

SOUTH DAKOTA MINES CAMPUS MASTER PLAN



SOUTH DAKOTA MINES

UPDATE
2023

STRANG ARCHITECTS | CO-OP ARCHITECTURE | FMG ENGINEERING | TERRASITE | WEST PLAINS ENGINEERING

INTRODUCTION

PURPOSE

The Design Team for this update to the Campus Master Plan was assembled by the campus leadership to analyze the existing 2011 Master Plan and provide an update to this document in order to inform major decisions on campus for the next decade. The ultimate direction of the previous Master Plan remains the guiding force for campus development, but the overall vision painted in this document was ultimately deemed too broad and ambitious to be considered actionable in the short-term. Our priority with this update to the Master Plan is to provide realistic, achievable, actionable goals for campus development over the next ten years while keeping the end goals of the original Master Plan in focus.

PROCESS

Through a process of Listen, Discover, Design, the design team sought first to understand the underlying potential behind this campus community, and then to provide an overall direction that will support the goals and initiatives meant to unleash that potential. We identified the most pressing needs by engaging eight campus groups representing all major aspects of the campus community in collaborative work sessions, and then worked closely with the steering committee to develop realistic and achievable plans for the near-term development of the campus and the connecting community.

DESIGN TEAM



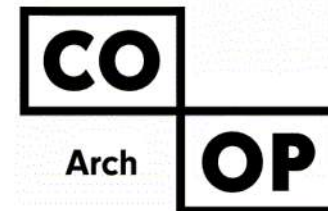
SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY

The South Dakota School of Mines & Technology is committed to excellence in science and engineering academics and research, and to developing the next generation of leaders and problem-solvers. Located in Rapid City, in the beautiful Black Hills of South Dakota, SD Mines offers a rigorous academic experience, supported by small class sizes, committed faculty members, and many student development programs and organizations.



STRANG ARCHITECTS

Strang, Inc. is an award-winning Architectural / Engineering / Interior Design / Master Planning firm with an impressive list of clients from across the country. Our project types are diverse, including higher education, commercial, civic, science & technology, and the performing arts. A well-planned campus reflects a university's culture, strategic goals, and core values. Our process produces straightforward, inclusive, practical, personal, responsible, and actionable master plans. By closely collaborating with our clients, Strang creates spaces that strike a balance with requirements for performance, image and budget.



CO-OP ARCHITECTURE

CO-OP Architecture is a full-service architectural firm with a staff of 14.25 people. We've designed schools, universities, churches, shops, downtowns, apartments, houses and hundreds of other projects, including numerous master plans. CO-OP Architecture is dedicated to beauty, economy, and craft. We work on large projects and small projects, and we are always looking for great clients and interesting challenges. We don't worry about creating our own signature style, but rather each project is designed with context and function in mind. We want to utilize light effectively, apply thoughtful materials, and make inspiring spaces.

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FMG ENGINEERING

FMG Engineering is a multi-discipline professional services firm located in Rapid City, SD with service lines of Civil and Geotechnical Engineering, Surveying, Construction Administration and Material Testing and Environmental Services. FMG's roots can literally be traced to the turn of the twentieth century when it began providing surveys for mining claims in the Black Hills of South Dakota. Through the years of ownership succession, it has evolved into a multi-discipline, full service engineering company offering professional services throughout the western United States and abroad. FMG's engineering staff includes eight SDSMT alumni.



TERRASITE

TerraSite Design is a cohesive partnering of a Landscape Architect and a Civil Engineer formed to solidify years of completing successful projects as a result of our experience and abilities. We are designers and scientists as well as engineers and architects; always striving to maximize performance. Our focus on sustainability epitomizes this performance goal through enhancing the human experience while remaining context sensitive to ecology and the urban environment. We currently employ 4 graduates of South Dakota School of Mines and Technology.



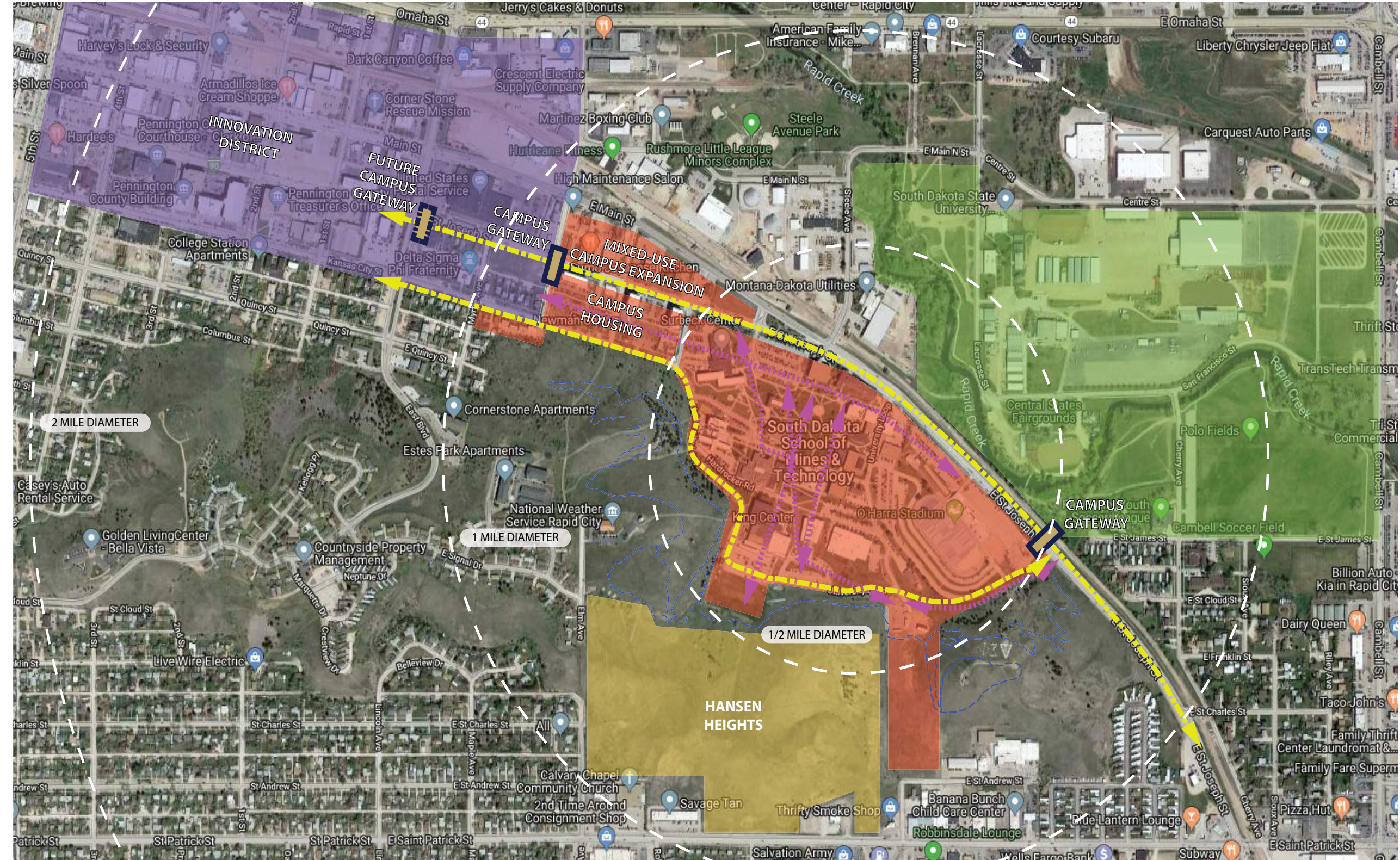
WEST PLAINS ENGINEERING

West Plains Engineering has been a leading mechanical, electrical, plumbing and power solution center in the Upper Midwest for more than 35 years. With more than 40 engineers on staff, our team of professionals has built a strong reputation for exceptional design, and perhaps more importantly, excellent client relations. Our Rapid City office has been a partner to the South Dakota School of Mines & Technology for more than three decades. Notably, 11 of our engineers are graduates of Mines, and we're committed to helping it grow and support the next generation of professionals.

CAMPUS STANDARDS



CONTEXT MAP





GUIDING PRINCIPLES

- World Class, Innovative, Engineering and Science School with a great reputation and connections around the world
- Small community of hard-working problem solvers with strong connections between students and faculty
- Provide top-notch research facilities that showcase the world-class work going on inside
- Strengthen ties to the community by encouraging growth to the northwest, towards Downtown Rapid City and the the developing Innovation District East of East Blvd.
- Preserve the history and traditions of the campus while also clearly conveying the values and aesthetic of an innovative, future-focused technology school.
- Focus academics within the existing campus core; build on and expand the synergies that are already established

DESIGN STRATEGIES

- Design for the Tour
- Define the Gateway/Front Door
- Provide One-Stop Shops
- Put Science on Display
- Engage the City
- Reinforce the Values of the Campus Community

LANDSCAPE AND THE PUBLIC REALM

- Develop uniform landscape standards for the campus
 - Lighting
 - Signage
 - Site Furnishings
- Improve accessibility campus-wide
- Utilize environmental design standards shown to reduce crime and increase public safety
- Develop a vibrant streetscape
- Provide green infrastructure on campus that can be used as a living classroom of environmental design strategies
- Work with fairgrounds to encourage joint-use of facilities, athletic fields, and parking
- Strengthen connections to existing City bike/pedestrian paths

KEY PROJECTS

NEAR-TERM PROJECTS - NEXT 10 YEARS

- Upgrade Campus Electrical Service**
The electrical service for campus is at capacity and needs to be upgraded to facilitate any new buildings on campus.
- Devereaux Library - Phase 1 (COMPLETED 2022)**
Renovate library to improve access to student services, with an emphasis on academic services and flexible + varied study spaces.
- Research Expansion - Phase 1 (COMPLETED 2022)**
Acquire existing Ascent Innovation facility to relocate research labs on campus.
- Mineral Industries (PROJECTED COMPLETION 2024)**
Relocate mineral industries programs to a new building. Due to constraints and inflation, building was moved to location F instead of A, J, or K in original plan.
- Surbeck Center Expansion [C]**
Expand Surbeck Center to improve access to student services with an emphasis on services that build community and enhance student life.
- Future Expansion [B, L]**
Expand CAMP program work areas with a new building (B) or add to the existing Civil and Mechanical Engineering Building to retain synergies with campus machine shop.
- King Center Parking Lot [P.4]**
Relocate throwing fields to double parking at King Center.
- Surbeck Center Drop-Off [P.2]**
Rework parking lot and drive aisles to develop a safer and more functional drop-off for Surbeck Center. Relocate Grubby statue to more prominent area with input from donor. March/Dake Plaza plaques will be moved to a location within the new parking area.
- Surbeck Center Parking Lot [P.1]**
Rework parking lot to create a more appealing front-door for the campus. Relocate stalls to new Surbeck Center Drop-off.

- Research Expansion [I] - Phase 2**
Expand Research facilities by adding on to existing Ascent Innovation facility.
 - One-Stop Shop - O'Harra**
Relocate Registrar, Financial Aid, and Cashier's Office to one convenient location.
 - Grandstand Improvements**
Upgrade existing grandstand.
 - Gap Parking [P.6]**
Provide parking in the gap, southeast of campus. Plan for relocation of Baja track and Mining and Mucking Field.
- #### LONG TERM PLAN - BEYOND 10 YEARS, OR AS FUNDS BECOME AVAILABLE
- Academic Program Expansion [A, E]**
Plan for expansion of existing Chemical and Biological Engineering Building due to addition of new biomedical engineering program or for a new academic building.
 - Event Center/Field House [M]**
Provide an indoor track to increase competitiveness and host collegiate and public events.
 - Music Building/Auditorium [J, D]**
Provide space for student performances as well as guest speakers and campus/community events.
 - Loop Road Extension**
Extend Loop Road on the east side of campus to St. Joseph via the uppermost ramp.
 - Traffic Improvements on St. Joseph**
Work with City to provide safer pedestrian experience on St. Joseph Street.

*Estimated costs within report were completed in 2019.

PEDESTRIAN AND BICYCLE CIRCULATION

- Rework pedestrian routes to reinforce major axes through the campus
- Locate bike-share in a prominent place on campus to encourage use
- Improve connections to City bike paths
- Provide contiguous interior/exterior transition spaces that cut through buildings along major public thoroughfares
- Create waypoints of visual interest that reinforce the aesthetic of a tech school
- Provide pedestrian-scale design elements that create a positive sense of campus community along St. Joseph Street

VEHICULAR CIRCULATION AND PARKING

- Reevaluate the role of the vehicle in campus life
- Prioritize strategies that reconfigure vehicular circulation around the perimeter of campus
- Redistribute parking to the perimeter of campus to reinforce pedestrian spaces
- Increase safety by creating clearly defined crosswalks and vehicular lanes
- Vacate Birch Street to improve access to campus via Kansas City Street
- Create Gateways on St. Joseph Street to establish campus community
- Work with the City to create a safer and more pedestrian-friendly streetscape by increasing parking and calming traffic on St Joseph Street

LISTEN | GROUP LISTENING SESSIONS

While it may appear obvious, taking the time to really listen to you is our first step. What is your philosophy of pedagogy? What does active learning mean to you? How do you facilitate creativity and new ideas? How does that impact indoor spaces as well as the campus? What are your growth and space needs projections? How can we best illustrate Hardrocker values in your places, landscaping, signage, facilities and campus access? What does a “one stop shop” look like to you? What makes a “front door” distinct? We want to hear you and your constituents weigh in on these questions. Most importantly, we want to clarify your objectives.



ATHLETICS

Please define the unique identity of the South Dakota School of Mines and Technology and what it means to be a Hardrocker.

- SDSMT is a major part of the community; something that the community is proud of and engaged with. Hardrockers are passionate about whatever they are doing and everyone is here for the betterment of South Dakota.
- Athletics is the front porch of the institution and a great way to engage the community: the first thing that many people in the community see. First rate facilities help with recruiting and retention.
- Student athletes are known for being hard-working, both inside the classroom and on the playing field.

How can the most positive aspects of the campus be further enhanced?

- The size of campus is a huge benefit; proximity reinforces the small, tightly-knit community of the campus.
- The quad right at the center of campus functions as the focal point for many campus-wide events.
- Material and scale of facades reinforces the campus brand.
- Hosting community events and state-wide tournaments is a great way to generate revenue and bring potential students on campus.

What are the challenges and problems on campus that can be improved upon?

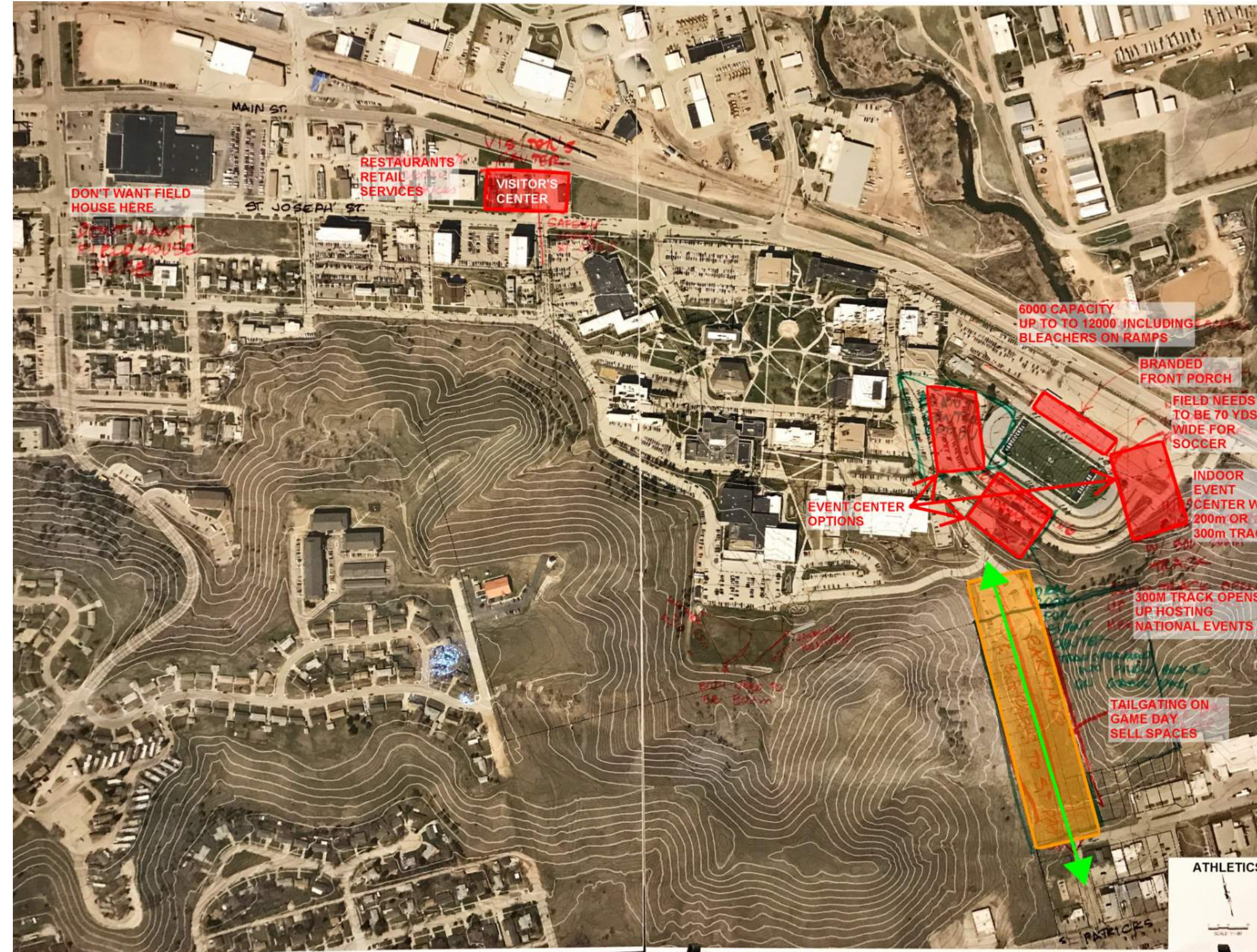
- Need championship-quality facilities in order to keep attracting high-profile events on campus. Upgrade stadium grandstand, widen track to provide turf soccer field, Event Center with 300m indoor track
- Need to improve public profile through consistent branding and signage. Need to be more proactive about involving the community through more game day signage and events.
- E-Sports is up-and-coming and will need facilities to support
- Need to provide more parking and improve access to campus to continue to host state track meet.

What do other campuses do well that you would like to see incorporated into the SDSMT campus?

- Other campuses are very successful in getting their mascots, logos, and branding out into the community and uniting everyone.
- Cohesive and consistent signage helps people get out and visit campus for a game; uncertainty makes people stay home.
- Colorado School of Mines, University of South Dakota, Northwest Missouri State, Black Hills State all do this well

What is your vision for the future look and feel of the SDSMT campus?

- A vibrant community with consistent branding and logos for both academics and athletics.
- More development at the entrance to campus along St Joseph Street to create a campus feel that engages the community and creates a true entrance to campus.



FOUNDATION AND ALUMNI

Please define the unique identity of the South Dakota School of Mines and Technology and what it means to be a Hardrocker.

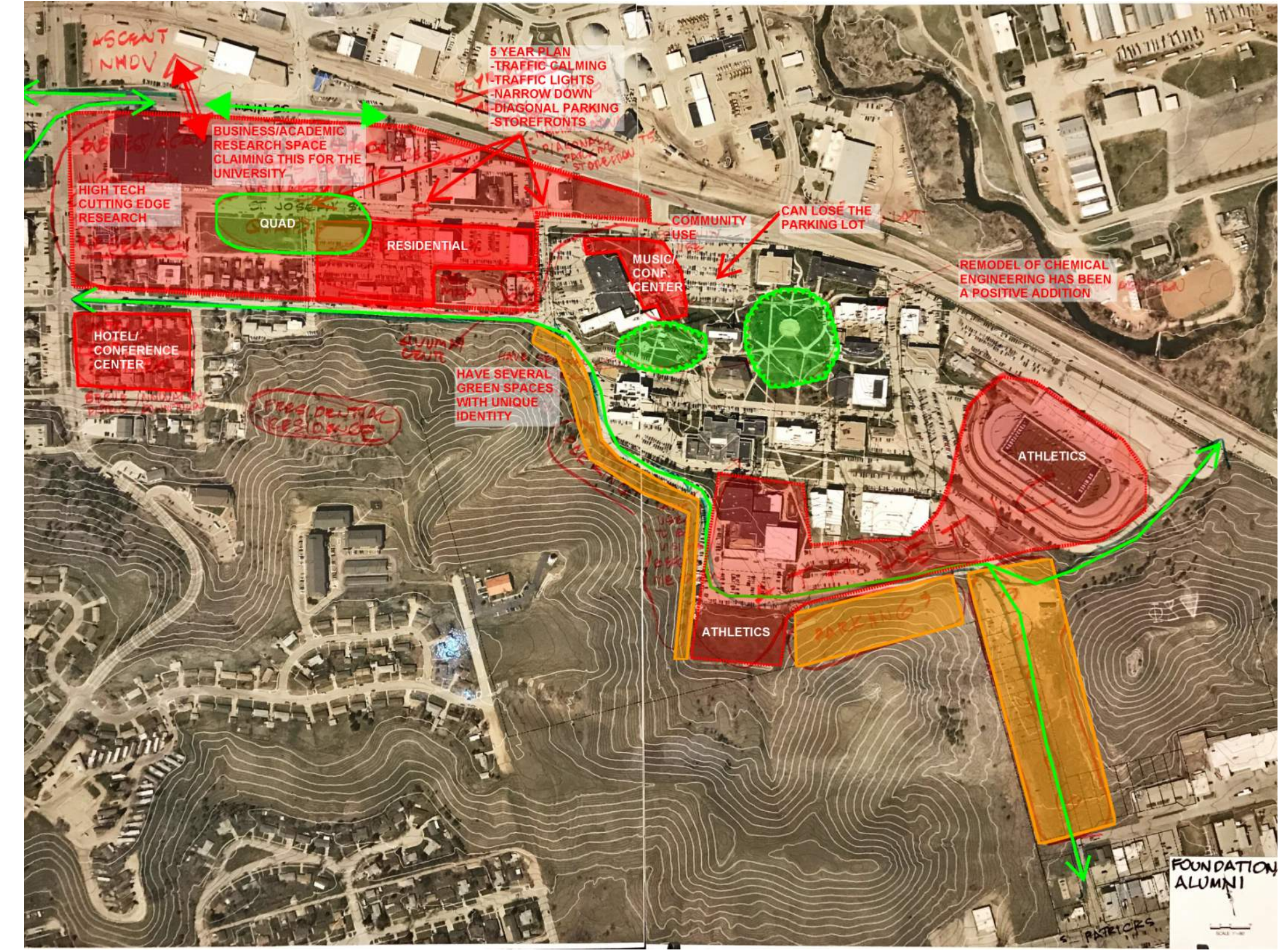
- The School of Mines is known for being a small, technically rewarding school that maximizes the return on investment for its students by being a gateway to a successful career.
- Students have great relationships with faculty because of the small, close-knit community.
- Students feel like they are accomplishing something important, not wasting time or money.

How can the most positive aspects of the campus be further enhanced?

- The football field and the ramps are unique and a great icon for the campus. Football brings more non-tech visitors to campus than anything else.
- The compact nature of campus, and the fact that you can probably see every building on campus from every other building, is a feeling we'd like to preserve even as the campus expands. Campus needs to be walkable.
- Many facilities on campus are best-in-class, but spaces aren't designed to be showcased.
- Need to keep the collegiate theme through materials and forms. Bricks and columns convey the ideals of an institute of higher learning.
- New buildings on campus have been successful at melding new and old. Paleontology and expansion to Chemical Engineering are good examples.

What are the challenges and problems on campus that can be improved upon?

- Some facilities on campus are not as showy or interesting as the things going on inside. Nothing to draw people in.
- Some departments have inadequate facilities. Mineral Industries needs major update.
- The focus on the quad isolates the university from the community; need to think about how to expand beyond the quad.
- Need to consider strategies to divert St. Joseph Street or modify traffic flow to allow campus to expand to the west.
- Affordable housing is critical to attract and retain students; currently no married student housing.
- Need to put functions that can attract the community at the front door in order to get people involved. Music/Performance Center and Field House/Event Center could both accomplish this goal.



COMMUNITY

Please define the unique identity of the South Dakota School of Mines and Technology and what it means to be a Hardrocker.

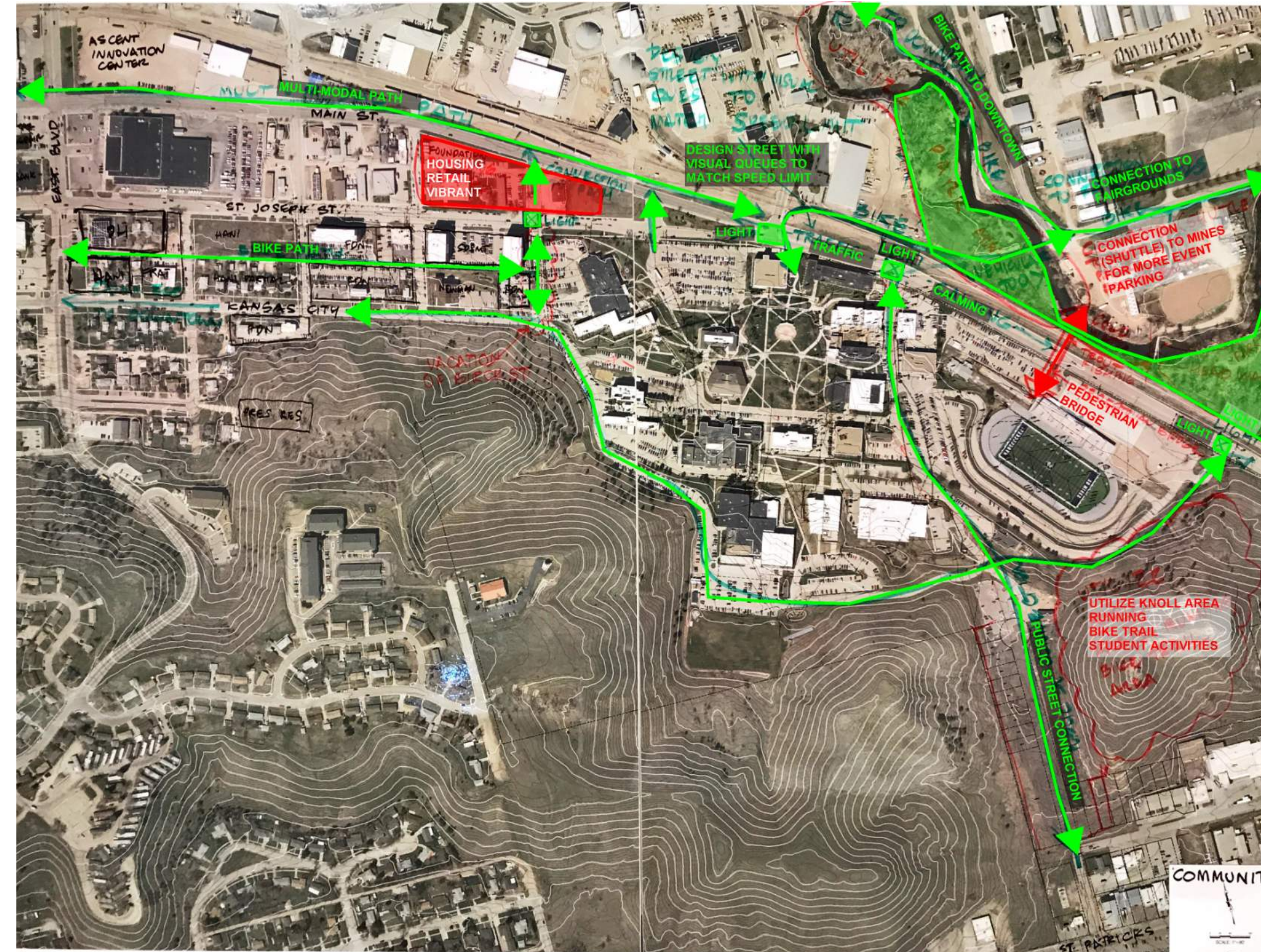
- Hardrockers are hardworking, talented people, but they often don't stick around Rapid City after they graduate.
- Hands-on, innovative, and pragmatic students and faculty who are always building things
- Students have close ties to alumni base and faculty that extends throughout their careers.

How can the most positive aspects of the campus be further enhanced?

- Proximity to downtown is a great opportunity, we need to continue to build connections to the community and develop a campus culture
- A park across St. Joseph Street would help capitalize on open space, creek, additional parking, and playing fields; would need to develop strategies to ensure safe crossing at St. Joseph Street.
- Develop more and better connections to the green belt, bike paths, and public transportation.
- Develop Kansas City Street as an alternative route to downtown to reduce pressure on other routes
- Short term pedestrian friendly elements along St. Joseph Street could encourage traffic calming during initial expansion towards East Boulevard. When critical mass is achieved, more permanent strategies could be considered.

What are the challenges and problems on campus that can be improved upon?

- The campus is great when you're on campus, but the community does not know a lot about it.
- When you're on campus it seems like you can't get out because it is separated from everything.
- Encourage campus to bypass campus by using corridors at the edges of campus.
- The industrial look across campus discourages the community from crossing the railroad tracks.
- Doesn't provide the best "college experience;" often feels very transactional
- Uncertainty of where to park/how to navigate campus can be a barrier to getting the community to come to events on campus. Clear signage and traffic patterns can help a lot.
- St. Joseph Street is a major barrier for pedestrians; the City would be more interested in slowing down traffic rather than re-routing traffic



STUDENTS

Please define the unique identity of the South Dakota School of Mines and Technology and what it means to be a Hardrocker.

- Professionalism and connection to all fields of Engineering and Science are at the core of what it means to be a Hardrocker
- Personal relationships with faculty, other students, and alumni shape the campus community.
- Traditions are very important in reinforcing connections with community and alumni. Running around the track, Sliding on the M, Senior Hat just to name a few
- Through student clubs and organizations, nearly all interests are well represented on campus, making it easy to build community through participation.

How can the most positive aspects of the campus be further enhanced?

- Upper Surbeck Center is always full--need more spaces like this on campus. Study space, social hub, variety of meeting spaces. Feels open and has natural lighting; very open, friendly, and visible.
- There are many interesting student projects that never get showcased properly

What are the challenges and problems on campus that can be improved upon?

- Could recreate many of the positive aspects of Upper Surbeck in the Library. Provide food and coffee, and a variety of meeting spaces that allow for collaborative work sessions or quiet study sessions.
- The Quad is bigger than it needs to be and is underutilized
- Admissions needs to be at the front of the campus to be clearer and more accessible to visitors.
- Do more to showcase interesting student work and put science on display; especially putting student work on display in public areas rather than where the work is happening.
- Student organizations need more dedicated space. The biggest student organizations, Music, E-Sports, and Campus Ministries, serve hundreds of students. Nearly every student is involved in something.

What do other campuses do well that you would like to see incorporated into the SDSMT campus?

- Restaurants, bars, and other amenities within walking distance make the campus feel more connected to the community
- Bike racks and bike sharing locations in prominent locations to encourage other types of transportation.



AUXILIARIES AND RESIDENTIAL LIFE

Please define the unique identity of the South Dakota School of Mines and Technology and what it means to be a Hardrocker.

- Hardrockers are innovative, creative students who are mission-driven and resourceful, and highly valued by employers.
- The small campus gives the University a more residential feel.
- Visitors comment about how impressive it is to see students using spaces for studying, especially at Upper Surbeck Center.

How can the most positive aspects of the campus be further enhanced?

- Small campus and tight-knit community are the most sacred and valuable things.
- Need more spaces that allow for collaboration across disciplines. Current opportunities, like CAMP, require students to seek out these opportunities.
- Campus landmarks could be reinforced. The Arch, Grubby Statue
- Unique topography could accommodate walking paths and bike trails in a way most campuses cannot.

What are the challenges and problems on campus that can be improved upon?

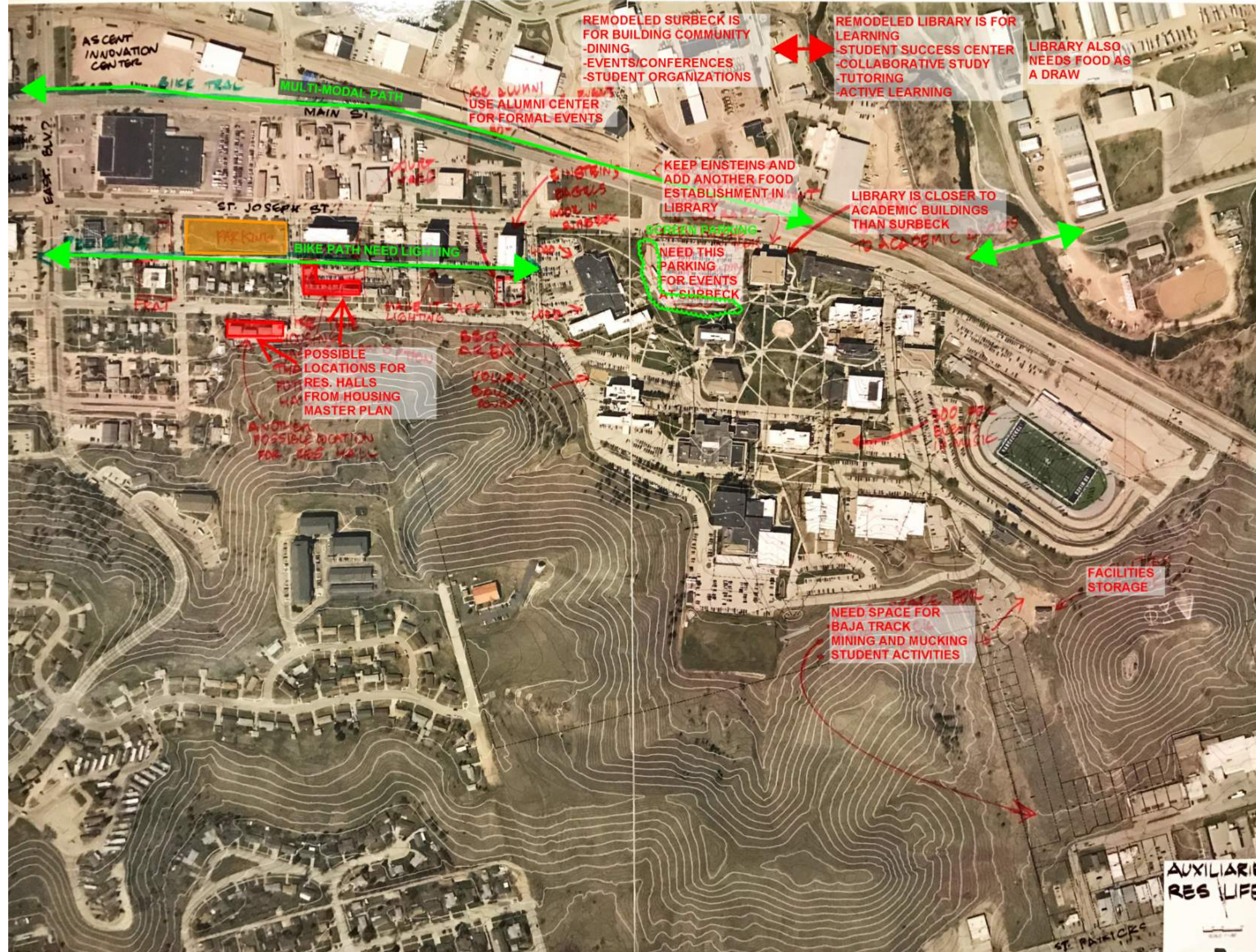
- The library is the space with the most potential, could recreate what is already working well at Upper Surbeck Center. Need food, 24-hour access, better lighting, and a variety of spaces that can serve many student needs.
- Need to find ways to put more technology on display; the technology should reflect the great things students are doing here.
- If the library becomes more focused on studying and learning, then Surbeck Center can become more focused on building community and facilitating connections between students.
- Parking on St. Joseph Street is not a good front-door, need to do something to screen and create a more positive face for campus.

What do other campuses do well that you would like to see incorporated into the SDSMT campus?

- Other campuses have more capacity to host larger public events. Performances, lectures, science fairs, career fairs, Women in Science, etc.

What is your vision for the future look and feel of the SDSMT campus?

- Technology, technology, technology
- Consistent look and feel with current campus buildings. Need consistent branding



CIVIL SERVICE ASSOCIATION EMPLOYEES AND NON-FACULTY EXEMPT EMPLOYEES

Please define the unique identity of the South Dakota School of Mines and Technology and what it means to be a Hardrocker.

- Technology, innovation, creativity, and inclusivity
- CAMP exemplifies what we do here.
- Marketing is focused mostly on what happens after your time on campus, which makes the college experience feel very transactional. Placement rates, internships, and starting salaries are the focus rather than the student experience.

How can the most positive aspects of the campus be further enhanced?

- The football field and ramps are very unique. Need to find ways to encourage more students to attend games.
- Need to provide more opportunities for people to use the Quad. Tables and seating, plus shading elements. Encourage visitors to the museum to spend more time on the Quad.

What are the challenges and problems on campus that can be improved upon?

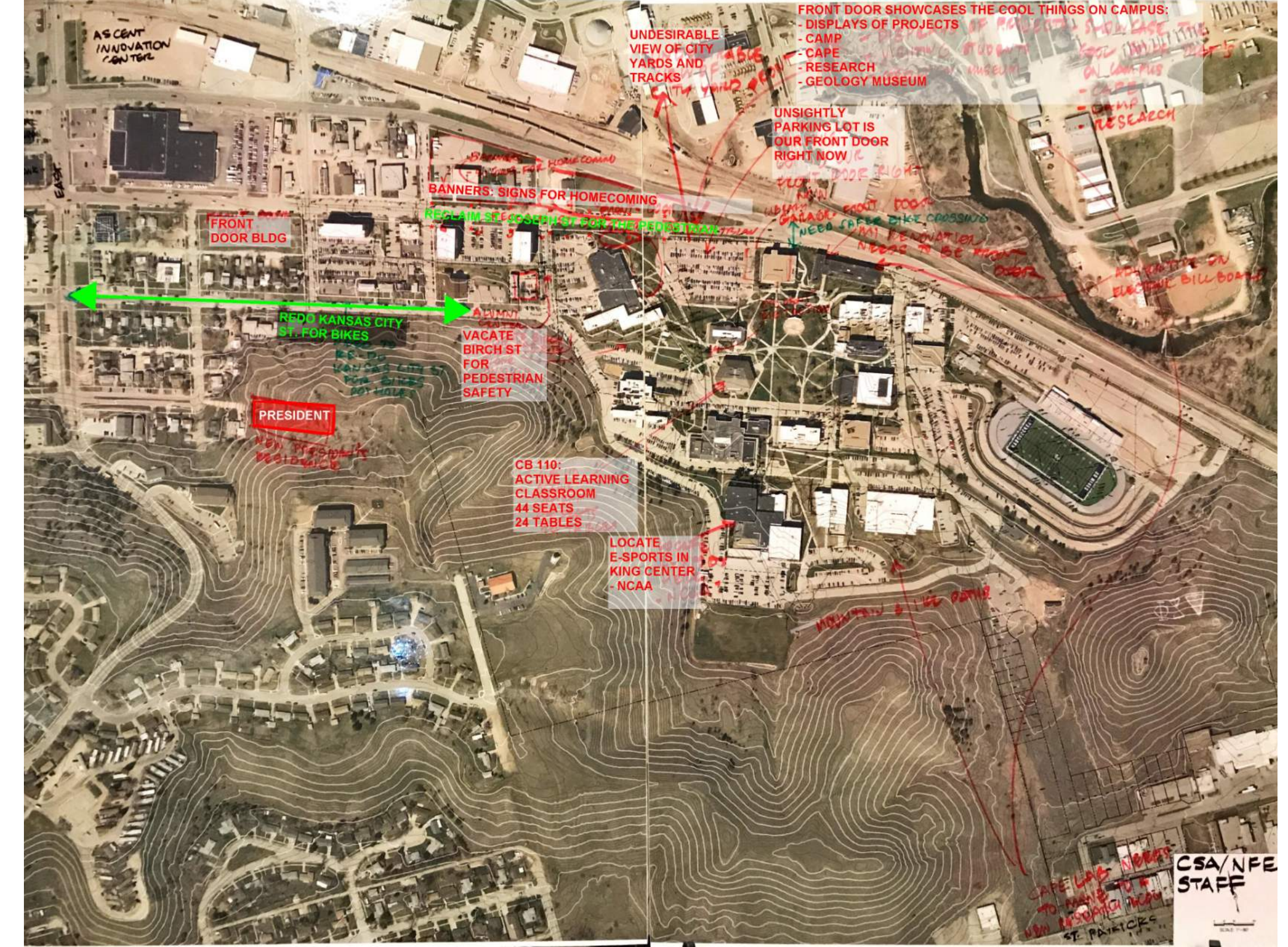
- Accessibility challenges on campus, especially behind O'Harra Building.
- Current spaces are prohibitive to updating educational pedagogy. There are not enough active learning spaces on campus and the ones that do exist aren't accessible to the departments that need them.
- Need more multi-disciplinary research spaces, as opposed to current departmental, siloed research spaces. Faculty would like to collaborate with other departments and other schools to take on multi-faceted projects.
- Admissions needs a more prominent spot on campus; somewhere more lively with students around rather than an administrative office.
- Parking is not in the right places, and community and state organizations don't want to collaborate because of parking issues.

What do other campuses do well that you would like to see incorporated into the SDSMT campus?

- Create an identity at the front door of campus and throughout community through consistent and cohesive branding.
- Black Hills State, SDSU, Creighton all do this well.

What is your vision for the future look and feel of the SDSMT campus?

- Value tradition and historical components of the University while also forging a more futuristic and innovative aesthetic.
- Branding needs to be more clear and cohesive
- Collaborative spaces that break down current silos need to be expressed throughout.



STEERING COMMITTEE

Key Decisions:

Front Door/Gateways

Strengthen connections to downtown and the innovation district

- Reclaim St. Joseph Street for the pedestrian
- Create a campus town atmosphere
- Set aspirational goals for campus growth rather than artificially limiting expansion to the West

One-Stop Shop and Admissions

Co-locate financial aid, cashier, and the registrar for a more efficient student experience.

Move admissions out of O'Harra to the front door of campus
Design for the tour—Put science on display and create places that illustrate the cool things going on behind closed doors

Parking

The campus is at a crossroads in terms of size and locations of parking

- There isn't a parking problem, there's a walking problem
- Relocate parking to the perimeter of campus and prioritize a pedestrian-focused campus core
- Create a more positive pedestrian experience along major axes through campus

Surbeck Center and Library

Redefine the paradigm for two prominent buildings on campus.

- Library: prioritize academic services and student success
- Provide active learning spaces and collaborative study spaces
 - Needs food to draw students here
- Surbeck Center: prioritize community-building services
- Dining hall
 - Student organizations
 - Events and conferences

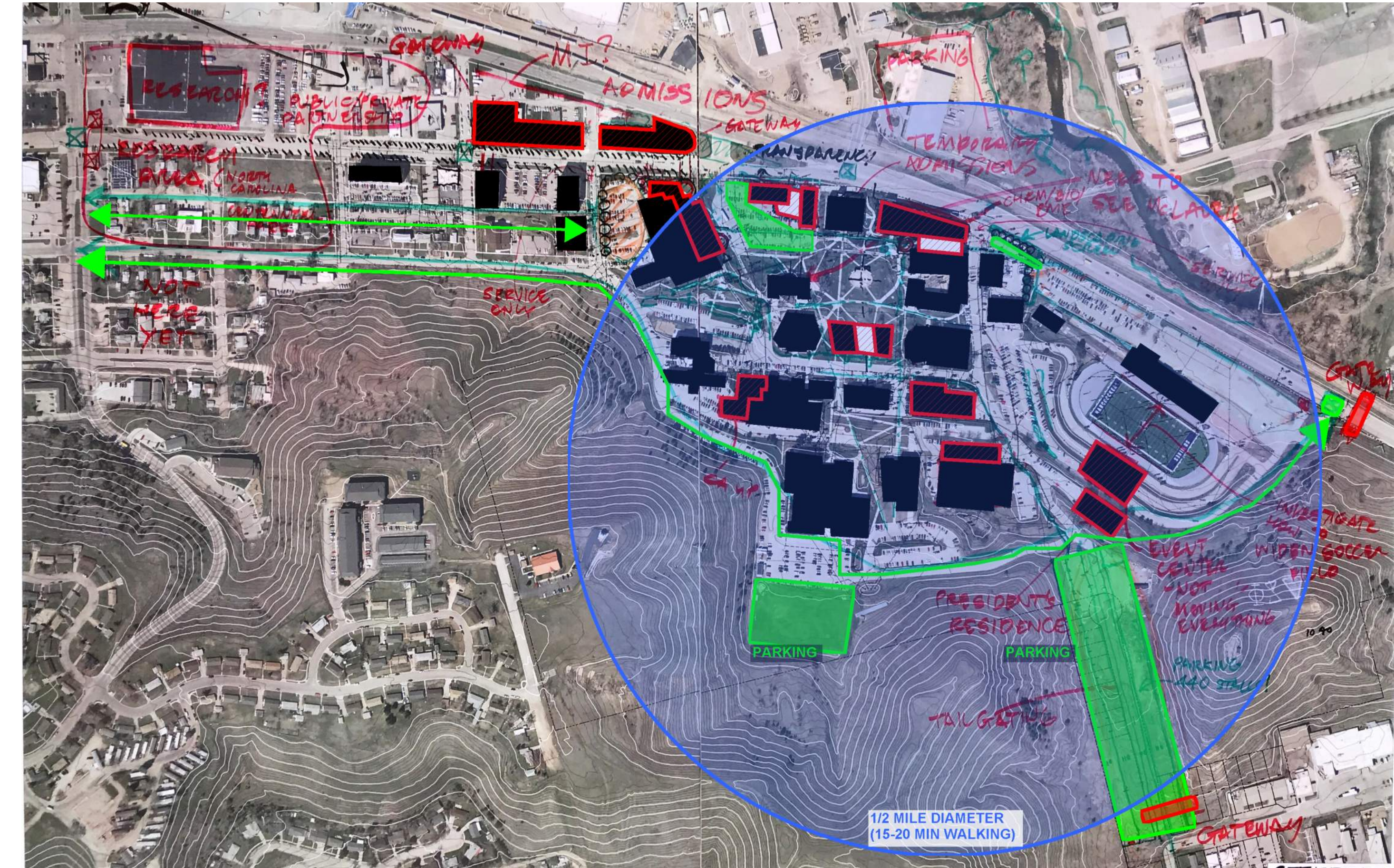
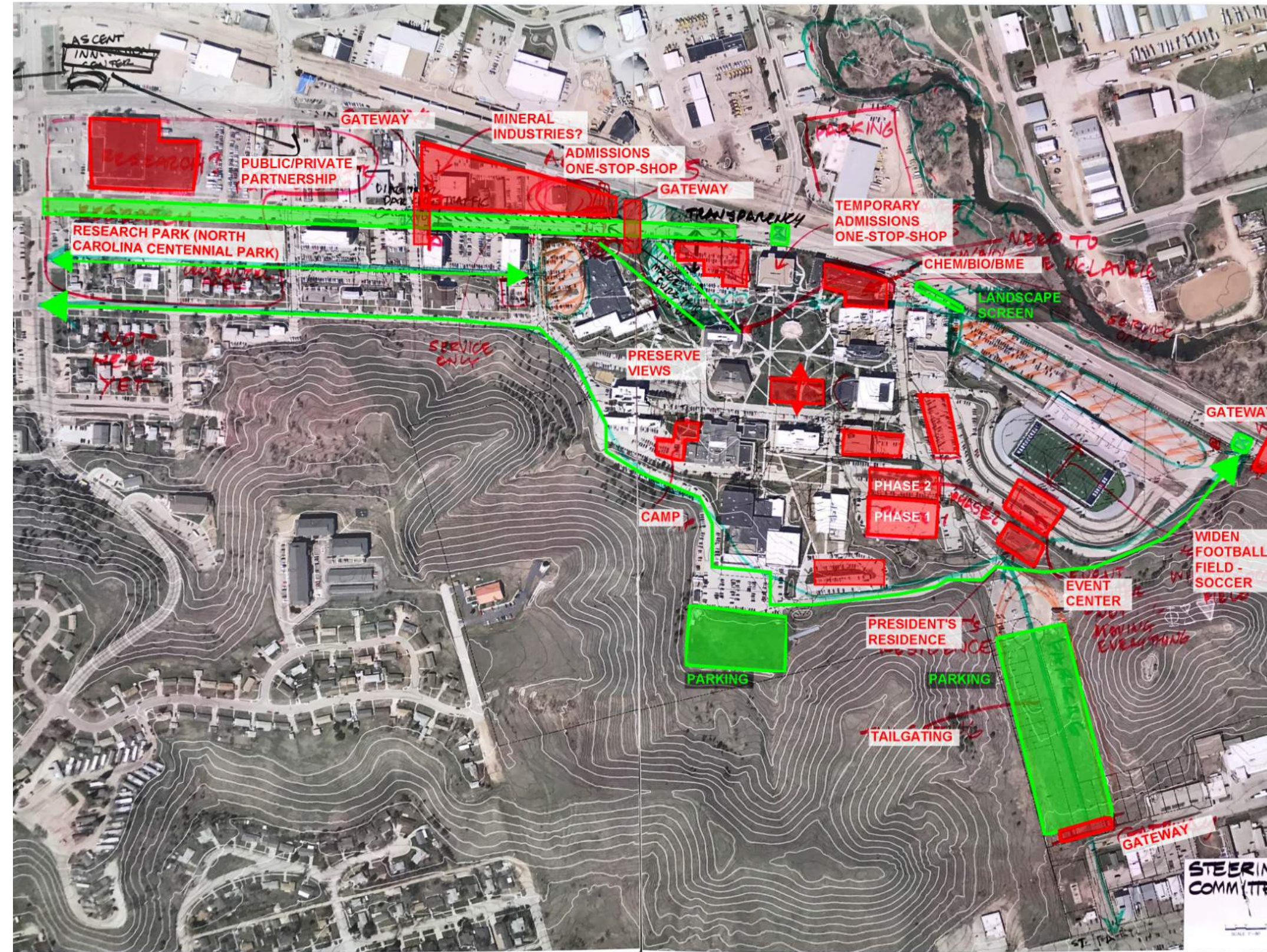
Research

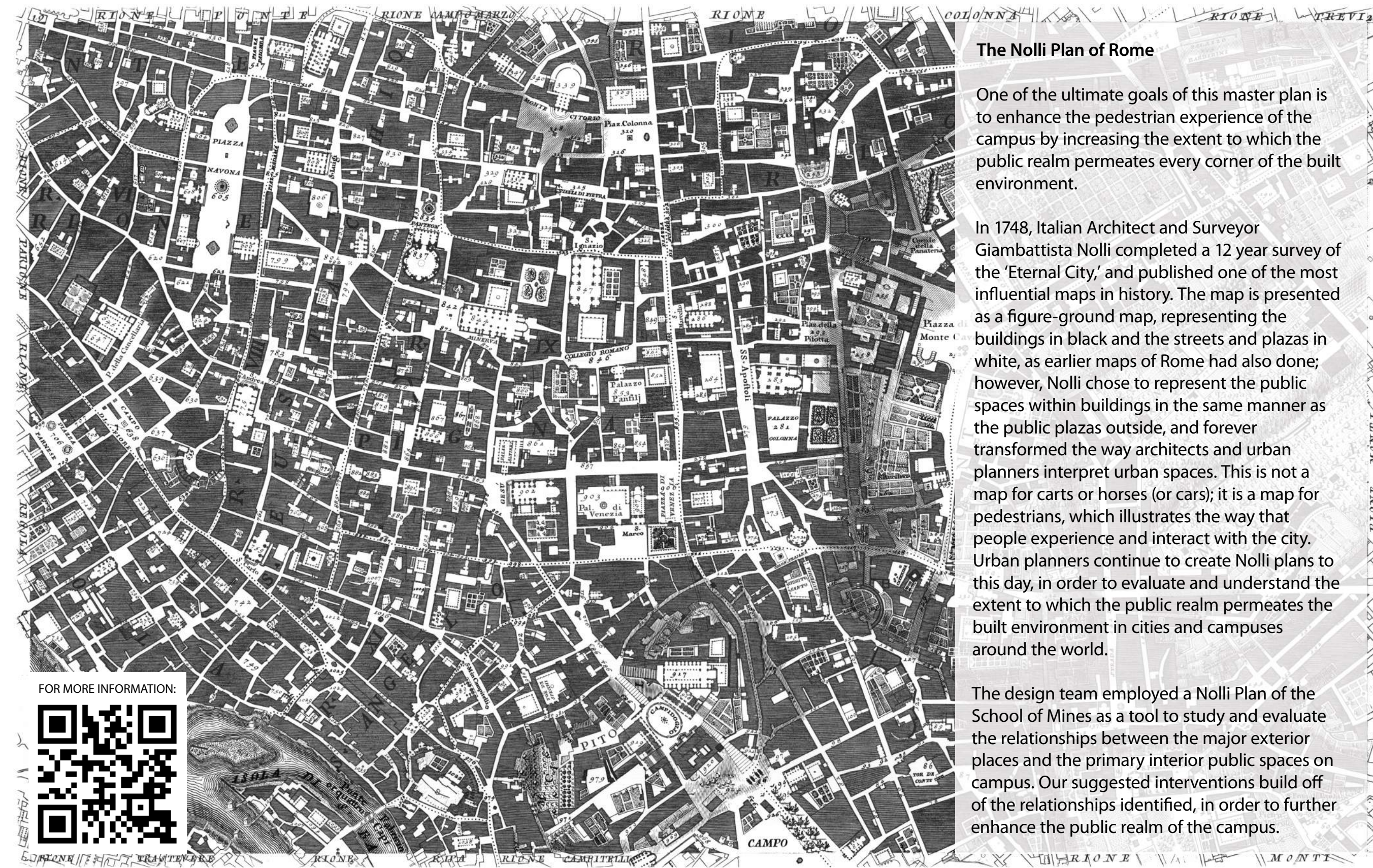
Phase 1: Need to bring major research facilities, CAPE, AMP, and Direct Write labs on St. Patrick Street, on campus in order to encourage and facilitate inter-departmental collaboration through research. Current Ascent Innovation building on campus would be a great location.

Phase 2: 40,000-50,000sf Advanced Materials and Manufacturing lab
Expand CAMP to improve access to this unique student program

Academic Space Needs

Mineral Industries needs major renovation or a new building





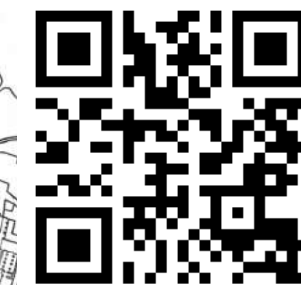
The Nolli Plan of Rome

One of the ultimate goals of this master plan is to enhance the pedestrian experience of the campus by increasing the extent to which the public realm permeates every corner of the built environment.

In 1748, Italian Architect and Surveyor Giambattista Nolli completed a 12 year survey of the 'Eternal City,' and published one of the most influential maps in history. The map is presented as a figure-ground map, representing the buildings in black and the streets and plazas in white, as earlier maps of Rome had also done; however, Nolli chose to represent the public spaces within buildings in the same manner as the public plazas outside, and forever transformed the way architects and urban planners interpret urban spaces. This is not a map for carts or horses (or cars); it is a map for pedestrians, which illustrates the way that people experience and interact with the city. Urban planners continue to create Nolli plans to this day, in order to evaluate and understand the extent to which the public realm permeates the built environment in cities and campuses around the world.

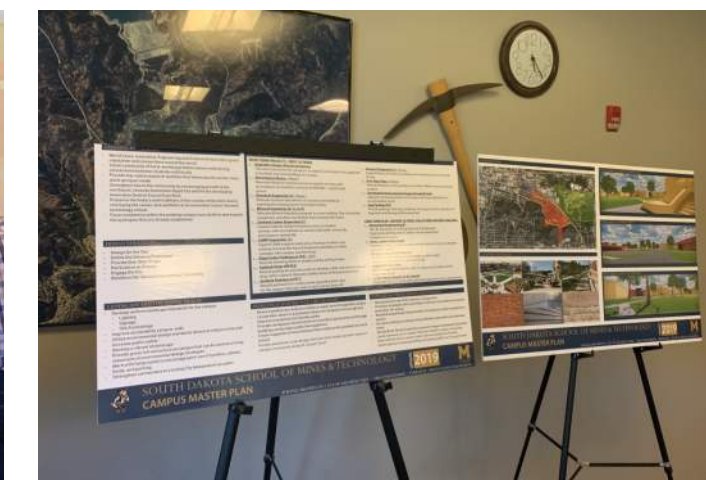
The design team employed a Nolli Plan of the School of Mines as a tool to study and evaluate the relationships between the major exterior places and the primary interior public spaces on campus. Our suggested interventions build off of the relationships identified, in order to further enhance the public realm of the campus.

FOR MORE INFORMATION:



DISCOVER | IDENTIFYING CORE VALUES AND NEEDS

After listening, we collect, review and analyze your input and existing conditions on your campus. This analysis facilitates discovery of unique opportunities inherent to you and your project. By drilling down and challenging assumptions, we discover what your true needs are and use them for design.



INITIAL DECISIONS: BUILDINGS

Match needs to opportunities

- Future Expansion
 - Building L
- Research Expansion
 - Current Ascent building
 - Expansion at Building I
- Mineral Industries
 - Buildings F, G, or K

One-Stop Shops

- O'Harra
 - Financial Aid
 - Registrar
 - Cashier's Office
- Library Remodel
 - Student Success
 - Career Development
 - Dean of Students
- Surbeck Expansion
 - Welcome Center
 - Admissions



INITIAL DECISIONS: TRAFFIC CIRCULATION AND PARKING

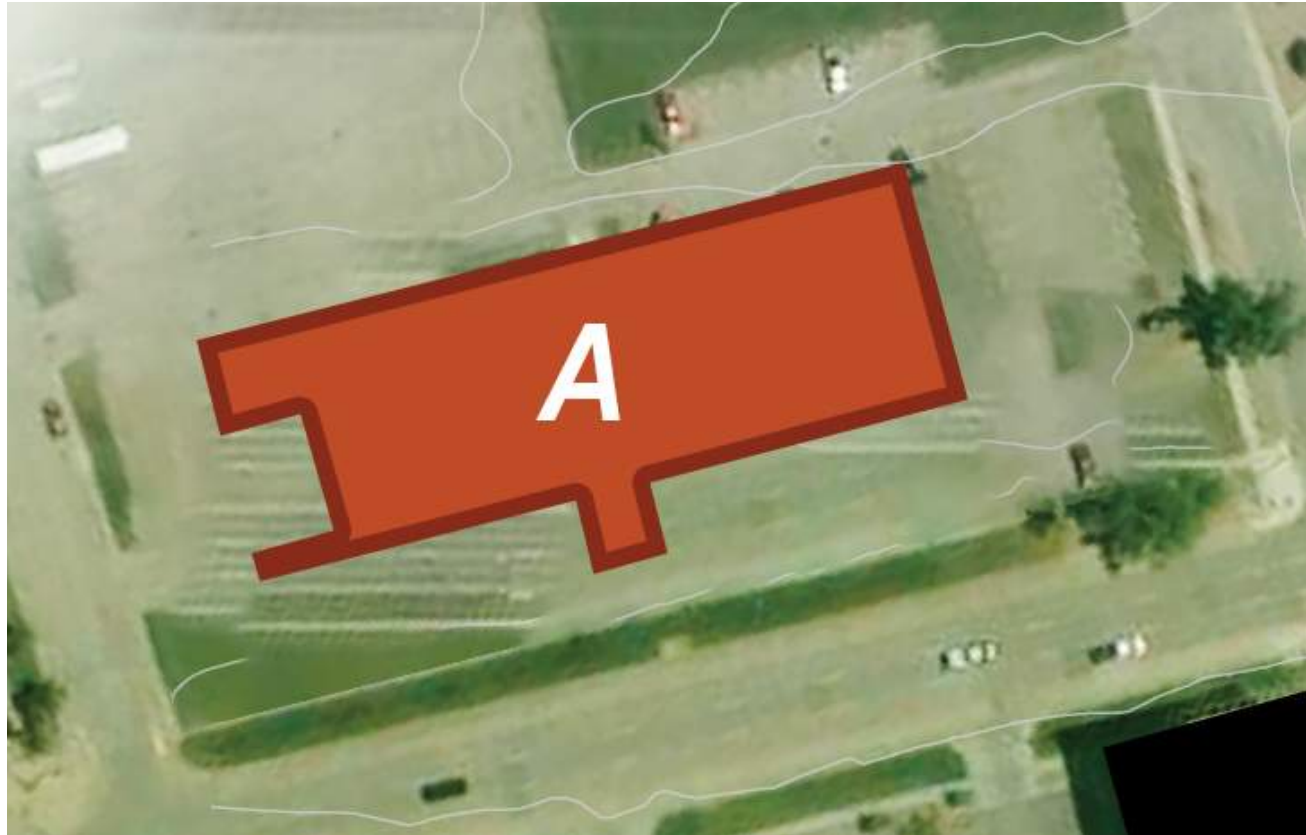
Relocate parking to perimeter

- P.1: Relocate parking East of Surbeck
- P.2: Reconfigure Parking South of Peterson
- P.3: Identify opportunities for Parking
- P.4: Double parking at King Center
- P.5: Expand parking at Day Care site
- P.6 & P.7: Expand parking in the Gap

IMPROVE PEDESTRIAN EXPERIENCE AND THE PUBLIC REALM

- Reinforce existing critical pedestrian axes and establish new circulation paths
- Provide contiguous interior/exterior transition spaces
- Enhance the character of public spaces
- Establish landscape standards





Complete Streets enable safe use and support mobility for all users while managing stormwater using green street technologies and design. <https://nacto.org/publication/urban-street-stormwater-guide/streets-are-ecosystems/complete-streets-green-streets/>



The use of virtual reality (online photo)



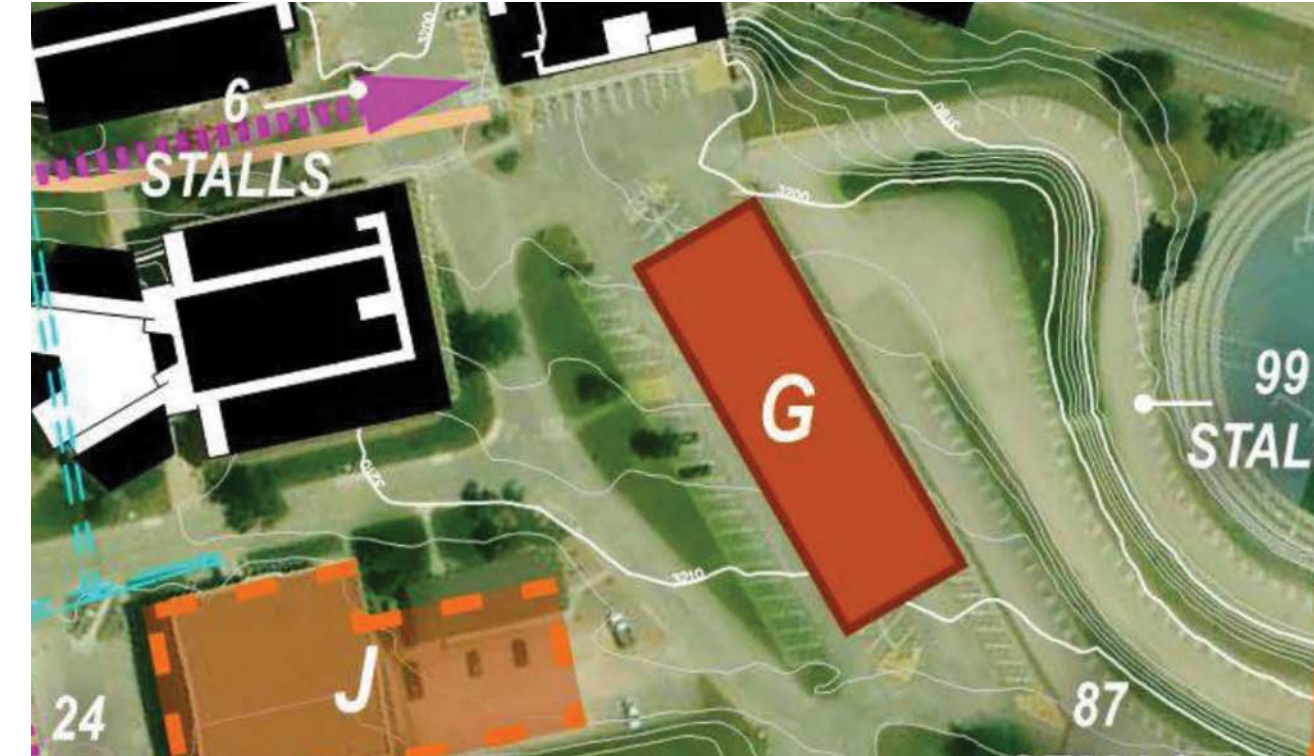
Use of passive space. (online photo)

Site Designation	Building A
Size	3.5 acres total (Buildings A&B), could accommodate up to 106,000 sf and 250 parking spaces
Adjacencies	Housing, Transportation, Innovation District, Railroad
Advantages	Creates gateway to campus and provides an opportunity to showcase innovative green building strategies that will leave a lasting impression Extends campus into public realm; consistent with Ascent Innovation Center theory of connecting campus and downtown Rapid City Creates "College Town" by engaging St. Joseph St. Great access to public transportation Potentially a catalyst for city buy-in regarding future traffic calming strategies on St. Joseph St. Foundation as Owner Aligns with Urban Commercial Zoning; i.e. setbacks. Could catalyze a more "complete streets" and "green streets" approach to safe walkability of Main Street and stormwater management of Main and St. Joseph Street (Image: Complete streets) Potential living laboratory to research "complete streets/ green streets"
Disadvantages	Must cross St. Joseph Street May require a stoplight or stop sign to support pedestrian crossing; or increased cost for a pedestrian tunnel connecting to campus Off-campus utilities or significant investment Vibrations from railroad affecting sensitive lab equipment - need to relocate existing physics lab Timing is dependent on city's pedestrian friendly re-design of St. Joseph Street Will be some public private shared costs associated with the upgrades Departments will be in multiple areas
Cost	Additional cost considerations of increased maintenance and increased utility costs if not on the campus loop; some additional cost considerations due to vibration Landscape/ Site Costs: \$990,000.00 Building Cost: \$22.5 - 26.5 million
Site Suitability	Consider as potential location for Mineral Industries

Site Designation	Building B
Size	3.5 acres total (Buildings A&B), could accommodate up to 106,000 sf and 250 parking spaces
Adjacencies	Housing, Transportation, Innovation District, Railroad
Advantages	Creates gateway to campus and provides an opportunity to showcase innovative green building strategies that will leave a lasting impression Extends campus into public realm; consistent with Ascent Innovation Center theory of connecting campus and downtown Rapid City Creates "College Town" by engaging St. Joseph St. Great access to public transportation Potentially a catalyst for city buy-in regarding future traffic calming strategies on St. Joseph St. Foundation as Owner Aligns with Urban Commercial Zoning; i.e. setbacks. Could catalyze a more "complete streets" and "green streets" approach to safe walkability of Main Street and stormwater management of Main and St. Joseph Street (Image: Complete streets) Potential living laboratory to research "complete streets/ green streets"
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Cost	Additional cost considerations of increased maintenance and increased utility costs if not on the campus loop; some additional cost considerations due to vibration Landscape/ Site Costs: \$603,000.00 Building Cost: \$13 - 17 million
Site Suitability	Consider as potential location for Mineral Industries

Site Designation	Building C
Size	Approximately 25,000sf addition to existing Surbeck Center
Adjacencies	Campus Edge, Housing, Student Services, Quad, Parking
Advantages	Enhances Surbeck Center as a resource for students and community Project has been designed and awaiting funding High visibility provides an opportunity to showcase sustainable designs
Disadvantages	Site is too constrained to accommodate a suitable Event Space
Cost	Some additional cost considerations due to utilities, vibration No electrical extension costs - power is already here Landscape/ Site Costs: \$403,000.00 Building Cost: \$6.8 - 7.8 million
Site Suitability	Welcome Center, Admissions, Building Community among students: Dining, Events, Student Organizations

Site Designation	Building D
Size	Could accommodate a 3 story building with approx. 15,000sf footprint
Adjacencies	Campus Edge, Student Services, Railroad, Quad
Advantages	Tie into main campus utility loop (200') Establish front door/face of campus by reinforcing the street edge and frames view of McLaury from St. Joseph St. Screens view of railroad tracks from Quad Great access to public transportation and parking Has both active and passive space for campus life and social interaction; a significant landscape for the University. This area could be used for outdoor classroom outdoor learning Could be part of Low Impact Development and Stormwater Strategies
Disadvantages	Railroad - must make considerations for sensitive equipment/sound Block views into campus? Reduces Surbeck Parking—must be phased with other projects to increase parking elsewhere
Cost	Landscape/ Site Costs: \$514,000.00 Building Cost: \$12.4 - 14.75 million
Site Suitability	Potential location for Event space/Auditorium; that could host music, festivals, or perhaps virtual reality competitions or gatherings. (image) Not in 10 year plan

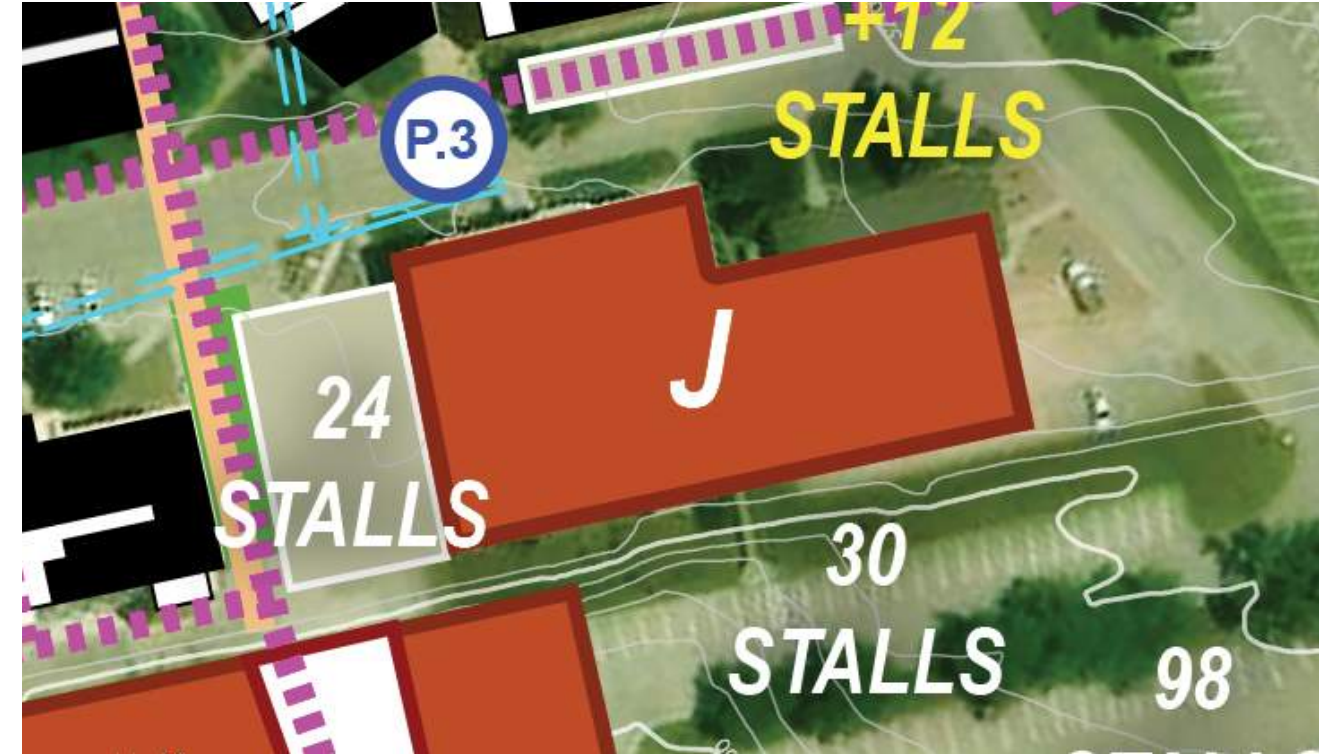


Site Designation	Building E
Size	Could accommodate a 3 story building with approx. 35,000sf footprint
Adjacencies	Campus Edge, Student Services, Railroad, CEBC, Quad, Parking
Advantages	Great access to main campus utility loop Establish front façade/face of campus by reinforcing the street edge Great access to public transportation SDSMT owns the land Open Lobby: Science on Display, reinforcing East-West Axis through campus Gateway facility to showcase visibility and representation to campus Possible physical connection to CBEC could enhance collaboration between departments
Disadvantages	Railroad – must make considerations for sensitive equipment/sound Existing building on site – Staging of existing spaces and Demolition of existing structure Noise from street will impact space
Cost	Additional cost considerations due to demolition of existing structure Landscape/ Site Costs: \$546,000.00 Building Cost: \$31.5 - 36.75 million
Site Suitability	Perfect site for future expansion of CBEC and Biomedical Engineering Not in 10 year plan

Site Designation	Building F
Size	Could accommodate a 3 story building with approx. 20,000sf footprint
Adjacencies	Campus Core, Administration, Academics, Quad
Advantages	Reinforces major pedestrian axes Potential to enhance the character of the Quad with a new façade Science on Display opportunity: Lobby on axis with Quad and O’Harra Adding to the density and vitality of the central core of campus Screens vehicles on Technology Court Great access to main campus utility loop
Disadvantages	Block views of O’Harra, reconfigures Quad Negative Impact on greenspace/ open space
Cost	Landscape/ Site Costs: \$258,000.00 Building Cost: \$18 - 21 million
Site Suitability	Site was originally not slated for the next 10 years but the Mineral Industries building costs came in too high at location K. This site was reevaluated and determined to be the best and only option for the Mineral Industries building.

Site Designation	Building G
Size	Currently 75 parking stalls Could accommodate a 3-4 story building with approx. 30,000sf footprint
Adjacencies	Parking, Athletics, Academics, Research
Advantages	Enhance Campus connection to athletics Adjacency to vehicular circulation and parking
Disadvantages	Far from existing campus utility loop (300’) Poor soils, significant structural issues
Cost	Some additional cost considerations due to disadvantages listed above Landscape/ Site Costs: \$289,000.00 Building Cost: \$27 - 31.5 million
Site Suitability	Not in 10 year plan

Site Designation	Building H
Size	2 story building with 30,000 sf footprint
Adjacencies	Parking, Athletics, Research
Advantages	Adjacencies
Disadvantages	Far from existing campus utility loop (1000’) Poor soils, significant structural issues, considerable grade changes to consider in site planning
Cost	Some additional cost considerations due to disadvantages listed above Landscape/ Site Costs: \$875,000.00 Building Cost: \$12 - 15 million
Site Suitability	Not in 10 year plan; great for additional research expansion or athletics due to adjacencies



Green roof on top of Ford truck plant.



Rapid City Regional and SD Mines green roof project.

Site Designation	Building I
Size	3 story addition with 18,750sf footprint
Adjacencies	Parking, Research, Academics
Advantages	Could tie in to existing campus utility loop (200') Potential green roof location due to roof being visible from above
Disadvantages	Eliminates some parking (-33 stalls) Impacts stormwater storage area and natural space
Cost	Additional cost considerations due to demolition of existing structure Landscape/ Site Costs: \$679,000.00 Building Cost: \$14 - 16.8 million
Site Suitability	Expand Research in 10 year plan

Site Designation	Building J
Size	Could accommodate a 3 story building with approx. 20,000sf-25,000sf footprint
Adjacencies	Administration, Academics, Parking, Major Pedestrian Routes
Advantages	Near existing campus utility loop Proximity to existing parking
Disadvantages	Existing buildings on site
Cost	Additional cost considerations due to demolition of existing structure Upgrade electrical: \$30,000.00 Landscape/ Site Costs: \$317,000.00 Building Cost: \$22.5 - 26.25 million
Site Suitability	Plan is to maintain Music Building for at least 10 years

Site Designation	Building K
Size	Could accommodate a three-story building with a footprint of approx. 25,000sf
Adjacencies	Administration, Parking, Academics, Athletics
Advantages	Near (200') existing main campus utility loop Allows for staging for relocating existing spaces Relatively far from train tracks Potential to reinforce existing pedestrian axes on campus Solves challenge of icy exterior stairs in winter Close to Paleontology and Geology Museum Relocate changes in grade to interior of building Reinforce pedestrian routes with interior spaces
Disadvantages	Site is very tight
Cost	Extension of electrical: \$50,000.00 Landscape/ Site Costs: \$435,000.00 Building Cost: \$22.5 - 26.25 million
Site Suitability	Recommended site for Mineral Industries building

Site Designation	Building L
Size	12,000 to 15,000sf addition to existing Civil Engineering building
Adjacencies	Parking, Civil Engineering, Machine Shops
Advantages	Retain existing synergies with CAMP and related fabrication spaces Enhance north façade of Civil Engineering Potential for Outdoor Classroom Space to North as part of campus parking/ pedestrian/ greenspace Utilize roof space for further research/development of green roofs, solar, etc. Potential patio/gathering area for outdoor classroom (learning in nature)
Disadvantages	Limited Space Maze-like building Loss of parking
Cost	Electrical: No extension costs - power is already here Landscape/ Site Costs: \$576,000.00 Building Cost: \$4.5 - 5.0 million
Site Suitability	Future Expansion within 10 year plan



Site Designation	Building M
Size	200m track: 86,000 sf; 300m track: 115,000 sf
Adjacencies	Football Field, Parking
Advantages	Adjacencies Possible ease of public access via campus loop and connector to St. Patrick Street (if constructed)
Disadvantages	Eliminates up to 280 new parking stalls in the Gap Poor soils, grade changes
Cost	Additional cost considerations due to poor soils in the Gap Landscape/ Site Costs: \$2,160,000.00 Building Cost: 300 m track 20 - 23 million, 200m track 15 - 17 million
Site Suitability	Consider beyond 10 year plan, or as funding becomes available



Site Designation	P. 1
Size	Currently 1.5 acres
Adjacencies	Major roadways, transit, Surbeck
Advantages	Perceived as a campus gateway, familiarity Adjacent to admin/student services
Disadvantages	Requires buffering
Cost	Landscape/ Site Costs: \$691,000.00
Site Suitability	Eliminate 100 parking stalls leaving 136 remaining

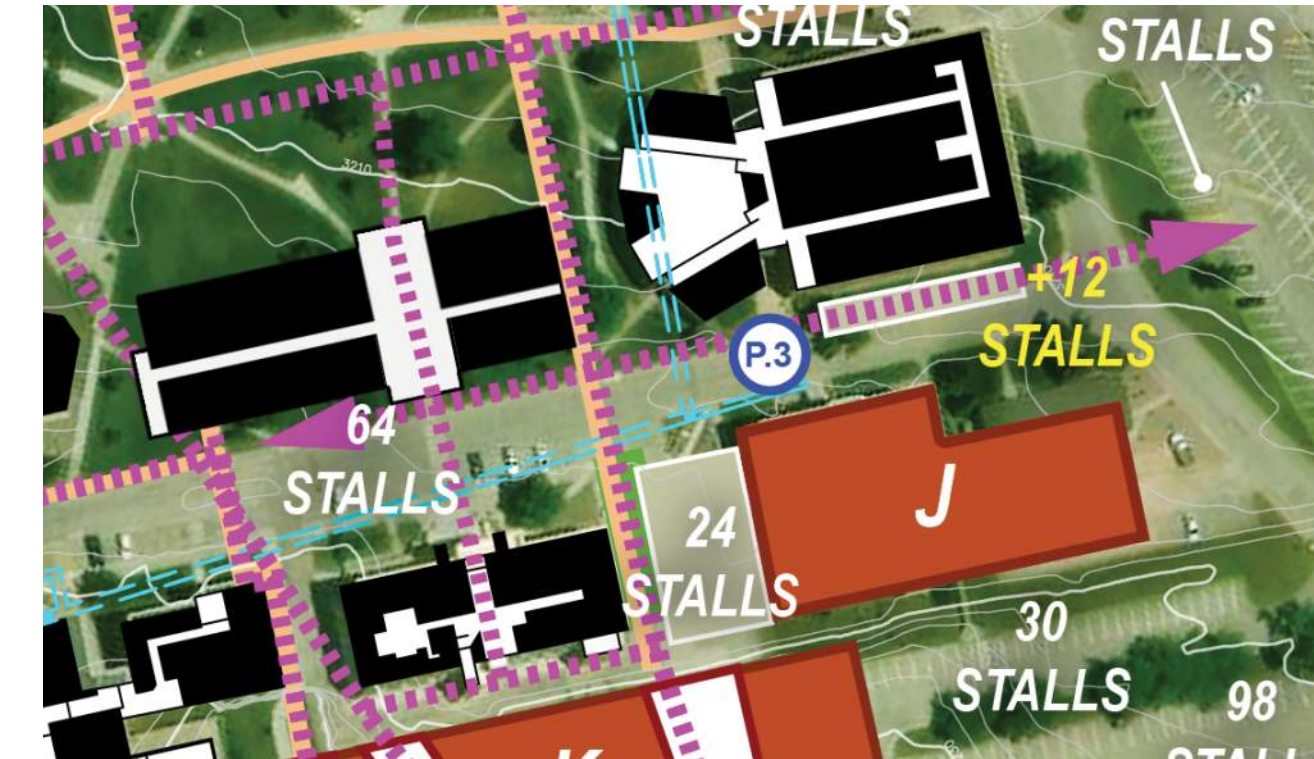


Section showing low impact development practices through an active travel corridor. (online photo)



Active travel corridor example. (online photo)

Site Designation	P. 2
Size	2.25 acres
Adjacencies	Surbeck, Civil Engineering, Primary access corridors for vehicular, quad spaces.
Advantages	This space could have a significant contribution to teaching environment (living laboratory) for campus. Essentially an outdoor classroom for Civil Engineering and Sustainability (Low Impact Development (image), Vehicular/Pedestrian bridging, Infrastructure) Open active/ passive space potential (image) Currently is underutilized space Grubby will move to a more prominent area with input from donor March/ Dake Plaza plaques will be moved to a location within the new parking area
Disadvantages	Infrastructure to be considered in design/ potential impacts. Increase in impervious surface/stormwater drainage infrastructure
Cost	Landscape/ Site Costs: \$1,884,000.00
Site Suitability	Provide 133 new parking stalls for a total of 170



Site Designation	P. 3
Size	Identify strategic locations for parking along Technology Ct.
Adjacencies	Academics
Advantages	Increase parking for core campus buildings Potential area for use of pavers
Disadvantages	Right of Way is narrow, confined, leaves little buffer between parking and adjacent structure
Cost	Landscape/ Site Costs: \$81,000.00
Site Suitability	Provide 12 parking stalls



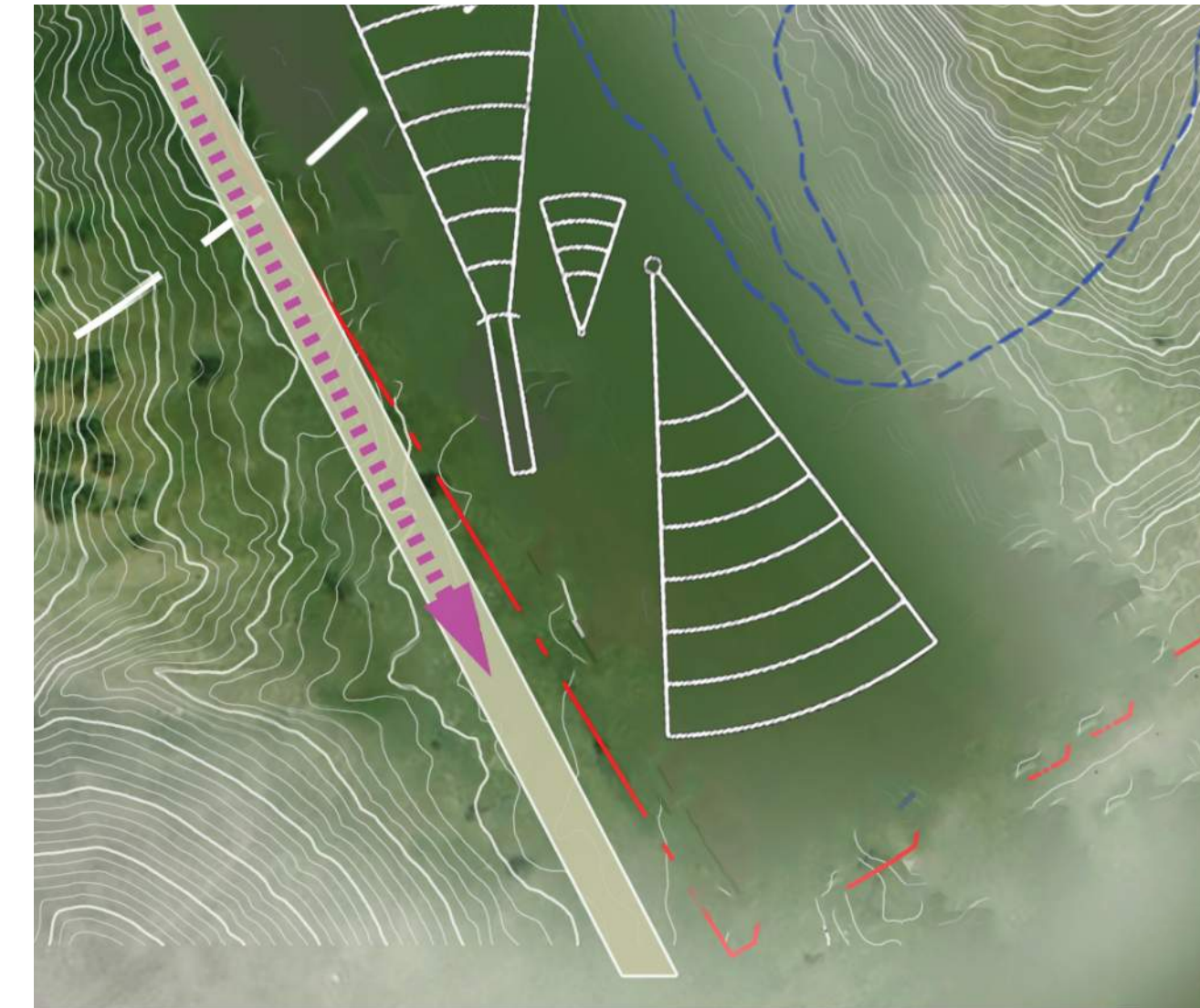
Site Designation	P.4
Size	1.75 acres
Adjacencies	Vehicular circulation, open space
Advantages	Accommodating grades Potential for subterranean stormwater management under parking Close proximity to campus for walking
Disadvantages	A practice facility would have to be relocated Increases impervious surfaces
Cost	Landscape/ Site Costs: \$1,598,000.00
Site Suitability	Provide 145 parking stalls



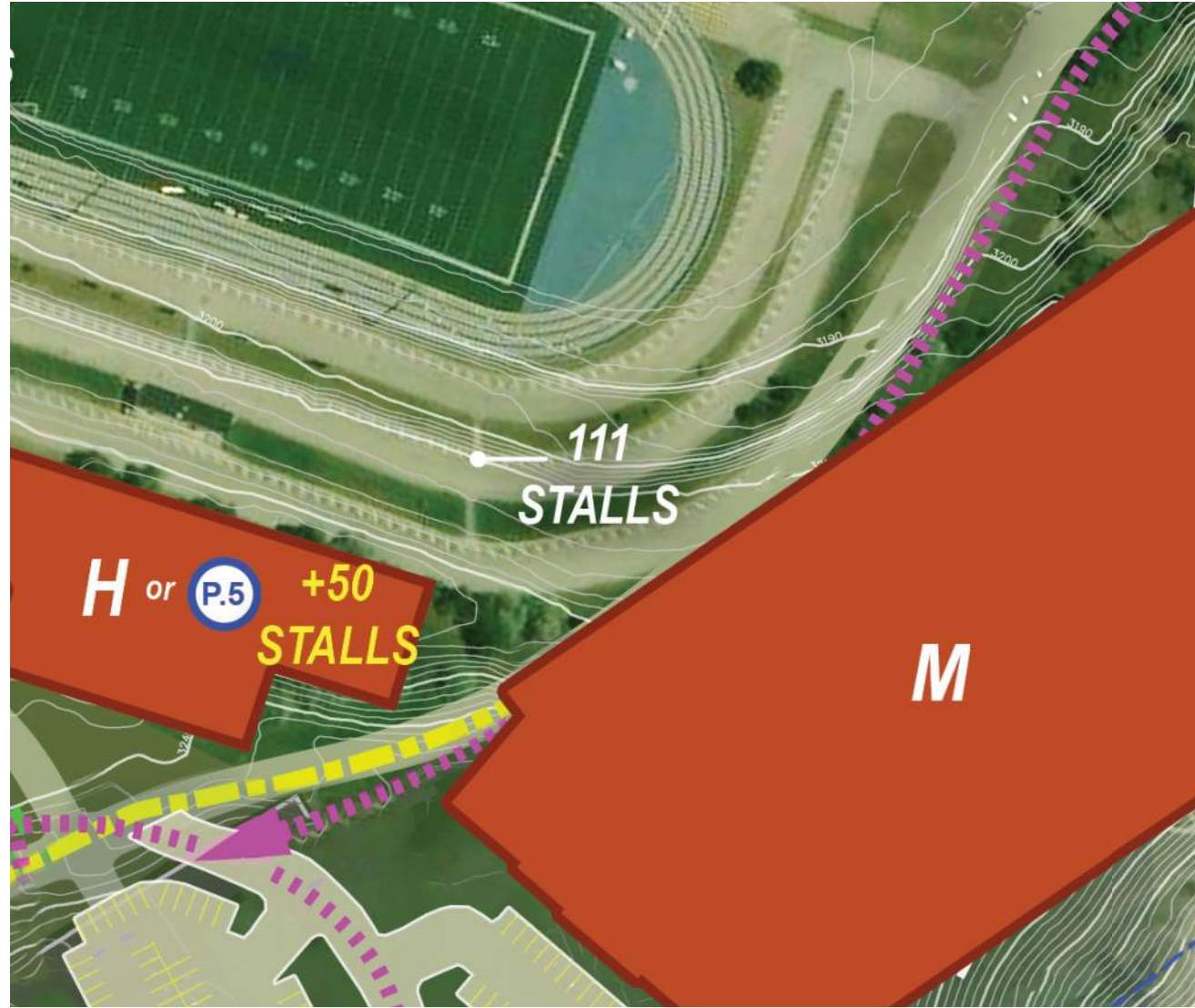
Site Designation	P.5
Size	0.5 acres
Adjacencies	Research, Athletics
Advantages	Adjacencies, increase parking Good proximity to events
Disadvantages	Grade changes will require retention, possibly walls
Cost	Landscape/ Site Costs: \$993,000.00
Site Suitability	Provide 50 Parking Stalls



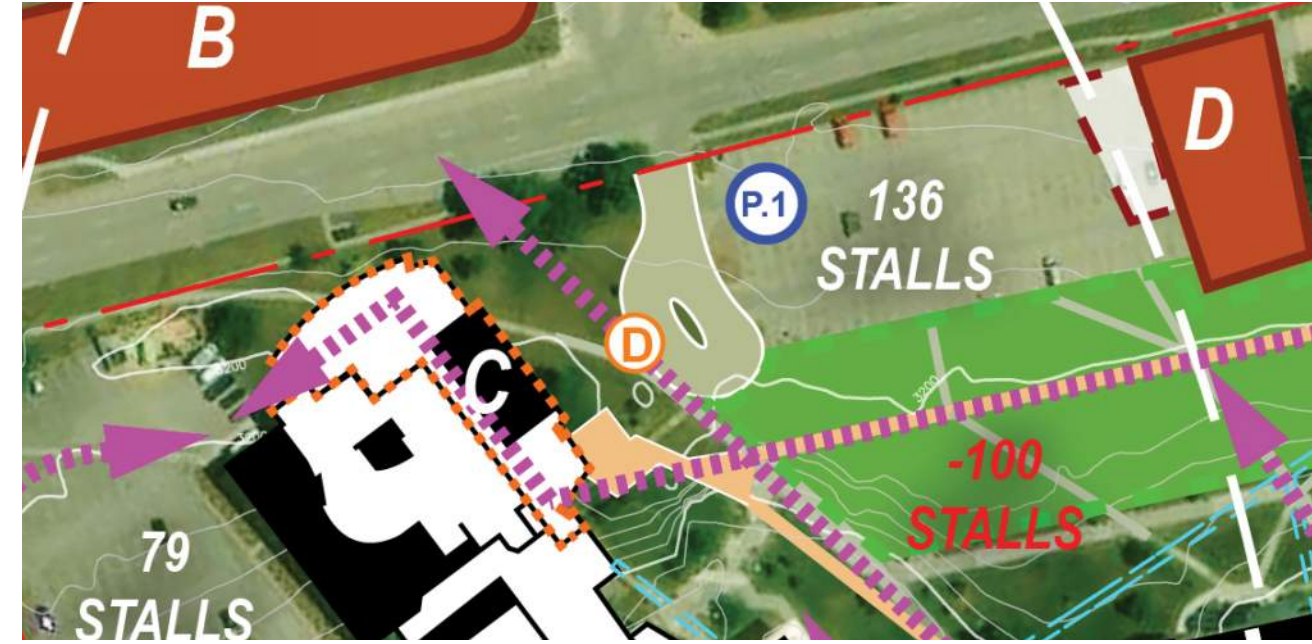
Site Designation	P.6
Size	1.75 acres
Adjacencies	Research, Athletics
Advantages	Increase Parking Accommodative existing site conditions Additional spots here can help mitigate parking on grass north of St Joseph Street during large Dunham Field Events Good overflow parking or as a second option for events and egress
Disadvantages	Relocate Baja track, Mining and Mucking field, must choose between parking and other projects
Cost	Landscape/ Site Costs: \$1,197,000.00
Site Suitability	Provide 250 parking stalls



Site Designation	P.7
Size	1.75 acres
Adjacencies	Gap, Athletics, Research
Advantages	Increase parking An additional option as egress ingress to campus for events, safety security Accommodating existing site conditions
Disadvantages	Distance to Campus, relocate Baja track, Mining and Mucking field High transient traffic through corridor
Cost	Landscape/ Site Costs: \$1,268,000.00
Site Suitability	Provide 280 parking stalls



Site Designation	P. 8
Size	437' of new road+widen 655' of existing upper ramp
Adjacencies	Athletics
Advantages	Simplify traffic patterns throughout campus by prioritizing loop road Improve drainage throughout campus by rerouting to follow new road Improved safety and security of site during academic and events Could allow current university loop campus access by physical plan to be de-emphasized, improving pedestrian experience in that area
Disadvantages	Cost Difficult terrain, poor soils, limited geometry, slope challenges
Cost	Landscape/ Site Costs: \$2,473,000.00
Site Suitability	Recommended when funds are available



Site Designation	G. 1
Size	1 acre
Adjacencies	Front door of campus
Advantages	Potential for a great first impression along St. Joseph Street Proximity to transit and alternative transportation Great location for public art and wayfinding High visibility provides an opportunity to showcase sustainable low impact development practices for landscaping/stormwater management Potential for living laboratory research/education space
Disadvantages	Currently the main campus entrance in terms of perception Noisy, busy street with undesirable views to north
Cost	Landscape/ Site Costs: \$197,000.00
Site Suitability	Consider screening elements, improve bus stop, provide pedestrian-scale elements along St. Joseph Street



Active and passive quad used as amphitheater/outdoor classroom that is also used to manage stormwater. (online photo)

Site Designation	G. 2
Size	1.5 acres
Adjacencies	Quad, Surbeck, Academics
Advantages	Improve 'front door' of campus, reinforce major pedestrian axes throughout campus Low impact development potential for managing stormwater Active and passive gathering space potential (campus, special events, etc.) Centralized location with good existing shade trees Adjacency to parking Potential for Outdoor Classroom space (image) Enhance the current use of Surbeck Center as the campus gathering place
Disadvantages	Eliminate (or relocate) 100 parking stalls Undesirable viewshed to north Adjacency to parking
Cost	Landscape/ Site Costs: \$534,000.00
Site Suitability	Expand the Quad, reinforce major pedestrian axes



Site Designation	G. 3
Size	0.5 acres
Adjacencies	Parking, football field
Advantages	Great pedestrian defined entry to campus Potential to manage stormwater and showcase Low Impact Development Good location for public art and or wayfinding
Disadvantages	Noisy, busy street
Cost	Landscape/ Site Costs: \$135,000.00
Site Suitability	Improve pedestrian access from football/parking lots to campus



Site Designation	G. 4
Size	0.5 acres
Adjacencies	Parking, New expansions
Advantages	Showcases stormwater strategies and low impact development Passive space for walking and reflection, therapeutic Potential to make a more safe and visible pedestrian crossing
Disadvantages	Limitations to patrolability due to grades and landform
Cost	Landscape/ Site Costs: \$359,000.00
Site Suitability	Improve pedestrian experience to access the Gap Will need to consider good pedestrian lighting as part of efforts

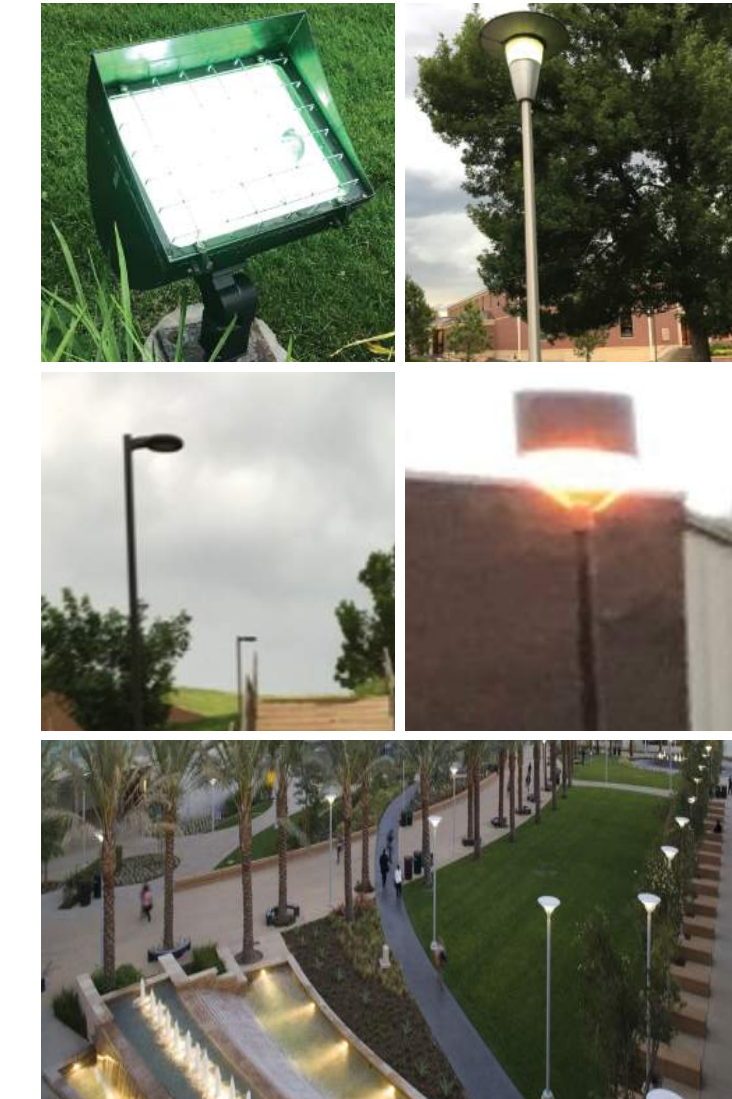


Site Designation	G. 5
Size	1.5 acres
Adjacencies	Athletics, parking
Advantages	Accommodating site conditions Additional option for campus ingress egress Potential to expand and connect campus activity and lifestyle to south
Disadvantages	Remote location Transient travel corridor
Cost	Landscape/ Site Costs: \$699,000.00
Site Suitability	Relocate throwing fields or provide 150 additional parking stalls

DEVELOP CONSISTENT STANDARDS FOR CAMPUS

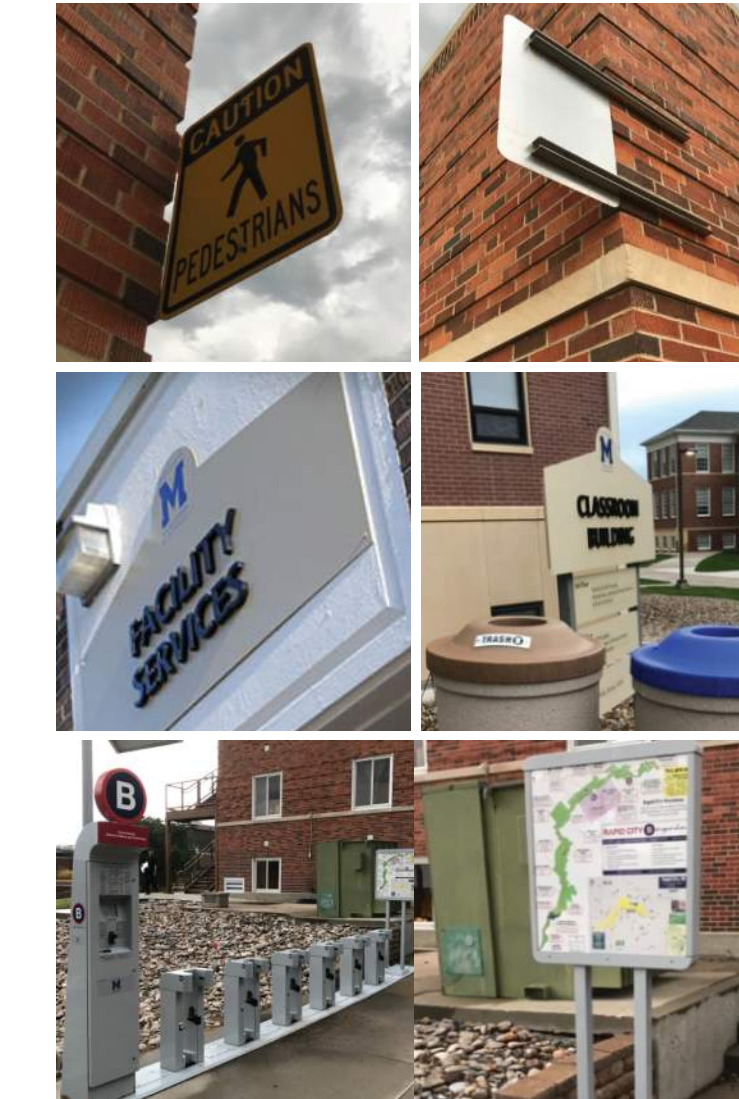
LIGHTING

- Pedestrian scale areas, vehicular parking areas, building, and landscaping
- Utilized to convey campus identity (consider Dark Sky compliant lighting)
- Provide beauty while maintaining safety



SIGNAGE

- Manual on Uniform Traffic Control Devices (MUTCD) type
- Wayfinding
- Gateway, Vehicular, Pedestrian, Building, University, Interior



SITE FURNISHINGS

- Create an overall campus theme and make furnishings ADA compliant
- Nearly 15 different styles of furnishings used
- Standard campus furnishings can help to integrate the campus environment and provide a more organized, unified, and beautiful campus



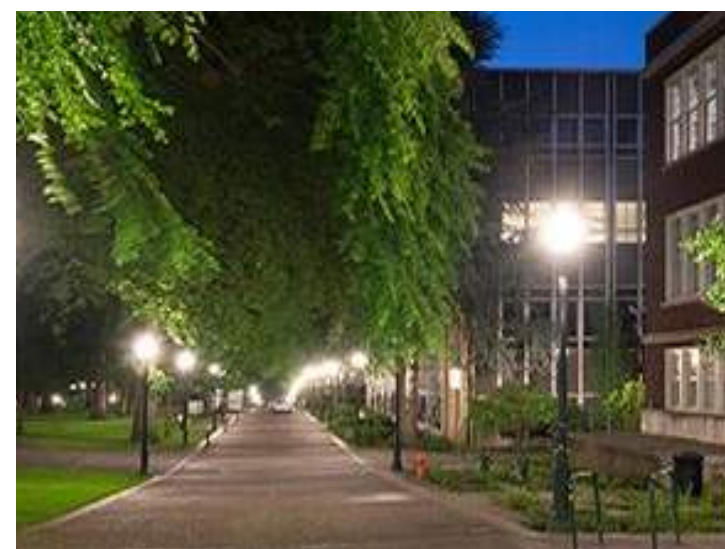
DEVELOP A VIBRANT STREET SCAPE

- Merges pedestrian and vehicular areas in several areas utilizing nodes and changes in tactile surfacing.
- Manage stormwater and direct it away from pedestrian areas and street crossings



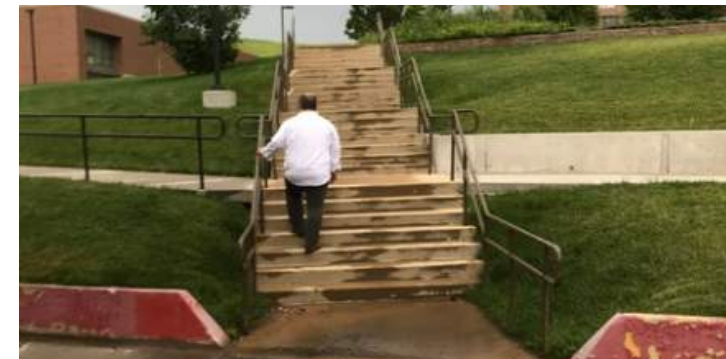
CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN STANDARDS

- Appropriately designed entrances, exits, fencing, landscaping, and lighting directs people and transportation (bikes & cars) where you want them!
- Create natural boundaries that help people know where to go.
- Campus Action Plan:
 - Light the right areas
 - Identify hazardous conditions
 - Create safe conditions
 - Use effective visible signage
 - Create clear boundaries



BRING RAMP AND STAIR ELEMENTS UP TO COMPLIANCE WITH ADA/ UBC

- Stairs require handrails on both sides
- Maximum cross slope is 2%, etc.



ACTIVE SPACE AT THE DROP OFF LOCATION

- Gateway into campus that is an active gathering spot
- Separation between vehicular and pedestrian travel corridors
- Highly visible focal point of many pathways that can be used to display artwork, geology, and campus themes
- Possible amphitheater for events



GREEN INFRASTRUCTURE ON CAMPUS

- Develop large expanses of bio-swales and stormwater mitigating space as part of a teaching/research laboratory. Consider large quad area and a connected network corridor.
- EPA Campus Rain Works Challenge is held every year!



LANDSCAPE

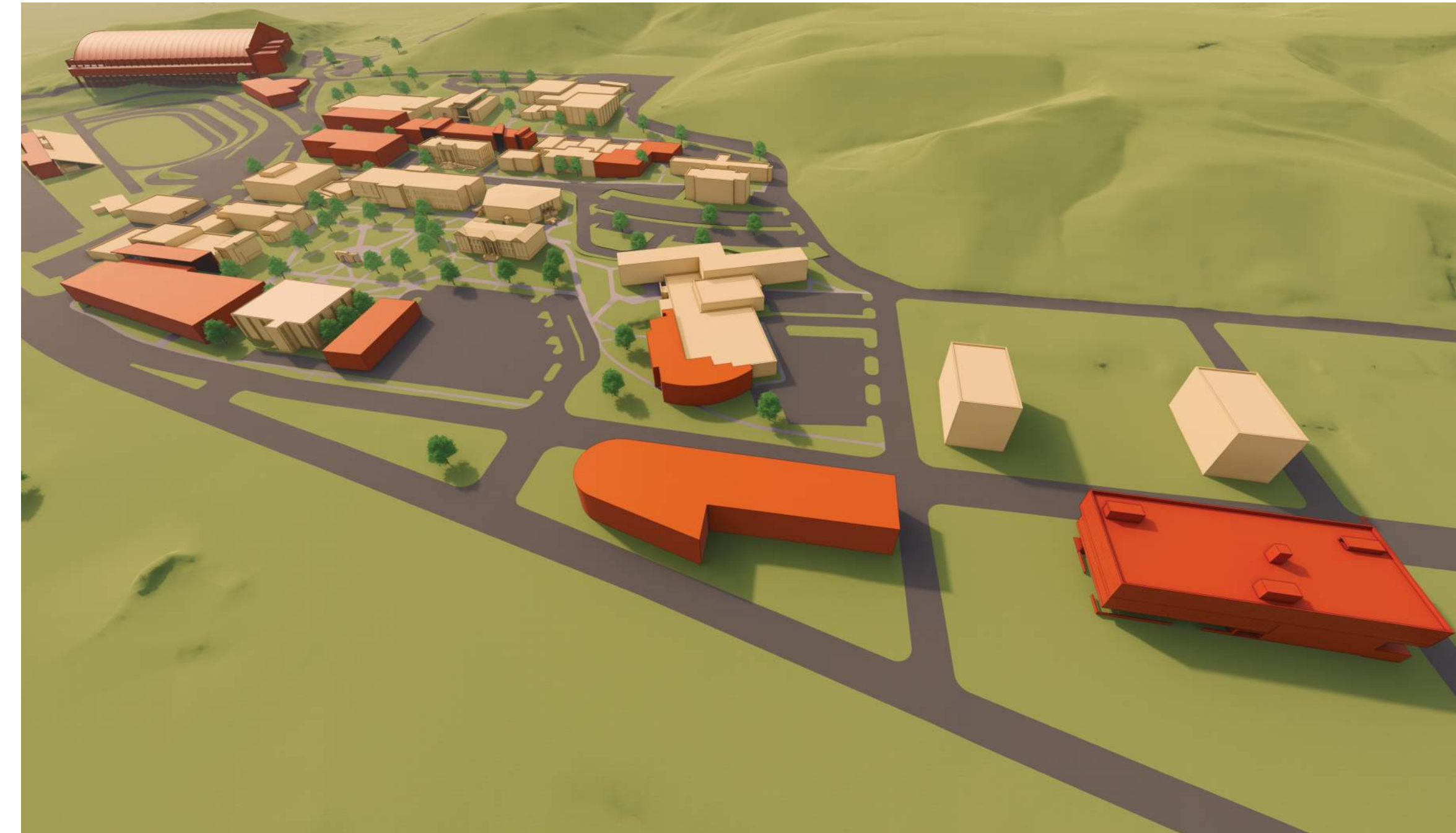
- Appropriate palettes for shade, ornamental, buffering, groundcover, and seasonal appeals – align with sight & visibility triangles and for patrolability (safety)
- Key pedestrian corridors and waypoints to be complemented with landscaping
- Consistent standards for signage, wayfinding, site furnishings, lighting, etc.





DESIGN | LONG TERM CAMPUS IMPROVEMENTS

Our team won't be designing anything until we have completed the first two steps in our methodology. The Listen and Discover phases necessarily inform Design. We may iterate through these steps to get to the best master plan. As we steward your vision, you are engaged as co-creators resulting in a design that perfectly fits your mission, budget and schedule.



LONG-TERM BUILDING IMPROVEMENTS

New buildings and interventions on campus should serve to reinforce the history, values, and identity of the South Dakota School of Mines, while also conveying the aesthetic of a forward-thinking tech institution with international recognition. A blend of timeless materials and transparency, with science on display wherever possible, reinforce a campus culture rooted in tradition, yet always ready to branch into unexplored fields. Weaving public spaces throughout the campus, both indoors and outdoors, allows the public realm to permeate deeply throughout the community, reinforcing a cohesive campus culture oriented towards inter-departmental collaboration. Furthermore, buildings should reflect the campus commitment to sustainability by attaining LEED Gold certification, at a minimum. As a step above-and-beyond this minimum criteria, however, sustainable strategies should be showcased as learning opportunities wherever possible.

CONTINUOUS INDOOR-OUTDOOR PUBLIC SPACES

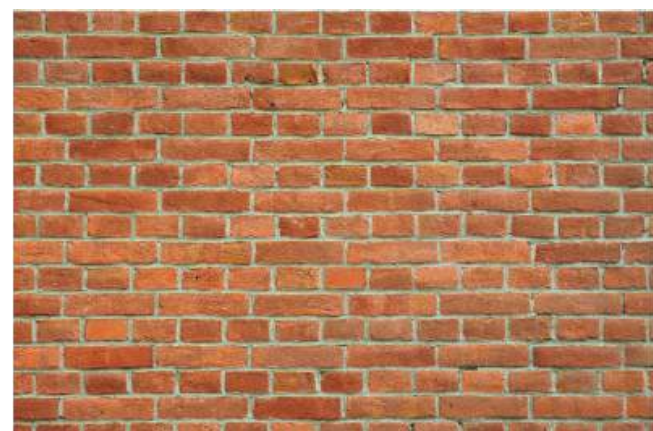
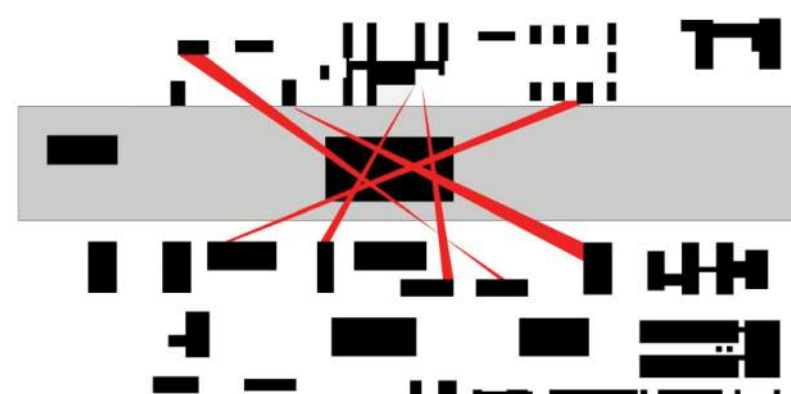
One of the most exciting and unique aspects of the South Dakota School of Mines campus is the dramatic topography characterized by significant changes in grade. Unfortunately, this also leads to significant accessibility issues, and causes challenges for all pedestrians in inclement weather.

Taking a cue from existing buildings on campus, like the PRL, significant meaningful indoor public spaces can be created that facilitate grade changes within the building and create beacons of warmth and comfort along major pedestrian axes. Additionally, these continuous indoor-outdoor public spaces create a perfect opportunity to create exciting showcases of student work, in order to put 'science on display' and exhibit the cool things going on behind the scenes throughout campus

MATERIAL PALETTE

The existing material palette on campus clearly communicates a stately, collegiate atmosphere that should be maintained in new buildings on campus. The combination of brick and limestone exhibited most clearly in the McLaury building signifies historical traditions and values of the School of Mines. These traditional building materials should be balanced with a forward-thinking and tech-focused aesthetic signified by large expanses of glass and silver metallic cladding.

Notably, some of the newest buildings on campus are also some of the most beloved, and serve as great examples of the type of balance needed. The Paleontology Research Laboratory uses the existing material palette of brick in a unique way by employing a non-traditional brick bond pattern. Contrasting the solid volumes of brick, the transparent public interstitial space between them shines like a beacon on one of the major pedestrian axes through campus, and the ancient creatures who watch over the quad clearly convey the unique work that occurs within the building.



LONG-TERM LANDSCAPE IMPROVEMENTS

The renovated space in proximity to Civil Engineering that will serve Surbeck and quad spaces as a gateway (P-2) has significant opportunity to become a teaching environment. This environment synthesizes vehicular and alternative transportation, pedestrian active and passive space, stormwater and low impact development strategies, and a myriad of infrastructure elements. A consideration for the development of this space would be for use in showcasing site detailing and site development strategies so that students could get first-hand experience visualizing these working systems and features; a learning environment, essentially. Implementing these elements in a visual way that can be occupied by students, visitors, and faculty reinforces the educational and campus life benefit of the spaces.

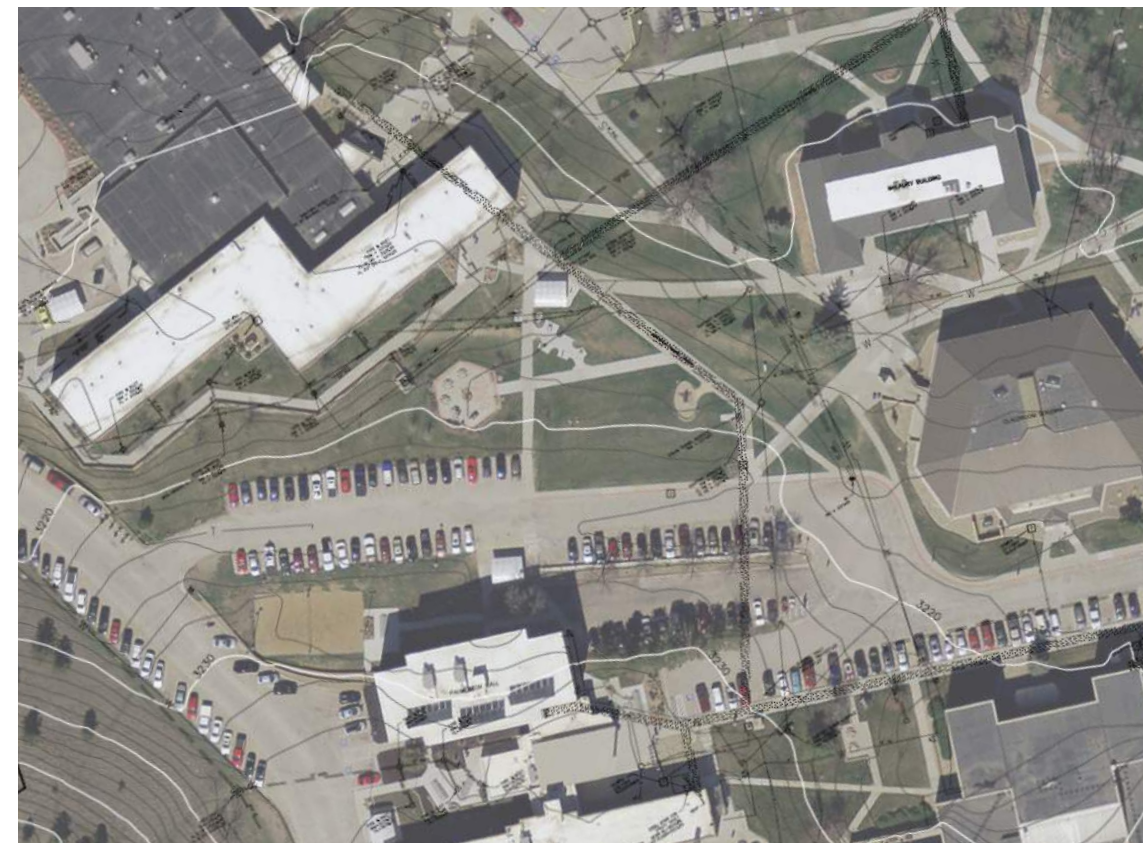
Some examples:

Bioswales that improve stormwater quality while buffering velocity through use of tiering, revetment, and a living landscape.

Creation of a safe transition from vehicular space to pedestrian space through use of standoff, site elements and furnishings, lighting, geology, and placemaking fabric (banners, canopies, ramps, stairs, etc.

Various pavement hierarchy to establish use association as well as lifecycle service.

Low Impact Development (LID) practices/green infrastructure and landscaping needs to be thought of as a network and not stand alone afterthoughts once a building is complete. Existing stormwater systems are networks and thus LID/green infrastructure needs to be planned and designed as networks. Thus, the design decisions and planning regarding LID/green infrastructure combined with landscaping needs to be at the forefront of the masterplan not at the 10-years and beyond plan. Furthermore, to utilize these practices as living laboratories and educational opportunities will require extensive upfront planning and collaboration with faculty and staff because the research/educational components need to be developed into the designs.



LONG-TERM UTILITY IMPROVEMENTS

UPGRADE CAMPUS ELECTRICAL SERVICE

Electrical

The campus's primary electrical service loop is fed from two service points, one from the south and one from the north. Previous discussions with Black Hills Power indicated that the current infrastructure to that part of town was not able to support the future growth of the campus. Each of these service points is fed by a 12KV feeder and rated for 120 amps. This and the capacities of the sub-stations that the campus is fed off of are limiting factors in the campus distribution and the campus's ability to expand.

When studying the existing primary loop, it was noted that the original intent of the two primary electrical services was to provide fully redundant services in the event one service should fail. This would allow all of the campus to be served from either source until repairs could be made to the failed service. With additional electrical load by new buildings, or additions to existing buildings this redundant coverage is no longer a viable option unless measures are taken to increase the infrastructure serving power to the campus.

Further evaluation of the existing primary electrical loop and how the planned future expansion of campus will impact it will be required as future expansion plans are considered in greater detail. These estimates will need to be passed on to WAPA and Black Hills Power for coordination on the utility infrastructure coming into the facility.

DEVEREAUX LIBRARY - PHASE 1

Mechanical

The HVAC systems design will be provided to maximize energy efficiency and lower maintenance. The systems will also be designed to optimize the overall end user experience. Depending on the level of the remodel, some of the existing HVAC equipment, specifically the air handling enclosure and associated ductwork, may be able to be reused to supply the various areas. The building is currently connected to the chilled water and steam loops and these system will continue to serve the building. Some equipment, (heat exchangers, supply fans, pumps), and piping may be at the end of their useful life.

Electrical

Provide energy efficient lighting and electrical systems design to allow for student and academic service spaces. The renovation shall be brought up to current state codes and energy standards. Depending upon the size (electrical load) of the renovation, and what the existing electrical demand is of the existing facility, it may be possible to utilize the existing electrical service or make a small service upgrade for the renovation. Electrical distribution equipment within this building may be at the end of its useful life and should be evaluated for replacement.

RESEARCH EXPANSION - PHASE 1

Mechanical

The HVAC systems design will be provided to maximize energy efficiency and lower maintenance. The systems will also be designed to optimize the overall end user experience. Depending on the level of new construction versus the level of remodel of the existing building, some of the existing HVAC equipment, specifically the rooftop units and associated ductwork, may be able to be reused to supply the various areas. There currently is not chilled water or steam in the area so that would need to be extended if it is to be connected to the campus loop.

Electrical

Relocation of laboratories on campus. Provide energy efficient lighting and electrical systems design to allow for new use of space in existing Ascent building. The renovation shall be brought up to current state codes and energy standards. Depending upon the size (electrical load) of the renovation, and what the existing electrical demand is of the existing facility; it may be possible to utilize the existing electrical service or make a small service upgrade for the renovation. Electrical distribution equipment within this building may be at the end of its useful life and should be evaluated for replacement. The building is equipped with its own stand-alone electrical service separate from the campus primary loop.

MINERAL INDUSTRIES [A, J, OR K]

Mechanical

The HVAC systems design will be provided to maximize energy efficiency and lower maintenance. The systems will also be designed to optimize the overall end user experience. The mechanical system types will be based on the final site location. For site location A, the system will utilize localized gas fired heating equipment. The cooling system will be either DX system or chilled water. For site locations J and K, the existing chilled water and steam loops on campus will be extended to serve the new building as both those locations are located on campus. Steam to heating water converters will be used for building heat and chilled water will be used to cool the building.

Electrical

New building to be constructed for mineral industries. The building shall be constructed in accordance with current state codes and energy standards. Energy efficient lighting and electrical systems are to be designed for use of space. Final site location will determine how the building will receive electrical service. Site location A is located on the North side of St. Joseph Street. The campus's electrical primary loop does not extend out to this location. A separate electrical service should be provided from Black Hills Energy at this location to furnish power for this site. Site locations J and K are located onsite in relatively close proximity to the campus's electrical primary loop. When the Upgrade Campus Electrical Service project is completed the primary loop should be capable of carrying the additional electrical load from this building.

SURBECK CENTER EXPANSION

Mechanical

The HVAC systems design will be provided to maximize energy efficiency and lower maintenance. The systems will also be designed to optimize the overall end user experience. Depending on the level of the remodel required to the existing building for the expansion, some of the existing HVAC equipment may be able to be reused to supply the various areas. Otherwise new air handling units and associated devices will be required to serve the expansion. The building is currently connected to the chilled water and steam loops and these system will continue to serve the building.

Electrical

Provide energy efficient lighting and electrical systems design to allow for student service spaces. The addition shall be designed to current state codes and energy standards. Energy efficient lighting and electrical systems are to be designed for use of space. Depending upon the size (electrical load) of the addition, and what the existing electrical demand is of the existing facility; it may be possible to utilize the existing electrical service or make a small service upgrade for the renovation. When the Upgrade Campus Electrical Service project is completed, the primary loop should be capable of carrying the additional electrical load from this addition. Electrical distribution equipment within this building may be at the end of its useful life and should be evaluated for replacement.

FUTURE EXPANSION [L]

Mechanical

The HVAC systems design will be provided to maximize energy efficiency and lower maintenance. The systems will also be designed to optimize the overall end user experience. Depending on the level of the remodel required to the existing building for the expansion, some of the existing HVAC equipment may be able to be reused to supply the various areas. Otherwise new air handling units and associated devices will be required to serve the expansion. The building is currently connected to the chilled water and steam loops and these system will continue to serve the building.

Electrical

Provide energy efficient lighting and electrical systems design to allow for additional student work spaces. The addition shall be designed to current state codes and energy standards. Energy efficient lighting and electrical systems are to be designed for use of space. Depending upon the size (electrical load) of the addition, and what the existing electrical demand is of the existing facility; it may be possible to utilize the existing electrical service or make a small service upgrade for the renovation. When the Upgrade Campus Electrical Service project is completed, the primary loop should be capable of carrying the additional electrical load from this addition. Electrical distribution equipment within this building may be at the end of its useful life and should be evaluated for replacement.

RESEARCH EXPANSION - PHASE 2

Mechanical

The HVAC systems design will be provided to maximize energy efficiency and lower maintenance. The systems will also be designed to optimize the overall end user experience. Depending on the level of the remodel required to the existing building, some of the existing HVAC equipment may be able to be reused to supply the various areas. Although this building is on campus, a separate entity from the University operated it, thus the heating and cooling systems are separate from the campus loop. Because of this, the existing chilled water and steam loops on campus will be extended to serve the expansion and new construction. Where required, new air handling units and associated devices will be required to serve the expansion.

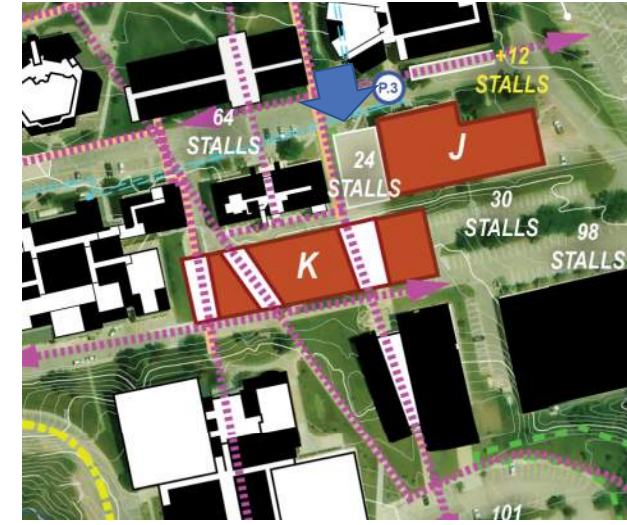
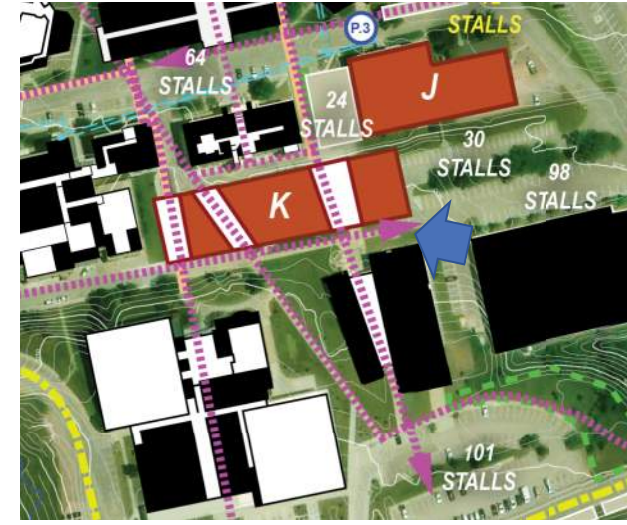
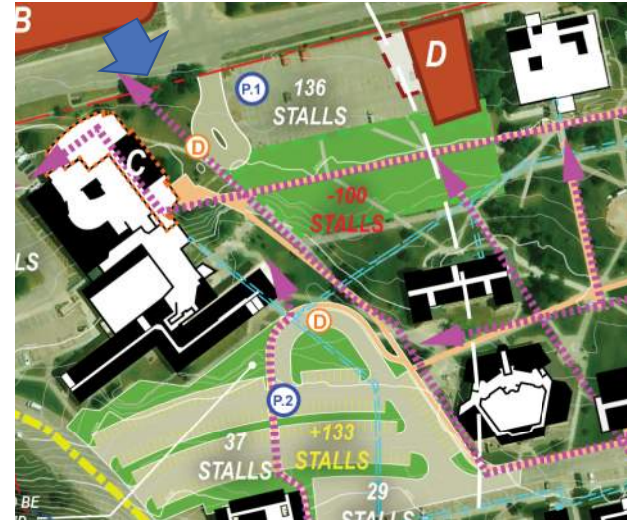
Electrical

Provide an addition to the existing Ascent Innovation for the purpose of expanding the research facilities on campus. Provide energy efficient lighting and electrical systems design for use of space. The addition shall be designed to current state codes and energy standards. An electrical service upgrade will most likely need to be planned for depending upon the size (electrical load) of the addition.

GRANDSTAND IMPROVEMENTS/ EXPAND FOOTBALL FIELD

Electrical

Energy efficient lighting and electrical system upgrades will need to be provided at the grandstands to allow for updates and the fan experience at the existing grandstands. The current state codes and energy standards will need to be followed. An electrical service upgrade will most likely need to be planned for depending upon the size (electrical load) of the addition. The existing field sports lighting will also need to be reviewed with the planned expansion to the football field to accommodate soccer.





GUIDING PRINCIPLES

- World-class, innovative engineering and science university with a great reputation and connections around the world
- Small community of hard-working problem solvers with strong connections between students and faculty
- Provide top-notch research facilities that showcase the world-class work going on inside
- Strengthen ties to the community by encouraging growth to the northwest, towards Downtown Rapid City and the developing Innovation District east of Fifth Street
- Preserve the history and traditions of the campus while also clearly conveying the values and aesthetic of an innovative, future-focused technology school
- Focus academics within the existing campus core; build on and expand the synergies that are already established

DESIGN STRATEGIES

- Design for the Tour
- Define the Gateway/Front Door
- Provide One-Stop Shops
- Put Science on Display
- Engage the City
- Reinforce the Values of the Campus Community

LANDSCAPE AND THE PUBLIC REALM

- Develop uniform landscape standards for the campus
 - Lighting
 - Signage
 - Site Furnishings
- Improve accessibility campus-wide
- Utilize environmental design standards shown to reduce crime and increase public safety
- Develop a vibrant streetscape
- Provide green infrastructure on campus that can be used as a living classroom of environmental design strategies
- Work with fairgrounds to encourage joint-use of facilities, athletic fields, and parking
- Strengthen connections to existing City bike/pedestrian paths

KEY PROJECTS

NEAR-TERM PROJECTS - NEXT 10 YEARS

- Upgrade Campus Electrical Service**
The electrical service for campus is at capacity and needs to be upgraded to facilitate any new buildings on campus.
- Devereaux Library - Phase 1**
Renovate library to improve access to student services, with an emphasis on academic services and flexible + varied study spaces.
- Research Expansion - Phase 1**
Relocate research laboratories on campus, potentially by acquiring the existing Ascent Innovation facility.
- Mineral Industries [A, J, or K]**
Relocate Mineral Industries program to a new building. Due to sensitive equipment, consideration should be made for vibration from nearby trains.
- Surbeck Center Expansion [C]**
Expand Surbeck Center to improve access to student services, with an emphasis on services that build community and enhance student life.
- Future Research Expansion [L]**
Expand research program work areas. Prioritize locations near existing Civil and Mechanical Engineering building to retain synergies with campus machine shop.
- King Center Parking Lot [P.4]**
Relocate throwing fields to double parking at King Center.
- Surbeck Drop-Off [P.2]**
Rework parking lot and drive aisles to develop a safer and more functional drop-off for Surbeck Center. Relocate Grubby statue to McLaury/Quad area.
- Surbeck Parking Lot [P.1]**
Rework parking lot to create a more appealing front-door for the campus. Relocate stalls to new Surbeck Center drop-off.

- Research Expansion [I] - Phase 2**
Expand research facilities by adding on to existing Ascent Innovation facility.
- One-Stop Shop - O'Harra**
Relocate Registrar, Financial Aid, and Cashier's offices to one convenient location.
- Grandstand Improvements/Expand Football Field**
Upgrade existing grandstand and expand existing football field to accommodate soccer.
- Gap Parking [P.6]**
Provide parking in the Gap, southeast of Campus. Plan for relocation of Baja track and Mining and Mucking field.

LONG TERM PLAN - BEYOND 10 YEARS OR AS FUNDS BECOME AVAILABLE

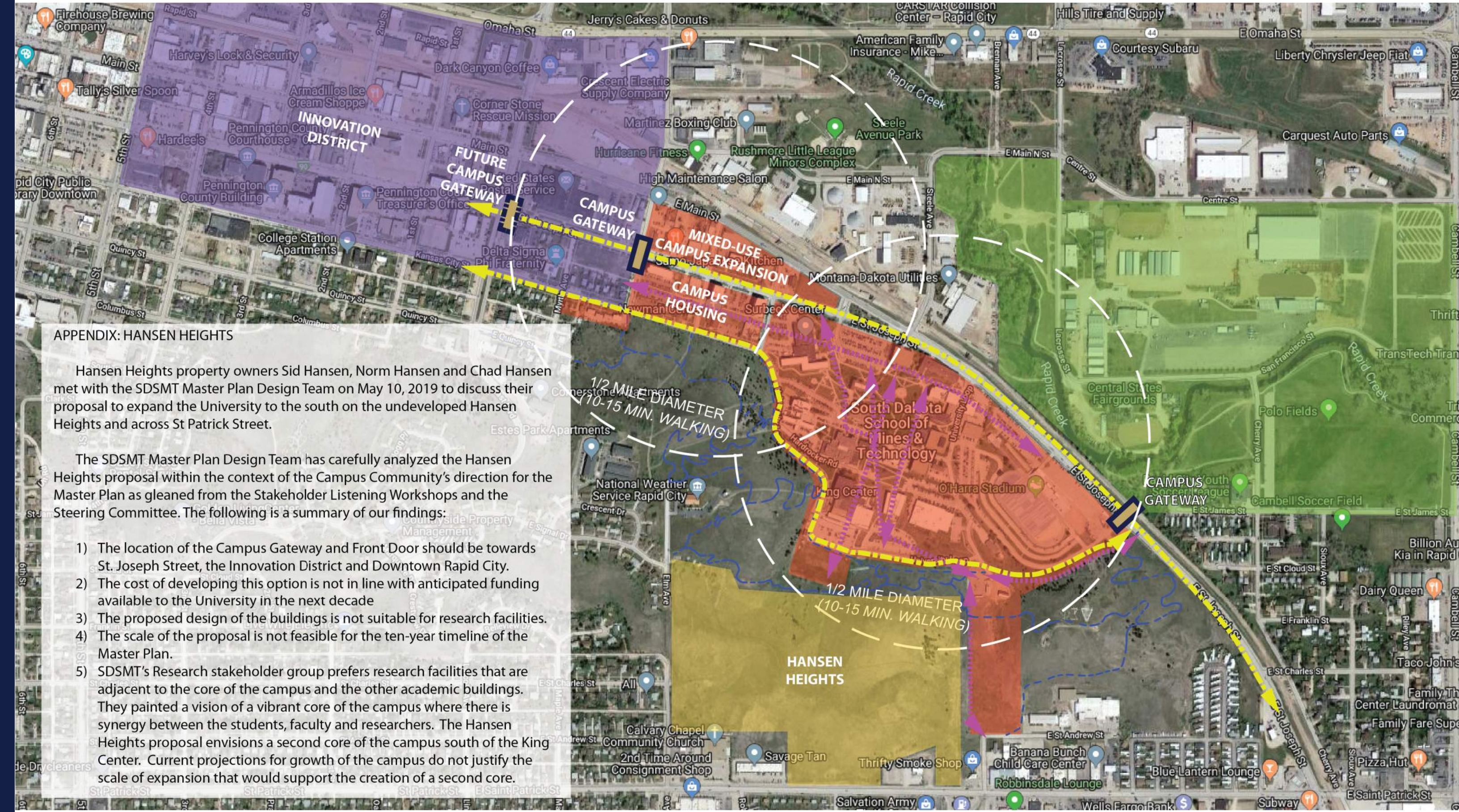
- Biomedical Engineering [E]**
Plan for expansion to existing Chemical and Biological Engineering building due to addition of new Biomedical Engineering program.
- Event Center/Field House [M]**
Provide an indoor track to increase competitiveness and host collegiate and public events.
- Music Building/Auditorium [J, D]**
Provide space for student performances as well as guest speakers and campus/community events.
- Loop Road Extension**
Extend Loop Road on the east side of campus to St. Joseph Street via the uppermost ramp.
- Traffic Improvements on St. Joseph Street**
Work with City to provide safer pedestrian experience on St. Joseph Street.

PEDESTRIAN AND BICYCLE CIRCULATION

- Rework pedestrian routes to reinforce major axes through the campus
- Improve connections to City bike paths
- Provide contiguous interior/exterior transition spaces that cut through buildings along major public thoroughfares
- Create waypoints of visual interest that reinforce the aesthetic of a technology school
- Provide pedestrian-scale design elements that create a positive sense of campus community along St. Joseph Street

VEHICULAR CIRCULATION AND PARKING

- Reevaluate the role of the vehicle in campus life
- Prioritize strategies that reconfigure vehicular circulation around the perimeter of campus
- Redistribute parking to the perimeter of campus to reinforce pedestrian spaces
- Increase safety by creating clearly defined crosswalks and vehicular lanes
- Vacate Birch Street to improve access to campus via Kansas City Street
- Create gateways on St. Joseph Street to establish campus community
- Work with the City to create a safer and more pedestrian-friendly streetscape by increasing parking and calming traffic on St. Joseph Street



APPENDIX: HANSEN HEIGHTS

Hansen Heights property owners Sid Hansen, Norm Hansen and Chad Hansen met with the SDSMT Master Plan Design Team on May 10, 2019 to discuss their proposal to expand the University to the south on the undeveloped Hansen Heights and across St Patrick Street.

The SDSMT Master Plan Design Team has carefully analyzed the Hansen Heights proposal within the context of the Campus Community's direction for the Master Plan as gleaned from the Stakeholder Listening Workshops and the Steering Committee. The following is a summary of our findings:

- 1) The location of the Campus Gateway and Front Door should be towards St. Joseph Street, the Innovation District and Downtown Rapid City.
- 2) The cost of developing this option is not in line with anticipated funding available to the University in the next decade
- 3) The proposed design of the buildings is not suitable for research facilities.
- 4) The scale of the proposal is not feasible for the ten-year timeline of the Master Plan.
- 5) SDSMT's Research stakeholder group prefers research facilities that are adjacent to the core of the campus and the other academic buildings. They painted a vision of a vibrant core of the campus where there is synergy between the students, faculty and researchers. The Hansen Heights proposal envisions a second core of the campus south of the King Center. Current projections for growth of the campus do not justify the scale of expansion that would support the creation of a second core.



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SOUTH DAKOTA MINES

STRANG ARCHITECTS | CO-OP ARCHITECTURE | FMG ENGINEERING | TERRASITE | WEST PLAINS ENGINEERING

UPDATE

2023