

CAPITAL PROJECT GUIDELINES

Missouri University of Science and Technology

Missouri University of Science and Technology
Design & Construction Management
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ABOUT THE CAPITAL PROJECTS PROCESS

The process of renovating existing buildings and constructing new buildings at the Missouri University of Science and Technology is complex and on-going. A new research lab may be required to recruit a world-renowned faculty member; a significant change in pedagogy or research technology may require redesigning any number of teaching or research facilities; new programs may require additional space; or a building may have reached the end of its useful life and need to be replaced. All of these capital project needs are important to the University and can drive the need for a major renovation, a building addition, or a new building.

These guidelines were designed to provide a consistent, transparent process for submitting your Department/Division's capital project needs to Design & Construction Management to ensure that they are reviewed and considered along with other institutional needs.

QUESTIONS?

For questions about this document or the capital projects process, please email spaceman@mst.edu

Who should Follow These Guidelines

These guidelines apply to all general fund academic and administrative department/divisions seeking Campus support for a major capital project on the Missouri S&T campus only. They do not apply to auxiliary Departments/Divisions (e.g., athletics, housing, and parking).

When to Follow These Guidelines

Most major capital project needs are required to follow the capital projects process described in this document, although there are a few exceptions to this rule. The distinguishing factor is typically based on the estimated cost of the project and/or the impact to the broader campus. The list below defines when capital project needs are or are not required to follow the process.

Estimated Cost	General Guideline
<i>Less than \$1M</i>	In general, department/divisions have autonomy in planning and initiating new construction or renovation projects that are estimated at less than \$1 million and do not need to follow these guidelines. <i>Note: Office of University Advancement should be involved in all projects that receive charitable contributions.</i>
<i>\$1-\$5M</i>	If a project is estimated between \$1M and \$5M, department/division must follow these guidelines and formally submit their capital projects needs to Design & Construction Management. <i>Note: Capital Projects under \$5 million will not appear on UM System Capital Project Listings.</i>
<i>Over \$5M</i>	If a project is estimated at over \$5 million, department/divisions are required to follow these guidelines and formally submit their capital projects needs to Design & Construction Management.
<i>Special situations</i>	Some projects have broader campus impact and require discussion with Design & Construction Management before the project begins to ensure that it aligns with institutional needs and priorities, regardless of estimated cost. These projects include: <ul style="list-style-type: none"> • New classrooms, laboratories, computer server rooms, food venues, and libraries • Space conversion (e.g., converting classrooms to office space) • Renovating space that is used campus-wide use (e.g., classrooms or Leach Theatre) • Changes that affect a building's exterior • Changes in land use • Projects that require financing with debt service

Process Overview & Timeframes

The following information provides a high-level overview of the capital projects submission, review, and approval process, and general time frames for each phase. This document describes each phase in greater detail and includes other important information related to capital project planning.

Phase	Deadline
1. Department/division submits capital needs to Design & Construction Management.	July 1 st
2. The Missouri S&T Capital Projects Committee reviews new and existing needs. The committee decides the institutional priorities. Committee and/or Director of Design & Construction Management discuss projects with other relevant administration and gather information as required.	July 15 th
3. Director of Design & Construction Management informs department/divisions of the status of their submissions. Department/divisions with needs that are deemed a high priority are informed of next steps based on these discussions.	September 1 st
4. Department/divisions that receive Design & Construction approval to explore their capital needs further begin a programming study with D&CM. <i>NOTE: The programming phase is expected to last 9-12 months, and the programming study will be submitted the following year for consideration as a capital project.</i>	October 1 st
5. The Director of Design & Construction Management submits final project information and priority ranking on the UM System Capital Project List to UM System.	January 30 th

Important Things to Note

Before exploring a capital project need, it is important to keep the following items in mind.

- All capital project work, including programming studies, conceptual designs, cost estimates, etc., must be coordinated through and managed by Design & Construction Management (D&CM) (Refer to specific policies: Missouri S&T Policy III-32-other). Department/divisions are not permitted to procure external consultants on their own.
- D&CM will not provide cost estimates or start capital project program and site studies without first ensuring that the Capital Projects Committee is aware of and supports proceeding with the study.
- The Office of Finance & Administration may be actively involved in capital project planning whenever central funding is used or multiple department/division are involved in a project. A representative from the Office of Finance & Administration may participate as a member of the project/facility planning committee to ensure that institutional needs are met.

- All projects estimated at \$5 million or higher require Board of Curators' approval. UM Facilities Planning & Development manages the Board's approval process in partnership with Design & Construction Management (D&CM).

UNIT SUBMISSION: HOW TO APPLY

Annual Submission Deadline: JULY 1ST

A department/division interested in submitting their capital needs to the Design & Construction Management Office for consideration must complete an application for Capital Project Consideration on or before July 1st. This is considered a firm deadline and is needed to enable the Design & Construction Management Office to review all campus needs collectively before making decisions on institutional priorities. The application can be found at designconstruction.mst.edu

NOTE: If your unit submitted a capital project need previously and the need has not yet been addressed, you do not need to resubmit the need each year. Design & Construction Management revisits both new and existing needs during the annual review process. If, however, significant changes have occurred since your last submission, we encourage you to submit a brief summary of the changes only on or before the July 1st deadline.

Submission Instructions

To ensure that each capital project submission is considered fairly, we ask that you:

1. Email your application for Capital Project Consideration (found at designconstruction.mst.edu) and any supplemental information to spaceman@mst.edu on or before July 1st. Complete the application in its entirety. You are permitted to provide supplemental information if necessary (no more than 15 pages, excluding photos).
2. Ensure that your submission addresses the following items and includes specific examples to help explain the context of your department/division overall need.
 - a. *Description of your facility challenges*
 - What is driving this capital project need at this time? (e.g., changes in programming, pedagogy, or research; increased enrollments; faculty or student recruitment and retention; ability to compete with peer institutions); benefit to our six customer groups.
 - How are your existing facilities affecting:
 - Your department/division ability to meet its core mission?
 - Faculty, student, or staff success?
 - Your department/division ability to compete with peer institutions?
 - How has your department/division worked around your facility challenges to date? (e.g., repurposing existing space to other uses, using another department/division space, leasing space, optimizing and/or reconfiguring existing space)

	<ul style="list-style-type: none"> • What are the challenges of continuing to address the problem in the same manner? • How will your unit continue to operate if this capital need is not addressed at this time?
<i>b. Supplemental Information</i>	<p>Please share any supplemental information that supports your narrative. Examples include:</p> <ul style="list-style-type: none"> • Trends in student enrollments, faculty headcounts, or visitors (for public goods, if applicable) over the past few years • Trends in research expenditures (or other measures of research productivity over the past few years • Relevant comparisons between your unit and peer institution's (e.g., enrollments, faculty, square footage, research expenditures) • Faculty or student recruitment or retention issues that are directly related to the limitations of your current facilities
<i>c. Support of Strategic & Master Plans</i>	<p>Please share how your project would support the Strategic Plan and Campus Master Plan. For supporting the strategic plan, please indicate which levers are supported.</p>
<i>d. Funding plan (no more than ½ page)</i>	<p>Please share your thoughts on how your capital need would need to be funded.</p> <ul style="list-style-type: none"> • Is your department/division financially prepared to support a programming or study? • What are the fund sources anticipated for this project?
<i>e. Photos</i>	<p>You may include up to 20 photos of your existing facilities to help describe the challenges you face. Please include the photos in your Statement of Need. Note that these photo pages should not be counted toward your 15 page limit. Include a brief description of each photo.</p>

MISSOURI S&T CAPITAL PROJECTS COMMITTEE REVIEW & DECISION ON INSTITUTIONAL PRIORITIES

After receiving all capital need submissions, the Director of Design & Construction Management and S&T Capital Projects Committee review each new capital need carefully to determine institutional priorities. Existing needs that have not yet been addressed are also revisited.

The Capital Project Committee representatives include:

<i>Office of the Provost</i>	<ul style="list-style-type: none"> • Provost • Dean of Engineering & Computing • Dean of Arts, Sciences & Business
<i>Office of Finance & Administration</i>	<ul style="list-style-type: none"> • Vice Chancellor of Finance & Administration
<i>Office of University of Advancement</i>	<ul style="list-style-type: none"> • Vice Chancellor of University Advancement
<i>Design & Construction Management</i>	<ul style="list-style-type: none"> • Director of Design & Construction Management

Facility Tours

As part of the review process, the S&T Capital Projects Committee typically requests on-site tours of the unit buildings that have capital needs. The tours are invaluable in providing committee members with a first-hand view of a department/division's facility challenges and enabling members to ask questions about the facility and the department/division's programs to help them better understand the department/division's situation. When possible, facility tours are based on the availability of the space.

Prioritization of Capital Needs

The S&T Capital Projects Committee reviews and discusses each capital need individually, considering how the department/division's facility challenges are affecting its core academic and research mission; its faculty, student, and staff success; its ability to compete with peer institutions; the urgency to address the need at this time; and more. The committee then prioritizes all new and existing needs, identifies opportunities for department/divisions to partner on potential solutions, and recommends priorities to the Director of Design & Construction for consideration.

The Director of Design & Construction reviews each capital need and makes the final decision on institutional priorities, seeking input from the Vice Chancellor of Finance & Administration and/or Chancellor, if appropriate.

New capital needs are prioritized against existing needs (i.e., those that were submitted in previous years, but have not yet been addressed) and are placed into one of four categories:

High priority Capital project needs in this category will move forward as funding becomes available. In particular, they are candidates for general funds, although the availability of external funds from the requesting unit is also a factor in determining timing. The fact that a need is in this category does not mean that it will be pursued immediately. Typically, there are more high priority projects than there are currently available resources.

Priority Capital project needs in this category are important to the institution's goals, but are less likely to receive central funds.

Lower priority Capital project needs in this category are consistent with institutional goals, but are not a high enough priority to qualify for central funding at the present time.

Not a priority Capital project needs in this category will not be implemented.

PROJECT FUNDING & TIMING DISCUSSIONS

The speed at which a capital project need is initiated is directly related to funding. Capital projects cannot move forward until all funding has been identified and is in place, so this is often the point where the process can slow down (sometimes quite a bit).

NOTE: For detailed information on capital project funding and financing options refer to “Appendix A – Funding Sources & Financing Options,” later in this document.

Funding Principles

With all capital projects, departments/divisions are responsible for creating a funding plan that covers the entire cost of the capital project (including temporary relocation during the project) and recurring operating costs (utilities, maintenance, etc.) of the new building or additional space. Each department/division must ensure that funding required by their plan is available and can be committed in support of the project before a project is approved to proceed.

Given how unpredictable the economic climate is and will likely continue to be, central funding may or may not be available to subsidize capital projects.

As your department/division considers its funding plan, it is important to keep the following key funding principles and assumptions in mind:

- Every proposed capital project must have a funding plan to support the design, construction, and operating costs, as well as the costs associated with any interim moves, of the renovated, new, or expanded asset from the department/division’s own financial resources.
- Any commitments from non-department/division funds (Provost’s Office, Dean, Vice Chancellor, etc.) must be approved in writing.
- Any general funds used for the completion of any project will be reimbursed first if the funding sources for the project exceed the final costs of the project.
- The department/division is responsible for supplying the cash needed during the project until the gift arrives. Department/divisions with gift agreements that are pledged but not yet available in cash to pay for construction costs may need to request “bridge funding” using University debt financing. If the Vice Chancellor of Finance & Administration agrees that debt financing can be used, the unit is responsible for paying the interest expense on the debt. The interest expense must be included as a cost in the department/division’s funding plan.
- All grant agreements and contracts must be signed and executed.

Capital Projects Committee Discussions

The Director of Design & Construction Management shares the prioritized capital needs with the S&T Capital Projects Committee and, for projects deemed a “high priority”, discusses each potential project’s funding plan and timing.

The S&T Capital Projects Committee discusses (at a high level) the capital project need and scope, the department/division’s funding plan, the availability and feasibility of central funding or debt financing (if needed), opportunities for and feasibility of fundraising, alignment of project budgets vs. funding, opportunities for State of Missouri capital project submissions, and more.

Once the Capital Projects Committee agrees that a capital project need has all funding in place and that the scope, budget, and funding align, the need can move forward. Needs can only move forward when all funding is in place.

Funding Plan Review

If the funding plan includes gift agreements, the Office of University Advancement is involved.

Office of Finance & Administration Review

After the application is received by Design & Construction Management, Office of Finance and Administration will perform a funding plan review. The Office of Finance & Administration considers the following information when reviewing a department/division capital project funding plan:

- Does the project leverage external funds, such as a gift or grant?
- Is the funding plan feasible?
- Are the assumptions conservative or aggressive?
- Are the assumptions based on one good year or is there a historical pattern that supports the assumptions?
- Is there a strategy for incremental costs like staffing, maintenance, utilities, moving, storage, temporary space, and interest?
- How strapped will the unit be to support unexpected program initiatives or operating expenses that arise after the capital project is approved?
- Does the unit have unrestricted fund balances that can be applied to the capital project?
- For projects that require University debt financing, does the proposing unit have the financial capacity to pay the debt service, as well as any new net operating costs from the renovation, construction, or asset acquisition (for major technology or equipment)?

- Is the funding plan sufficient to cover the life cycle repair and improvement costs of the new or expanded facility?

Office of University Advancement Review

The Office of University Advancement provides consulting on fundraising objectives and reviews the final fundraising plan to ensure its viability. The Office of University Advancement considers the following information when reviewing a department/division capital project funding plan:

- Are the fundraising expectations realistic?
- Has a proper fundraising feasibility analysis been conducted?
- Does this fundraising need conflict with other fundraising priorities?
- Has the appropriate donor coordination taken place?

INITIATING A PROGRAMMING STUDY/CONCEPTUAL DESIGN WITH DESIGN & CONSTRUCTION MANAGEMENT

Once a project has all funding in place and has been approved to proceed, the unit may begin working with Design & Construction Management (D&CM) to officially explore the capital project further and begin program studies and conceptual designs, as a starting point. It is important to note that:

- All capital projects must be coordinated through and managed by D&CM. Department/divisions are not permitted to procure services from architectural firms, general contractors, or other consultants on their own.
- D&CM will not provide cost estimates or start capital project program and site studies without first ensuring that the Finance & Administration Office is aware of and supports proceeding with the study.

NOTE: For more information on D&CM's role in the capital projects process, refer to "Appendix B – Design & Construction Management Overview" in this document.

INSTITUTIONAL APPROVALS

Before a capital project can officially begin, the Board of Curators must first approve the project.

President's Approval

The President is informed of major capital project needs that are being explored and determines the projects that she or he will forward to the Board of Curators for consideration and approval.

Board of Curators Approval

Board of Curators approval is required at three key points in the overall capital projects process. A capital project cannot move forward without these Board of Curators approvals:

- Approval to proceed with the capital project and appoint an architectural firm to develop the schematic design
- Approval of the schematic design
- Approval to bid and award the construction project

D&CM prepares all materials for the Board of Curators approvals. The UM System Vice President of Finance (CFO) submits the request for approval to the Board of Curators on behalf of the University.

APPENDIX A – FUNDING SOURCES & FINANCING OPTIONS

The following sources or combination of sources are typically used to fund capital projects, depending on availability:

<i>Department/ Division reserves, gifts, & grants</i>	Typically, there are more high priority capital needs than there are currently available central funding resources, so department/divisions are expected to contribute to capital projects, whenever possible. This includes using unit reserves (if available) and securing external funding (gifts or grants) to support their capital need.
<i>General Funds</i>	Given the unpredictable economic climate, general funds are often limited and may or may not be available for a capital project. If general funds are available, the Finance & Administration Office and UM System Vice President of Finance (CFO) Office will work with the unit to ensure that the funding is committed.
<i>Debt financing</i>	<p>The University has limited debt capacity and approval of external financing requires a rigorous funding plan (operating forecast and capital plan) that demonstrates the department/division's capacity to pay the debt service. Approval of the use of debt capacity is made by the Vice Chancellor of Finance and Administration in consultation with the S&T Capital Projects Committee. In any given period, the University may have a greater or lesser debt capacity depending on the capital projects in progress, market conditions, and the relationship of new capital activity to the University's competitiveness and overall financial condition.</p> <p>Key principles of debt financing include:</p> <ul style="list-style-type: none"> • The CFO is responsible for obtaining the most cost-effective financing possible by strategies that include the pooling of overall capital needs and issuing various forms of debt to meet these aggregate needs. • The CFO Office manages the actual payments of each debt issue to assure an event of default will not occur. • Each department/division will be assigned an internal payment schedule with fixed interest rates to decrease volatility in budgeting for debt. Adjustments

will be made periodically to credit or assess department/division for any variations between the budgeted interest rate and the actual interest rate. Over the course of the financing, the department/division will pay the actual cost of the debt.

NOTES: Only the CFO is allowed to secure debt financing on behalf of the University.

<i>Maintenance Funds</i>	<p>Maintenance funds are used from time to time to fund deferred maintenance and infrastructure projects. Approval of this funding source is made through the S&T Capital Projects Committee with agreement from the Vice Chancellor of Finance and Administration.</p> <p>Facilities Operations maintains an inventory of condition assessments for all assets owned by the University. A deferred maintenance plan related to those assessments is prepared and monitored by Facilities Operations. Projects are prioritized based on numerous factors related to risk, the assets' importance for academic, research, or student life, and other factors. Department/divisions should consult with staff from Facilities Operations if they have questions about the deferred maintenance needs in their facilities and how they will or will not relate to new capital activity.</p>
<i>State Funding</i>	<p>Each year, the State of Missouri requires state agencies, universities, and community colleges to submit prioritized capital project requests, special maintenance needs, and other information about their facilities. Preliminary information for the Capital Project submission is provided to UM System on January 30th.</p> <p>Although the State of Missouri requests annual submissions of capital project needs, State funding is not always available to support these needs. Funding amounts, availability, and timing vary from year-to-year, and are directly related to the State budget situation. In addition, when the State of Missouri provides capital outlay funding to the University, it requires the University to contribute funding to the capital project(s) as well. Due to the unpredictable nature of the State of Missouri Capital Outlay program and requirement for universities to match State capital outlay funds, the University depends on other primary sources of funding to fund its capital projects.</p> <p>At Missouri S&T, Design & Construction Management identifies and prioritizes the projects that should be considered for the State of Missouri Capital Outlay program, and submits the information to UM System. Design & Construction Management identifies projects for State of Missouri Capital Outlay consideration based on priority to the institution and priority to the State of Missouri. Design & Construction Management identifies projects based on facilities discussions with department/divisions that may occur during annual budget meetings and on knowledge of projects that have been discussed with the S&T Capital Projects Committee.</p>

APPENDIX B – DESIGN & CONSTRUCTION MANAGEMENT OVERVIEW

Design & Construction Management (D&CM) is responsible for managing the design and construction activities for all capital projects on the Missouri S&T campus. Primary project management responsibilities include selection of all consultants and construction contractors, and leadership throughout all stages of design and construction.

Design & Construction Management’s Role

The Director of D&CM approves all requests for architectural and related engineering services on behalf of the University. Department/division are not allowed to procure architectural firms, general contractors, or other consultants on their own and must also go through D&CM for all program studies, site studies, preliminary cost estimates, etc. after first receiving Office of Finance & Administration approval to begin these preliminary studies.

D&CM provides comprehensive planning and management for capital projects, as described below.

<i>Project programming</i>	Support and feasibility studies.
<i>Project initiation</i>	Development of an initial project budget, verification of funding requirements, development of a project schedule, leadership in selection of external architectural/engineering firms for the project’s design, negotiation of contracts with design professionals, completion of appropriate reports for the Board of Curators and/or State of Missouri, etc.
<i>Design management</i>	Coordination with internal S&T departments, management of cost estimates preparation, facilitation of design reviews by external agencies, preparation of monthly status reports to users, etc.
<i>Construction management</i>	Preparation of detailed project schedules, necessary bid documents, and contracts; procurement of construction services; management of contractors and other construction professionals; coordination of project compliance; management of change directives; coordination with internal and external groups; monthly reporting; management of project budget and schedule; coordination with users on user-activation and move-in activities, etc.
<i>Other services</i>	<p><u>Cost benchmarking</u> - For many projects, D&CM works with external firms to benchmark the estimated costs of a particular project against projects similar in size and scope at other institutions in the United States. The information is shared with the Finance & Administration Office, unit and other groups that have a vested interest in sponsoring or supporting the project and ensures that the cost estimates are aligned with comparable benchmarks.</p> <p><u>Operating cost estimates</u> – D&CM, in cooperation with Facilities Operations and other resources, determines the approximate long-term operating cost estimates for each project. Factors that influence operating costs include the types and degree of energy efficient materials used in the project, the expected product life-cycle of materials and quality of products used, etc.</p>

Working with Design & Construction Management in the Design Phases & Beyond

D&CM oversees all capital projects through multiple design phases, and unit involvement is critical to each phase to ensure that unit needs are met and are within the overall project scope and budget. D&CM typically works with the Building Design Committee (BDC), comprised of unit leadership, faculty, and staff, as well as representatives from the Office of Finance & Administration and other central department/divisions.

The committee works closely with D&CM in the following phases of planning and executing a capital project:

Conceptual & schematic design	During this phase, the BDC, D&CM project manager, and architects work closely to develop the general building program to better understand user requirements for the space, the spatial relationships within a building, and building site requirements. Project costs are estimated and may result in changes to the project scope to fit within the project budget.
Design development	During this phase, the BDC and user working groups visualize the spaces and their functions to help the D&CM project manager and architects develop more detailed drawings, floor plans, and infrastructure needs (mechanical, plumbing, and electrical) for the building. Project costs are estimated again, and may result in changes to the project scope to fit within the project budget.
Construction documents	During this phase, the architects develop the design further to produce actual construction drawings. Materials and finishes are also determined at this time. The result of this phase is a package that can be sent to an estimator and to contractors for bidding. Even at this phase, the project scope may need to change to fit within the project budget. Items to potentially change or eliminate will have been predetermined and prioritized throughout the entire design process, with close involvement from the BDC.
Bid, Award, and Construction	Once construction documents are complete, D&CM sends the project out for bid and awards the project to a general contractor. D&CM continues to manage the project through completion, in partnership with the general contractor, who manages the detailed construction work and contractors involved in the project. D&CM continues to work closely with the unit should any questions or issues arise during construction.

Project Cost Considerations and Variables

Every capital project is different, and as a result, project costs can vary greatly. To ensure that project cost estimates reflect costs associated with our geographic area and other variables that are unique to each project, it is important that D&CM provide initial cost estimates.

Some variables that can affect a cost estimate include:

- State laws

- Labor rates
- Project timing
- Fees
- Code requirements
- Expedited -“phased” or “fast-tracked” projects
- Unit-requested changes
- Leadership in Energy and Environmental Design (LEED) certification
- Quality of interior and exterior finishes
- Energy efficiency goals
- Infrastructure needs
- Project site needs
- Inclusion/exclusion of furniture and/or major equipment in the defined project

For example, if a project is scheduled during a time when several other construction projects are underway in our geographic area, the project is competing for labor, materials, and other resources, which can drive up the cost. Projects that are “phased” or “fast-tracked” to achieve an earlier completion date typically result in the need to pay additional costs due to overlaps in design and construction. Projects that have several user changes after the schematic design phase affect the budget and schedule and increases the overall cost of the project. Building code requirements may require specific work that must be adhered to and included in the project that may also add to the cost of a project.