MISSOURI S&T CAMPUS MASTER PLAN

Repurpose / Renovation / Addition:

R1 Historic Bureau of Mines #1
R2 Havener Center - Student Center
R3 Straumanis-James/ERL - Engineering
R4 Emerson Electric - Engineering
R5 Butler-Carlton Civil - Engineering
R6 Curtis Laws Wilson Library - Learning Commons
R7 Physics Hall - Engineering
R8 Schrenk Hall - Biology, Chemistry
R9 Norwood Hall - Student Affairs
R10 Castelman Hall
R11 Locker Room - Athletics
R12 Centennial Hall
R13 605 W. 11th Street
R14 Parker Hall
R15 Rola Building
R16 Humanities and Social Sciences Building
R17 Power Plant

New Construction:

N1 Interdisciplinary Research Center
N2 Arts, Sciences and Business
N3 Quad Replacement
N4 Central Parking Structure
N5 Field House
N6 Event Center / Golf Club House
N7 Information Technology Building
N8 Residential Complex
N9 Pine Street

Landscape

L1 Athletic Field Complex
L2 Campus Creek
L3 General Service Building Replacement
L4 Golf Course
L5 Campus Gateway
L6 The Oval
L7 Painted Street
L8 Bishop Avenue

The continual process of campus evolution requires a Campus Master Plan that is dynamic, or “living” in nature as is the Strategic Plan with which it is aligned. As the campus continues to evolve and change in pursuit of the vision defined within this Campus Master Plan, priorities may shift and the plan and associated implementation efforts may need to be refocused.

To ensure that the plan serves the campus community well, it will be reviewed annually and updated and revised as needed. These updates may involve documenting implementation and change, monitoring Capital Plan decisions, or coordinating with other organizations in pursuit of the campus vision.

Major evaluations should be scheduled on three-year intervals to identify new or evolving campus issues, major policy shifts, and changed conditions.
To understand the potential future of the S&T campus a thorough evaluation of the existing campus and past improvements was prepared. This evaluation provides the necessary foundation for the decisions made during the planning process that have shaped the vision for the future of the campus and content of this master plan. This section examines the different elements that have shaped the evolution of the S&T campus.
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- **1893**: Student Dormitory, 1889
- **1905**: University Classroom, 1900
- **1910**: The Rolla Building, 1900
- **1917**: Student Dormitory, 1889
- **1930**: University Classroom, 1900
- **1942**: The Rolla Building, 1900
- **1956**: Student Dormitory, 1889
- **1961**: University Classroom, 1900
- **1983**: The Rolla Building, 1900
- **1996**: Student Dormitory, 1889

**Campus Morphology**
Existing Campus

Missouri University of Science and Technology (Missouri S&T) is a national, doctoral, research-intensive university with a strong undergraduate education reputation. Missouri S&T serves over 7,000 on-campus students, and is located in Rolla, Missouri, in the heart of the Ozarks. The campus of this internationally known university is comprised of over 300 acres with 110 buildings and over 2.7 million gross square feet of space. The university offers more than 65 undergraduate and graduate degree programs in engineering, science, computing and technology, business, management systems, education, the humanities, and the liberal arts. Missouri S&T is a growing university with an average on-campus student increase of almost 5% annually during the ten year period from 2003 to 2013. During fall semester 2012, there were 6,760 on-campus students while in 2013 there were 7,143.

In addition to the facilities the campus is home to educational exhibits and student projects dotted across campus. Missouri S&T also houses over 2,000 students in residential life facilities. The campus is also home to over 20 social fraternities and sororities that house Missouri S&T students. Additionally the campus has an active student body with more than 200 student organizations. The recreation facilities include 8 athletic fields, a football stadium, a baseball and softball field and a regulation 9-hole golf course.

Below is the legend for the campus map on this page which lists the identifying number with each current campus building/facility:
Key Issues

An analysis was completed for the campus, early in the project, by walking the campus and documenting the physical conditions and quality of the campus spaces and structures. The analysis review of the campus identified three primary issues: underutilized spaces, poor building conditions and poor accessibility of the campus.

Underutilized Space. As the campus has evolved over time, some spaces have been left behind or evolved into a space that does not contribute to the campus. One example of this is the area known as the “painted street,” north of the Havener Center. This area from Bishop Avenue to where the road turns south into State Street, aside from painting, has largely been ignored. The redevelopment of that space could contribute to the Promenade and provide an additional amenity for McNutt Hall and the Havener Center as well as all of campus. Similarly, the area at the south end of the main mall has largely been ignored since the removal of the University Center – West. The size and location of this space could provide a nice open space for the east side of campus and a natural amenity for Centennial Hall, Schrenk Hall, the Rolfa Building, Toomey Hall and Norwood Hall. Finally the “parking horseshoe” Lot F on the east side of campus, south of 14th Street, provides access to the campus but interrupts the pedestrian connectivity through that area, particularly along the 14th Street alignment. These areas can be redesigned in a manner that contributes in a positive manner to the look and feel of the campus environment.

Building Condition. In general the buildings on campus are in good condition and represent the progression of the campus through the years. However, there are some buildings that are in need of significant investment to maintain their service to the campus. The buildings that are in the worst condition include the Bureau of Mines Building #1, Schrenk Hall – East, the Interdisciplinary Engineering Building (IDE), Physics Hall and the Power Plant. Each of these buildings is in need of exterior renovations as well as interior, and each of these buildings has a public façade at the edge of campus. These buildings rate as the highest on the FCNI scale that rate the condition of buildings based on their structure, mechanical equipment, electrical and exterior condition.

Campus Access. The campus is divided by Bishop Avenue and Interstate 44. While these routes provide access to the campus, they create significant traffic through portions of the campus. Bishop Avenue aligns with the western side of the main campus and provides good access; however, the entry point to the campus for both pedestrian and automobiles are poorly defined.
Space Utilization

Space utilization on campus was assessed based on Fall 2012 data for enrollment, staffing and space use. In addition to usage, space needs were estimated based on a projected enrollment of 7,460 on-campus headcount of students, the existing library collections, research expenditures for the most recent fiscal year, and the University’s strategic plan. Growth is projected for both undergraduate and graduate student populations over the next 10 years. The undergraduate growth is projected to increase by 500 on campus, targeted as two-thirds engineering and one-third non-engineering majors. The graduate population is projected to increase by 200 on-campus headcount students. An additional 100 faculty are also targeted.

Existing space surpluses were found for classroom, teaching laboratory, open laboratory and office space. Existing space use dedicated to assembly and exhibit space is in balance with normal guidelines.

A slight deficit was found for existing research laboratory space. Existing space dedicated to library use is significantly deficient related to the need for additional study space and learning commons areas. Space dedicated to athletics and student recreation is also significantly deficient.

These deficits will increase with projected growth in enrollment and positions over the next 10 years, creating demand for additional space dedicated to research laboratories, library and learning commons, athletics and student recreation, and assembly and exhibits.

Additional community gathering spaces are also needed on campus, both indoors and out. These include collaborative learning and group study spaces for students, faculty and staff; lounge, lobby and common areas with various types of casual seating; quick hit stations with flat panels, keyboards and plug-and-play technology to support use of hand-held devices and cloud computing; and touchdown areas in which faculty from various departments can collaborate.

<table>
<thead>
<tr>
<th>Academic Spaces</th>
<th>2014 Existing ASF*</th>
<th>2020 Guideline ASF</th>
<th>2020 Surplus (Deficit) ASF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classrooms and Service</td>
<td>104,626</td>
<td>88,513</td>
<td>16,113</td>
</tr>
<tr>
<td>Teaching Labs and Service</td>
<td>85,627</td>
<td>92,875</td>
<td>(7,248)</td>
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<tr>
<td>Open Labs and Service</td>
<td>82,634</td>
<td>59,680</td>
<td>22,954</td>
</tr>
<tr>
<td>Research Labs and Service</td>
<td>212,472</td>
<td>284,513</td>
<td>(72,341)</td>
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</table>

<table>
<thead>
<tr>
<th>Academic Support Space</th>
<th>2014</th>
<th>2020</th>
<th>2020 Surplus (Deficit) ASF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Offices and Services</td>
<td>370,296</td>
<td>334,640</td>
<td>35,656</td>
</tr>
<tr>
<td>Library</td>
<td>60,951</td>
<td>76,121</td>
<td>(15,170)</td>
</tr>
<tr>
<td>Assembly and Exhibit</td>
<td>16,211</td>
<td>37,210</td>
<td>(20,999)</td>
</tr>
<tr>
<td>Other Department Space</td>
<td>70,840</td>
<td>59,682</td>
<td>11,158</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Student Support Space</th>
<th>2014</th>
<th>2020</th>
<th>2020 Surplus (Deficit) ASF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athletics and Student Recreation</td>
<td>124,511</td>
<td>164,120</td>
<td>(39,609)</td>
</tr>
<tr>
<td>Student Center</td>
<td>55,772</td>
<td>67,140</td>
<td>(11,368)</td>
</tr>
<tr>
<td>Physical Plant</td>
<td>39,452</td>
<td>50,789</td>
<td>(11,327)</td>
</tr>
<tr>
<td>Student Health Care</td>
<td>5,708</td>
<td>5,222</td>
<td>486</td>
</tr>
</tbody>
</table>

The "2020 Guideline ASF" is projected space needed in the year 2020 based on the enrollment projections for the University. The "2020 Surplus (Deficit)" numbers represent the anticipated excess (surplus) or shortage (deficit) of space on campus in relation to the 2020 Guideline ASF need.
In the fall of 2013 an online survey was administered to the students, faculty/staff, and alumni of Missouri S&T. The focus of the survey was on each group’s perception of the use and quality of the spaces, academic, support, and social, throughout campus. As one might expect those newer spaces (Havener, Toomey, Butler-Carlton) were identified as better, more used spaces and those older spaces (Physics, Schrenk, and IDE) were identified as needing change. The survey had a tremendous response with more than 710 students, 265 faculty/staff, and 130 alumni responding. Many of the recommendations of the campus master plan stem from or are supported by the responses from the survey.

- Only 15% of students identified downtown as a dining & shopping destination.
- 57% of Students rated the classrooms on campus as “Average”.
- 78% of Students and 72% of Faculty/Staff rated the current recreational facilities as average or below.
- The Main Mall was identified by all groups surveyed as the favorite outdoor place on campus.
- The area adjacent to Havener, including the Painted Street, was identified as the area of campus most deserving of improvement.
- The Puck was identified as the favorite Campus landmark, by students and alumni, and Stonehenge by Faculty / Staff.
- 75-77% of students, faculty/staff, and alumni rated the campus as safe or very safe.
Planning Process

Beginning in the fall of 2013 the master planning process engaged the campus and community. Through the use of advisory and steering committees, open campus meetings, a campus survey and numerous individual and small group interviews, students, faculty, staff, alumni and the administration of the university as well as the community leaders in Rolla have helped define the future vision for the S&T campus. The process involved participants through a sequence of information research, idea exploration and plan refinement, which led to the production of the plan document in the Spring of 2014.

The process explored three different conceptual alternatives called Networks, Nodes and Nucleus. Each alternative was reviewed by the participants and specific elements from each of the three broader concepts contributed to the campus vision identified. The Network alternative focused on a series of green corridors that provided connecting pathways across campus. The Nodes alternative focused on a series of open spaces dotted across campus for people to gather and recreate. The Nucleus alternative focused on creating a central gathering space, a place for people, including passive and active spaces at the heart of the campus.
Existing Conditions

The campus infrastructure is in generally good shape and provides consistent reliable services to the buildings on campus for data, electricity, gas, sanitary sewer, storm sewer and water.

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<td>Building Use</td>
</tr>
<tr>
<td>Electric</td>
<td>Tree Cover</td>
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<tr>
<td>Geothermal</td>
<td>Lighting</td>
</tr>
<tr>
<td>Sanitary Sewer</td>
<td>Bicycle Routes</td>
</tr>
<tr>
<td>Storm Sewer</td>
<td>Previous Master Plans</td>
</tr>
<tr>
<td>Water</td>
<td>Blue Systems</td>
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<tr>
<td>Campus Green</td>
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**A complete evaluation of each building, and their systems, based on the ISES Reports prepared in 2010, with additional information gathered and obtained from University Facilities.**
Missouri S&T will be the leading public technological research university for discovery, creativity and innovation.

We will cultivate curiosity, creativity and confidence in our graduates. We will be the institution of choice for partners around the world seeking a highly qualified, talented and entrepreneurial workforce; innovative research; relevant educational programs, products and services; and technology and ideas to solve the great challenges of our time.

- Lifelong Success
- Integrity
- Partnerships
- Creativity
- Sustainability
- Inclusion

(from Missouri S&T’s Strategic Plan, Strategy for Success)
Arrival District

The proposed Arrival District will establish a welcoming entrance to the campus and an arrival experience highlighting academics and student life.

To stand out along Bishop Avenue, a broad landscape frontage will replace visual clutter of existing parking areas, driveways, signage and commercial buildings. Landscape elements (walls, fencing, and plantings) with signage announcing the arrival to S&T at the intersection of University Drive and Bishop Avenue will continue southward to frame and accentuate Miner Circle Drive as the primary gateway onto campus. The drive leads into a major vehicular drop-off and plaza, showcasing a new interdisciplinary research building, the historic Rolla Building, a repurposed Power Plant events center, expanded student life space in the Havener Center and a new Admissions Building in a renovated Historic Bureau of Mines Building No. 1. Visitor and event parking is provided, and new campus wayfinding signage clearly marks each building and leads visitors to various destinations on campus.
The proposed Campus Center will further define the intersection of the Main Mall and the Campus Promenade, near the library entrance, as the heart of the campus. The Campus Center will focus on creating a place for students by providing academic and social activities. The library will be repurposed as the learning commons and student success center for campus and the inclusion of food service will provide an additional amenity for students to use while on campus. Improvements to the facilities, natural areas and gathering spaces will create a comfortable relaxed environment to serve S&T students, faculty and staff as well as other partners such as civic, business, national and international communities.
Academic Districts

The Campus Master Plan follows the lead of the Strategic Plan, wherein academics on campus have been reorganized into two distinct colleges – Engineering and Computing, and Arts, Sciences and Business – each with its own dean, by repurposing and expanding academic buildings in campus to create more clearly distinguishable districts for each of the colleges. Generally, shared facilities such as the Havener Center, the Library and the proposed Power Plant events center are central on campus, as are Parker Hall and Norwood Hall, the respective centers for Administration and Student Affairs. With the reorganization, Engineering and Computing programs are found in the northern portion of the campus, while Arts, Sciences and Business programs are located in the southern part of campus. Offices for the deans for each of the colleges are recommended to be located within their districts.
**Athletics & Recreation**

Many students are attracted to S&T because of the strong sports programs. Both Miner Athletics and intramurals complement a strong educational experience. To ensure that the athletic programs continue to contribute to the success of the university and allow S&T to compete with peer institutions, improvements to the facilities are necessary. Improvements to support facilities, including locker rooms, recreation spaces and fields, are necessary to provide a strong foundation for the athletic programs and a new field house and expanded pool will provide necessary contemporary spaces for athletic events. A new pedestrian bridge across Bishop Avenue will provide improved access to the athletic facilities.
Partnerships can provide value to the university and the community through the leveraging of different resources to achieve shared goals. Often the university can benefit from the use of private resources to build necessary facilities including housing, academic space, support space and athletic facilities. As public funding continues to decline the use of partnerships can help the university maximize its limited resources to achieve it vision. In turn the community and other partners can benefit from the continued growth of the university.

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<td>Academic Districts</td>
<td>Athletics &amp; Recreation</td>
<td>Partnerships</td>
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<td></td>
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**Bishop Avenue**
Continued partnering with local business and property owners, the City of Rolla and the Missouri Department of Transportation will be needed to improve pedestrian and vehicular safety, enhance the university’s image and strengthen businesses along US Highway 63. Acquisition of properties and elimination of driveways will reduce congestion on US Highway 63, while new streetscape features and a fully signalized intersection at Miner’s Circle will improve safety for pedestrians and motorists, allowing controlled access into campus and onto US Highway 63.

**Pine Street**
Working with the City and the business community, the university can contribute to the on-going revitalization of Pine Street, the “Main Street” in Rolla’s downtown area. New student apartments above ground floor retail, services and community spaces will create mixed-use development along the east edge of the campus.

**Innovation Park / Corporate Center**
Continued development of research facilities in S&T’s Innovation Park plus development of an innovation campus on sites along Interstate 44 will expand entrepreneurship and partnerships with private industry and opportunities to commercialize Missouri S&T discoveries. The addition of a new conference center across from the Technology Development Center will foster collaboration among students, faculty, researchers and business leaders. Additional partnering opportunities could exist with the new Information Technology offices and data center proposed for on the Innovation Park campus.
Academic spaces are the primary learning facilities on campus including the classrooms and laboratories. Currently the campus population is underserved by academic space, particularly in teaching and research laboratory spaces. As a central theme to the University’s mission, the right-sizing, repurposing and additional laboratory space are a critical need. The plan details the direction for addressing the needs of a growing campus for academic spaces that provide for students.
**Existing Best Use**

**R8 - Schrenk Hall**
Proposed Use: Center for Biological Sciences and Chemistry
Completion of the new Bertelsmeyer Hall will free space in Schrenk Hall, allowing Biological Sciences and Chemistry programs to be consolidated, and creating opportunities for space in Norwood Hall, Bureau of Mines Nos. 2 and 3, and Centennial Hall to be more clearly purposed.

**R12 - Centennial Hall**
Proposed Use: Physics
Relocating various academic and administrative programs currently housed in Centennial to more appropriate locations in other buildings on campus will allow Centennial to become the new Physics Building.
### Additions

#### R3 - Engineering Research Laboratory (ERL)
**Proposed Use: Materials Research Center**
A new addition connecting the Engineering Research Laboratory and Straumanis-James Hall will expand research facilities and lab space on campus.

#### R5 - Butler Carlton
**Proposed Use: Civil Engineering**
A north addition allows for expansion of existing programs.

#### R4 - Emerson Electric Building
**Proposed Use: Electrical and Computer Engineering**
A north addition allows for expansion of existing programs.

#### R7 - Physics Building
**Proposed Use: Mining and Nuclear Engineering**
Relocation of the Physics into a renovated Centennial Hall will allow the existing Physics Building to be renovated as a new center for Mining and Nuclear Engineering. The renovated building plus a future expansion replacing Fulton Hall to the west would accommodate programs currently in McNutt Hall, Fulton Hall, the Engineering Research Laboratory (ERL) and the Rock Mechanics Building. The third floor of the expansion could bridge across the adjacent drainage way and connect the two buildings, potentially providing a more public display location for the Mineral Museum.
New Academic Spaces

N1 - Interdisciplinary Research Building
New Academic Building
Proposed Use: Interdisciplinary Research Building
Location for S&T’s most sophisticated laboratory facilities, where the university’s most significant interdisciplinary research programs are showcased.

N2 - New Academic Building
New Academic Building
Proposed Use: College of Arts, Sciences and Business programs
Academic Support

Academic support spaces include those learning support spaces outside the classroom. These spaces include the library, learning commons, assembly and exhibit space and offices. Currently the total academic support space on campus is adequate for the student population; however, the library and the assembly spaces are lacking. The amount and type of support space is important to ensure that the students are able to complement their classroom lessons with experiential learning opportunities with other students and through access to their professors. As the campus continues to grow, additional appropriate academic support space will be necessary on campus.
### Existing Best Use

**R13 - 605 West 11th Street**  
Proposed Use: Student Diversity, Outreach and Women's Programs

**R14 - Parker Hall**  
Proposed Use: Administration  
The relocation of Admissions to the Historic Bureau of Mines Building No. 1 will allow consolidation of administrative functions in Parker Hall, including programs such as the Office of Undergraduate Studies and the Office of Research.

**R9 - Norwood Hall**  
Proposed Use: Student Affairs  
Consolidation of Biological Sciences and Chemistry programs at Schrenk Hall will free space at Norwood, allowing it to become the center for Student Affairs on campus, including offices for the Vice Chancellor of Student Affairs and space for Distance and Continuing Education.

**R15 - Rolla Building**  
Proposed Use: Dean of the College of Arts, Sciences and Business  
In addition to on-going use as an academic center for Mathematics, the historic Rolla Building, the first building on campus when S&T was founded in 1870, is proposed to become the home for the Dean of the College of Arts, Sciences and Business. This prominent and distinguished location is intended to be a central feature of the developing campus Arts, Sciences and Business District.

**R16 - Humanities and Social Sciences Building**  
Proposed Use: Dean of the College of Engineering and Computing  
As part of the reorganization of campus, Humanities and Social Sciences Building is recommended to become the home for offices of the Dean of the College of Engineering and Computing. Locating the Freshman Engineering Program to this building might also be appropriate.

Consideration could also be given for partial use of this building as a secondary repository for collections in Curtis Laws Wilson Library, providing an alternative to expanding the building, which still allowing for development of Student Success and Learning Commons programs in the Library.
### Additions

#### R6 - Curtis Laws Wilson Library
**Proposed Use:** Library/Learning Commons/Student Success Center
Transformation of the traditional role of the Library to include electronic resources and technology supported learning spaces is anticipated. In addition to becoming a Learning Commons on campus, the Library is also envisioned to become the center for academic enrichment and student success programs. As a centrally located academic resource, expanded amenities at Wilson Library are recommended, including student and faculty meeting areas and a coffee café with indoor and outdoor seating and a limited “grab-and-go” menu with prepared sandwiches and snack foods.

#### R1 - Historic Bureau of Mines Building No. 1
**Proposed Use:** Admissions
As part of the new campus arrival district, repurposing the Historic Bureau of Mines Building No. 1 into the new center for Admissions programs will locate a primary destination for many first time campus visitors at the new front door of S&T. In addition to Admissions, programs may include Human Resources, the Offices of the Registrar and Accounting/Fiscal Services. Renovation of the historic building will likely require an addition to create an appropriate entrance to the building and to make the building fully accessible.

#### R17 - Power Plant
**Proposed Use:** Event Center
With the campus central geothermal project completed, the equipment remaining in the existing Power Plant building is no longer needed, allowing the building to be repurposed. Although converting this utilitarian structure into an occupiable building will require a significant reinvestment, its tall interior volumes, central location and iconic image could justify a new use for the Power Plant as a campus events center. Further studies are needed to confirm the feasibility of this potential reuse.

#### R10 - Castleman Hall
**Proposed Use:** Performing Arts, Arts, Humanities, Events
Additions and upgrades will maintain and enhance Castleman Hall as the center for the arts for S&T and the greater Rolla community. Additional performance and event venues will meet increasing demands and allow higher utilization of Leach Theater. These new venues plus the additional Arts and Humanities classrooms will add versatile new learning spaces for the S&T campus.
New Academic Support

N7 - New Building at Innovation Campus
Information Technology Center
A new building housing Information Technology is proposed at the Innovation Campus. This building would consolidate Information Technology offices currently scattered across campus and provide a new data center. Partnering opportunities for the data center feature should be considered.

N6 - New Building at Par 3 Course
Clubhouse / Conference Center
A new conference center will provide a unique amenity to corporate partners at the Innovation Park and provide meeting space on campus to be shared by the business and university communities. The building could also house a new golf clubhouse to support the renovated golf course.

N4 - New Central Campus Parking Structure
Parking
As enrollment increases, parking access around campus will become more challenging. A new parking structure is recommended to expand parking opportunities near the center of campus. The site for the new parking structure is west of Bishop Avenue on University Drive in the location of the current surface lot. In addition to addressing the growing demand for parking, the new parking structure will also provide a pedestrian bridge over Bishop Avenue, a major campus safety concern. In addition to expanded parking and the pedestrian bridge, a first phase of the parking structure could include replacement facilities for non-academic programs currently located in the Campus Support Facility.
Student Support

Student support spaces are important to the educational experience at Missouri S&T. Support facilities like athletic, recreation, health, gathering, studying and other spaces round out the college experience for most students. The current student support spaces at S&T are deficient for a campus of its size. Additionally, as the university continues to grow in student population, additional support spaces will be necessary. The plan focuses on the reuse, expansion and addition of student support spaces across campus and their impact to students outside the classroom.
Existing Best Use

L1 - Athletics

Fields
Athletics and intramural sports are highly active at S&T. The synthetic turf being installed at the stadium and one intramural field will help to meet the demand for field time and to relieve the overuse that is occurring. Two additional athletic fields are proposed, and existing fields northwest of Interstate 44 should be maintained. Existing fields should be regraded and crowned as needed to improve drainage. All fields should be irrigated.

Baseball and softball fields need to be rebuilt with proper grade, drainage, turf, permanent bleachers, press boxes, concession and restroom facilities, as well as improved entrances. The softball field needs to be reoriented as part of this work. Recommended upgrades to the existing soccer field include dugouts and a press box.

A soft-surface, one-mile running path is recommended to support fitness activities and intercollegiate athletics. The pathway should be well-lit for evening usage. As recommended in the previous master plan, the existing Rock Mechanics Building should be demolished and new parking areas should be provided to support the soccer, baseball and softball complex.

Parking areas should be improved with consistent lighting, landscaping and paved areas to support tailgating and other programmed gatherings. Sidewalks should be enhanced to connect parking areas with buildings and adjacent streets.

Fraternities and Sororities
Continued development of Greek housing on the west campus north of Interstate 44 is recommended.

L4 - Athletics

Golf Course
The existing golf course is a popular amenity and one of the few public courses in the area. However, it is in poor condition and in need of significant improvements. Replacement of the existing course with a new and more compact “executive par 3” style, nine-hole facility is recommended to maintain this unique amenity for students, faculty and staff, as well as the broader community. Design of the new course should consider existing landscape features and integrate existing greens and t-boxes, if reasonable.
Additions

### R2 - Havener Center

**Student Center**
An eastern addition to the Havener Center is needed to expand student dining, social and recreational amenities. The addition is envisioned to feature a two-story commons accessed from two new entranceways to the Havener Center: a southern entrance at a lower level on grade with the proposed Arrival Plaza and a northern entrance on the main level accessed from the pedestrian mall.

### R11 - Athletics

**Locker Room**
New main men’s and women’s locker facilities are recommended. Present locker room space needs to be renovated.

Additional coaching offices are needed and could be located in the fieldhouse addition, at a renovated stadium or as part of a new locker facility.

### N5 - Athletics

**Field House**
A fieldhouse addition is needed on campus to provide additional court space. This facility will also become a major event center for the campus and the community. Expansion of the pool facility should be completed at the time of the field house addition. Parking and service access should be planned accordingly.
**New Student Support**

**N8 - Housing**  
*Residential Complex*  
A new housing community is proposed west of Residential Colleges One and Two. The community will replace the Nagogami Apartments, substantially increasing the amount of housing units available. The community will share a central greenspace with the neighboring Residential Colleges. Expanded resident parking should be included.

**N9 - Housing**  
*Pine Street*  
A new mixed use development along Pine Street will serve the campus in many ways. It will create a well-planned district along the eastern edge of campus, provide an attractive campus residential area, create a strong identity for the university and contribute to the community’s efforts to revitalize Rolla’s downtown district.

**N3 - Housing**  
*Quad Replacement*  
A new residential community is proposed to replace the outdated Quad Housing at the corner of 10th and US Highway 63. The style of residential units provided should complement housing options provided by Thomas Jefferson Hall and the Residential Colleges. A contemporary dining facility replaces the Ray Cafeteria, designed to take advantage of its frontage onto US Highway 63 by showcasing a multi-functioning student living center. The facility design should celebrate this highly visible corner by integrating a new pedestrian bridge over US Highway 63 to the athletic district as a southern gateway to the S&T campus.
This section of the campus master plan focuses on those physical improvements to the campus that will enrich the personal experience through the enhancement of spaces and improved access to and throughout the campus. The spaces and their use will become a defining feature of the campus environment. The enhanced accessibility of the campus will assist in the use, safety and promotion of the campus and its connection to the surrounding community.
<table>
<thead>
<tr>
<th>Campus Spaces</th>
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<td><strong>Campus Front Door</strong></td>
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<td><strong>11th Street</strong></td>
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<td><strong>14th Street</strong></td>
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<td><strong>Bishop Avenue</strong></td>
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Campus Front Door

A newly defined front door to the campus will be created at the current alignment of Miner Circle. The access point will be supported with improved access, new signage, landscaping and the visual appeal of the campus arrival district. Improved access to the campus will be provided through signalization of the intersection of Bishop Avenue and Miner Circle as well as the closing of a number of driveways and 11th Street along Bishop Avenue. The new entrance to campus will be defined with new signage and landscaping that will clearly identify the access to campus and to student services. The arrival district will highlight the new interdisciplinary research building, an expanded Havener Center, a repurposed Power Plant and the historic Rolla Building, providing visitors a view of the leading public technological research university for discovery, creativity and innovation.
Pine Street / Living Lab

Pine Street provides a significant opportunity to enhance the town and gown relationship between the City of Rolla and the university. The redevelopment of Pine Street will better connect the campus to downtown, physically, by creating a destination that is an extension of the Downtown to serve students and the community. A mix of uses providing housing, retail and student support services will encourage the use of the area by a broad range of people. The redevelopment of this corridor also provides the opportunity to expand the living laboratory ideas from the campus into the community through green infrastructure and streetscape improvements.
Campus Creek / Living Lab

The Campus Creek is an integral part of the living laboratory of the S&T campus and the Campus Center concept. The creek represents a potential collaborative, interdisciplinary, educational opportunity to study best management practices for storm water, through the monitoring, testing and interpreting of water, landscapes and structures (forebays, dams, etc.). The creek also provides a natural area and water feature, in the center of campus, as an amenity for the campus providing scenery for people and wildlife habitat. Through flood control measures and its natural feel the area will also provide a natural setting for the adjacent buildings and the east side of campus, in particular a repurposed and expanded Physics Building.
The Oval

At the south end of the Main Mall the Oval will provide an intentional open space for the campus and an anchor for the south end of the Main Mall. Similarly, the space will provide an organizing element for the buildings in the area as well as a gathering space to support the Puck. The design of the Oval is intended to be an open central lawn, that does not currently exist on campus, with a defined edge of landscape and a perimeter walkway. The space is intended to provide active and passive recreation opportunities on campus, and can contribute to the living laboratory through its design as part the campus’ natural systems.
14th Street

14th Street, west of Pine Street, will become a primary pedestrian access point for the east side of campus. A continuation of The Promenade to the east will provide a continuous connection across campus. The area will become a generous, landscaped walkway/bikeway that will provide access to the surrounding buildings and support the Central Campus, Campus Creek and Physics Building enhancements in the area.
Bishop Avenue

Bishop Avenue divides the S&T campus core from some of its support facilities including housing, athletics and recreation and the health center. As the campus continues to grow west the divide and safety issues created by the highway traffic will increase. The safe crossing of this roadway is necessary to support the students, faculty and staff of the university and their ability to access the campus and the community. Improvements to the highway should be made that slow and reduce traffic, improve the safety of crossings and better connect the campus and the surrounding community. Methods to reduce traffic on Bishop Avenue should also include consideration of reassigning the highway designation to another route within Rolla. Improvements to the current roadway configuration will also make Bishop Avenue a better pedestrian route.
11th Street

Closing 11th Street east of Bishop Avenue to Main Street, will improve the physical connection between the core of campus and the southern edges of the campus. In particular the closing will provide uninterrupted pedestrian connectivity to Castelman Hall, 605 East 11th Street and the future academic building along Bishop Avenue. It also removes one additional barrier between the campus and the Quad housing complex, and athletics and recreation facilities further to the south. Closing 11th Street and the redevelopment of the Bishop Avenue frontage between 10th Street and Miner Circle will improve the traffic flow and accessibility of Bishop Avenue, supporting the new front door to campus at Miner Circle. To provide service to portions of campus north of 11th, a restricted access drive will be maintained in this area.
Living Lab

The concept of using the campus as a living laboratory is captured in the master plan. A number of outdoor exhibits are already in place on campus, though the purpose of many of these may not be clearly marked. Implementation of the Living Laboratory should be accompanied by an interpretive system of stations on campus providing information about each particular exhibit and the research involved.

A model for a variety of potential projects that would be appropriate to the Living Laboratory concept is found in the 2013 Campus RainWorks Challenge Project developed by an interdisciplinary team of S&T engineering students, guided by Dr. Joel Burken, Professor of Civil and Environmental Engineering. The project uses "Ozark Biomimicry," a "design theme of raingardens, native prairie grasses and wildflowers and dry swales" to manage stormwater runoff in a way that follows patterns of natural hydrology on campus. Concepts include "geolocated educational experiences of campus history and Ozarks biology native flora with dry swales native plantings and raingardens" along the corridor east of Schrenk Hall.

A description of the Challenge Project can be found on the web at http://youtu.be/PuhjtnGpeTE.
Campus Access

Improved pedestrian and vehicular access to the campus will be provided at the following location:

- **University Avenue and Bishop Avenue** – Improved access for pedestrians will be gained through the placement of a pedestrian bridge from the proposed parking structure at the southwest corner of the intersection to the Havener Center. The pedestrian bridge provides another safe alternative crossing for people in addition to the tunnel north of University Drive.
- **Miner Circle and Bishop Avenue** – A signalized intersection at this location will allow signaled crosswalks to be introduced and provide a traffic-calming influence along Bishop Avenue. The signalization of this intersection will also provide easier ingress and egress from the campus by automobile, when accompanied by the closing of 11th Street at Bishop Avenue.
- **10th Street and Bishop Avenue** - Improved access across Bishop Avenue, between the Main Campus and the Athletics Complex, will be provided through a pedestrian bridge. The pedestrian bridge will span from the Gale Bullman facility to a redevelop Quad Housing site. The closing of 11th Street and State Street north of 10th street will also help the flow of pedestrian traffic to the Main Campus.
- **14th Street and Pine** – The removal of 14th Street west of Pine Street will remove automobile access and improve pedestrian access to the east side of campus. The continuation of the Promenade to Pine Street will encourage the access along the former 14th Street alignment. The creation of a mixed-use (housing and services) district along Pine Street, south of 14th, will provide additional accessibility to the campus from the east.
- **11th Street and State Street** – The removal of 11th Street, between Bishop Avenue and Main Street, and State Street, north of 11th Street, will provide improved (safety) pedestrian accessibility to the campus from the south. These closures will provide limited accessibility for automobiles and connect the southern portions of campus back to the core of campus.
- **Pine Street** is currently one-way north, south of 12th Street. It is proposed that Pine Street between 12th and 10th Street be realigned to two-way, providing improved access between the campus and downtown Rolla.
**Signage**

Improved university signage is necessary to better identify and promote the university to the community and visitors as well as provide improved wayfinding for the campus. Improved campus signage is recommended at the following locations:

- **University Drive and I-44** — University identification and directional signage.
- **University Drive and Bishop Avenue** — Improved university / campus identification on a grand scale. University identification should also be a part of the new pedestrian bridge across Bishop Avenue.
- **Bishop Avenue and Miner Circle** — University / campus identification appropriate for the primary entry of the university. Opportunities to coordinate and link the signage at Miner Circle to that at University Drive should be considered.
- **Bishop Avenue and 10th Street** — Campus identification signage. University identification should also be a part of the new pedestrian bridge across Bishop Avenue.
- **N. Bishop Avenue and Pine Street** — University and campus identification signage.
- **14th Street and Pine Street** — Campus identification signage.
- **11th Street and Pine Street** — Campus identification signage.
- **Kingshighway and Bishop Avenue** — Improved university / campus identification on a grand scale.
- **Campus** — Improved wayfinding signage on campus is necessary to provide increased accessibility to the different destinations on campus. Starting with the entry signage at the periphery of campus, the wayfinding signage should be enhanced to complement the building identification signage on campus.
Campus Parking

Improvements to parking on campus are proposed in conjunction with the Arrival District at Miner Circle, as development and redevelopment occur and to the north of campus along 16th Street. Future improvements to parking should accompany development of academic spaces, support spaces and housing, but not be intrusive to the campus setting. To serve future student populations and visitors to the campus a parking structure is proposed at the southwest corner of University Drive and Bishop Avenue. This structure will allow parking to be accommodated adjacent to campus without interrupting the pedestrian nature of the campus, as well as serve events in the Havener Center and on campus.
Implementation and Phasing

Achieving the vision for the future of Missouri S&T will take continued coordination and collaboration, as well as resources and resolve. This section defines the actions necessary to achieve that vision. To achieve each of these actions, resources will need to be identified and leadership will be necessary. In a time of limited resources, the ability to leverage and maximize projects and resources will be necessary. The prioritization of the projects is based on building the campus towards the vision, yet not set in stone. This plan provides the vision and action plan to achieve that vision; however, there are many actions and details that will support the vision that are not specifically identified in this plan document. The university should be opportunistic in its pursuit of the vision to accomplish projects or leverage resources when presented. As improvement projects arise they should be evaluated for their contribution to the vision and their ability to leverage or support future improvements. It is up to the campus community to continue the momentum toward achieving the campus vision.
Phase 1

1. Schrenk Hall - East (R8)
2. Butler - Carlton Hall (R5)
3. Engineering Research Lab Addition (R3)
4. Library Learning Commons (R6)
5. Experimental Mines Building
6. Bureau of Mines Building #1 (R1)
7. Painted Street (L7)
8. Athletic Field Complex (L1)
9. Residential Complex (N8)
10. 605 11th Street (R13)
11. Havener Center (R2)
12. Campus Gateway (University and Bishop Avenue) (L5)
13. Arrival District North (L5)
Phase 2

1. Interdisciplinary Research Center (N1)
2. Physics Hall / 14th Street (R7)
3. Castleman Hall / 11th Street (R10)
4. Information Technology / Data Center (N7)
5. Stadium Addition (R11)
6. Pine Street (N9)
7. Arrival District South (N1)
8. Campus Creek (L2)
9. The Oval (L6)
Phase 3

1. New Academic Building (Arts, Sciences and Business) (N2)
2. Rolla Building (R15)
3. Emerson Electrical Hall (R4)
4. Corporate Event Center (Innovation Campus) (N7)
5. Golf Course (L4)
6. Field House (N5)
7. The Quad Housing (N3)
8. General Services Building Replacement (L3)
9. Parking Garage / Pedestrian Bridge (N4)
Ongoing / Repurposing

Parker Hall (R14)
Bishop Avenue (L8)
Campus Wayfinding
Norwood Hall (R9)
Power Plant
Centennial Hall (R12)
Humanities and Social Sciences Building (R16)
Acknowledgements

Advisory Committee
Steering Committee
Board of Trustees
Board of Curators
Community Leaders
Interviewees
Survey Respondents
Campus Meeting Attendees
Consultant Team