MONTANA
STATE UNIVERSITY
BILLINGS
Access & Excellence

SCIENCE & INSTRUCTIONAL TECHNOLOGY CENTER

RENOVATION FEASIBILITY ANALYSIS

Billings, MT
January 20, 2009

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SCIENCE & INSTRUCTIONAL TECHNOLOGY CENTER

RENOVATION FEASIBILITY ANALYSIS

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I. DESCRIPTION OF PROJECT

The Science Building is the home for all the sciences' undergraduate, graduate and research studies and its faculty. The campus Information Technology resources are located in the McMullen Hall as well as a number of other buildings. The purpose of this study is to:

- Document the existing programs within the Department of Biological and Physical Sciences and project future space allocations.
- Identify the existing campus I.T. systems and propose a central location that will meet its functional space requirements.
- Perform a building analysis for the existing Science Hall in regards to structure, mechanical/electrical systems, accessibility and current building codes.
- Analyze the existing information, propose options for meeting the needs of both departments and recommend a course of action.
- Provide an outline budget and schedule of the recommended option.

Previous Funding Request

- Improves an Existing Facility
- Class II

Location:

- Site on Owned Property
- Outside of 100 Year Flood Plain
- Utilities Already Available
- Access Already Available

Estimated Cost of Project:

1.	Land Acquisition:	$0
2.	Site Investigation:	$15,000
3.	Consultant Services:	$1,475,000
4.	Construction Costs:	$10,630,000
5.	Site Development:	$225,000
6.	Utilities:	$75,000
7.	Telecomm. Systems:	$250,000
8.	Furnishings & Equipment:	$500,000
9.	Contingency:	$1,475,00
10.	A&E Supervisory Fee:	$0
11.	Construction Mgmt:	$0
12.	Commissioning:	$50,000
13.	Construction Testing:	$30,000
14.	Percent for the Arts:	$25,000
15.	Other:	$0
	Total Estimated Cost:	**$14,750,000**

Project Funding:

Fund	Amount	Cash/Bonded	Bill Number
05007	$14,750,000	C	HB 0005
Total Funding:	**$14,750,000**		

II. DESCRIPTION OF FACILITY

General Description:

Built in 1947 the Science Building is in dire need of updating to meet the demands of today's curriculum.

Impact on Existing Facilities:

Presently, the Science Building is the home for all the Sciences' undergraduate, graduate and research studies and its faculty. Last year its' 14 classrooms and labs supported a relatively consistent 10%-12% of our student FTE throughput: Fall 360, Spring 374 and Summer 73. Accommodations need to be considered should renovation become the preferred alternative.

Functional Space Requirements:

- The ability to provide a safe learning environment for our students is paramount and the sciences' pose some of the the greatest risks to their health and safety. Hazardous and radioactive materials demand the latest environmental safeguards.
- This project will allow us to co-locate our IT resources in one central location with the next generation high speed bandwidth infrastructure to support the sciences and their research; and provided walk-in technology support for students, faculty and staff.

Site and Building Assessment:

- Will eliminate 20% of the deferred maintenance within the campus' academic facilities.
- Will provide redundant infrastructure to support failed system rollover and disaster recovery.

Alternatives Considered:

1. Continue to defer repairs, needed upgrades and code/life safety deficiencies.
2. Construct a new facility specifically tailored to meet our growing needs.
3. Renovate selected areas within the existing facility and add minimal new space.

Rationale for Selection of Particular Alternative:

A Facility Planning Study was undertaken to determine the most prudent course of action between Alternative (2), new construction and Alternative (3), renovation. Alternative (1), continuing with the status quo remains the least desirable option to addressing the needs of a long overdue situation.

Department of Biological and Physical Sciences Programs

Biology
Chemistry
Earth Science
Environmental Science
Geography
Health Science
Physics
Pre-engineering

Undergraduate Degrees and Majors

Bachelor of Arts Major: Biology

Bachelor of Science Majors: Biology, Chemistry

Bachelor of Science in Education Teaching Majors: Biology, Chemistry

Minors and Teaching Minors: Biology, Chemistry, Earth Science, Geography, Physics

Pre-Professional Programs: Medicine (including Medical Technology, Veterinary Medicine, Dentistry, Pharmacy, Physical Therapy, Pre-engineering, and Pre-engineering Technology

Programs of Study leading to the AS Degree: Allied Health, Environmental Science, and Pre-engineering.

Career Opportunities:

There are numerous opportunities for science graduates. City, state and federal agencies have employed many biology graduates including the U.S. Forest Service, Bureau of Land Management and Montana Department of Fish, Wildlife, and Parks. Chemistry waste treatment facilities, community water departments, chemical analysis laboratories, and air quality agencies are some of the places graduates may secure employment.

Program Requirements:

Lecture	7,600 s.f.
Lecture (1) 150 Students	
Lecture (4) 75 Students	
Lecture (4) 25 Students	
Student Labs	18,000 s.f.
General Biology	
Cell/Molecular Biology	
Microbiology	
Ecology	
Plant Development/Physiology	
Anatomy and Physiology	
General Chemistry	
Organic Chemistry	
Physical Chemistry	
Earth Science	
Physics	
Support Spaces	
Observatory	
Cell Culture facility	
Electron Microscope	
Balance Room	
Prep/Storage	
Core Equipment Room	
Dark Room	
Research Labs	10,000 s.f.
Faculty Research	
Biosafety Level II	
Radioisotope Room	
Microscopy	
Laser Facility	
Main Office	1,500 s.f.
Faculty Offices	2,600 s.f.
Green House	3,000 s.f.
Animal/Growth	1,200 s.f.
Tutoring/TA's	300 s.f.
Stock Room	2,000 s.f.
Equipment/Waste	1,000 s.f.
Radioactive Storage	200 s.f.
TOTAL:	**47,400 s.f.**
Circulation, Mechanical, Restrooms	15,600 s.f.
	63,000 s.f.

Information Technology:

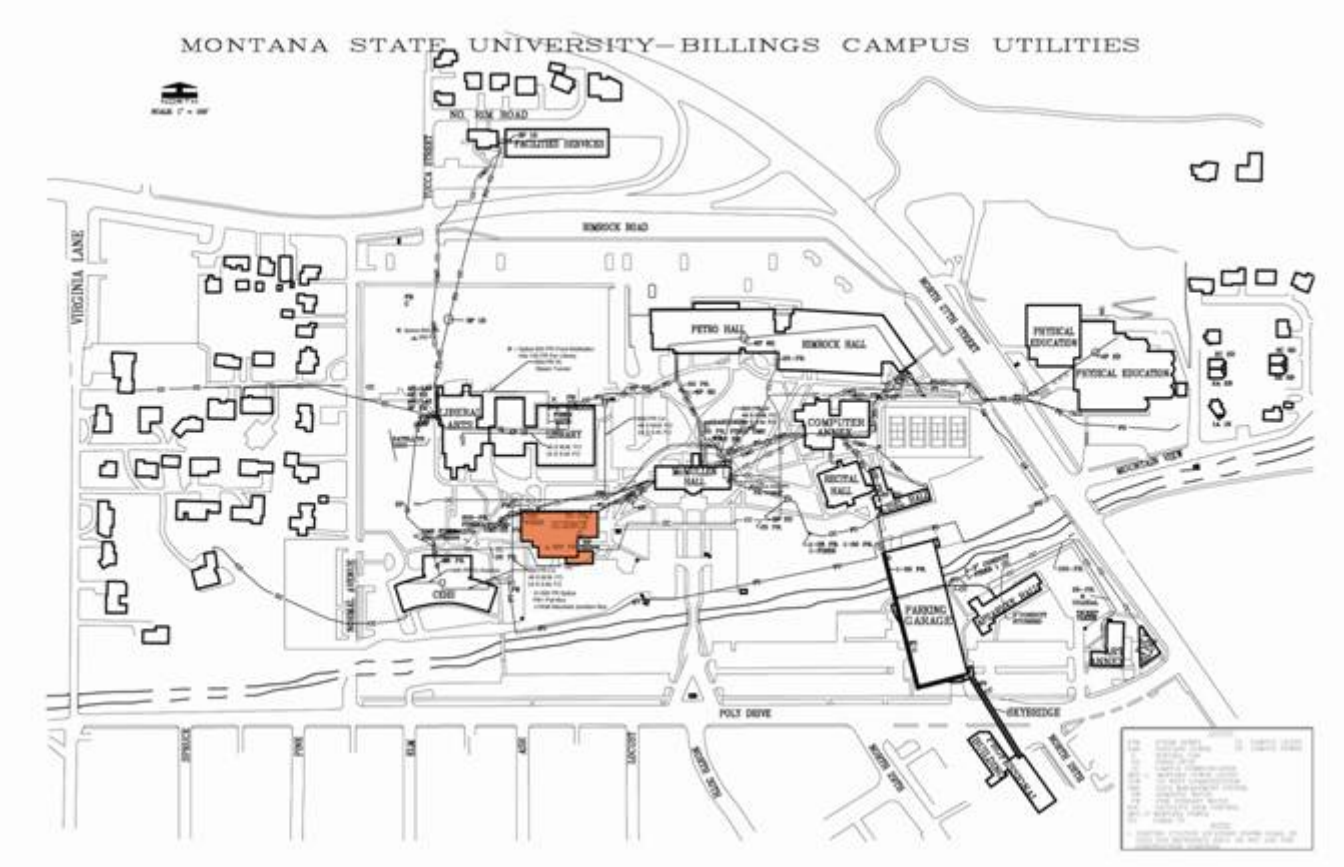
MONTANA STATE UNIVERSITY – BILLINGS COMPUTER SERVICE POLICY

General Policy

Montana State University – Billings Computer Services maintains the centralized computing facility that supports instruction, research, and administrative functions of the college.

This support includes consulting, documentation, training, application development and maintenance, system software maintenance, network facilities, and help desk. Through these service functions, Computer Services endeavors to provide computing resources that will ensure instructional program quality and dynamic administrative information processing.

Services may also be provided to other educational institutions and state agencies, local governments, non-profit organizations, and industry to the extent that instructional and administrative services for Montana State University – Billings are not negatively impacted.



IT Program Requirements:

Offices	1,800 s.f.
Work – Desktop Support	500 s.f.
C/O	200 s.f.
Main Computer	700 s.f.
Reception/Conference Room	500 s.f.
Software Library	200 s.f.
Storage	2,500 s.f.
Production	500 s.f.
Disposal	500 s.f.
Multi-Media (2)	1,500 s.f.
Help Desk	100 s.f.
SUB-TOTAL:	**9,000 s.f.**
Circulation, Mechanical, Restrooms	**3,034 s.f.**
TOTAL:	**12,034 s.f.**

III. SITE AND BUILDING ASSESSMENT

MSU-Billings Campus Plan - Site Assessment

The MSU-B Science Hall is located in the southwest corner of the campus. It is adjacent to the Liberal Arts/Library complex to the north and the College of Education building to the west. The current Campus Master Plan identifies the Science Hall as building that could have a future addition on the south side of the existing building. A new addition would fulfill aspects of the campus planning goals.

Goal 2: Enhance the Student Experience
- Modernize science labs and provide adequate science lab equipment
- Optimize access to technology

Goal 6: Develop a Space Utilization and Growth Plan
- Update science labs to enable teaching and research
- Create effective locations for computer centers for student use

With a proposed addition to the south side of the existing building, other considerations include:

- Pedestrian Circulation – the current pedestrian access is on the north, east and west sides of the building and would not be adversely affected by the addition.
- Vehicular Access – the addition would eliminate some parking spaces but could maintain service vehicle access to the building.
- Emergency Access – rescue and fire truck access would remain available.
- Underground Utilities – the least disruption to the campus utilities would be on the south side of the existing building.

The campus Master Plan has identified a future east building site on the lawn between McMullen Hall and the Recital Hall. A new building here would also fulfill aspects of the campus planning goals.

Goal 2: Enhance the Student Experience
- Modernize science labs and provide adequate science lab equipment
- Optimize access to technology

Goal 3: Increase the Efficiency of Parking
- Parking garages are preferred over surface parking lots and a new facility would be adjacent to the existing parking garage.

Goal 4: Strengthen Campus Image and Character
- Defines main campus entry by book ending the primary visitor vehicular access and parking
- Identifies a 'heart' of the campus by framing McMullen Hall

Goal 6: Develop a Space Utilization and Growth Plan
- Update science labs to enable teaching and research
- Create effective locations for computer centers for student use

With a new proposed building on the east side, other considerations include:

- Pedestrian Access – the new building could define a pedestrian space that would extend 'the Mall' to the west in front of McMullen Hall and to the east side of campus.
- Vehicular Access – the new building would shift some of the student classroom load to the east side adjacent to the under-utilized parking garage and help relieve the over-crowded parking on the west side of campus.
- Emergency Access – rescue and fire truck access can be provided from the adjacent Cisel Hall parking lot.
- Underground Utilities – gas, power, fiber optic lines would need to be relocated and all other major utility services and available.

The campus Master Plan has identified a future west building site on the lawn west of the Liberal Arts Building. A new building here would also fulfill aspects of the campus planning goals.

Goal 2: Enhance the Student Experience
- Modernize science labs and provide adequate science lab equipment
- Optimize access to technology

Goal 6: Develop a Space Utilization and Growth Plan
- Update science labs to enable teaching and research
- Create effective locations for computer centers for student use

Floor Plan Assessment:

Floor Plan Assessment (continued)

The original Science Hall was built in 1947 with an addition completed in 1976. The two-story building provides labs, classrooms, offices, an auditorium and support spaces. With the changes in teaching paradigms and technology, the building falls far short of providing the necessary facilities to support an integrated learning environment for the sciences of tomorrow.

- The limited space does not allow students to be active participants in a hands-on laboratory environment.
- There is no integration of computers at the benches or any other multi-media technologies.
- The current building does not provide adequate research laboratories for faculty use.
- The layout does not allow for efficient use and storage of shared laboratory equipment.
- The current building does not engage the students or visitors in science with collections and displays.
- There is inadequate space for outside of classroom interaction between faculty and students.
- The students have no dedicated space to meet with tutors and class counselors.
- Faculty offices are small and have no daylighting.
- The labs are not flexible to adapt to changing teaching paradigms, i.e., teaching lectures in the laboratories.
- The building layout does not take advantage of any daylighting, natural ventilation or any other sustainable design strategies.

HVAC Assessment

Heating System:

The steam boiler has outlived its useful life and should be replaced. Steam as a source of heat for the building is not as efficient as hot water and is not adaptable to good temperature control because of the constant temperature of the heating medium. This results in control valves modulating very close to the seat, causing wire drawing and increased maintenance. The existing boiler is loaded about to capacity based on what it is currently serving. It was also reported to me that the current burner is short on combustion air and is having to be derated to operate properly. Steam however is a good heating medium for heating large amounts of outdoor air such as is found in laboratory heating and cooling systems.

The existing steam and condensate piping appears to be in good shape without any noted leaks or drips. Most of the system appears to have been modified when the addition was done but some of the original piping remains in place. Again this piping has served the building well but any amount of major changes it should be replaced to provide serviceable systems in future. If the system is changed to hot water the existing piping systems will not provide adequate flow. Steam systems also require the use of steam traps. Most traps appear to be working properly but are a continuing source of maintenance and problems down the road. There are still steam risers located in walls that were cast into the original building structure. These may be a source of problems in the future. There are a few cast iron radiators still in use which have also have outlived their useful life and should be considered for replacement.

Ventilation System:

The building was probably built with very little ventilation except for double hung windows, high ceilings and a central natural gravity natural draft or forced air exhaust. It is difficult to say with all the remodels that have taken place. The last remodel installed the multi-zone units which are not set up to handle large amounts of outdoor air. They are not equipped with preheat coils that would be required for this purpose. The current air distribution seems to be working well and most areas where air is being provided are not stuffy. I did notice the building pressurization and odor control are not what they should be. The units have provided 30 years of service and have outlived their useful life. The two deck multi-zone unit is currently not in code compliance because of the constant reheating and mixing of cooled and heated air streams to provide temperature control. Current multi-zone units consist of three decks and will not mix heated and cooled air streams to provide temperature control. This feature results in lower energy use. Filtration for the units consists of flat or angled filter boxes with throw away fiberglass filters. There are better filtering systems for laboratory environments which will remove harmful fumes and particulates from the air streams and depending on what is being done in the facility may be applicable.

Existing fume hoods and exhaust systems are inefficient by current standards. Major remodel and changes should include modern fume hood technology to provide proper ventilation with varying air flows and proper pressure relationships to maximize energy conservation. The existing system would be hard to adapt to current energy code requirements for lab systems.

Piped Systems:

The piped gas system is adequate with the exception of new requirements for emergency shut offs and earthquake requirements for critical systems which will require some updates and changes to meet the new code requirements.

The vacuum system is outdated and should be replaced if another remodel is done. The current requirements for vacuum systems have changed with regard to alarms, discharge of effluent and venting of systems. This coupled with the age would dictate total replacement of the system.

The building sprinkler system appears to basically adequate and could possibly be revised to match new layouts and density requirements. The water service entrance is not equipped with proper backflow devices. This system was probably calculated on a pipe schedule basis and would have to be recalculated to be sure it will provide proper coverage for the remodeled building. A remodel will also require an adjustment in head spacing, type and density of coverage. Sprinkler systems are quite inexpensive and it is our opinion that a new system would be less costly than remodeling of the existing system.

Existing Plumbing Systems

The building is served by a conventional domestic water and sewer system connected to the city utilities. The piping systems range in age from original to current day. It was noted that the water service does not include the proper backflow prevention that is required by current code. It was also noted that there is a lack of backflow for connections to lab equipment. Other lab water systems such as di water etc may have existed but seemed to not be in use. There is no central distilled water system, RO water, De-ionized water or other specialty systems that may be found in laboratories. We did not see any waste neutralization systems but they may be present. Again the existing systems have outlived their useful life and should be replaced to provide reliable service for the next 20 years or to support a remodeled and updated laboratory facility.

A detailed report is included in the Appendix.

Electrical Assessment

The majority of the existing power systems appear to meet code requirements for the time they were installed. We did note a few exceptions and those are noted below.

Electrical Power System

The existing MDP and the branch panels are for the most part filled with very few spare breakers or spaces. The ability of the existing system to expand is limited because of this. Any remodel and addition would require a much larger and expanded distribution system and would probably result in the elimination of most of the existing devices due to new layouts and changes in floor plan.
Convenience outlets appear to be plentiful but the circuits feeding the outlets are overloaded because of lack of breaker space and distribution panels.
Power to the labs is severely overloaded due to the use of hot plates and will require significant upgrade to serve any lab function.
The existing switchgear and distribution panels appear to have been installed with the last remodel and for the most part are still serviceable. It will not be long however until breakers and fused switches will not be available and will present problems with remodels additions and changes in the future.
The existing 1200 amp service is adequate to serve the functions of a remodel for this part of the building but any addition to the building would require a new service with the existing switchboard being back fed from the new service.
Because of the nature of work that is conducted in this structure a reliable power system is required. Failure of the electrical system could impair or destroy ongoing projects and research being done in the building. Due to the nature of the facility it would be wise to consider the installation of an emergency backup generator to keep necessary equipment operating during and extended power outage.

Due to the age of the equipment, current loading and availability of fused switches and breakers any major remodel should include the replacement of the main electrical distribution system to keep a system with adequate expansion capabilities and replacement devices. The addition of an emergency generator should be analyzed at the time of design when all building functions have been defined.

Wiring

Most of the main distribution system feeds to the branch panels and branch circuits are in conformance with codes. Some circuit overloading is taking place as mentioned previously. While the wiring is adequate to serve the majority of what is currently installed any remodel or expansion of facilities would result in overloading the branch circuits and would require replacement and upgrade.

The use of Romex is prohibited by the National Electric Code in commercial buildings and should be removed and changed to proper wiring methods.

Lighting System

While current lighting systems are adequate. Any major remodel will involve ceiling and wall removal and relocation. The reuse of fixtures is not cost effective and will require new fixtures to serve the remodeled areas.
New lighting is more efficient and the any fixture that utilizes the T12 type of lamp will not have lamps available in the near future.
The existing fixtures are not designed to reduce glare on computer screens and TV monitors. Any remodeled facility should take this into account.
Existing systems do not incorporate dual level switching or lighting control of areas with items such as motion sensors etc. While this can be done with the existing system it would be very costly and complete replacement of lighting will probably be necessary.

Emergency Lighting and Fire Alarm Systems

The fire alarm should be replaced throughout the entire building. Installation of fire alarm activation devices: manual pull stations, smoke detectors, heat detectors, duct detectors, fire sprinkler monitoring etc. along with notification devices: horn/strobes, etc. should be installed.
Battery backed-up or emergency generator emergency lighting should be installed in all egress pathways and rooms that do not have obvious adequately lighted exits. Exit lighting needs to be updated to current requirements.
The main system should include current polling devices to detect early system failures and a city tie to alert the fire department of a fire.

Data and Communications Systems

Existing data and communications systems while adequate for the existing function will have to be replaced and updated for any remodel or addition that is done to the building. This should include the addition of cable trays, data outlets and rough in as well as possible Closed Circuit television, overhead projectors, video conferencing etc.

A detailed report is included in the Appendix.

Building Code Review Summary

The Science Hall was reviewed for conformance to the 2003 International Building Code (IBC).

The original 1947 Science Hall building is constructed of concrete, masonry, steel, and wood framing. The 1976 addition is primarily masonry and steel. Because of the wood present, the building is classified as at Type V-B (non-rated) structure. The current size of the building is:

First Floor:	17,988 sq. ft.
Second Floor:	16,052 sq. ft.
Total:	34,040 sq. ft.
Basement:	16,396 sq. ft.

The building contains two occupancy groups: (B) Business for Educational Occupancies above the 12th grade; and (A-3) Assembly for the Auditorium. These two occupancies require a 2-hour fire separation between them.

For the V-B construction and the occupancies contained in the building, the maximum allowable size for both floors combined is 44,108 square feet. Therefore, a 10,068 s.f. addition is possible before the separated use provisions of UBC 302.3.2 would be required.

The existing auditorium on the west side of the building is required to have a 2-hour fire separation. Also, the auditorium does not have fire sprinklers and should have them installed with any renovation. For educational occupancies above the 12th grade in B occupancies, classrooms with less than 50 occupants (1,000 s.f.) are included as part of the B occupancy. Classrooms larger than that are considered (A-3) assembly occupancies:

Currently there are five classrooms/labs that are over 50 occupants and would need to be made smaller or install a 2-hour rated fire wall between them and the rest of the building.

The current building is in conformance with the exiting requirements and any alteration or addition would have to continue to meet those requirements.

Based on the building size, the total occupancy load is 1034 occupants. Based on occupancy, the plumbing requirements are:

Men:	1/100 = 517/100 = 5.17 → 6 fixtures required
Women:	1/45 = 517/45 = 11.48 → 12 fixtures required

The current building does not meet these plumbing fixture requirements.

A more detailed Code Review is included in the Appendix.

IV. ALTERNATIVES CONSIDERED

A Programming Design Charrette was held on Friday, May 5, 2006 with faculty and staff from the Department of Biological and Physical Sciences, the Informational Technology Department, MSU-B Facility Services and the Montana State A/E office. After determining the program requirements of both the Science and I.T. departments, the following five Alternatives were proposed based on combinations of new, remodeled and additional space being provided.

	NEW	REMODEL	ADDITION	COSTS
1	S IT 75,000 S.F.			$24,400,000
2	S 66,000 S.F.	**3** IT AH 50,000 S.F.		$17,160,000 $6,750,000
4		S 50,000 S.F.	S 20,000 S.F	$6,750,000 $5,250,000
5		S IT 50,000 S.F.	S 20,000 S.F.	$9,550,000 $5,200,000

S – Biological & Physical Sciences

IT – Instructional Technology

AH – Allied Health

Alternative #1

All New Construction

75,000 S.F.

Advantages

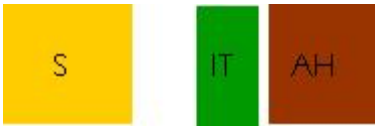
1. The hierarchy of spaces and programmed adjacencies for function can be designed without the constraints of an existing structure.
2. The new building can be planned for maximum flexibility to anticipate future changes.
3. All infrastructure, mechanical electrical, plumbing, data, etc., would be new and compliant with current building codes.
4. A new building would be energy efficient and could incorporate sustainable design strategies.
5. Allows integration of science program technology needs with the Information Technology Center.
6. A new facility would not displace faculty and students during construction.
7. The current MSU-B Master Plan has identified building sites for future construction and proper building siting could enhance the pedestrian mall already established on campus. A new building could also help 'frame' McMullen Hall as the signature building on campus.
8. A new building on the east side of campus would shift some of the parking demand to the under-utilized parking garage on that side of campus.

Disadvantages

1. New construction costs for laboratory spaces should be budgeted at $266/sq. ft.
2. A new facility would increase operational budgets and staffing to maintain the increased square footage.
3. A new facility would eliminate open space on campus.
4. There are possible cross-contamination issues with the science programs and IT center located in the same facility.
5. This option does not address or remedy what will be done with the vacated Science Hall.

Alternatives #2 and #3

New Construction and Remodel



66,000 S.F. & 50,000 S.F.

Advantages

1. The hierarchy of spaces and programmed adjacencies for function can be designed without the constraints of an existing structure.
2. The new building can be planned for maximum flexibility to anticipate future changes.
3. All infrastructure, mechanical electrical, plumbing, data, etc., would be new and compliant with current building codes.
4. A new building would be energy efficient and could incorporate sustainable design strategies.
5. A new facility would not displace faculty and students during construction.
6. The current MSU-B Master Plan has identified building sites for future construction and proper building siting could enhance the pedestrian mall already established on campus. A new building could also help 'frame' McMullen Hall as the signature building on campus.
7. A new building on the east side of campus would shift some of the parking demand to the under-utilized parking garage on that side of campus.
8. Provides a plan for re-using the existing Science Hall.
9. Provides space for the new Allied Health Program. This program requires for less infrastructure be integrated into an existing building.
10. The IT program and Allied Health are currently housed on campus and could move into the renovated Science Hall when it is completed.
11. The overall cost/sq. ft. for all the buildings would be $190.00/sq. ft.

Disadvantages

1. New construction costs for laboratory spaces should be budgeted at $266/sq. ft.
2. A new facility would increase operational budgets and staffing to maintain the increased square footage.
3. A new facility would eliminate open space on campus.

Alternative #4

Remodel and Addition

50,000 S.F. & 20,000 S.F.

Advantages

1. Does not eliminate open space on campus and would leave all sites available for future buildings.
2. A smaller addition would not greatly increase operation and maintenance costs.
3. By designing the labs to be in the addition, all new infrastructures can be provided.
4. The addition and remodel could be designed to incorporate limited sustainable design strategies.
5. The program needs for the science programs could be met.
6. The overall cost for the remodel and addition would be $170/sq. ft.

Disadvantages

1. Does not provide space for the Information Technology Center.
2. The existing structure would limit the functional programming and adjacencies desired by the Science Department.
3. The addition would eliminate some parking.
4. The remodel would require displacing faculty and students for a period of time.

Alternative #5

Remodel and Addition

50,000 S.F. & 20,000 S.F.

Advantages

1. Does not eliminate open space on campus and would leave all sites available for future buildings.
2. A smaller addition would not greatly increase operation and maintenance costs.
3. By designing the labs to be in the addition, all new infrastructures can be provided.
4. The addition and remodel could be designed to incorporate limited sustainable design strategies.
5. The program needs for the science programs could be met.
6. The overall cost for the remodel and addition would be $210/sq. ft.
7. Allows integration of science programs' technology needs with the Instructional Technology Center.

Disadvantages

1. The existing structure would limit the functional programming and adjacencies desired by the Science Department.
2. The addition would eliminate some parking.
3. The remodel would require displacing faculty and students for a period of time.

V. RECOMMENDATIONS

After review and analysis of the collected information, Alternative 5 is recommended.

This approach would be constructed in two-phases to avoid interrupting the science curricula or having to lease temporary laboratory facilities. The lab addition would be constructed first followed by the renovation. During the renovation, existing spaces across the campus will be converted into temporary offices and classrooms. This solution is the best choice because Alternative 5:

Fulfills more of the MSU-B Goals and Strategies
Strengthens the Existing Campus Plan
Meets the Space Requirements for Designing Tomorrows Science Facility
Adds Space to Meet the Growing Demands of Instructional Technology
Provides Cost Effective Square Footage through a Combination of Renovation and New Construction

The Estimated Cost of Alternative 5 is:

Land Acquisition	$ -0-	Contingency	$ 1,475,000
Site Investigation	$ 15,000	A & E Supervisory Fee	$ -0-
Consultant Services	$ 1,475,000	Construction Management	$ -0-
Construction Costs	$10,630,000	Commissioning	$ 50,000
Site Development	$ 225,000	Construction Testing	$ 30,000
Utilities	$ 75,000	Percent for the Arts	$ 25,000
Telecom Systems	$ 250,000	Furnishings & Equipment	$ 500,000
		Total Estimate Cost	**$14,750,000**

The proposed schedule for Alternative 5 completion is:

Submit to the State	October 2008
Allocate Design Funds	May 2009
Advertise for Bids	February 2010
Start Construction	April 2010
Complete Construction	July 2011
Fit Out/Start-Up	August 2011

VI. APPENDIX

Previous Project Reports
MSU-B Goals and Strategies
Mechanical/Electrical Appraisal
Structural Appraisal
Building Code Analysis
Program Charette