University of Colorado
Colorado Springs

UCCS Recreational Trails Micro-Master Plan

November 2014

Submitted by

Tapis Associates, Inc.

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Executive Summary

Introduction

"The University of Colorado's guiding principles state that they seek to 'be conscientious stewards of the university's human, physical, financial, information and natural resources.' (Regent Policy...) While the UCCS 2020 Strategic Plan sets a vision for a period of significant growth, it places a high value on growing sustainably. 'Dynamic responsible growth,' defined as 'financially responsible, academically sound and environmentally sustainable,' is a stated value of excellence. Moreover, one of the 12 stated goals for 2020 is to 'provide inspired sustainability leadership and education and direct the responsible, informed application of social, environmental and economic sustainability measure in all university activities.'"

- Excerpt from 2012 Campus Master Plan, Sustainability Commitments page 91

The 2014 University of Colorado Colorado Springs (UCCS) Recreational Trails Micro-Master Plan provides a strategy for implementing a trail system that is both a recreational amenity and an alternative transportation experience.

UCCS has long recognized the value of its unique natural landscape. The 2012 Campus Master Plan's goals - *Preserve a Sense of Place* and *Develop the Campus in a Responsible & Sustainable Way* - establish natural resource preservation and integration with the campus experience as key components of all campus development. The Campus Master Plans' goals - *Connect Campus Destinations* and *Engage the Public on the North Campus* - give further direction and character to the campus trail system. Both the 2012 Master and Strategic Plans identify E*ducation Enhanced by Wellness through Recreation* as a key component of the UCCS campus experience. The 2012 Campus Master Plan recommended the Recreational Trails Micro-Master Plan; it took shape and is specifically funded as part of the Recreation Center Expansion Fee Referendum. The trail system is identified as key to the UCCS student experience, a unique asset for student recruitment, and a means for physically engaging students, faculty and staff with the campus' stunning natural landscape resource while contributing the their health and wellness.

Purpose of the Micro-Master Plan

UCCS has grown steadily since its inception. The 2012 Campus Master Plan is grounded in the premise of *"respecting the responsible capacity of the land"* and supported by three design principles: *1) Respect natural features. 2) Reinforce vibrant campus anchors. 3) Connect campus destinations.* The Recreational Trails Micro-Master Plan embodies these concepts, as it is an addendum to the Campus Master Plan.

As the designated growth campus within the CU System, the University has already witnessed campus growth's impact on the current endemic trail routes. The University also recognizes the unique opportunity presented by its dramatic natural setting. In light of this context, the Micro-Master Plan will:

- Create a world-class trail system engaging the unique natural landscape and contributing to UCCS's sense of place,
- Protect the natural environment by minimizing impacts to the local fauna, flora, and soils while providing a robust trail system for recreation and transportation,
- Accommodate campus development by creating a trail system that connects and unifies campus destinations,
- Integrate the UCCS trail system with adjacent public trails, parks and open spaces, as well as housing, retail and employment centers, and
- Recommend campus-wide initiatives to further the University goals of sustainability, education, and holistic health and wellness.

Compliance with the 2012 Campus Master Plan

The recommendations of the 2012 Campus Master Plan and the 2009 Heller Center Master Plan were carefully considered. The Campus Master plan defines area "not suitable for development" and open space areas; these two designations defined the land area for the trail system to be developed.

Facilities Department representation on the Recreational Trails Advisory Committee (RTAC) and ongoing coordination ensured this micro-master plan accommodates current and future campus expansion and protects the Heller Center as a unique resource and retreat.

Planning Process

The Recreation Trails Micro-Master Plan planning process was a collaborative effort engaging individuals from departments across campus and guided by the RTAC.

The planning process was designed to be cumulative, moving from identifying and organizing the hopes, concerns and ideas people held for the UCCS trail system into a set of issues to be addressed throughout the planning. An important step was the development of the *Givens, Values* and *Goals* based on these issues and on information about the trail system. The values and goals were used as touchstones for each step in the planning process. Throughout the process, technical evaluation and expertise was conveyed so that sound information was provided to and used by the RTAC as the basis for discussion and recommendations. The result is a final set of recommendations based upon informed judgment by the RTAC, the cumulative experience of the consultant team, and input from the campus community and public. Focused interviews, campus forums, public forums, coordination with the City of Colorado Springs and strategic reviews by the Auxiliary Directors and Leadership Team were utilized to gather input.

The RTAC leadership and consultant team worked closely with Facilities representatives to ensure compatibility with the 2012 Campus Master Plan as well as the numerous campus construction and planning projects underway during this plan's development.

The Recreational Trails Advisory Committee recommended the UCCS Recreational Trails Micro-Master Plan to the Leadership Team for consideration. The Leadership Team approved the Plan on 21 April 2014.

Recreational Trails System Micro-Master Plan

The proposed UCCS trail system is both a recreational amenity and an alternative route for getting around campus. The system expands upon the current endemic routes, while repairing and rerouting trails to provide key connections and protecting the campus' cultural and natural resources. The proposed trail system will include a series of looped trails linking desired destinations on campus to surrounding public open spaces. The backbone of the trail system will be the extension of the Sherpa Trail from East Campus to the underpass at North Nevada Avenue. The system will include about 13.8 miles of varied-challenge-level trails, consisting of both existing and new trail segments.

Research, data and existing conditions were collected and documented to inform the plan. A variety of methods were utilized by the consultant team specialists to collect data including numerous site visits, stakeholder interviews, extensive conversations with campus faculty, staff and students, and review of previous resource studies. The inventory and analysis of existing conditions conducted as part of the 2012 Campus Master Plan were used as the foundation for this micro-master plan. The consultant site visits during this plan served to extend the body of knowledge upon which trail planning decisions were based.

The UCCS Recreational Trails Micro-Master Plan envisions the campus as an area that offers all people the opportunity to experience this unique and beautiful place. The focus is on providing access through a variety of multi-use trails and the support facilities needed to serve them. Trails throughout the site are planned to accommodate a wide range of abilities and interests, and to offer a variety of experiences that will make multiple visits engaging, informative and interesting. The plan also allows for related trailside gathering areas, interpretive sites, trails with additional attributes for sight impaired interpretation and designation of themed routes (e.g. curriculum based geology, biology, wellness, etc. and a cross country venue). Trailheads have also been identified at key connections to the system.

The micro-master plan also recommends approaches for integration with the UCCS experience, design guidelines for trails, functional guidelines for safety and signage, construction procedures, management considerations, natural and cultural resource protection, and phasing priorities, costs and implementation guidelines.

The Recreational Trails Micro-Master Plan is a specific yet flexible roadmap that will guide creation and maintenance of a sustainable trail system for the UCCS campus community.

Introduction

Background

The 2014 University of Colorado Colorado Springs (UCCS) Recreational Trails Micro-Master Plan provides a strategy for implementing a trail system that is both a recreational amenity and an alternative experience for getting around campus.

UCCS has long recognized the value of its unique natural landscape. The 2012 Campus Master Plan's goals - *Preserve a Sense of Place* and *Develop the Campus in a Responsible & Sustainable Way* - establish natural resource preservation and integration with the campus experience as key components of all campus development. The Campus Master Plans' goals - *Connect Campus Destinations* and *Engage the Public on the North Campus* - give further direction and character to the campus trail system. More detail pertaining to the 2012 Campus Master Plan goals can be found in Appendix A.

Both the 2012 Master and Strategic Plans identify E*ducation Enhanced by Wellness through Recreation* as a key component of the UCCS campus experience. The 2012 Campus Master Plan recommended the Recreational Trails Micro-Master Plan; it took shape and is specifically funded as part of the Recreation Center Expansion Fee Referendum. During those discussions the trail system was identified as key to the UCCS student experience, a unique asset for student recruitment, and a means for physically engaging students and faculty with the campus' stunning natural landscape resource while contributing the their health and wellness.

UNIVERSITY MISSION AND VISION

The Colorado Revised Statutes state the mission of the university as:

The Colorado Springs campus of the University of Colorado shall be a comprehensive baccalaureate and specialized graduate research university with selective admission standards. The Colorado Springs campus shall offer liberal arts and sciences, business, engineering, health sciences, and teacher preparation undergraduate degree programs, and a selected number of master's and doctoral degree programs.[1]

To support this mission, the University of Colorado Colorado Springs Strategic Plan, 2012-2020 has set forth the following vision:

UCCS, a premier comprehensive undergraduate and specialized graduate research university, provides students with academically rigorous and life-enriching experiences in a vibrant university community. We advance knowledge, integrate student learning with the spirit of discovery, and broaden access to higher education for the benefit of southern Colorado, the state, nation and world.

1 Colorado Revised Statutes, Senate Bill 11-204, Section 2. 23-20-101 (1) (b) Approved June 10, 2011

Compliance with Previous Planning Studies

The State of Colorado requires that each campus develop a master plan for facilities and land use to support the implementation of the academic mission and guide capital improvement plans. Micro-master plans support master plans with specific area planning detail. In developing this Micro-Master Plan, the 2012 Campus Master Plan, 2012 Strategic Plan and the 2009 Heller Center Master Plan were carefully considered.

Since adoption, implementation of the 2012 Master Plan recommendations has progressed steadily. The Recreational Trails Micro-Master Plan was developed within this dynamic campus atmosphere. Active participation of Facilities department representatives and ongoing coordination ensure this micro-master plan accommodates current and future campus expansion as well as protects the Heller Center as a unique resource and retreat. The detailed findings of the most recent planning and construction efforts are incorporated in this Micro-Master Plan.

Purpose of the Micro-Master Plan

The University of Colorado Colorado Springs (UCCS) has grown steadily since its inception in 1965. The 2012 Campus Master Plan is grounded in the premise of *"respecting the responsible capacity of the land"* and supported by three design principles: *1) Respect natural features. 2) Reinforce vibrant campus anchors. 3) Connect campus destinations*. The Recreational Trails Micro-Master Plan embodies these concepts, as it is an addendum to the Campus Master Plan.

As the designated growth campus within the CU System, the University has already witnessed campus growth's impact on the current endemic trail routes. The University also recognizes the unique opportunity presented by its dramatic natural setting. In light of this context, the Micro-Master Plan will:

- Create a world-class trail system engaging the unique natural landscape and contributing to UCCS's sense of place,
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Micro-Master Plan Organizational Overview

Within the Micro-Master Plan, *Summary of the Planning Process* fully presents the Recreational Trails Advisory Committee's (RTAC) role, public participation process and resulting guiding documents and issues. Natural resource research findings along with cultural and social influences are documented, mapped and assessed in *Existing Conditions and Site Assessment. Recreational Trails System Plan* contains recommendations for trailheads and trails, gathering areas, and integration with the UCCS Experience. *Design Guidelines* includes trail hierarchy, sustainable trail design, gathering area, safety components and signage design guidelines. The Micro-Master Plan concludes with *Management Recommendations* covering construction and management procedure recommendations, resource protection, and phasing and implementation guidelines.

The *Acknowledgments* and *Appendix* contain selected supporting documents and all public input received during this master planning process conclude this document.

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Summary of the Planning Process

Givens, Values and Goals

The Recreational Trails Micro-Master Plan planning process was a collaborative effort engaging individuals from departments across campus throughout all its phases.

The Recreational Trails Advisory Committee (RTAC) facilitated the overall process and was guided by Recreation Center Director, Matt Gaden, Manager of Intramurals, Clubs and Outdoors, Daniel Bowan, and Trails and Outdoors Coordinator, Andrea Hassler. The Committee consisted of eleven faculty, staff, leadership and student members. The Committee also included representatives from Tapis Associates (trail system master planning and design), and ERO Resources (environmental planning).

During their initial meetings, the RTAC established benchmarks to guide their decision-making. These included *Givens, Values*, and *Goals*. The *Givens* are a set of non-negotiable commitments the University is irresponsible not to fulfill. The *Givens* serve as the "fence" within which all other discussion and recommendations are contained as the planning progresses. The *Values* articulate the cultural framework for the trail system within the UCCS experience and the *Goals* provide specific issues and needs to be fulfilled by the plan. The *Givens* and *Values* are listed below; the longer *Goals* can be found in Appendix B.

GIVENS

- The micro-master plan will comply with and support the *2012 UCCS Campus Master Plan*.
- The trail system will be open to both the campus and the community for non-motorized and appropriate multi-use recreation and transportation.
- The micro-master plan as recommend by the UCCS *Recreational Trails Advisory Committee* will be submitted to the UCCS *University Leadership Team* for final approval.
- Implementation of the micro-master plan will occur as funding allows.

VALUES

"The University of Colorado's guiding principles state that they seek to "be conscientious stewards of the university's human, physical, financial, information and natural resources." (Regent Policy...) While the UCCS 2020 Strategic Plan sets a vision for a period of significant growth, it places a high value on growing sustainably. "Dynamic responsible growth," defined as "financially responsible, academically sound and environmentally sustainable," is a stated value of excellence. Moreover, one of the 12 stated goals for 2020 is to "provide inspired sustainability leadership and education and direct the responsible, informed application of social, environmental and economic sustainability measure in all university activities."- Excerpt from 2012 Campus Master Plan, Sustainability Commitments page 91

A. The Campus' valuable natural and cultural resources are critical to successfully developing UCCS for future generations.

B. Outdoor recreation and individual wellness are core commitments for the campus community.

C. Trails are a crucial part of the campus' heritage, transportation network and commitment to sustainability.

D. Social trails degrade the natural capital of the campus.

Campus Community Involvement

The planning process was designed to be cumulative, moving from identifying and organizing the hopes, concerns and ideas people held for the UCCS trail system into a set of issues to be addressed throughout the planning. An important step was the development of the Givens, *Values* and *Goals* based on these issues and on information about the trail system. Those values and goals were verified and adopted by the campus community and public and then used as touchstones for each step in the planning process as decisions moved from broad to narrow.

Throughout the process, technical evaluation and expertise was conveyed so that sound information was provided to and utilized by the Recreational Trails Advisory Committee (RTAC) as the basis for discussion and recommendations. The result is a final set of recommendations based upon informed judgment by the RTAC and with thoughtful consideration of input from the campus community and public. The input took a variety of forms, which are briefly described below. Detailed documentation of participant input is included in the *Appendix*.

Recreational Trails Advisory Committee

As stated above, the RTAC facilitated the overall process. The RTAC met over ten times with the consultant team, participated in on-site hikes, reviewed the site resource inventory, established the trail system conceptual framework, evaluated numerous trail alignment alternatives, established recommended trail alignments, reviewed report drafts and hosted two Campus-wide Forums and two evening Public Forums.

and founded

Focused Interviews

Early in the process, the RTAC conducted listening sessions with campus and community individuals and groups interested in the future of UCCS trail system. During these sessions, the team described the objective of the micro-master plan and asked participants to discuss their concerns, hopes and ideas for the trail system and its integration with the UCCS experience. Follow- up meetings were held with campus departments and auxiliary services supporting the trail system. Conversations continued with the City of Colorado Springs to coordinate campus connections to surrounding open spaces. The listening session and forum input was compiled in the *Issues and Ideas List* in Appendix C.

Campus and Public Forums

Twice during the planning process, the RTAC held separate campus and public forums to present their findings and proposals and to listen to concerns and suggestions from those who attended. The meetings were open to all members of the campus community and surrounding neighbors were invited by direct mail. Following the first forum in October, the forum and listening session input was compiled in the *Issues and Ideas List* in Appendix C. The draft plan presentations during the February 2014 forums were followed by a two week online review and comment period of the draft plan. The *Summary of the Draft Plan Comments* received is in Appendix D.

Auxiliary Directors and Leadership Team

The Auxiliary Directors and Leadership Team reviewed the progress of the micro-master plan as the draft plan was being compiled. Feedback from formal presentations as well as the ongoing input from individual Auxiliary Directors and Leadership Team members was invaluable in shaping the recommendations in this plan. The Recreational Trails Advisory Committee will present the Recommended Recreational Trails Micro-Master Plan to the Leadership Team for consideration in April 2014.

Planning Phases

Listening and Inventory/Assessment

During this first phase, the RTAC gathered information about the trail system through interviews with stakeholders as described in *Focused Interviews* above. The campus and public forums were held towards the end of this phase. The input was compiled in the *Issues and Ideas List*; the category headings are in the side bar and the complete *Issues and Ideas List* can be found in Appendix C. At the same time, the consultant team analyzed the natural and cultural resources and the existing social trail network. This on-the-ground knowledge along with the stakeholder input coalesced into the *Planning Considerations* map and the *Conceptual Trails Network* diagram to guide the process forward.

ISSUES AND IDEAS LIST TOPIC CATEGORIES

- Big picture trail ideas tied to University mission
  - Campus Connectivity to the Colorado Springs Community
  - Sustainability Ethic/Lifestyle and Trails
  - Curriculum
- Recreational Trail System ideas
  - Intra-Campus Connectivity
  - Trail system design considerations
  - Specific trail features and amenities
- Administrative and Maintenance Comments
- Interpretive and Wayfinding Signage Comments
- Non-recreational trail/Bike friendly atmosphere/ Infrastructure issues & ideas
  - These issues are also shared with Recreational Trails

Alternative Trail Alignments and Management Approaches

During the Alternatives phase, the Committee explored trail alignment options, special uses, and implementation options. Onsite hikes and discussion with the campus community further refined and identified preferred approaches.

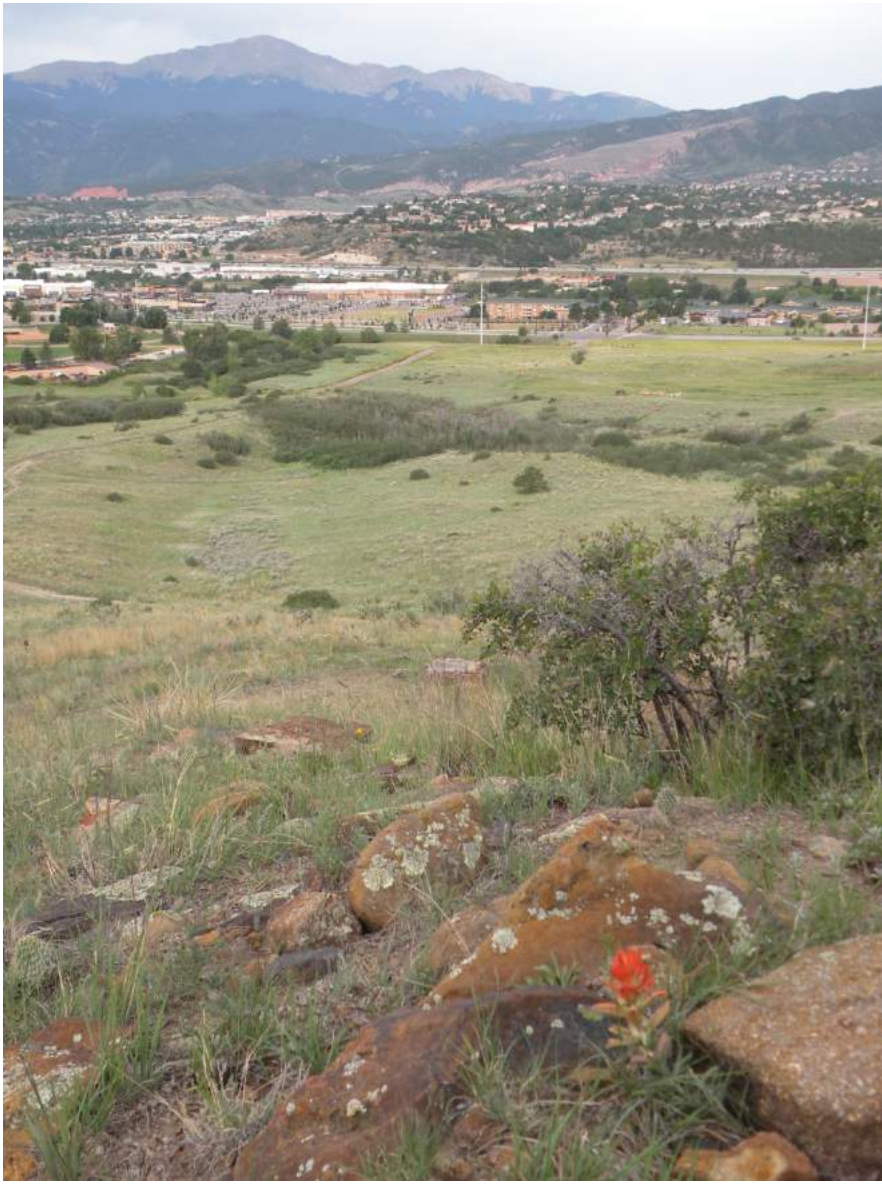
Micro-Master Plan Integration

The RTAC leadership and consultant team worked closely with facilities representatives to ensure compatibility with the 2012 Campus Master Plan as well as the numerous campus construction and planning projects underway during this plan's development. The Committee worked to integrate the trail system routes and resource protection implementation with the campus master plan development priorities to optimize student recreation, wellness and transportation opportunities, resulting in the final Micro-Master Plan.

Existing Conditions and Site Assessment

Introduction

An inventory and analysis of existing conditions was conducted as part of the planning process. The purpose of these investigations was to extend the body of knowledge on which planning decisions could be based. The data assembled for the campus in the 2012 Campus Master Plan was extended to include the entire campus and trail specific information. This data informs decisions to be made in ways that will protect the resources and preserve the conditions that make UCCS unique. Resource mapping can be found in Appendix B.



Natural and Cultural Resources

Geology and Soils

The steep ridges and bluffs along the eastern and northern edges of the UCCS campus provide a characteristic natural backdrop to the urban campus setting. These bluffs are surface expressions of the Dawson geologic formation, and include several notable rock outcrops including Eagle Rock and Pulpit Rock. The slopes of the bluffs are considerably steep (with many vertical cliff bands), while the lower elevations have gentler slopes. Elevations along the top of the ridges range are about 6,700 feet, while the lowest point of the campus near the North Nevada/Austin Bluffs intersection is 6,184 feet.

The UCCS campus is dominated by four distinct soil types, most of which are fragile and are highly erosive, posing additional challenges for trail development and management. Soil types and their characteristics are described as follows:

- **Travessilla-Rock outcrop complex** – This soil type dominates most of the bluffs and undeveloped portions of the UCCS campus.
- **Blakeland loamy sand** – This soil type is found in the lower portions of the North Campus, adjacent to Eagle Rock Road.
- **Kutch clay loam** – This soil type is found in the far, northwest corner of the campus.
- **Truckton sandy loam** – This soil type is found in the developed portions of the South Campus.

Soils on the UCCS campus, particularly the Travessilla and Blakeland soils on moderate to steep slopes, present a challenge for long-term trail development and resource stewardship. Due to the very low organic content and granular nature of these soils, they do not easily bind together and once disturbed easily disintegrate and erode.

There are several locations on campus where steep, vertical social trails have eroded into large, deep gulleys and are no longer able to absorb moisture or support any type of vegetation. Besides the visual and resource degradation, these gulleys create hazards for people and facilities below due to the potential for flooding and sediment deposition during and after rainfall. Revegetation in these soils is extremely difficult and is not likely to be successful, but it may be possible to stabilize these areas with walls, check dams, and other measures to direct water and reduce soil erosion. Over the past several years, the campus has invested significant resources into the construction of several large, heavily reinforced detention basins that are intended to capture rainfall and sediment. As part of this planning process, several additional sub-areas were identified as "Erosion Hazard Areas" where large areas of particularly loose, steep, or unstable soils present a challenge to future trail development. These are shown on the *Soils* and *Planning Considerations* maps.

From a trails perspective, it is incumbent on this plan and future managers to

- Reduce or eliminate the use of existing social trails in unstable areas,
- Close and stabilize erosive social trials,
- Avoid trail construction in unsuitable locations, and
- Ensure proper construction of new trails to minimize future erosion.

Any new trail development will need to be sited, designed, and constructed in a manner that minimizes the risk of soil instability and erosion. This means avoiding steep slopes and areas with particularly "rotten" soils, making use of natural benches and vegetated areas that are more stable, limiting excessive grades (above 6-8%), and building adequate trail drainage.

Vegetation Communities

Undeveloped portions of the UCCS campus contain the variety of plains transition vegetation communities that is typical of the Colorado Springs region. What is unique about these areas is that, combined with the adjacent and nearby open space lands, the campus contributes to an island of native vegetation in an urban and developed setting. Primary vegetation communities include the following:

- Native prairie
- Disturbed grassland
- Pine shrub
- Mountain shrub
- Cottonwood willow
- Pinyon juniper
- Upper Arroyo oak/elm
- Introduced locust
- Disturbed

Sensitive Habitat Areas

While the campus is not known to contain any rare or imperiled plant species or communities, the remaining native prairie communities can be sensitive to disturbance. The North Campus area contains several large patches of high quality native prairie, with limited disturbance or infestations of noxious weeds. These areas are primarily located to the north and west of the Heller Center complex, and in the large open meadow between the arroyos near the southwest edge of the campus.

Intact patches of native prairie are increasingly rare along Colorado's Front Range, where most of it has given way to urban development or agricultural conversion. These communities can be vulnerable to disturbance that can destroy native plant species and introduce noxious weeds into the community.

From a trails perspective, it is important to minimize new trail disturbance in these areas (including unintended social trails). However, a single well-managed trail, built following the design guidelines, in these areas is preferable to multiple social trails that may result from lack of adequate connectivity. Where trails or disturbance does occur, proactively monitor and manage new noxious weed infestations.

Wildlife

The UCCS campus and surrounding open space lands provide habitat for a wide variety of wildlife species that are typical of the region, including mule deer, coyote, mountain lion, black bear, small mammals, reptiles and amphibians, migratory birds, and raptors. However, due to the relatively small island of habitat that is surrounded by urban development, occurrences of larger broad-ranging species such as mountain lion and black bear are less frequent. Small mammals and carnivores, however, (such as coyote, bobcat, and skunk) often thrive in these urban interface settings.

While most of the undeveloped campus provides general habitat used by many wildlife species, the limited riparian habitat and the remaining undisturbed habitat areas are particularly sensitive to human use and development. These habitat elements are described as follows:

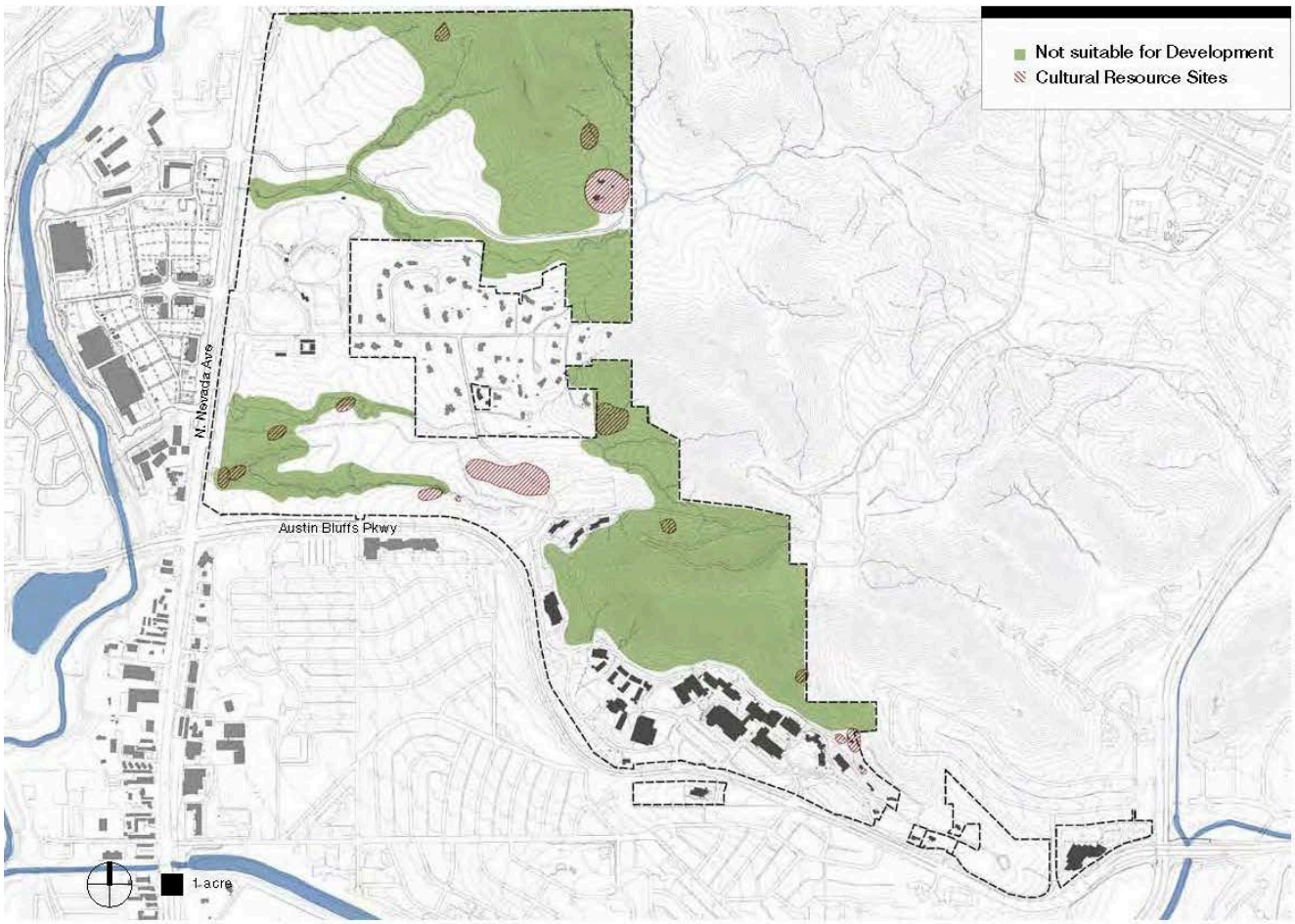
- **Riparian habitat.** The primary drainage that bisects the North Campus contains the largest and most intact riparian habitat corridor on the UCCS campus (shown as the cottonwood willow vegetation community, see Appendix E), while some of the smaller arroyos also support small patches of riparian habitat. This habitat type is important to most wildlife species as they seek forage and water, and is essential for some species (including many birds) that specifically rely on riparian vegetation for nest sites and food.
- **Unfragmented habitat.** Considering the urban context and high levels of human use in and around the campus, many wildlife species are reliant on the few remaining large patches of unfragmented habitat that are free of human disturbances (including trails, roads, homes, constructed facilities and the presence of humans). Several such areas are found on the campus, including the arroyos, the ridgeline north of Alpine Village, and the valley north of the Heller Center.

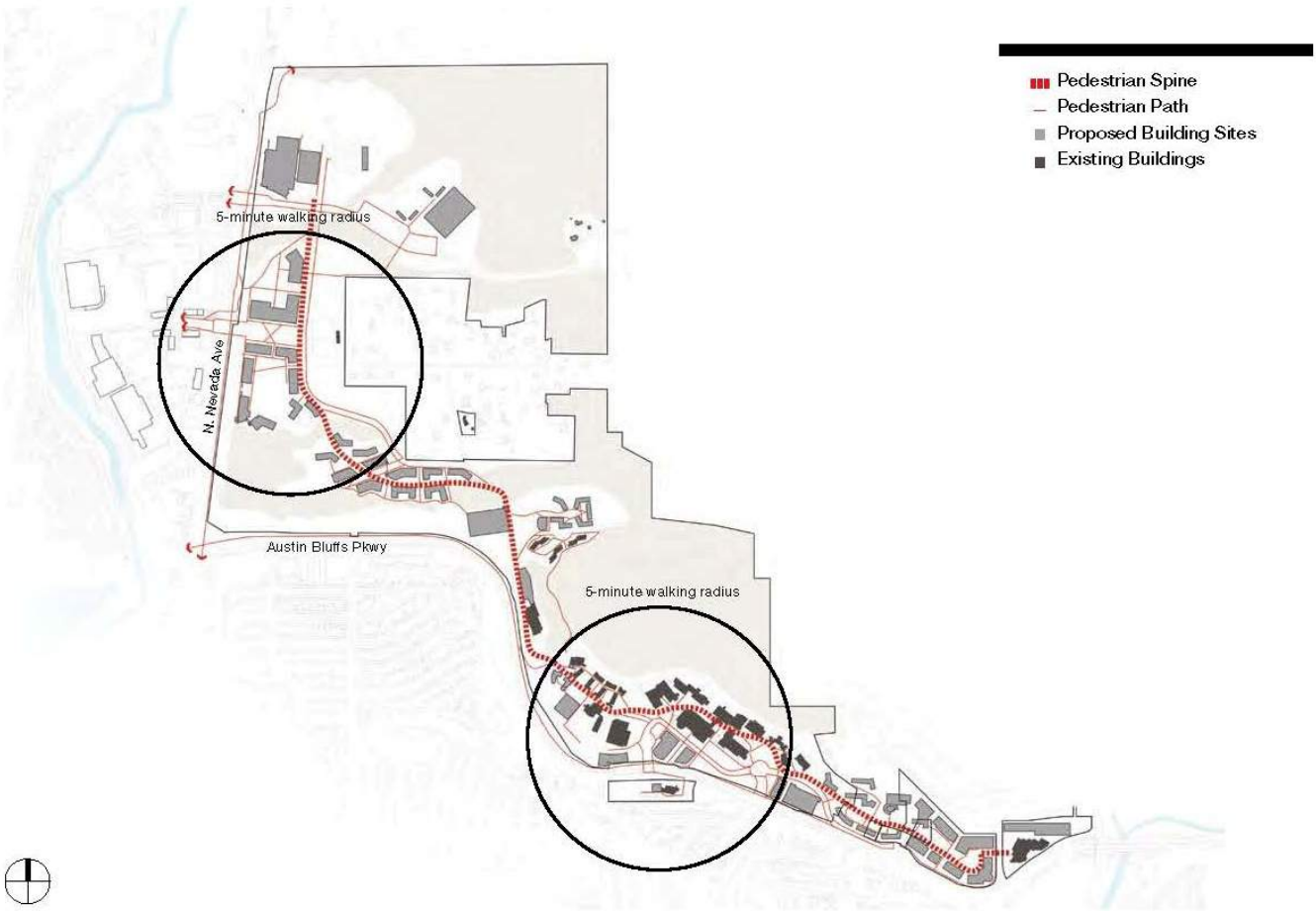
From a trail planning perspective, it is important to consider these habitat areas and to minimize new impacts or intrusions. However, in some cases the effective closure of several social trails can improve habitat integrity, and offset the impacts of a single, well-sited trail.

Cultural Resources

The unique topography and rock formations found on the UCCS campus attracted early inhabitants of the region, seeking sheltered terrain and views of the surrounding landscape to facilitate hunting. Prehistoic use of the region has been documented, and several Native American tribes were known to occupy or pass through the area. On campus, wind and water erosion (as well as infrastructure development) has revealed many prehistoric and historic artifacts. Over 17 cultural sites have been identified and are monitored on the campus, including a large site (to the north of Alpine Village) that is a teaching lab for the Anthropology Department. The Heller Center is also an important historic resource.

While these resources are important for scientific research, education, and interpretation, they are also vulnerable to degradation, vandalism, and theft. However, sites that are well known or are frequently visited by classes or student groups could benefit by clear and well-defined access trails to minimize the degradation of soils, vegetation, and cultural resources in the area. Trail development near known cultural resource sites should strike a balance between access, education, and resource protection. This balance needs to be determined on a case-by-case basis with a representative from the Anthropology Department.


Not suitable for Development
Cultural Resource Sites
N. Nevada Ave
Austin Bluffs Pkwy
1-acre


Pedestrian Spine
Pedestrian Path
Proposed Building Sites
Existing Buildings
5-minute walking radius
N. Nevada Ave
Austin Bluffs Pkwy
5-minute walking radius

Campus Development Context

The 2012 UCCS Campus Master Plan established a blueprint for the long-term development and integration of the campus. At full build-out, the master plan envisions several clusters of buildings and facilities, all connected by a continuous pedestrian spine running the length of the campus. Based on an analysis of natural resource conditions and long-term facility needs, the master plan defines areas that are suitable for development, and campus land that is intended to remain undisturbed as open space. Two key elements of the master plan are integral to this process:

- **Areas Suitable for Development –** The master plan defines areas that are *not* suitable for development based on topography, soils, slope, and natural resources. The remaining lands, therefore, are considered suitable for development and will likely be developed for campus purposes at some time. Open space, as defined in the Campus Master Plan, mostly correlates to the areas not suitable for development.

- **Pedestrian Spine -** The pedestrian spine is a wide, continuous concrete pathway that is the primary mode of circulation between the various campus areas. Portions of the spine currently exist, and it will be expanded over time to connect to new development clusters to the north and east. The pedestrian spine is an important part of campus circulation, complementing existing and future trail connections.

The campus master plan establishes the context for this trails micro-master plan, limiting the land that is available for the construction of new trails. While existing trails and interim trails in areas slated for development may be appropriate on a case-by-case basis, it is assumed that these areas will eventually be developed. Since adoption, implementation of the 2012 Master Plan recommendations has progressed steadily. The Recreational Trails Micro-Master Plan was developed within this dynamic campus atmosphere. Active participation of Facilities department representatives and ongoing coordination ensure this micro-master plan accommodates current and future campus expansion as well as protects the Heller Center as a unique resource and retreat.

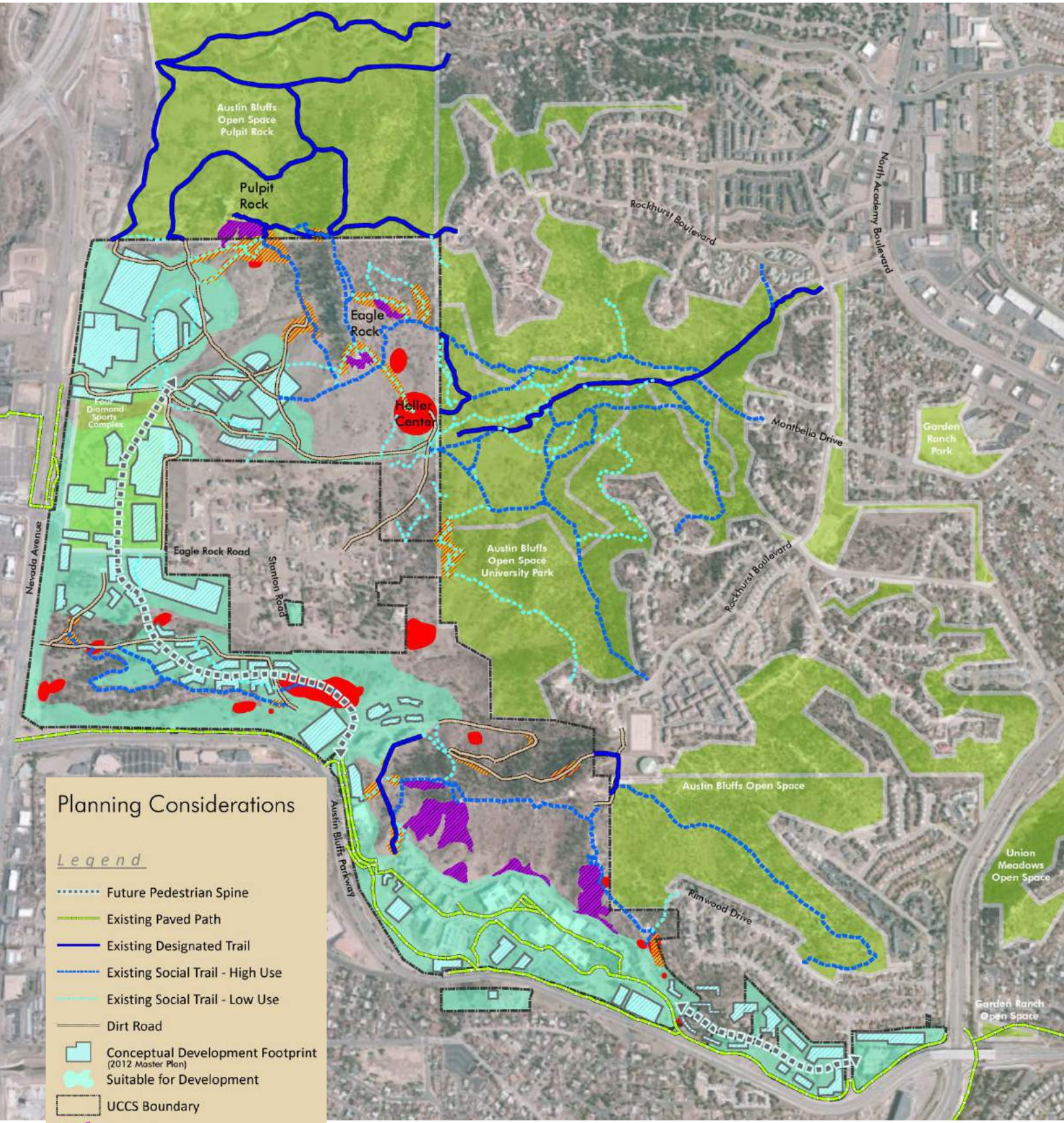
maps this page exerted for the 2012 Campus Master Plan

Existing Social Trails

For decades, students, community members, and neighbors have been accessing the undeveloped portions of the UCCS campus for the purposes of recreation, educational programs, or access to buildings and neighborhoods. These informal use patterns have resulted in an expansive network of social trails across the campus landscape. "Social trails" are defined as unplanned or undesignated trails that are developed as a result of consistent use patterns and are typically not constructed with any deliberate method or standard.

About 7.9 miles of social trails and dirt roads used as trails have been identified and mapped on the UCCS campus. These vary from well-defined and heavily used routes that resemble designated open space trails, to faint and elusive paths through wooded areas and vertical gullies up steep slopes. Over the years, student and faculty groups have worked to stabilize and improve some social trails to make them more desirable for users or less vulnerable to erosion. Some of the social trails on campus are in good condition due to appropriate placement or stabilization efforts – these trails may be integrated into the long term trails plan if they satisfy the desired connections and experiences. Most of the social trails are not suitable for long-term use and will be recommended for abandonment, closure, and restoration.

With the exception of the Sherpa Trail, which was constructed for student circulation, and access to the ROTC fitness equipment on top of the bluff, no trails have been planned, designated, or constructed on the UCCS campus. Therefore, all of the remaining trails are considered social trails. As part of the trails plan implementation, all social trails that are not integrated into the trais system should be closed, blocked, and restored or otherwise managed. The appropriate closure strategy depends on their level of development and accompanying resource problems. Although the appropriate closure strategy is noted in the trail matrices, the social trail conditions change over time, so evaluation at the time the closure will be necessary to ensure the appropriate closure strategy is implemented.


Austin Bluffs Open Space Pulpit Rock
Pulpit Rock
Rockhurst Boulevard
North Academy Boulevard
Eagle Rock
Heller Center
Diamond Sports Complex
Montbello Drive
Garden Ranch Park
Nevada Avenue
Eagle Rock Road
Stanton Road
Austin Bluffs Open Space University Park
Rockhurst Boulevard
Austin Bluffs Open Space
Austin Bluffs Parkway
Union Meadows Open Space
Rimwood Drive
Garden Ranch Open Space
Planning Considerations
Legend
Future Pedestrian Spine
Existing Paved Path
Existing Designated Trail
Existing Social Trail - High Use
Existing Social Trail - Low Use
Dirt Road
Conceptual Development Footprint (2012 Master Plan)
Suitable for Development
UCCS Boundary
Erosion Hazard
Problem Area for Trails
Cultural Site
Note: This map shows existing trails and conditions.

Planning Considerations

Recognizing the nature and context of natural resources on the UCCS campus, the following principles and guidelines were integrated into the planning process and should be considered during plan implementation.

- **Campus Development Context** – Develop desirable connections to serve the current campus development and pedestrian spine. As future development occurs, construction of designated trails will deter social trail routes occurring and further degrading the campus resources.
- **Current Routes and Social trails** – Recognize desirable connections defined by current social trails. Close and manage social trails that are not integrated into this trails plan, and implement new trails in a manner that reduces the creation of new social trails.
- **Soil erosion** – Locate, design, and construct any new trails in a manner that minimizes the risk of soil instability and erosion. *Erosion Hazard* areas are indicated on the map. soil erosion combined with steep slopes is also a characteristic in *Problem Area for Trails*.
- **Vegetation** – Minimize new trails and impacts to native prairie and other areas with high-quality native vegetation; where trail development does occur, monitor and manage for noxious weeds along the trail corridor. Sensitive or denuded vegetation is a characteristic in *Problem Area for Trails*.
- **Wildlife Habitat** – Minimize new trails within riparian habitat or through undisturbed habitat patches; improve these habitats by closing social trails and design any new trails carefully to minimize intrusions.
- **Cultural Resources** – Avoid trail development within known cultural resource sites, while integrating opportunities to use trail connections to manage access to select sites for research, education, or interpretive opportunities.

Recreational Trails System Plan

Introduction

The proposed UCCS trail system is both a recreational amenity and an alternative route for getting around campus. The system expands upon the current endemic routes, social trails which indicate routes frequently travelled by users, while augmenting, repairing and rerouting these routes to provide key connections and protect the campus' cultural and natural resources. The UCCS Recreational Trails Micro-Master Plan envisions a campus that offers students, faculty, staff and community members the opportunity to experience this unique and beautiful place through a variety of multi-use trails. Trails throughout the campus have been planned to accommodate a wide range of abilities and interests and to offer a variety of experiences that will make multiple excursions worthwhile. The plan also allows for compatible uses in appropriate locations. Some of these that are identified on the plan include trailheads, transitions, trailside gathering areas, interpretive modalities and themed trail routes.

Trail System

The UCCS non-motorized multi-use trail system is designed to accommodate conditions identified during the community involvement and the natural systems assessment (discussed in *Existing Conditions and Site Assessment)*. The consideration of trail system alternatives is also grounded in the *Values* and *Goals* developed during the Campus Community Involvement early in the planning process; they are discussed in detail within the *Summary of the Planning Process.*

VALUES

"The University of Colorado's guiding principles state that they seek to "be conscientious stewards of the university's human, physical, financial, information and natural resources." (Regent Policy...) While the UCCS 2020 Strategic Plan sets a vision for a period of significant growth, it places a high value on growing sustainably. "Dynamic responsible growth," defined as "financially responsible, academically sound and environmentally sustainable," is a stated value of excellence. Moreover, one of the 12 stated goals for 2020 is to "provide inspired sustainability leadership and education and direct the responsible, informed application of social, environmental and economic sustainability measure in all university activities."- Excerpt from 2012 Campus Master Plan, Sustainability Commitments page 91

A. The Campus' valuable natural and cultural resources are critical to successfully developing UCCS for future generations.

B. Outdoor recreation and individual wellness are core commitments for the campus community.

C. Trails are a crucial part of the campus' heritage, transportation network and commitment to sustainability.

D. Social trails degrade the natural capital of the campus.

Themes considered when evaluating the trail system alternatives included:

- Balance a wide range of trail user abilities and recreational interests. Visitor recreation activities vary by individuals' physical capabilities and the intensity of the activity. They range from walkers seeking solitude, to families biking together, to competition-level trail runners, and to expert mountain bikers;
- Provide a variety of trail experiences;
- Preserve and protect the natural qualities and cultural resources of the land;
- Integrate interpretive opportunities;
- Facilitate access to the larger regional trail system and recreational opportunities; and
- Retain access for natural resource management.

In general, the system preserves the natural qualities of the land, while providing varied access through a network of non-motorized trails. With this in mind, the following four themes emerged to organize a trail system that serves the various desires of the users while upholding the University's resource protection goals.

Connectivity

The UCCS recreational trail system will include a series of looped trails linking desired destinations on campus to surrounding public open spaces. The backbone of the trail system will be the extension of the Sherpa Trail from East Campus to the underpass at North Nevada Avenue. The system will include about 11.6 miles of varied-challenge-level trails, consisting of both existing and new trail segments.

Multi-Use Trails

The intent is for the campus trail system to remain open to all legitimate user groups. The concept of multi-use trails is strongly supported by the UCCS community. Horses will not be permitted on any campus trails. The appropriateness of a particular trail for a particular use (hiking, cycling, running) is dependent on each individual's skill and experience level. Because of this, actively encouraging or discouraging particular uses on individual trails is not recommended. All trails will be rated by difficulty in a classification system similar to that used for skiing and discussed later in this section.

Resource Protection

Protecting and sustaining the campus' natural and cultural resources is strongly supported by the UCCS community. The site evaluation identified cultural resources, sensitive habitat areas, and erosion hazard areas that are sensitive to disturbance or require consideration when disturbed. The trail system does not disturb these resources except when no alternative trail connection exists. Sustainable trail design and construction, as recommended herein, mitigates erosion, sedimentation and aims to eliminate social trail cutting, and plant community and habitat degradation.

Sustainable Trails

Trail sustainability includes consideration and attention to protection of the natural and cultural resources, trail safety, trail design, construction cost, structural integrity and maintenance. Compliance with and proper execution of consistent design and construction standards that reduce entrenching, braiding, erosion, and sediment loading, will best ensure durable, safe, sustainable trails. This is the recommended approach for the UCCS trail system.

Less often considered components of trail sustainability are fiscal, knowledge and manpower resources. The UCCS trail system is specifically funded as part of the 2012 Recreation Center Expansion Fee Referendum. The RTAC, charged with providing guidance and recommendations to the Recreation Center management and campus leadership by evaluating priorities and allocating resources, will require ongoing training to build knowledge and stay up-to-date in areas of campus development, student wellness, recreation, finances, partnership opportunities, contracting, and technical trail considerations. Administrative needs were addressed by the addition of the Trails and Outdoor Coordinator position in 2013. However, it will take considerable focus, training and resources to organize, train and equip volunteer manpower/ student-power to fully participate in the trail system implementation.

Integration with the UCCS Experience

UCCS has long recognized the value of its unique natural landscape. As stated previously, the 2012 Campus Master Plan's Goals - *Preserve a Sense of Place* and *Develop the Campus in a Responsible & Sustainable Way* - establish natural resource preservation and integration with the campus experience as key components to guide development. Both the Master and Strategic Plans identify *education enhanced by wellness through recreation* as a key component of the UCCS campus experience. The trail system is key to the UCCS student experience, a unique asset for student recruitment, and a means for physically engaging students, faculty and staff with the campus' stunning natural landscape resource while contributing to their health and wellness.

Discussions during the planning process explored specific ideas to integrate the students', faculties', and staff's UCCS experience with the trail system. They reflect how campus trails are currently used and will influence the way they are integrated with campus life in the future. The ideas are discussed below.

Trail-Accessed Recreation Opportunities

Along with traditional trail uses (hiking, cycling, running), potentially compatible recreation opportunities were identified during the RTAC campus and community dialog. The RTAC advises the Recreation Center Director, who serves as the committee's chairperson. The Director in turn works with campus leadership to determine approval and resources for the opportunities listed below:

- Fitness Course
  - Students utilize current exercise course and would like removal/maintenance/replacement and more outdoor calisthenics opportunities.
  - Multiple locations to consider include Rec Center, Stanton Road/utility access road, north campus Health Sciences area, east housing, track/stadium/field house.
- Stair Circuit
  - The east side of the Rec Center offers a unique opportunity to incorporate a stair circuit to encourage intensive outdoor exercise. Topography and space allow two staircases to create a loop with the Sherpa Trail and a new trail paralleling the back of the Rec Center.
  - Concentrated fitness equipment incorporated with the stair circuit can be located on the plateau directly behind the Rec Center.
  - Trail access is from the north end of the Rec Center at the Student Outdoor Leadership Expeditions (S.O.L.E.) office.
- Cross-Country Training/Racing Course
  - The cross-country team meets are currently held in Monument Valley Park which provides stable weather-resilient trail surface, parking, restrooms, and electricity, while not being too hilly.
  - The cross-country team currently runs some practices on campus roads and trails. Training trails requirements are 2-3'wide trails with consistent surface.
  - The team optimally desires a 2-Kilometer loop approximately 8' wide that would be used for practice and competitions with parking, restrooms, electricity, weather resilient surface and regular surface.
  - A possible course route could include a loop with trails W1, Austin Bluffs (public) B1, G1, and connecting with the existing double track until the stadium and arena are constructed.
  - If possible, the team desires a trail surrounding the proposed Stadium to provide a looped warm-up trail near a future competitive running team tent set up area in an adjacent to the stadium.
- Geo-caching: Consider opportunities to provide geo-caching without associated resource damage. Consider a campus policy that may include dismantling unauthorized geo-caching sites with off-trail access.

- Challenging Technical Mountain bike Opportunities
  - Students are interested in both natural and manmade technically challenging on-trail features. Desired components include fun jumplines, dirt jumps, slope style, dual slalom, and downhill courses. These are desired to incorporate a range of difficulty from beginner to pro, easy gentle sloped return routes and the possibility of shuttle service from the lowest point to the highest. Because of the speed required to execute, the size of on-trail jumps will be limited.
  - Where trail challenges are extreme and prolonged, the section should be delineated by a fence portal with signage warning "entering expert ride area." Incorporating signage and fencing similar to the City of Colorado Springs' approach at the Mountain Bike Free Ride Area in Red Rock Canyon Open Space should be considered. Campus Risk Management agreed this was adequate to protect students and other trail users.
  - In addition to on-trail features, students desire a bike park (similar to Valmont in Boulder, CO) on campus or a City facility accessible (within 5 miles of campus) to students. At this time funding and infrastructure is not available on campus, for a region-wide facility so the campus leadership may consider collaborating with the City to pursue a public bike park in close proximity to the campus.
- Conference Services will coordinate events that involve taking facilities offline for student access.
- Several recreation ideas were determined incompatible or destructive to the natural systems; they are recorded in the *Issues and Ideas List* found in Appendix D.

Trailside Gathering Areas

Along the trail corridors, trailside gathering areas are identified to allow opportunities for concentrated group use. The gathering areas are located to provide a variety of outdoor experiences (shaded, exposed, secluded, dramatic views), to provide accessibility from many areas of campus, to optimize safety for 'gathered' and trail users, to, when appropriate, occupy previously utilized areas, and to minimize resource damage. Some gathering areas can accommodate several uses, while others may incorporate use-specific facilities. A limited number of potential Trailside Gathering Area locations are indicated on the Trail System Plan. The Recreation Center Director, after consultation with the RTAC, will confer with senior leadership regarding the approval and allocation of resources. Gathering area activities discussed during this Micro-Master Plan include:

- Areas for resting and contemplation-bench or rock outcrops
- Area for a labyrinth
- Areas for small group socializing- circled benches
- Area for water refill, bike repair (currently designed into the SOLE area of the Recreation Center Expansion)
- Area for recreation classes such as yoga, Tai Chi
- Area for small seminar seating

Interpretative and Educational Opportunities

The UCCS campus contains unique natural and cultural resources. These are opportunities for interpretation, educational programs and research. During the planning process, attention often turned towards interpretative and educational opportunities to engage and inform the campus community. Below are the ideas and concepts discussed. Signage system design recommendations are in the *Design Guidelines*.

Wayfinding, Trail Etiquette and Safety Suggestions

- Provide wayfinding signs including trail maps, trail length, distance to key destinations and difficulty level.
- Provide information on ADA access.
- Provide information on possible wildlife encounters.
- Provide educational signage addressing trail etiquette including:
  - Leave No Trace Outdoor Ethic
  - Trail etiquette and yielding right-of-way for passage
  - Dog etiquette including on-leash and "doggie doo" cleanup including dog doo bags dispensers
- Consider outreach pertaining to trail opportunities, trail etiquette and trail safety. This could be via RTAC hosted seminars, creating web-based information, printed material and information distributed to incoming students (similar to walking alone at night). Also, explore outreach in partnership with Campus Risk Management.

Interpretive and Educational Suggestions

- Consider new and emerging technologies for interactively communicating interpretive and educational information. The advantages of new technologies must be weighed against the reality that total reliance on QR codes and smart phone technology excludes some trail users thus making printed informational signs necessary.
- Provide access, interpretive signage and, where appropriate, protection of interpretive sites and subjects including:
  - Views
  - Geology and Soils
  - Archeology
  - Wildlife and wildlife habitat
  - Sensitive natural areas and ongoing natural resource restoration
  - Campus Historic Context (pre-development, Native American, sanatorium, current campus initiatives, and significant cultural, paleontological and archeological sites)
  - Plant communities and historic uses of plants (edible, wildlife uses, textile dye, introduced or native)
  - Interpretive trail for the sight impaired originating at the Lane Center on parts of trails G4-G6
- Educate visitors about non-system social trail closures. Content may include graphic illustrations, resource values, resource damage caused by a footfall, and direction to, and advantages of, the designated route .
- Consider guided trail to top of bluff as part of prospective student/student recruitment tour (historic foundations, old water works, and views) or a community outreach/engagement tour.
- Consider a permanent or intermittent interpretive center that exhibits artifacts relevant to the campus.
- The Recreation Center Director has the decision-making authority to determine routes, appropriateness and/or provide limited resources for the curriculum specific trail routes.
- There is overlap between the interpretive/ educational and curriculum suggestions below.

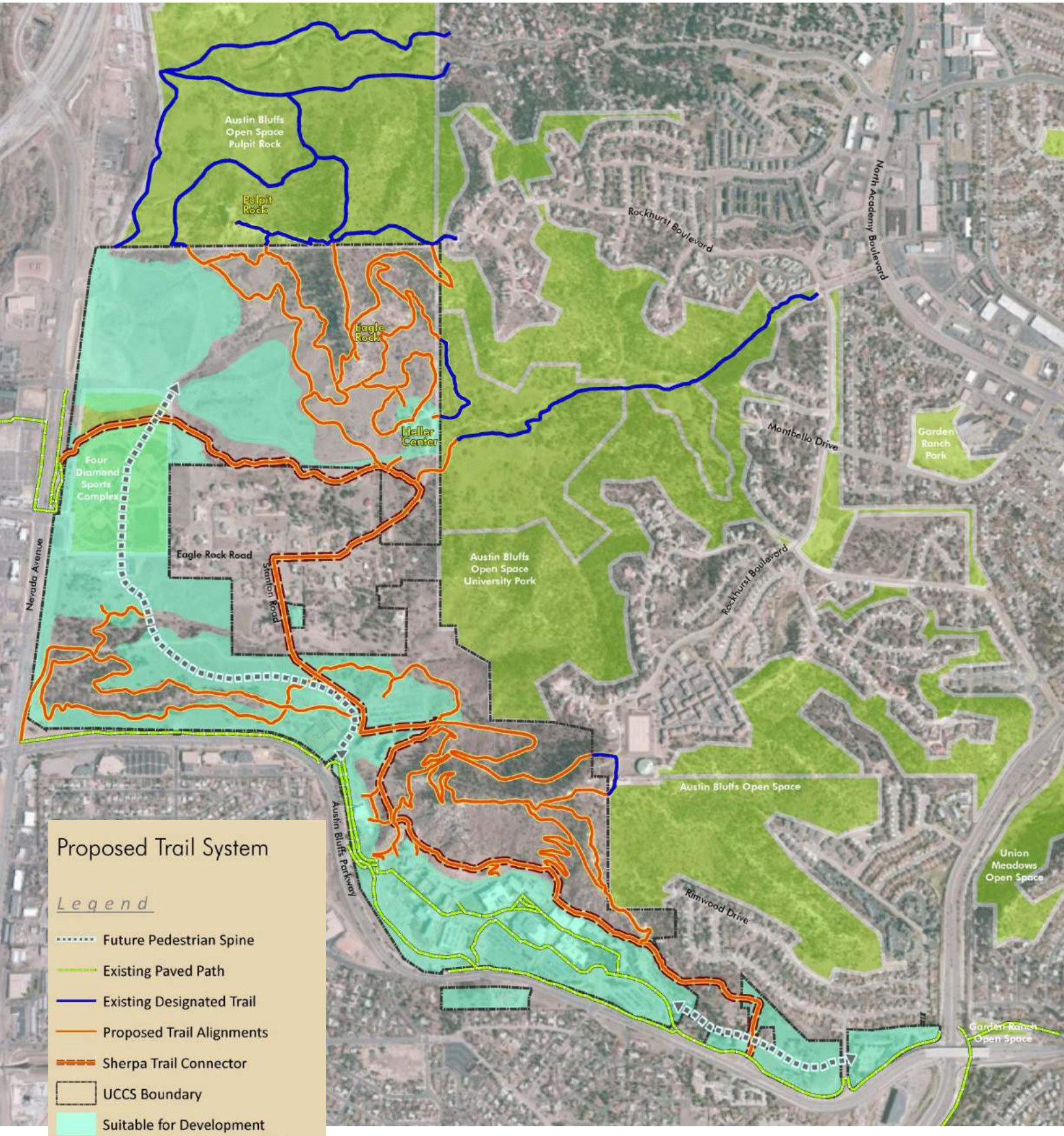
Curriculum-based Suggestions

- Apply new and emerging technologies for interactively communicating curriculum-based information with students. Technologies discussed included "push/pull" smart phone technology and QR codes that allow flexibility to relay class related information to specific students.
- Integrate class specific or themed trails within designated trail system. Designated loop trails allow students or visitors to take a journey to explore the theme, complete the loop and return to the starting point. Interpretive signs, map guides, direct observation, and other techniques will be used to convey information. Thematic trails that represent and could be sponsored by various university departments include:
  - Geology, soils and minerals
  - Archeology
  - Biology
  - Botany, plant identification and/or arboretum
  - Health Sciences
  - Team building
- Encourage curriculum based trail-related monitoring. Opportunities discussed included trail durability and the effects of aspect, moisture, soils, grade, cross slope, experimental construction techniques, and use, sustainability, natural resource impacts and wellness/nutrition/exercise science topics.
- Provide a specific trail loop and wayfinding signage for Heller Center users.
- Consider fencing to delineate Heller Center retreat area.
- The Recreation Center Director has the decision-making authority to determine routes, appropriateness and/or provide limited resources for specific faculty requests.
- There is considerable overlap between the interpretive/educational and curriculum suggestions. Please refer to suggestions above.

Trail System Plan

The UCCS Recreational Trail System is both a recreation amenity and an alternative route for getting around campus. The system expands upon the current endemic routes, while augmenting, repairing and rerouting trails to provide key connections and protecting the campus' cultural and natural resources. The trail system includes a series of looped trails linking desired destinations on campus to surrounding public open spaces. The loops cross and interlock so that many different combinations are possible allowing users to link varied routes for interest over multiple visits. The backbone of the trail system is the extension of the Sherpa Trail from East Campus to the underpass at North Nevada Avenue. The system will include about 13.8 miles of varied challenge-level trails, consisting of both existing and new trail segments. Trail features indicated on the Recreational Trails Micro-Master Plan map include:

UCCS Campus Trail System Plan



Trails

The trail system addresses all the conditions identified during the site assessment and public process. To accommodate the variety of experiences, the trail design offers a range of trail difficulty levels interconnected into a series of loops wherever possible. The Sherpa Trail extends through Eagle Rock neighborhood to the Heller Center on the roadways and current easements. Continued dialog with individual landowners may open the opportunity for the optimal Sherpa Trail alignment contouring east from The Village at Alpine Valley, through the Austin Bluffs Open Space and connecting to the Heller Center.

The overall trail organization is *by degree of difficulty* and utilizes a system similar to that used for skiing. Coloradoans are familiar with this system and understand it intuitively. The specific criteria for each type of trail are detailed in *Design Guidelines.*

Trailheads and Access

While students, faculty and staff primarily access the trails from internal campus locations, the community access is from trailheads with parking or connections to the regional trail system. Connections to the regional Austin Bluffs, University Park and Monument Creek trails as well as several trails within Austin Bluffs Open Space are included in the plan. The on-campus trailhead is centrally located near the north end of the Recreation Center with parking in the nearby parking garage. Nearby public trailheads are north of Pulpit Rock, on the west edge of the University Village retail area parking lot, and along the north edge of Palmer Park. Trailheads, indicated on the detailed area plans that follow, include community access points and selected campus access points and may provide signage, kiosks and pet waste bag dispensers.

Trailside Gathering Areas

Trailside gathering areas allow opportunities for concentrated group use. Gathering areas are defined and shown on the map; they are described earlier in *Trailside Gathering Areas*. Design information can be found in the *Design Guidelines*.

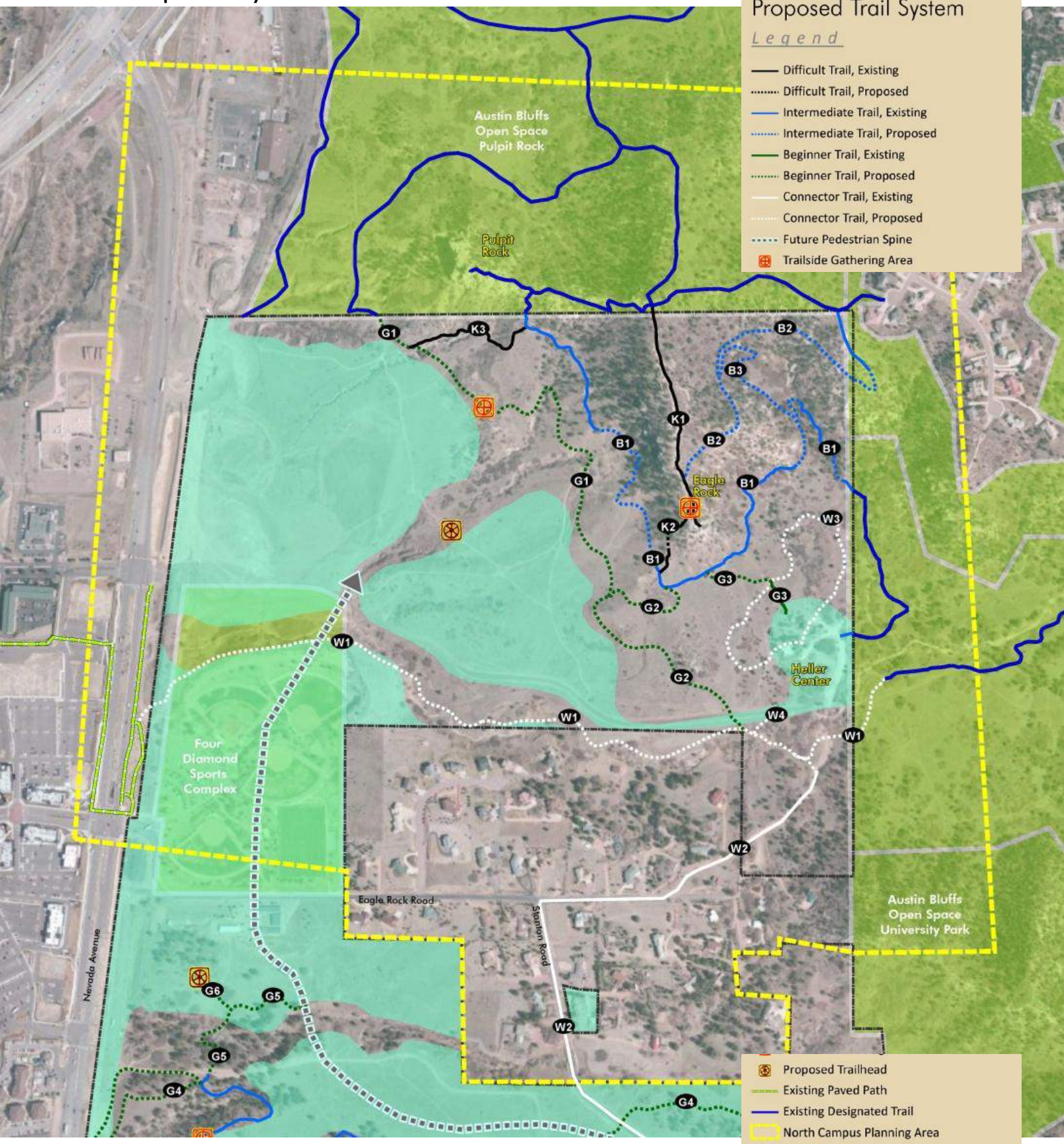
Transitions and Key Trail Intersections

Key trail intersections and transition zones are the segments along the trail that provide physical and visual clues for users to slow down when approaching roadways, trail intersections, and gathering areas. Examples for design of visual and physical clues can be found in the *Design Guidelines*.

Future Connections in Development Zones

The trail system is a recreational amenity that provides connectivity to key campus destinations. To achieve connectivity, the Plan suggests key connections through development zones defined in the 2012 Campus Master Plan. Although not intended as defined routes, these connection corridors provide guidance for future campus planning and design efforts to ensure the recreational trail system's continuity, accessibility and connectivity. The future connections in development zones will most likely be sidewalks that are part of the building infrastructure.

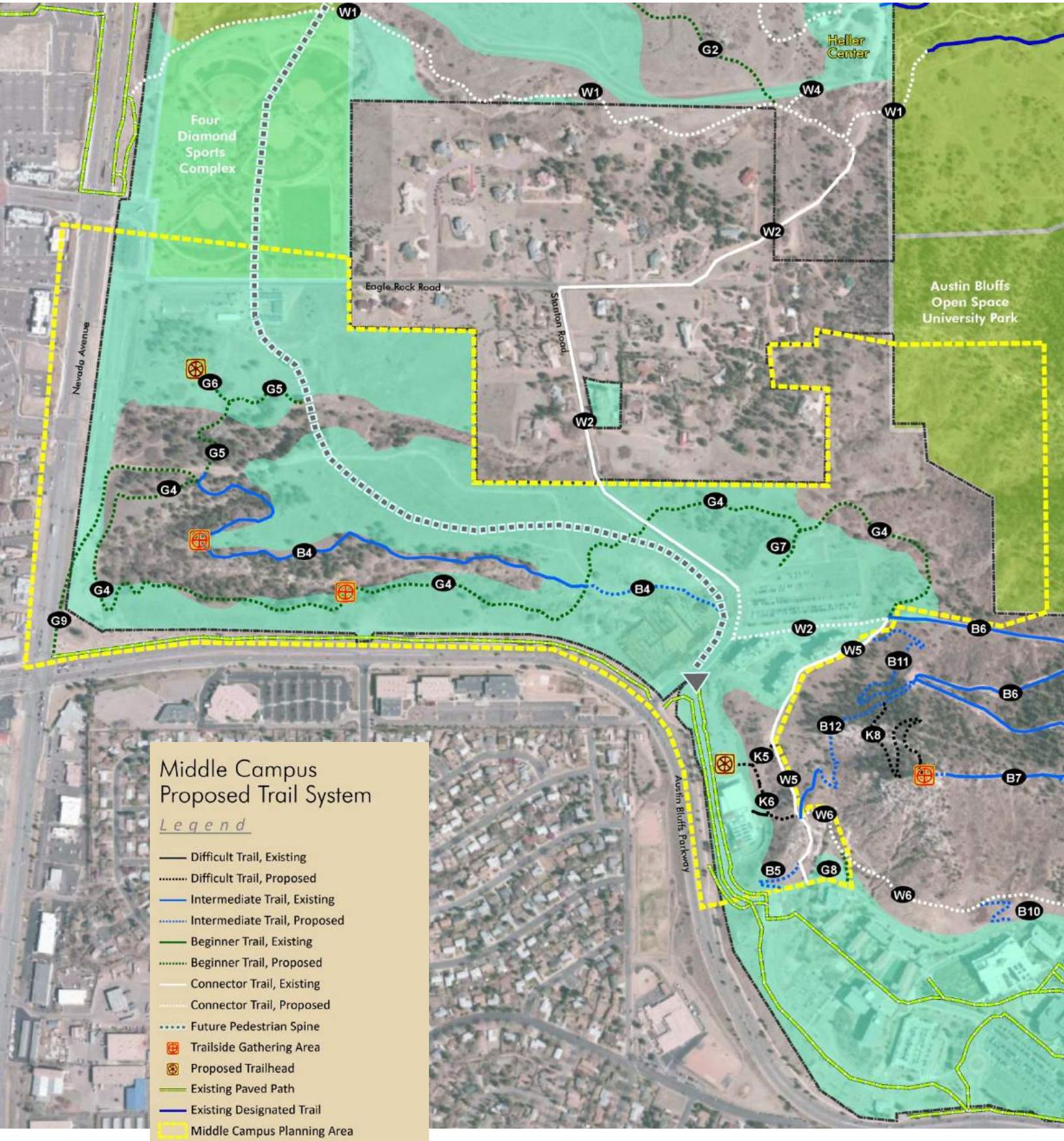
North Campus Trail System Plan - detail



North Campus Trail System Matrix

trail code	area of campus	difficulty category	length in miles	length of new trail construction in miles	estimated length of social trail closure in miles	description	trail structures
W1	N	white	0.9	0.9	0.25	City of Colorado Springs tier two trail connecting University Trail east of the Heller Center to the underpass at North Nevada; two bridges crossing arroyo; associated social trail closure; trail alignment located in legal easement	2 bridges; signage
W2	N +M	white	0.87	0.02	0.15	On-street route connecting University Trail near the Heller Center to the Village at Alpine Valley; short section of new trail at Heller Center connection	signage, street striping
W3	N	white	0.45	0.45	0	Contour loop trail for Heller guest use only; trailside gathering area with interpretation and individual benches; narrow 3 foot trail width; consider alternative routes, outside of pristine area that may integrate with planned sculpture garden and be consistent with Heller program goals at time of construction	Heller specific signage
W4	N	white	0.1	0.1	0	Trail connecting University Trail to the Heller Center Driveway	Heller specific signage and entry monument
G1	N	green	0.48	0.48	0.75	Contour trail connecting public trail at base of Pulpit Rock to G2; associated social trail closure	1 bridge; closure; fencing; signage
G2	N	green	0.33	0.33	0.15	Contour trail connecting G1 and B1 to the driveway west of the Heller Center;; associated active and passive social trail closure	closure
G3	N	green	0.11	0.11	0.15	Contour trail connecting the Heller Center to B1; provides trail connection to Heller gravesite on existing fallline trail; stabilize fallline section to blue standards; associated social trail closure	on existing trail, rock reinforcement & erosion mitigation, Heller specific signage & entry monument, closure
B1	N	blue	0.8	0.37	0.5	Contour trail connecting public trail near top of Pulpit Rock to east- most property line north west of the Heller Center; three major reroutes; short section of green difficulty rating; associated social trail closure	3 major reroutes. closure, rock drainage crossings, dips, sections of rock reinforcement
B2	N	blue	0.44	0.44	0.25	Contour trail connecting Eagle Rock geologic formation to public trail at northeast property corner	mono wall, rock transition structures (on public trail)
B3	N	blue	0.2	0.2	0.5	Ascending trail consolidating numerous social routes, connecting B1 and B2; associated social trail closure	rock reinforced climbing turns, 1 switchback, closure
K1	N	black	0.23	0	0.25	Ridge top trail extending from public trail to Eagle Rock geologic formation; associated social trail closure	rock stairs, rock erosion mitigation, fencing
K2	N	black	0.15	0.15	0.15	Steeply ascending trail connecting B1 to K1 and Eagle Rock geologic formation; nearly half will be rock reinforced structures, steps or switchbacks; steep erosive soils; associated social trail closure	rock stairs, rock erosion mitigation, 3 switchbacks, fencing
K3	N	black	0.15	0.05	0.15	Steeply ascending trail connecting G1 to B1 beneath Pulpit Rock on mostly existing trail; nearly half will be rock reinforced structures, steps or reinforced tread; associated social trail closure	rock stairs, rock erosion mitigation, reinforced tread

Middle Campus Trail System Plan - detail



Middle Campus Trail System Matrix

trail code	area of campus	difficulty category	length in miles	length of new trail construction in miles	estimated length of social trail closure in miles	description	trail structures
W5	M	white	0.36	0.1	0.15	Contour trail connecting Village at Alpine Valley to Summit Village with reroute; associated trail closure	Lighting call boxes, signage, closure
G4	M	green	1.14	1.14	0.35	Contour and ascending trail looping with B4, crossing the pedestrian spine, and connecting to the Sherpa Trail at the east edge of the Village at Alpine Valley; associated social trail closure	1 bridge, closure
G5	M	green	0.21	0.21	0.2	Contour trail connecting B4 and G4 to the pedestrian spine	closure
G6	M	green	0.02	0.02	0	Contour trail connecting G5 to the center of the Health Campus	
G7	M	green	0.02	0.02	0	Contour trail connecting Alpine Valley to G4	
G8	M	green	0.02	0.02	0	Contour trail connecting Sherpa Trail to Summit Village around parking and sediment structures	Lighting call boxes, signage, closure
G9	M	green	0.28	0.18	0.1	Contour trail connecting G4, G5 and B4 to the City-wide system Austin Bluffs Trail at the intersection of North Nevada Avenue and Austin Bluffs Parkway	Reduce trail width along existing utility road section
B4	M	blue	0.57	0	0.25	Contour trail paralleling southernmost arroyo along existing trail; associated social trail closure	routine trail maintenance
B5	M	blue	0.11	0.61	0.05	Contour trail with rock structures and switchbacks connecting Sherpa Trail to the Pedestrian Spine; intensive closure effort on abandoned stairs	switchbacks, 6-8 single rock steps, intensive closure
K4						Trail key not designated	
K5	M	black	0.13	0.13	0.15	Ascending trail and structural staircase connecting the Rec Center to the Sherpa Trail; associated social trail closure	concrete staircase, basic trail, closure
K6	M	black	0.13	0.13	0	Ascending and contour trail looping Sherpa Trail to create stair circuit	concrete staircase, basic trail

South Campus Trail System Plan - detail

South Campus Trail System Matrix

trail code	area of campus	difficulty category	length in miles	length of new trail construction in miles	estimated length of social trail closure in miles	description	trail structures
W6	S	white	0.41	0.41	0	Knowledgeable trail design to address soils and drainage structures for contour trail paralleling the Pedestrian Spine, located near the base of the bluff, and connecting Summit Village and University Hall, possible soil hardening agents in erosive soil areas, rock reinforced trail segments	knowledgeable trail design to address soils and drainage structures, rock reinforced trail segments, possible mono walls, possible soil hardening agent ; lighting call boxes, signage, closure
W7	S	white	0.47	0.47	0.25	Contour trail paralleling the Pedestrian Spine, located adjacent to the service road transitioning to top of the bluff, and connecting University Hall to East Campus	Lighting call boxes, signage, closure
B6	S	blue	0.66	0	0.1	Utility access road connecting Alpine Valley to B8 and public trails on top of bluff	
B7	S	blue	0.36	0.24	0.1	Ridge top and contour trail extending east to west connecting K7, K8 and B6; one major reroute to ease grade transition towards campus; associated social trail closure	basic trail reroute; closure
B8	S	blue	0.13	0	0.2	Contour trail connecting public trails to K7	trail maintenance
B9	S	blue	0.4	0.4	0	Ascending trail connecting W6 to B7 and public trails to the north and east	rock reinforced switchbacks and climbing turns; basic trail
B10	S	blue	0.1	0.1	0	Ascending trail connecting W6 to campus near the Engineering breezeway	switchbacks or climbing turns
B11	S	blue	0.27	0.27	0.25	Ascending trail connecting W5 at Alpine Valley to B12 and B8; associated social trail closure	switchbacks; climbing turns; rock reinforced trail segments; fencing; closure
B12	S	blue	0.2	0.19	0.25	Ascending trail connecting W5 and K6 to B11 and K8; incorporating section of existing routes; associated social trail closure	switchbacks; climbing turns; rock reinforced trail segments; fencing; large erosion channel closure; closure
K7	S	black	0.5	0.2	0.3	Ascending and ridge top trail along existing route connecting W7 to B7 and B8; three reroutes; incorporate historic staircase on east end; associated social trail closure	switchbacks; rock stairs; rock grade transitions; rock erosion mitigation; closure
K8	S	black	0.35	0.35	0.35	Ascending trail connecting B11 and B12 to B7; incorporating some existing route; steep erosive soils, associated social trail closure	switchbacks; rock stairs; rock grade transitions; rock erosion mitigation; large erosion channel closure; closure

Design Guidelines

Introduction

"A truly successful University campus satisfies two distinct criteria -- it provides an effective FUNCTIONAL environment and a beautiful VISUAL environment."

exert from 2007Campus Design Guidelines page 0.5

The Design Guidelines assure a sense of visual beauty, harmony and functionality throughout the trail system and with the UCCS campus. These guidelines are intended as a supplement to the prevailing 2007 Campus Design Guidelines. They focus on creating sustainable trails and integrated trail improvements. All aspects aim to enhance the trail users' enjoyment of the natural environment, without undo interruption, while blending with this unique and beautiful place.

Trail Hierarchy Types

A system similar to that used for skiing has been adapted for trail classifications by degree of difficulty. Coloradoans are familiar with this system and understand it intuitively. Trails are classified as easy, intermediate, difficult or ADA accessible. A color designation for each class matches the system used for ski slopes: green for easy, blue for intermediate, and black for difficult. The color white is assigned for the ADA accessible trails. The specific criteria for each type of trail are on the following pages.

White - Connector Trails 3.36 miles

Connector trails provide wide-widths and smooth surfaces at relatively low degrees of slope and will strive to not contain steps or other obstacles.

Sustained slopes less than 5% and up to 8% with required landing/rest areas or as designated by the Architectural and Transportation Barriers Compliance Board's Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas, most recent report. When possible, the intent is to construct these trails in compliance with the more stringent standards of the Americans With Disabilities Act (ADA).

o Typical width from 4' to 8'
o Smooth surface without obstructions
o Small vehicle access along Sherpa Trail is desired for lighting and call box maintenance

Green - Beginner Trails 2.61 miles

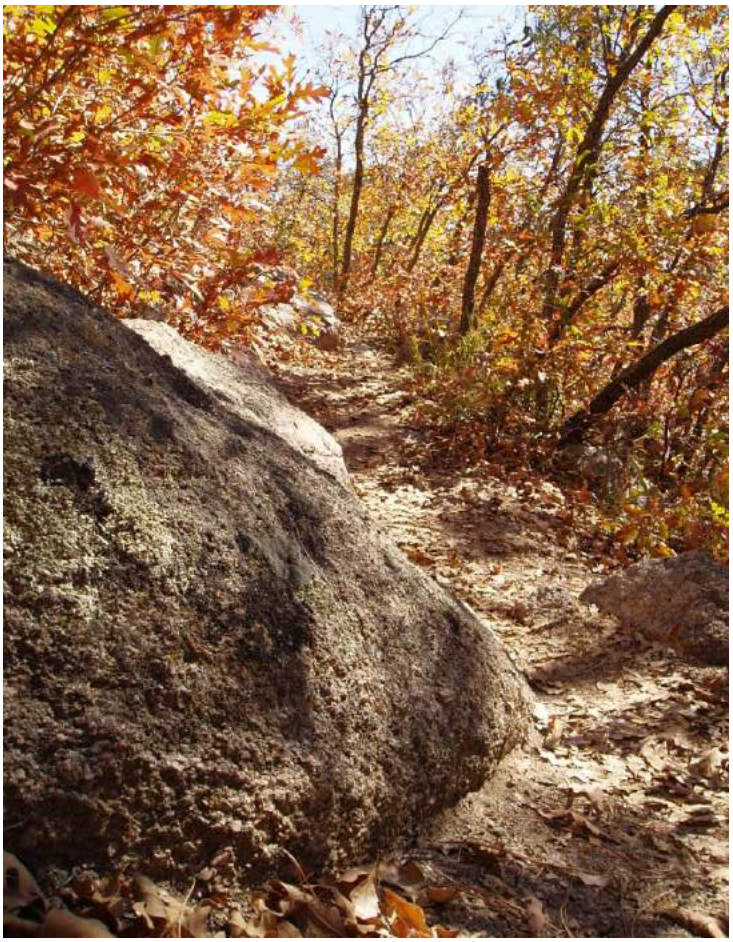
These are trails that offer narrow to wide widths and smooth surfaces at relatively low grades.

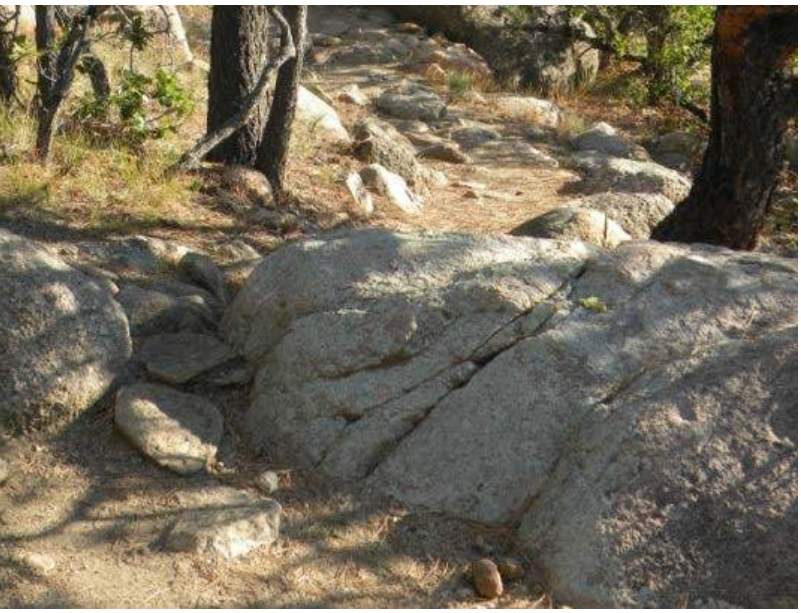
- Sustained slopes less than 5% with short sections up to 10%
- Typical width from 18" to 3'
- Smooth surface without obstructions

Blue - Intermediate Trails 4.24 miles

Intermediate trails may be narrower than the easy beginner trails and may have frequent challenges. Qualifiers, obstacles consistent with the blue-intermediate designation, should be designed into the trails at every connection with a Green-easy trail classification.

- Sustained slopes range from 0 – 10%. Sustained grades on intermediate trails should not exceed 10%, except for short distances up to 12%.
- Typical width from 18" to 2'
- Variable surface – Occasional obstacles including steps, water diversions, roots, rocks, etc.



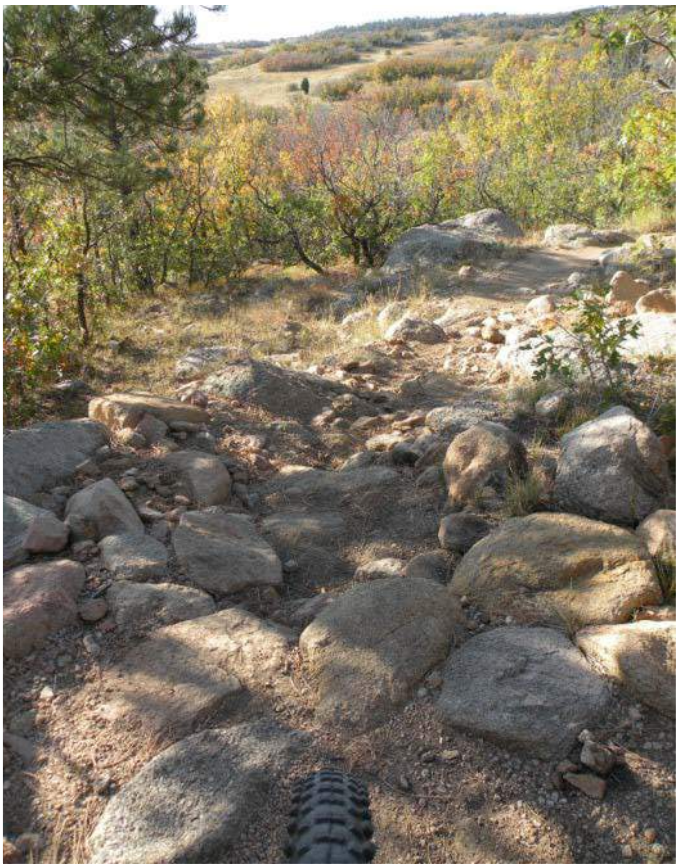


Black - Difficult Trails 1.66 miles

Difficult trails provide a more challenging experience, including steeper grades, rougher surfaces, more frequent challenges and narrow widths. Trails may contain frequent water diversions, steps, switchbacks, and roots or exposed rocks on their surface. Difficult/black trails may include recommended bike dismount sections and optional "chicken" lines.

Qualifiers, obstacles consistent with the difficult designation, should be designed into the trails at every connection with a green-easy or blue-intermediate trail classification.

- Sustained slopes range from 0-12% except for short distances up to 15%
- Typical width from 12"-2'
- Rough to variable surface – Frequent obstacles including steps, water diversions, roots, rocks, etc.



Standard Trail Construction

Trail Layout and Design

Trail design is both a technical and a creative process. A skilled trail designer will have a feel for the land and an eye for the corridors that can become high quality trail alignments. During the process of laying-out new trails, the following design elements should be integrated, balanced and optimized:

- **Placement -** Place trails on a contour along the side of hills; avoid steep fall-line locations and flat terrain.
- **Flow -** Design trails to have a subtle rhythm of twists, turns, ups and downs that is consistent with the landscape and terrain (often referred to as "trail flow").
- **Grade -** Maintain an average grade of no more than 6-8%, and not exceeding 12-15% for short distances.
- **Resource sensitivity** - Provide a connection to nature, while minimizing impacts to environmental resources.
- **Provide Views** - Route trails for interesting views and visual character along the trail corridor, with access to key view points along the route.
- **Trail Anchors** - Use vegetation, rocks, terrain, and other natural features to "anchor" the trail corridor, keep users on the trail, reduce bike speeds, and break the visual connection to existing or potential social trails to other routes.
- **Experience** - Provide the user with a continuous sense of variety, discovery, and forward progress; trails that are too circuitous or meandering will result in shortcutting and additional social trail development.
- **User Experiences** - Anticipate the motivations and desires of various trail users – destination hikers, cyclists, commuters, runners, students, etc. – and design trails accordingly to provide desired experiences and limit social trails and conflict.
- **Conflict Reduction** - Manage the speed of cyclists in areas likely to induce potential user conflicts by limiting excessive grades, providing clear sightlines around turns, using choke points (rocks and logs that narrow the trail) and designing trails that are *interesting* to the rider rather than *fast*.

High quality trails that are integrated into the landscape appear as though they were "discovered", rather than built. Likewise, if a desired trail connection or experience is not achieved, users will create their own connections through social trail development.

Resource Protection

The following general concepts about trail impacts can be drawn from scientific studies on the impacts of trails and recreation on wildlife (including Miller et al. 2001; Taylor and Knight 2003; Cassirer et al. 1992; Sisk 1989; Germaine et al. 2006, George and Crooks 2006):

- Trails and recreation sites have a "zone of influence" within which human disturbance may alter wildlife behavior. The effects vary by species and individual animal, and can range from no effect, interruption of activity, flight, to abandonment of nesting or foraging sites.
- The zone of influence can range from between 30 and 100 meters or more – it is generally greater in open terrain than in wooded areas.
- In urbanized or high-use areas, some animals may become habituated to predictable and recurrent use of trail corridors, reducing their sensitivity to human use.
- There is little difference in wildlife response between hikers and mountain bikers.

Recognizing the conflicting objectives of outdoor recreation and habitat conservation, many of the following guidelines can be useful in making real-world trail planning and management decisions.

- Provide reasonable and enjoyable trail experiences and connections in appropriate locations to minimize the proliferation of unplanned social trails.
- Use thoughtful and creative planning to minimize redundant and unnecessary trails.
- Avoid new fragmentation of large, undisturbed blocks of habitat.
- Retain a variety of undisturbed habitat types to provide a refuge for a variety of wildlife species.
- Maintain visual or physical barriers (e.g., thick vegetation, cactus or rock outcrops) between trail corridors and habitat areas.
- Not all areas have the same values or sensitivities. Understand the particular ecological dynamics and threats to sensitive species/habitats (e.g., human disturbance, erosion, noxious weeds).
- There are frequently trade-offs between competing habitat values (e.g., new habitat disturbances may be necessary to avoid more sensitive areas), or between habitat values and other management priorities (e.g., new disturbances to make existing trails more sustainable or functional). Each situation should be evaluated on a case-by-case basis.

These guidelines were integrated into this master planning process and the trail alignments recommended for implementation. However, it is still important to integrate resource sensitivity principles into the final design and construction process.

Trail Types and Details

Properly designed and constructed trails will provide an interesting and rewarding user experience while minimizing long-term maintenance requirements. New campus trails should be constructed with a rolling contoured design, with the following key components:

- Natural surface (dirt) tread
- Trail tread width of 12 to 36 inches
- Follow contours, and blend the trail into the natural topography
- Emphasize climbing turns over switchbacks
- Avoid excessively steep slopes and flat ground
- Install frequent grade reversals/dips
- Construct back slopes between a 1:1 and 2:1 ratio blending the top of the cut back slope with the existing terrain
- Construct out-slopes with a 3-5% slope to facilitate drainage
- Use design elements to control speeds and minimize user conflict

Trail Clearing

Natural woody vegetation (primarily brush and small trees on UCCS campus land) should be cleared from within 3-6 feet of the trail center line, depending on location. In level terrain, the corridor is cleared an equal distance on either side. On moderate to steep side slopes, it may be more useful to clear only the uphill side of the trail. This approach can help guide trail traffic from the lower edge of the trail tread, and can also help reduce visual impacts by obscuring the trail bench. Work with natural vegetation patterns to feather or meander the edges of the clearing work so it doesn't leave straight lines. Cut intruding brush back at the base of the plant rather than in midair at the clearing limit boundary. Cut all plant stems close to the ground. Scatter the resulting debris as far as practical. Toss stems and branches so the cut ends lie away from the trail.

Tread Width

The recommended tread width may vary between 12 and 36 inches depending on location and anticipated traffic. Wider trail tread is more suitable for areas where higher levels of use are anticipated, or areas that are constructed with mechanized equipment. ADA accessible trail width may vary between 4 and 6 feet.

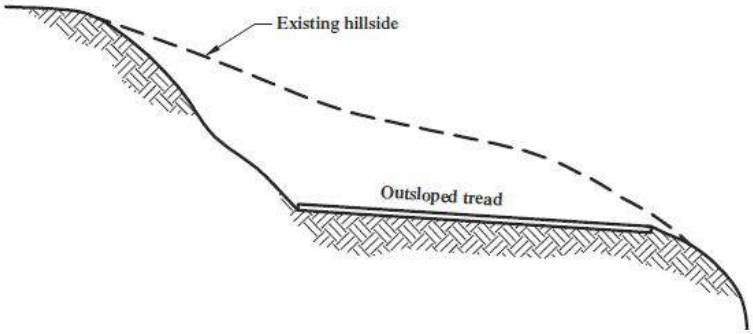
Trail Grades

Trail grades should not exceed an overall average grade of 8%. Steeper grades are permissible for short distances (only in more stable soils or rock expressions). This is important for managing drainage and erosion, as well as reducing speeds and user conflict. Trail grades can exceed this when entering and exiting grade reversals or switchbacks.

The One Third Rule: Trail grades should never exceed one-third of the measured side slope grade. If this occurs, water traveling down the hillside from above will intercept the trail and travel down the trail tread instead of draining off of the trail. For example, if the side slope of a hillside measures 20%, do not design the trail with a maximum trail grade exceeding 7%.

Bench Construction

Trails should be constructed with a full bench (with the trail tread cut entirely into the hillside). Back slopes should be constructed with between a 1:1 and 2:1 ratio, and trail tread out-slopes should be 3-5% to facilitate drainage.

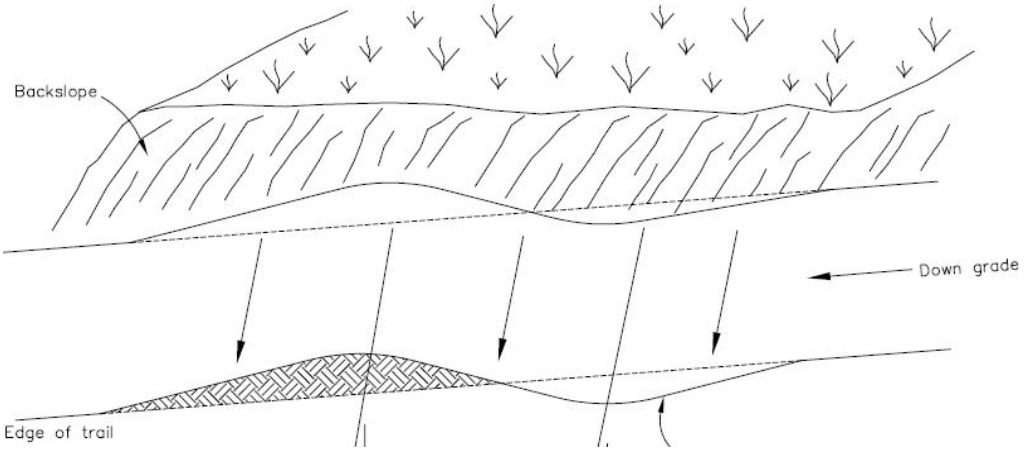


Full Bench Construction

Grade Reversal

Grade Reversals and Armored Grade Reversals

A grade reversal is a dip in the trail that collects a flow of water and diverts it off of the trail tread. Without grade reversals, water travels down the trail tread creating erosion channels and destroying sections of the trail tread. Grade reversals are essential to trail sustainability and give the trail a rolling effect. Whenever possible, grade dips are preferable to armored grade reversals (sometimes referred to as water bars) where rock is installed at the peak of the downhill raised mound, as they are more effective, easier to maintain, and provide a more enjoyable and natural feeling trail experience.



Tread Armoring

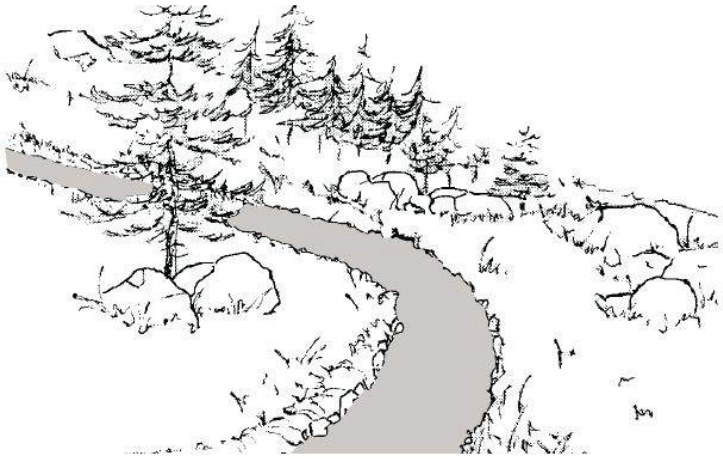
Reinforcing or "armoring" the trail tread with rock or wood is a useful solution for trails in the following situations:

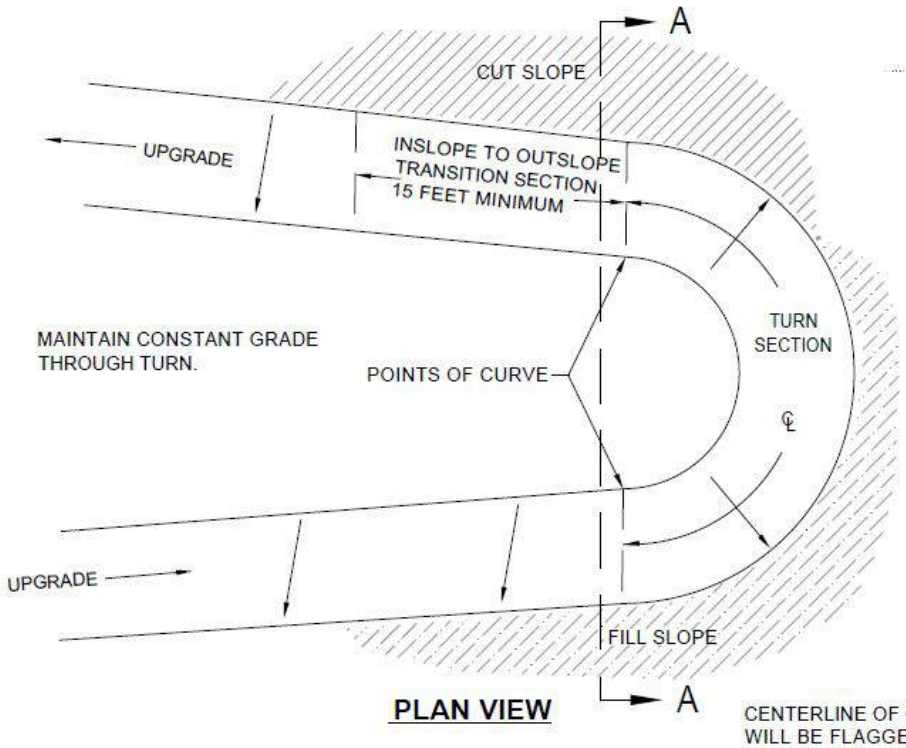
- Traversing a short pitch that is too steep for standard trail construction
- Crossing low-lying wet areas or ephemeral drainages
- Crossing short sections with sandy, highly-erosive, or otherwise unstable soils

Besides providing a solution to localized trail alignment challenges, trail armoring can also provide a unique visual feature or technical challenge for trail users. However, armored tread can be difficult and expensive to install properly, so it should be used sparingly and strategically as a construction technique.

Climbing Turn

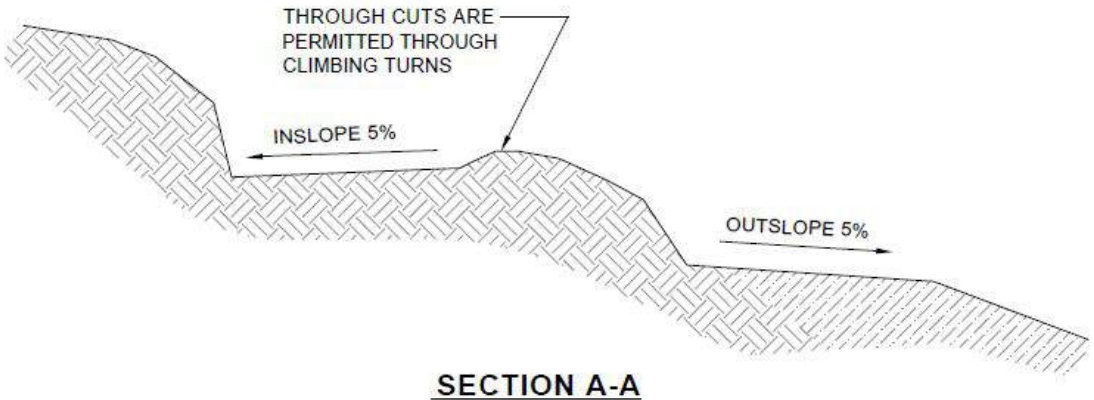
Climbing turns are constructed on gentler side slopes that do not exceed a cross-grade of about 10%. The radius of the climbing turn is wide – 15 to 20 feet or more. A short portion of the climbing turn travels up the fall line for a short distance. Grade reversals are constructed before and after the turn, and both legs of the trail are downsloped.





PLAN VIEW

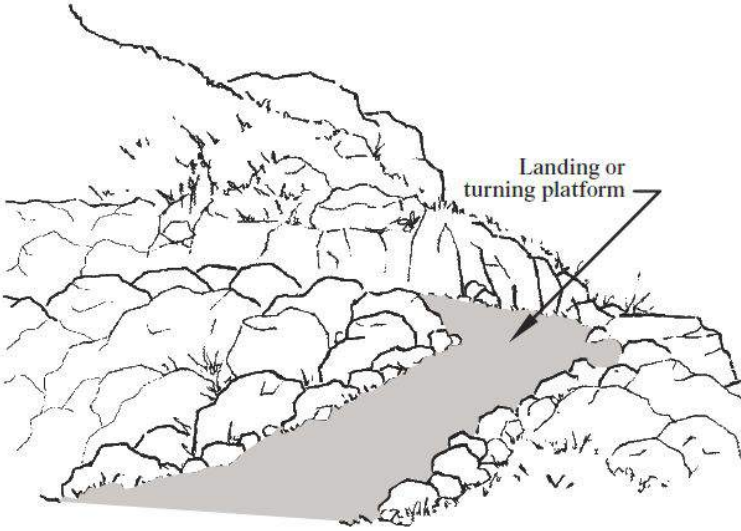
CENTERLINE OF CLIMBING TURN WILL BE FLAGGED OR STAKED ON THE GROUND.

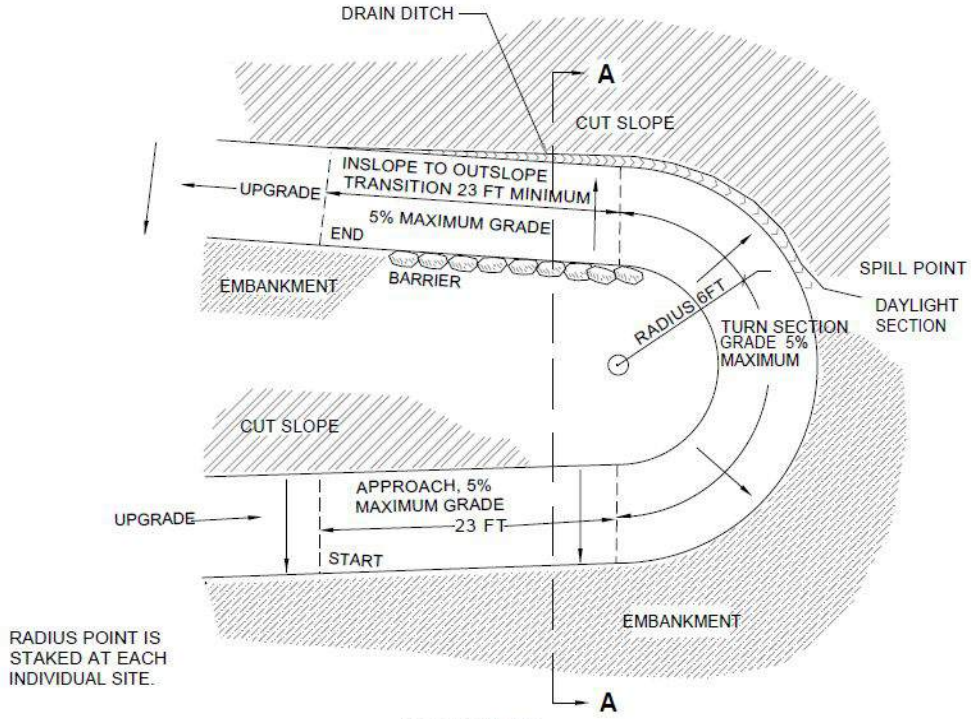


SECTION A-A

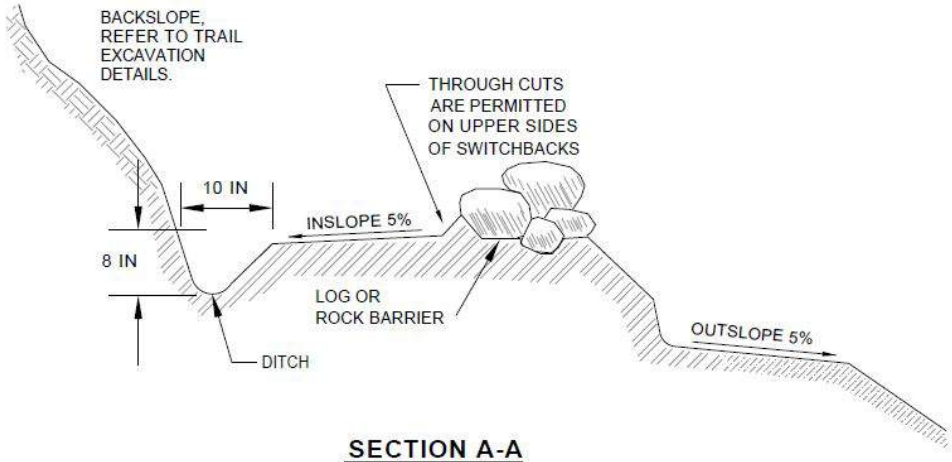
Switchback Turn

A switchback turn provides a level turning platform when ascending or descending steeper slopes (with cross slopes of 15 to 45%). The radius of the switchback turn should be 6 to 8 feet. They are more difficult to construct, but are a necessary trail feature when trying to keep grades low in steeper terrain. The lower leg of a switchback turn is built up with rock and soils created while cutting in the trail tread. The upper leg is insloped and the lower leg is downsloped. Grade reversals are constructed into and out of a switchback turn and water is diverted off the edge of the turning platform. Switchbacks that are constructed properly create a sustainable turning platform and stabilize the trail tread when elevation needs to be gained or lost.





PLAN VIEW



SECTION A-A

Stairs and Steps

Stairs and steps can be a useful tool for a trail that needs to ascend steep or difficult terrain, or in cases where it is necessary to stabilize and harden sections vertical fall-line trails are deemed necessary for access. Steps are difficult to construct properly and should be using sparingly in the trail system. While there are a variety of methods and designs for stairs, some of the following general guidelines should be considered:

- Steps built out of rock should use very large rocks that allow one-third of the rock surface to overlap the rock below.
- Steps built out of wood should be very-well secured and constructed in order to withstand the elements and long-term use.
- The steps should provide a more attractive route for users than the surrounding terrain, otherwise they won't be used and social trails will persist.
- Poorly constructed steps (wood or rock) will become unstable and hazardous to trail users.
- Provide armored ramps adjacent to staircases in areas of heavy bike use.
- Cyclists familiar with an area will select routes to avoid dismounting based on their ability - at stairs and highly technical areas. A less technical option, if available, needs to be visually identifiable before a section is "committed to."

Drainage Crossings

Most trails will eventually cross drainage ways on the landscape. The type of crossing to construct depends on the width and depth of the channel, the frequency of water flow, and the intensity of peak water flows. Typical trail crossings that would be suitable for trails on the UCCS campus include the following:

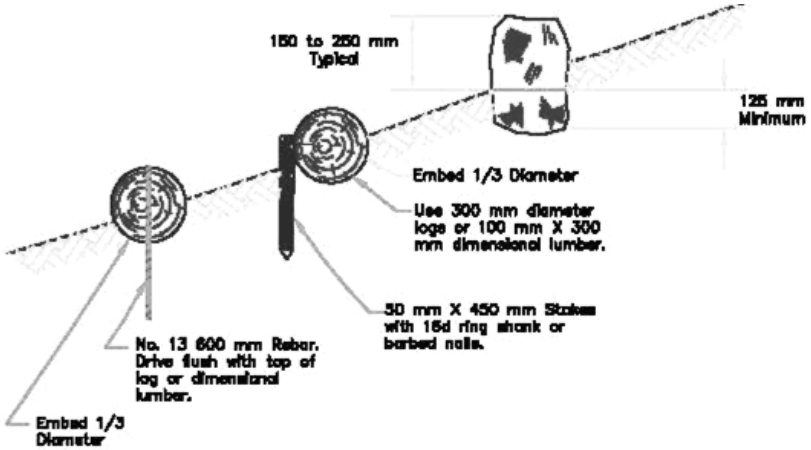
- **Swale crossing** – A swale crossing is a low-point in the trail tread where occasional, low-intensity water flows (like those following a typical rain storm) cross the trail. Swale crossings are relatively easy to build into the trail tread (and are very similar to drainage dips).
- **Culvert crossing** – In cases where small drainages are more frequently flowing, or where other simple crossings are not appropriate, a culvert crossing can be built. Metal or plastic culvert pipes, usually greater than 10 inches in diameter, are commonly used, while culverts built out of rock can create a more natural and interesting feature when material is available.
- **Reinforced ford crossing** – Ford crossings are appropriate for larger stream crossings where it is necessary or desirable for the trail to cross the channel during normal low or dry periods. Ford crossings should be reinforced with rock or other durable materials, should allow passage of normal to high flows, and often have large "stepping stones" built in for trail use when water is present.
- **Wood stringer trail bridge** – For short trail crossings where a bridge is deemed necessary, a small bridge constructed from wood stringers and planking can be an appropriate choice, and can be constructed from typical lumber materials or purchased as a kit. Bridge abutments need to be skillfully installed, but can often be completed with native stone or imported materials. Handrails are usually required if the bridge decking is greater than 30 inches above the ground surface.

- **Prefabricated steel trail bridge** – Drainage crossings that are longer, less stable, or are anticipated to have heavier use may require a prefabricated steel trail bridge. These are usually constructed at the factory and delivered to the site; these require concrete abutments that are built at the site. These bridges typically require detailed engineering specifications.

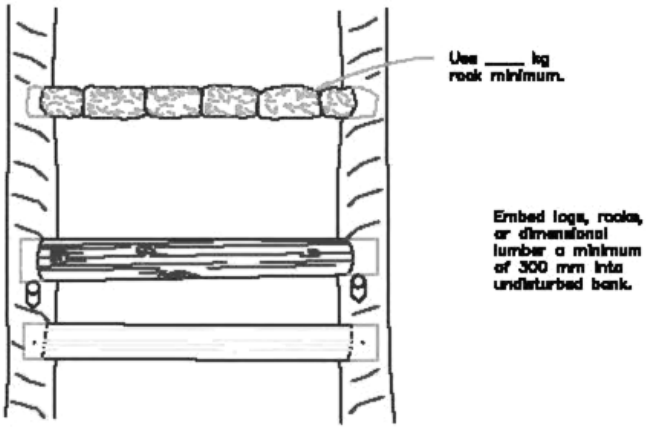
The selection of appropriate drainage crossings at the right locations is critical to the success and durability of a trail. In general, an appropriate drainage crossing must be safe for users, and should be the minimum structure that is necessary to withstand the most likely high peak flow event in that location.

Check Dam

Check dams are specifically used in trail closure to stabilize the entrenched route to shed and slow water, reduce erosion, and accumulate topsoil. Check dams strategically place in the closure section, and used in combination with other closure techniques, are effective in preventing water from flowing down the area just rehabilitated and if constructed properly, to discourage addition travel by trail users.



SECTION



Construct check dams at locations staked on the ground. Space check dams ____ m apart.

PLAN VIEW

Check dam construction should be adapted to meet site-specific conditions.

Construction Techniques

The most common techniques for constructing natural surface trails is by hand, by machine, or a hybrid approach, described as follows:

Hand Construction

The traditional way to construct natural surface trails is with hand tools to excavate the backslope, shape the trail tread, and finish the details of the trail. Commonly-used tools include the McLeod, mattocks, hard rakes and shovels. Steel bars, slings, and other tools can also be used to move or maneuver large rocks. Hand construction is time consuming and can be difficult in some types of terrain (including rocky areas or thickly vegetated grassland), but often results in a more intimate and natural-looking trail.

Hand construction is most effective when many individuals (through organized groups or volunteer projects) work together to build a relatively short section of trail. It is also the preferred technique in situations where a sensitive or precise touch is necessary to meet objectives.

Machine Construction

Machine-built trail is the preferred method for most land management agencies and professional trail contractors. The backslope is excavated and the trail tread is shaped using mechanized equipment, usually a small excavator or dozer that are narrow enough for trail construction. The bucket of an excavator can also be a powerful tool in moving rocks and boulders into position. Some amount of finishing work with hand tools is usually required to give the trail its final shape, tread, and drainage. Machine construction is much more efficient than hand construction, and can result in high-quality trails with a skilled and experienced operator. However, machine-built trails usually have less of a natural and intimate feel in the first few years after construction. Over time, trail compaction, backslope sloughing, and revegetation will allow the trail to "rough-in" to a more natural feel.

Machine construction is the most efficient for trail projects that are large or technical enough to require a professional contracted trail builder.

Hybrid Construction

A hybrid technique using both machine and hand construction can take advantage of the best of both approaches. A machine is used to excavate the backslope, cut the rough trail tread, and position large rocks while hand tools are used to shape the final tread and drainage. If sufficient hand labor and tools are available, this hybrid approach can improve efficiency by focusing machines on the initial excavation, while maintaining a more intimate feel of hand built trails. This method can also be satisfying for volunteers, who can spend more energy on the trail shaping and final finish and less time on the tread excavation.

Hybrid construction is an effective approach in cases where a skilled contractor is available (and willing) to complete the rough excavation, and skilled staff or volunteers are available to finish the trail.

Resources

For more information on many of the above topics, the following technical resources are recommended:

Trail Construction and Maintenance Notebook. 2007 Edition. USDA Forest Service Technology and Development Program in cooperation with the Federal Highway Administration. http://www.fhwa.dot.gov/environment/fspubs/07232806/index.htm.

Trail Solutions: IMBA's Guide to Building Sweet Singletrack. 2004. International Mountain Bicycling Association. http://www.imba.com/catalog/book-trail-solutions.

City of Colorado Springs Parks, Recreation and Cultural Services Urban Trails Parks, Recreation and Trails 2000-2010 Master Plan Chapter 5. http://www.springsgov.com/Page.aspx?navid=3593.

Trailside Gathering Areas

Trailside gathering areas allow opportunities for concentrated group use. Some gathering areas can accommodate several uses, while others may incorporate use-specific facilities.

General Aesthetic

The each gathering areas should be constructed to provide a different outdoor experience (shaded, exposed, secluded, dramatic views), to provide access from many areas of campus, to optimize safety for 'gathered' and trail users, to minimize resource damage, and to, when appropriate, occupy previously utilized land.

The gathering areas will be implemented according to environmentally friendly design principles including: the utilization of stormwater runoff, the use of the native landscape plantings, and the use of natural materials and proportions that blend into the surrounding context. When accessed by white trails, trailside gathering areas will be designed to accommodate users with a variety of physical abilities.

Furnishings

Site furnishings located in gathering areas may include picnic tables, trash receptacles, bike racks, fitness equipment, and other objects. Items shall be constructed to blend with the natural surroundings and seating may be constructed with or without backs as shown in the Campus Design Guidelines. Furnishings can be constructed of wood and/or metal powder coated (to match the campus-side metal elements - Landscape Forms Ivy) in accordance with the Campus Design Guidelines. Utilizing a buff color consistent with the colors of the soil and rock may allow more compatible trailside structures in some areas and should be considered. Signage will conform to the Signage Guidelines below.

All donation items shall conform to the design guidelines and be sited at designated trailheads or trailside gathering areas indicated in this micro-master plan. The RTAC and Facilities staff will determine all specific design, installation methods and positioning of donor-items. The RTAC and Campus Architect must approve all donor-item plaque design and language.

Transitions and Key Trail Intersections

Transition zones and key trail intersections provide physical and visual clues for trail users to slow down when approaching roadways, trail intersections, and gathering areas. Some transition signals will occur naturally on the trail, but many require intentional design choices and/or construction. Trail conditions that slow speeds include concentrated trail obstacles, curves in the trail, narrowing trail corridor, uphill grade change, and vegetation.

The dalliances and key trail intersections will be implemented according to environmentally friendly design principles including: the utilization of stormwater runoff, the incorporation of the native landscape plantings, and the use of natural materials and proportions that blend into the surrounding context.

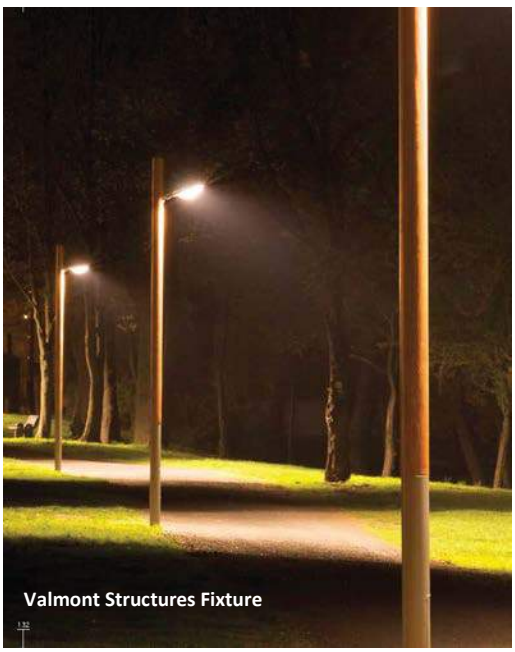
Security Provisions

While safety is a primary factor in all trail system design consideration, additional security provisions are recommended along the Sherpa Trail.

Pedestrian scaled lighting fixtures should be spaced to provide pools of light. The fixtures will be dark sky compliant, and incorporate motion sensor activation to minimize energy usage and minimize light disturbance in the natural area. The 2007 Campus Design Guidelines do not include an appropriate trail fixture. The fixture currently in use is pictured on the right below. A refined and contemporary fixture consistent with other campus furnishings, such as those pictured below, is recommended.

Locate call boxes along the Sherpa Trail at the frequency and design standard recommended by Campus Rick Management.

The Sherpa Trail safety provisions will be implemented according to environmentally friendly design principles including: consideration of stormwater runoff, the protections and incorporation of the native landscape plantings, and the use of natural materials and proportions that blend into the surrounding context.


Valmont Structures Fixture


Valmont Structures Fixture

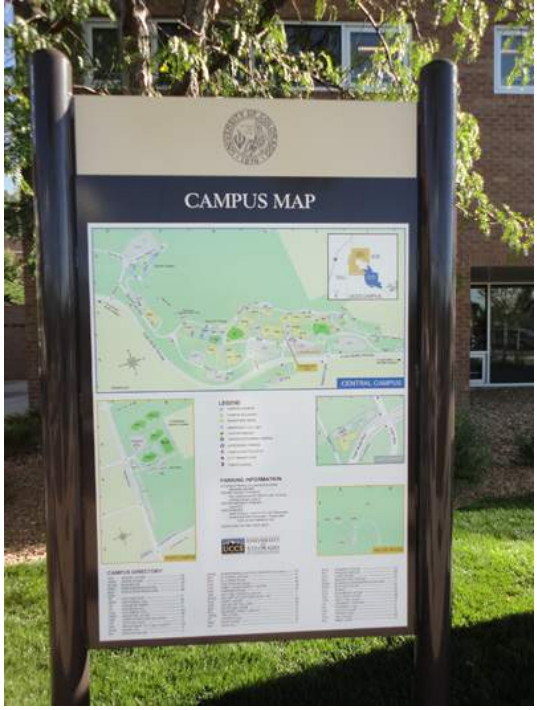

Existing Fixture

Signage

Trailhead signage and large trail maps should conform to the UCCS Campus Sign Design standards - Wayfinding, safety and trail etiquette and safety signage is anticipated to be located at trailheads, major trail system access points and, where appropriate, trailside gathering areas. Smaller scaled interpretive, educational and curriculum specific signage will be located along the trail corridor.

Signage design. messaging and placement will consider:

- Locating wayfinding maps at trailheads, key campus access points to the trail system, and major trail system intersections/junctions. The UCCS trail system offers a range of trail difficulty levels on numerous interconnected trails over varied terrain. The extensive system can be challenging to navigate for frequent users and overwhelming for new visitors. For this reason, trail maps are recommended at the above stated locations.
  Optimally, trail maps should contain a "you are here" notation, trail names and the trail etiquette triangle; signs may possibly include additional etiquette notation such as "Trails are intended to be enjoyed by all users. Trail users are expected to be in control at all times, which means properly yielding to slower uses and users." Signage will conform to the Signage Guidelines below. Key Trail Intersection locations are designated on the master plan.
- Combining sign messages to minimize number of signs to alleviate concerns of too many signs affecting the natural experience.
- Concentrating signs to alleviate dispersed locations affecting the natural experience.
- Designing low profile small surface area interpretive, educational and curriculum specific signage for low visual impact.
- Including safety related sign message pertaining to potential wildlife encounters (mountain lions, bears and rattlesnakes) at trailheads and key access points.



Standard Campus Signage

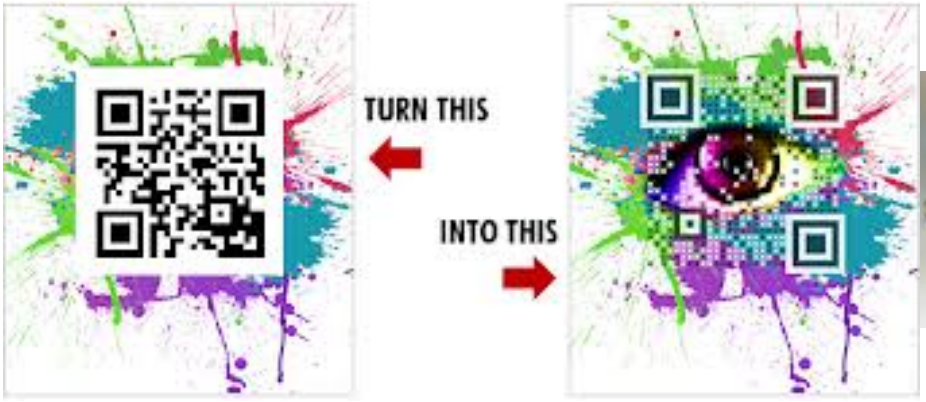
http://www.uccs.edu/~facsrvs/exterior-signage.html.

- Crafting sign messaging to reach a broad range of users including written text, universal symbols, smart phone technology (including push/pull and QR codes), and Braille. Advantages of integrating new technologies included reducing size of individual signs, ability to communicate detailed information and ability to update information. Total reliance on QR codes and smart phone technology excludes some students, so an alternative method for obtaining curriculum specific information may be needed.
- Heller Center specific sign design, material and gateway features.
- Campus Architect input to ensure continuity, uniformity and appropriate presence of signage in the natural trail environment.

All donated signage shall conform to the design standards and be sited appropriately as indicated in this micro-master plan. The RTAC and Facilities staff will determine all specific design, installation methods and positioning of donor-items. The Recreation Center Director and Campus Architect must approve all donor-item plaque design and language.

The signage will be implemented according to environmentally friendly design principles including: consideration of stormwater runoff, the protections and incorporation of the native landscape plantings, and the use of natural materials and proportions that blend into the surrounding context.

Combined text and QR code messaging



Artful QR code design integrating graphic communication

Customizable and variable fitness trail application

Creative signage options for seeing impaired and Braille users

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Management Recommendations

Introduction

The management plan is grounded in the Values and Goals developed and adopted early in the planning process. The Values serve as the agreed-upon litmus test for evaluating alternative approaches design and management through the planning process. Together the trail system plan and the management recommendations aim to protect and restore natural and cultural resources, while accommodating sustainable recreational and interpretive opportunities. Ultimately, the Micro-Master Plan aims to protect the property for future generations.

The Management Recommendations reference departments, positions, decision-makers and agreements at the "moment in time" of this writing. Ultimately, the high-quality, efficient micro-master plan implementation will come about from responsible individuals and clear open communication. The Recreational Trails Advisory Committee (RTAC) is made up of students, faculty, and staff exists to provide thoughts, opinions, and direction on the development and management of the campus recreational trail system. They also provide input pertaining to requests for trail or trailside use, by both on or off campus groups, for organized activities. The RTAC advises the Recreation Center Director, who serves as the committee's chairperson. The Recreation Center Director in turn works with campus leadership to determine approval, resources, and if needed contractual arrangements for trailside and trail system usage.

The Campus Recreation staff, which includes the Director, Manager of Intramurals, Club and Outdoors, and Trails Coordinator ultimately determines budget allocation for trail development, management and maintenance. The Trails Coordinator, with oversight from the Manager of Intramurals, Clubs and Outdoors, is responsible for coordinating trail work and construction between contractors, campus group and community volunteers.

Construction Procedures

Construction procedures for trail design, construction and maintenance are intended to follow the Campus Facilities protocols. Facilities Services provides input and guidance to help with construction, volunteer coordination, collaboration with other campus projects but does not have any specific responsibility or oversight of the recreational trail system.

Because trails are specifically funded as part of the Recreation Center Expansion Fee Referendum and the funding is part of the Recreation Center Director's budget, it makes sense to identify some thresholds for trail work and expenditures that can be accomplished without direct Facilities staff involvement. It is recognized, as trail system implementation progresses, modification and additions to these thresholds should be considered to best serve the university's needs.

Prequalifying Trail Consultant and Contractor Recommendations

Upon adoption of the micro-master plan, it is recommended that Facilities, in conjunction with the Recreation Center Director, solicit a standing order contract RFQ for both on-site trail layout/design consultants and trail construction contractors. The pre-qualification solicitation and subsequent agreements are recommended to include:

- For both trail design consultants and trail construction contractors
  - Familiarity with UCCS climate, weather, plant ecosystems and soils
  - Sample trail projects and role/involvement with each project
  - Insurance requirements consistent with the scope of work
  - References
  - Standing order contract time frame - 5 years was discussed during this planning process

- Additionally for trail design consultants
  - VOC,OSI, RMFI and/or IMBA trail design training
  - Trail design and/or trail construction observation methodology

- Additionally for trail contractors
  - Trail construction methodology

Procuring Professional Services and Purchasing Materials Recommendations

Once trail specific design consultants and construction contractors agreements are in place, scope and fiscal thresholds for Recreation Center Director, independent of Facilities, decision-making should be established. The thresholds are recommended to include:

- Scope:
  - Include all trail design, supervision, purchases and construction within the fiscal parameters suggested below.
  - Exclude trail work requiring stamped engineering drawings, trail work within easements or public rights of way, and trail work in the Heller Center retreat area.

- Fiscal:
  - Annual and per occurrence dollar limit for sole sourcing from pre-qualified standing order consultants and contractors
  - Annual and per occurrence dollar limit for competitive bid solicitation from pre-qualified standing order consultants and contractors
  - Annual and per occurrence dollar limit for volunteer related supplies, tools and materials
  - The Vice Chancellor of Administration and Finance establishes the annual budget for trail development, maintenance and management and, working closely with the Recreation Center Director, oversees all trail expenditures

Volunteer Construction and Maintenance Recommendations

The Recreation Center Director supervises the Trails and Outdoors Coordinator position. Together they determine appropriate trail volunteer projects and expenditures. Volunteer participation was discussed throughout the micro-master plan process. The trail matrices that follow, identify trail sections appropriate for hand construction; pre-qualified contractors or volunteers with skilled crew leaders and appropriate tools may build these sections. Considerations for volunteer trail involvement are recommended to include:

- Organization of volunteers
  - o Designate volunteer supervisor qualifications including leadership, safety, and technical training
  - o Consider requiring VOC, OSI, IMBA, RMFI and/or UCCS specific trail crew leader training for safety and construction consistency
  - o If needed, identify appropriate alternative leadership training organizations and qualifications
  - o Complete UCCS volunteer agreement by individual volunteers is not required but recommended once/year. Form is available at website www.cu.edu/risk

- Volunteer projects and volunteer engagement
  - o Maintain trails
  - o Restore rogue trail, erosion, and drainage damage
  - o Maintain trail closures
  - o Execute short trail reroutes and closures
  - o When skill, resources and volunteer numbers are available, execute large trail construction and/or closures

Stormwater Compliance Recommendations

During the micro-master plan process, the Facilities Department raised concerns regarding requirements for Urban Drainage Flood Control District (UDFCD) engineering, submissions and permitting during trail construction.

- Concerns centered around:
  - o Total cumulative disturbance area for the entire trail system. The UDFCD threshold of one-acre or 500 cubic yards
  - o Potential stormwater discharge
  - o Concern with retroactive findings of non-compliance in a lawsuit

- Application and submission to UDFCD is not the standard for trail construction in Southern Colorado.
  - o Disturbance per project each year is minimal
  - o Sustainable trail construction techniques inherently reduce erosion, sediment and runoff
  - o Associated rogue trail restoration and native plant restoration completed during trail construction or rerouting generally results in reduced disturbed area, runoff and sediment discharge
  - o The cost to secure stamped engineering drawings and complete UDFCD permitting for every trail construction, restoration and/or reroute project will require both timing and engineering fee considerations
  - o The City of Colorado Springs and the Colorado Spring Utilities do not pursue UDFCD permitting for natural surface trail construction.

The Facilities Department currently recommends securing a stamped engineer document attesting that USFCD permitting is not required for trail construction work. Further discussion between Facilities and the Recreation Center Director is recommended.

Management Procedures

Easements and Legal Arrangements

City-owned open space and regional trails surround UCCS; in addition, the Eagle Rock neighborhood is nestled in the heart of the North Campus. Because of this, student's, faculty's and staff's desired access and travel routes often incorporate these properties. UCCS has secured legal passage via public streets and an easement to the Heller Center. As the trail system develops, additional easements are anticipated for the City's University Park Trail and an off-street trail connection (Sherpa Trail extension) from the Village at Alpine Valley to the Heller Center. Members of the Leadership Team initiate and conduct all easement and legal arrangement negotiations. The Recreation Center Director can request consideration for easements or legal arrangements to the Facilities Director, who will coordinate and forward requests to the Leadership Team.

Rules and Enforcement

UCCS student codes and campus-wide regulations govern activities in the open space and trail system. The micro-master plan identifies areas of concern. Recommendations to customize the campus regulations and policies are specifically aimed to protect the natural resource and visitor trail experience. These include:

- Areas of Enforcement Concern
  - Off- trail travel and trail closures ignored
  - Damaging archeological, paleontological and historic sites
  - After-hours use
  - Fire rings
  - Litter
  - Dog waste
  - Camping/homeless encampments
  - Alcohol consumption
  - Campus police access for on-trail enforcement
- Recommended Trail System Rules
  - Dawn to dusk, except Sherpa Trail
  - Non-motorized use with campus trails closed to equestrians
  - Require dogs to be on leash and owners are responsible to collect and dispose of pet waste
  - No off-trail use

Although adequate and appropriate rules of use are in place, the natural resources and visitor experience are degraded by non-compliant visitors. The key is consistent education and enforcement. It is recognized that appropriate, fiscally sustainable and implementable recommendations will require a consistent collaborative campus-wide approach. With this in mind, possible solutions listed below.

- Educate visitors about social trail closures. Content may include: graphic illustrations, resource values, resource damage caused by a foot fall, and directional signs to the designated route describing its advantages.
- Provide educational signage addressing Leave No Trace Outdoor Ethic.
- Provide trail etiquette signage.
- Consider volunteer student bike ambassadors with the mission to assist, inform, encourage/discourage, and if necessary contact campus police.
- Provide on-trail campus police enforcement during evenings, weekends and other times of peak trail use.
- Allow campus police patrol vehicular access on wide Sherpa Trail sections, Stanton Road and utility road trails.
- Maintain open dialog with Campus Police as trail system enforcement evolves.

University Policy Considerations

Although not within the scope of the Recreational Trails Micro-Master Plan, several campus-wide policies and practices that impact the non-motorized travel (bike friendly) atmosphere throughout campus arose during the planning process. These policies and practices are recorded below for consideration by the RTAC, Rec Center Director, and campus leadership.

- Trail Naming Policy
  - o The only named campus trail is the Sherpa Trail. Any additional trail names must be submitted to the Leadership Team for consideration and approval.
  - o Consider a trail naming convention that trail names connote campus location. An example may be North Campus trails start with an "N."

- Campus Bike Policy
  - o Lack of clarity and understanding is widespread for the "no bikes in buildings" rule. Many students questioned if this is an actual or perceived rule.
  - o University Center is a barrier in the bike-friendly Pedestrian Spine. Consider opening the building with a bike accessible breezeway.
  - o The "no bikes in buildings" rule is challenging for students with higher end bikes when bike lockers are not available. There is not appropriate alternative storage for on-campus resident students. Lack of information regarding bike locker availability was also expressed. A secure interior bike garage was a suggested short-term solution.
  - o Inadequate bike locker storage results in bikes being stored in dorms or offices.
  - o Bike Racks and Lockers are Inadequate throughout campus. Specific locations mentioned included inadequate bike racks at Columbine, Rec Center, and Campus Facilities/Office of Sustainability.

- Enforcement Methods and Resource Damage
  - o Campus Police currently access the Trembly homestead and other areas in North Campus via patrol cars; this causes damage to the area's natural resources. Consider patrol to remote areas via mountain bike to protect natural resources.
  - o Police on mountain bikes represent the University's commitment to health and wellness, provide more opportunity for personal interactions, protect natural resources during trail surveillance, allow enforcement of trail rules that may limit off-trail use, increase safety, and further protect natural resources.

- Safety
  - o Campus Risk Management suggests signage pertaining to possible wildlife encounters, The University may also consider folding trail etiquette and safety into the student information (similar to walking alone at night) as an option.
  - o Faculty and students are concerned with bike designated "share-roads" in parking lots - backing cars and cars cruising for parking spaces add too many conflicts for this to be a safe bike route.
  - o Crossing Austin Bluffs at all three traffic lights is dangerous and difficult with a bike. Traffic light timing (up to 5-7 minutes at Stanton Road) and unresponsive pedestrian light activation were specifically noted.
  - o Not all students have or can afford bike helmets. Consider a helmet program.

Potential Trail Related Partnerships

Partnerships may provide opportunities for expanding the campus' community connection, trail construction and maintenance, knowledge, volunteer base and recreational resources available to students, faculty and staff. Potential partners include:

- City of Colorado Springs
- Medicine Wheel Mountain Bike Club
- International Mountain Bike Association, IMBA
- Trails and Open Space Coalition, TOSC
- Rocky Mountain Field Institute, RMFI
- Eagle Rock Neighborhood Association

The Recreation Center Director can request consideration for partnerships to the Vice Chancellor of Administration and Finance. A written agreement with each partner organization is required; the Vice Chancellor of Administration and Finance will provide the official campus signature.

Resource Protection

Social Trail Closure

As described previously in the site assessment, the UCCS campus currently has an extensive network of undesignated social trails. Some are in good condition and will be integrated into the trail system, some are faint paths that will disappear over time, while others are problematic and need to be actively closed and restored. A map of the social trails present on campus at the time of this writing can be found in Appendix F. Any trails that are not designated in this plan (or subsequent management decisions) are social trails and should be managed according to the following guidelines.

Active Closure

Several heavily-used social trails are in poor locations, are contributing to erosion and other resource issues, and need to be actively closed and restored:

- Construct a new trail providing the desired access or experience *prior to* closing the existing social trail
- Stabilize existing tread with constructed check dams (wood and/or rock) and drains to shed and slow water, reduce erosion, and accumulate topsoil
- Obliterate the trail tread to soften the soil, eliminate future use, and promote revegetation
- Cover the obliterated tread with biodegradable erosion control matting (in select locations) and natural materials such as rocks and woody debris
- If deemed suitable, seed the area with native grasses to promote revegetation
- Monitor the closed trail for erosion, vegetation establishment, and noxious weeds
- For popular social trails, install temporary or permanent fencing to clearly direct users away from the closed trail

Passive Closure

Many of the social trails on campus are faint and sparsely used and do not cause substantial erosion or resource management concerns. In these cases, most users will easily adapt to new trails providing desired experiences, while the remaining off-trail wanderers can be tolerated, and passive closure is appropriate:

- Construct new trails to provide the desired access and experiences
- Lightly scarify the tread surface to reduce compaction and facilitate revegetation
- Randomly place rocks, woody plant material, and other natural-looking materials in the trail tread to obstruct travel, promote revegetation, and disguise it from future users
- Allow natural vegetation to re-establish over time

Trail Restoration

In several cases, existing social trails are recommended to be designated and integrated into the campus trail system. Some of these trails will likely require some work to ensure long-term function and sustainability, such as the following:

- Excavation of the outer/lower berm along the trail to ensure adequate width and sheet or cross-trail drainage
- Installation of drainage dips in strategic locations
- Short reroutes or tread reconstruction to fix steep or otherwise problematic segments

Revegetation

From a trails management perspective revegetation is important to mitigate the effects of existing social trails while also minimizing the additional impacts of new trail construction. Considering the coarse, unstable soils with limited organic matter, any efforts to successfully re-establish native vegetation may be difficult. Therefore, the most important strategy is to minimize new impacts to native vegetation communities. Key guidelines for revegetation include the following:

- Stabilize the site to reduce future erosion
- Monitor for and eliminate existing noxious weeds
- Use biodegradable revegetation mats, wattles, or weed-free mulch to reduce erosion, capture or retain topsoil, increase soil moisture, and protect seedlings. To address campus soil conditions, install biodegradable revegetation mats in combination with wattles and check dams on slopes over 2%; weed-free mulch or mats can be used on slopes under 2%
- Stabilize existing route to be closed with constructed check dams (wood and/or rock) and drains to shed and slow water, reduce erosion, and accumulate topsoil
- Select plant species that are suitable for the soils and conditions
- Use organic soil amendments to provide a substrate for seed establishment
- Plant early successional grass species (those that grow quickly on disturbed sites), supplemented by perennial and annual forbs and late successional species
- Monitor the site for erosion problems, vegetation establishment, and noxious weeds

A revegetation seed mix (designed for the Heller Complex) is included in Appendix G.

Weed Management

The prevention and management of noxious weeds should be considered in any trail construction or closure project. Noxious weeds are aggressive, non-native plant species that threaten the integrity of the native ecosystem and are designated for management or eradiation. Many noxious weeds are present in the ecosystem, and several disturbed portions of the UCCS campus have existing weed infestations.

Trail construction can contribute to the spread of weeds by providing a corridor of newly-disturbed soil where native plants have been removed, trampled, or otherwise compromised. These corridors provide an opportunity for weeds to colonize new areas. To reduce the potential for weed infestation associated with trails, the following guidelines should be used:

- Minimize unnecessary disturbances to native vegetation
- Actively restore and revegetate social trails with native species
- Construct new trail from native communities moving *towards* weedy areas, to avoid spreading weed seeds during construction
- Wash equipment before moving from weedy areas to weed-free areas
- Disperse “spoils” (dirt removed from trail construction) over a broad area to avoid piles that bury native vegetation and provide a foothold for weeds
- In sensitive areas with high-quality native vegetation, consider transporting spoils away from the work area to minimize the trail’s footprint

Cultural Resources

The Austin Bluffs provided some of the most sought after stone for tool fabrication in the region for thousands of years. As the result of erosion, many artifacts have already been uncovered in the North Campus' drainages. Research suggests that artifacts may be located at or below the surface across the entire site.

To assess and protect these artifacts, care must be taken during the trail design process. In the past, students from the Anthropology Department have preformed monitoring during projects' excavation activities. Often surface construction does not disturb or destroy artifacts. Engaging the Anthropology Department early in the annual trail implementation priorities can optimize departmental participation, engage specialized student skills, and optimize trail related funding that may otherwise need to be allocated for consultant-based cultural resource fieldwork.

The following procedure is recommended prior to each trail construction.

- Contact the *Consultant in the Anthropology Department* to review annual trail implementation priorities
- Consider feasibility to utilize department and student resources
- Flag the trail corridors in preparation for the anthropology survey
- Schedule and complete survey including artifact inventory, possible artifact collection, unique resource identification, and identification of interpretive opportunities
- Consider cultural resource protection and interpretive opportunities that may qualify for State Historical Grant funding
- Follow recommendations of the anthropology survey when constructing the trail

Fencing

Successful implementation of this plan will require the installation of fencing in some locations to manage users, minimize future social trails, and protect restored and revegeated areas. Several general fencing types are recommended for different situations.

Post and Rail Fence

Post and rail wood fencing should be used in locations where a visually attractive barrier is necessary to keep people on designated trails and delineate the limit of appropriate access. For example, this type of fencing may be suitable along the base of the bluff (behind the main campus), and in other locations where the boundary between developed campus land uses and natural settings is encountered. They are semi-permanent installations that require vehicle and equipment access and suitable soils for setting posts in the ground. They should be designed and constructed from materials that are consistent with the overall aesthetic of the campus.

Buck-and-Rail Fence

Buck-and-rail fences are rustic, free-standing A-frame fences that are constructed out of rough-hewn logs or lumber, and are appropriate for establishing a barrier to restrict access to closed trails or areas. They can be easily constructed on-site and do not need to be set in the ground, and are therefore appropriate for locations that are farther from roads and vehicle access. While they are rustic in character, buck-and-rail fences are visible from a distance and should be planned and used appropriately as to not create a visual impact on the landscape.

Woven Wire Fence

Installation of woven wire agricultural fencing is an inexpensive, utilitarian approach to closing and restricting access to specific trails or areas. The benefits are that wire fences are relatively simple to install, materials are easily transported to the site, and they are not visible from a distance. Woven wire fence is the style of fencing used at the Heller Center perimeter. However, they are not passable to wildlife and are less visually attractive than other fencing options, so they should be used sparingly and for short distances.

Other Fencing Options

The following less conventional options for fencing may be useful on the UCCS campus:

- **High tensile wire fencing –** High tensile wire fencing is similar to traditional barbed wire fencing, without the barbs, and can be useful in locations where a continuous barrier is necessary to prevent encroachment or protect resources. This style also minimizes visual intrusion and while allowing the easy passage of wildlife (as long as the top wire is less than 42 inches from the ground).
- **Remnant barbed-wire fencing** – In appropriate locations, it may be useful to strategically place or re-position existing barbed wire fencing to limit social trail access and dissuade wandering off of the trail corridor. Re-use of existing fencing would be compatible with the existing landscape setting, nearly invisible, and would not disrupt wildlife movement.

Phasing Priorities and Implementation Guidelines

Project Phasing

This recreation trails micro-master plan provides a blueprint for the long-term form and function of a high quality trails system on the UCCS campus. Implementation of this plan will require thoughtful, strategic, and diligent project planning to develop the trail system and make the most efficient use of existing financial and student resources. Therefore, many of the key trail development projects are identified as high, medium, and low priorities for implementation.

High Priority Trails

High priority trail projects are those that can be successfully completed now, can be completed with existing resources, can provide immediate benefits to the campus, and/or address an immediate resource concern. High priority trail projects should focus on improving the function of trails in the North Campus area, improving the trail interface with the Heller Center, and improving the function of the existing Sherpa Trail connections.

- W1 – Regional University Trail extension from open space to North Nevada Avenue
- G3 – Improved sustainable access to/from/around the Heller Center, with clear gateway
- G2 - Construct sustainable access to Eagle Rock that bypasses the Heller Center retreat area
- B4/G5 – Re-establish access to the existing arroyo area trail from the east and the north and establish access to the Lane Center. Maintain connectivity to the existing double track road to serve as a temporary connection until the Pedestrian Spine is constructed.
- W5/G8/B5/K5– Reconstruct the southern end of the existing Sherpa Trail and improve Recreation Center access
- W8/B7/B9/B11/B12/K7/K8 – Improved and sustainable access and circulation to the main bluff area

High priority projects should be implemented within the next 2 to 3 years.

Medium Priority Trails

Medium priority trail projects are those that are larger, more difficult projects, are not necessary in the short-term to address functional issues, and/or provide a larger, longer-term resolutions to resource concerns. Medium priority trail projects should focus on improving sustainable access to and around the bluff behind the main campus, additional trail opportunities in the west arroyo area, and suitable access to the rock outcrops in the North Campus.

- G4 – Improvement and extension of the west arroyo trail
- G7- Improved access for Alpine Valley
- B1/K3 – Improve contour loop through the North Campus area, and access to surrounding trails
- K6 - Improve Recreation Center access and create endurance stair course
- K1/K2/B8 - Improved, sustainable access to the rock outcrops and ridgelines

These should be slated for implementation within the next 3 to 6 years.

Low Priority Trails

Low priority projects are those that are currently not necessary (but may become necessary as a result of campus build-out), and/or are more difficult or expensive to complete. Low priority trails are generally those that are not needed until future campus build-out, and additional enhancements in the North Campus area.

- W2/W4 - Improve safety along Stanton Road and provide clear campus only passage between Heller Center and main campus, with clear gateway
- W3 - Heller Center specific trail loop
- W6/B10 – Sherpa Trail extension behind the main campus
- W7 – Extension of Sherpa Trail to East Campus
- B6 – Improvements to the existing utility road access to the bluff
- G1 – Lower contour trail above athletics campus (once buildings are constructed)
- G9 - New contour trail connection to Austin Bluffs Trail at the North Nevada intersection
- B2/B3 – New contour trail connection to the north bluffs
- G6 – Establish access to the central area of the Health Sciences Campus once the micro-master plan for this area is established.
- Campus connectors – Connections through new development areas, to be integrated into those development plans

Low priority trails should be implemented within the next 6 to 10 years.

During the ongoing process of implementation, it is important the Recreational Trails Advisory Committee and the UCCS community remain flexible, adapting to changing circumstances and new opportunities. Ultimately, the implementation of trail projects should continually seek to improve the overall function of the recreational trail system, while sequencing projects to be compatible with the of new campus developments that are envisioned in the 2012 Campus Master Plan.

Trails Matrix Organized by Phased Priorities

The following trails matrix is a tool for the Recreation Center Director, Recreational Trails Advisory Committee and Facilities staff in determining individual project priorities, annual priorities and budget considerations.

Considerations in reviewing the estimated construction cost:

- Unit prices are averaged from bids received for similar work in the past 5 years from reputable single-track trail construction contractors.
- Special conditions that increase material and/or construction costs in each segment are noted in the right-hand column.
- Disturbance in sensitive prairie ecosystems leads to weed infestations. The campus is committed to preservation and noxious weed control in the pristine prairie areas. The linear foot unit cost for trail construction in prairie areas is augmented by two dollars per linear foot to facilitate removal of overburden from the prairie area to significantly reduce the chance of weeds becoming established.
- Cost savings can be achieved by hybrid construction (see page 57) or all volunteer construction. For planning purposed, hybrid construction will realize a savings of about 50% over full contraction construction.
- Suitability, as well as level of effort, of trail segments for student volunteer projects is rated in the matrix. The feasibility to pursue volunteer projects will depend on UCCS available trail construction tools, available time and partnerships to augment the volunteer base and the technical skill set.

High Priority Trails

ail code	area of campus *North(N) Mid (M) South(S)*	length in miles	length of new trail construction in miles	estimated length of social trail closure in miles	description	trail structures	hand *(H)* or machine *(M)* build	suitable for student volunteer project *not suitable (na) Small(s), medium(m), large(l)*	new trail / lf	new trail additional section expense	existing trail rehabilitation / lf	additional section expense - description to right	social trail closure / lf	trail section sub-total	description of additional section expense
W1	N	0.9	0.9	0.25	City of Colorado Springs tier two trail connecting University Trail east of the Heller Center to the underpass at North Nevada; two bridges crossing arroyo; associated active social trail closure; trail alignment located in legal easement	2 bridges; signage	M	na						Construct -ed by City of Colorado Springs	
G2	N	0.33	0.33	0.15	Contour trail connecting G1 and B1 to the driveway west of the Heller Center;; associated active and passive social trail closure	closure	M	m	$6	$0	$2.50	$2,000	$3	$14,830	$20x100lf fencing + prairie
G3	N	0.11	0.11	0.15	Contour trail connecting the Heller Center to B1; provides trail connection to Heller gravesite on existing fallline trail; stabilize fallline section to blue standards; associated active social trail closure	on existing trail, rock reinforcement and erosion mitigation, Heller specific signage and entry monument, closure	M + H	s-l	$6	$5,000	$2.50	$400	$3	$11,261	Signage; stone pitching $25x16 manhhours + prairie
B4	M	0.57	0	0.25	Contour trail paralleling southernmost arroyo along existing trail; associated active social trail closure	routine trail maintenance	Maint-enance only	s	$6	$0	$2.50	$0	$3	$11,484	
G5	M	0.21	0.21	0.2	Contour trail connecting B4 and G4 to the pedestrian spine	closure	M	m	$6	$0	$2.50	$0	$3	$9,821	prairie

High Priority Trails - Continued

trail code	area of campus *North(N) Mid (M) South(S)*	length in miles	length of new trail construction in miles	estimated length of social trail closure in miles	description	trail structures	hand *(H)* or machine *(M)* build	suitable for student volunteer project *not suitable (na) Small(s), medium(m), large(l)*	new trail / lf	new trail additional section expense	existing trail rehabilitation / lf	additional section expense - description to right	social trail closure / lf	trail section sub-total	description of additional section expense
W5	M	0.36	0.1	0.15	Contour trail connecting Village at Alpine Valley to Summit Village with reroute; associated active trail closure	Lighting call boxes, signage, closure	M	na	$12	$0	$2.50	$0	$3	$12,144	call boxes and lighting by others
G8	M	0.02	0.02	0.02	Contour trail connecting Sherpa Trail to Summit Village around parking and sediment structures; associated active trail closure	Lighting call boxes, signage, closure		s	$4	$0	$2.50	$0	$3	$739	call boxes and lighting by others
B5	M	0.11	0.61	0.05	Contour trail with rock structures and switchbacks connecting Sherpa Trail to the Pedestrian Spine; intensive active closure effort on abandoned stairs	2 switchbacks, 6-8 single rock steps, intensive closure	H	l	$9	$1,800	$2.50	$0	$3	$24,979	switchbacks 2x$500 rock steps 8x$100
K5	M	0.13	0.13	0.15	Ascending trail and structural staircase connecting the Rec Center to the Sherpa Trail; associated social trail closure	concrete staircase, basic trail, closure	Contrac-tor to build circuit stairs	s	$4	$4,800	$2.50	$0	$3	$9,922	concrete stairs $120x40
W8	S	0.1	.0.1	0	Ascending trail connecting B9 to the sidewalk along the service road just behind University Hall	Signage and street striping			$12	$0	$2.50	$500	$3	$3,668	Prairie construction, Interface with service road and striping

High Priority Trails - Continued

trail code	area of campus *North(N) Mid (M) South(S)*	length in miles	length of new trail construction in miles	estimated length of social trail closure in miles	description	trail structures	hand *(H)* or machine *(M)* build	suitable for student volunteer project *not suitable (na) Small(s), medium(m), large(l)*	new trail / lf	new trail additional section expense	existing trail rehabilitation / lf	additional section expense - description to right	social trail closure / lf	trail section sub-total	description of additional section expense
B7	S	0.36	0.24	0.1	Ridge top and contour trail extending east to west connecting K7, K8 and B6; one major reroute to ease grade transition towards campus; incorporate historic stairway on east end of trail; associated active and passive social trail closure	basic trail reroute; closure	M	l	$6	$0	$2.50	$0	$3	$10,771	
B9	S	0.4	0.4	0	Ascending trail connecting W6 to B7 and public trails to the north and east	rock reinforced switchbacks & climbing turns; basic trail	M + H	l	$6	$3,500	$2.50	$0	$3	$16,172	7 x 500 climbing turn and switchback
B11	S	0.27	0.27	0.25	Ascending trail connecting W5 at Alpine Valley to B12 and B8; associated active and passive social trail closure	switchbacks; climbing turns; rock reinforced trail segments; fencing; closure	H	l	$9	$0	$6,000.00	$0	$3	$16,790	switchback climbing turns 7 x$500, rock reinforced 50ft x $10, fencing 100 x $20
B12	S	0.2	0.19	0.25	Ascending trail connecting W5 and K6 to B11 and K8; incorporating section of existing routes; associated active and passive social trail closure	switchbacks; climbing turns; rock reinforced trail segments; fencing; large erosion channel closure; closure	H	l	$9	$4,500	$2.50	$0	$3	$17,621	switchback climbing turns 4 x$500, rock reinforced 50ft x $10, fencing 100 x $20, channel closure by others

High Priority Trails - Continued

trail code	area of campus *North(N) Mid (M) South(S)*	length in miles	length of new trail construction in miles	estimated length of social trail closure in miles	description	trail structures	hand *(H)* or machine *(M)* build	suitable for student volunteer project *not suitable (na) Small(s), medium(m), large(l)*	new trail / lf	new trail additional section expense	existing trail rehabilitation / lf	additional section expense - description to right	social trail closure / lf	trail section sub-total	description of additional section expense
K7	S	0.5	0.2	0.3	Ascending &ridge top trail along existing route connecting W7 to B7 and B8; three reroutes; incorporate historic staircase on east end; associated active social trail closure	switchbacks; rock stairs; rock grade transitions; rock erosion mitigation; closure	H	s-l	$9	$4,000	$2.50	$0	$3	$22,216	switchbacks 4x$500 rock steps 20x$100
K8	S	0.35	0.35	0.35	Ascending trail connecting B11 and B12 to B7; incorporating some existing route; steep erosive soils; associated active and passive social trail closure	switchbacks; rock stairs; rock grade transitions; rock erosion mitigation; large erosion channel closure; closure	H	s-l	$9	$4,500	$2.50	$0	$3	$26,676	switchback climbing turns 4 x$500, rock reinforced 50ft x $10, fencing 100 x $20, channel by others

Medium Priority Trails

trail code	area of campus	length in miles	length of new trail construction	estimated length of social trail closure	description	trail structures	hand *(H)* or machine *(M)* build	suitable for student volunteer project *not suitable (na) Small(s), medium(m) large(l)*	new trail / lf	new trail additional section expense	existing trail rehabilitation / lf	additional section expense - description to right	social trail closure / lf	trail section sub-total	description of additional section expense
G4	M	1.14	1.14	0.35	Contour and ascending trail looping with B4, crossing the pedestrian spine, and connecting to the Sherpa Trail at the east edge of the Village at Alpine Valley; associated active and passive social trail closure	1 bridge, closure	M	l	$4	$100,000	$2.50	$0	$3	$129,621	100,000 bridge
G7	M	0.02	0.02	0	Contour trail connecting Alpine Valley to G4		M	s	$6	$0	$2.50	$0	$3	$634	prairie
B1	N	0.8	0.37	0.5	Contour trail connecting public trail near top of Pulpit Rock to east-most property line north west of the Heller Center; three major reroutes; short section of green difficulty rating; associated active social trail closure	3 major reroutes. closure, rock drainage crossings, dips, sections of rock reinforcement	H +M	l	$6	$900	$2.50	$0	$3	$26,218	rock reinforce and drainages $100 x 9

Medium Priority Trails - Continued

trail code	area of campus	length in miles	length of new trail construction	estimated length of social trail closure	description	trail structures	hand *(H)* or machine *(M)* build	suitable for student volunteer project *not suitable (na) Small(s), medium(m) large(l)*	new trail / lf	new trail additional section expense	existing trail rehabilitation / lf	additional section expense - description to right	social trail closure / lf	trail section sub-total	description of additional section expense
K3	N	0.15	0.05	0.15	Steeply ascending trail connecting G1 to B1 beneath Pulpit Rock on mostly existing trail; nearly half with be rock reinforced structures, steps or reinforced tread; associated active social trail closure	rock stairs, rock erosion mitigation, reinforced tread	H	l	$9	$2,700	$2.50	$0	$3	$8,772	rock stairs $100 x 25 reinforced tread 20lf x $10
K6	M	0.13	0.13	0	Ascending and contour trail looping Sherpa Trail to create stair circuit	concrete staircase, basic trail	contracto r to build circuit stairs	s	$4	$4,800	$2.50	$0	$3	$7,546	concrete stairs $120 x 40
K1	N	0.23	0	0.25	Ridge top trail extending from public trail to Eagle Rock geologic formation; associated active and passive social trail closure	rock stairs, rock erosion mitigation, fencing	H	l	$9	$4,500	$2.50	$0	$3	$11,496	rock stairs $100 x 25 fencing 100 x $20
K2	N	0.15	0.15	0.15	Steeply ascending trail connecting B1 to K1 and Eagle Rock geologic formation; nearly half with be rock reinforced structures, steps or switchbacks; steep erosive soils; associated active social trail closure	rock stairs, rock erosion mitigation, 3 switchbacks, fencing	H	l	$9	$6,000	$2.50	$0	$3	$15,504	rock stairs $100 x 25 fencing 100 x $20 switchback 3 x 500
B8	S	0.13	0	0.2	Contour trail connecting public trails to K7	trail maintenance	maintena nce only	s	$6	$0	$2.50	$0	$3	$4,884	

Low Priority Trails

trail code	area of campus	length in miles	length of new trail construction	estimated length of social trail closure	description	trail structures	hand *(H)* or machine *(M)* build	suitable for student volunteer project *not suitable (na) Small(s), medium(m) large(l)*	new trail / lf	new trail additional section expense	existing trail rehabilitation / lf	additional section expense - description to right	social trail closure / lf	trail section sub-total	description of additional section expense
W2	N + M	0.87	0.02	0.15	On-street route connecting University Trail near the Heller Center to the Village at Alpine Valley; short section of new trail at Heller Center connection	signage, street striping	M	na	$6	$0	$.20	$1,500	$3	$5,407	street striping, signage 5 x $300, existing trail rehab is street striping
W4	N	0.1	0.1	0	Trail connecting University Trail to the Heller Center Driveway	Heller specific signage and entry monument	M	s	$8	$5,000	$2.50	$0	$0	$9,224	signage + prairie
W3	N	0.45	0.45	0	Contour loop trail for Heller guest use only; trailside gathering area with benches; individual benches; narrow 3 foot trail width; consider alternative routes consistent with Heller program goals at time of construction	Heller specific signage	M	m	$8	$5,000	$2.50	$0	$0	$24,008	signage +prairie

Low Priority Trails - Continued

trail code	area of campus	length in miles	length of new trail construction	estimated length of social trail closure	description	trail structures	hand *(H)* or machine *(M)* build	suitable for student volunteer project *not suitable (na) Small(s), medium(m) large(l)*	new trail / lf	new trail additional section expense	existing trail rehabilitation / lf	additional section expense - description to right	social trail closure / lf	trail section sub-total	description of additional section expense
W6	S	0.41	0.41	0	Knowledgeable trail design to address soils and drainage structures for contour trail paralleling the Pedestrian Spine, located near the base of the bluff, and connecting Summit Village and University Hall, possible soil hardening agents in erosive soil areas, rock reinforced trail segments	rock reinforced trail segments, possible mono walls, possible soil hardening agent; lighting call boxes, signage, closure	M	na	$12	$4,000	$2.50	$0	$3	$29,978	knowledge able trail design to address soils and drainage structures, rock reinforced segments 200x$20, call boxes and signage by others
B10	S	0.1	0.1	0	Ascending trail connecting W6 to campus near the Engineering breezeway	switchbacks or climbing turns	H + M	m	$6	$1,000	$2.50	$0	$3	$4,168	2 x 500 switchback or climbing turn
W7	S	0.47	0.47	0.25	Contour trail paralleling the Pedestrian Spine, adjacent to the service road transitioning to top of the bluff, and connecting University Hall to East Campus	Lighting call boxes, signage, closure	M	na	$12	$0	$2.50	$0	$3	$33,739	call boxes and lighting by others
B6	S	0.66	0	0.1	Utility access road connecting Alpine Valley to B8 and public trails on top of bluff		maintained by Colorado Springs Utilities	na	$6	$0	$2.50	$0	$3	$10,296	

Low Priority Trails - Continued

trail code	area of campus	length in miles	length of new trail construction	estimated length of social trail closure	description	trail structures	hand *(H)* or machine *(M)* build	suitable for student volunteer project *not suitable (na) Small(s), medium(m) large(l)*	new trail / lf	new trail additional section expense	existing trail rehabilitation / lf	additional section expense - description to right	social trail closure / lf	trail section sub-total	description of additional section expense
G1	N	0.48	0.48	0.75	Contour trail connecting Public trail at base of Pulpit Rock to G2; associated active social trail closure	1 bridge; closure; fencing; signage	M	l	$6	$100,000	$2.50	$2,000	$3	$129,086	100,000 bridge $20x100lf fencing + prairie
G9	M	0.28	0.18	0.1	Contour trail connecting G4, G5 and B4 to the City-wide system Austin Bluffs Trail at the intersection of North Nevada Avenue and Austin Bluffs Parkway	Reduce trail width along existing utility road section	M	s	$4	$0	$2.50	$0	$3	$6,706	
B2	N	0.44	0.44	0.25	Contour trail connecting Eagle Rock geologic formation to public trail at northeast property corner	mono wall, rock transition structures (on public trail)	M + H	l	$6	$1,000	$2.50	$0	$3	$18,899	mono wall 100lf x 10
B3	N	0.2	0.2	0.5	Ascending trail consolidating numerous social routes, connecting B1 and B2; associated active and passive social trail closure	rock reinforced climbing turns, 1 switchback, closure	H	l	$9	$2,000	$2.50	$0	$3	$19,424	climbing turn and switchback 4 x 500
G6	M	0.02	0.02	0	Contour trail connecting G5 to the center of the Health Campus		M	s	$6	$0	$2.50	$0	$3	$634	prairie

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Acknowledgements

The University would like to thank the individuals who participated in developing the UCCS Recreational Trails Micro-Master Plan

Campus and Public Forum Sessions

Students, faculty, staff, university leadership, neighbors and city officials participated in forums. They were informed about the planning process and offered unique insight into UCCS, neighborhood and community trail system usage.

Carole Huber
Nick Lee
Eric Gaulke
CJ Agusen
Mark Mische
Larry & Kim Yonker
Kevin Gilford
Perrin Cunningham
Justin Bills
Kevin Hadfield
Harrison Ory
Matthew Driftmier
Grant Barnes
James Duvall
Liam Casey
Jose Mora
Tish Fleener
Taryn Bailey
Tyson Randall
Bradley Plesz
Linda Kogan
Tamara Moore
Al Brody
Larry Hilliard
Elizabeth Hiner
Syd and Ralph Seaman
Phyllis Zell
Kitty Wooley
Bill Koerner
Myrtice & Tom Moegler
Joe Lavorini
Kimberly Kime
Kay Lee
Allen Beauchamp
Liz Klein
Cory Sutela
Zach Buchanon
Kyle Brungardt
Jon Winkelblech
Megan Bell
Ben Hofman
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Ben Lemke
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Recreational Trails Advisory Committee

The Recreational Trails Advisory Committee met frequently. Their ideas and guidance throughout the planning process shaped the campus trails system.

Matt Gaden, Director of Campus Recreation
Daniel Bowan, Manager of Intramurals, Club Sports and Outdoors
Andrea Hassler, Coordinator of Trails and Outdoors
Cheryl Kelly Buening, Assistant Professor, Health Sciences
David Havlick, Associate Professor, Geography
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Trent Claypool, Staff Psychologist

Auxiliary Directors Group

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Jeff Davis, Executive Director of Auxiliary Services Operations
Ida Bauer, Director of the Family Development Center
Ralph Giese, Director of Residence Life and Housing
Tamara Moore, Executive Director of Auxiliary Services UCCS
Russ Saunkeah, Executive Chef and Associate Director of Food Services
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Megan Bell, Director of the University Center
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Clay Garner, Police Lieutenant/Director of Police Operations
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Kelly Janssen, Manager of the Greenhouse and Garden
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Daisy McConnell, Director of Galleries of Contemporary Art
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Holly Kaspar, Director of Auxiliary Services Marketing
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Annette Biggs, Associate Director of Campus Recreation
Jody Nelson, Director of Program Development, Family Development Center
Susan Mahoney, Associate Director of Family Development Center
Jessica Pocock, Development and Events Professional, Gallery of Contemporary Art

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Brian Burnett – Senior Executive Vice Chancellor for Administration and Finance
Mary Coussons-Read – Provost and Executive Vice Chancellor for Academic Affairs
Martin Wood – Vice Chancellor for University Advancement
Susan Szpyrka – Vice Chancellor for Administration and Finance
Homer Wesley – Vice Chancellor for Student Success and Enrollment Management
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Executive Summary

The 2012 Master Plan for the University of Colorado Colorado Springs (UCCS) provides a strategy for meeting projected growth needs and campus capacity in a responsible and sustainable way. This guide to capital improvement projects supports the university's academic mission and strategic plan while identifying opportunities to reinforce campus identity and a sense of place. It incorporates proposals from previous planning efforts, including the 2006 Master Plan and the East Campus Master Plan, into a holistic framework for campus development.

The Master Plan was undertaken concurrently with the development of the UCCS 2020 Strategic Plan, and both plans reinforce shared goals. The strategic plan indicates that enrollment will grow from 9,321 students in 2011 to over 13,000 students by 2020. This growth will largely occur as a result of a significant number of new students attracted from outside the Colorado Springs region.

The Plan specifically focuses on the underdeveloped North Campus and suggests ways to accommodate future growth on North Nevada Avenue nearest to the commercial activity of Colorado Springs, a prominent area of the university. The capacity of the North Campus at full build-out respects the campus character, connects to the rest of the university, and promotes sustainable design.

MASTER PLAN GOALS

Preserve a Sense of Place

The Colorado Springs campus offers uninterrupted, impressive views of Pikes Peak, the Front Range, and Pulpit Rock, which differentiates it from every other university in the state and nation. Respecting this natural beauty and the dramatic topography of the university setting is critical to avoid environmental damage as enrollment grows and campus development expands.

The Master Plan sites buildings to maintain and frame important views. Drainage corridors are respected and enhanced to accommodate stormwater runoff. Where appropriate, large stands of native vegetation are preserved, and native species are reintroduced to developed landscapes. Evidence of archeological remains uncovered during building excavations for new development will also be monitored and documented or preserved as appropriate.

Connect Campus Destinations

The university's setting is distinctive in its linear organization. Like a string of pearls, the campus is distinguished by various activity areas connected by a single pathway. This circulation spine unifies the campus and serves as a community gathering space for students, faculty, staff, and visitors. It unifies the campus, but each campus district has a unique character that will be preserved and strengthened.

The Master Plan suggests ways of building on existing nodes of activity by creating academic and housing "villages" along the spine extenstion. The pathway maintains a primary pedestrian route, but also allows bicycles and public transit in an area separate from vehicular traffic. In some situations, pedestrian paths are separated from transit and bicycle routes; at other times, their routes run parallel to one another. Where the pedestrian spine runs alongside a campus road, appropriate design ensures that pedestrians feel separated from auto traffic.

Develop the Campus in a Responsible & Sustainable Way

To accommodate 13,000 students on campus, nearly 1,200,000 gross square feet of new academic and student life facilities will be needed. Should enrollment rise to 20,000 students, nearly 2 million gross square feet of new academic and student life facilities will be needed. However, the university is experiencing several trends that may impact future space needs: online courses, higher utilization of classrooms, and increased on-campus housing. These trends may either slow or accelerate the rate of growth needed to reach full build-out capacity.

The Master Plan accommodates these future needs for academic, research, administrative, and housing facilities by suggesting locations for buildings that are well-connected to the Core Campus through transit, bike, and pedestrian connections. To ensure these facilities are integrated with the campus fabric in a sustainable way, the Plan addresses how future development can reflect the principles of smart growth, achieve high performance buildings and landscapes, and take advantage of alternative modes of transportation.

Engage the Public on the North Campus

A mix of uses within walking distance will be considered carefully when developing the North Campus. With a significant portion of campus located within the North Nevada Corridor Urban Renewal Zone, university development can complement commercial and residential development at University Village Colorado and near the Interstate 25 interchange to create a college town district. By providing public university functions along this important corridor, UCCS can take advantage of partnership opportunities and enhance its presence in the cultural life of Colorado Springs.

The Master Plan sites new buildings related to the health sciences, arts, and athletics on the North Campus that will engage the public in the life of the university. These major facilities are described below.

The Lane Center for Academic Health Sciences, a partnership between the university and community health centers, will be approximately 54,000 square feet and house clinic, research, and office space. The Center is envisioned as the first phase of a future Health and Wellness Village. Potential uses in this area of the North Campus include expansion of existing clinical programs, a dental school, a pharmacy school, a nursing school, and additional research, office, or new clinical program space.

The Visual and Performing Arts Center will accommodate performance venues, practice rooms, classrooms, offices, and studio and gallery space. This facility could be split into two buildings devoted to the visual and performing arts or combined into one. By connecting to a shuttle bus stop and the central green aligned with the existing soccer field, a campus gateway will be created along North Nevada Avenue. A series of sculpture gardens, stormwater management ponds, and outdoor art yards will line the path from the North Nevada underpass to a new arena and complement the existing student sculpture installations along North Nevada Avenue in front of University Village Colorado.

As part of a consolidated athletics precinct on the North Campus, a new 4,000-seat arena will house UCCS athletics programs as well as host public events such as UCCS athletics, US Olympic Committee gatherings, and concerts. Its location along North Nevada Avenue offers easy access and makes it a landmark entry to the UCCS campus. A nearby outdoor stadium hosting track and field and soccer events could be used by community organizations and the US Olympic Committee as well.

These transformational projects establish a vibrant UCCS presence on the North Campus, and the transportation and pedestrian spines establish a critical link back to the academic core. As enrollment grows to 13,000 in 2020 and beyond, the identified development sites allow the university to meet new facilities needs while respecting its natural resources and establishing a unique sense of place.

Goals

1. Protect the natural environment while providing a robust trail system for recreation and transportation.
   1.1. Protect wildlife habitat in the undeveloped lands of the campus including the connectivity and movement corridors.
   1.2. Create a well thought out, long term trail system that is designed to be responsive to the landscape and will minimize impacts to the local fauna, flora, and soils.
   1.3. Protect the natural environment from damage that can come from the creation of social trails.

2. Restore land that has been degraded due to trail use and devise plans to develop trails that will mitigate future erosion problems.
   2.1. Develop a trail plan that addresses erosion issues on campus and is designed to minimize those impacts.
   2.2. Establish a priority for trail maintenance, construction and renovation projects that need to be completed.

3. Develop a trail system in concordance with our educational mission including informative trailheads and kiosks.
   3.1. Preserve areas and routes of historical significance.
   3.2. Protect quiet, peaceful retreat atmosphere at the Heller Center.
   3.3. Provide opportunities for outdoor experiences that are unique to Colorado.

4. Create a variety of safe and responsible trail experiences for all levels of trail use.
   4.1. Provide opportunities for recreation, fitness and education for the UCCS campus community, including ADA accessible opportunities.
   4.2. Create active transportation/commuting linkages within campus, as well as to local trails and open space.
   4.3. Minimize user conflicts as the campus population grows.
   4.4. Ensure the trails are safe for use.
   4.5. Provide opportunities for outdoor experiences that are unique to Colorado. (repeat)

5. Develop appropriate standards and procedures for the design, construction, management and maintenance of various types of trails on the UCCS campus.

6. Foster a cooperative and mutually beneficial partnership with the City of Colorado Springs.

Appendix C

UCCS Recreational Trails Micro-Master Plan

Issues and Ideas from Individual Interviews, Trails Forums and Committee Discussions

Individual interviews were conducted in person and via telephone focusing on the project stakeholder list dated 10 Sept 2013. Face-to-face interviews held on 22 September in the Rec Center included university faculty, students and administrative staff as well as the Eagle Rock HOA. Trails Forums where hosted on 07 October 2013 for the campus community and the public. UCCS Recreational Trails Committee contributions were collected during committee meetings.

All comments and ideas shared are compiled below in categories useful to the Recreational Trails Committee for consideration in the Micro-Master planning process.

Big picture trail ideas tied to University mission

I. Campus Connectivity to the Colorado Springs Community

I.1. Connecting University Park Open Space to Underpass/Greenway is priority for students, Heller Center, Eagle Rock Neighborhood, City and community groups. Trail connection is possible while maintaining the "tranquil, park-like atmosphere of the property." Build new trail to same design standards as upper trail. Some Eagle Rock residents desire the trail to be on the north side of the arroyo.

I.2. Consider diagonal connection between mid-hill Austin Bluffs Parkway Trail towards the underpass.

I.3. Connect dorms to open space. Alpine Village to Austin Bluffs Open Space. Connect the dorms to open space by Alpine. It would be great to not have to ride on Stanton.

I.4. Sustainably reconnect campus trails to Pulpit Rock trails

I.5. Connect apartments at top of bluff through the Utilities site and down the bluff to main campus.

I.6. Surrounding residential:
   a. Connect all cul-de-sacs along Rockhurst Boulevard to the University Park trail. (city property)
   b. Eagle Rock residents concerned that public will access university trail system via their streets.
   c. Unsustainable access from Rimwood Drive is increased usage since parking restrictions in Cragmoor have been instituted.

I.7. Trail connectivity is important to Heller Center's new outreach initiative on Sunday afternoons. Open 1-4pm to hikers, runners, bikers and will serve water. Other staff prefers the Heller Center to not have connectivity to the trail system.

I.8. Consider guided trail to top of bluff as part of prospective student tour (historic foundations, old water works, views) or community tour.

I.9. Cancer Survivor Park not moving forward therefore this can become a City connection point.

Big picture trail ideas tied to University mission (continued)

II. Sustainability Ethic/Lifestyle and Trails

II.1. Potential for "world-class" trail system. Currently underutilized in maintenance, execution and marketing.

II.2. Connecting to outdoors and nature is essential for sustainability to resonate - or at least a starting point.

II.3. Is the Trail system part of Place making? Place-making is a key objective of the 2012 Campus Master Plan. During thesis study, when alumni ask about what place they associate with UCCS - only one could answer. Awareness is a building block to sustainability.

II.4. Encourage Sustainable infrastructure and lifestyle.

II.5. Is there a goal or value related to establishing the UCCS identity as a premier school for recreational activities? This would help to attract more students.

II.6. Sustainability and healthy living are connected - better health leads to prosperity.

II.7. For sustainability to work, people have to care about their surroundings.

II.8. Sustainability is about change - how you get people to change behavior.

II.9. Sustainability Strategic Plan includes sections on Health and Wellness and Alternative Transportation

II.10. Sustainability is looking at information that is generally not yet seen as interrelated.

III. Curriculum

III.1. Faculty possibly interested in class related trail monitoring may include: Eric Billmeyer, David Halvelik, Tom Huber, Sustainability Seminar, Steve Jennings (plant communities) and Nanina Meyer (nutrition and exercise science – wellness). Follow up is required to confirm interest and needs.

III.2. Integrate "push / pull" smart phone technology.

III.3. QR codes and "push" smart-phone technology allow flexibility to include specific class related information to specific students.

III.4. Consider class specific geology and archeology trails.

Recreational Trail System ideas

IV. Intra-Campus Connectivity

IV.1. Heller Center, students and faculty desire a trail connecting current campus (Alpine Village) to the Heller Center along the bluffs. Heller Center prefers this to be "easy enough" to hike and bike. City is open to this trail crossing Austin Bluffs Open Space.

IV.2. Trail linkages at west end of spine, Summit Village tower on service road, one-way service street at Cragmoor Hall

IV.3. Connect the dorms to open space by Alpine. It would be great to not have to ride on Stanton.

IV.4. Connecting current trails for running and biking to avoid on-road sections and if possible road crossings.

IV.5. Consider loop trail including arroyo edge single track then up and paralleling Austin Bluffs Parkway and back connecting below new parking garage.

IV.6. Connect Main Campus to North Campus. Connect free parking (currently at 4 Diamonds) to Main Campus.

V. Trail system design considerations

V.1. Well designed trail system focused on

1. Alternative modes of transportation,
2. Entertainment,
3. Exercise,
4. Education

V.2. Trails for transportation - especially bikes to North Campus

V.3. Loops more interesting than dead ends (especially to ends of ridge tops); Multiple loop options are desirable. This has strong support

V.4. "nice cohesive trail system"

V.5. Close social trails and travel paths not part of the final system. "Social trails degrade the natural capital of the campus" is a stated guiding Value of this Micro Master Plan and consistent with the Campus' commitment to sustainability.

V.6. Cross County meets currently held in Monument Valley Park - stable weather-resilient surface, parking, restrooms, electricity, not too hilly.

V.7. Incorporate utility road in the trail system and maintain.

V.8. CAMPUS Construction /Development update:

a. Infrastructure Plan will determine the transit spine location and elevation.
b. Colorado Springs Utilities will underground power lines at Rec Center expansion to top via their service road.
c. Erosion Control Phase III is starting the design phase and will interface with the trail plan. Phase II is under construction.
d. A temporary Parking Lot will be constructed in the winter 2013-14 on the bluff above University Hall. Access will be created through the sound barrier wall just east of the right-in-right-out.
e. Dead end section of Austin Bluffs trail will be removed at the new office building.
f. Lane Center extends concrete trail to near dirt road.

Recreational Trail System ideas (continued)

VI. Specific trail features and amenities

VI.1. Heller Center:

a. Heller Center users prefer two trail loops: 1. From Heller east on public trail to detention pond looping to north and back nearly parallel (just to the north of route out). 2. From Parking near North Nevada north to Pulpit Rock, east/southeast along ridge, public trail in drainage; over to south ridge and back to Heller.

b. Heller Center, students and faculty desire a trail connecting current campus (Alpine Village) to the Heller Center along the bluffs. Heller Center prefers this to be "easy enough" to hike and bike. City is open to this trail crossing Austin Bluffs Open Space.

c. Well designed, selective trails to control and limit access while protecting the native grasses in the Heller preserve area.

d. Heller view-shed is more important that public trail proximity.

VI.2. Other:

a. Student utilizes current exercise course and would like maintenance/replacement and more outdoor calisthenics opportunities. Specifically add parallel bars, monkey bars.

b. Geo-caching; Consider opportunities to provide geo-caching. Consider a campus policy that may include dismantling unauthorized geo-caching sites.

c. Areas/Stations for resting, socializing, water refill, bike repair

d. Build sustainable trail over ridge from Rimwood Drive to main campus

e. Prefer more trails in the north campus near Pulpit Rock.

f. Coordinate trails with future gondola at soccer field.

g. Disc Golf Course

h. Would like to see trail from Eagle Rock Formation to University Park trail connection. And to Pulpit Rock. Social trails will persist if no sustainable rout is provided.

VI.3. Track and Cross-Country:

a. Trail surrounding proposed Stadium to provide a loop warm-up trail/loop near the competitive running team tent set up area

b. Optimally a 2-Kilometer loop approximately 8' wide would be used for practice and competitions with parking, restrooms, electricity, weather resilient surface and regular surface.

c. Cross Country team currently meet in University Center and runs from there. Training trails requirements are 2-3'wide, consistent surface.

VI.4. Mountain Biking:

a. Desire highly technical mountain bike options; big drops, steep rocky downhill with and easy uphill return. Strong support.

b. Trails that range from easy to difficult.

c. Prefers mountain bike design approach of technical line with and associated "chicken line."

d. "Jumps are necessary"

e. Flow is a large consideration when designing trails. Rolling single track could complement more difficult terrain (big jumps, drops, rock gardens) Well-placed info signs could help with navigation, Input like the comments above are crucial for unique destination MTB riding.

f. Students desire Valmont Style Bike Park on campus or access within 5 miles to City facility. Consider possible student/campus/city partnership for construction, patrol and maintenance. Consider location along arroyo single track westernmost loop.

i. Valmont style preferred components:

1. Fun Jumplines
2. Dirt Jump Section
3. Slope style section
4. Dual slalom
5. Beginner, intermediate, and Pro
6. Gentle slope, easy return
7. Progressively bigger hits
8. Downhill Trails
   a. Range of difficulty
   b. Shuttle from lowest point to highest
   c. Flowey trails from top to bottom designated for downhill only with blind corners and fun flowey runs over "jumps", berms, rocks
   d. A trail with lots of berms would be really fun and draw in a lot of people for mountain bike riding.

g. Consider non- biking trails

Recreational Trail System ideas (continued)

VII. Administrative and Maintenance Comments

VII.1. Campus Patrol will access trails via dirt bike and currently patrol north campus trails up to the Trembly homestead via patrol car impacting natural resources.

VII.2. "Only way to prevent people from creating social trails and pursuing technical rock drops is via policing."

VII.3. Students expressed interest in contributing labor to trail construction and maintenance. Student's names were recorded by Andrea Hassler.

VII.4. Armor and maintain current trails

VII.5. Change Bike Share Waiver.

VII.6. Require dogs to be on leash.

VII.7. Pursue partnerships with TOSC, Med Wheel, Others for trail construction and maintenance.

VIII. Interpretive and Wayfinding Signage Comments

VIII.1. Wayfinding signs including trail maps, trail length, and difficulty level are desired by faculty and students.

VIII.2. Interpretive signage is desired by faculty and students. Total reliance on QR codes and smart phone technology excludes some students, so printed informational signs are desired by several interviewed students.

VIII.3. Heller Center would like trail loop specific wayfinding signage for Heller users.

VIII.4. Integrate "push / pull" smart phone technology especially desired for Engineering components, Physics of the trail and for team building courses.

VIII.5. Campus Risk Management agreed that signage and fencing similar to the City of Colorado Springs approach at the Mountain Bike Free Ride Area in Red Rock Canyon Open Space is adequate.

VIII.6. Interpretive topics may include: history, plants, edible plants, views, geology, archeology and campus greenhouse.

a. Consider trails that represent each department available on campus (Selected and documented: plants and wildlife - Biology; activities with measurable efforts/results - Math; descriptions written by - English/Communications; show off different soils and minerals present plus practical uses._____

VIII.7. Dog leash and "doggie doo" reminder signs would be great. Include dog doo bags dispensers too.

VIII.8. Campus Risk Management requires signage "use trail at your own risk" for liability purposes. Messages pertaining to possible wildlife encounters, difficult terrain, and loose footing are also recommended. [The RRTC may wish to consider 'enjoy trails at your own risk' or a message about 'responsibility.' The RTC may also consider folding trail etiquette and safety into the student information (similar to walking alone at night) as and option. Wording and approach will need to be worked out with Risk Management]. Risk Management is not concerned with maintained "regular pathways" like the Sherpa Trail.

Non-recreational trail and Bike Friendly Atmosphere/Infrastructure issues & ideas

(issues also shared with Recreational Trails)

IX.1. Eagle Rock Neighborhood utilizes Heller gated dirt-drive and paved public roads to access campus and open space trails. Additional access points via other properties is not being pursued by the HOA.

IX.2. Faculty and students concerned with bike designated "share-roads" in parking lot - backing cars and cruising for parking spaces add too many conflicts.

IX.3. Campus Patrol will access trails via dirt bike and currently patrol north campus single-track trails up to the Trembly homestead via patrol car impacting natural resources.

IX.4. Crossing Austin Bluffs at all three traffic lights is dangerous/difficult with a bike - light timing (up to 5-7 minutes at Stanton Road) and light activation. Consider interior bike building for bike storage. (combined from bottom of list)

IX.5. Inadequate bike racks at Columbine, Rec Center, Campus Facilities/Office of Sustainability, and other locations

IX.6. Inadequate bike lockers and lack of information regarding bike locker availability was expressed. All lockers were rented 2 weeks prior to class start in fall 2012.

IX.7. Lack of clarity and reason for "no bike ins buildings." Lack of clarity on whether this is an actual or perceived rule. Inadequate bike storage results in bikes being stored in dorms or offices.

IX.8. Lack of knowledge and accessible information about trail system opportunities - both on campus and off campus.

IX.9. University Center is a barrier in the Bike-friendly Spine. Consider opening the building via a bike accessible breezeway. 'No Bikes" rule is posted, but not written (according to this interviewee). This is a fundamental problem.

IX.10. Not all students have bike helmets - possibly consider a helmet program.

IX.11. Consider green “beltway” enveloping campus – similar to the Jade Necklace concept.

IX.12. Consider a "Walking only" parking lot in the Southernmost parking area currently in existence along North Nevada with the understanding that the construction is not finished at Austin Bluffs and Nevada Avenue. Commuters who park n the "walking only" parking lot would not be provided with a shuttle bus at that lot. "Walking Only" would be a trail through the trees separate from the concrete sidewalk provided.

IX.13. Is inexpensive close in parking a Given? Is inexpensive subsidized parking a “value.”

IX.14. Eagle Rock residents concerned about the functional operations of the Pedestrian spine crossing of Stanton Road – e.g. light, stop sign….

Appendix D

The draft plan presentations during the April 2014 forums where followed by a four week online review and comment period of the draft plan. The Summary of the Draft Plan Comments received is in Appendix D.

Comment 1

Looked through your new micro master plan; lots of great trails and connections. One item that I think needs to be incorporated (but I didn't see) was to ensure that certain distance loops can be made through combining the trails. UCCS has a great opportunity to host races and events on its grounds, and with a trail system that is flexible enough to offer the most popular distances could enhance its draw for such events. Those distances as generally 1k, 5k, 10k, 1mile, 5mile, 10mile; such loops from the heart of and through campus would provide great potential for UCCS to host both public and university events. Our city parks have easement restrictions and limited trail options for such events. As such, I would recommend that trail routes be linked and if needed, adjusted to enable a selection of routes for event organizers to choose from.

As these trails will interface with future parks trails, I'd love to see a route that makes it possible to connect from Palmer Park to the University Village underpass on trail. Some of this would require Parks trails, but building the UCCS system with such an expectation would allow future students to connect with Palmer and Ute Parks.

Comment 2

I read through the Master Plan yesterday. I think it may be helpful for the general public and perhaps a few students to have all the trail head parking location areas.

On-Campus (Free on weekends):
Lot B (323 new #); Rec Center (434 new #); Lot 15 (580 new #)

On-Street Parking:
University Park Blvd; Rimwood Drive (at clearing on north side of street)

Off-Campus Lots:
North Nevada Ave; 2610 Rockhurst Boulevard at Marconi Heightss (6 spaces)

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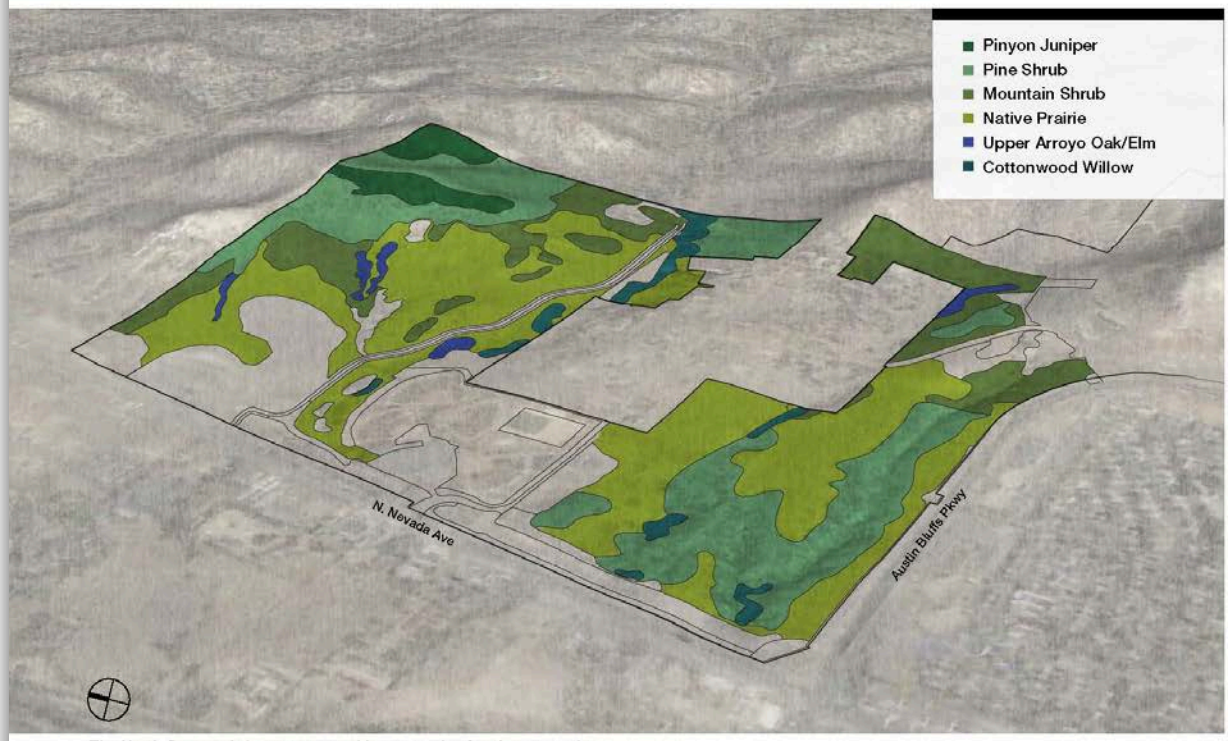
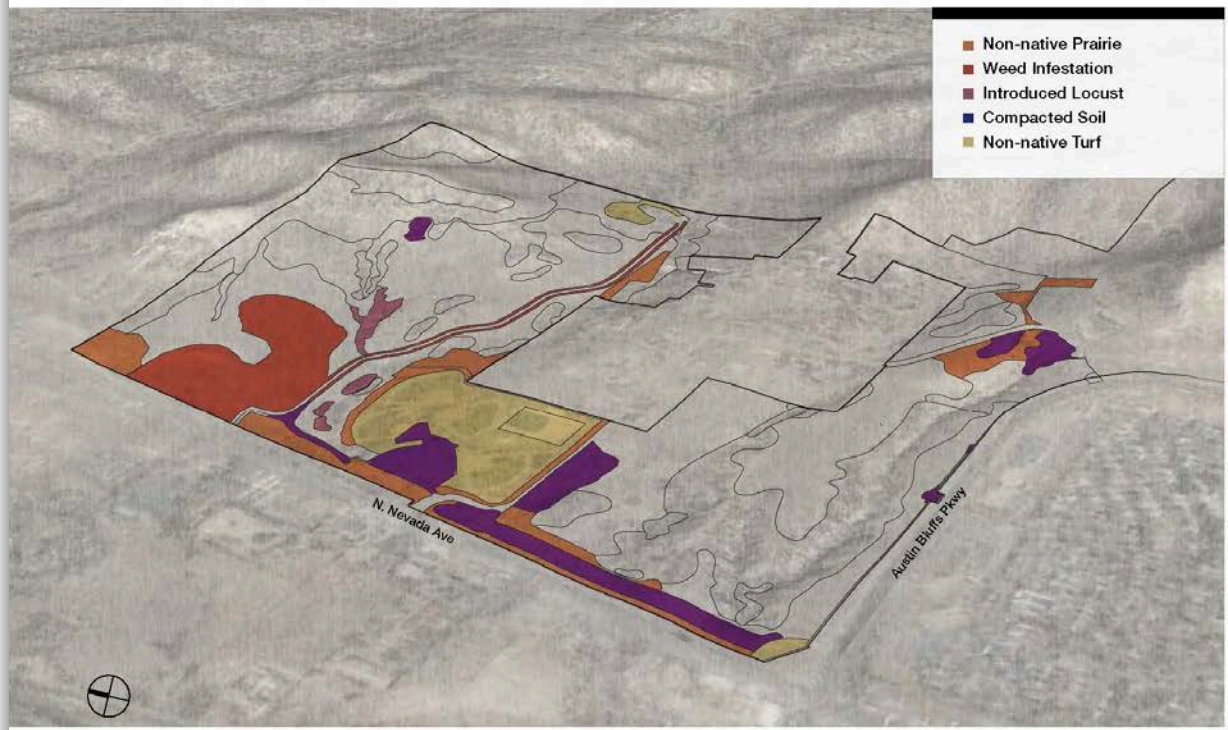


The North Campus is home to several large stands of native vegetation.



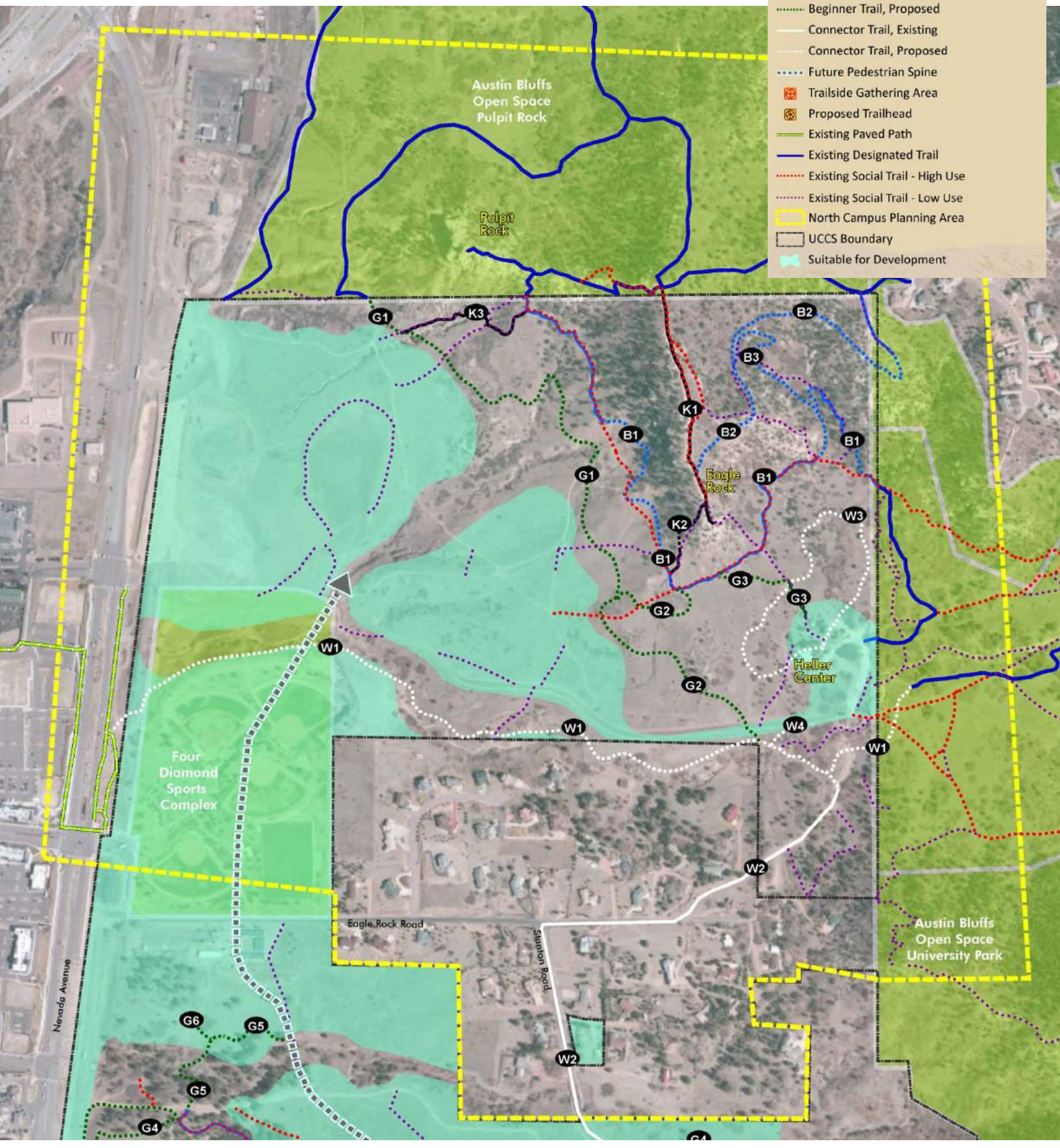
Areas of disturbed vegetation are priority development sites.

Campus Setting

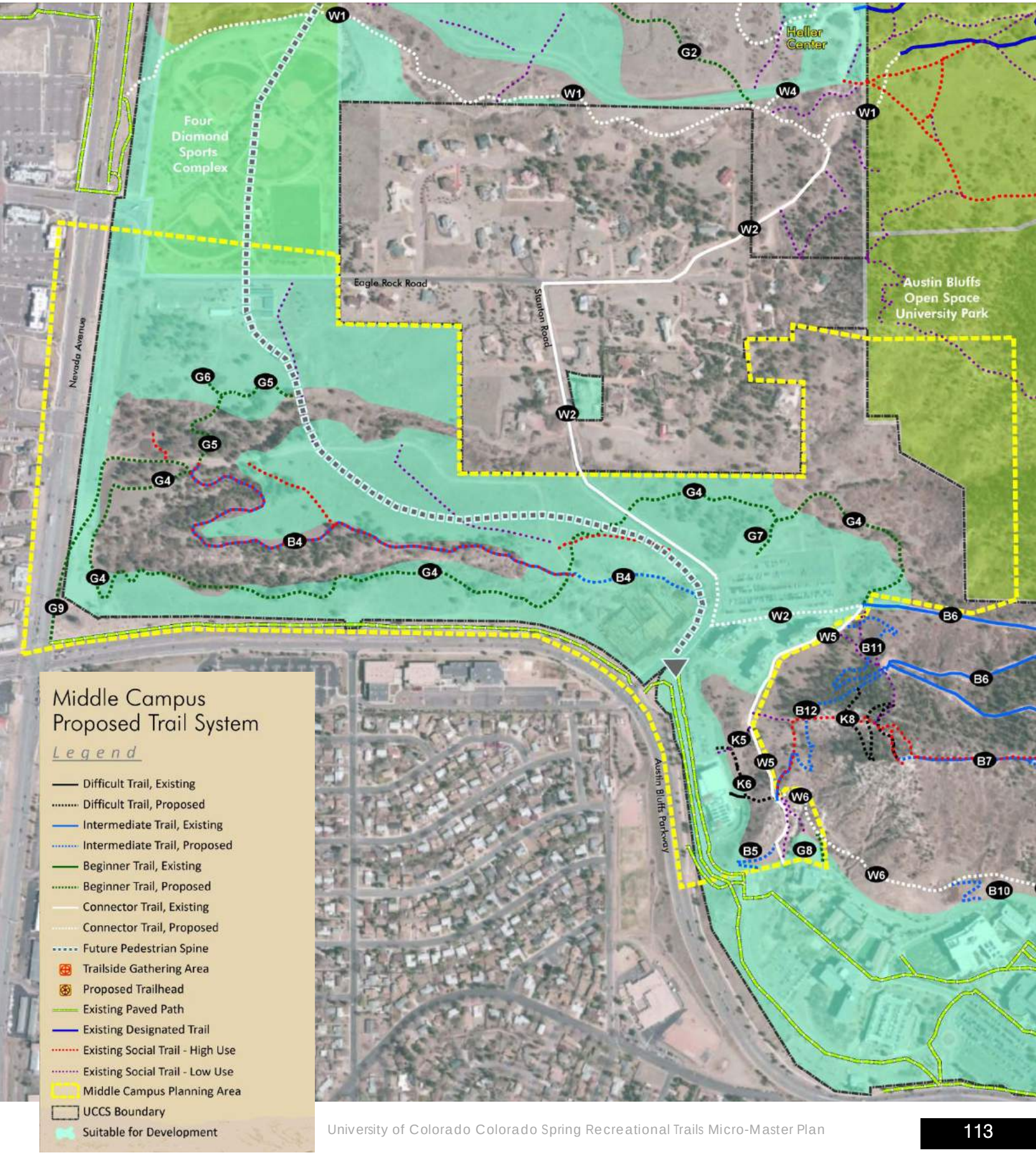
Appendix F

Area maps of proposed trail system and the social trails present on campus in Fall 2013.

North Campus Existing Social Trails and Proposed Trail System - detail



Middle Campus Existing Social Trails and Proposed Trail System - detail



South Campus Existing Social Trails and Proposed Trail System - detail

Upland Seed Mix

Species	Scientific Name	PLS#/Acre
Big Bluestem	*Andropogon gerardii*	0.9
Little Bluestem	*Schizachyrium scoparium*	0.6
Yellow Indiangrass	*Sorghastrum nutans*	0.8
Switchgrass	*Panicum virgatum*	0.6
Sideoats Grama	*Bouteloua curtipendula*	0.9
Western Wheat	*Agropyron smithii*	1.5
Blue Grama	*Bouteloua gracilis*	0.3
Indian Ricegrass	*Achnatherum hymenoides*	1.0
Prairie Sandreed	*Calamovilfa longifolia*	0.5
Green Needlegrass	*Nassella viridula*	0.8
Slender Wheatgrass	*Agropyron trachycaulum*	0.6
	Total	8.5

Woody Plant Species

Scientific Name†	Common Name	Riparian & Upland‡	Notes	Height (ft)	Spread (ft)
Shrubs					
Amelanchier alnifolia	Saskatoon serviceberry	R, U	5000-10,900 ft	15	8-10
Amorpha canescens	Leadplant	U	3500-7600 ft	2-4	2-4
Atriplex canescens	Fourwing saltbush	R, U	3900-8600 ft	3-6	2-4
Cercocarpus montanus	Mountain mahogany	R, U	4000-8500 ft	2-4	2-4
Chrysothamnus nauseosus	Rubber rabbitbrush	U	various	2-6	2-4
Cornus sericea	Red-Osier dogwood	R	4500-10,000 ft	4-6’	4-6
Crataegus erythropoda (rivularis)	Red hawthorn	R, U		15	10

Scientific Name†	Common Name	Riparian & Upland‡	Notes	Height (ft)	Spread (ft)
Crataegus macracantha	Big-thorned hawthorne	R, U	4500-7500 ft	15	10
Fallugia paradoxa	Apacheplume	U	3500-8000 ft	3-5	3-5
Juniperus communis	Common juniper	U	5000-7500 ft	2-3	3-6
Krascheninnikovia lanata	Winterfat	U	2500-8000 ft	1-3	1-3
Lonicera involucrata	Twinberry honeysuckle	R, U	6000-11,500 ft	2-7	2-7
Purshia tridentata	Antelope bitterbrush	U	4500-8000 ft	4	5
Prunus americana	Wild plum	R, U	3500-6000 ft	10-20	8-12
Prunus virginiana	Chokecherry	R, U	4500-9000 ft	8-20	8-12
Quercus gambelii	Gambel oak	R, U	4500-8500 ft Container plant from seed only	5-15	10-15
Rhus glabra	Smooth Sumac	R, U		6-12	6-12
Rhus typhina (hirta)	Staghorn Sumac	R, U		10-20	12-20
Rhus trilobata	Skunkbrush sumac	R, U	4000-9000 ft	3-6	3-6
Ribes aureum	Golden currant	R, U	3000-9000 ft	4-6	4-6
Ribes cereum	Wax currant	R, U	4000-11,400 ft	2-4	2-4
Rosa woodsii	Wood's rose	R, U	3000-11,500 ft	3-6	3-6
Rubus deliciosus	Boulder raspberry	R, U	4500-9000 ft	3-6	3-6
Sambucus nigra Canadensis	Common elderberry	R, U		8-12	8-12
Sambucus nigra cerulea	Blue elderberry	W, R, U	5500-8500 ft	10	8-12
Sambucus racemosa (microbotrys)	Red elderberry	R, U		8-10	8-10
Shepherdia argentea	Silver buffaloberry	U	3800-7500 ft	10	6-12
Symphoricarpos albus, occidentalis or oreophilus	Snowberry	R, U	4000-11,500 ft (albus: 5500-7500 ft)	2-4	2-4
Trees					
Acer glabrum	Rocky mountain maple	R, U	6500-10,000 ft	10-20	10-15
Acer negundo	Boxelder	R, U	4500-7600 ft	25-30	20-25

Scientific Name[†]	Common Name	Riparian & Upland[‡]	Notes	Height (ft)	Spread (ft)
Alnus incana (tenuifolia)	Thin leaf alder	R	4500-11,500 ft	15-30	15-20
Betula occidentalis (fontinalis)	Water birch	R	4500-11,500 ft	15	10
Celtis occidentalis	Hackberry	R, U	3500-7200 ft	40-50	35-40
Juniperus scopulorum	Rocky Mountain juniper	U	5000-9000 ft	15-30	15-20
Picea pungens	Colorado blue spruce	R, U	7000-9500 ft	50-100	15-20
Pinus contorta	Lodgepole pine	U	>8000 ft	20-80	15-25
Pinus flexilis	Limber pine	U	5000-9000 ft	30-40	12-15
Pinus ponderosa	Ponderosa pine	U	5000-9000 ft	40-100	25-40
Populus angustifolia	Narrow-leaved cottonwood	R	3000-11,500 ft	50	40
Populus deltoides monilifera	Plains cottonwood	R	3000-6000 ft	75	40
Populus tremuloides	Quaking Aspen	R, U	6000-10,000 ft	12-15	40
Pseudotsuga menziesii	Douglas fir	R, U	4000-11,000 ft	50-60	20-25
Robinia neomexicana	New Mexico Locust	R, U		10-20	10-20
Salix amygdaloides	Peachleaf willow	R	3000-9000 ft	30-40	25-30

[†]Some of these species may not be commercially available.

[‡] R=Riparian, U=Upland.