portion of the new facility would not initially be built out (shell space), but would be designed for anticipated growth and to serve as surge space as the Mark Jefferson Building renovation is underway. The University's goal is to secure private funding to build out the shell space, but it is accepted that this strategy is ineffective if the shell space is not built out in advance. With these improvements and the new facility, Eastern Michigan University will be able to expand its curriculum—particularly in the areas of biochemistry and microbiology—to meet the needs of today's science student, and to be competitive among universities of comparable size and instructional mission.

The renovation project for the existing Mark Jefferson building will be constructed in phases according to the layout of the existing mechanical system and room-type use as described in the existing building assessment. Eastern Michigan University is developing an implementation plan (utilizing temporary facilities/trailers and/or existing buildings) so as not to adversely impact class schedules or research projects. The renewal of Mark Jefferson is expected to increase the building's useful life by an additional 35 years, and will provide an exceptional environment for all who pursue learning in the field of science. In addition, this project will also increase the utilization levels of the building on a daily basis. The estimated project life for the new addition and renovation of Mark Jefferson is 2.5 years. The total project cost is estimated in 2008 economics at \$105,000,000; these costs are expected to increase substantially over time.

**B. Other Alternatives Considered**

Demolition and replacement of the Mark Jefferson Building was considered and abandoned for several reasons. As the second largest classroom building on campus, the University cannot offer its full academic program without continued use of this facility. There is no other academic building that can accommodate the thousands of students who attend classes there daily or the faculty whose offices are located in the facility. We believe it is fiscally responsible to renovate this academic facility and to preserve the investment that the State originally made in the Mark Jefferson building.

In addition, the building is centrally located on the campus, close to residence halls and other academic facilities, including the library, and parking. Relocating the building to another site loses its centrality to the core campus, would require additional parking, new infrastructure for utilities, and would increase project costs to excessive levels. The building's structure is in good condition and therefore warrants renovation rather than a new building. Should a new building

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be constructed, Mark Jefferson would still have to be renovated or razed. Other alternatives such as leasing space, long-distance learning or terminating programs were not viable due to the complex nature of science programming and the importance of the University's science programs.

If the project is not authorized, Mark Jefferson's failing building systems will shortly compromise the integrity of the facility. Structural erosion, health and safety air exchange requirements and other critical building systems will be threatened. Eventually, the University would not be able to fulfill its mission to provide an exceptional learning environment, attract quality faculty or properly educate students in the field of science. There is no other facility on EMU's campus to accommodate the demands of the current science facility were this building to fail.

**C. Programmatic Benefit to State Taxpayers and Specific Clientele or Constituencies**

Multiple economic benefits would accrue to the State of Michigan as a result of authorizing and funding this project, including the ongoing economic benefit of a well-educated work force to attract and retain industry within the state. In addition, students who participate in science programs will be prepared to contribute to society and in return enjoy the quality of life that evolves from challenging and rewarding careers. Other benefits include lower operating costs throughout the life cycle of a modern, energy-efficient facility and an enhancement to the local economy because of the construction project's economic activity.

The Mark Jefferson Science Complex Project would provide economic benefit to the City of Ypsilanti and the eastern Washtenaw County area through the creation of new construction jobs over the 2.5 years project life. The creation of new jobs is critical to the area, given the recent auto plant closings. It is imperative that Eastern Michigan University continue to be a vital and vibrant institution within the community.

**D. Funding Resources**

Matching funds of \$26,250.00 will be provided through the sale of bonds. The University is prepared, and has the financial capacity, to execute such borrowing. Repayment of these bonds will be funded by the 4% tuition and fee increase that began in the FY2006 to address the campus' capital needs.