

Concept Paper: Facilities & Infrastructure

Background

The University of South Dakota has been erecting, maintaining, and renovating buildings and infrastructure continuously since the 1882 construction of our first building, Old Main. The Vermillion campus consists of 72 buildings with over 2.2 million square feet on 274 acres of land. The current plans to construct a Health Sciences building, expand the Wellness Center with the addition of a new pool, Grounds Facility building, Facilities Storage & Receiving building, plus the removal of obsolete structures will complete our anticipated need for buildings into the near future.

Expansion and renovation of our existing buildings is a continuing and ongoing process. The pace of technological and cultural changes in academia will necessitate constant and committed efforts to maintain our buildings and Information Technology (IT) infrastructure at state-of-the-art levels, to remain competitive with our peer institutions.

USD's IT infrastructure supports the teaching, research, and service functions of the University. IT infrastructure includes Smart classrooms, WIFI, lecture capture soft & hardware, data storage, complex systems and software, etc. Technology touches every aspect of campus life.

Maintenance and Repair (M&R) of academic buildings and infrastructure is funded from two sources. 11.5 % of tuition dollars is allocated to M&R, which accounts for about 58% of that budget. The other 42% comes from the State of South Dakota. Repair and replacement reserve (RRR) funds are separate from M&R dollars, and are devoted to student-centric facilities, such as the Wellness Center, the Muenster University Center, and all Residence Halls. Funding the construction of new buildings has always been a challenge, dependent primarily on private donations. Advances in the research infrastructure such as the Lawrence supercomputer have often been funded by one-time grants, rather than by base operating budget. While the IT budget has remained stable over the last ten years, the demands have increased.

A lack of funds in the past led the University to defer a great deal of needed M&R. This shortfall has been improved by a 320% increase in annual funding available for M&R projects, increasing from \$2.5 million in FY11 to \$8.3 million in FY20. Even with this increase, it will take the University time to catch up on building repairs. We anticipate that the major building infrastructure projects will be complete by the year 2030.

Construction of additional square footage without securing adequate funds for ongoing maintenance and repair receives little support. South Dakota and the Board of Regents have a goal of funding maintenance and repair (M&R) at 2% of building replacement value (BRV). In other words, the goal is to make sure we are annually spending the equivalent of 2% of the total BRV on M&R. For example, if USD's total BRV is \$400M, then the goal is to invest \$8M each year on the M&R of those buildings. The same goes for new square footage. If we decide to build a new building that has a BRV of \$20M, we also need to finance the annual M&R of that facility at 2%, or \$400,000, all else equal.

Lessons learned

Deferring maintenance and repair of our facilities and IT infrastructure is detrimental to our University. As parents and prospective students tour the USD campus, they are quite naturally comparing our facilities and grounds to those of other campuses, and the high quality of our education can be overshadowed by an appearance of neglect, or by the absence of features offered elsewhere.

It has been a challenge to catch up with the repairs and upgrades while keeping up with ongoing maintenance. This has led to the deferral of needed and in some cases fully funded projects. Both Facilities Management (FM) & IT face difficulties recruiting and retaining qualified staff.

The investment of significant State dollars toward M&R has been vital to our turnaround.

National Trends/External Picture

Non-traditional offerings

As the education market becomes more competitive due to the emergence of online alternatives and the decrease in the number of students, universities are finding ways to set themselves apart. Regarding facilities, this translates into things such as boutique dining alternatives, updates in living spaces, unique outdoor and indoor recreational options, and other non-traditional leisure facilities (zip lines, frisbee golf, cultural and civic spaces etc.).

IT Infrastructure

Today's students are entering the University with new and ever-changing technology expectations. As teaching methods change, so must classrooms. Rather than lecture halls with fixed seating, space and technology for collaboration are often needed. Smart classrooms open many possibilities and AR/VR (augmented reality/virtual reality) is starting to enter classrooms around the country. Distance learning is expected to continue grow as a percentage of all post-secondary education. Distance learning is evolving away from a simple narrated PowerPoint to content that includes videos, animation, interactive exercises, game-learning, and microlearning options. Blended learning using a combination of face-to-face and technological components requires the appropriate infrastructure to be in place.

Sustainability

Sustainability will continue to be a trend across all campuses, which includes Green buildings, Healthy buildings and the use of healthy materials. By creating healthy buildings, we will improve indoor air quality for faculty, staff, and students. Healthy buildings include inviting spaces that bring the outdoors in, and passive design for building safety. Healthy buildings employ an increased usage of renewable energy and alternative buildings materials that reduce the overall carbon footprint. A current trend is the construction of Net Zero energy buildings, which produce enough renewable energy to meet their own annual energy consumption

requirements. Healthy buildings employ an increased usage of renewable energy and alternative buildings materials that reduce the overall carbon footprint.

Strategic Themes

Communication & Prioritization

A common thread running through all conversations has been the lack of communication between departments and work groups. Despite receiving many e-mails, staff and faculty often feel that they do not hear about the information most important to them. The absence of knowledge leads to speculation, conjecture, and dissatisfaction. Decisions about how to spend a fixed budget often do not include those impacted by the decision. It is understood that everything cannot be done at once, and that priorities need to be established. While these decisions are made at the Executive Management level, staff and faculty voices should be heard by the decision makers. The decisions should be transparent, and clearly communicated to all. Staff and faculty often read of University plans in the newspaper or by word-of-mouth, rather than hearing directly from University leadership. The USD community needs to understand the process and see how priorities have been tied to the overall strategic objectives of the university. Important upgrades, repairs and renovations should be celebrated and publicized.

Building upon several years of successful Coyote athletics capital fundraising, similar models and creative strategies can be employed to enhance support in academic areas. Resources are available within the USD Foundation to guide academic units in the development of a comprehensive fundraising plan, case for support, proposals and other materials and strategies to create long-term, mutually beneficial relationships with alumni and donors.

Cyber Security

Cyber Security is a growing concern, particularly with many systems being moved to the cloud. The foremost research institutions of the United States (National Science Foundation, National Institutes of Health, Department of Defense, etc.) have expressed concern about the possibility of undue foreign influence on research integrity. A coordinated program to manage cybersecurity, data governance and interactions with foreign researchers and institutions will be expected of all publicly funded research institutions.

Collaboration, Academic, Creative & Research Infrastructure

Academic, creative and scientific research infrastructure is not what it once was. No longer is a large blackboard in a lecture hall the only tool a professor needs to teach, or a Bunsen burner on a lab bench the only tool needed for research. The dependence on state-of-the-art IT, high performance computers, specialized performance and academic facilities as well as high-tech laboratory equipment has resulted in a need for infrastructure replacement on a much shorter time frame than in the past. The budgets for routine (but expensive) upgrades necessitated by this trend are often not included in forecasts.

Suggested Future Plans

- Continue with USD's plan of facilities improvement, using the M&R budgets. This includes major building improvements and renovations of current infrastructure (roofs, ceilings, floors, lighting, HVAC, etc.)
 - Examples of this include:
 - Renovation of the Wayne S. Knutson Theater and the Winfred Colton Recital Hall
 - Improvements to classrooms, with smart technology, furniture, and interior finishes
 - Construction of the new Health Sciences Building
 - Demolition of Julian Hall and Julian Hall Addition
 - Expansion of the Wellness Center
 - Renovation of residence halls
 - Increase the number of lactation suites across campus
- Reduce energy costs and the university's carbon footprint through sustainable construction and renovations
- Systematically upgrade our existing buildings to meet current accessibility codes
- Improve collaboration and communications between Registrar, Academic Departments, and FM to optimize the use of our current classrooms and teaching spaces.
- Search for creative solutions to address parking situation
- Keep pace with changes in core IT technology and infrastructure (including maintenance cost)
- Implement IT infrastructure to facilitate data-enabled decisions
- Develop methodology and tools (e.g. process automation) to improve student experience and reduce costs
- Encourage Departments to include regular investment in computer replacement in their annual budgets. (Many faculty and staff are working on old hardware, which may pose a security risk if the manufacturer no longer supports updates).
- Increase investment in academic facilities by finding creative ways to engage potential donors
- Clarify processes Departments should use to manage Maintenance & Repair of their buildings and infrastructure
- Implement a streamlined system for University leadership to solicit suggestions, requests and input from staff and faculty
- Improve communication by distributing regular informative updates, explaining goals, plans, and achievements (newsletter, FM and IT webpages listing all projects, etc.)