

**CITY OF HOMER
HOMER, ALASKA**

Venuti

RESOLUTION 24-101

A RESOLUTION OF THE CITY COUNCIL OF HOMER, ALASKA
SUPPORTING THE EFFORTS OF THE HOMER CYCLING CLUB AND
FRIENDS OF THE KACHEMAK BAY STATE PARK TO ESTABLISH
HIKING, BIKING AND EQUESTRIAN TRAILS IN THE COTTONWOOD-
EASTLAND MANAGEMENT UNIT OF THE KACHEMAK BAY STATE
PARK.

WHEREAS, Kachemak Bay State Park is Alaska's first state park, encompassing an area
of 400,000 acres of mountains, forests, coastline and glaciers; and

WHEREAS, The Cottonwood-Eastland Management Unit covering 2,643 acres within
Kachemak Bay State Park is located on the north side of Kachemak Bay making it accessible
from the road system; and

WHEREAS, The management plan for the Cottonwood-Eastland Unit identifies the need
for more intensive multi-modal trail based recreation opportunities and the development of
associated facilities to accommodate current and future recreation use; and

WHEREAS, There are no Alaska State Park approved trails in the Cottonwood-Eastland
Management Unit; and

WHEREAS, Community input, including from the local neighborhood, received during
the public comment period July-August 2022 was overwhelmingly in favor of trails in
Cottonwood-Eastland with no negative comments received; and

WHEREAS, The Parks, Art, Recreation and Culture Advisory Commission discussed this
at their August 15, 2024 regular meeting and voiced unanimous consent in support of the
proposed project; and

WHEREAS, The Homer Cycling Club and the Friends of Kachemak Bay State Park have
engaged and paid for trail contractors to do trail layout with the intent of constructing those
trails; and

WHEREAS, A Recreational Trails Program grant and any other grants applied for will
require letters or resolutions of support.

NOW, THEREFORE, BE IT RESOLVED that the City Council of Homer, Alaska hereby
supports the efforts of the Homer Cycling Club and Friends of the Kachemak Bay State Park to

establish hiking, biking and equestrian trails in the Cottonwood-Eastland Management Unit of Kachemak Bay State Park.

PASSED AND ADOPTED by the Homer City Council this 23rd day of September, 2024.

CITY OF HOMER

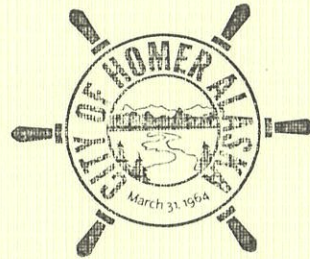


KEN CASTNER, MAYOR

ATTEST:



RENEE KRAUSE, MMC, CITY CLERK



Fiscal Note: N/A



MEMORANDUM

Resolution 24-101, A Resolution of the City Council of Homer Alaska Supporting the Efforts of the Homer Cycling Club and Friends of Kachemak Bay State Park to Establish Hiking, Biking and Equestrian Trails in the Cottonwood-Eastland Management Unit of the Kachemak Bay State Park. Venuti.

Item Type: Backup Memorandum
Prepared For: Mayor Castner and City Council
Date: September 4, 2024
From: Parks Art Recreation & Culture Advisory Commission

Purpose:

This memorandum aims to convey the reasons why the City Council should support the passage of the attached resolution endorsing the efforts of the Homer Cycling Club and Friends of Kachemak Bay State Park to establish hiking, biking, and equestrian trails in the Cottonwood-Eastland Unit of Kachemak Bay State Park.

Background:

Kachemak Bay State Park, Alaska's first state park, encompasses 400,000 acres of mountains, forests, coastline, and glaciers. Within this park, the Cottonwood-Eastland Management Unit covers 2,643 acres and is accessible from the road system on the north side of Kachemak Bay. This accessibility makes it an ideal location for developing multi-modal trails that can accommodate various recreational activities.

Rationale for Support:

- 1. Alignment with State Management Plans:** The management plan for the Cottonwood-Eastland Unit highlights the need for more intensive trail-based recreation opportunities. The proposed trails will directly address this need, enhancing the recreational offerings of the park.
- 2. Community Support:** During the public comment period in July-August 2022, there was overwhelming support from the local community for developing these trails, with no negative comments received. This reflects a strong local desire for improved access to outdoor activities.
- 3. Conformance with Statewide Goals:** The project aligns with the goals and objectives of the Alaska 2023-2027 Statewide Comprehensive Outdoor Recreation Plan (SCORP). The SCORP emphasizes expanding and enhancing recreational infrastructure to meet the growing demand

for outdoor activities, promoting healthy lifestyles, and fostering community engagement with natural resources.

4. **Proven Dedication and Preliminary Efforts:** The Homer Cycling Club and Friends of Kachemak Bay State Park have already engaged and funded trail contractors who have flagged 11 miles of trail. Their comprehensive plan for phased implementation of these trails demonstrates their dedication and preparedness to see this project through to completion.
5. **Funding Opportunities:** The proposed Recreational Trails Program (RTP) grant, along with other potential funding opportunities, is crucial for the project's success. The RTP grant application requires community letters of support or resolutions, making the passage of this resolution essential.
6. **Enrichment:** Supporting the development of trails in the Cottonwood-Eastland Unit of Kachemak Bay State Park is a significant step towards enriching the recreational landscape of our community and secure the necessary funding to bring this project to fruition.

Recommendation:

The PARCAC strongly recommends that the City Council adopt Resolution 24-0xx demonstrating its commitment to enhancing recreational infrastructure, supporting community health and well-being, and fostering a stronger connection between residents and the natural environment.

Attachment:

PARCAC Unapproved Meeting Minutes for August 15, 2024

Cottonwood Eastland Project Documents

Public Trail Location Map

CALL TO ORDER

Session 24-07, a Regular Meeting of the Parks, Art, Recreation and Culture Advisory Commission was called to order by Chair David Lewis at 5:30 p.m. on August 15, 2024 from the City Hall Upstairs Conference Room located at 491 E. Pioneer Avenue, Homer, Alaska and via Zoom Webinar. The Commission met at 4:30 p.m. for a worksession on the development of the Commission Strengths Weaknesses Opportunities Threats (SWOT) Analysis Parks, Recreation, Art & Culture.

PRESENT: COMMISSIONERS ARCHIBALD, HARRALD, KEISER, ROEDL, PARSLEY, STEFANO, LEWIS

ABSENT: STUDENT REPRESENTATIVE WALKER (EXCUSED)

STAFF: CITY CLERK KRAUSE
RECREATION MANAGER ILLG
PARKS MAINTENANCE COORDINATOR FELICE
PUBLIC WORKS DIRECTOR KORT

AGENDA APPROVAL

HARRALD ARCHIBALD MOVED TO AMEND THE AGENDA TO ADD SPECIAL PROJECTS & COMMUNICATIONS COORDINATOR CARROLL AS A VISITOR FOR THE CAPITAL IMPROVEMENT PLAN PRESENTATION.

There was no discussion.

VOTE. (Amendment). NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

There was no further amendments or discussion.

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

PUBLIC COMMENTS ON MATTERS ALREADY ON THE AGENDA (3 minute time limit)

Karin Marks, city resident, commented on the proposed mural suggesting that it could then be placed in other locations. She stated that the Boathouse Pavilion was a very nicely constructed building.

John Foutz, non-resident, wanted to provide comment on access to driving on the beach and was informed that he would need to wait until the end of the meeting or attend the meeting in October. Chair Lewis explained that the Beach Policy was postponed until the October meeting at 5:30 p.m.

VISITORS/PRESENTATIONS (10-minute time limit)

A. 2025-2030 Capital Improvement Plan and FY26 Legislative Request Presentation by Jenny Carroll
Special Projects and Communications Coordinator

Ms. Carroll presented the draft 2025-2030 Capital Improvement Plan pointing out the various changes and updates and described the process to develop the plan. She explained for the Commission why it included other organizations' projects, noting that typically the City Council did not include them in the listing of top

priority projects, but as a show of support from the Community these projects are important to the City of Homer. She explained and provided clarification on the request to the Commission to present their top three or four projects to Council for inclusion in their top 9 recommendations to the Legislature.

RECONSIDERATION

CONSENT AGENDA All items on the consent agenda are considered routine and non-controversial by the Parks Art Recreation & Culture Advisory Commission and are approved in one motion. There will be no separate discussion of these items unless requested by a Commissioner or someone from the public, in which case the item will be moved to the regular agenda and considered in normal sequence.

- A. Unapproved Meeting Minutes for June 20, 2024

ARCHIBALD/PARSLEY MOVED TO APPROVE THE CONSENT AGENDA AS PRESENTED.

There was no discussion.

VOTE: NON OBJECTION: UNANIMOUS CONSENT.

Motion carried.

STAFF & COUNCIL REPORT/COMMITTEE REPORTS (5 minute time limit)

- A. Parks Maintenance Staff Report for August 2024

Parks Maintenance Coordinator Felice reviewed his report that was provided in the packet. He facilitated discussion the following:

- Karen Hornaday Park road was redone up to 200 feet
- Prepared the access road to accommodate delivery and removal of the unit, electrical, water to the location, security lighting installed
- Jack Gist Park parking lot was redone
 - o access road was from the neighborhood was put in
 - o hydroseeding completed
- Bartlett & Pioneer restroom area was completed
- Bayview Park bid was concluded but came in over so additional money is required
- Trail over the creek in Karen Hornaday Park will be reviewed
- A proposed trail in Taijen will require funding
- New Sign for Ben Walters Park in the same style as the one placed in Jeffrey Park has been ordered
- Lighthouse sculpture donation is still being constructed
- Fencing for Bayview Park pricing is needed
- Updates to the financial plans for the next meeting for the upcoming budget cycle
- Homer Soil and Water Conservation District is interested in starting up a Steering Committee for the Homer Demonstration Forest
- Resolution for the Western Lot Library Trail Completion and plans to resurface Lucky Shot and Story Trail.
- Parks Maintenance Coordinator and Part time job description will be redone since duties are changed

B. Community Recreation Staff Report for August 2024

Mike Illg, Recreation Manager reported on the following in addition to his written report in the packet:

- Receiving a lot of calls regarding Pickleball and scheduled meetings with the City Manager and Community Development Director on getting more promotion by the Chamber of Commerce
- Meeting with City Engineer on the installation of the volleyball net system
- Scheduling Kathy Vogel to come and provide a demonstration on the CivicRec software
- Councilmember Erickson meeting with School Officials to assist in clarification on the agreement between the School District and the City regarding the use of equipment
- Looking at expanding use in the middle school as they currently do not have access to the facility; and
- Renewing ARPA membership for the Commission and staff
 - o The 2025 conference will be in Valdez and 2026 in Kenai

C. Staff Report for August 2024

Mike Illg, Recreation Manager reported the following:

- there was little action by Council that involved Parks, Art, Recreation or Culture items or topics
- Commissioner Scott Smith, Chair Lewis, City Planner Foster and he met regarding a joint worksession on the Comprehensive Plan Update.
 - o A Joint Worksession will be arranged for the September 18th Planning Commission meeting

Mr. Illg facilitated a brief discussion on the Transportation Plan and site selection for a community center.

PUBLIC HEARING

PENDING BUSINESS (15 minute time limit)

A. Review Commission Strategic Plan and Goals - Final Draft

Chair Lewis introduced the topic and noted that they received a memorandum from the City Manager stating that the Strategic Plan and Goals is a tool for the Commission to use as a work plan not a tool to direct staff. It is not the Commission's role to direct the staff.

Commissioner Keiser stated that PARCAC as the Commission is not empowered to do this work so it is the staff that will or should do it, she understood that the Commission could not "direct" staff. She questioned if they could recommend that staff is the appropriate party and with all due respect the work needs to be done and it is staff's job to perform that work.

Staff facilitated a lengthy discussion with the Commission on the following:

- Amending the language to remove the "Staff will" or "Staff shall"
 - Amend the language to read more as a goal and objective as opposed to an assignment
 - Such as PARCAC requests research options from Staff for creating long term sustainable funding or PARCAC would need to accomplish the goal
- If the tasks or goals as outlined are not measured or scheduled they will never be completed

- Staffing capacity
 - Many of the items listed in the document are expecting Staff to provide something in addition to what is currently being done.
- Amend it to read Commission requests draft budget to be presented to the commission
- the Commission recommends and does not approve
- Objective, Action
- Review of the previous strategic plans for the other advisory bodies was referenced
- There are multiple items that staff already does and is it required to differentiate
- Staff recommended working on the document and bringing back to the Commission
- Underlying procedural assumption from the Commission that Staff is doing the work versus the Commission
 - Referenced the difference in how the EDC Strategic Plan is written

City Clerk Krause clarified that the only motion is to postpone to the next meeting.

Commissioner Keiser offered to remove the language but keep the spirit of what the Commission would actually need to accomplish.

Chair Lewis then stated that the document could then be taken by Staff and reviewed with the City Manager.

Commissioner Keiser objected to that action and reiterated that it was the Commission's Strategic Plan and Goals not the staff. She understood the direction provided by the City Manager, but the Commission is not accountable to the City Manager they are accountable to City Council, City Council appointed them and they were directed by City Council. Ms. Keiser reminded the Commission that the Council had a big ask when they charged us with this strategic plan.

Commissioner Archibald would rather soften the ask than present it to Council and they send it back.

ARCHIBALD/HARRALD MOVED TO POSTPONE TO THE SEPTEMBER REGULAR MEETING.

A brief discussion ensued including removal of the associate planner position, add "appropriate actions of other Commissions"

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

Commissioner Keiser will make the amendments and submit the document to staff and the Clerk for review.

B. Review Draft Memorandum for Vessel Haul Out and Camping Area

Chair Lewis introduced the topic and deferred to Recreation Manager Illg.

Recreation Manager Illg reviewed the memorandum and City Clerk Krause clarified the Commission to focus on the document in the Supplemental packet.

Commissioner Harrald stated that the memorandum captured everything the Commission wanted.

HARRALD/ARCHIBALD MOVED TO ADOPT THE MEMORANDUM AS WRITTEN AND FORWARD TO THE CITY COUNCIL.

There was no further discussion.

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

C. Review and Recommendation on Art Mural for the Boathouse Pavilion

Chair Lewis introduced the topic and deferred to City Clerk Krause.

City Clerk Krause provided the Commission with additional information on the proposed mural that was gained from a discussion with Ms. Oberstein.

Staff facilitated discussion on the proposed mural that included the following:

- Not the location that was preferred
- Responsible party for cleaning
- The goal is to discourage capture of large halibut
- Artistic style was not preferred
- No Alaska artist involved
- The endorsement of the people who constructed the Boat Pavilion
 - o Postponing the acceptance until input is received from the members of the group who constructed the pavilion
- The Commission is not required to accept all donations, so they can move to recommend the Port and Harbor Commission for their opinion and then forward to City Council.

KEISER/STEFANO MOVED TO REJECT THE APPLICATION FOR A DONATION OF A MURAL DEPICTING A GROUP OF PEOPLE HOLDING THEIR LARGE HALIBUT FISH TROPHIES SUBMITTED BY ALASKA WORLD ARTS FOR PLACEMENT ON THE BOATHOUSE PAVILION CREATED BY CHICAGO ARTIST KATHLEEN DOSE-KOEHL

Discussion ensued on the proposed art does not demonstrate to visitors why Homer has a reputation of being an art destination, it does not enhance the diversity of the City Municipal Art Collection, does not represent Homer's culture or immediate environment, the mural is not from a local artist.

VOTE. YES. STEFANO, LEWIS, HARRALD, ARCHIBALD, PARSLEY, KEISER.

Motion carried.

A memorandum will be submitted to Council.

NEW BUSINESS (15-20 minute time limit)

A. Memorandum from City Manager re: HERC 2 Exterior Recommendations

Chair Lewis introduced the topic and deferred to Public Works Director Kort.

Public Works Director Kort expressed concern on painting or doing any improvements to this building that would elicit public adoration. He noted that he was not aware that this was on the agenda until today and Staff has discussed boarding up the windows.

Discussion ensued on not improving the exterior and boarding up the windows with a graphic or painting the same color of paint, the removal of glass from the windows and installing netting to prevent wildlife from entering, previous comments from the public not to do anything artistic with the exterior.

ARCHIBALD/PARSLEY MOVED TO RECOMMEND NOT BEAUTIFYING THE EXTERIOR WITH ARTISTIC ENDEAVORS THAT MAY DISTRACT THE PUBLIC OR INGRATIATE THE FACILITY TO THE LOCAL COMMUNITY ENCOURAGING THAT IT BE KEPT. IT IS FURTHER RECOMMENDED THAT BUILDING MAINTENANCE BE CONSULTED TO PROVIDE SOLUTIONS THAT ARE ECONOMICALLY FEASIBLE AND WILL WITHSTAND THE ELEMENTS WITH MINIMAL TO NO MAINTENANCE UNTIL THE BUILDING CAN BE REMOVED.

There was a brief comment that the City Manager was approached by members of Council to address the issues of the broken windows, etc.

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

B. Recommendation of Support for Cottonwood Eastland Trails

Chair Lewis introduced the topic and reported he ran into Cameale Johnson with the Homer Cycling Club and agreed to bring this before the Commission. He added that he reached out to Councilmember Venuti who agreed to sponsor a resolution of support for Council. There is no cost to the City or Commission and a number of folks would like to see trails in the Cottonwood-Eastland Management area. It is proposed to construct 10 miles of trails, Eric Clark is mapping out the area and he is with the Kachemak Bay State Park.

City Clerk Krause explained that the resolution will be from the City Council and the Commission will be submitting a memorandum of support with the excerpt from the minutes.

Commissioner Archibald reported that they are in the process of getting an interagency land management assessment agreement with the State Department of Natural Resources for a parking lot and they have had a

professional trails designed do additional layout for trails that will provide a good system of trails for pedestrians, cyclists and horses. It will really be nice to have something like this on this side of the bay.

Discussion ensued with Commissioners pointing out the benefits to being able to access trails from the road system and encouraging visitors to Kachemak Bay State Park that might never be able to otherwise.

MOVED THAT PARKS, ART, RECREATION AND CULTURE ADVISORY COMMISSION FULLY SUPPORTS THE CREATION OF TRAILS AND RECOMMENDS CITY COUNCIL ADOPT A RESOLUTION EXPRESSING SUPPORT FOR THE PROJECT.

There was no further discussion.

VOTE. NON-OBJECTION. UNANIMOUS CONSENT.

Motion carried.

C. Welcome New Commissioner Ellie Stefano!

INFORMATIONAL MATERIALS

A. PARCAC Letter to the Editor

B. Annual Calendar for 2024

Commissioner Keiser will be reporting at the Special Meeting on August 29, 2024 and requesting on behalf of the Commission for Council to postpone adoption of the Transportation Plan until after their September regular meeting.

Commissioner Harrauld will report at the August 25, 2024 regular meeting.

Recreation Manager Illg will provide the FY24/FY25 Budgets for the Commission review for the September meeting.

COMMENTS OF THE AUDIENCE (3 minute time limit)

COMMENTS OF THE MAYOR/COUNCILMEMBER (If Present)

COMMENTS OF THE CITY STAFF

City Clerk Krause announced that she will be assigning a new Clerk for the Commission so she will be turning the Commission over to someone else after almost 18 years Clerking for the Commission.

Recreation Manager Illg commented it was a great meeting

COMMENTS OF THE COMMISSION

Commissioner Harrauld welcomed Commissioner Stefano and stated that it would be nice to have a Student Representative mentor to assist the Student Commissioner with packet pickup, etc. Glad to see the quality of

life happens in the parks, noting some of her best memories this summer were because the parks looked awesome.

Commissioner Archibald welcomed Commissioner Stefano and noted that he will be absent from the September meeting. He expressed his appreciation for her participation on the mural donation noting his significant other fully agreed with her opinion of the artwork.

Commissioner Parsley commented it was a good meeting, the SWOT analysis was really fun and welcomed Commissioner Stefano.

Commissioner Keiser thanked everyone for their hard work and welcomed Commissioner Stefano and then noted that the Calendar called out for the Commission to work on the budget in September and October but the Budget Schedule said Council is going to present their budget priorities in October and budget sheets in November.

Chair Lewis welcomed Commissioner Stefano and commented that it was a good meeting.

ADJOURNMENT

There being no further business to come before the Commission Chair Lewis adjourned the meeting at 8:10 p.m. A Special Meeting is scheduled for **Thursday, August 22, 2024 at 5:30 p.m. The next regular meeting is Thursday, September 19, 2024 at 5:30 p.m. A worksession is scheduled for 4:30 p.m.** All meetings scheduled to be held in the City Hall Cowles Council Chambers located at 491 E. Pioneer Avenue, Homer, Alaska and via Zoom Webinar.

Renee Krause, MMC, City Clerk

Approved: _____

Cottonwood Eastland Trail Design

Trail Construction and Design Recommendations



PTARMIGAN PTRAILS
CONSULT :: DESIGN :: BUILD





Acknowledgements

Homer Cycling Club Board and Members

Derek Reynolds Jason Herreman

Dale Banks Cooper Freeman

Chuck Lindsay

Jake Schlaffer

Camaele Johnson

Alaska DNR Staff

Jason Okuly

Eric Clarke

Carter Forney

Additional Organizational Support

Camaele Johnson - Friends of Kachemak Bay State

Park Megan Stoll - Kenai Peninsula Back Country

Horsemen Christine Byl - Interior Trails

Gabe Travis - Interior Trails

Kevin Simpson - Mountain Surf Creative LLC



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Cottonwood Eastland Trail Design

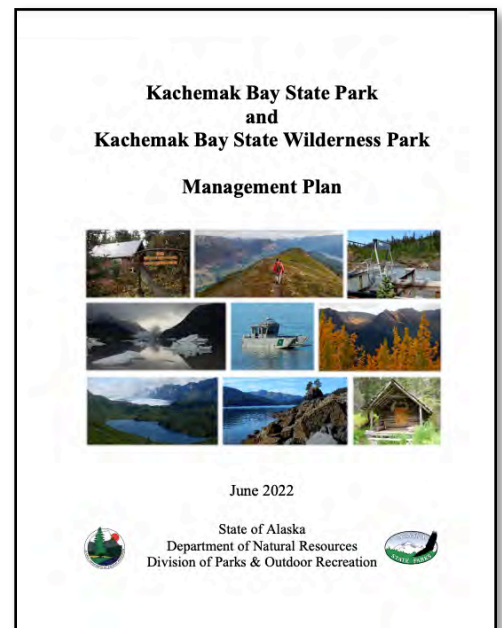
Homer Cycling Club and Alaska State Parks - Department of Natural Resources

Summary

Cottonwood Eastland (CE) is 2643 acre management unit of the expansive Kachemak Bay State Park, Owned and managed by Alaska State Parks (ASP) under the Department of Natural Resources (AKDNR). The CE parcels are located directly east of Homer, Alaska, 17 miles out East End Rd. This document provides guidance to the Homer Cycling Club (HCC) and Alaska State Parks (ASP) in their efforts to expand and enhance the accessibility and function of Cottonwood Eastland. HCC has hired Ptarmigan Trails LLC (PTRAILS) to assess the property, identify promising locations for trail development, highlight potential areas of concern within the property boundary, create a trail prescription to conceptualize desired community trail experiences and provide construction budget recommendations for future grant applications.

In 2022, ASP approved and finalized a revision to the parks master plan, originally created in 1995. The 2022 plan aims “to provide management direction that facilitates recreational use opportunities while conserving the natural and cultural resources through a set of policies and recommendations that guide permitting activities, uses, facilities, and trail development on all the state owned and managed land and waters within KBSP and KBSWP” (Pg 2, KBSP & KBSWP Plan, 2022).

Ptarmigan Trails LLC, under the direction of HCC has conceptualized trail development at *Cottonwood Eastland*, seeking to meet the needs of HCC and the outdoor community at large. Our design team was able to identify a roughly 11.5 mile trail system, with potential for phased development depending on funding availability. The mileage contained within the trail system is sufficient to provide a fun and engaging experience for varied trail users of all skill levels while also providing a unique nature experience for both pedestrian and bike traffic.



This deliverable aims to inform HCC, ASP and stakeholders on the potential physical and fiscal investment in the area. Upon direction from HCC, our team:

- Conducted stakeholder meetings to gather input and concerns
- Completed Field Layout of Concept and logging of GPS data
- Developed Conceptual Trail Mapping
- Created budget for construction contracting and grant fundraising
- Provided trail management objectives for development of trail infrastructure



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Site Description

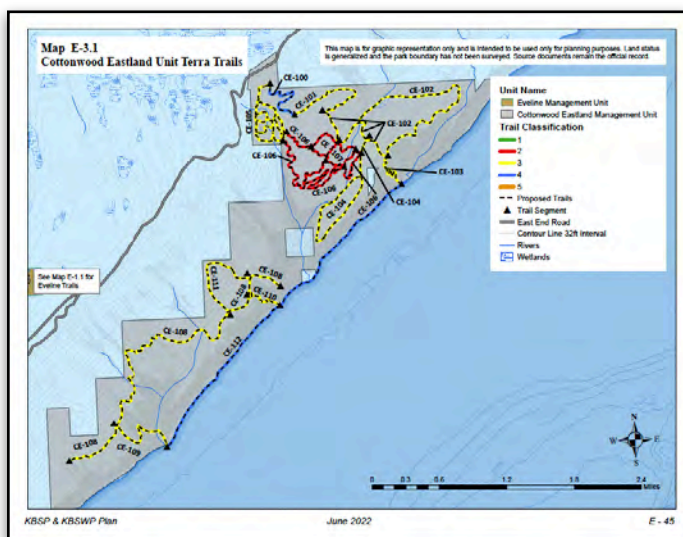
Cottonwood Eastland consists of 2643 acres located along the northern side of Kachemak Bay and is now classified as a Recreational Development Zone within the 2022 revised master plan. This unit is characterized by southeast sloping terrain that falls precipitously at a bluff to Kachemak Bay. The exception to the difficult and complex terrain is the northern parcel of CE, in which HCC has interest in developing mountain bike and multi-use trails. According to Alaska State Parks, the “northern part of the unit would be suitable to both trail and facility development. East End Road provides direct access to this portion of the unit. The vast majority of this unit is forested, with five streams entering the bay from the CE unit. The remaining area is composed of coastal/estuarine habitat along the north side of Kachemak Bay. Since a 2009 burn, 400 acres of the forest area is now *Calamagrostis*/shrub dominated habitat.” (Pg 123, KBSP & KBSWP Plan, 2022)



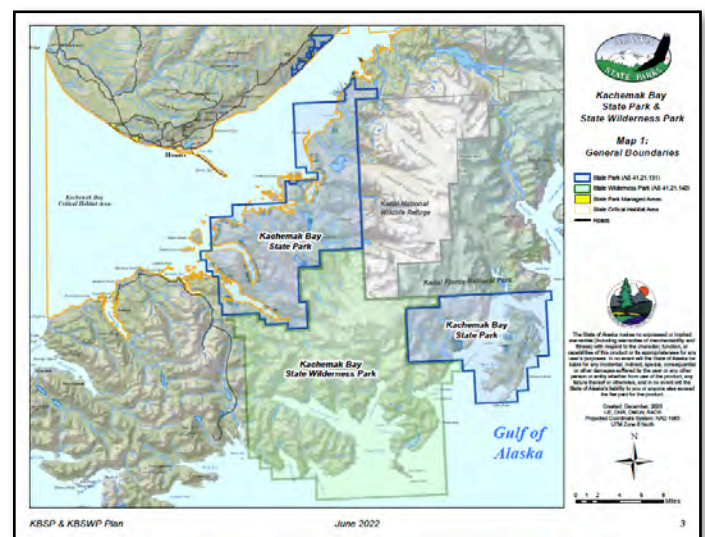
Project Location

While the southern portion of Cottonwood Eastland is difficult to access and slated to be managed as natural space, the highest level of development and use is suggested in the northern parcel and “includes - but are not limited to - roads, trails, private vehicle and public transportation routes or access, campgrounds, picnic areas, visitor and interpretive centers, high-standard trails for all ages and abilities, park management facilities, and commercial lodges or resorts as provided for within the unit management or site development plan.” (Pgs 58- 58, KBSP & KBSWP Plan, 2022).

For the purpose of this trail development and prescription plan, PTRAILS and HCC are most interested in implementing primary mountain bike optimized trails and high-standard multi-use trails for all ages and abilities.”



K-Bay State Park CE Trails Proposed during
2022 Parks Master Plan Revision



K-Bay General Boundaries Map



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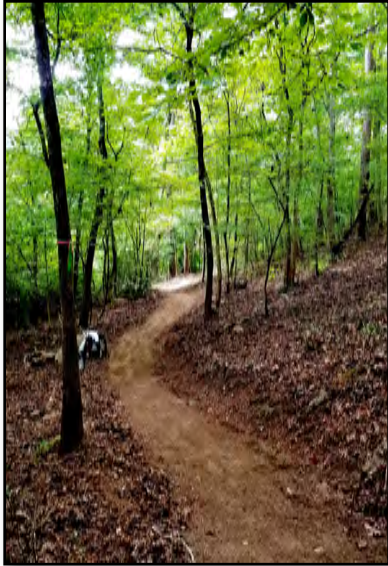
Trail Vision and Development Details

Cottonwood Eastland is a unique location and deserves to be highlighted as a trail destination. This parcel of public land, once dominated by a mixed conifer/hardwood spruce forest, consists primarily of open grasslands and young hardwoods. Current development of the property is limited to a small user developed parking area, steep social trails and dispersed user developed routes. In fact the majority of Cottonwood Eastland and the north side of the bay has relatively little development. (*Pg 35, KBSP & KBSWP Plan, 2022*). The post-fire successional landscape offers a coastal trail experience with sweeping views of Kachemak Bay, Cook Inlet and the glaciated terrain of Kenai Mountains. Developing a trail system at Cottonwood Eastland should emphasize the importance of appreciating this unique natural landscape. Secondary to the natural beauty, the trail system should be a spotlight on local development of healthy recreation, potential for renewed economic vitality and an outdoor trail community looking to sustain visitation and use into the future.



The planned trail development imagines multiple styles of trail use and experiences, ranging from low-risk to technically demanding mountain bike trails, user specific routes and stacked loops for added trail connectivity. The property has potential to become an attractive snow biking, mountain biking and hiking stop for those visiting Homer or Kachemak Bay State Park. Locals will have a recreation facility to stay fit and improve their mental well-being in nature. Trails will be suitable for families, beginners and experienced users alike. The proposed development could result in increased visitation to Homer and the surrounding communities, in turn supporting tourism spending in local communities and businesses.

This trail development and conceptual design seeks to provide an experience for the majority of trail users. The design our team has created seeks to benefit the most users possible, with a large portion of the trails open to adaptive users and multi-use access. The design lends itself to both longer outings or short and after-work recreation. Local schools can also use the trail system for outdoor experiential education activities or as a venue for team practices and events.



Easy/Intermediate - Dual Direction Multi-Use Trails:

Design Standard: Pack & Saddle (P&S)

Managed Use: Adaptive MTB (AMB), Mountain Bike (MTB), Pedestrian (PED)

Trails #'s: 121, 202, 204, 300, 301, 302, 400

These multi-use trails will consist of long grade reversals, low trail grades (5-7%), sinuous hillside contours and provide a trail experience mixing classic US Forest Service Trail and Alaska State Parks standards with updated industry standards of trail construction developed over the last decade. These dual direction trails provide arterial connections and stacked loops throughout the CE trail system. From HUB A, C and H trail users can choose to descend a variety of trails back to the trailhead or continue on additional trails throughout the property. When combined with MTB and P&S optimized trails, users can create a perimeter loop of the entire property. These trails will have slower speeds, as a more diverse group of trail users will navigate these segments.

Additionally, these trail segments have been designed in a manner that allows grooming and use as winter snow biking trails. Not every trail in the system is appropriate for this, but trails in this category are well suited.

Intermediate - Mountain Bike Optimized Trails:

Design Standard: Mountain Bike (MTB)

Managed Use: Mountain Bike (MTB), Adaptive MTB (AMB), Pedestrian (PED)

Trails #'s: 200, 201, 203, 400, 401, 402, 403

These trail segments provide mountain bikers with one-way descending trail options. These trails will begin at various hubs throughout the trail system and are intended to be looped back with multi-use trails as climb options. These segments will have frequent grade reversals that could be linked using the transitions to jump between each reversal. Trails will have in sloped turns, faster speeds, and slightly steeper overall trail grades (up to 10%). These trail will not be recommended for foot traffic due to their high rates of speed and one-way travel, but pedestrian users will not be specifically barred from using them. There may be technical trail features (TTF) along the route of the trail providing additional challenge to riders looking to test their skills. These TTF's will be located as an "option line" and exist outside the obvious main tread alignment.





Easy - Multi-Use Pedestrian/Biking Trails:

Design Standard: Pack & Saddle (P&S)

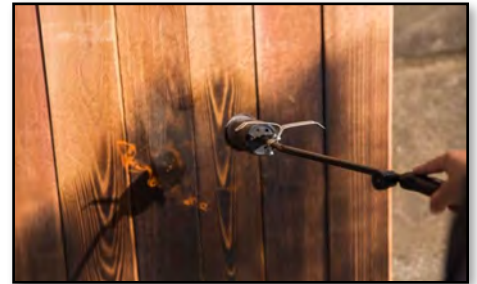
Managed Use: Adaptive MTB (AMB), Mountain Bike (MTB), Pedestrian (PED)

Trails #'s: 101, 121

These dual direction trail segments will cater to users seeking a shorter more developed experience. Their hardened surface also provides a technical solution to crossing relatively flat terrain or saturated areas. Users will experience low angle trail grades, hardened tread surfaces and greater tread widths. In order to accommodate a wider variety of users, trail sections will be comprised of a compacted aggregate tread, and will be generally usable in nearly all conditions.



Trail 101 will require a 100' span of puncheon to traverse a wet area between Hubs B and D; also a 50-75' section between E & G. These puncheon can be constructed from locally milled spruce logs gathered on site. The down and dead logs have been fire charred and provides similar hardening benefits as the Japanese method of Yakisugi or Shou Sugi Ban, and would be excellent joists and support structure for traditional treaded wood decking.



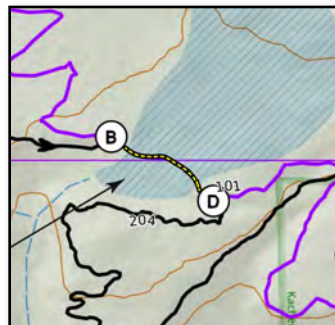
Yakisugi method for curing

In order to encourage a specific traffic flow throughout the trail system, and to limit risk and potential conflicts between users, these trail segments will be suggested as one-way climb only travel for mountain bike users. Pedestrians may use the trail in both directions.

Additional segments of trail may be improved later if HCC or ASP seeks to establish additional Universal Access Trail segments.



Short span puncheon



Puncheon locations on trail 101



Hiking Trails:

Design Standard: Pack & Saddle (P&S)

Managed Use: MTB, PED

Trails #'s: 500, 501

Trail 500 and 501 will be designated for pedestrian traffic and experience mountain bikers seeking a backcountry experience. These will be dual direction trails varying in difficulty.

Moderately difficult, the trails will traverse steeper slopes, beginning at HUB H and K s they descends to the lower portions of the Cottonwood Eastland parcel, above Cottonwood Creek. Creek crossings may consist of rock stone fords or small timber crossings. Due to the difficult nature of the terrain and soils along it will be constructed as a backcountry style Class II trail, providing a unique experience for trail users looking for a more remote and less developed experience.





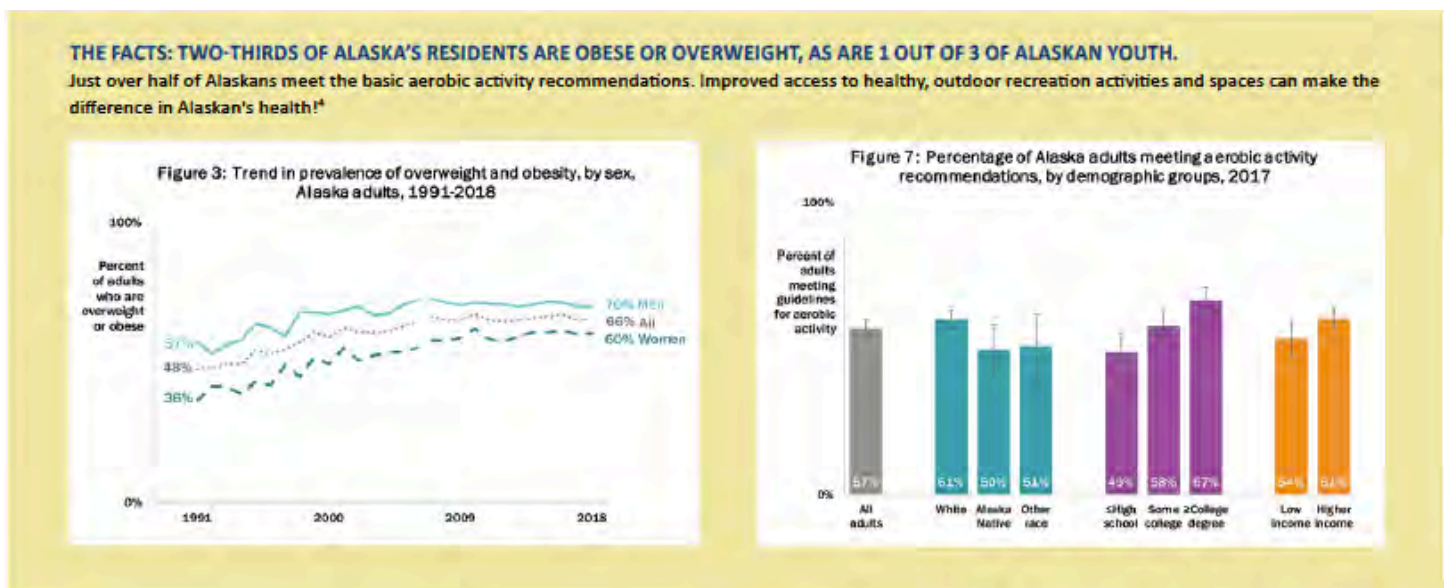
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Alaska SCORP

Recreation users in Alaska spend on average \$887 billion dollars annually (2023-2027 Alaska SCORP, pg. 9 fig 1). As mountain biking, hiking and general trail use expands across the United States it is incumbent upon public agencies, land managers and trail designers to create experiences that meet the myriad needs of diverse trail users. This includes new trails, adaptive trails and trails that are accessible to populations not normally portrayed in recreation marketing and advertising.

Chapter 2 of the The **2023 - 2027 Alaska SCORP** (Statewide Comprehensive Outdoor Recreation Plan) discusses the positive outcomes associated with outdoor recreation and the need to get more Alaskans, especially youth, outside (2023-2027 Alaska SCORP, ch 2. Pg 13, pg 53 of 194). The plan highlights needs specific to the Alaska recreation industry and specifically underserved recreational project areas such as Cottonwood Eastland outside Homer.



In Strategy 6.1 (2023-2027 Alaska SCORP, ch4, page 14, pg 142), the SCORP outlines the need to “Support non-profits that build and maintain trails, including bike trail and hut organizations.” The growing shift towards outdoor recreation for residents and visitors suggests that Cottonwood Eastland is worthy of investment from both a community and agency standpoint. Alaska State Parks should lean on their stakeholder partners and listen to their needs. The 2022 revision of the Kachemak Bay State Park plan already envisions additional trail and more intensive use at Cottonwood Eastland, and the 2023-2027 Alaska SCORP further reinforces this trend through real world quantified statistical data.

In order of importance, the need for:

1. Increased day use recreations (parks, waysides, scenic areas)
2. Winter Biking (trailhead parking and trails)
6. Mountain Biking (unpaved trails, trailheads and open space)



Expanded trail infrastructure and the desire to recreate closer to home is something desired by a vast array of Alaskans. According to the Land Managers “Summary of Results” on *ch 2, pg 39, page 79*, a survey conducted by land managers showed three clear demands that would be satisfied by the development of trails at Cottonwood Eastland.

The **2023-2027 SCORP** recommendations suggest that a Cottonwood Eastland trail system could help to highlight and address issues associated lack of recreation access, potential new tourism income, alleviate physical health disparities and create positive mental health outcomes.

Our outdoor and recreation facilities provide more than physical benefits, they also help alleviate inequality through shared social and cultural experiences, thus creating a more unified and diverse sense of community identity.

HCC and the Homer outdoor community seeks to invite more diverse opportunities for visitors, residents and businesses regardless of social class or economic income, and has done so through continued investment in trail infrastructure, tourism and lodging needs as well as working with stakeholder partners at Alaska State Parks and City of Homer.

NEWS FROM THE FRONTLINES – ALASKA LAND
MANAGERS REPORT ON TRENDS IN USE



SCORP Land Managers Survey:

What were the top growth areas in recreation demand from 2019-2022? (Question #36)

1. Day-use recreation (city parks, picnic areas)
2. Winter biking (trailhead parking, trails, open space)
3. Walking or biking (paved trails, parking areas)
4. Cross-country skiing (trailheads, groomed and open space trails)
5. Camping or RV-ing (campgrounds)
6. Mountain biking (unpaved trails, trailheads, open space)
7. ATV riding (places to ride, developed trails)



Trails Descriptions and Classifications

COTTONWOOD EASTLAND TRAIL ALIGNMENTS									
TRAIL NAME	STYLE	DIFFICULTY	DIRECTION	DESIGNED STANDARD	MANAGED USE	AK STATE PARKS CLASSIFICATION	DESIGN LENGTH (LF)	BUILT LENGTH (LF)	FLAGGED
101a	NSP	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	IV	2407	1467	Y
101b	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	IV	1367	1504	Y
101c	NSP	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	IV	2957	3253	Y
102	NSP	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	IV	1670	1837	Y
121	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	AMB/MTB/PED	III	1738	1912	Y
200	SINGLETRACK	GRN	One Way	MTB	MTB/PED	III	2750	3025	Y
201	SINGLETRACK	GRN	One Way	MTB	MTB/PED	III	1900	2090	Y
202	SINGLETRACK	GRN	Dual Direction	MTB	MTB/PED	III	850	935	Y
203	SINGLETRACK	BLU	One Way	MTB	MTB/PED	III	2105	2316	Y
204	SINGLETRACK	BLU	Dual Direction	MTB	MTB/PED	III	3220	3542	Y
300	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	III	1000	1100	Y
301	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	III	1960	2156	Y
302	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	III	4500	4950	Y
400	SINGLETRACK	GRN/BLU	Dual Direction	AMB/MTB	AMB/MTB/PED	III	4550	5005	Y
401	SINGLETRACK	BLU	One Way	AMB/MTB	AMB/MTB	III	4550	5005	Y
402	SINGLETRACK	BLU	One way	AMB/MTB	AMB/MTB	III	3380	3718	Y
403	SINGLETRACK	BLU	One way	AMB/MTB	AMB/MTB	III	4000	4400	Y
500	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	MTB/PED	II/III	8555	2850	N
501	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	MTB/PED	II	5300	7350	N
					Overall Linear Foot		58759	58414	
					Overall Milage		11.13	11.06	

The Following information explains experience and style descriptions mentioned in the trail experience narratives on pages 23-28.

Mountain Bike Optimized (MBO)

Alias/s: Flowy Mountain Bike Optimized - Flow trail

Characteristics: Features, flow, berms, surface treatments

Description: Mountain bike-optimized singletrack trails are designed and constructed to enhance trail experiences specifically for mountain bikers. Mountain bike-optimized trails might differ from traditional trails in several ways: enhanced tread shaping, directional or one-way travel, and the addition of man-made technical trail features (TTFs). Bicycles move differently along a trail than other modes of transportation. The movement of the wheel, the use of gravity and friction, the transfer of energy from the rider to the wheel – these offer both opportunities and constraints for trails and trail features that may differ from those of other users.

Primitive Bike Optimized (PBO)

Alias/s:

Characteristics: Enduro, 1%'er, natural

Description:

Often this style of trail is observed in a mid-country to backcountry setting.

These trails provide an adventurous and more rugged experience to riders

offering technical terrain challenges. Trail alignment is not without intention, but does not always take into consideration modern trail building design standards.

Classic (CLX)

Alias/s: old school, XC, cross country, historic, Legacy

Characteristics: Not Bike Optimized

Description: A trail style that is to be the most efficient route between point A and point B. Often shared use, and not taking particular consideration to any one user experience. Grades may be manageable for average riders (3-10%) but are often severe (15% or greater) on historic alignments., Users of this trail are focused on pedal efficiency, distance, and speed.often devoid of distinct uphill or downhill sections.

Trail Typology

Format below = Abbreviation - Title - key descriptor - Alias/s

Many of these will not be used on this project

Route Type

Narrative - “Route Type” or “Type” describes the basic physical presence of a route through the landscape. This is the highest and least granular level of attribution for a route.

SGL - Singletrack - narrow, natural surface or OCCASIONALLY imported surface

NSP - Narrow Surfaced Pathway - ALWAYS a paved or imported surface

WSP - Wide Surfaced Pathway - Always a paved or imported surface

DBL - Double Track - truck/Jeep/natural surface/driven in/fire road

RBD - Road Bed - Natural Surface - cut road

GRD - Gravel surfaced road - cut road

PAV - Paved Road

PBL - Paved road with bike lane

RRD - Railbed

STR - Streambed

Style

Narrative - “Style” describes trail characteristics that primarily affect mountainbikers.

“Style” is a layer of granularity added almost exclusively to a Singletrack “Route Type”.

CLX = Classic - Not Bike Optimized - old school, XC, cross country, historic, legacy

TRD = Traditional Bike Optimized - Trad, Rolling contour trail, traditional

SKL = Skills -

TEC = Technical Bike Optimized - Techie

MBO = Flowy Mountain Bike Optimized - Flow trail

PBO = Primitive Bike Optimized - Enduro, 1%’er, natural, down-country

JMP = Jump - Slopestyle, Freeride

GRV = Gravity/DH

Trail Difficulty

Narrative - “Difficulty” These attributes are derived from the IMBA Trail Difficulty Rating System, a basic method used to categorize the relative technical difficulty of recreation trails.

WHT - White Circle, Easiest

GRN - Green Circle, Easy
BLU - Blue Square, More Difficult
BLK - Black Diamond, Very Difficult/MOST DIFFICULT
RED - Double Black Diamond, Extremely Difficult

User

Narrative - “User” is who or what is on the trail. This is commonly broken out into “Designed User” - for whom or what the trail is design for, and “Managed User” - For whom or what the trail is managed for. They are not always the same.

MTB - Mountain Biker, Bicycle
HIK - Hiker/Pedestrian
EQU - Equestrian, Pack & Saddle
SHRD or HIKBIK - Hiker and Biker
HIKEQ - Hiker and Equestrian
MULTI - Mountain Biker, Hiker, and Equestrian
ALL - All users - All of the above and below
MTO - Motorcycle
ATV - All terrain vehicle
UTV - UTV/Side by side
TRK - Truck - jeep, 4x4, Class

Direction

Narrative - “Direction” describes a preferred or mandated direction of travel for user upon a trail.

A. UP - Up
B. DWN - Down
C. BI - Bidirectional
D. ONE - One-way travel (for a skills loop for example)

Status

Narrative - “Status” describes at what level of implementation a specific alignment is.

FLG - Flagged
PFLG - Partially Flagged
CON - Conceptual
FEA - Feasible
EXT - Existing

Trail Difficulty Definitions

WHT - White Circle - Not applicable to this project

GRN - Beginner, Easiest Trails, Green Lines (green circle) – For beginners, these trails have a smoother and wider tread, lower trail grades, and less exposure.





BLU - Intermediate, More Difficult, Blue Lines (blue square) – For intermediate riders, these trails can be steeper, more technically difficult, or longer.

BLK - Advanced, Very Difficult Trails, Black Lines (black diamond) – For advanced riders, these trails offer a combination of difficult trail tread, technical features, and long distances for those looking for challenge and endurance-oriented experiences. Generally, they have moderate exposure and have less predictable surfaces.

RED - Expert, Extremely Difficult Trails, Red Lines (double black diamond) – For expert riders, these trails offer a combination of extremely difficult trail tread, extremely technical features, and often longer distances for those looking for challenge and endurance-oriented experiences. Generally, they have significant exposure and have very unpredictable surfaces.

IMBA Trail Difficulty Rating System



	 EASY GREEN CIRCLE	 MORE DIFFICULT BLUESQUARE	 VERY DIFFICULT BLACK DIAMOND	 EXTREMELY DIFFICULT DBL. BLACK DIAMOND
TRAIL WIDTH	36" (900 mm) or more	24" (600 mm) or more	12" (300 mm) or more	6" (150 mm) or more
TREAD SURFACE	Firm and stable	Mostly stable with some variability	Widely variable	Widely variable and unpredictable
AVERAGE TRAIL GRADE	Typically 5% or less	Typically 8% or less	Typically 12% or less	Typically 15% or less
MAXIMUM TRAIL GRADE	Max 15%	Max 15% or greater	Max 15% or greater	Max 15% or greater
NATURAL OBSTACLES AND TECHNICAL TRAIL FEATURES (TTF)	Unavoidable obstacles 2" (50 mm) tall or less Avoidable obstacles may be present Unavoidable bridges 36" (900 mm) or wider	Unavoidable obstacles 8" (200 mm) tall or less Avoidable obstacles may be present Unavoidable bridges 24" (600 mm) or wider TTF's 24" (600 mm) high or less, width of deck is greater than 1/2 the height	Unavoidable obstacles 15" (380 mm) tall or less Avoidable obstacles may be present May include loose rocks Unavoidable bridges 24" (600 mm) or wider TTF's 48" (1,200 mm) high or less, width of deck is less than 1/2 the height Short sections may exceed criteria	Unavoidable obstacles 15" (380 mm) tall or less Avoidable obstacles may be present May include loose rocks Unavoidable bridges 24" (600 mm) or narrower TTF's 48" (1,200 mm) high or greater, width of deck is unpredictable Many sections may exceed criteria

Trail Number/Name	101, 102	
Mileage (appx.)	1.76	
Build Spec	Narrow Surfaced Path	
Route Type	Classic	
Difficulty Rating	Green Circle - Easiest	
Detail Sheet Reference	DT-05-All	
Narrative	<p>This series of trails consists of narrow surfaced pathways with a compacted crushed quarry rock tread.</p> <p>Trail will feature 5-7% average grade with maximum grades of up to 12% in short sections. Typical tread width will be 48-60". Trail tread surface comprised of native soil capped with aggregate base and top course throughout to prevent soil damage due to water intrusion and soil saturation. Trails will flow continuously, contouring along the hillsides, with open sight-lines to prevent issues with wildlife and other trail users. These trails are suitable for all user types and provide point to point arterial connections throughout Cottonwood Eastland. Suggest "Climb Only" encouragement for MTB users</p> <p>Tread will consist of: Base course of 3-5" of 3/4" Minus Crushed Quarry Rock Top Course of 3" 1/4" Minus Crushed Quarry Rock</p>	
Trail Characteristic/Feature	Value	Description
Finished tread width, 0% - 20% side slope	48-60"	
Finished tread width, 21% - 40% side slope	48-60"	
Finished tread width, 40%+ side slope	48-60"	
Horizontal clearance	120"	60" clearance each side of centerline
Vertical clearance	8' - 10'	Over entire trail tread.
Outslope	0% - 5%	Avoid aggressive outsloping for purposes of drainage; use grade reversals instead
Inslope	0% - 7%	Avoid aggressive in-sloping to avoid the sensation of a "flow trail".
Average grade, soil	5-7%	
Maximum grade, soil	N/A	Maximum length of segment = 50'
Maximum grade, rock or armored, climbing	12%	Maximum length of segment = 20'
Maximum grade, rock or armored, descending	8%	Maximum length of segment = 50'
Maximum grade, soil, optional lines	N/A	Maximum length of segment = 20'
Maximum grade, rock or armored, optional lines	N/A	Maximum length of segment = unlimited
Grade reversal, frequency (trough-to-trough)	25'-50'	More than outslope, grade reversals will be responsible for draining the tread. Grade reversals should not make the trail feel "hyperkinetic" or resemble a pump track. Instead, the natural terrain should be "surfed" to take advantage of microtopography.
Turn radius	6-10'	Where possible climbing turns are preferred. SwitchBerm style turns are acceptable on steeper side slopes. Maximum berm height Cut and fill slopes on inside and outside of turns excavations must be filled and graded to meet natural angle of repose.
Roughness/texture	0"	Relief from surround typical soil-based tread
Roughness/texture, optional lines	N/A	Relief from surround typical soil-based tread
Sightlines	100'	Continual clear sightlines are expected.
TTFs, natural, unavoidable	None	
TTFs, natural, optional lines	Not allowed	
MTTFs, natural, unavoidable	Not allowed	
MTTFs, natural, optional lines	Not allowed	

Trail Number/Name	121, 202, 204, 300, 301, 302, 400	
Mileage (appx.)	3.72	
Build Spec	Singletrack	
Route Type	Traditional Bike Trail and Classic Trail Experience	
Difficulty Rating	Green Circle and Blue Square - Easy and Intermediate - see bid sheet	
Narrative	<p>This series of trails consists of native soil tread with some areas of armoring or puncheon where needed to protect soil structure and hydrological resources.</p> <p>Trails will feature 7-9% average grades with maximum grades of up to 15% in short sections. Typical tread width will be 36". Trail tread surface comprised of native soil with some aggregate armoring or puncheon where needed to prevent soil damage due to high water table. Trails will contour along the hillside, with open sight-lines to prevent issues with wildlife and other trail users. These trails will provide greater exposure and higher speeds than the "narrow surfaced pathways." These native surface pathways are best suited to XC Mountain Bike Users, hikers and trail runners. These trails provide loop options for those seeking longer trail experiences or a varied experience in a more diverse and challenging trail environment</p>	
Trail Characteristic/Feature	Value	Description
Finished tread width, 0% - 20% side slope	36-48"	
Finished tread width, 21% - 40% side slope	36-48"	
Finished tread width, 40%+ side slope	36-48"	
Horizontal clearance	96"	48" clearance each side of centerline
Vertical clearance	96"	Over entire trail tread.
Outslope	0% - 5%	Avoid aggressive outsloping for purposes of drainage; use grade reversals instead
Inslope	0% - 7%	Avoid aggressive in-sloping to avoid the sensation of a "flow trail".
Average grade, soil	7-9%	
Maximum grade, soil	10%	Maximum length of segment = 50'
Maximum grade, rock or armored, climbing	12%	Maximum length of segment = 20'
Maximum grade, rock or armored, descending	12%	Maximum length of segment = 50'
Maximum grade, soil, optional lines	N/A	Maximum length of segment = 20'
Maximum grade, rock or armored, optional lines	N/A	Maximum length of segment = unlimited
Grade reversal, frequency (trough-to-trough)	25'-50'	More than outslope, grade reversals will be responsible for draining the tread. Grade reversals should not make the trail feel "hyperkinetic" or resemble a pump track. Instead, the natural terrain should be "surfing" to take advantage of microtopography.
Turn radius	6-10'	Where possible climbing turns are preferred over switchbacks. On steeper side slopes or where necessary, use switchberms style turns. These turn styles allow mtb riders to use the backslope as tread in addition to the standard flat tread surface. Cut and fill slopes on inside and outside of turns excavations must be filled and graded to meet natural angle of repose.
Roughness/texture	3"	Relief from surround typical soil-based tread
Roughness/texture, optional lines	6"	Relief from surround typical soil-based tread
Sightlines	75'	Continual clear sightlines are expected.
TTFs, natural, unavoidable	Allowed	some roots and rocks may be left in the trail tread that meet the roughness and texture guidelines. Where indicated, follow Kootenay guidelines for AMB use.
TTFs, natural, optional lines	Allowed	some roots and rocks may be left in the trail tread that meet the roughness and texture guidelines. Where indicated, follow Kootenay guidelines for AMB use.
MTTFs, natural, unavoidable	Not allowed	
MTTFs, natural, optional lines	Not allowed	

Trail Number/Name	401	
Mileage (appx.)	0.95	
Build Spec	Singletrack - Native Soil Surface	
Route Type	Gravity Trail	
Difficulty Rating	Blue Square - Intermediate	
Narrative	<p>Trail will feature 8-10% average grade with maximum grades of up to 20% in short sections. Steep sections will be incorporated in to jump and technical features. Typical 36-48" tread with fall away turns and small in-sloped turns where possible. Trail will incorporate root/rock rollovers and technical challenges throughout the tread, designed to keep riders speed in check between potentially airborne features. Trail experience will be consistent between and among features, with open sightline to prevent issues with wildlife and other trail users. Rythm of trail will not be syncopated like a "flow" trail, and will thus require riders to interpret the trail and terrain, using their existing riding experience to influence their riding style and speed throughout trail system. Users will develop appropriate skills in order to descend effectively with the trail becoming more enjoyable each time it is ridden. Trail should still allow for progression for novice and intermediate riders if users cannot clear each feature.</p>	
Trail Characteristic/Feature	Value	Description
Finished tread width, 0% - 20% side slope	36-48"	
Finished tread width, 21% - 40% side slope	36-48"	
Finished tread width, 40%+ side slope	36-48"	
Horizontal clearance	96"	48" clearance each side of centerline
Vertical clearance	96"	Over entire trail tread.
Outslope	0% - 7%	Avoid aggressive outsloping for purposes of drainage; use grade reversals instead
Inslope	0% - 10%	Avoid aggressive in-sloping to avoid the sensation of a "flow trail".
Average grade, soil	8-10%	
Maximum grade, soil	20%	Maximum length of segment = 50'
Maximum grade, rock or armored, climbing		
Maximum grade, rock or armored, descending	25%	
Maximum grade, soil, optional lines	25%	Maximum length of segment = 30'
Maximum grade, rock or armored, optional lines	25%	
Grade reversal, frequency (trough-to-trough)	15 - 40'	More than outslope, grade reversals will be responsible for draining the tread. Grade reversals should not make the trail feel "hyperkinetic" or resemble a pump track. Drainage features will likely be troughs of jumps and gravity features.
Turn radius	8-12'	All turns should be insloped and bermed. No flat turns or climbing turns. Users should expect large radius berms that allow riders to maintain or increase speed with minimal braking required. Cut and fill slopes on inside and outside of turns excavations must be filled and graded to meet natural angle of repose. Average height 24-36" throughout with a Maximum berm height of 48-60" at apex of bowl if conditions allow.
Roughness/texture	smooth	Relief from surround typical soil-based tread
Roughness/texture, optional lines	none	generally smooth
Sightlines	75'	Continual clear sightlines are expected.
TTFs, natural, unavoidable	3-6"	
TTFs, natural, optional lines	6-10"	roots, rollovers and rocks may be left in the trail tread that meet the roughness and texture guidelines. Where indicated, follow Kootenay guidelines for AMB use.
MTTFs, natural, unavoidable	none	
MTTFs, natural, optional lines	allowed	roots, rollovers and rocks may be left in the trail tread that meet the roughness and texture guidelines. Where indicated, follow Kootenay guidelines for AMB use.

Trail Number/Name	401	
Mileage (appx.)	0.70	
Build Spec	Singletrack - Native Soil Surface	
Route Type	Gravity Trail	
Difficulty Rating	Blue Square - Intermediate	
Narrative	<p>Trail will feature 8-10% average grade with maximum grades of up to 20% in short sections. Steep sections will be incorporated in to jump and technical features. Typical 36-48" tread with fall away turns and small in-sloped turns where possible. Trail will incorporate root/rock rollovers and technical challenges throughout the tread, designed to keep riders speed in check between potentially airborne features. Trail experience will be consistent between and among features, with open sightline to prevent issues with wildlife and other trail users. Rythm of trail will not be syncopated like a "flow" trail, and will thus require riders to interpret the trail and terrain, using their existing riding experience to influence their riding style and speed throughout trail system. Users will develop appropriate skills in order to descend effectively with the trail becoming more enjoyable each time it is ridden. Trail should still allow for progression for novice and intermediate riders if users cannot clear each feature.</p>	
Trail Characteristic/Feature	Value	Description
Finished tread width, 0% - 20% side slope	36-48"	
Finished tread width, 21% - 40% side slope	36-48"	
Finished tread width, 40%+ side slope	36-48"	
Horizontal clearance	96"	48" clearance each side of centerline
Vertical clearance	96"	Over entire trail tread.
Outslope	0% - 7%	Avoid aggressive outsloping for purposes of drainage; use grade reversals instead
Inslope	0% - 10%	Avoid aggressive in-sloping to avoid the sensation of a "flow trail".
Average grade, soil	8-10%	
Maximum grade, soil	20%	Maximum length of segment = 50'
Maximum grade, rock or armored, climbing		
Maximum grade, rock or armored, descending	25%	
Maximum grade, soil, optional lines	25%	Maximum length of segment = 30'
Maximum grade, rock or armored, optional lines	25%	
Grade reversal, frequency (trough-to-trough)	15 - 40'	More than outslope, grade reversals will be responsible for draining the tread. Grade reversals should not make the trail feel "hyperkinetic" or resemble a pump track. Drainage features will likely be troughs of jumps and gravity features.
Turn radius	8-12'	All turns should be insloped and bermed. No flat turns or climbing turns. Users should expect large radius berms that allow riders to maintain or increase speed with minimal braking required. Cut and fill slopes on inside and outside of turns excavations must be filled and graded to meet natural angle of repose. Average height 24-36" throughout with a Maximum berm height of 48-60" at apex of bowl if conditions allow.
Roughness/texture	smooth	Relief from surround typical soil-based tread
Roughness/texture, optional lines	none	generally smooth
Sightlines	75'	Continual clear sightlines are expected.
TTFs, natural, unavoidable	3-6"	
TTFs, natural, optional lines	6-10"	roots, rollovers and rocks may be left in the trail tread that meet the roughness and texture guidelines. Where indicated, follow Kootenay guidelines for AMB use.
MTTFs, natural, unavoidable	none	
MTTFs, natural, optional lines	allowed	roots, rollovers and rocks may be left in the trail tread that meet the roughness and texture guidelines. Where indicated, follow Kootenay guidelines for AMB use.

Trail Number/Name	403	
Mileage (appx.)	0.83	
Build Spec	Singletrack - Native Soil Surface	
Route Type	XC Trail	
Difficulty Rating	Blue Square - Intermediate	
Narrative	<p>Trail will feature 8-10% average grade with maximum grades of up to 20% in short sections. Steep sections will be incorporated in to jump and technical features. Typical 36-48" tread with fall away turns and small in-sloped turns where possible. Trail will incorporate root/rock rollovers and technical challenges throughout the tread, designed to keep riders speed in check between potentially airborne features. Trail experience will be consistent between and among features, with open sightline to prevent issues with wildlife and other trail users. Rythm of trail will not be syncopated like a "flow" trail, and will thus require riders to interpret the trail and terrain, using their existing riding experience to influence their riding style and speed throughout trail system. Users will develop appropriate skills in order to descend effectively with the trail becoming more enjoyable each time it is ridden. Trail should still allow for progression for novice and intermediate riders if users cannot clear each feature.</p>	
Trail Characteristic/Feature	Value	Description
Finished tread width, 0% - 20% side slope	36-48"	
Finished tread width, 21% - 40% side slope	36-48"	
Finished tread width, 40%+ side slope	36-48"	
Horizontal clearance	96"	48" clearance each side of centerline
Vertical clearance	96"	Over entire trail tread.
Outslope	0% - 7%	Avoid aggressive outsloping for purposes of drainage; use grade reversals instead
Inslope	0% - 10%	Avoid aggressive in-sloping to avoid the sensation of a "flow trail".
Average grade, soil	8-10%	
Maximum grade, soil	20%	Maximum length of segment = 50'
Maximum grade, rock or armored, climbing		
Maximum grade, rock or armored, descending	25%	
Maximum grade, soil, optional lines	25%	Maximum length of segment = 30'
Maximum grade, rock or armored, optional lines	25%	
Grade reversal, frequency (trough-to-trough)	15 - 40'	More than outslope, grade reversals will be responsible for draining the tread. Grade reversals should not make the trail feel "hyperkinetic" or resemble a pump track. Drainage features will likely be troughs of jumps and gravity features.
Turn radius	8-12'	All turns should be insloped and bermed. No flat turns or climbing turns. Users should expect large radius berms that allow riders to maintain or increase speed with minimal braking required. Cut and fill slopes on inside and outside of turns excavations must be filled and graded to meet natural angle of repose. Average height 24-36" throughout with a Maximum berm height of 48-60" at apex of bowl if conditions allow.
Roughness/texture	smooth	Relief from surround typical soil-based tread
Roughness/texture, optional lines	none	generally smooth
Sightlines	75'	Continual clear sightlines are expected.
TTFs, natural, unavoidable	3-6"	
TTFs, natural, optional lines	6-10"	roots, rollovers and rocks may be left in the trail tread that meet the roughness and texture guidelines. Where indicated, follow Kootenay guidelines for AMB use.
MTTFs, natural, unavoidable	none	
MTTFs, natural, optional lines	allowed	roots, rollovers and rocks may be left in the trail tread that meet the roughness and texture guidelines. Where indicated, follow Kootenay guidelines for AMB use.

Trail Number/Name	500, 501	
Mileage (appx.)	1.93	
Build Spec	Singletrack	
Route Type	Hiker/ MTB	
Difficulty Rating	Blue Square - Intermediate - see bid sheet	
Narrative	<p>This series of trails consists of native soil tread with some areas of armoring or puncheon where needed to protect soil structure and hydrological resources.</p> <p>Trails will feature 7-9% average grades with maximum grades of up to 15% in short sections. Typical tread width will be 24". Trail tread surface comprised of native soil with some aggregate armoring or puncheon where needed to prevent soil damage due to high water table. Trails will contour along the hillside, with open sight-lines to prevent issues with wildlife and other trail users. These trails will provide greater hillside exposure and a less developed tread. Best suited for hikers and potentially pack and saddle users in the future. These trails provide loop options for those seeking longer or varied trail experiences in a more diverse and challenging trail environment</p>	
Trail Characteristic/Feature	Value	Description
Finished tread width, 0% - 20% side slope	24"	
Finished tread width, 21% - 40% side slope	24"	
Finished tread width, 40%+ side slope	24-36"	
Horizontal clearance	120"	48" clearance each side of centerline
Vertical clearance	96"	Over entire trail tread.
Outslope	0% - 5%	Avoid aggressive outsloping for purposes of drainage; use grade reversals instead
Inslope	-	outsloped
Average grade, soil	7-9%	
Maximum grade, soil	10%	Maximum length of segment = 50'
Maximum grade, rock or armored, climbing	12%	Maximum length of segment = 20'
Maximum grade, rock or armored, descending	12%	Maximum length of segment = 50'
Maximum grade, soil, optional lines	N/A	Maximum length of segment = 20'
Maximum grade, rock or armored, optional lines	N/A	Maximum length of segment = unlimited
Grade reversal, frequency (trough-to-trough)	25'-50'	More than outslope, grade reversals will be responsible for draining the tread. Grade reversals should not make the trail feel "hyperkinetic." The natural terrain should be "surfing" to take advantage of microtopography.
Turn radius	6-10'	Where possible climbing turns are preferred over switchbacks. On steeper side slopes or where necessary, use switchberms style turns. Cut and fill slopes on inside and outside of turns excavations must be filled and graded to meet natural angle of repose.
Roughness/texture	3"	Relief from surround typical soil-based tread
Roughness/texture, optional lines	6"	Relief from surround typical soil-based tread
Sightlines	75'	Continual clear sightlines are expected.
TTFs, natural, unavoidable	Allowed	some roots and rocks may be left in the trail tread that meet the roughness and texture guidelines.
TTFs, natural, optional lines	Allowed	some roots and rocks may be left in the trail tread that meet the roughness and texture guidelines.
MTTFs, natural, unavoidable	Not allowed	
MTTFs, natural, optional lines	Not allowed	



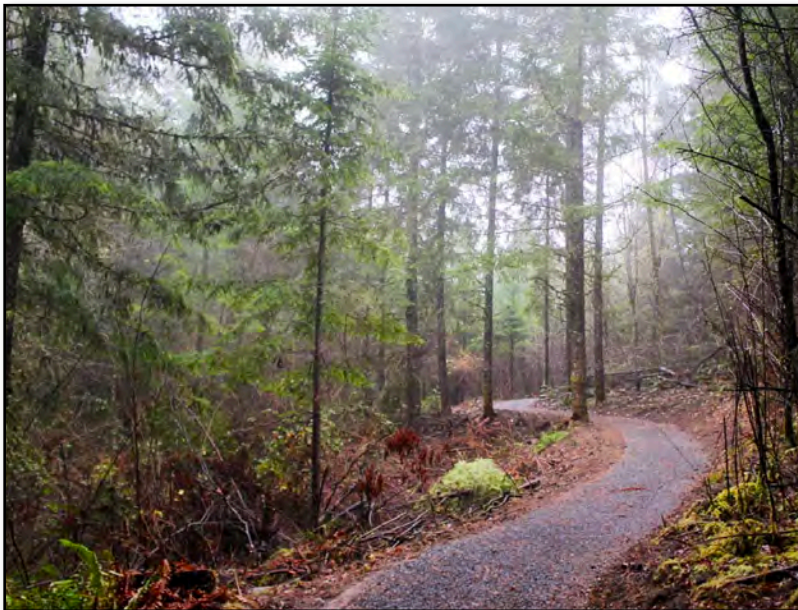
Trail Photo Examples



Trail Examples Trails 101, 121



Clockwise from top left, Mossy Maple Trail, Campbell Creek Estuary, Chehalem Ridge Nature Park, Thurston Hills Natural Area

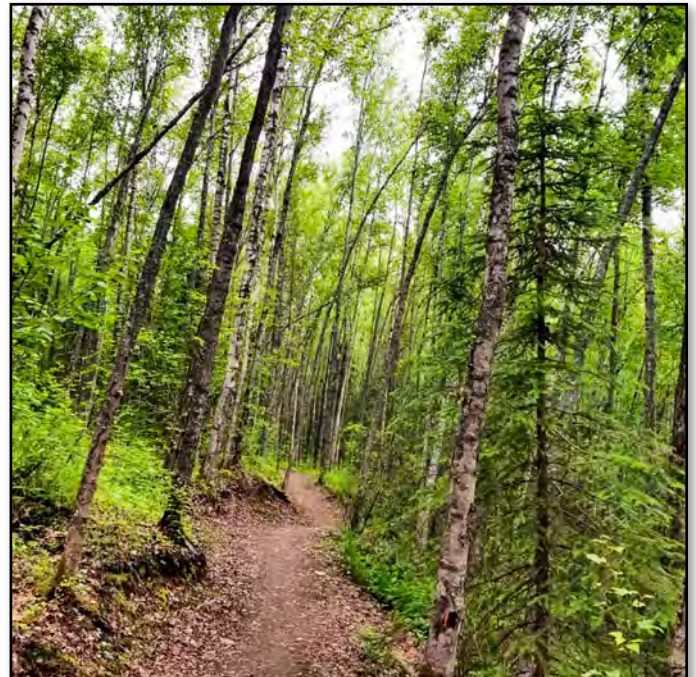




Similar Trail Examples - 202, 204, 400, 401,300, 301, 302



*Clockwise from top left, Northwoods Trails, Lichen It Trail, Monkshood Trail
- GPRA, Mirror Lake Trails*



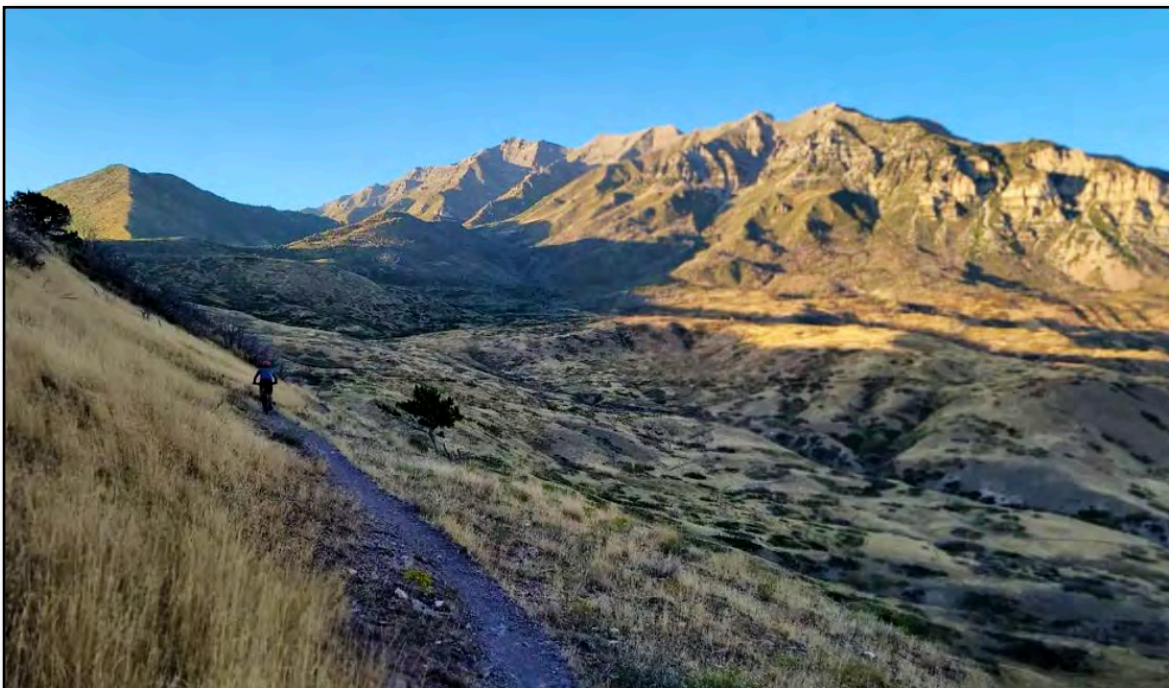


Trail Photo Examples

Cross Country Style Contour Trails - Trails 201-204, 400, 401



Wing and a Prayer - Whiskey Run Trails



Draper, UT



MTB One-way Downhill Trails - 201, 202, 401, 402, 403



Top: Hollerback Trail - Whiskey Run, Below: Evolution Trail - Kincaid Park,





Similar Trail Example Options - 402, 403



Top: This Buds For You - Winchester Trails, Below: No Joke Trail - Mountain of the Rogue





MTB One-way Downhill Trails - 201, 202, 401, 402, 403



Lava Flow - Cedar City, UT



Breakdown Trail - Mountain of the Rogue



No Joke Trail - Mountain of the Rogue (photo by Bermstyle 2020)



Crossing and Bridge Examples



Cabbage Patch Crossing - Whiskey Run



Crystal Bridges Museum Trail - Bentonville, AR



Tumble Falls Bridge - Newell Creek Canyon Nature Park



Technical Trail Features and Rock Work - 401, 402, 403 Options



Back 40 Trails - Bella Vista, AR



Spence Mountain - Klamath Falls



Coler Preserve - Bentonville, AR



Baker Creek Preserve - Knoxville, TN



Primitive Backcountry Technical Trails - 500, 501



Strawberry Mountains - John Day, UT



Wishbone Trail - Hot Spring National Park, AR



Progressive Skills Trails and Loops - Future Phases?



Bike Park Progression Features (photo by IMBA)



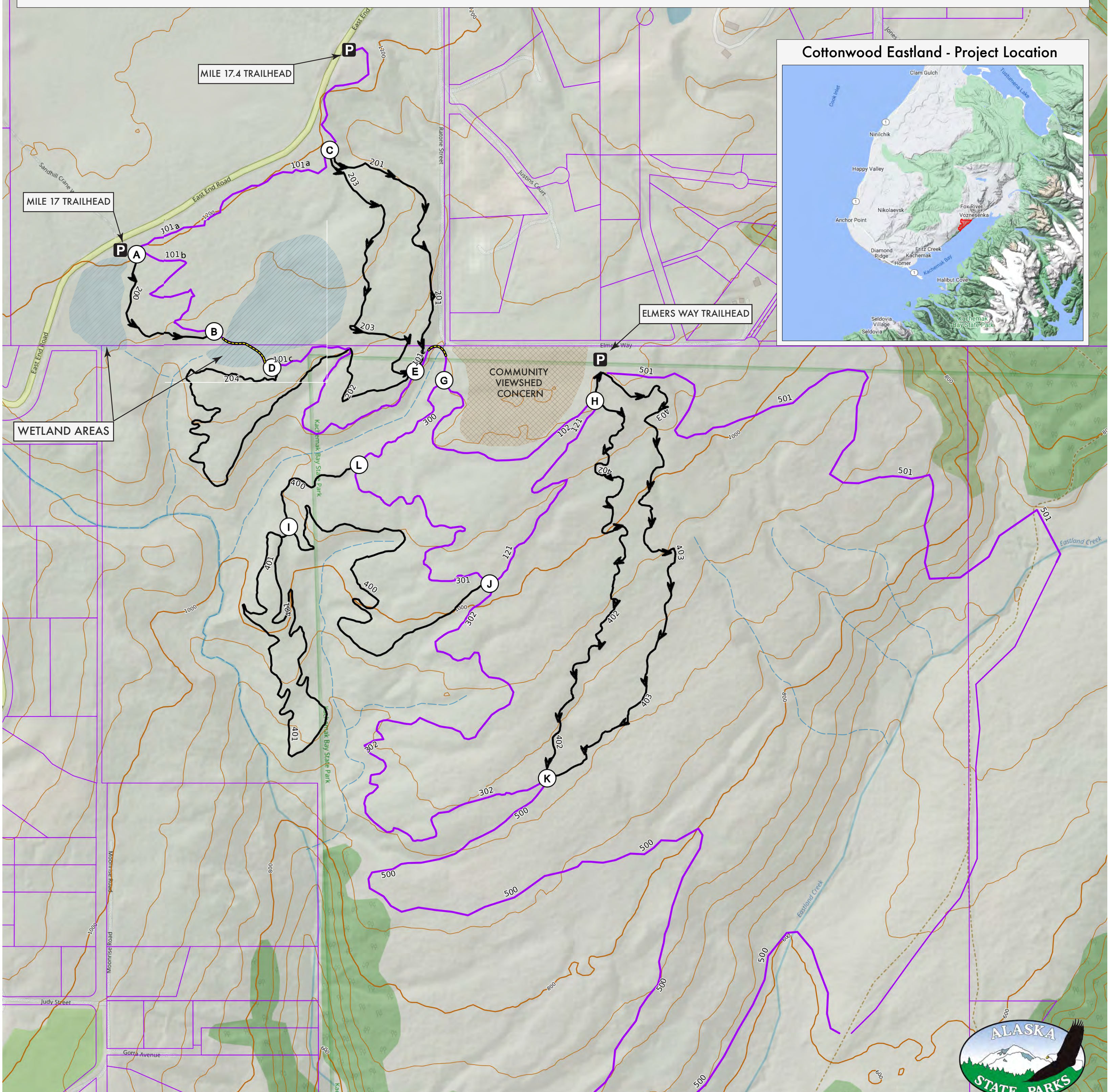
Progression Trails with constructed flow, natural and man made “technical trail features” (TTF’s)



Mapping

Cottonwood Eastland - Kachemak Bay State Park

Mountain Bike and Multi-Use Trail Design

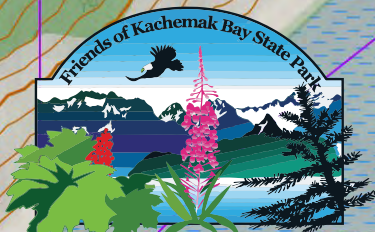


Cottonwood Eastland Map Legend

- Multi-Use
- MTB Optimized
- MTB One-way
- Puncheon
- Parking/Staging
- Trail Hubs

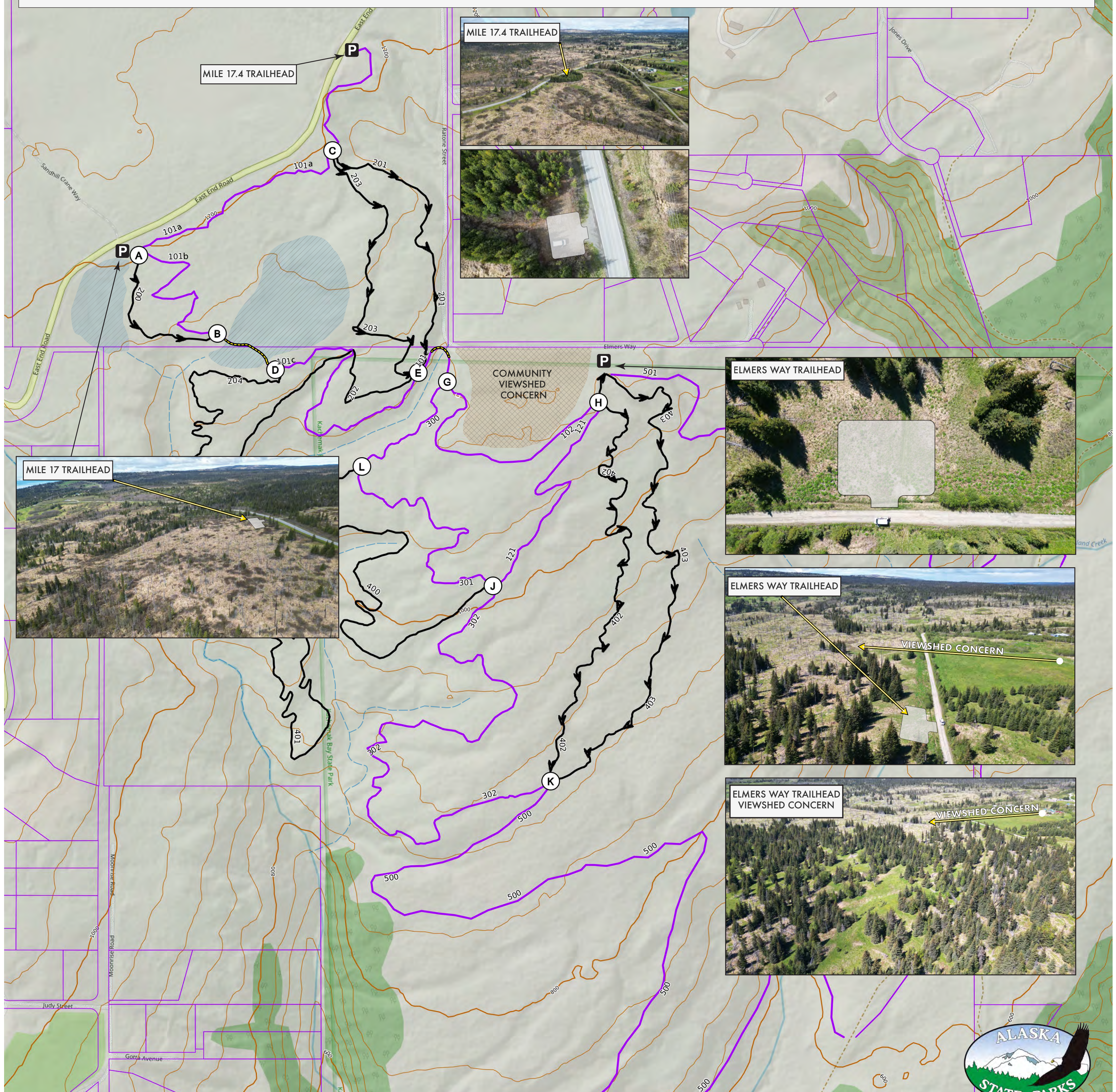
0' 1000' 1" = 400'

COTTONWOOD EASTLAND TRAIL ALIGNMENTS									
TRAIL NAME	STYLE	DIFFICULTY	DIRECTION	DESIGNED STANDARD	MANAGED USE	ALASKA STATE PARKS CLASSIFICATION	DESIGN LENGTH (LF)	BUILT LENGTH (LF)	FLAGGED
101	NSP	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	IV	6800	7480	Y
102	NSP	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	IV	1670	1837	Y
121	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	III	1738	1912	Partial
200	SINGLETRACK	GRN	One Way	MTB	AMB/MTB/PED	III	2750	3025	Y
201	SINGLETRACK	GRN	One Way	MTB	AMB/MTB/PED	III	1900	2090	Y
202	SINGLETRACK	GRN	Dual Direction	MTB	AMB/MTB/PED	III	850	935	Y
203	SINGLETRACK	BLU	One Way	MTB	AMB/MTB/PED	III	2105	2316	Y
204	SINGLETRACK	BLU	Dual Direction	MTB	AMB/MTB/PED	III	3220	3542	Y
300	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	III	1000	1100	Y
301	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	III	1960	2156	Y
302	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	III	4500	4950	Y
400	SINGLETRACK	GRN/BLU	Dual Direction	MTB	AMB/MTB/PED	III	4550	5005	Y
401	SINGLETRACK	BLU	One Way	MTB	AMB/MTB/PED	III	4550	5005	Y
402	SINGLETRACK	BLU	One way	MTB	AMB/MTB/PED	III	3380	3718	Y
403	SINGLETRACK	BLU	One way	MTB	AMB/MTB/PED	III	4000	4400	Y
500	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	P&S/MTB/PED	II/III	8555	2850	N
501	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	P&S/MTB/PED	II	5300	7350	N
Overall Linear Foot							58828	59670	
Overall Mileage							11.14	11.30	



Cottonwood Eastland - Kachemak Bay State Park

Trail Parking and Staging Areas

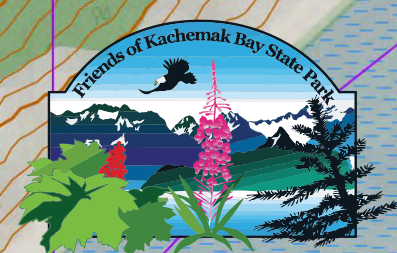


Cottonwood Eastland Map Legend

- Multi-Use
- MTB Only
- MTB One-way
- Puncheon
- Parking/Staging
- Trail Hubs

0' 1000' 1" = 400'

COTTONWOOD EASTLAND TRAIL ALIGNMENTS									
TRAIL NAME	STYLE	DIFFICULTY	DIRECTION	DESIGNED STANDARD	MANAGED USE	ALASKA STATE PARKS CLASSIFICATION	DESIGN LENGTH (LF)	BUILT LENGTH (LF)	FLAGGED
101	NSP	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	IV	6800	7480	Y
102	NSP	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	IV	1670	1837	Y
121	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	III	1738	1912	Partial
200	SINGLETRACK	GRN	One Way	MTB	AMB/MTB/PED	III	2750	3025	Y
201	SINGLETRACK	GRN	One Way	MTB	AMB/MTB/PED	III	1900	2090	Y
202	SINGLETRACK	GRN	Dual Direction	MTB	AMB/MTB/PED	III	850	935	Y
203	SINGLETRACK	BLU	One Way	MTB	AMB/MTB/PED	III	2105	2316	Y
204	SINGLETRACK	BLU	Dual Direction	MTB	AMB/MTB/PED	III	3220	3542	Y
300	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	III	1000	1100	Y
301	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	III	1960	2156	Y
302	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	P&S/AMB/MTB/PED	III	4500	4950	Y
400	SINGLETRACK	GRN/BLU	Dual Direction	MTB	AMB/MTB/PED	III	4550	5005	Y
401	SINGLETRACK	BLU	One Way	MTB	AMB/MTB/PED	III	4550	5005	Y
402	SINGLETRACK	BLU	One way	MTB	AMB/MTB/PED	III	3380	3718	Y
403	SINGLETRACK	BLU	One way	MTB	AMB/MTB/PED	III	4000	4400	Y
500	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	P&S/MTB/PED	II/III	8555	2850	N
501	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	P&S/MTB/PED	II	5300	7350	N
Overall Linear Foot							58828	59870	
Overall Mileage							11.14	11.30	





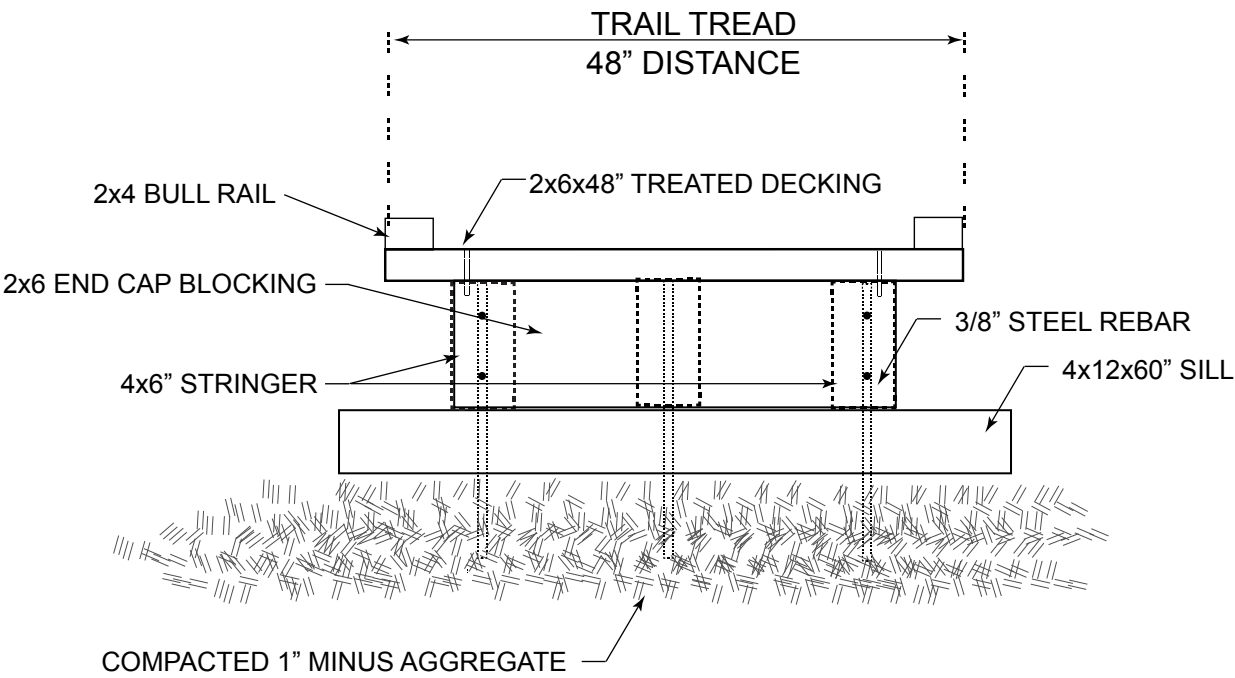
Cross Section Schematics
(Not to Scale)

MOUNTAIN BIKE TRAIL BRIDGES

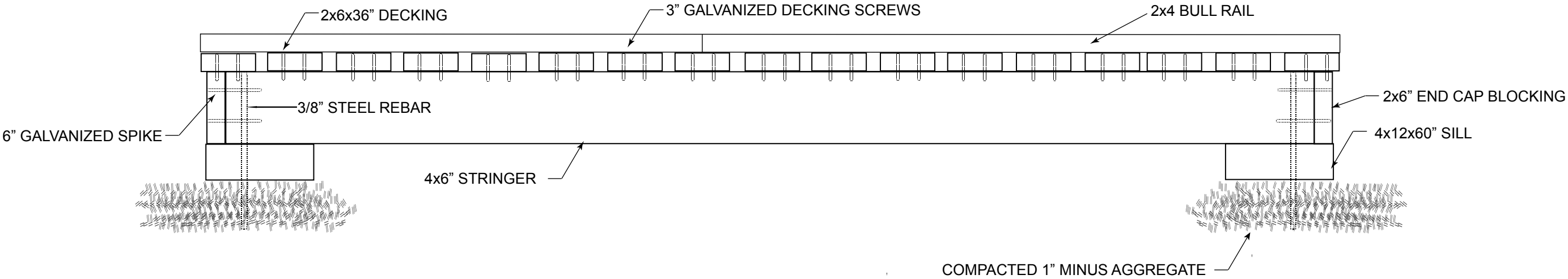
TYPICAL BRIDGE CROSSING (CLASS 4)

- A. TYPICAL BRIDGE CROSS VIEW
- B. TYPICAL BRIDGE SIDE VIEW

- 1. DECKING TREAD WIDTH 48" (DECKING WIDTH UP TO 60" W/ APPROPRIATE SILL WIDTH)
- 2. BRANCHES EXTENDING INTO CLEARING LIMITS WILL BE CUT CLEAN AT TRUNK OR BASE OF TREES
- 3. SILLS AND 1" MINUS AGGREGATE TO BE PLACED OUTSIDE HIGH WATER MARK IN RIPARIAN AREAS
- 4. APPROACHES TO BE ARMORED USING NATIVE ROCK AND IMPORTED 1" MINUS AGGREGATE



A. TYPICAL BRIDGE CROSS VIEW (TC3)



B. TYPICAL BRIDGE SIDE VIEW (TC4)



PTARMIGAN PTRAILS
CONSULT :: DESIGN :: BUILD

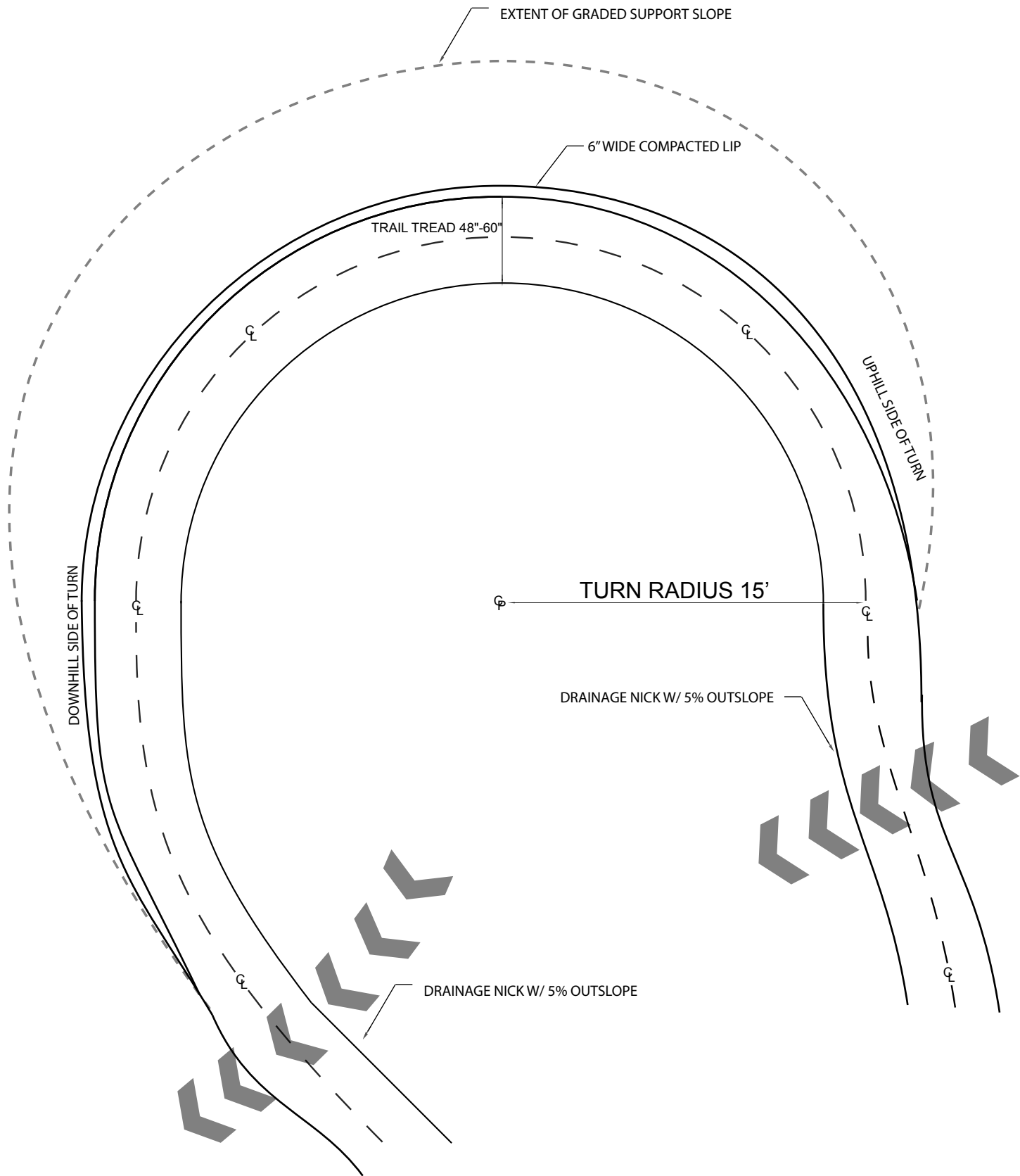
MTB SINGLETRACK TRAILS

TYPICAL IN-SLOPE TURN SECTION (CLASS 3)

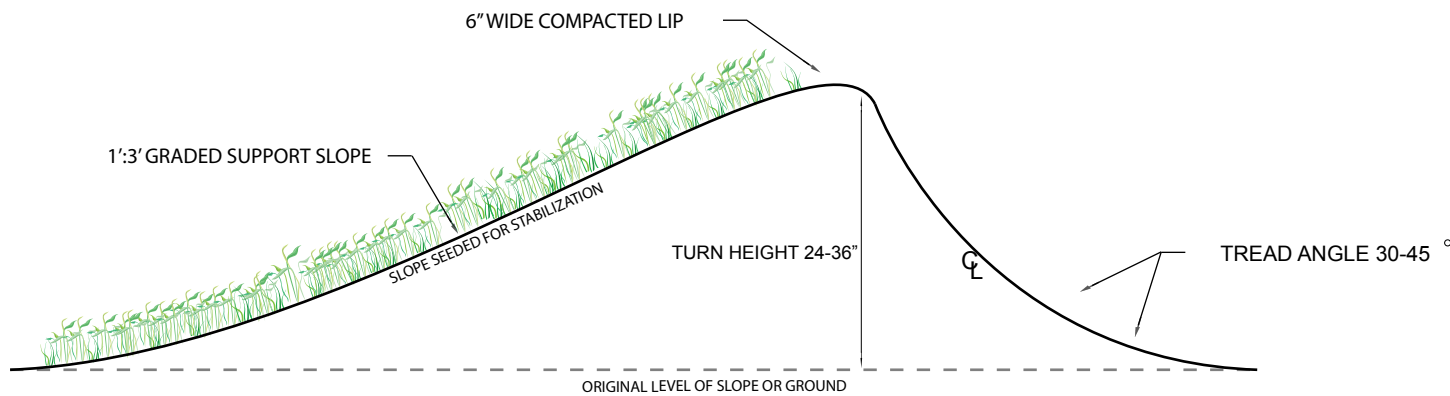
NOT TO SCALE

- A. TOP VIEW
- B. SIDE VIEW

- 1. 30-45% INSLOPE OF TREAD SHEETS FLOW OF WATER TO DRAINS
- 2. BRANCHES EXTENDING INTO CLEARING LIMITS WILL BE CUT CLEAN AT TRUNK OR BASE OF TREES
- 3. TREAD COMPRISED OF NATIVE SOILS AND COMPACTED USING 18" VIBRAPLATE COMPACTOR
- 4. SPOILS AND EXCAVATED MATERIAL TO BE BURIED OR PLACED DOWNHILL OF TRAIL AND CLEAR OF DRAINAGES
- 5. 1':3' GRADING ON BACK OF TURNS PREVENTS SLOUGHING OF SOILS
- 6. 6-10' FROM CENTERLINE - ROOTS AND BRANCHES WILL BE CUT TO 2" HEIGHT OR LESS
- 7. DISTURBED AREAS, GRADED SLOPES AND DRAINS WILL BE SEEDED WITH M.O.A APPROVED GRASS SEED
- 8. AREAS OF HIGH SPEED TURNS WILL BE CLEARED 10' EACH SIDE OF CENTERLINE FOR SIGHTLINES



A. TYPICAL IN-SLOPE TURN TOP VIEW (TC3)



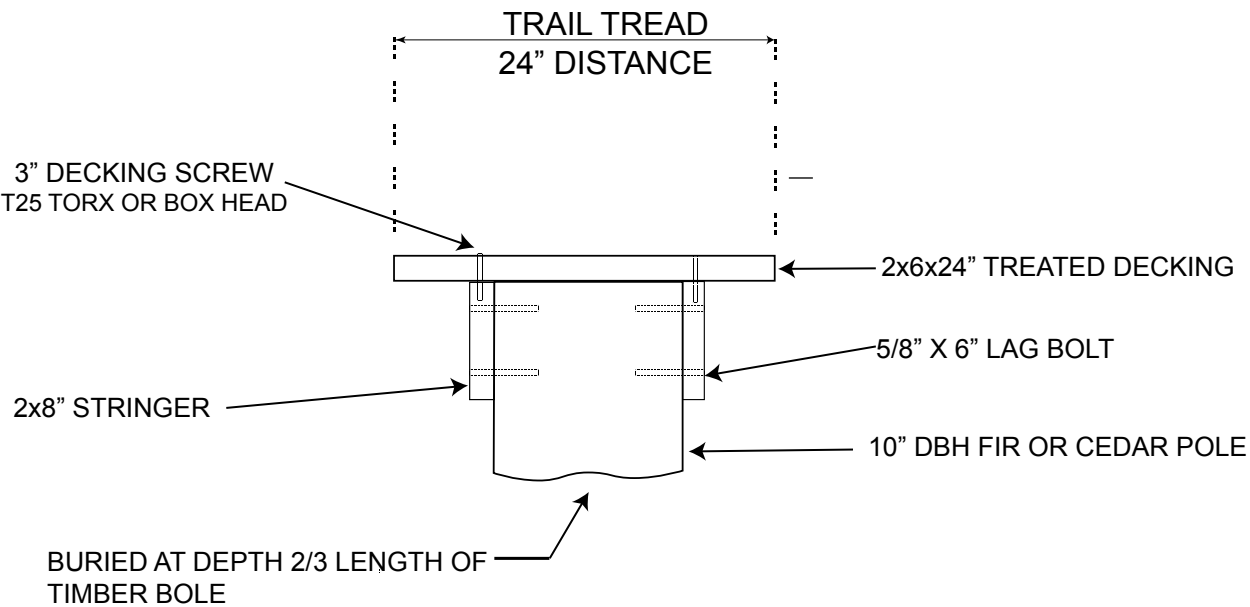
B. TYPICAL IN-SLOPE TURN SIDE VIEW (TC3)



PTARMIGAN PTRAILS
CONSULT :: DESIGN :: BUILD

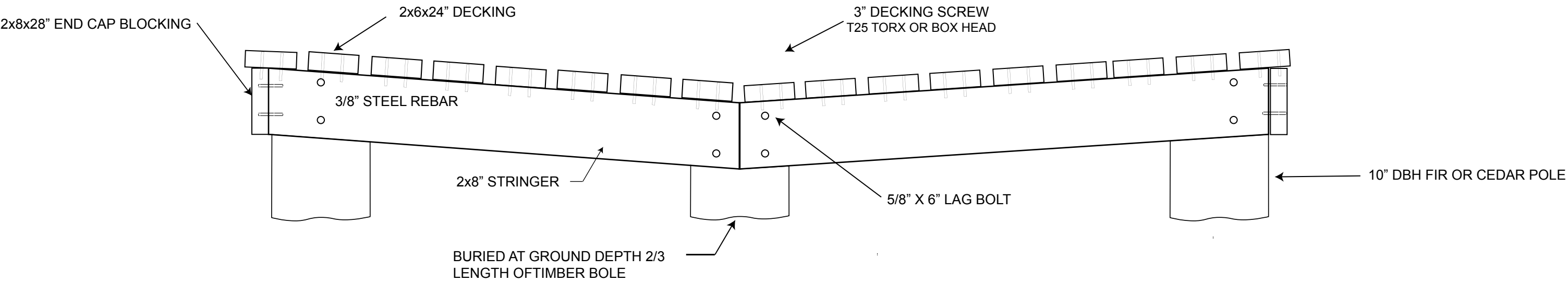
MOUNTAIN BIKE SINGLETRACK TRAILS

TIMBER TECHNICAL TRAIL FEATURE (TTF CLASS 2)



A. TYPICAL TTF CROSS VIEW (TC2)

- A. TYPICAL TTF CROSS VIEW**
B. TYPICAL TTF SIDE VIEW
1. DECKING TREAD WIDTH 24" (DECKING WIDTH UP TO 36" W/ APPROPRIATE POLE WIDTH)
 2. BRANCHES EXTENDING INTO CLEARING LIMITS WILL BE CUT CLEAN AT TRUNK OR BASE OF TREES
 3. APPROACHES TO BE ARMORED USING NATIVE ROCK AND IMPORTED 1" MINUS AGGREGATE OR APPROPRIATE COMPACTED NATIVE MINERAL SOILS



B. TYPICAL BRIDGE SIDE VIEW (TC2)

6.1 Figures

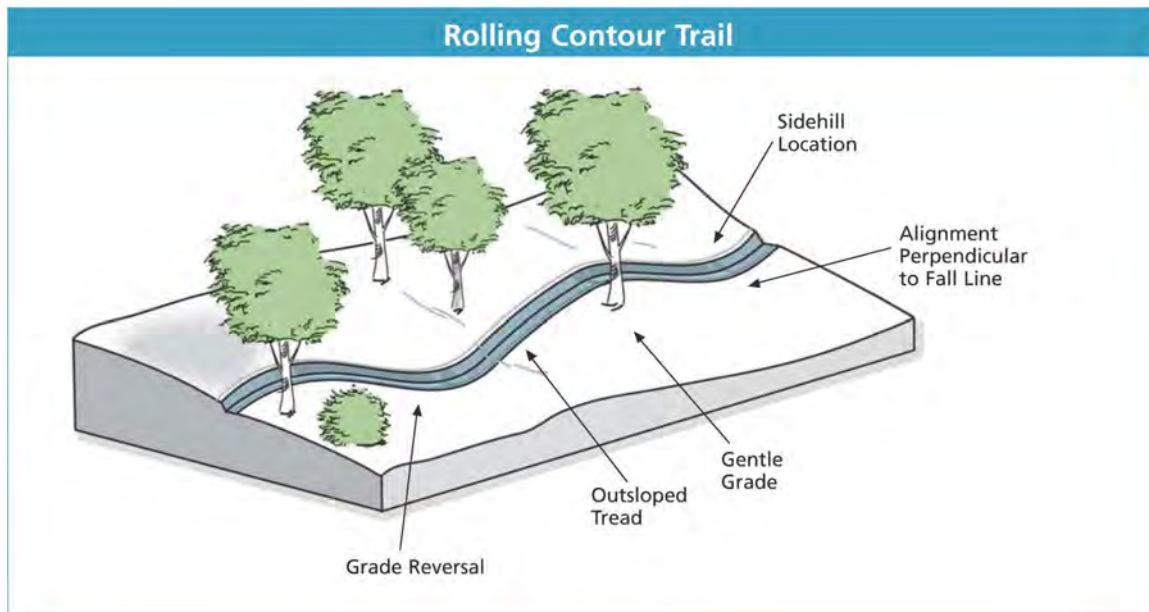


Figure 1: Rolling Contour Trail

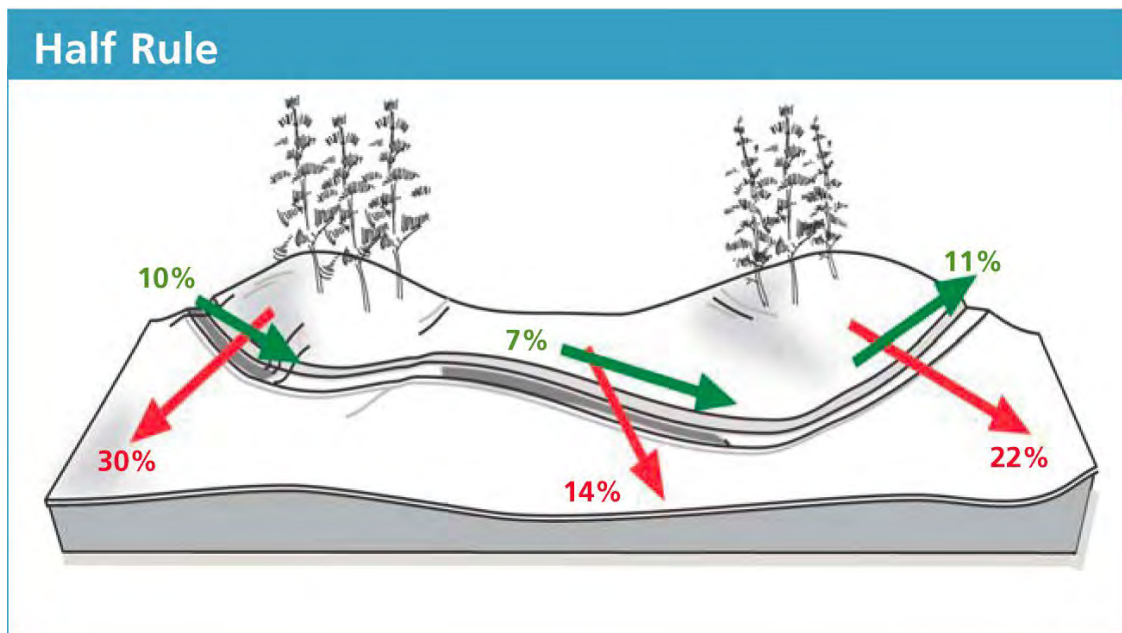


Figure 2: Illustration of The Half Rule

Full Bench Trail

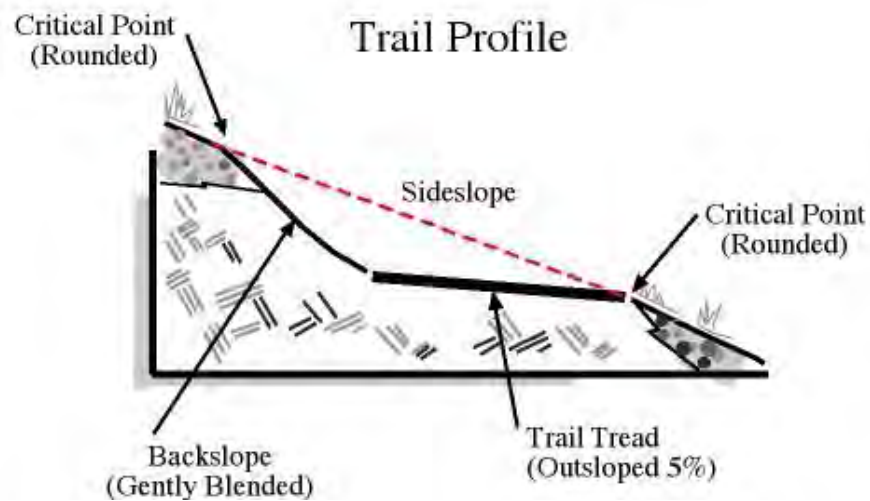
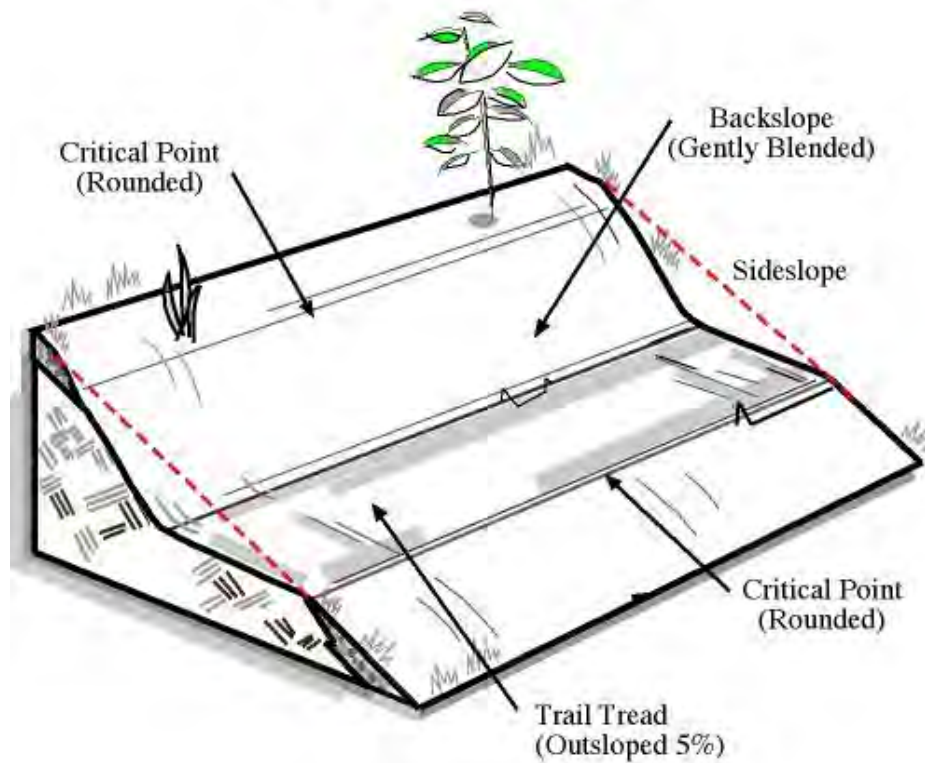
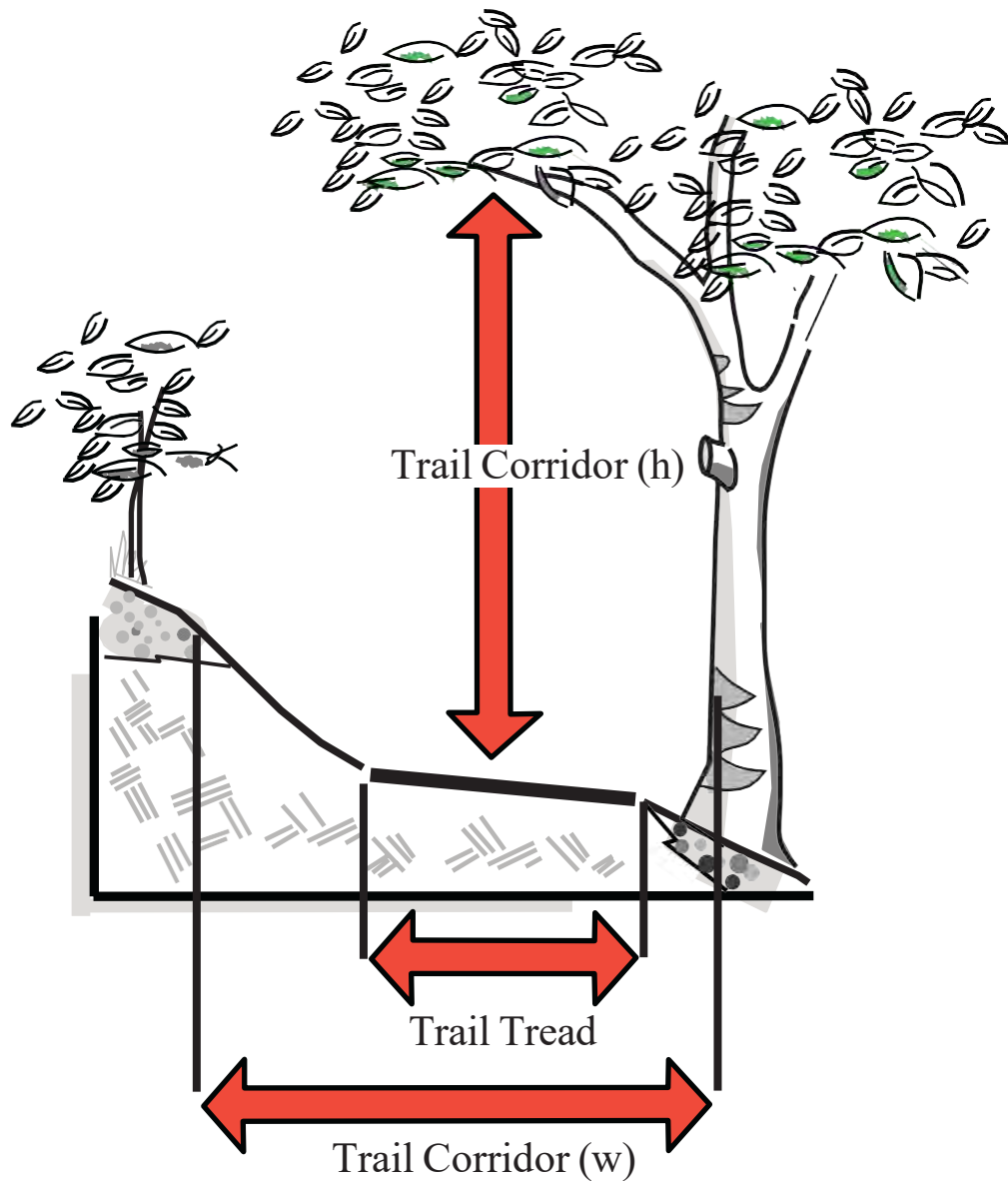


Figure 3: Full Bench Trail



Trail Tread = 24" – 36"
Trail Corridor (w) = 48" – 72"
Trail Corridor (h) = 8' – 10'

Figure 4: Clearing Limits

Stone Pitching

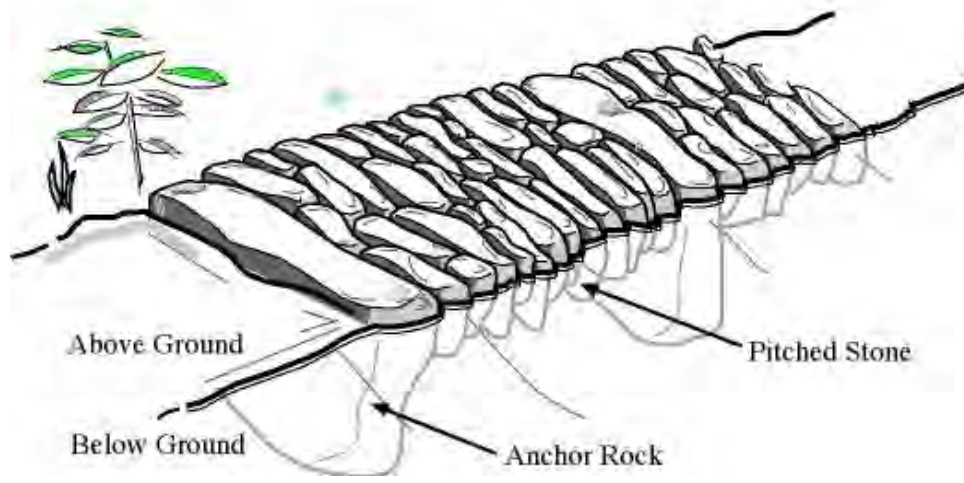


Figure 5: Stone Pitching

Rolling Grade Dip

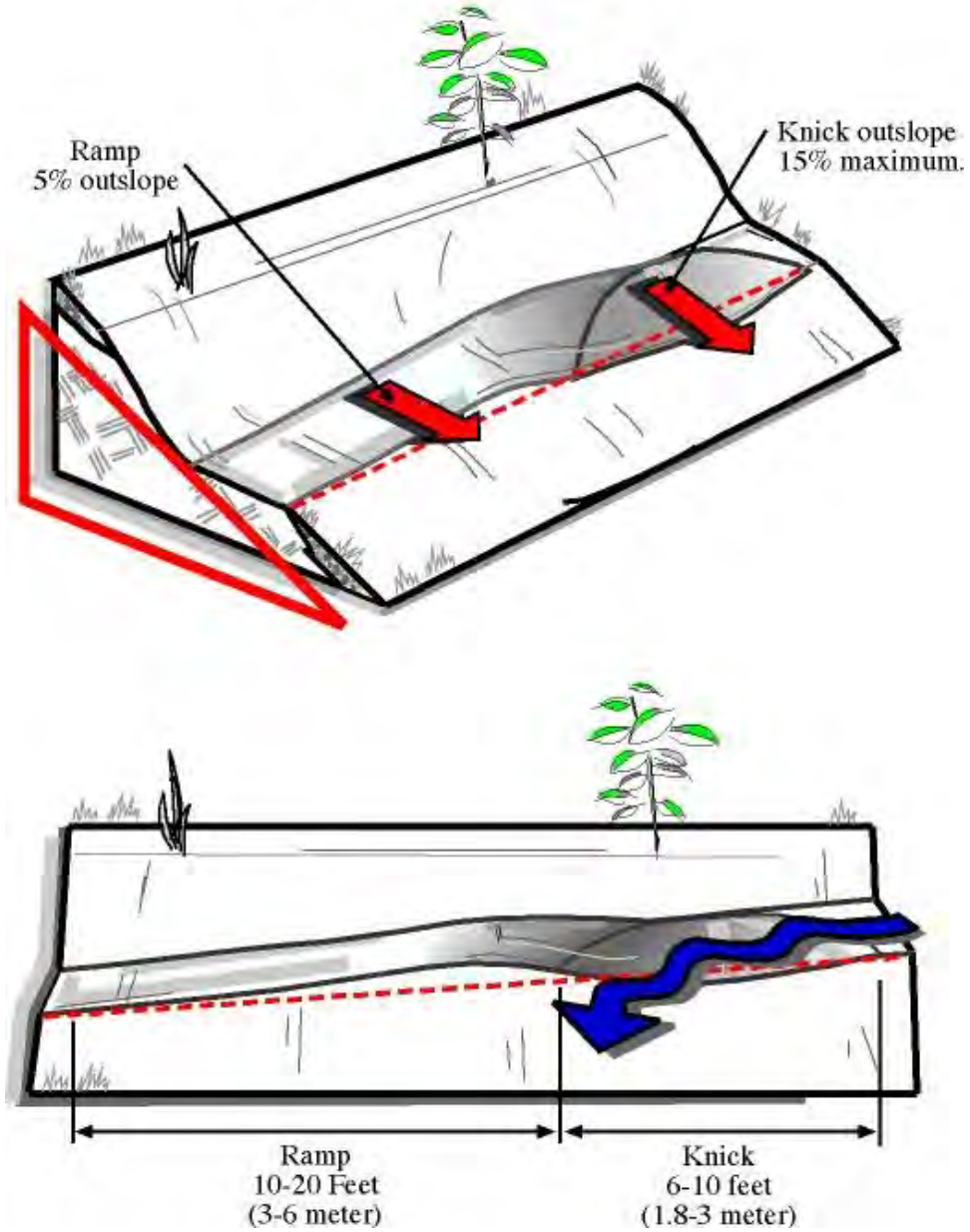


Figure 7: Rolling Grade Dip

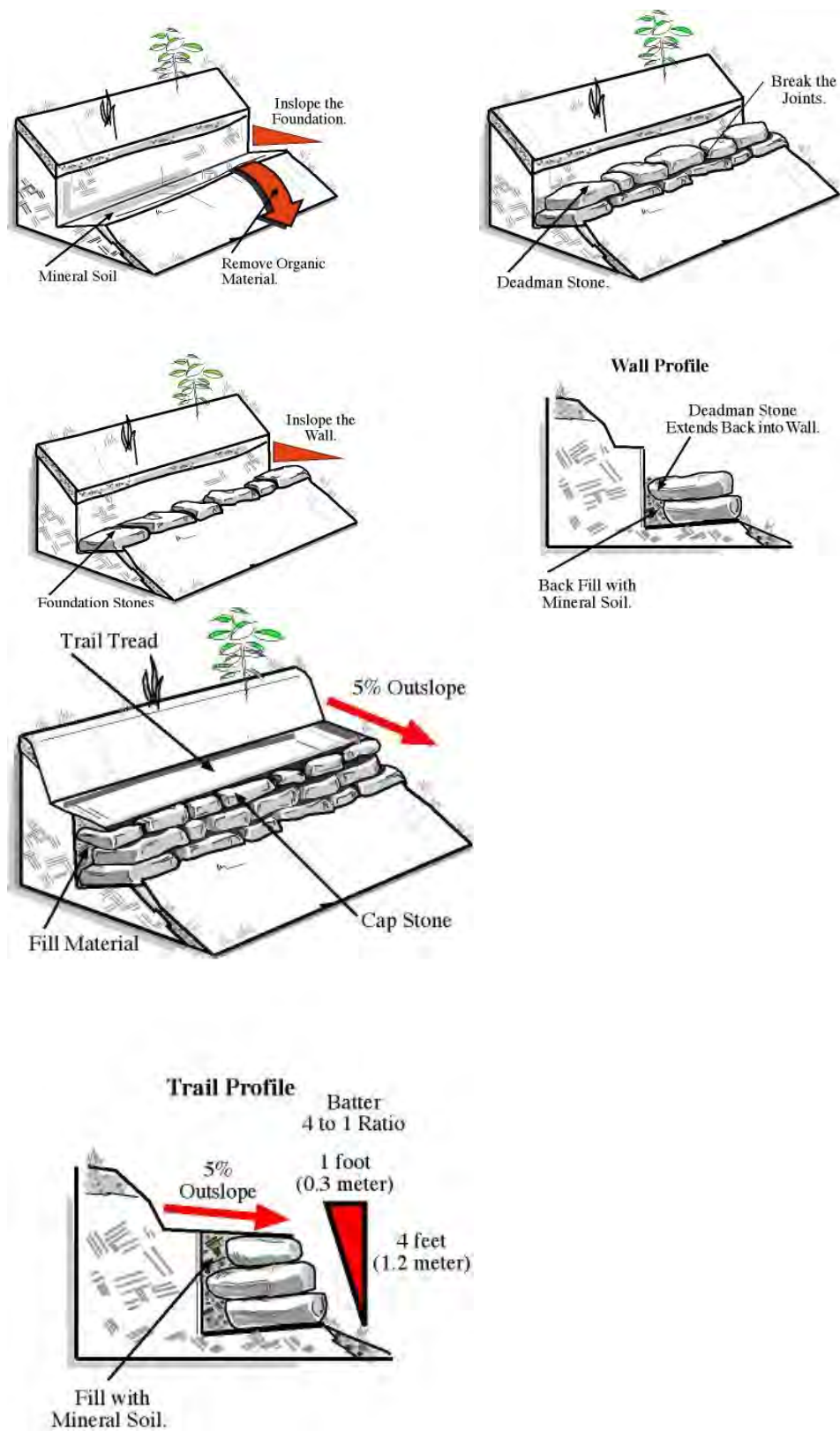
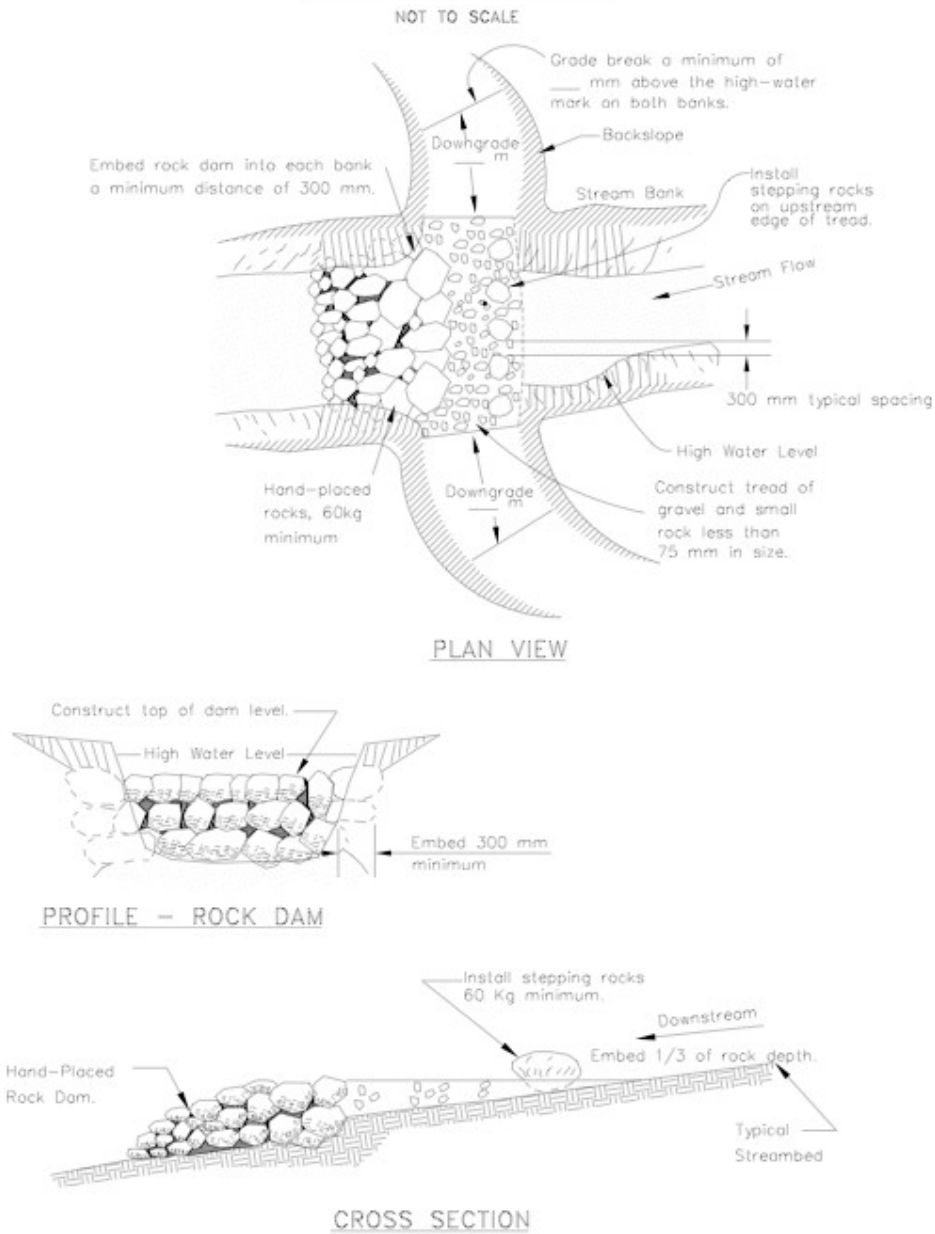


Figure 9: Rock Retaining
Wall 54

SHALLOW STREAM FORD AND GULLY CROSSING ROCK STRUCTURE



4/96

912-7

Figure 10: Rock Armored Ford

Insloped Turn

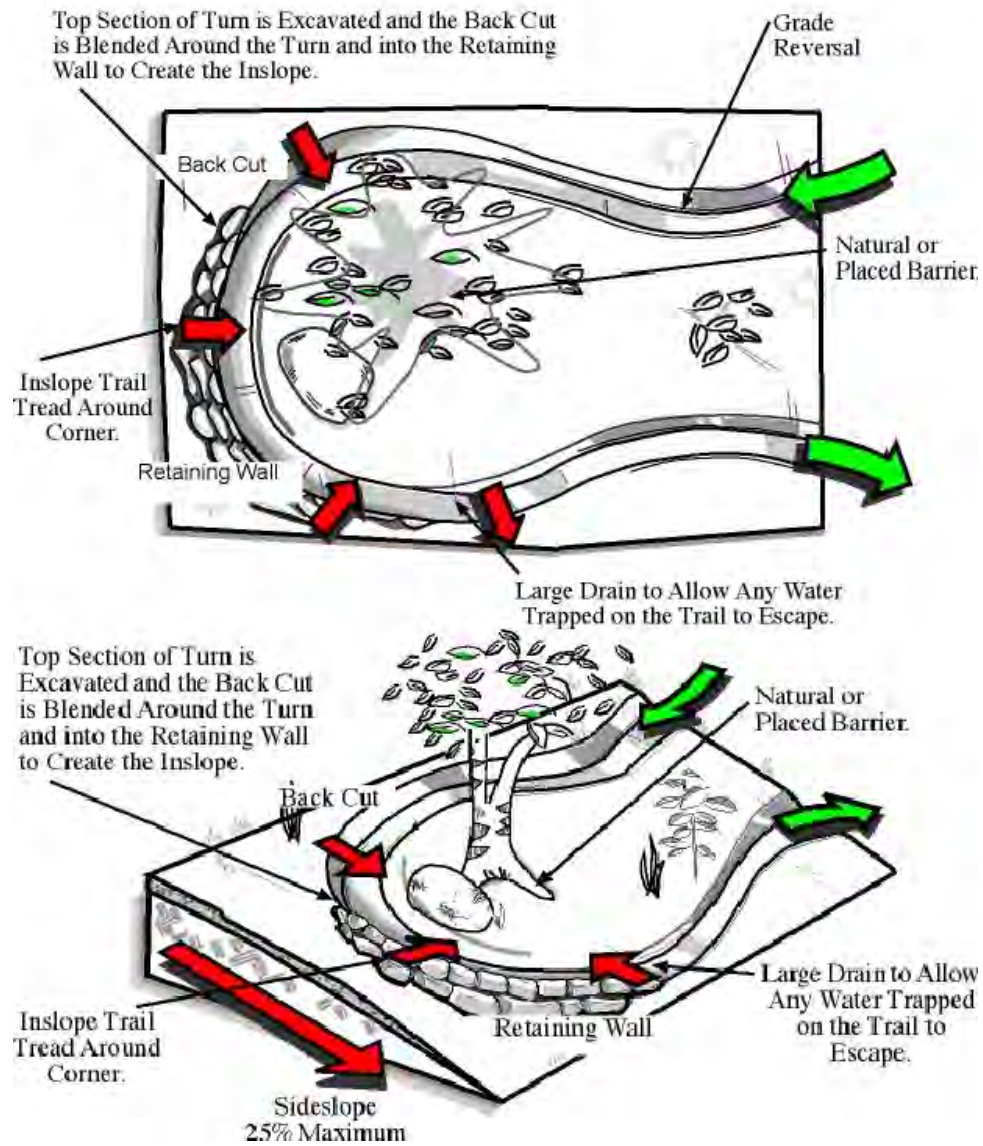


Figure 11: Insloped Turn

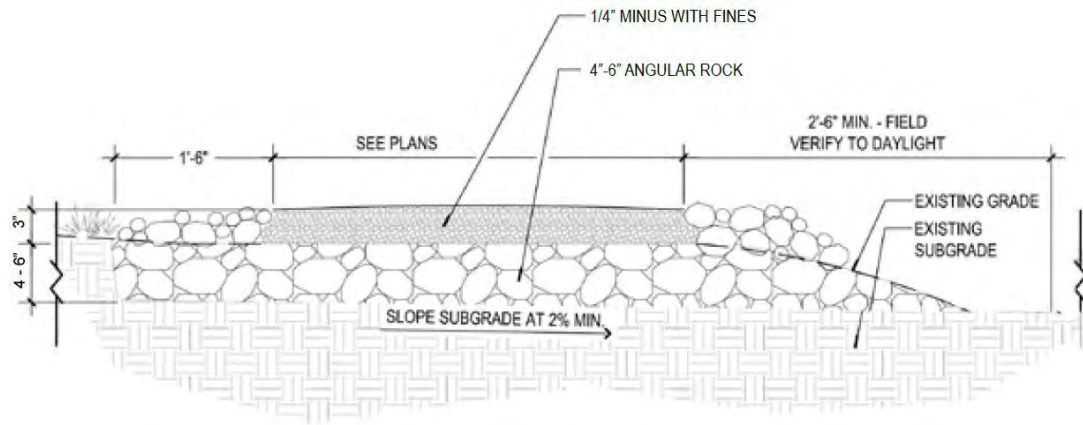


Figure 13: Filled Tread Trail



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Equipment Recommendations

When constructing or improving sustainable trail, it is important to utilize equipment most suited to the trail design and management guidelines. In the case of this assessment, we are looking to meet the needs of a Alaska State Parks or CLASS III USFS Trail designed for Bicycles and Equine use.

Designed Use BICYCLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width	Single Lane	6" – 12"	12" – 24"	18" – 36"	24" – 48"	36" – 60"
	Double Lane	36" – 48"	36" – 48"	36" – 48"	48" – 84"	72" – 120"
	Structures (Minimum Width)	18"	18"	36"	48"	60"
Design Surface ²	Type	Native, ungraded May be continuously rough Sections of soft or unstable tread on grades < 5% may be common and continuous	Native, with limited grading May be continuously rough Sections of soft or unstable tread on grades < 5% may be common	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present, but not common	Native, with improved sections of borrow or imported materials and routine grading Stable, with minor roughness	Likely imported material and routine grading Uniform, firm, and stable
	Protrusions	≤ 24" Likely common and continuous	≤ 6" May be common and continuous	≤ 3" May be common, but not continuous	≤ 3" Uncommon and not continuous	No protrusions
	Obstacles (Maximum Height)	24"	12"	10"	8"	No obstacles
Design Grade ²	Target Grade	5% – 20%	5% – 12%	3% – 10%	2% – 8%	2% – 5%
	Short Pitch Maximum	30% 50% on downhill segments only	25% 35% on downhill segments only	15%	10%	8%
	Maximum Pitch Density	20% – 30% of trail	10% – 30% of trail	10% – 20% of trail	5% – 10% of trail	0% – 5% of trail

Designed Use BICYCLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Cross Slope	Target Cross Slope	5% – 10%	5% – 8%	3% – 8%	3% – 5%	2% – 3%
	Maximum Cross Slope	10%	10%	8%	5%	5%
Design Clearing	Height	6'	6' – 8'	8'	8' - 9'	8' - 9'
	Width	24" – 36" Some vegetation may encroach into clearing area	36" – 48" Some light vegetation may encroach into clearing area	60" – 72"	72" – 96"	72" – 96"
	Shoulder Clearance	0' – 12"	6" – 12"	6" – 12"	6" – 18"	12" – 18"
Design Turn	Radius	2' – 3'	3' – 6'	4' – 8'	8' – 10'	8' - 12'

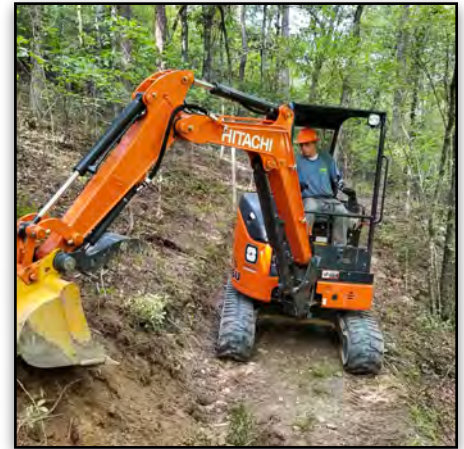
In order to best meet specifications in an efficient manner, with the least amount of impact on surrounding trail and infrastructure, our team recommends the following trail equipment for use at the Cottonwood Eastland.



Additionally, managers should consider potential size and weight limits on construction equipment used by contractors during transitional weather and seasonal period

Mini Excavators:

- Size Class <6500 lbs
 - Maximum Track Width 65"
 - Common models - Kubota U27, John Deere 27G (D), Bobcat E26, CAT302CR, CAT 302.7
 - These models should be limited to trails with treads consistently maintained at 48" width, or to areas where major lift and turnpiking is required
- Size Class <4500 lbs
 - Maximum Track width 48"
 - Common Models - Kubota U17, JD 17G(D), Bobcat E20, CAT302CR, CAT301.7
 - These models can be used throughout the entire trail system, but are best suited to narrower trails and naturalized technical trails



<6500 lb Size Class - Hot Springs, AR

Materials Moving: Skid Steers and Powered Wheelbarrows

- Skid Steer Size Class <8000 lbs
 - Maximum Track width 72"
 - All skid steer models are uniformly similar, Canycom S100, S120(a)
 - No wheels, only tracks
 - These models should be limited to trails with treads consistently maintained at 60" width, or to areas where major lifting, rock placement and turnpiking is required
- Skid Steer Size Class <5000 lbs
 - Maximum Track Width 42"
 - Common Models: Vermeer S625-1000, Ditch Witch SK650-850, Dingo, Bobcat MT55
 - These models can be used throughout the entire trail system, but are best suited to narrower trails and in areas that see predominantly more motorcycle use. Their narrower width and lower weights make them better suited to maintaining narrower treads.
- Tracked Power Wheelbarrow <48" Width
 - Models BFP602, SC75
 - These models can be used throughout the entire trail system, but are best suited to narrower trails and in areas that see predominantly more motorcycle use. Their narrower width and lower weights make them better suited to maintaining narrower treads.
 - Small 4 & 6 way dozer blade attachments work well in Sandy soils



<5000 lb Skid Steer - Vermeer SX800



48" Width Canycom Buggy S120
June 2024



Trail Dozers:

- Size Class < 10,000 lbs
- Common Models: SWECO 480, Sutter 500, SWECO 500, SUTTER 300
 - These models can be used throughout the entire trail system, but are best suited to narrower trails and in areas that see predominantly more motorcycle use. Their narrower width and lower weights make them better suited to maintaining narrower treads.



SWECO 480 Trail Dozer



Construction Budget

COTTONWOOD EASTLAND BUDGET ESTIMATIONS										
BID ITEM	STYLE	DIFFICULTY	DIRECTION	DESIGNED STANDARD	MANAGED USE	AK STATE PARKS CLASSIFICATION	UNIT or LUMP SUM	BUILD LENGTH (LF)	COST / UNIT	TOTAL COST
PHASE I										
100.1	MOBILIZATION						LS		1.00	\$8,610.80
101b	NSP	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	IV	U	1350	\$17.36	\$23,436
101c	NSP	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	IV	U	2640	\$20.13	\$53,150
102	NSP	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	IV	U	1837	\$17.36	\$31,890
121	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	AMB/MTB/PED	III	U	1912	\$13.51	\$25,832
200	SINGLETRACK	GRN	One Way	MTB	MTB/PED	III	U	3025	\$13.95	\$42,190
202	SINGLETRACK	GRN	Dual Direction	MTB	MTB/PED	III	U	935	\$13.95	\$13,040
204	SINGLETRACK	BLU	Dual Direction	MTB	MTB/PED	III	U	3542	\$12.72	\$45,054
300	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	III	U	1100	\$12.76	\$14,034
301	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	III	U	2156	\$12.76	\$27,506
PHASE I SUBTOTAL							LINEAR FT	18497	COST	\$284,744
BID ITEM	STYLE	DIFFICULTY	DIRECTION	DESIGNED STANDARD	MANAGED USE	AK STATE PARKS CLASSIFICATION	UNIT or LUMP SUM	BUILD LENGTH (LF)	COST / UNIT	TOTAL COST
PHASE II										
100.2	MOBILIZATION						LS		1.00	\$8,611
302	SINGLETRACK	GRN	Dual Direction	PACK & SADDLE	AMB/MTB/PED	III	U	4950	\$12.76	\$63,152
400	SINGLETRACK	GRN/BLU	Dual Direction	AMB/MTB	AMB/MTB/PED	III	U	5005	\$13.95	\$69,805
401	SINGLETRACK	BLU	One Way	AMB/MTB	AMB/MTB/PED	III	U	5005	\$14.75	\$73,820
402	SINGLETRACK	BLU	One way	AMB/MTB	AMB/MTB/PED	III	U	3718	\$14.75	\$54,838
403	SINGLETRACK	BLU	One way	AMB/MTB	AMB/MTB/PED	III	U	4400	\$14.75	\$64,897
PHASE II SUBTOTAL							LINEAR FT	23078	COST	\$335,122
BID ITEM	STYLE	DIFFICULTY	DIRECTION	DESIGNED STANDARD	MANAGED USE	AK STATE PARKS CLASSIFICATION	UNIT or LUMP SUM	BUILD LENGTH (LF)	COST / UNIT	TOTAL COST
PHASE III										
100.2	MOBILIZATION						LS		1.00	\$8,611
101a	NSP	GRN	Dual Direction	AMB/MTB	AMB/MTB/PED	IV	U	2640	\$17.36	\$45,830
201	SINGLETRACK	GRN	One Way	MTB	MTB/PED	III	U	2090	\$13.95	\$29,149
203	SINGLETRACK	BLU	One Way	MTB	MTB/PED	III	U	2316	\$12.72	\$29,460
500	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	PED/MTB	II/III	U	2850	\$9.71	\$27,671
501	SINGLETRACK	BLU	Dual Direction	PACK & SADDLE	PED/MTB	II	U	7350	\$9.71	\$71,362
PHASE II SUBTOTAL							LINEAR FT	17246	COST	\$212,083
									Total Cost	\$831,949
									Total Linear Ft	58,821
									Average Cost/LF	\$14.14



Glossary of Terms



- **Annual Maintenance** - Preventative and/or cyclic maintenance performed in the year it is scheduled (maintenance schedules are identified on TMOs and in Infrastructure)
- **Clearing Limit** - The area over and beside the trail tread that is cleared of trees, limbs, and other obstruction
 - a. Clearing Height. The height of the clearing limit measured vertically from the trail tread.
 - b. Clearing Width. The width of the clearing limit measured perpendicular to the trail.
- **Cross Slope** - The percentage of rise to length when measuring the trail tread from edge to edge perpendicular to the direction of travel (also referred to as Outslope).
- **Deferred Maintenance** - Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period.

Deferred maintenance includes repair, replace or decommission.

- a. Repair - Work to restore a damaged, broken, or worn-out fixed asset or component to normal operation condition
- b. Replace - Substitution or exchange of an existing asset or component with one having essentially the same capacity and purpose.
- c. Decommission. Demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work.
- **Design Clearing** - The clearing limit determined to be appropriate to accommodate the Managed Uses of a Trail
 - d. Design Clearing Height. The minimum clearing height determined to be appropriate to accommodate the Managed Uses of a trail.
 - e. Design Clearing Width. The minimum clearing width determined to be appropriate to accommodate the Managed Uses of a trail.
 - f. Design Shoulder Clearance. The minimum horizontal and vertical clearance of obstructions (for example, removal of bicycle pedal or motorcycle peg bumpers) immediately adjacent to the trail tread that is determined to be appropriate to accommodate the Managed Uses of a trail.
- **Design Cross Slope** - The cross slope determined to be appropriate to accommodate the Managed Uses of a trail.
 - g. Target Cross Slope. The cross slope that is determined to be appropriate over most of a trail to accommodate its Managed Uses.
 - h. Maximum Cross Slope. The steepest cross slope that is determined to be appropriate based on the Managed Uses of a trail and that exceeds the target cross slope of the trail.



- **Design Grade** - The trail grade determined to be appropriate to accommodate the Managed Uses of a trail.
 - a. Target Grade. The trail grade that is determined to be appropriate over most of a trail to accommodate its Managed Uses.
 - b. Short Pitch Maximum. The steepest grade that is determined to be appropriate based on the Managed Uses of a trail, that generally occurs for a distance of no more than 200 feet, and that does not exceed the maximum pitch density.
 - c. Maximum Pitch Density. The maximum percentage of a trail with grades that exceed the Target Grade and that are less than or equal to the short pitch maximum, which is determined to be appropriate based on the Managed Uses of the trail.
- **Design Surface** - The trail tread surface, defined in terms of surface type, surface protrusions, and surface obstacles, that is determined to be appropriate to accommodate the Managed Uses of a trail.
 - d. Surface Type. A characteristic of the design surface expressed in terms of material type, grading, compaction, and roughness of the trail tread.
 - 1. Native - A surface composed of soil, rock or other naturally occurring materials found on or near the trail.
 - 2. Firm - A surface that is not noticeably distorted or compressed during the seasons for which it is managed, under normally occurring weather conditions, by the passage of a device that simulates a trail user in a wheelchair.
 - 3. Stable - A surface that is not permanently affected by normally occurring weather conditions and able to sustain normal wear and tear caused by the uses for which the trail is managed between planned maintenance cycles.
 - e. Surface Protrusions. Trail tread imperfections, such as rock, roots, holes, stumps, steps, and structures, that are within the acceptable range of tread roughness and challenge level for the trail and that do not obstruct the Managed Uses of the trail.
 - f. Surface Obstacles. Trail tread imperfections, such as rocks, roots, holes, stumps, steps, downed logs, and structures, that are beyond the acceptable range of tread roughness and challenge level for the trail and that obstruct one or more Managed Uses of the trail.
- **Design Tread Width** - The tread width determined to be appropriate to accommodate the Managed Uses of a trail.
- **Design Turn Radius** - The minimum horizontal radius required for a Managed Use to negotiate a curve (for example, a switchback, climbing turn, or horizontal turn) in a single maneuver.
- **Designed Use** - The Managed Use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable Trail Class, determines which Design Parameters will apply to a trail.
- **Full Bench** - A trailbed constructed entirely on undisturbed material.
- **Grade Reversal** - A location in the trail tread where sustained grade is changed in order to aid in removing water from the tread surface, and diminish the effects of erosion do to water running down the trail tread.



- **Managed Use** - A mode of travel that is actively managed and appropriate on a trail, based on its design and management.
- **Nick** - Small cutout or increase if outslope on the downhill side of the tread, allowing water to drain or sheet off the tread surface
- **Side Slope** - The natural slope of the ground, usually expressed as a percentage.
- **Sloughing** - The loss of soil integrity in the backslope, critical edge or anywhere loose fill or soil has begun to slump and settle along the trail
- **Switchback** - A reverse in direction of the trail grade with a level landing that is used to change elevation on a steep slope and that usually involves special treatment of approaches, barriers, and drainages.
- **Trail** - A linear route managed for human-powered, stock, or off-highway vehicle (OHV) forms of transportation or for historic or heritage values.
 - a. Clarifier: Trails provide public access for opportunities of outdoor recreation as well as access to many significant prehistoric and historic sites.
 - b. Some portions of historic trails are accessible today, and provide recreational and other benefits, while others, more 'virtual' in nature, provide a cultural and/or historic experience, but are not physically capable of being traversed or accessed. Historic trails can consist of a path, a route, a corridor, a road, a river/stream, etc.
- **Trail Class** - The prescribed scale of development for a trail, representing its intended design and management standards.
- **Trail Fundamentals** - The five concepts that are the cornerstones of Forest Service trail management, including Trail Type, Trail Class, Managed Use, Designed Use, and Design Parameters.
- **Trail Grade** - The ascent or descent of a trail segment expressed as a percentage of its length.
- **Trail Management Objective (TMO)** - Documentation of the intended purpose and management of a National Forest System trail based on management direction, including access objectives.
- **Trail Type** - A category that reflects the predominant trail surface and general mode of travel accommodated by a trail.
- **Trailhead** - The transfer point between a trail and a road, water body, or airfield, which may have developments that facilitate transfer from one mode of transportation to another.
- **Tread Creep** - Movement of active tread path due to poor design, erosion, intrusion of obstacles, or general unintended consequences.



Reference Materials



Cited References:

1. **Kachemak Bay State Park and Kachemak Bay State Wilderness Park Management Plan**, State of Alaska Department of Natural Resources Division of Parks and Outdoor Recreation, June 2022
2. **Alaska State Parks Trail Management Handbook**, Alaska State Parks, Alaska State Trails Program, May 2015
3. **Alaska Statewide Comprehensive Outdoor Recreation Plan 2023-2027**, State of Alaska Department of Natural Resources Division of Parks and Outdoor Recreation, December 2022
4. **Guidelines for a Quality Trail Experience**, International Mountain Bike Association and Department of Interior Bureau of Land Management, 2017

Cottonwood Eastland - Kachemak Bay State Park

Hike & Mountain Bike and Multi-Use Trail Design



Cottonwood Eastland - Project Location

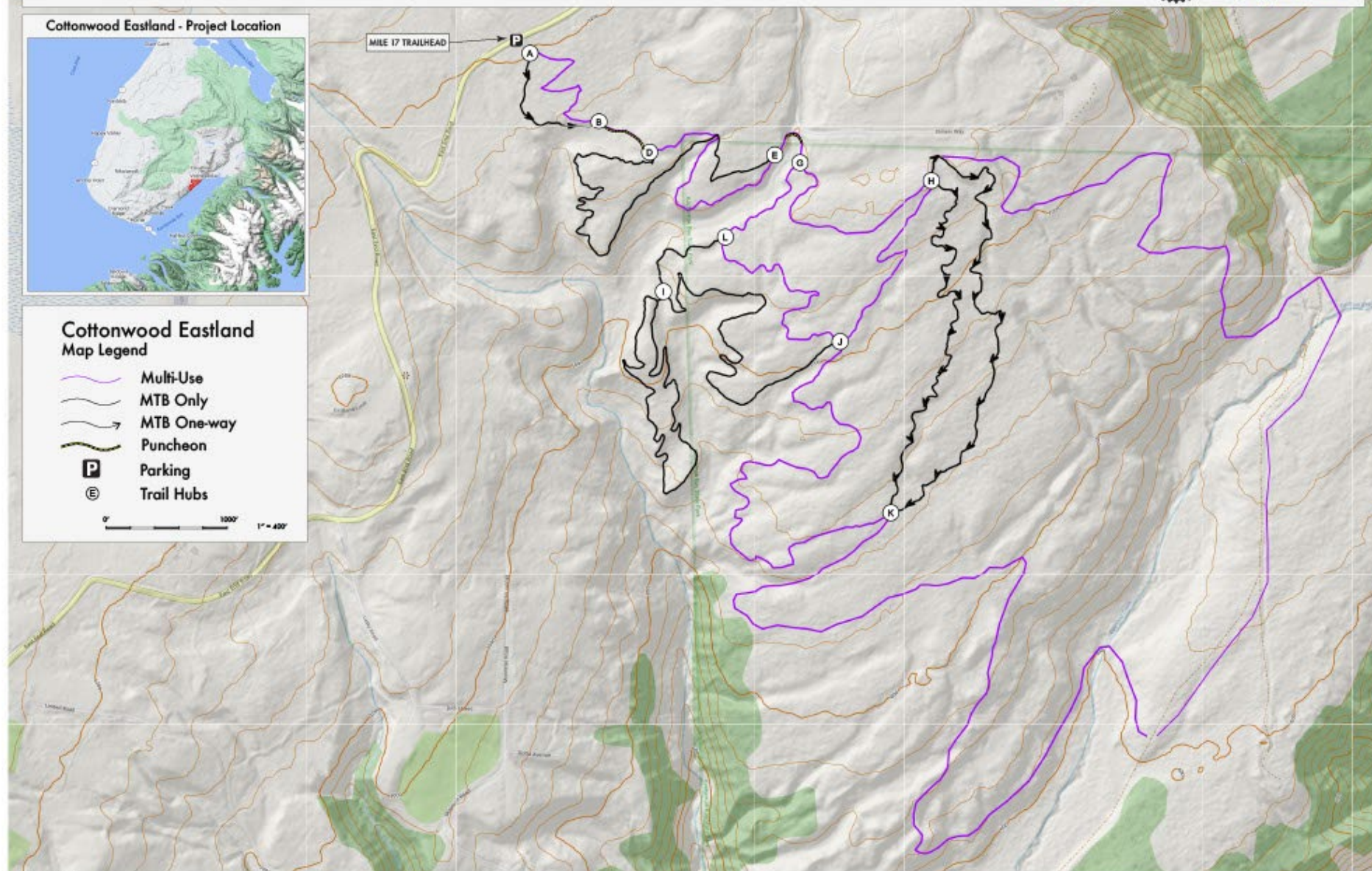


Cottonwood Eastland Map Legend

- Multi-Use
- MTB Only
- MTB One-way
- Punchon
- Parking
- Trail Hubs

0 1000' 1" = 400'

MILE 17 TRAILHEAD



Mercator Projection
WGS84
UTM Zone 5V
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MSU 14.15

