OPERATIONS AGREEMENT BETWEEN
CITY OF DULUTH AND
CYCLISTS OF GITCHEE GUMEE SHORES, INCORPORATED

THIS LICENSE AGREEMENT (this "Agreement") is entered into by and between CYCLISTS OF GITCHEE GUMEE SHORES, INCORPORATED, a Minnesota non-profit corporation ("COGGS"), and the CITY OF DULUTH, a municipal corporation created and existing under the laws of the State of Minnesota (the "City").

WHEREAS, the City is committed to providing recreational opportunities for the citizens of Duluth and enhancing the quality of the City's open spaces.

WHEREAS, COGGS is a non-profit corporation with the mission of building, maintaining, and advocating for mountain bike trails in the City.

WHEREAS, the City and COGGS have worked together to develop the Duluth Traverse Trail System, which is a multi-use trail network linking neighborhoods and parks across the entire ridge-line of Duluth from Lester Park in the east to Chambers Grove Park in the west (the "Traverse Trail"). The Traverse Trail conceptual alignment was part of the City's 2011 Trails and Bikeway Master Plan. The Traverse Trail is made up of (i) a 40- mile single track beginner-level trail that traverses the City and connects neighborhoods and people to green spaces and parks; (ii) five trail centers with 70+ miles of concentrated clusters of trail with varying skill levels and terrain; and (iii) various skill areas, bike parks, and neighborhood and inter-community connections.

WHEREAS, in 2017, the City of Duluth approved a publicly-vetted mini-master plan for the entire length of the Traverse Trail that created a development and management plan for long-term sustainability of the Traverse Trail (the "Mini Master Plan").

WHEREAS, the City and COGGS have collaborated on the construction and financing of a portion of the Traverse Trail, including obtaining grants and other types of funding and mobilizing volunteers. To date, the parties have completed construction of approximately 94 miles of the Traverse Trail (the "Existing Trail"). To the extent that additional segments of the Traverse Trail are constructed and opened to the public during the Term (defined below), those sections of the Traverse Trail shall automatically be included in the "Existing Trail" under this Agreement.

WHEREAS, COGGS wishes to assist the City with the preservation, maintenance, and enhancement of the Existing Trail (the "Trail Maintenance Project").

WHEREAS, the City wishes to create a revocable, non-exclusive license in favor of COGGS to allow COGGS to complete the Trail Maintenance Project in accordance with the terms and conditions of this Agreement and consistent with the Mini Master Plan.

WHEREAS, COGGS has represented itself as fully capable of completing the Trail Maintenance Project and as qualified and willing to perform the Trail Maintenance Project.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained in this Agreement, the receipt and sufficiency of which is acknowledged, the parties agree as follows:

I. Use of the Premises and Grant of Rights.

A. Subject to the terms and conditions set forth in this Agreement, the City grants to COGGS a revocable, non-exclusive license to enter onto the Existing Trail for the limited purpose of completing the Trail Maintenance Project. The Trail Maintenance Project shall be completed by COGGS, its employees, agents and volunteers. The Trail Maintenance Project shall be at no cost to the City, except as otherwise set forth in this Agreement, or as may be approved by the City, in the City's sole discretion. This Agreement does not permit COGGS to construct new sections of the Traverse Trail, however, with the advance written permission of the Manager (defined below), sections of the Existing Trail may be realigned within existing trail corridors as established by the City, the State Authorizations (defined below) and the Private Authorizations (defined below) (the "Existing Trail Corridors") to the extent permitted by Section III.A.6. below.

B. COGGS acknowledges and understands that the Existing Trail is public property (located, in part, on private property), and the cooperation of all users and coordination of activities is required. This cooperation includes ingress, egress and use of amenities and related improvements. The City's Manager of Parks and Recreation or his or her designee (the "Manager") shall ultimately determine the appropriate use of the Existing Trail and shall decide any disputes between COGGS and any other users of the Existing Trail.

C. COGGS's use of the Existing Trail shall in no way limit or restrict the City's or the public's use of the Existing Trail. The City shall continue to enjoy unlimited access to the Existing Trail during the Term. Notwithstanding the foregoing, COGGS may temporarily close off a section of the Existing Trail for public safety reasons when performing the Trail Maintenance Project by providing appropriate signage and/or fencing to notify the public of the activities occurring.

D. City shall determine, in its sole discretion, when the Existing Trail, or portions of the Existing Trail, is open or closed for public use. Nothing in this Agreement shall prevent COGGS from: (i) sending notifications to its members and the public regarding the City's decisions to open and close the Existing Trail, or portions of the Existing Trail; or (ii) advising its members to refrain from using the Existing Trail, or portions of the Existing Trail, even then it is open for public use, in order to prevent or minimize damage to the Existing Trail.

E. COGGS shall be responsible for all of its costs and employee compensation in connection with the Trail Maintenance Project, including but not limited to payroll, rental

or purchase of equipment and all other expenses, except as otherwise set forth in this Agreement, or as may be approved by the City, in the City's sole discretion. .

F. COGGS will work on the Trail Maintenance Project in coordination with the City's Parks and Recreation Department, with the Manager serving as the primary contact for the City. COGGS shall notify the City in writing no less than two weeks in advance of any planned activities that will close a segment of the Existing Trail or substantially impact use of any portion of the Existing Trail. However, the Manager may grant COGGS permission to work within the Existing Trail with less than one week's notice in the Manager's sole discretion. In the event that the City determines, in its sole discretion, that the planned activities will substantially interfere in any way with other activities planned for that time period (either in the Existing Trail or surrounding areas), COGGS shall reschedule its planned activities for a time that is acceptable to the City. In the event of a major wind or other event causing substantial damage or blockage to one or more portions of the Existing Trail, the City may indefinitely suspend COGGS's access to the affected portion(s) of the Existing Trail by providing written notice to COGGS. In such an event, and as the City's resources allow, the City will reopen the affected portion(s) of the Existing Trail in the City's sole discretion.

G. The City may be working within the Existing Trail or nearby areas during the Term, and COGGS's activities cannot interfere with the City's activities.

H. COGGS acknowledges that portions of the Existing Trail are on property owned by the State of Minnesota and managed by St. Louis County (the "State Property") and portions of the Existing Trail are on property owned by private property owners (the "Private Property"). As to the State Property, COGGS must comply with (i) this Agreement, (ii) all applicable rules, regulations and laws, and (iii) the terms and conditions of applicable trail authorization agreement(s) now existing or entered into from time to time between the City and the State of Minnesota and/or St. Louis County (collectively, the "State Authorizations"). As to the Private Property, COGGS must comply with (i) this Agreement, (ii) all applicable rules, regulations and laws, and (iii) the terms and conditions of applicable trail authorization agreement(s) now existing or entered into from time to time between the City and the private property owners (collectively, the "Private Authorizations"). The City shall provide COGGS with copies of the State Authorizations and the Private Authorizations. In the event that any terms and conditions of any of the State Authorizations or the Private Authorizations contradict any terms or conditions of this Agreement, the terms and conditions set forth in those authorizations shall supersede the terms and conditions set forth in this Agreement.

I. No advertising signage of any kind ("Advertisement") may be installed by COGGS within the Licensed Premises until a request for approval of Advertisement has been submitted to the City's Parks and Recreation Manager or their designee (the "Parks Manager"). COGGS shall wait for Advertisement approval prior to fabrication and installation of the Advertisement. All Advertisement is subject to the approval of the Parks Manager, including as to size, content and location within the Premises, which approval shall not be unreasonably withheld. COGGS shall: (i) be entitled to revenues generated by the sale or sponsorship of Advertisement, and (ii) ensure that all Advertisement complies with all applicable codes and laws. Tobacco products may not

be advertised. Adult bookstores, as defined by Section 5-17(a) of the Duluth City Code, and adult entertainment establishments, as defined by Section 5-17(b) of the Duluth City Code, may not be advertised at the Licensed Premises. All Advertisement shall adhere to the COGGS Signage & Wayfinding Plan, attached as Exhibit D, except as may otherwise by approved in writing by the Manager

J. PERMMITTING.

1. City acknowledges the valuable contributions that COGGS makes to the multi-use Duluth Traverse trail system. In addition to activities relating to trail stewardship, COGGS also wishes to host and coordinate a range of special events and activities on the trail system, which may use adjacent park property, trailheads, and parking lots from time to time.

2. All standard requirements for use and permitting of parks and trails apply to COGGS activities, which may change from year to year. For the duration of this agreement, City agrees to waive fees associated with the cost of standard Special Event Permits as related to trail use. COGGS agrees to follow standard permitting processes to ensure events and activities are appropriately documented, approved, and aligned with the intended use of the trail system and adjoining park and/or trail amenities.

3. The waiver of fees associated with Special Event Permits is non-transferable. COGGS is responsible for ensuring all permitting requirements are met. COGGS will not be given priority in processing of permits.

4. COGGS acknowledges that the Duluth park and trail system is meant to be enjoyed and permitted by many individuals and groups, and the City appreciates COGGS' support of other users both through Stewardship efforts and Permitting processes. While fees are waived for Special Event Permits, the permit process itself remains consistent. The following information is provided as a guide to help inform when a permit (no cost) is still applicable.

a. This information is based upon 2025 Parks Permitting Policies and City Ordinances, which may be updated from time to time, resulting in changes to these standards. City agrees to making a good faith effort to proactive communication and permitting processes that support the ongoing activities of COGGS.

SPECIAL EVENT PERMIT REQUIRED *If one or more of these terms apply to the special event, a Parks permit is required.*	**SPECIAL EVENT PERMIT NOT REQUIRED**
Competitive trail use (example: race, enduro, etc)	Non-competitive trail use (casual gathering, event is not timed, fun ride/walk/hike, no fees are collected by the organizer of the event)

40+ attendees	<40 attendees
Use of dedicated park space is required and/or desire for exclusive use of certain park spaces, which may include but not be limited to: pavilions, stage, parking lot, and/or other park space that can be rented for special, private and wedding events	Only trailheads and trails used, all non-exclusively
Alcohol Permit needed	Alcohol Permit not needed

5. Fee Waivers referenced in this document do not apply to building rentals, Alcohol Consumption Permits, Liquor License, Tent/Canopy Permits, Fire Permits, electric panel rental, street closures, late fees, or special services requests. These additional requests are required to be processed through the appropriate City offices, within the established timelines, and additional fees may apply.

II. TERM OF THIS AGREEMENT. Notwithstanding the date of execution of this Agreement, the term of this Agreement shall commence on or about May 1, 2025, and shall continue through April 31 2028, unless earlier terminated as provided in this Agreement (the "Term").

III. MAINTENANCE AND OPERATION

A. Authorized Activities on Trail Maintenance Project. COGGS shall, under the conditions set forth in this Agreement and consistent with the Trail Specifications (defined below), engage in the following activities for the purpose of completing the Trail Maintenance Project, without additional approval from the City (unless otherwise required by this Agreement):

1. Build and maintain drainage structures to prevent loss of soil through erosion.

2. Keep existing structures such as bridges, foot logs, puncheons, rock culverts, etc. safe for use.

3. Clear the Existing Trail of debris and obstructions to allow for safe use.

4. Maintain the surface of the Existing Trail to provide an adequate walking and riding surface, free from obstacles or hazards, which maintenance duties includes the repair or modification of the tread in a manner that is consistent with the trail's character and difficulty.

5. Cut and remove brush, trees and other vegetation to define and protect the established tread of the Existing Trail.

6. In the event no storm water permit is necessary (to be determined in advance by the City pursuant to a written request by COGGS), realign the Existing Trail or create a b-line within the Existing Trail Corridors. A realignment of the Existing Trail outside of the Existing Trail Corridors or creation of a b-line outside of the Existing Trail Corridors may not be constructed unless COGGS obtains advance written approval of a project proposal. A realignment of the Existing Trail or creation of a b-line that requires a storm water permit, may not be constructed unless a storm water permit is obtained in advance as set forth in Section XI, B., below.

7. Construct trailside features that are within one difficulty rating higher than the Existing Trail, provided that they do not block or interfere with the primary trail and install signage, indicating trail difficulty rating and wayfinding.

8. Manage and maintain all trail maps, signage, and wayfinding necessary for proper trail use. Notwithstanding the foregoing, the City reserves the right to install its own Signage within the Licensed Premises.

B. Regulation of Activities.

1. COGGS may use chainsaws, track wheelbarrows, lawnmowers, weed whips, brush cutters, saws, drills, mini-excavators, snowmobiles, track sleds and other mechanized equipment (collectively, the "Mechanized Equipment") to perform the Trail Maintenance Project, but must adhere to the following rules when using the Mechanized Equipment:

a. Only individuals designated by COGGS as a "chainsaw operator" will be allowed to operate chainsaws. COGGS shall adhere to Occupational Safety and Health Administration ("OSHA") requirements for working safely with chainsaws, including with respect to its volunteers.

b. Only individuals designated by COGGS as a "machine operator" will be allowed to operate mechanized equipment. COGGS shall adhere to OSHA requirements associated with the use of wheel or track propelled equipment, including with respect to its volunteers. Mechanized Equipment must be clearly labeled or otherwise visibly displayed with a sticker or other device acceptable to the City to notify the public that such mechanized equipment specifically authorized.

c. Only individuals designated by COGGS as a "power tool operator" will be allowed to operate power saws (circular saw), power pole saw, and brush cutters tools. COGGS shall adhere to OSHA requirements associated with the use of hand and power tools, including with respect to its volunteers.

d. The Manager, in their sole discretion, retains the right to prohibit any type of equipment from being used by COGGS on the Existing Trail.

2. COGGS may not use chemical methods to remove brush, trees, and other vegetation, except (i) when removing or attempting to remove invasive species, and (ii) with written approval from the City. If COGGS wishes to use chemical removal methods,

it must submit a written request in advance. The City may approve or refuse a request to use chemical removal methods in its sole discretion. In the event chemical removal methods are authorized, COGGS shall (i) use only the specific chemicals and methods authorized by the City, in the approved quantities; (ii) only disperse the chemical(s) on the invasive species identified in the City's written approval; and (iii) use, transport and store the chemical(s) in accordance with applicable law and consistent with all guidelines imposed by the City.

3. All brush and other vegetation shall be slashed and dispersed on site so that it sits no higher than 18" off the ground with cut ends pointed away from the active trail tread whenever possible. All cut and/or slashed vegetation shall be dragged away from the active trail tread so that it is out of sight from users (but within the Existing Trail corridor, which varies among different sections of the Existing Trail). Wood chips may not be left in piles higher than four inches off the ground. Cut and/or slashed vegetation, including wood chips, shall not be deposited into suspected wetlands, low lands, or drainage ways and must be disposed of in an upland location.

4. All cut trees shall be left on site, but, to the extent possible, dragged away from the active trail tread (but within the Existing Trail corridor, which varies among different sections of the Existing Trail) so that, to the extent possible, they are out of sight from users. All tree stumps greater than 6" in diameter shall be left no higher than three inches off the ground. All woody vegetation less than 6" in diameter that are within the active trail tread or fall zone shall be removed as to not leave any sharp edges or protrusions. The removal and cutting of trees and vegetation under this Section III.B.4. shall be consistent with the trail's character and degree of difficulty.

5. Standing or live fallen trees designated as "special tree species" under the City's Code Chapter 35-26(i), as it may be amended or replaced from time to time, greater than six inches in diameter measured at breast height, require written approval from the Manager before removal; except that if a standing or live fallen tree designated as "special trees species" is physically blocking the Existing Trail, it may be removed from the Existing Trail without the prior written approval of the Manager. At the time of execution of this Agreement the "special tree species" listed in Chapter 35-26(i) include the following: white pines, red or Norway pines, white cedars, white spruces, eastern hemlocks, sugar maples, American basswoods, American elms, yellow birches and all oak species. It is the responsibility of COGGS to obtain the current list of species included in "special tree species" under the City's Code at the time of tree removal. All other trees may be removed without written permission. COGGS shall submit tree removal requests in writing to the City prior to removal of any tree requiring the Manager's approval, which the City may approve or reject in its sole discretion.

6. COGGS must provide personal protective equipment necessary or adequate for all activities on the Existing Trail. The City will not provide recommendations and/or direction as to what, if any, personal protective equipment should be used by individuals working on the Trail Maintenance Project.

7. Any COGGS activities not approved by the Manager may be grounds for termination of this Agreement.

8. COGGS is not permitted to widen the active trail tread or the surrounding buffer areas beyond what is appropriate for the trail rating and characteristics. COGGS shall perform all duties and activities authorized under this Agreement consistent with the Mini Master Plan and/or at the direction of the City.

9. COGGS shall only perform the Trail Maintenance Project during regular park hours, generally 6 a.m. to 10 p.m., with the exception of winter grooming. Any activities performed outside of this timeframe requires written permission from the Manager.

C. Mechanized Equipment Use. COGGS may, under the following conditions, use an all-terrain vehicle and other mechanized equipment which include mini-excavators, snowmobiles, track sleds, and tracked wheelbarrows ("~~ATV~~ Mechanized Equipment") to access the Existing Trail solely for the purpose of completing the Trail Maintenance Project:

1. Mechanized Equipment use shall be limited to (i) the Existing Trail, and (ii) approved ski trails, snowmobile trails, and forest roads. No other trail or off-trail use can have ATV traffic unless such use is approved by the City in advance pursuant to a written request submitted to the City. If such a request is approved, the City shall transmit permission in writing or via email. The City reserves the right to deny any such requests. Overland cutting is prohibited unless approved in writing by the Manager in advance.

2. Speed of Mechanized Equipment is limited to 10 miles per hour or less.

3. Mechanized Equipment users must yield to people and pets.

4. Mechanized Equipment use is limited to times when the trails are dry. Mechanized Equipment use is prohibited when the trails are wet and/or muddy. If COGGS causes any rutting on the Existing Trail or any other damage to a trail surface, COGGS shall promptly restore the rutted or damaged portion of the trail to its pre-existing condition.

5. Mechanized Equipment use on off-trail locations shall be minimized to the greatest extent possible and used to bypass bridges, boardwalk, and terrain where the Mechanized Equipment cannot be safely operated. If COGGS causes any rutting or any other damage to an off-trail surface, COGGS shall promptly restore the rutted or damaged portion of the off-trail surface to its pre-existing condition.

6. Mechanized Equipment may be used only to haul tools, materials, and equipment. Mechanized Equipment may not be used for sightseeing or other purposes.

7. When authorized to use Mechanized Equipment, COGGS shall only use Mechanized Equipment during daylight hours and may not use Mechanized Equipment when it is dark.

8. Mechanized Equipment must be clearly labeled or otherwise visibly displayed with a sticker or other device acceptable to the City to notify the public that such Mechanized Equipment use is specially authorized.

9. All Mechanized Equipment used to complete the Trail Maintenance Project must be supplied by COGGS or its designated volunteers.

D. VOLUNTEER USE. COGGS may use volunteers to perform work on the Trail Maintenance Project and, in such event, must supervise volunteers in accordance with the requirements under this Agreement, as well as adhere to the following:

1. COGGS must provide a trail steward or crew leader to supervise volunteers at all times and submit their name and contact information to the Manager. The type of supervision will be based on type of work being performed and skill level of the volunteer, ranging from direct onsite supervision to indirect supervision.

2. COGGS must train and supervise volunteers in appropriate construction techniques; and

3. COGGS must provide volunteers with the appropriate tools to perform the Trail Maintenance Project.

E. CONFORMANCE TO SPECIFICATIONS. COGGS shall complete the Trail Maintenance Project in a professional and diligent manner. All work shall be done in accordance with: (i) the Mini Master Plan, (ii) the Construction Specifications dated January 18, 2019 and boardwalk, bridge, and erosion details, all attached as Exhibit A, except as may otherwise by approved in writing by the Manager; (iii) the Trails Specification Matrix attached as Exhibit B (collectively, as they may be amended from time to time, the "Trail Specifications"), and (iiii) The Duluth Traverse Trail Operations and Management Plan as Exhibit E. In the event COGGS performs work that does not conform to the Trail Specifications, the Manager may require that COGGS fix the non-conforming work, including revegetation in the event vegetation or trees are removed by COGGS without proper authorization. The Trail Specifications shall not be amended without the prior written approval of the Manager. In the event of any conflict between this Agreement and the Trail Specifications, the Trail Specifications shall control.

IV. CITY RESPONSIBILITIES.

City shall be responsible for the following:

A. COGGS may utilize the City's Volunteer Toolshed in accordance with the then-current policies governing use of the Volunteer Toolshed. COGGS's staff members and volunteers shall be employees or agents solely of COGGS and not employees or agents of the City.

B. Assisting with tree, brush, and vegetation removal, upon request by COGGS and in accordance with City's Uniform Development Code, as amended in

City's sole discretion from time to time.

C. The City shall review Materials Requests each year, and provide COGGS with a written response by March 31 each year as to which, if any, requests will be fulfilled by City. Failure to submit Materials Requests by March 01 each year will not obligate City to fulfill any portion of the Materials Requests.

D. The City shall coordinate with COGGS on delivery of Materials.

E. The frequency of City's assistance under this section shall be City's sole discretion and will depend on work force and equipment availability.

V. TERMINATION.

A. Either party may terminate this Agreement without cause by providing at least fourteen (14) calendar days' written notice to the other party.

B. The City may terminate this Agreement for the material breach by COGGS of any provision of this Agreement if such breach is not cured to the satisfaction of the City within ten (10) days of delivery of a written notice by the City (or such longer time as specified in the notice). The notice shall identify the breach and the actions necessary to remedy the breach.

C. The City may terminate this Agreement immediately on written notice to COGGS if the City believes in good faith that the health, welfare, or safety of occupants or neighbors of the Existing Trail would be placed in immediate jeopardy by the continuation of this Agreement.

VI. REPRESENTATIONS AND WARRANTIES.

A. The City makes no representation that the Existing Trail is suitable for any particular purpose or specific uses and COGGS accepts the Existing Trail in "as is" condition without representations or warranties of any kind.

B. COGGS represents and warrants that it shall perform its duties in a professional and diligent manner in the best interests of the City and in compliance with all applicable laws.

C. COGGS represents and warrants that COGGS and all personnel and volunteers working on the Trail Maintenance Project shall have sufficient training and experience to perform the duties set forth herein and are in good standing with all applicable licensing requirements.

VII. RESTORATION.

A. COGGS shall exercise reasonable care in performance of the Trail Maintenance Project.

B. Except as explicitly permitted by this Agreement, COGGS shall not make any alterations or improvements to the Existing Trail without the prior written consent of the City and then only upon the terms and conditions which may be imposed by the City. Prior to expiration of the Term, COGGS shall repair any damage caused by COGGS, its employees, servants, volunteers, agents, contractors, invitees, and licensees to the equivalent of its condition prior to the damage caused by COGGS, or better, or, upon demand, pay to the City the reasonable costs incurred by the City to repair any damage done by COGGS, its employees, servants, volunteers, agents, contractors, invitees, and licensees.

HOLD HARMLESS. To the extent allowed by law, COGGS shall defend, indemnify and hold the City and its employees, officers, and agents harmless from and against any and all cost or expenses, claims or liabilities, including but not limited to, reasonable attorneys' fees and expenses in connection with any claims resulting from:

VIII. (a) COGGS's breach of this Agreement; (b) COGGS's negligence or misconduct or that of its employees, agents, volunteers or contractors in completing any portion of the Trail Maintenance Project; (c) any claims arising in connection with COGGS's employees, agents, volunteers or contractors; or (d) the use of any materials supplied by COGGS to the City unless such material was modified by the City and such modification is the cause of such claim. COGGS is not responsible for maintenance or other work on the Existing Trail unless it is performed under the direction or control of COGGS. This section shall survive the termination of this Agreement for any reason.

IX. INSURANCE.

A. During the Term, COGGS shall procure and maintain continuously in force Public Liability Insurance written on an "occurrence" basis under a Comprehensive General Liability Form in limits of not less than One Million Five Hundred Thousand Dollars ($1,500,000) aggregate per occurrence for personal bodily injury and death. The City shall be named as an additional insured therein. COGGS's insurance policies shall cover:

1. Public Liability, including premises and operations coverage.
2. Independent contractors - protective contingent liability.
3. Personal injury.
4. Owned, non-owned and hired vehicles.
5. Contractual liability covering the indemnity obligations set forth herein.

B. COGGS shall provide to the City a Certificate of Insurance in form acceptable to the Duluth City Attorney's Office evidencing such insurance coverages. The City does not represent or guarantee that these types or limits of coverage are adequate to protect COGGS's interests and liabilities. The form of the Certificate of Insurance shall

(i) contain an unconditional requirement that the insurer notify the City not less than 30 days prior to any cancellation, non-renewal or modification of the policy or coverages evidenced by said certificate; and (ii) provide that failure to give such notice to the City will render any such change or changes in said policy or coverages ineffective as against the City. The use of an "Accord" form as a Certificate of Insurance shall be

accompanied by two forms: 1) ISO Additional Insured Endorsement (CG-2010 pre-2004) and 2) Notice of Cancellation Endorsement (IL 7002) - or equivalent, as required by the Duluth City Attorney's Office.

C. During the Term, COGGS shall also have workers' compensation insurance in accordance with applicable law.

X. INDEPENDENT CONTRACTOR. COGGS shall be responsible for all of its employee compensation in connection with the Projects, including but not limited to payroll and all other expenses. Nothing contained in this Agreement is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties or as constituting COGGS, COGGS personnel, or COGGS volunteers as an agent, representative, or employee of City for any purpose or in any manner whatsoever. COGGS and its employees shall not be considered employees of City and any and all claims that may or might arise under the Workers' Compensation Act of the State of Minnesota on behalf of COGGS' employees or agents while so engaged, shall in no way be the responsibility of City. Furthermore, City shall not, in any way, be responsible to defend, indemnify or save harmless COGGS from liability or judgments arising out of the intentional or negligent acts or omissions of COGGS while performing the work specified by this Agreement.

XI. ASSIGNMENT. COGGS shall not in any way assign or transfer its rights or interests under this Agreement. However, COGGS may hire subcontractors to work on the Trail Maintenance Project. Any subcontractor hired by COGGS shall procure the required insurance coverages as described in Section VIII above and provide proof of coverage to the City prior to conducting any work on the Existing Trail. COGGS shall remain primarily responsible for all work performed by any subcontractor.

XII. LAWS, RULES AND REGULATIONS.

A. COGGS shall conduct its activities related to the Trail Maintenance Project in strict compliance with the United States Constitution and with the applicable laws, rules, and regulations of the United States, State of Minnesota, St. Louis County, City of Duluth, including, but not limited to, all laws, rules, and regulations relating to accessibility standards under the Americans with Disabilities Act. COGGS shall not unlawfully discriminate and shall comply with all applicable federal and state laws regarding non- discrimination.

B. COGGS shall procure, at COGGS's expense, all licenses, permits, approvals and permissions necessary for carrying out its obligations under this Agreement and completing the Trail Maintenance Project, unless otherwise agreed to in advance by the City in writing. Notwithstanding the above, the City shall apply and pay for necessary storm water permits.

C. COGGS shall ensure that its staff members, agents and volunteers complete the Trail Maintenance Project in a professional and diligent manner and shall use its best efforts to complete the Trail Maintenance Project in accordance with Trail Maintenance Project timelines and schedules.

XIII. RECORDS RETENTION. COGGS shall maintain all books, records, documents, and other evidence pertaining to this Agreement for six (6) years after termination or expiration of this Agreement for any reason.

XIV. GOVERNMENT DATA PRACTICES. All data collected, created, received, maintained or disseminated for any purpose by the parties because of this Agreement is governed by Minn. Stat. § 13.05, Subd. 11. COGGS shall comply with Minn. Stat. § 13.05, Subd. 11. COGGS agrees to hold the City, its officers, and employees harmless from any claims resulting from COGGS's failure to comply with this law.

XV. WAIVER. The waiver by the City or COGGS of any breach of any term, covenant, or condition of this Agreement shall not be deemed to be a waiver of any subsequent breach of same or any other term, covenant, or condition in this Agreement.

XVI. SEVERABILITY. If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, then the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.

XVII. RECITALS INCORPORATED. The recitals at the beginning of this Agreement are true and correct and are incorporated into this Agreement by reference.

XVIII. NO THIRD PARTY RIGHTS. This Agreement is to be construed and understood solely as an agreement between COGGS and the City regarding the subject matter herein and shall not be deemed to create any rights in any other person or on any other matter. No person shall have the right to make a claim that they are a third party beneficiary of this Agreement or of any of the terms and conditions hereof, which may be waived at any time by mutual agreement between the parties.

XIX. NOTICES. Notices provided pursuant to this Agreement shall be sufficient if sent by regular United States mail, postage prepaid, addressed to

Cyclists of Gitchee Gumee Shores, Incorporated
PO Box 161261
Duluth, MN 55816
executivedirector@coggs.com

City of Duluth
Attn: Parks Manager
411 W. First Street, Ground Floor
Duluth, Minnesota 55802
(218) 730-4300

or to such other persons or addresses as the parties may designate to each other in writing from time to time.

XX. INCIDENT REPORT. COGGS shall promptly notify the City in writing of any incident of injury or loss or damage to the Existing Trail or any staff members, volunteers or invitees occurring during the performance of the Trail Maintenance Project. Such written report shall be in a form acceptable to the City's Claims Investigator and Adjuster and sent to the Manager. A copy of the City's form of Incident Report is attached as Exhibit C.

XXI. COMPLIANCE WITH AGREEMENT. The right of COGGS to use the Existing Trail are subject to COGGS's compliance with the undertakings, provisions, covenants, and conditions set forth in this Agreement.

XXII. APPLICABLE LAW. This Agreement, together with all of its paragraphs, terms, and provisions, is made in the State of Minnesota and shall be construed and interpreted in accordance with the laws of the State of Minnesota.

XXIII. AMENDMENTS. All amendments to this Agreement shall be in writing and shall be executed in the same manner as this Agreement.

XXIV. AUTHORITY TO EXECUTE AGREEMENT. The parties represent to each other that the execution of this Agreement has been duly and fully authorized by their respective governing bodies or boards, that the individuals who executed this Agreement on their behalf are fully authorized to do so, and that this Agreement when thus executed by said individuals will constitute and be the binding obligation and agreement of the parties in accordance with the terms and conditions of this Agreement.

XXV. COUNTERPARTS. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original as against any party whose signature appears thereon, but all of which together shall constitute but one and the same instrument. Signatures to this Agreement transmitted by facsimile, by electronic mail in "portable document format" (".pdf"), or by any other electronic means which preserves the original graphic and pictorial appearance of the Agreement, shall have the same effect as physical delivery of the paper document bearing the original signature.

XXVI. KEYS.

A. The City's Properties and Facilities Manager or his or her designee (the "PFM Manager") shall be exclusively responsible for the design and designation of keying systems, lock changes, key fabrication and key distribution for any locks within the Existing Trail. COGGS shall comply with the City's Key Control Policy, a copy of which shall be provided to COGGS, and is subject to unilateral change by the City during the Term.

B. COGGS shall not make copies of any keys that are distributed to COGGS. All keys shall be promptly returned to the PFM Manager upon termination or expiration of this Agreement.

XXVII. ENTIRE AGREEMENT. This Agreement, including exhibits, constitutes the entire agreement between the parties and supersedes all prior written and oral agreements and negotiations between the parties relating to the subject matter hereof. The exhibits to this Agreement include the following:

Exhibit A: Construction Specifications dated January 18, 2019
Exhibit B: Trails Specification Matrix
Exhibit C: Incident Report
Exhibit D: COGGS Signage and Wayfinding Plan
Exhibit E: Duluth Traverse Trail Operations and Management Plan

IN WITNESS WHEREOF, the parties have executed this Agreement as of the dates set forth below.

CITY OF DULUTH, MINNESOTA

By: _____
Mayor

ATTEST:

_____
City Clerk

Dated:_____

COUNTERSIGNED:

_____
City Auditor

APPROVED AS TO FORM:

_____
City Attorney

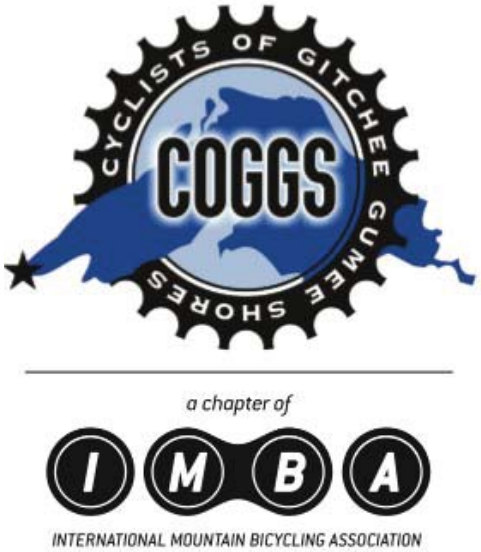
CYCLISTS OF GITCHEE GUMEE SHORES, INCORPORATED

By: Ansel Schimpff_____

Title: Executive Director_____

Dated:8/7/2025_____

Exhibit B



CONSTRUCTION SPECIFICATION
January 18, 2019

COGGS Project #: 01-2019

Duluth Traverse Trail System
2019 Club Bid

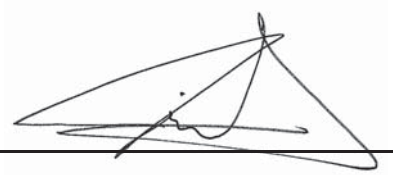
COGGS
Cyclists of Gitchee Gumee Shores
PO Box 161261
Duluth, MN 55815
United States

Table of Contents

1.0 Certification

DATE: JANUARY 18, 2019

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

NAME	REGISTRATION NUMBER
	
JAMES M. SHOBERG, LANDSCAPE ARCHITECT	45577

SECTION 1: PROJECT DESCRIPTION AND SCOPE

1.1 General Project Description

The Cyclists of Gitchee Gumee Shores (herein referred to as "COGGS") is seeking a contractor to provide an experienced trail crew to construct approximately ±3.0 miles of new mountain bike-specific natural surface singletrack trails on public lands in Duluth, MN. This is Phase 8 of a multi-year project that seeks to create upwards of 100 miles of singletrack. Duluth, MN is situated at the western most point of the Great Lakes on the north shore of Lake Superior.

The surrounding city park lands demand a high standard-of-care during construction activities due to steep topography, exposed bedrock and proximity to trout streams. Blasting is not an anticipated component of this bid however rock breaking will be encountered in this build. For more information about soil conditions visit the National Cooperative Soil Survey at http://websoilsurvey.sc.egov.usda.gov/

The contractor will be responsible for implementing and maintaining the Stormwater Pollution Prevention Plan (SWPPP) supplied by the COGGS.

The trail alignment corridor has been flagged by COGGS with approval from the City of Duluth (herein referred to as the "City"). The flag line represents the center line of a 50 foot wide corridor. As part of this project the contractor is responsible for final field alignment and design and must remain within 25 feet on either side of the corridor flag line. It is also the responsibility of the contractor to remain 50' away from private property where possible as depicted in the plan. If there is a need to go outside the corridor or get closer than 50' to a private property the contractor must receive written Club approval.

The area is front country, with many areas of mobile phone coverage, and is located less than one hour from emergency medical service.

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1.2 Mountain Bike-Specific Singletrack

It cannot be more strongly emphasized that this project is for purpose-built mountain bike natural surface singletrack trail. Desired characteristics include: cambered trail surfaces, insloped turns, aggressively rolling terrain, incorporation of native rock features, and seamless transitions between trail types. Trail features and flow should *progress* as a user gets deeper into the system; larger, tighter, more narrow examples of similar elements moving from "green" (easier) to "blue" (more difficult) to "black" (most difficult) areas. Along segments intended for more skilled trail users, optional lines available only to more-skilled riders are highly desirable and encouraged.

In partnership with the Club, the contractor will be expected to maximize the potential of the landscape hosting the trail corridors. Creativity is encouraged. A portfolio of previous mountain bike-focused work will be heavily weighted in the selection process.

1.3 Project Scope

To satisfy funding requirements for the project, the work outlined in this document shall be completed by November 1st 2019.

Overall, the project's scope of work includes up to approximately ±3.0 gross miles of new trail construction including: berms, switchberms, technical trail feature (TTF) boardwalks, rock armoring and bridges. The Storm Water Pollution Prevention Plan (SWPPP) outlines general construction information and best management practices (BMPs) as they apply to the stormwater pollution prevention as it relates to trail project construction activities.

This project is funded by private funding from the local mountain bike club Cyclist of Gitchee Gumee Shores (COGGS).

1.4 Additions and Deletions

No extras or additional work outside of the construction documents will be allowed or paid for unless such extras or additional work are ordered in writing by the Club, and the price fixed and agreed upon before such work is performed. The Club will not accept any overruns nor will it pay any quantities beyond those specified.

The Club shall have the right, without invalidating the contract, to make additions to or deductions from the work defined in this document, and in case such deductions or additions are made, an equitable adjustment of the addition to or deduction in cost shall be made between the Club and the contractor, but must be agreed to in writing.

1.5 Discrepancies

Should the contractor discover discrepancies in this document, the plans or specification, the matter shall at once be brought to the attention of the Club, and the discrepancies corrected before proceeding further. Bid tabulation sheets quantities take precedence over quantity discrepancies in the specifications or plans.

1.6 Project Location Descriptions

There are many potential locations for staging and trail access. This project goes through the heart of Duluth with many nearby road and parking areas. Contractor is to provide a request in writing for staging and laydown areas prior to the start of construction.

SECTION 2: PROJECT DETAILS

Below are brief project descriptions and important project details.

2.1 Quarry Park Connector – Project #1

Starting in Quarry Park this segment is about ½ mile following the eastern rim of the quarry starting in the quarry infield and terminating at Skyline Parkway. The lower portion follows an existing walking trail that will need to be rebuilt and slopes reduced to make it more beginner for bikes. We want the contractor to build this trail as a two-way green flow trail as beginner as possible wherever possible. Overall the running slope is expected to exceed what we consider beginner and should be the only spec that exceeds beginner specifications.

The terrain is mostly moderate slopes with portions of outcropped bedrock. There are significant piles of overburden that will be built through and can be utilized as a borrow source in this segment. Wetland flanks the eastern edge while a private parcel sitting in the middle of the site that must be avoided. Property lines of this parcel will be flagged in the field to ensure avoidance.

Once above the quarry the terrain mellows out a little bit and is a mix of rock bands, jumbled rock piles, and loamy sandy soils. The tree canopy is thin and there is patchy underbrush.

2.2 Brewer Park Connector – Project #2

Once above Skyline Parkway the terrain changes drastically. The first portion that parallels Skyline Parkway is dominated by high cliff bands, talus and scree slopes, large boulders and bedrock with some limited soils dispersed in between. The second portion that makes the connection up the hill is still very rocky but is not as steep and has more soils present to work with.

Overall this segment is about ½ mile in length and begins on Skyline Parkway terminating up the hill in Brewer Park tying into an existing trail. The portion that parallels Skyline Parkway is dominated by very steep side slopes and some moderate slopes. This build is to be constructed as a narrow advanced black diamond free-ride trail segment that is two-way but with a preferred direction of downhill. As an alternate we would like to have pricing to build this as a blue intermediate flow trail.

The contractor will work with the club to identify rock climbing/bouldering areas that are to be avoided by the trail. They will be marked in the field at the time of construction. Vegetation is sporadic with segments of brush and some larger trees.

2.3 Antenna Farm Phase II DT Spine – Project #3

From east to west this segment is approximately ½ mile in length and connects Hilltop Park to Enger Park through a residential area. It is to be constructed as a two-way green level flow trail as much as possible and as the terrain allows. At any point if the contractor does not feel beginner trail is possible they must receive written approval from the Owner prior to construction of that element.

This segments begins in Hilltop Park on an existing trail before dumping out onto a gravel road. Through this stretch expect to find soils dominated by sandy loam and gravel based on nearby projects. The underbrush is dense through this segment before it dumps out to a gravel road.

The central segment is the next portion that stays entirely within a 66 foot wide unplatted right-of-way. Property lines will be marked in the field to ensure construction stays on public lands. There is a lot of outcropped bedrock through this portion including two large bellies of bedrock. The easterly most belly can be avoided but the central belly is unavoidable. We have included details for an optional wood crib wall construction technique that the contractor may use if they deem necessary to traverse this bedrock segment. Through the bedrock areas there is little to no vegetation and through the forested segment the vegetation is at times a dense thicket of underbrush dominated by invasives.

The westerly most segment jumps back into Enger Park and follows a low cliff band with a mix of soils and boulders. The vegetation is mostly open with some sparse underbrush before it connects back into the existing trail system.

2.4 UMD DT Spine Segment – Project #4

This segment begins at Arrowhead Road and is approximately 1.0 mile in total length before it terminates on Brainerd Avenue. It is to be constructed as a two-way beginner green level flow trail. Half of this segment is within the boundary of the university Bagley Nature Center while the other half utilizes a narrow stretch of undeveloped land between a neighborhood and university parking lots and apartment buildings. Property lines will be marked in this segment as there is not much room to stray outside of the flagged corridor.

Based on site observations and nearby similar projects expect to find a mix of loamy sandy and gravely soils. There is a segment thought the Bagley Nature area that has a high content of larger rock with a short portion of exposed bedrock. The site is densely forested throughout with variable underbrush conditions ranging from thick underbrush to open areas with little to no underbrush.

There are special considerations that must be abided by in this segment. Some vegetation will be marked in the field with tags that indicate the plant specimen is part of a research project. These specimens must not be disturbed and avoided during construction. There is a patch of invasive knotweed. The soil in the area of the knotweed cannot be disturbed or transported and a boardwalk must be built over the patch.

2.5 East Lester River Trail – Project #5

Approximately ½ mile in length this project is located at the eastern most terminus of the Duluth Traverse System in Lester Park on the north end of Duluth. It is to be constructed as a two-way beginner green level flow trail. As an alternate we would like to have pricing to build this as a blue intermediate traditional singletrack trail. The trail itself begins at the parking lot just off Lester River Road as an existing limestone path. No work needs to be done to this limestone portion of the trail.

Your flag line begins where the limestone path ends a few hundred yards up river. From that point the there is an existing informal footpath about 12”-18” in width. It is in very poor condition and was not purpose built nor does it follow sustainability best practices. We will not be using this corridor and rerouting much of the alignment as all new trail.

This site's terrain is dominated by moderate side slopes with several areas of extreme slopes pinched between the river and the road with no room to vary from the flag line. There are also several cliff band areas where the trail will cross on the bare bedrock or pass very closely to or just above. Based on past construction projects in the area expect to encounter soils dominated by heavy red clays with little to no stone or rock present.

SECTION 3: FINISHED TRAIL CONSTRUCTION AND MAINTENANCE GUIDELINES

3.1 Trail Design

Design of any new segments or reroutes must be guided by the sustainable trail principles published by accepted resources such as the current editions of the *Trail Solutions; IMBA's Guide to Building Sweet Singletrack*; *Managing Mountain Biking; IMBA's Guide to Providing Great Riding;* the USDA's *Trail Construction and Maintenance Notebook* and the *Minnesota Department of Natural Resources' Trail Planning, Design, and Development Guidelines*.

3.2 Bike-Specific Trail Flow

All trails constructed as part of this project shall be natural surface singletrack trail that is purpose-built for mountain bicyclists, sometimes described as *flow trails*. A subset of the larger family of rolling contour trails, flow trails share the following basic characteristics:

- *Synergy with the landscape:* Making the most of what the natural terrain provides by using the trail to explore the topography and features (rocks, trees, waterways) present. Some describe a trail with good flow as one that has been revealed in the landscape, not so much as constructed.
- *Opposition to user forces:* Flow trails maximize the efficiencies afforded by using a bicycle, and are designed to counteract forces that direct a user off the trail. Bermed turns and cambered tread surfaces, for example, promote traction, safety, sustainability, and enjoyment.
- *Conservation of momentum:* The ideal trail avoids "flow killers" such as sharp turns, incongruent features, and disjointed climbs and descents. Instead, it utilizes undulations and cambered turns to rewards smooth, deliberate riding and maximizes forward motion. A flow trail encourages a better understanding of the bicyclist/bicycle interface, allowing riders to reach that unique sensation of floating through the landscape.
- *Leading the user forward:* A sense of discovery, combined with a design that maximizes a rider's forward momentum, helps to draw the user forward. The trail is never repetitive or predictable, nor is it "awkward", with variety and innovation combining to create an intuitive feel.

3.3 Trail Specifications

The trail system is composed of a number of loops and segments design, constructed, and maintained to a defined trail specification as outlined in the "Trail Specification Matrix". Making use of a range of different specifications results in a *complete* trail system when creating the overall trail system masterplan. This method appeals to a wider range of users, with different fitness, technical proficiency, or preferred modality. It is important that individual segments and loop maintain consistent specification over their length to ensure visitors have the experience they expect.

A project-specific “Trail Specification Matrix” is included along with the definition of project units.

3.4 Erosion and Sedimentation Control

Management of erosion and sediment on this project is defined in the provided Storm Water Pollution Prevention Plan (SWPPP). All construction activities must conform to the requirements of the SWPPP. Any inconsistencies created by the construction specifications do not excuse the contractor violating the procedures and requirements laid out in the SWPPP.

No excavation or fill is permitted in wetlands. Wetlands will not be marked in the field. It is the responsibility of the contractor to consult with Club prior to doing any work within suspected wetlands areas.

3.5 Trail Construction Best Practices

To satisfy erosion and sediment control requirements, trail must be finished as the project advances. Any roughed-in corridors not being worked for 24 hours must be completed trail to reduce the exposure of non-compacted tread to moisture. Any segments requiring delayed finishing must be approved in advance by the Club. Any disturbed areas not part of active tread must be stabilized within 24 hours of not being worked with native duff from within the trail corridor or erosion control blanket and seed as defined in the SWPPP. Wood chips created from the slash as a result of the trail corridor clearing are an acceptable mulch alternative to weed free straw.

3.6 Corridor Clearing

Corridor clearing shall be confined to within four (4) feet of trail and backslope edges. Specific values are identified in the “Trail Specifications Matrix” included with the definition of project units.

3.7 Debris

Cut and scatter all branches, roots and brush to a maximum height of eighteen inches (18”) above grade. No debris shall be left within ten feet (10’) of trail. Butt-ends of any sawed limbs must face away from trail. Cut brush and slash must be disposed of in an upland location and must be kept out of streams, gullies, swales, low areas, and suspected wetlands.

3.8 Tread

All tread should be constructed as full bench whenever possible. If fill is required, it should be supported by a stone retaining wall or approved equal.

Specific tread widths are based on their difficulty rating and are specified in the “Trail Specifications Matrix” included along with the definition of project units. Narrower gateways through natural obstacles (trees, rock outcrops) are encouraged. Tread widths in areas of dynamic flow, jump landings, and insloped turns, for example, may be wider to accommodate the full range of riding experiences. Significant deviations from these examples require prior written approval from the Club.

3.9 Trees

These trails are to be built with minimal impact to the over story trees and the surrounding forest. Only brush and small trees should be removed from the trail corridor. Trees larger than 6" DBH require permission from the Club before they are removed. Removal of healthy trees approaching this size should be avoided and only done when there is not a better option. Dead, dying, and rotted trees can be removed to open up the trail corridor as necessary for grading or if they present a clear hazard to trail builders or trail users.

3.10 Rocks

Maximum size rock material to be left in trail is based on the difficulty rating and defined in the "Trail Specification Matrix". Specific values are enumerated in the "Trail Specifications Matrix" including definition of project units.

Rocks that are unearthed during grading shall be used as anchors or built into trail features and stabilized not more than five feet (5') away from the trail-edge. It is not permitted to allow rocks to roll down the slope. The trail will be routed around or over rocks and fractured stones that cannot be moved with the approved equipment.

These requirements do not apply in areas where rocky tread is integral to the flow goals of a specific segment (e.g., technical rock gardens, slabs that provide jump or "kicker" opportunities). Exceptions also apply in boulder fields or where only a portion of the tread is obstructed. All rock embedded in the trail surface should be stable. When used in structures, care will be taken to match rock to the immediate surroundings; grain patterns, lichen growth, etc. Excess tool marks on rocks shall be avoided as much as possible. Non-native rock may not be imported into a work area without approval of the Club.

3.11 Woody Material

Woody material such as stumps, logs, roots and brush shall be removed from the trail tread. No stumps less than twelve inches (12") in diameter shall be left within four feet (4') of the trail tread. Wood chips created from the slash as a result of the trail corridor clearing may be dispersed at a depth no greater than 4" and are an acceptable mulch alternative to weed free straw. Contractor may ONLY chip woody material that was created as a result of the corridor clearing.

3.12 Fall Zone Clearing

Areas adjacent to dynamic trail segments where visitors have a greater potential to exit the immediate trail corridor will be cleared of impact focusers; butt-end branches, stumps, and rocks under six-inch (6") diameter.

3.13 Backslope

Backslope of trail should be graded to three-to-one (3:1) slope or until it matches the existing slope. In areas where the backslope has the potential to become part of the active tread it must be finished to trail tread specifications.

3.14 Trail, Finished Condition

Hand finish and grading of trail tread, backslope, down slope spoils, and drainage features shall leave a surface that matches the texture of the surrounding forest floor while enabling water to drain off the trail.

3.15 Spoils Stabilization

All excavated materials not used in the trail tread or other constructed trail features must be stabilized within 24 hours of not being worked. Spoils should be distributed in a thin layer adjacent to the trail tread not more than 4" in depth. Care should be taken to avoid placing spoils in drainages, swales or wetlands. When possible, spoils must be mulched with native materials to discourage erosion while native seed stocks reestablish. In areas without adequate native duff mulch, wood chip mulch may be substituted along with the approved seed mix per the attached seed mix exhibit. In certain circumstances, installation of formal erosion control measures may be required.

3.16 Turns

A turn is defined as a change-of-direction that turns more than 90 degrees across the local landscape. All turns are to be bike optimized insloped turns. Turns that exceed 12" of insloped tread height above the surrounding landscape are defined as constructed features. The bid worksheet identifies constructed turns as either insloped switchbacks also known as *switchberms* or an insloped bermed turn or *berm.* If conditions warrant, a traditional rolling crown switchback may be substituted for a switchberm with prior written approval from the Club. Insloped turns that are less than 12" in height above the surrounding landscape are included in the contractors unit bid price for all trail construction types.

Insloped and off camber tread necessary for trail flow that are less than a 90 degree change in direction are not turns and are included in the contractors unit bid price for all trail construction types.

Acceptable values for turn radius, camber and turnpad grade are identified in the trail specifications. Turns should be constructed to have good flow for wheeled trail users. All turns must include an entrance and exit rolling grade dip. Building through uneven grades, flat areas and undulations local to a specific turn is included in the contractor's unit bid price.

Turns that are less than 12" in insloped height are included in the contractors unit bid price for all trail types. Berms and switchberms that are over 12" in height are quantified in "Bid Worksheet B".

If it is determined in the field that additional turns or an alternative type of turn is necessary than what was specified in the plans, the contractor must request written approval from the Club prior to construction.

See 5.9 Berm (figure 10) and 5.10 Switchberm (figure 11) for unit turn types.

3.17 Brollers (Bermed Rollers)

A broller is defined as tilted tread surface that is insloped or off camber in excess of the standard tread out slope of 5%. Brollers do not result in a change of direction across the landscape and do not cross the fall line. Brollers are included in the unit bid price for all trail construction types and are not considered berms or turns.

3.18 Grade Reversals

A designed grade reversal or constructed rolling grade dip should occur at least every one hundred feet (100') and preferably more frequently. Any grade reversal must be strongly anchored with a significant landscape feature, boulder, or large tree or trees, to discourage short cutting.

In mountain bike-specific trails, grade reversals also double as flow elements, such as rollers, jumps, and pump/rhythm sections. In this context grade reversal shape, size, and placement should reflect the specifications for its location within the system. Specific details will be determined by the contractor in partnership with the Club.

3.19 Above-Grade Earthen Structures

Any portion of trail rising above the grade of its surroundings must be composed of mineral soil. If soil is scarce, a rock core may be used so long as it provides less than fifty percent (50%) of the total volume of the structure. Use of organic materials, duff, woody materials, etc., is absolutely prohibited.

Fill structures must have a fill slope of at least the angle of repose of the local soil. A retaining wall may be substituted for a fill slope with permission of the Club. Fill structures must be completely stabilized and compacted in no greater than six-inch (6") lifts. Acceptable techniques include track-packing or compaction via a dedicated tamping unit. Hand tamping is not acceptable. Raw soil faces that do not become tread must be mulched and seeded in the same fashion as spoils and satisfy the terms of the project SWPPP.

Examples of above-grade earthen structures include aggressive grade reversals ("rollers", "brollers", "jumps"), berms, switchberms and turn pads on insloped switchbacks.

3.20 Water Diversions

All tread should be out-sloped at five percent (5%). When not possible or desirable due to purpose-built in-sloping, resource concerns, or obstructions, water can be directed down the trail for up to fifty feet (50') before a water diversion location.

3.21 Invasive Species

To reduce the spread of invasive plant species all hand tools and mechanized equipment should be free of soil, seeds, and clean of any dirt and mud when entering a project site. When transferring materials between distinct locations within town or within the project site all tools and equipment must again be cleaned to discourage transport of invasives to the local landscape.

Equipment is subject to inspection at the start and will be requested to be removed and replaced if found to have soils or seeds present from a sources not native to the location. This will be done at the expense to the contractor.

3.22 Filter Strips

Filter strips are vegetated areas downslope of the trail corridor intended to treat sheet flows coming off the tread. Filter strips function by slowing down flow velocities, filtering out sediments, and providing an opportunity for infiltration into the underlying

soils. Properly mulched spoils may be designated as part of the filter strip. Filter strips shall not be used as regular travel-ways for equipment and materials. Areas with inadequate filter strip capacity above waterways may require installation of formal erosion control measures to satisfy erosion and sediment control plan requirements.

At all times, filter strip characteristics must satisfy the terms of the project Stormwater Pollution Prevention Plan (SWPPP).

3.23 Environmental and Historic Preservation

The corridors identified in the provided design have been vetted through an assessment process to ensure they respect sensitive environmental and historic areas. The construction shall avoid any disruption or dislocation of sensitive cultural resources found on the site unless expressly authorized in writing by the Club. Any known sensitive cultural areas will be communicated to the contractor in writing before construction begins. In the event that previously unidentified historical artifacts are found during the construction process, trail construction must be immediately suspended in that area until it can be evaluated and a determination made on how to proceed. The Club will need to make final determination on how to proceed around sensitive cultural resources after consulting with appropriate archeologist personnel. The trail may be rerouted around the sensitive area or special accommodations may be made such as boardwalk. The decision on how to proceed will depend on the type and sensitivity of the resource and the distance separating it from the planned trail.

3.24 Signage and Wayfinding

Installation of the map post is the responsibility of the contractor. The map and content itself and other signage is the responsibility of the Club and its partners. Signage and its installation will comply with all the requirements of the authorized governing unit. Construction documents, (figure 16) and maps will identify the signage requirements, locations, frequency, and physical design plus materials standards.

3.25 Mechanized Equipment Best Practices

All track marks will be raked smooth. Affected area will be finished to have a *nature shape*, e.g., spoils piles rounded, smoothed and cleared of significant brush, blade edges blended. A spill kit suitable for five gallons of fluid will be onsite and within 500 feet of mechanized equipment whenever equipment is being operated. Scarring of trees is to be avoided. If scarring occurs contractor is responsible to paint with colors that match the color and pattern of the damaged tree to prevent infection or further degradation of the tree.

Machine service and fueling is not permitted with 500 feet of a wetland or drainage. Machine access is restricted to the trail corridor. Separate access routes may only be created and used with prior written permission of the Club. Any approved access route must be retired and reclaimed back to its original pre-existing condition upon project completion.

SECTION 4: UNIT DEFINITIONS AND DETAIL DRAWINGS

Any accompanying figures are for illustrative purposes only and do not relieve contractor of the need to satisfy written requirements. All units may not be used in all projects. Additional units may be required. In this case, the Club will establish their definition via a change order process and the contractor must request in writing additional units if the amount is not sufficient in the bid document prior to construction.

4.1 Trails Specifications (table 1)

A "Trail Specifications Matrix" provides the foundation for the possible trail styles and a starting point for their defining characteristics. Contractor should always start here, whether composing their bid or designing/constructing trail elements. The Club understands that all trail, and especially bike-specific trail, is an art form strongly driven by local conditions and anticipates a collaborative effort between all parties involved.

Note that all types fit within the sustainable trail guidelines framework. While short specific grades may exceed typical suggested maximums, armoring is suggested in these cases. It is not acceptable to sacrifice "the half rule" or eliminate grade reversals to meet experience driven goals. When creating trails at these upper limits grade reversals are more important than ever.

A high-level summary of the various styles detailed in the matrix:

- *Traditional* – Typical shared-use natural surface singletrack as described in the standard trail texts. May include bike-specific elements, like in-sloped turns, berms, brollers, rollers, and jumps.
- *Bump and Pump* – Natural surface singletrack strongly influenced by pump tracks. Distinguishing feature is the high frequency of roller features. Proper shaping and spacing of rollers is critical, both to increase their utility as a method of propulsion and to match the intended speed and flow style of the segment. All turns are insloped. Tread surface is smoother than average. More difficult Bump and Pump segments may add smaller technical features and tread texture.
- *Jump* – A natural surface trail more focused on jump opportunities. Similar to Bump and Pump but with longer features less frequently placed. Tread is wider than average in recognition of the dynamic riding style likely on these segments. Corridor clearing limits are larger as well for similar reasons. Most Jump segments are directional.
- *Gravity* – An extremely technical downhill-specific trail. More difficult Gravity segments include mandatory drops in the tread. These segments may include structures to manufacture the desired experience when natural terrain is lacking. May include elements of Bump and Pump or Jump. Gravity trails are directional.

4.2 Trail Flagging

In this project, the centerline of a 50' wide trail corridor has been flagged by COGGS. The plans and specifications are based on this trail corridor. Final trail design is the responsibility of the Contractor within this corridor.

Corridor is marked with blue hanging drop flags. Final trail design should be at least fifty feet (50') from property boundaries unless otherwise authorized by the Club or identified in the plans.

Contractor shall mark with flagging tape all trees over six inches (6") DBH that are to be removed. Final determination on removal lies with the Club.

The trail should have a grade reversal a minimum of every one-hundred feet (100'). Trail should follow a rolling contour alignment and abide by the Half Rule. Grades must match the trail type defined by the "Trail Specification Matrix" for a specific segment.

4.3 Trail Construction (figures 1 - 4)

Trail construction unit costs are a combination of trail specification and landscape type. For each project, the specification is constant. But as the landscape changes, different construction units apply, matching the local terrain. Trail construction unit types A, B, and C are identified in the plan set and on the bid worksheets.

Measurement and payment for trail construction is based on landscape averages as depicted in the plan set. Grading through localized uneven grades, flat areas and undulations is included in the contractor's unit bid price for all trail unit construction types.

Creation of typical trail features as enumerated in the specifications (ex. Rollers and Brollers) are included in the trail construction units.

Each linear foot unit shall satisfy the enumerated guidelines for the specification associated with the specific segment. Trail width guidelines apply to active tread only; backslope and any fill slopes are not included. Tread variance will satisfy the guidelines for its location in the system. Note the global design attempts to match trail specifications to the landscape most suited for that type. In local landscapes where there is a mismatch, the contractor will be expected to modify the area to match the trail specification. An example is creating an easier "green" style trail through a locally rocky area. However, in this specific set of projects we are allowing "blue" construction through the rocky areas.

The trail corridor shall be cleared of all woody plants less than four inches (4") DBH. The extent of corridor clearing will meet the requirements for the specific trail type. Any stumps resulting from the clearing should be excavated and removed. Any woody debris not used in trail closure should be removed from sight of the trail or arranged to blend into the landscape.

Limb trimming will be done to open up the trail corridor as defined in specification for the specific segment. Limb trimming and pruning shall be completed using approved trimming techniques that comply with the guidelines for tree care operations from the American National Standards Institute (ANSI) contained in the ANSI A300 Pruning Standards and ANSI Z133.1-2000.

The trail tread shall consist of packed earth or rock. Any stumps and/or roots should be excavated and removed from the trail tread. Backslope dimensions are derived from surrounding area such that they satisfy the earlier stated three-to-one (3:1) definition. Any stumps and/or roots in the backslope should be flush-cut. In areas where the backslope has the potential to become part of the active tread (ex. naturally formed in-slopes or berms) it must be finished to trail tread specifications.

The trail should contain frequent grade reversals. To encourage self-cleaning the grade of the drains at the bottom of the grade reversals must be at least fifteen percent (15%) and typically not greater than twenty-five percent (25%). If the drain grade exceeds twenty-five percent (25%) then installing Rock Rip-Rap (see Section 5 – Rock

Rip-Rap) may be requested by the Club in the bottom of the drain to prevent head-cutting. If grade reversals result in a fill slope, these slopes and the associated feature(s) will be finished to satisfy the above-grade earthen structure guidelines. Contractor is expected to create frequent grade reversal regardless of the local landscape, this is included in low sideslope Type A trail construction. This may require localized topography modification, borrow pits and raised tread when building through landscapes with low slope angles.

Any downslope spoils must be distributed such that no berm is present. When distributing, care shall be taken to match the local terrain. Spoils must be stabilized within 24 hours of not being worked with a covering of forest duff. In areas with insufficient duff, sterile wood chips may be substituted for forest materials. Excess soil shall not be distributed into drainages, wetlands or adjacent to streams. Refer to the SWPPP for further details.

If borrow pits are created in the course of trail construction they will be finished to satisfy the requirements of the trail and its surroundings: slopes graded to the local angle of repose, stumps and roots trimmed, spoils stabilized and covered with forest duff. Borrow pit wall must be broken down to blend into the surrounding natural landscape slopes.

For billing purposes, trail construction is measured along the centerline of the tread.

4.4 Trail Types (figure 4.1)

Trail types are broken into three categories:

- Type "A" (Low Sideslope Trail) 3%-15% Sideslope
- Type "B" (Medium Sideslope Trail) 16%-60% Sideslope
- Type "C" (High Sideslope Trail Trail) 61%+ Sideslope

Measurement and payment for trail construction types is based on the slope averages found in the field.

Grading through low spots, flatter areas, earthen piles, landslides, miscellaneous debris and fallen woody material is included in the contractor's unit bid price for each trail construction type. Builder is expected to create frequent grade reversals regardless of the local landscape. This may require localized topography modification including but not limited to raised tread, borrow pits and sumps when building though landscape with low slope angles such as "Type A Trail".

Contractor cannot invoice for both trail construction and constructed features of a given linear foot of trail.

4.5 Armored Tread/Stone Pitching (figure 5)

Width of armored tread should be at least 1.5 times the width of the local trail specification to permit users to find their line as the trail matures, and at least two (2) times in areas where more variation is likely (e.g., jump landings, insloped turns).

Stone pitching must extend at least ten inches (10") deep with a minimum of two-thirds (2/3) of the rock buried below the surface of the surrounding grade. Stones should be stable and aligned perpendicular to the direction of travel. Each end of a pitched section shall be supported by larger "bookend" stones embedded in the ground. Stones used for armoring should be two inches (2") to twenty-four inches (24") thick and

twelve inches (12”) to forty-eight inches (48”) wide. Voids shall be filled with compacted native soil, crushed rock, and/or crusher fines. Additional guide stones may be necessary along the edges of the trail if the final surface of the trail appears more rugged than the adjacent landscape.

For billing purposes, armoring is measured along the centerline of the tread. This unit includes the construction of the trail as well as armoring. Contractor cannot invoice for both trail construction and armoring of a given linear foot of trail.

4.6 Armored Tread/Turf Block Pavers (figure 6)

Turf block pavers are an alternate armoring technique to stone pitching where it is difficult to source appropriate native stone. As turf block pavers allow a more predictable tread surface, they are particularly appealing for “green”-style trails or for flow elements where excessive tread variance is not desired (e.g., high-speed insloped turns, some constructed jump elements.

Width of armored tread should be at least 1.5 times the width of the local trail specification to permit users to find their line as the trail matures, and at least two (2) times in areas where more variation is likely (e.g., jump landings, insloped turns). Turf blocks pavers must be installed as directed by manufacturer’s recommendations. Final installation should be nominally at-grade with the surrounding landscape. Individual paver blocks should be completely supported to reduce the chance of breakage. Height variance and joint spacing should both be less than one-half inch (0.5”). Blocks should be laid in a pattern to minimize joint lines. Paver voids are filled with local materials compacted to reduce settling.

For billing purposes, armoring is measured along the centerline of the tread. This unit includes the construction of the trail as well as armoring. Contractor cannot invoice for both trail construction and armoring of a given linear foot of trail.

4.7 Rolling Grade Dip (figure 7)

A rolling grade dip is a drainage feature added to existing trail. The minimum length of the drain portion shall be six feet (6’) and the rise must be at least ten feet (10’) long; the height differential between the bottom of the dip and the top of rise shall be approximately twelve inches (12”) to twenty-four inches (24”). The sides of rise must have a fill slope of at least two-to-one (2:1) or the angle of repose of the local soil, whichever is greater.

To encourage self-cleaning the grade of the drains at the bottom of the grade reversals must be at least fifteen percent (15%) and typically not greater than twenty-five percent (25%). If the drain grade exceeds twenty-five percent (25%) then installing Rock Rip-Rap (see Section 5 – Rock Rip-Rap) in the bottom of the drain to prevent head-cutting may be requested by the Club. If grade reversals result in a fill slope, these slopes and the associated feature(s) will be finished to satisfy the above-grade earthen structure guidelines.

Rolling grade dips must be sited at least thirty feet (30’) uphill from significant turns in order to reduce the effects of unweighting on higher speed users. Exceptions on these dimensions and requirements may be made on a site-by-site basis to accommodate terrain constraints. In certain locations the Club may determine that

smaller structures reinforced with large rocks that fit the character of the trail may be an acceptable substitute.

A rolling grade dip is billed as a “whole” unit.

4.8 Terrace (figure 8)

A terrace is a combination of landing, drain, retaining wall, and step useful for creating sustainable shared-use trail in steeper corridors than would be supported by the natural surface tread alone. Steps are used to accelerate the climb/descent while the use of landings between risers allows continued use by bicycles and equestrians. Terraces may be incorporated in new trail construction or applied as a corrective maintenance measure.

Step risers should be constructed out of stone; rot-resistant wood may be substituted with the approval of the Club. Maximum riser height is determined from the step height requirements of the trail segment. The riser shall be battered in the direction of uphill travel. A riser may be assembled from multiple stones with the understanding it must withstand the dynamic loading of climbing and descending users.

The landing must have a minimum length of at least 1.5 times the stride or wheelbase of the longest users. Each landing must contain a drain to the downhill side; it is not acceptable for a landing to drain over its riser. Drain differential must be at least six inches (6”). The fill required to create the landing is included in this unit.

The downhill edge of the landing must be supported by a retaining wall of stone; rot resistant wood may be substituted with the approval of the Club. The landing’s retaining wall must satisfy all the requirements of a stand-alone wall (see Section 5 – Rock Retaining Wall).

A terrace is billed per riser. For example, the figure shows parts of three (3) terraces

4.9 Rock Retaining Wall (figure 9)

A rock Crib Wall or Rock Retaining Wall is defined as a more than one row of stones stacked on top of each other greater than 12” in height specifically designed to hold back soils and raise the tread to meet variations in the running grade of the trail tread. A single row of stones placed at the downslope of a tread in order to create a full bench are not considered a retaining/crib wall and are included in the contractors unit price for that specific trail construction type.

The bidding unit of a rock retaining wall is square-feet, calculated from the exposed vertical face, Square Face Foot (SQ FF). Rock retaining walls should be stable and battered (inclined back into the slope) a minimum of fifteen percent (15%) from vertical. All walls should have rubble backfill of at least six inches (6”) in depth behind the wall to allow for drainage and to prevent damage from frost heaves. The base of the wall should be placed on firm compacted mineral soil or rock outcroppings. Any small stones used to “chink” larger stones in place should be placed in the back of the wall. The top of the wall shall not be counted in the width of the trail tread. The top layer of stones shall be installed in a manner to avoid being accidentally dislodged by trail users.

Deadmen (stones that extend from the wall into the slope) should be used to ensure integrity. There should be one deadman for every five square face foot (5 SQ FF) of wall.

4.10 Insloped Bermed Turn (Berm) (figure 10)

A berm is defined as an insloped change-of-direction that turns more than 90 degrees across the local landscape *not requiring* the trail to cross the fall line and is over 12" in height above the surrounding landscape. Trail tread that uses an existing embankment to change direction is also not a berm and is included in all trail construction unit types.

Acceptable values for berm radius, camber and turnpad grade are identified in the "Trail Specifications Matrix". Berm radii should be consistent.

Fill structure for a berm will comply with composition, compaction, and fill slope requirements of an above-grade earthen structure.

For billing purposes, a berm is measured along the centerline of the tread by the linear foot at the point where the berm is over 12" in height above the bypass trail grade. This unit includes the construction of the bypass trail as well as the berm. Contractor cannot invoice for both trail construction and creating a berm over a given linear foot of trail. Locations and lengths of berms are identified in the plans.

4.11 Insloped Switchback (Switchberm) (figure 11)

A switchberm is defined as an insloped change-of-direction that turns more than 90 degrees across the local landscape *requiring* the trail to cross the fall line and is over 12" in height above the surrounding landscape. The switchberm unit includes any walls, armoring, setup berm, and drainage features associated with the structure as well as the trail itself.

Switchberm units are broken into three different units based on the sideslope of the surrounding terrain: Type "A" for low sideslopes, Type "B" for medium sideslopes and Type "C" for high sideslopes.

Each switchberm or insloped switchback requires a grade reversal or rolling grade dip before and after; these shall not be counted as separate units for payment purposes. The dips for these drainage features should be a minimum of six feet (6') long. To encourage self-cleaning the grade of the drains at the bottom of the reversal/dip must be at least fifteen percent (15%) and typically not greater than twenty-five percent (25%). If the drain grade exceeds twenty-five percent (25%) then installing Rock Rip-Rap (see Section 5 – Rock Rip-Rap) in the bottom of the drain to prevent head-cutting may be requested by the Club. The uphill dip should be sited to minimize unweighting effects for higher speed users.

All switchberms or insloped switchbacks will be created with an insloped turnpad. Specifications for radius and cross slopes across the turn are defined in the "Trail Specifications Matrix" for the particular trail segment. Turning radii should be consistent. Turns with a running grade of twenty percent (20%) or greater in the apex should have a rock armored drain two feet (2') wide following the inside of the turn. Interior of legs shall be anchored by and filled with large rocks and/or woody debris to discourage shortcutting.

If required, the fill structure for the turnpad will comply with composition, compaction, and fill slope requirements of an above-grade earthen structure. Club may require that a retaining wall be employed in place of a fill slope. Any retaining structures will be constructed of stone and comply with all rock retaining wall specifications. If multiple switchbacks are required, they will be sited to minimize "stacking". Stacking is defined

as the placement of subsequent turns and associated drains and support structures in close proximity to the same fall line area of a hill or slope.

A switchberm is billed as a “whole” unit. The unit starts at the initiation of the uphill and completion of the downhill drainage structures. Quantities, type, and locations are identified in the plans.

4.12 Rock Bench

Rock bench construction is defined as trail tread construction through areas of exposed bedrock and slick rock where rock breaking and or blasting may be required. The rock found in Duluth is weathered at the surface and often fractured lending rock breaking a proven technique to get through these difficult areas. It is not anticipated that any blasting will be required as part of this project.

In order to save on construction costs construction through rocky areas a variation form the Green Trail specification to the Blue Traditional Trail Specification as enumerated in the “Trail specification Matrix” is allowed. However, effort must be made to keep the construction as close to the Green Specification as possible.

Rock bench construction is billed per the linear foot. If a bedrock area does not require any rock breaking or blasting to allow the passage of the trail no billable units will be applied to that portion of the trail.

4.13 Technical Trail Features, Boardwalks, and Bridge (figure 12)

Contractor is to provide typical shop drawings of the actual boardwalks planned to be constructed for approval by the Club for a given segment of TTF boardwalk based on the engineered construction documents found in the plan set.

TTFs and Boardwalks should have a playful and organic appearance to better match the natural environment. Recommendations include curved structures instead of straight lines or angles and trail deck that pitch, yaw, and vary in width.

Specific guidelines for TTFs and boardwalks are included in the plan set supplied for the project.

General guidelines include the following. Wooden structures must be designed and constructed with the assistance of an experienced professional. Acceptable materials for the riding/deck surface must be rough cut lumber and includes: Cedar, Tamarack, Black Locust, and Treated Pine. All other lumber used in the construction can be either rough cut or planed dimensional treated pine lumber. Treated lumber shall be treated in accordance with AWPA Standard C2/C9 with ACQ 0.4 LBS/CF Ret. And 0.6 LBS/CF Ret. for 6x6’s and wood in contact with the ground. Unapproved treated lumber, creosote soaked railroad ties, or similar lumber cannot be used since these would introduce toxins into the natural environment.

All cuts and drilled holes shall be saturated with 2 coats of copper napthenate in a 2% solution. Allow treatment to absorb into wood prior to applying second coat. Avoid applying treatment over water and be extra careful whenever applying this treatment over or near water to prevent contaminating the water. Follow the treatment manufacturer’s recommendations.

Hardware shall be corrosion/rust resistant, such as triple dipped hot dip-hot dipped galvanized or stainless steel, intended for outdoor use, and matched to the material to insure long-term integrity. All hardware shall meet ASTM A307. All hardware that is hot

dipped galvanized shall meet ASTM A153. To maintain consistency though out the trail system all fastener heads shall be T25 hex heads. Nails are not an acceptable fastener and will be rejected.

Deck materials should be rough-cut or finished with a slip-prevention coating to maximize traction. Approaches and configuration of structures shall be adjusted to reduce the accumulation of organic material on deck surface. A fall zone sufficient to accommodate the likely trajectory of a trail user accidentally leaving the structure shall be cleared of all materials that could focus impact (e.g., stumps, sharp rocks, woody materials).

Pre-engineered TTFs are an acceptable alternative to custom construed wooden features. Deck material on pre-engineered TTF must match the acceptable deck materials as described in this specification section.

To reduce the amount of toxic chips introduced into the landscape, preparatory tasks (primary cutting and drilling, refinishing of cut edges of all treated lumber) shall occur offsite. At the project site, all final drilling, fitting, and retreating will be done in a "temporary workshop" area where a tarp or similar is used to capture chips and any spilled preservatives.

This unit includes design, materials, preparatory tasks, mobilizing materials into the project area, and installation.

For billing purposes, a boardwalk or bridge is measured along the centerline of the tread. This unit includes the construction of the trail as well as the boardwalk. Contractor cannot invoice for both trail construction and boardwalk of a given linear foot of trail.

4.14 Rock Rip-Rap

Rock Rip-Rap is a six inch (6') deep layer of placed stone intended to stabilize slopes with concentrated storm flow. Typically this technique will be used to protect drains of rolling grade dips and drainage channels below an armored crossing. Individual stones should be gabion-class or equivalent. Rock Rip-Rap is included in the contractors unit bid price for trail construction or constructed feature.

4.15 Coir Roll (Bio Log) Installation (figure 13)

Coir Rolls or Bio Logs are formal erosion control measures. They are installed in areas where the existing vegetative filter strip is inadequate to prevent sediment from reaching adjacent water courses. See project SWPPP for additional detail.

Rolls/Logs are placed parallel to trail and/or anticipated concentrated flows, set in a minor indentation excavated approximately two inches (2") deep. They are held in place with one inch-by-one inch (1"x1") or one inch-by-two inch (1"x2") wooden bio degradable stakes driven through the center of the roll/log at least six inches (6") into the ground, stopping about two inches (2") above the roll/log. Use five (5) stakes twenty inches (20") to twenty-four (24") long in the typical roll/log. Set the roll/log with foot-tamped backfill on the uphill side to prevent water from flowing underneath.

Erosion control prevention is billed on a per project basis as a lump sum.

4.16 Causeway or Turnpike Trail Construction (figure 14)

A causeway or turnpike is defined as an elevated trail tread utilizing mineral fill material confined by stable edge materials on both sides such as stone or rot resistant timber and is to be used when constructed through poorly drained areas. This application cannot be used in wetlands. Where suspected wetlands are present a boardwalk must be constructed to avoid disturbance.

A ditch can be dug parallel to and on both sides of the causeway to improve drainage. This variation is often called a turnpike. The material excavated from the ditches can be used to help fill the causeway if they are composed of mineral soil. The interior of the turnpike must be excavated down to mineral soil to create a firm and stable base for the fill material.

Causeway or turnpike trail tread construction is billed per the linear foot.

4.17 Trail Closure or Trail Obliteration (figure 15)

Compacted tread will be scarified to encourage regrowth of native seed stock. Small plants and other nearby growth will be transplanted into scarified treadway. Seed and mulch meeting the mix requirements of the SWPPP may be used in this application. Exposed soils will be covered with local leaf litter. Trail tread will be disguised with woody debris. If trail is incised, check dams will be placed at a minimum of every twenty feet (20') to capture sediment. If trail is actively eroding, grade reversals will be added to stem continued damage. Trail corridor will be erased via the placement of vertical debris. If length of trail to be closed is greater than one hundred (100) linear feet than vertical debris must extend a minimum of fifty feet (50') from each end or until visible sight line is diminished, whichever is greater.

For billing purposes, closure is measured along the centerline.

4.18 Map Post Installation (figure 16)

Install map post according to (figure 16). Treated lumber shall be treated in accordance with AWPA Standard C2/C9 with ACQ 0.4 LBS/CF Ret. And 0.6 LBS/CF Ret. for 4x4 map posts and wood in contact with the ground. Unapproved treated lumber, creosote soaked railroad ties, or similar lumber cannot be used since these would introduce toxins into the natural environment. Map post locations to be marked in the field by the Club.

4.19 Trail Capping (figure 17)

Trail capping is for those locations where the underlying native mineral soils do not support usage under normal trail conditions. Typical soils found in these locations include fat clays and water saturated soils not in wetlands. These locations are to be identified at the time of construction in the field by the contractor. Any zones that are to be capped must be quantified by the contractor and submitted to the Club in writing for approval prior to capping. For bidding purposes, trail capping is measured by the linear foot (LIN FT).

4.20 Wood Crib Wall Retaining Wall (figure 18)

In this application the Wood Crib Wall or Wood Retaining Wall is to be anchored to exposed smooth unfractured bedrock. Any fractured stone is to be chipped away until a smooth clean surface is exposed. The bottom timber shall be cut to meet the contour of the bedrock. The stacked timbers are to be anchored to the bedrock with steel rods and epoxy suitable for rock to wood exteriors must be used. See (figure 18) for specific construction details.

Treated lumber shall be treated in accordance with AWPA Standard C2/C9 with ACQ 0.4 LBS/CF Ret. And 0.6 LBS/CF Ret. for 4x4 map posts and wood in contact with the ground. Unapproved treated lumber, creosote soaked railroad ties, or similar lumber cannot be used since these would introduce toxins into the natural environment.

This detail is to be only used when stone or other natural materials are unavailable or likely to fail. This construction technique is specifically designed to hold back soils and raise the low end of the tread to meet variations in the cross slope of the trail tread. This bid item includes the mineral backfill used on the side of the wall that is retaining soils to create the trail tread at a 3% to 5% cross slope.

For bidding purposes, wood retaining wall is bid by the linear foot (LIN FT, and is measured from the exposed top beam by the wall.

4.21 Rock Armored Ford (figure 19)

Grade reversals will be created in the trail tread prior to the crossing on each bank. Maximum grade on each approach is thirty percent (30%) for a maximum distance of fifty feet (50'). Armored tread surface will extend through the stream and up the banks until a grade of less than ten percent (10%) can be achieved. The armored tread will be flush with stream bottom to discourage failures from cavitation. Armoring will extend downstream one-half (1/2) the required maximum tread width of trail tread to discourage headcutting. For bidding purposes Rock Armored Fords are measured by the unit.

4.22 Culverts

Pipe culverts may be corrugated plastic pipe (CPP) only. Remove organics in ditch bottom for culvert to sit on solid ground. Place culvert ends flush with the ditch bottom. Place rocks around the culvert's upstream end to armor the bank against erosion.

Install culvert according to manufacturer's specifications, especially those relating to ground cover to prevent collapsing. Generally, the greater of ("half the pipe diameter" or "12 inches") is the minimum cover to ensure that a culvert will not collapse under load or float up over time and become exposed.

4.23 Modifications

Modifications to the specifications may be allowed, however, they must be made to the Club in writing.

4.24 Tables And Figures

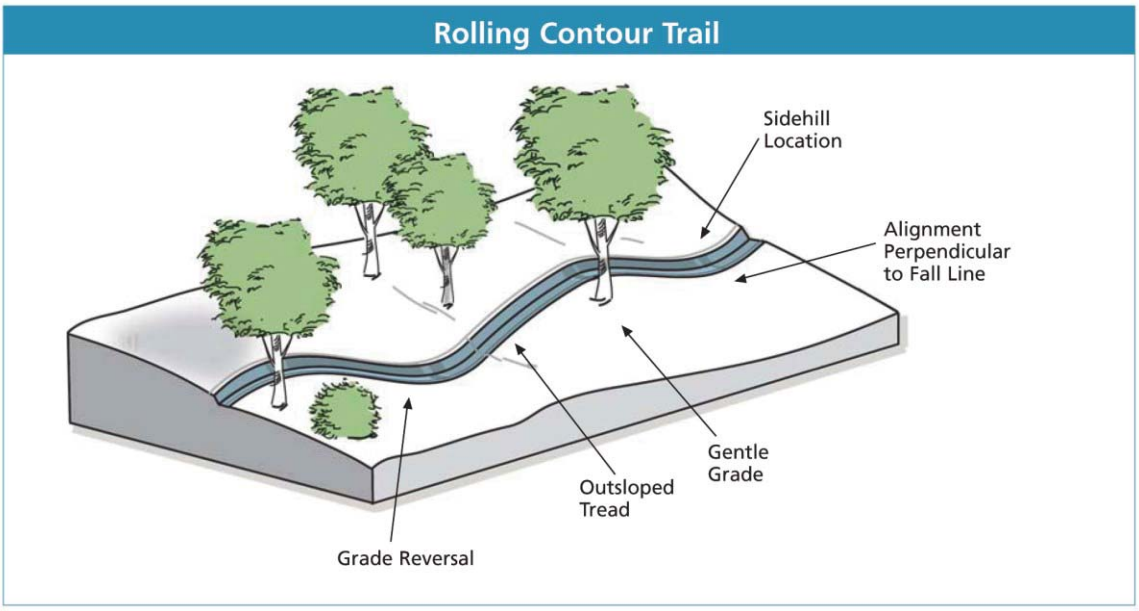


Figure 1: Rolling Contour Trail

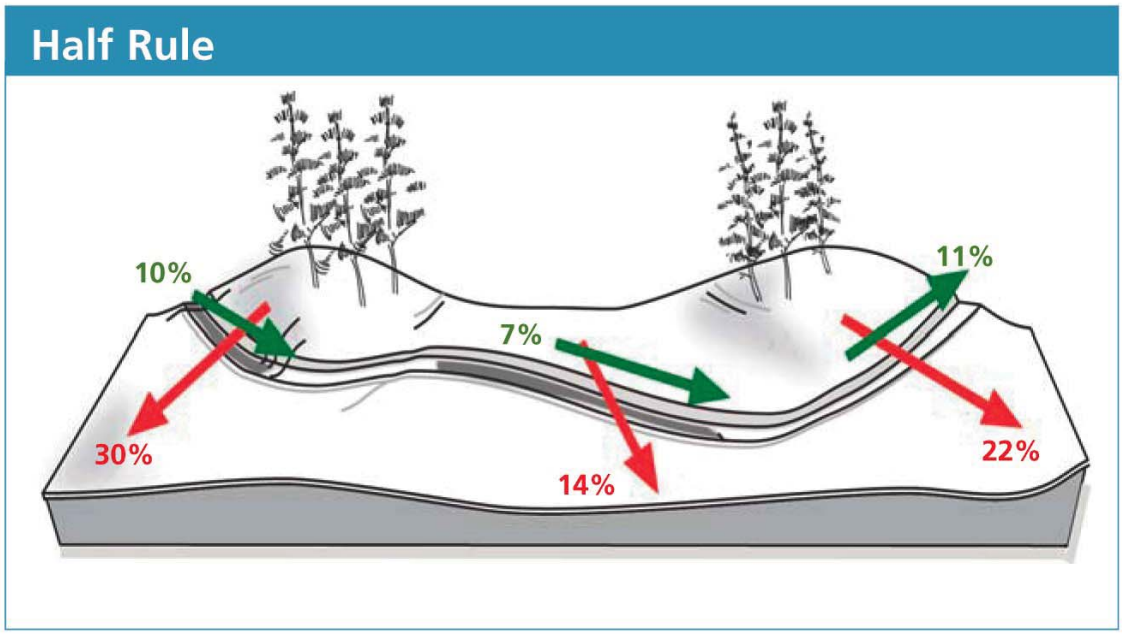


Figure 2: Illustration of "The Half Rule"

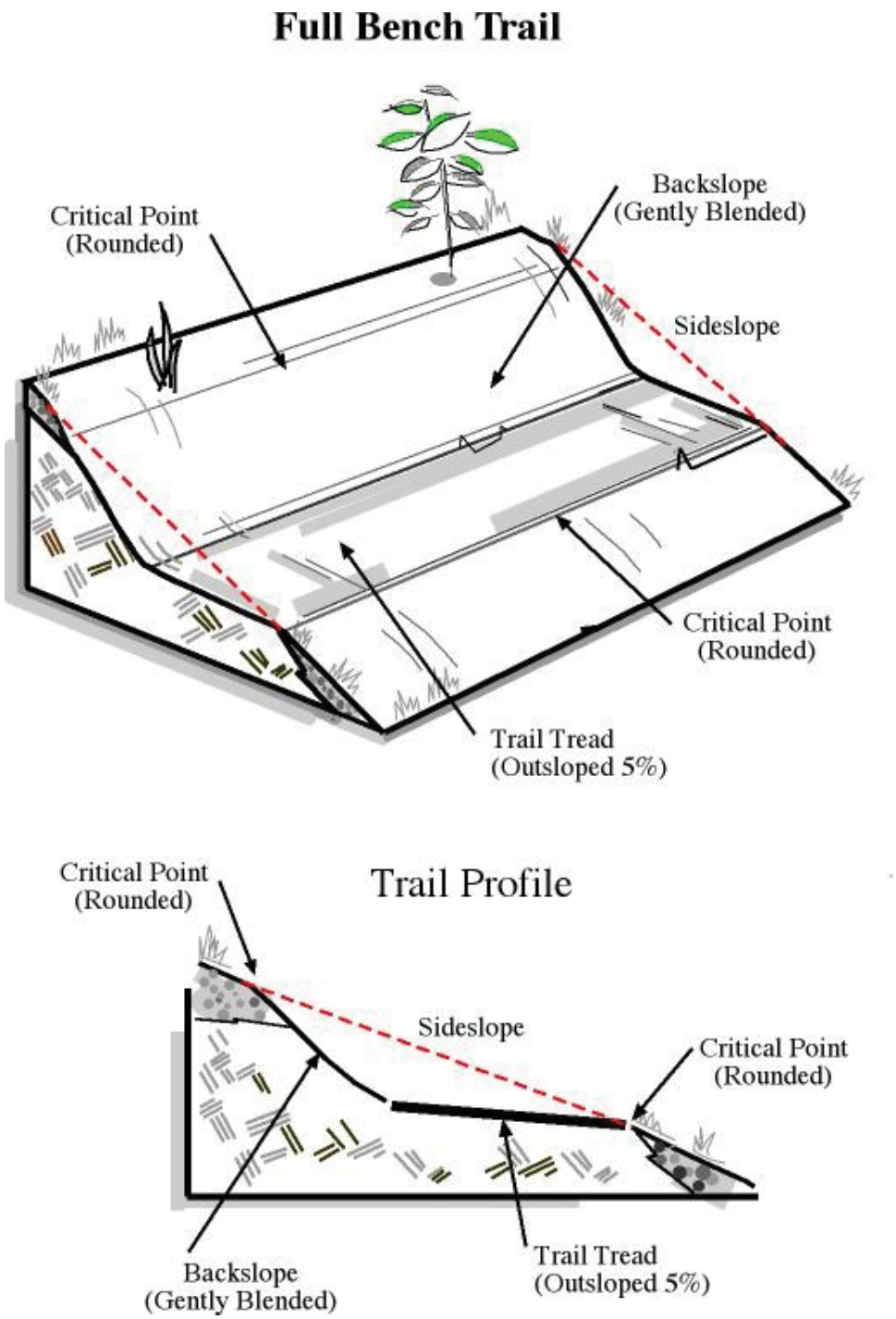


Figure 3: Full Bench Trail

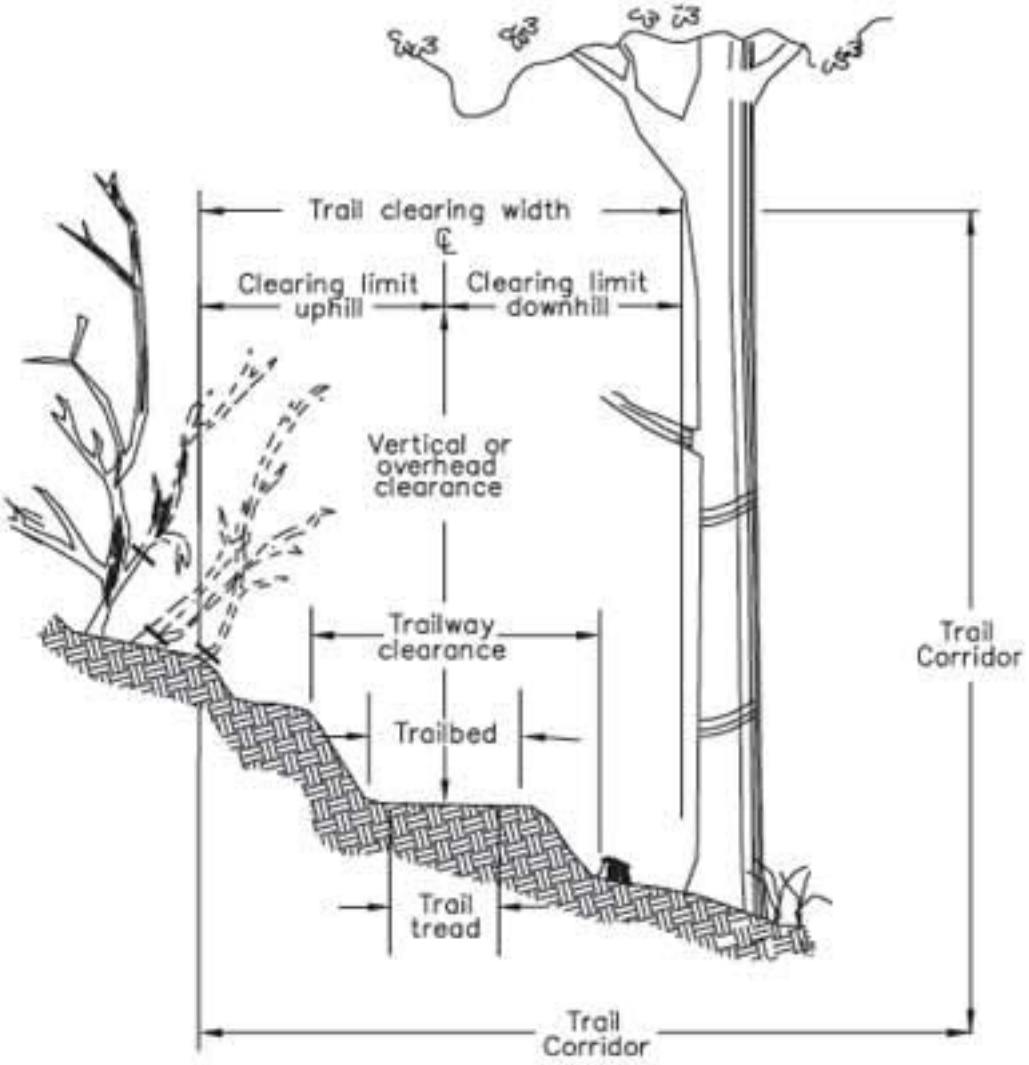
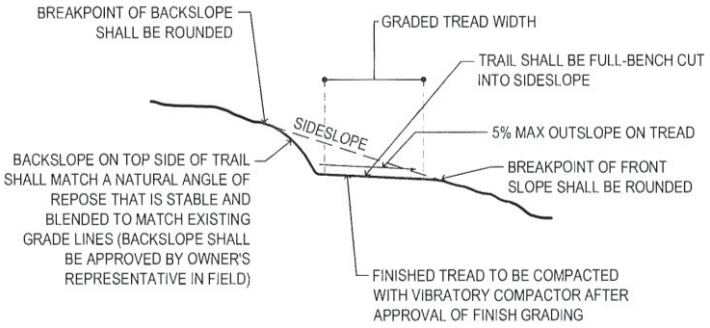
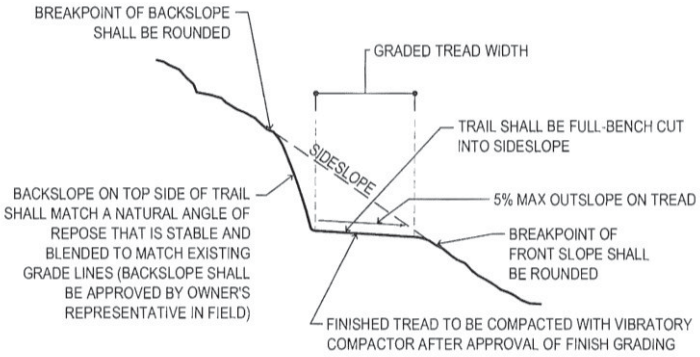


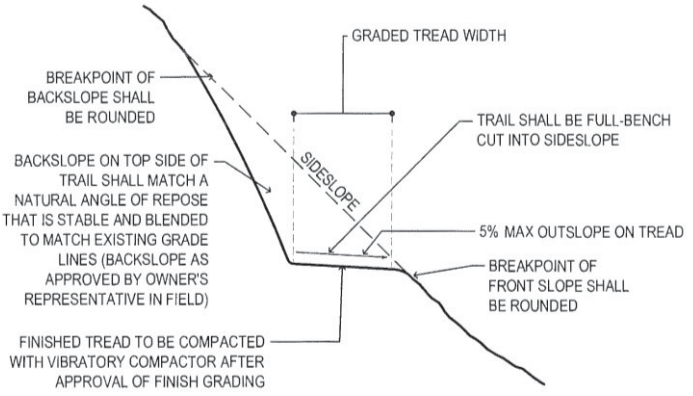
Figure 4: Clearing limits



Type A Type "A" (Low Sideslope Trail) 3%-15% Sideslope



Type "B" (Medium Sideslope Trail) 16%-60% Sideslope



Type "C" (High Sideslope Trail Trail) 61%+ Sideslope

Figure 4.1: Trail Types

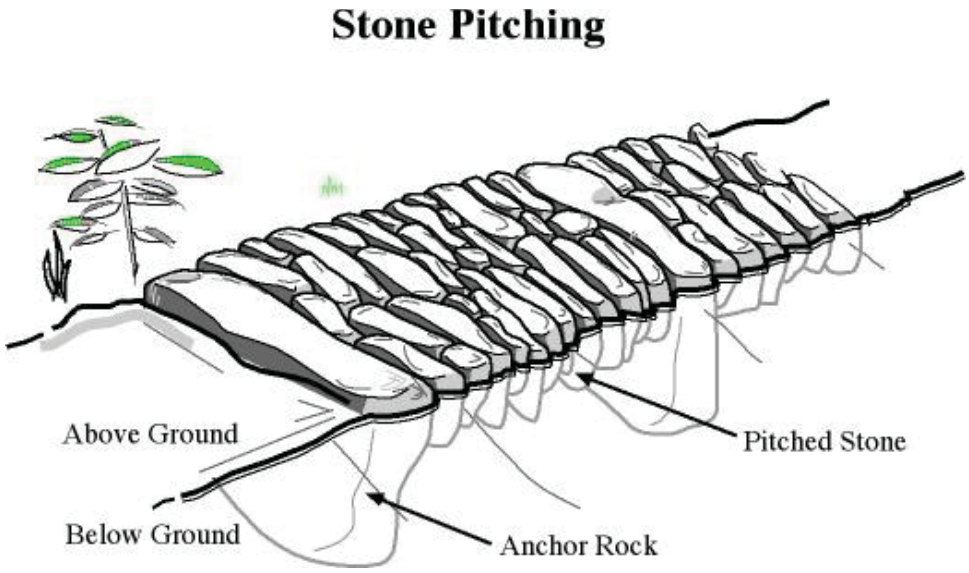


Figure 5: Tread Rock Armoring

Figure 6: Turf Block Pavers

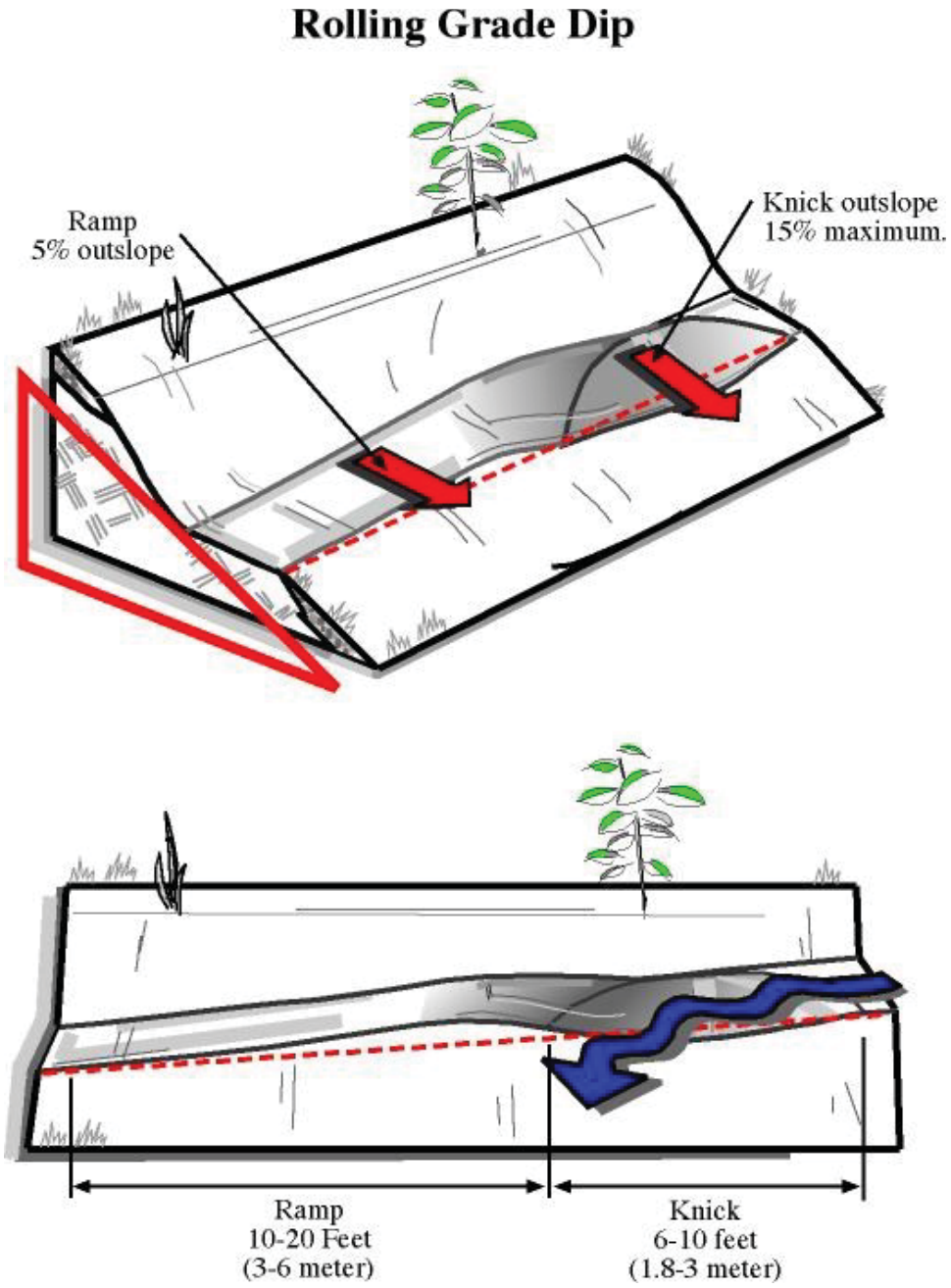


Figure 7: Rolling Grade Dip

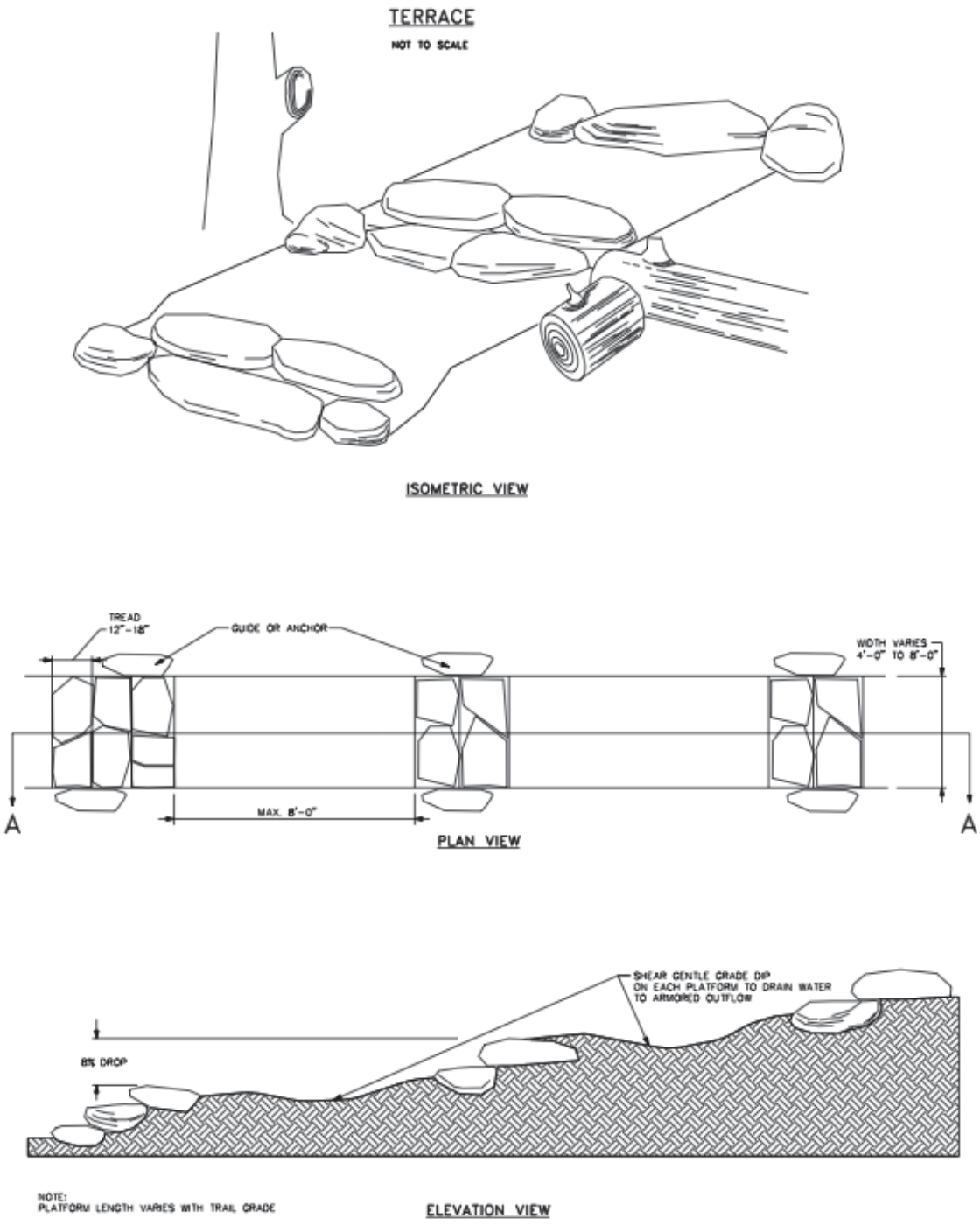


Figure 8: Terrace

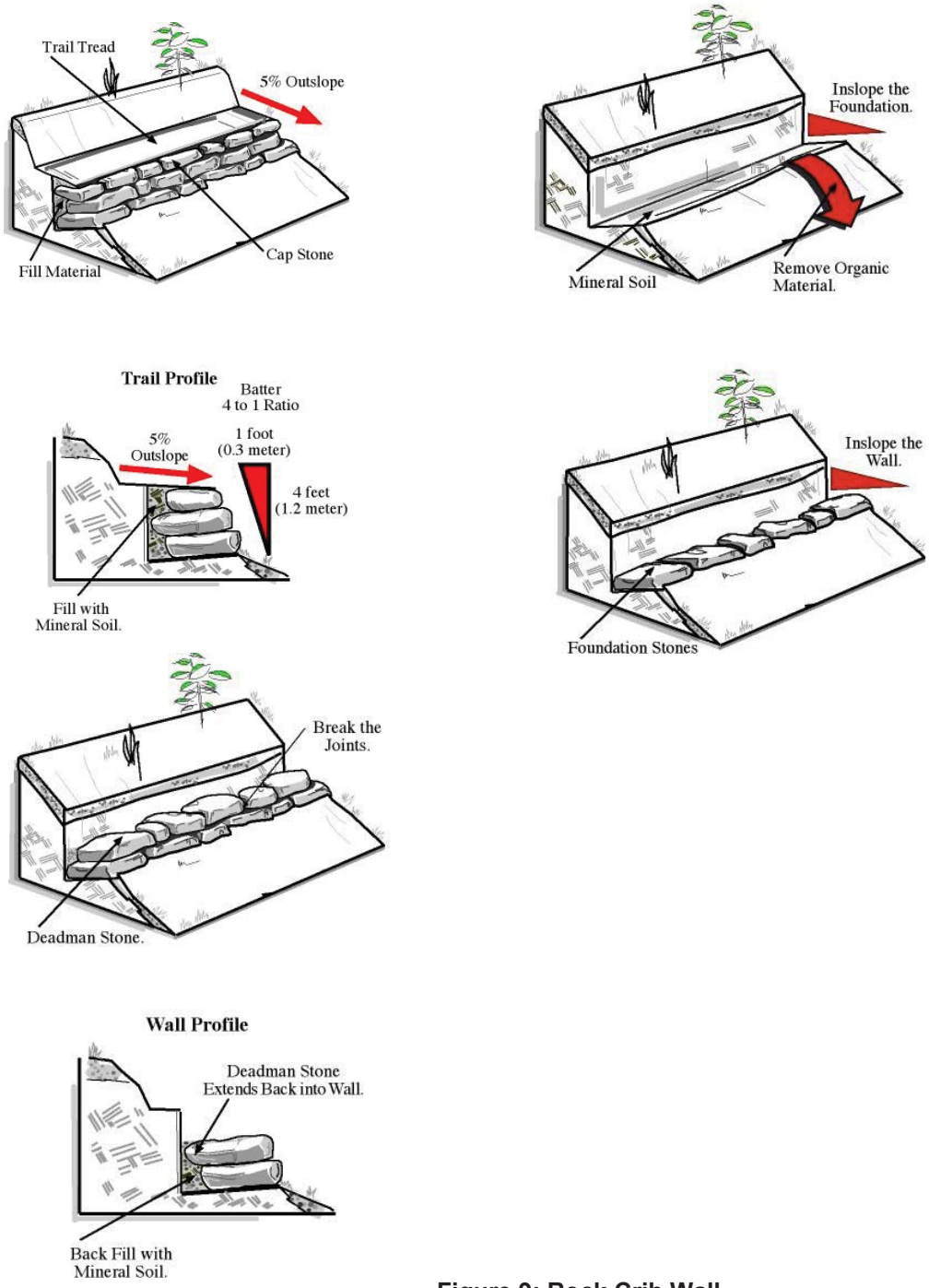


Figure 9: Rock Crib Wall

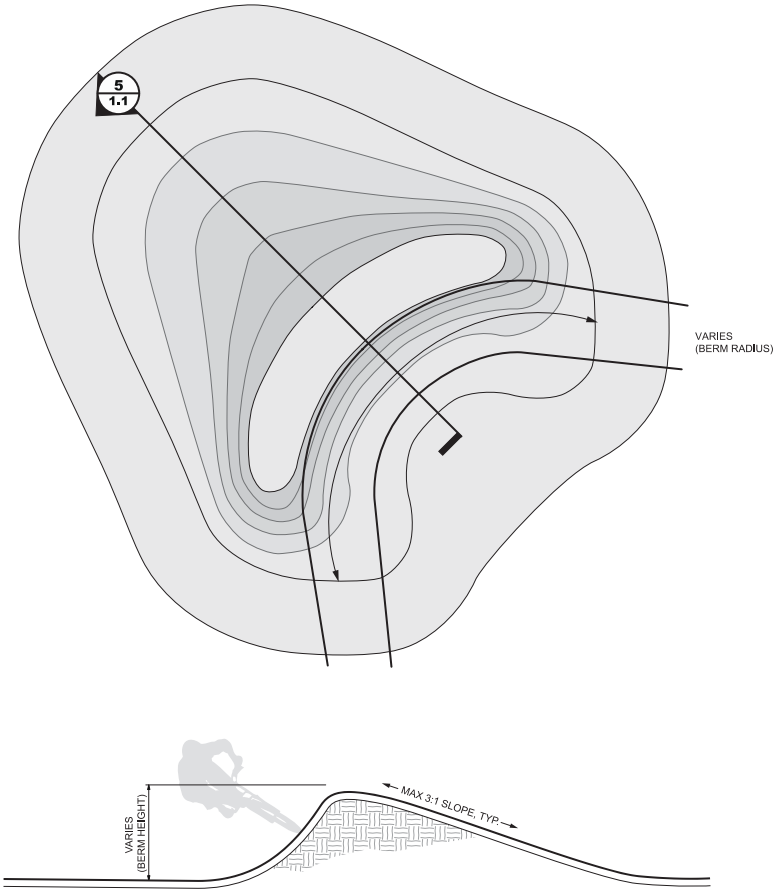


Figure 10: Berm

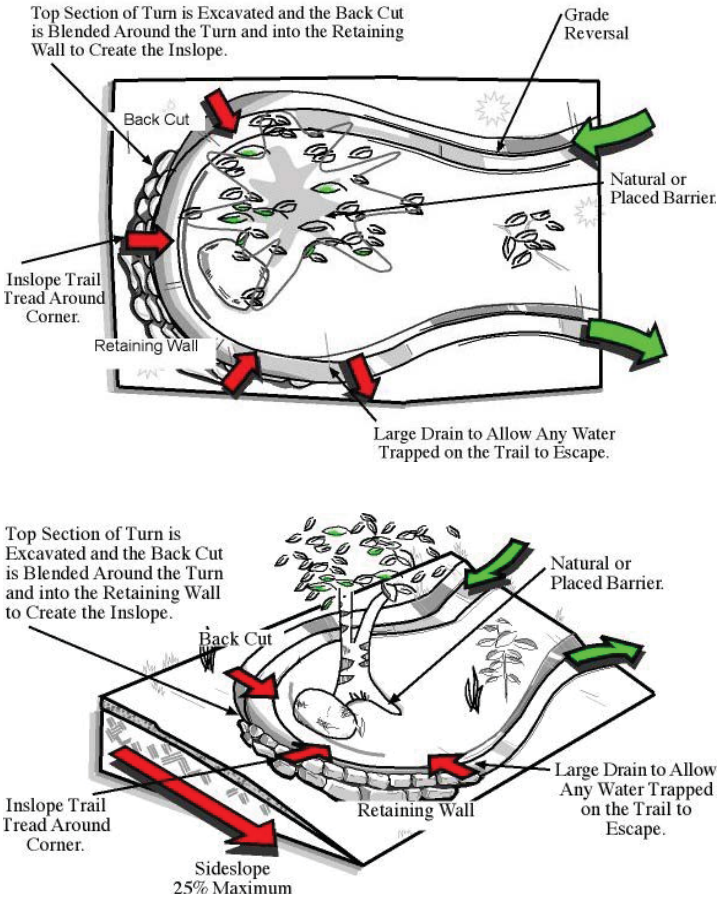


Figure 11: Insloped Switchback (Switchberm)

Figure 12: Technical Trail Feature Boardwalk (TTF)

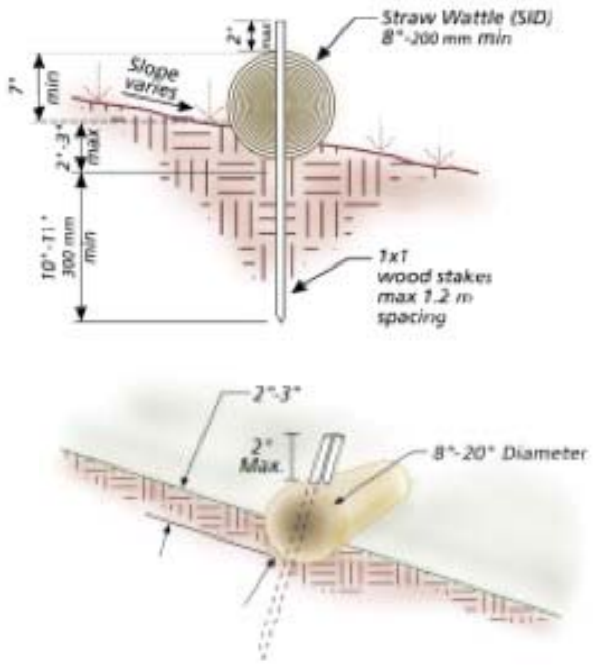


Figure 13: Coir Roll (Bio Log) Installation

Figure 14: Causeway or Turnpike Trail Construction

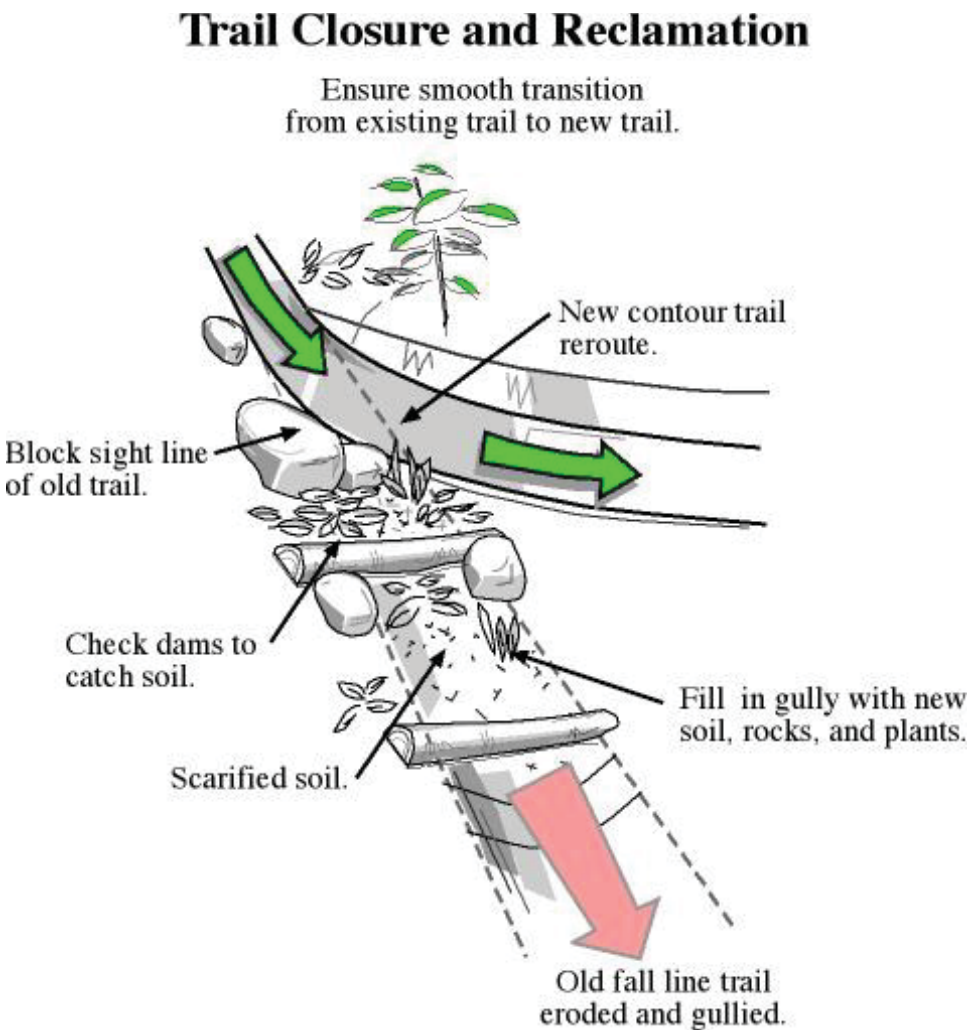


Figure 15: Trail Closure

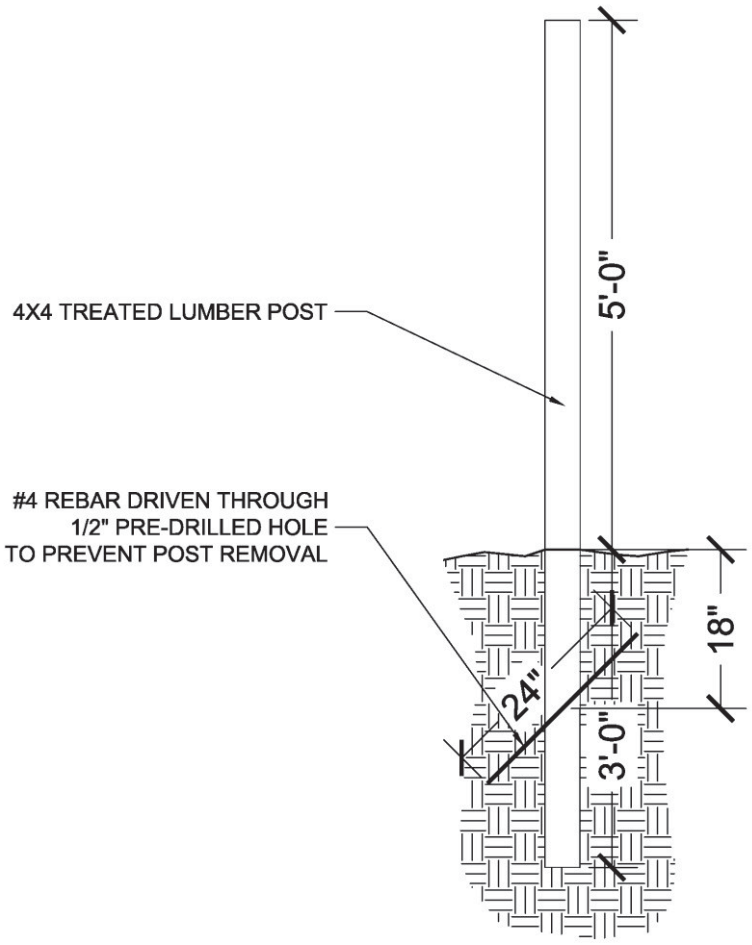


Figure 16: Map Post Installation (NTS)

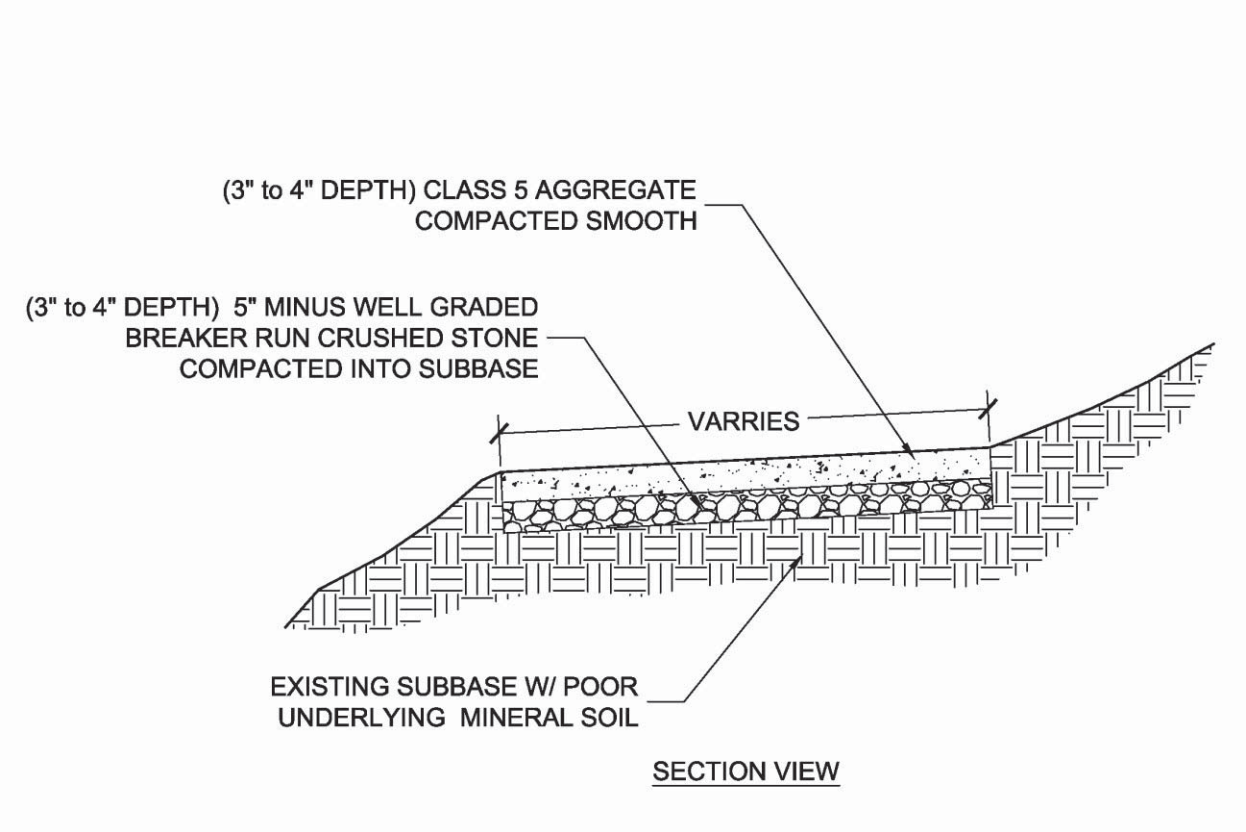


Figure 17: Trail Capping (NTS)

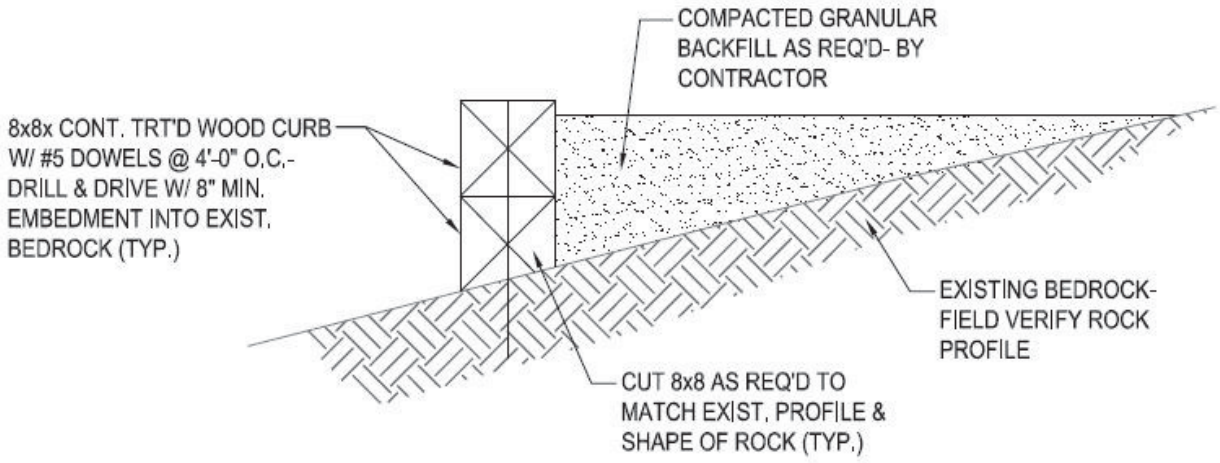


Figure 18: Wood Crib Wall (NTS)

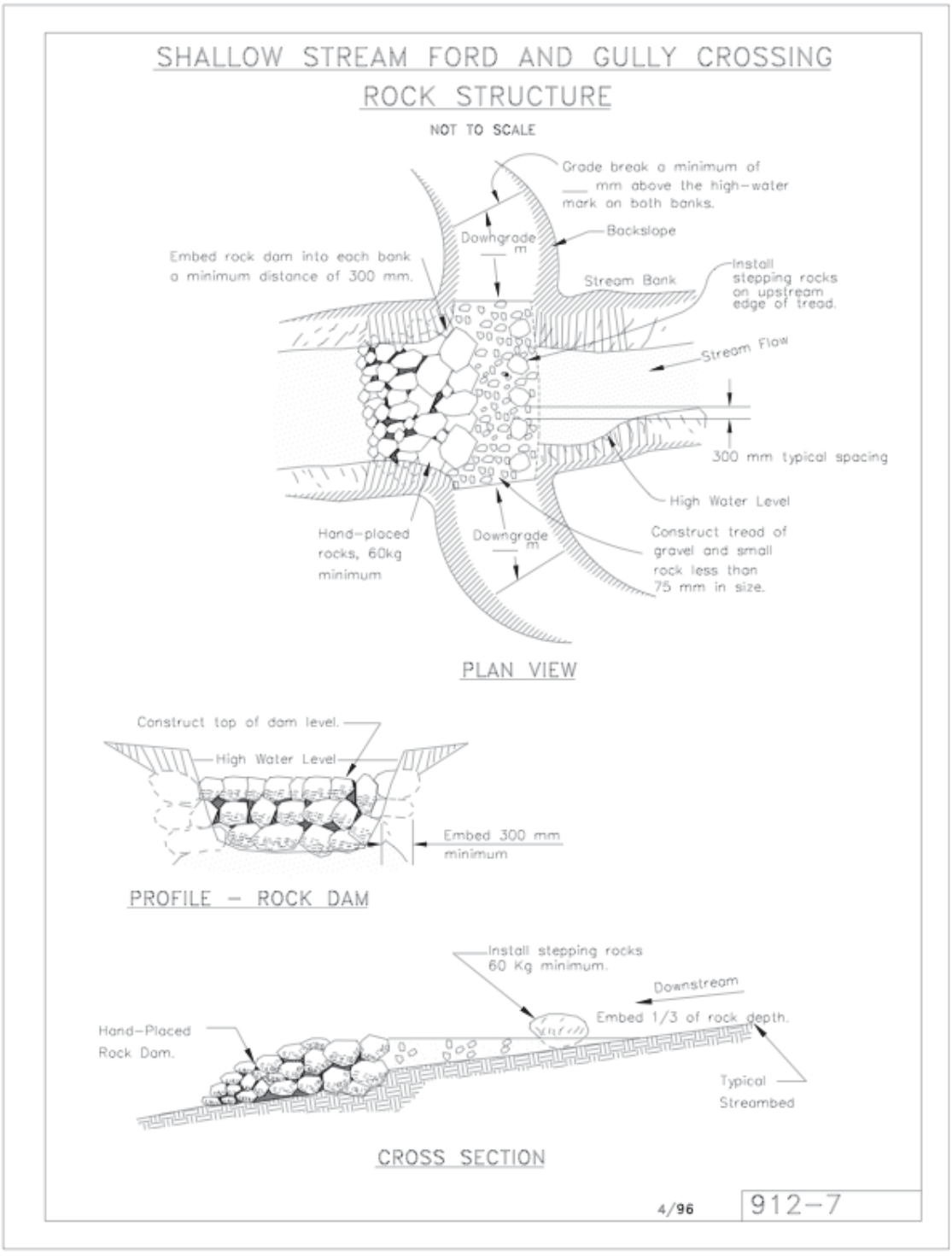


Figure 19: Shallow stream ford and gully crossing rock structure

SECTION 5: CONTRACTOR QUALIFICATIONS, REQUIREMENTS AND RESPONSIBILITIES

5.1 Professional Association

The contractor shall be a Professional Trailbuilders Association (PTBA) member in good standing. Equivalent professional experience and ability, as determined by the Club, is acceptable.

5.2 Mountain Bike-Optimized Experience

The contractor shall have demonstrable experience in building sustainable mountain bike-optimized singletrack trail in a backcountry environment. Mountain bike-optimized singletrack is that which maximizes the fun and efficiency of the bicycling experience through the provision of trail features and macro and micro design techniques.

5.3 Insurance

The contractor shall carry one and a half million dollars ($1,500,000) in Commercial General/Umbrella Liability insurance and shall furnish a certificate listing the Club and its partner the City of Duluth as additional insureds. The certificate shall show the type, amount, class of operations covered, effective dates, and dates of expiration of policies.

5.4 Workman's Compensation

The Club reserves the right to request proof of compliance with workmen's compensation laws.

5.5 Tools

The contractor shall perform the required work using hand tools and/or small mechanized equipment that is a maximum of fifty inches (50") in width. Equipment with adjustable width tracks should be able to reduce track width to less than fifty inches (50"). Some sites may not be suitable for equipment this large and other sites may not be suitable for any mechanized equipment regardless of size due to terrain constraints. Permanent modification of trail outside the scope of work to accommodate equipment access (e.g., widening of an existing trail) is not desirable and must be specifically approved by in advance by the Club.

5.6 Mechanized Equipment Best Practices

Using mechanized equipment equipped with tracks is strongly recommended. On project work, tracks are required for heavy equipment (greater than 500 lbs. gross weight).

All equipment will be clean and free of debris before introduced to work site. Equipment is subject to inspection at the start and during the project.

All mechanized equipment shall be in good mechanical condition, free of any fluid leaks and be equipped with spark arrestors if applicable.

Each machine will be equipped with a readily accessible fully charged fire extinguisher. Heavy equipment must have two extinguishers. Mounting locations

should be chosen such that at least one fire extinguisher is accessible in the event of a rollover.

A spill kit with appropriate capacity must be mounted on the machine or available within 500 feet whenever equipment is operating.

Any equipment that does not meet these criteria shall be shut down until in compliance. If not correctable it will be removed from the project site at the request of the Club and at no additional cost to the Club.

As part of their bid package, the contractor will be asked to supply the expected list of mechanized equipment required to complete the project.

5.7 Backcountry Protocol

The Contractor's crew shall be familiar with backcountry operation and safety protocols as well as be familiar and adept at "leave no trace" practices.

When operating mechanized equipment, at least two workers will be in close proximity to provide assistance in the event of an emergency. Each worker will have a cell phone or radio with them that can be used to summon emergency service personnel. At least one GPS type device should be on hand at each worksite to help give location information to emergency dispatch personnel.

5.8 Personal Protective Equipment

It is the responsibility of the contractor to ensure that all employees working on the project equipped with and are using as appropriate the proper Personnel Protective Equipment (PPE) for the work being done. It is the contractor's responsibility that PPE be deployed where appropriate for the work being performed. The contractor must have at least one OSHA-compliant First Aid Kit readily available at each worksite.

5.9 Timetable

As part of their bid package, the Contractor will provide an approximate timetable and schedule detailing how all project work will be met.

5.10 Meetings and Progress Reviews

The contractor shall meet with the Club and designated City representative at the beginning of each work week or as otherwise agreed upon by both parties to: review progress, check completed trail and trail features against the construction documents for completeness, tabulate completed work for payment and project expectations for the upcoming week.

5.11 What Contractor Provides

The contractor shall provide the necessary supervision, equipment, materials, and tools to perform specified trail maintenance and trail construction on identified trails and sites, including fuel for any mechanized equipment/tools and any and all personal protection and safety equipment required.

5.12 Food and Water

The C\contractor shall be responsible for providing food and water for self and staff.

5.13 Toilet Facilities

The contractor will be responsible for providing worksite sanitary facilities (ex. Porta-potties) for project staff or make alternate arrangements as appropriate for work areas where restroom facilities are not readily accessible.

The use of Porta-potties will be dependent on the location of the worksite relative to vehicle accessibility and concerns about potential vandalism in remote locations.

5.14 Parking

Construction personnel shall confine parking of private vehicles to within the area of the project limits or to those parking spaces available on public streets or pull off parking areas along skyline parkway and or public parking lots.

5.15 Public Safety

The Contractor shall ensure that reasonable precautions are taken to protect the public at all times where work is being performed.

5.16 Environmental Footprint

Contractor will be expected to institute practices to minimize the environmental footprint of construction activities. Examples are minimizing the running time of idle mechanized equipment, cutting treated lumber away from wetlands or standing water, clean-up of spills and trash, and staying within the designated trail corridor of 50’.

5.17 Fees for Licenses, Permits, and Insurance

All costs for required licenses and insurance shall be borne by the contractor. Permits necessary for land access and environmental permits are the responsibility of the Club and will be in place at the time of construction.

5.18 Employee/Subcontractor Conduct

All of the contractor’s employees and subcontractors shall conduct themselves in a proper manner at all times. Intoxication or any unsafe behavior by the contractor’s employees while performing duties related to this contract is strictly prohibited. The contractor will be required to remove from the site any individual whose continued employment or retainer is deemed to be contrary to the public interest or inconsistent with the best interests of this trail construction project, and will not use such individual to perform services under this contract.

Smoking is prohibited in City of Duluth public spaces and is not permitted at any of the project locations.

5.19 Employee Competence

The contractor may be required to immediately remove from the worksite any employee or subcontractor of the contractor who is incompetent or who endangers persons or property or whose physical or mental condition is such that it would impair

the employee's ability to satisfactorily perform the work. Notification to the contractor shall be made by voice promptly and confirmed in writing as soon as possible. No such removal shall reduce the contractor's obligation to perform all work required under this contract.

5.20 Compliance with Modern Practices

All work shall be performed and completed in a thoroughly skillful, efficient and professional manner in accordance with best modern practices, regardless of any omissions from the attached specifications and/or drawings.

5.21 Condition of Materials and Equipment

All materials and equipment incorporated into the trail shall be new or otherwise in good working order and shall comply with the applicable standard in every case where such a standard has been established for the particular type of material in question.

5.22 Disposal of Materials and Supplies Not Approved

Materials, supplies, etc., that have been delivered to the job but do not comply with specifications and have not been approved, upon notification, the contractor shall immediately remove from the premises any such condemned material, supplies, etc., and replace them with material, supplies, etc., in full accordance with the specifications.

5.23 Disposal of Materials and Supplies Not Used

Materials, supplies, etc., have been delivered to the job but are not used shall be removed from the site and properly disposed by the contractor. Tossing treated wood scraps into the surrounding landscape or placed under completed boardwalk or bridge segments is not permitted.

5.24 Access Control

The contractor is prohibited from installing gates, cables, chains, fences, and other types of barricades to limit access to the project site without prior written permission from the Club. It is anticipated that some type of access control will be necessary to control access to the trail that is under construction and is strongly encouraged. It will be up to the Contractor to determine the best access control prescription.

5.25 Use of Premises – Storage

Contractor shall confine its apparatus, storage of materials, and operation of its employees/subcontractors to limits indicated by law, ordinance, permits, and/or directions of the Club, and shall not unreasonably encumber the premises with project materials. Before any work is undertaken the contractor shall consult with the Club and secure from Club the use of such space as may be available for the storage of materials and/or equipment. Contractor will be held responsible for any damage done in connection with the use of this location for storage.

The Club is not responsible for any damages that may occur to the contractor's equipment during storage whether it is from natural causes or caused by man from such unlawful acts as theft, vandalism, and arson. The contractor is responsible for providing

their own property insurance. The contractor is responsible for providing their own storage and transportation equipment such as trailers, tarps, locks, or other security devices.

5.26 Trail Rehabilitation

The Contractor shall rehabilitate sections of trail that will be closed as a result of trail realignment. Any travel-ways or temporary access routes or trails created as a result of construction and/or ingress/egress will be restored to their original pre-existing condition.

5.27 Use of Subcontractors

The Contractor shall be able to use subcontractors to complete the work provided the subcontractors meet all qualifications and satisfy all conditions defined in this RFQ. Contractor is responsible for all actions of their subcontractor.

Subcontractor staff must be described in the bid submission. Use of subcontractors not described in the bid submission will only be allowed with written permission from the Club.

5.28 Indemnity

The contractor shall indemnify, save, and hold harmless the Club, City of Duluth,, the land owner, and their employees and agents, against any and all claims, damages, liability and court awards including costs, expenses, and attorney fees and related costs, incurred as a result of any act or omission by the contractor, or their employees, agents, subcontractors, or assignees pursuant to the terms of this contract.

5.29 Protection of Finished Construction

Contractor shall assume the responsibility for the protection of all finished construction, until at which the Club accepts in writing the work as substantially complete. The Contractor shall repair and restore any and all damage of finished work to its original state if damage occurred prior to the club accepting the trail as substantially complete.

Where responsibility can be established for damage to finished construction, the cost for repair or replacement shall be charged to the party responsible.

SECTION 6: REGULATIONS AND STANDARDS

6.1 Jurisdictional Regulation

The work shall comply with all laws, ordinances and regulations of all legally constituted authorities having jurisdiction over any part of this work. These requirements supplement the specifications and shall take precedence in case of conflict.

6.2 Davis-Bacon & Prevailing Wage

Davis-Bacon and prevailing wage requirements "do not apply" in this contract.

6.3 Applicable Laws and Courts

This solicitation and any resulting contract shall be governed in all respects by the laws of the State of Minnesota and any litigation with respect thereto shall be brought in the courts of the State.

6.4 Anti-Discrimination

By submitting their bids, bidders certify to the State that they shall conform to the provisions of the Federal Civil Rights Act of 1964, as amended, and where applicable, the Americans With Disabilities Act.

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
2. The contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such contractor is an equal opportunity employer.
3. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting these requirements.

The contractor shall include the provisions of item 1 above in every subcontract or purchase order over ten thousand dollars ($10,000) so that the provisions will be binding upon each subcontractor or vendor.

6.5 Ethics in Public Contracting

By submitting their bids, bidders certify that their bids are made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other bidder, supplier, manufacturer or subcontractor in connection with their bid, and that they have not conferred on any person having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money,

services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

SECTION 7: TIMELINE AND SCHEDULE

7.1 Project Timeline

The project schedule is as follows:

various	Site visit by request (non-mandatory)
January 18, 2019	Bid posting
February 07, 2019	Bid opening submission deadline (end of business day)
February 14-15, 2019	Anticipated award announcement
November 1, 2019	Work complete

7.2 Pre-Bid Conference and Site Visit

Due to the importance of potential contractors having a clear understanding of the specifications and requirements of this solicitation, a non-mandatory pre-bid conference/site visit will be held by contractor request and on an as needed basis. All bidders shall bring a copy of the solicitation. Any changes resulting from this conference will be noted in a written amendment to the solicitation. Failure to attend will not relieve the contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the Club. The Club assumes no responsibility for any conclusions or interpretations made by the contractor based on information made available at the conference. Nor does the Club assume responsibility for any understanding reached or representation made by any of its representatives or agents before the execution of this contract, unless that understanding is expressly stated in this contract.

Bidders are cautioned that in no event shall failure to familiarize themselves with requirements of this solicitation, or to resolve ambiguous or inconsistent terms or conditions of this solicitation or proposed contract, constitute grounds for a claim of any kind after contract award.

As the project area occupies a large footprint, it may not be possible to visit all the trail corridors during the pre-bid conference. That does not relieve the bidder of their responsibility to be aware of the conditions over the entire site. It is expected that a worthwhile review of these sites may require at least two days.

~~The pre-bid conference/site visit will be held at~~

~~Date: XXXX~~
~~Time: XXXX~~
~~Location: XXXX~~

Bidders should wear clothing suitable for hiking in the upper Midwest. The pre-bid tour should be concluded by 6pm. Bidders should bring adequate food and water for a full day on the trail.

7.3 Deadline for Requests for Clarifications/Questions

All requests for clarification must be submitted in writing to Jim Shoberg via email to jberg_21@hotmail.com and Adam Sundberg to adamsundbergdc@gmail.com

7.4 Responses to Requests for Clarifications Distributed

Response(s) to written requests for clarification will be distributed to recipients of the bid package via email only.

7.5 Bid Submission Deadline

All bid submissions are due February 07, 2019 end of business day 5:00 pm Central Time.

7.6 Anticipated Award Announcement

The contract award announcement is anticipated to occur no later than February 14-15, 2019.

7.7 Contract and Insurance Certificate

The successful bidder will be required to execute a written contract with the Club within ten (14) days after notice of acceptance of his proposal. In the event the successful bidder fails or refuses to execute a formal contract as required within ten (14) days after notice of acceptance of his bid, the Letter of Acceptance of their proposal may be revoked, and all obligations of the Club in connection herewith will be canceled.

Before work commences, an insurance certificate will be provided to the Club that fulfills the contractor's responsibilities for insurance as detailed in this document.

7.8 Work Complete

All work shall be completed and approved by the Club before November 01, 2019.

SECTION 8: BID SUBMISSION PACKAGE

8.1 Bid Submission

Each bid must be submitted via email to with the title of the email clearly marked as "**DULUTH TRAVERSE 2019 COGGS BID**" and delivered to:

Jim Shoberg jberg_21@hotmail.com &
Adam Sundberg adamsundbergdc@gmail.com

Each bid must be received prior to the deadline on the date set forth per the aforementioned schedule. Faxed bids will NOT be accepted.

It is the contractor's responsibility to verify the receipt of the email bid submission by the Club.

8.2 Submittal Checklist

The bid package must contain each of the following. Incomplete bid packages may not be considered.

- Completed bid worksheets A and B (see section 13 and attachments A and B)
- A recommended project schedule and timetable.
- Three (3) references from previous mountain bike-specific trail construction projects.
- One (1) letter of recommendation from a previous client.
- A detailed list of work accomplished from past comparable or relevant projects. The list shall include a 1-3 paragraph description of the project, client name and contact information, and dates during which the work was executed.

SECTION 9: BASIS FOR AWARD, RIGHT OF REJECTION, AND CANCELLATION

9.1 Basis for Award

The Club reserves the rights to eliminate for consideration for award any or all offers at any time prior to the award of the contract; to negotiate with bidders in the competitive range; and to award the contract to the bidders, or combination of bidders, submitting the bid determined to represent the best values.

9.2 Right of Rejection

The Club reserves the right to waive any informality in any bid, to reject any or all bids in whole or part, with or without cause, and/or to accept the proposal that in its judgment will be in the best interest of the citizens of Minnesota.

9.3 Qualifications and Experience

The qualifications and experience of the contractor in completing similar work will be given equal weight to price of the bids in determining value of qualified bids. It is considered in the best interest of the Club to allow consideration of award to other than the lowest bidder or most qualified bidder.

9.4 Additional Information

The Club reserves the right to request that the bidder supply additional information prior to the award of the contract should such action be deemed in the Clubs best interest.

9.5 Estimated Quantities

For all specifications that contain more or less quantities, it shall be understood and agreed that quantities listed in the Project Details and Worksheet B are estimated only and may be increased or decreased in accordance with the actual normal requirements of the Club and that the Club in accepting any bid or portion thereof, contracts only and agrees to purchase only the services in such quantities as represent the actual requirements of the Club.

The Club reserves the right to change the quantities at its discretion and it is understood that this will have no effect on the price per unit quoted by the bidder.

9.6 Partial Award

The Club reserves the right to award a partial award of only some of the projects contained within the solicitation or to award separate projects to separate bidders. The projects contained within this solicitation are diverse in nature and it is possible that one contractor will not be the most suitable bidder for all the projects. It is recommended to bid on all the projects, but is not required. For this reason a one-time mobilization rate is requested as a separate line item. Upon award a contractor will be allowed to bill for one mobilization regardless of the number of sub-projects included in their contract.

9.7 Right Of Cancellation

In the event a contractor is awarded more than one project, and performs that project in a manner deemed unacceptable to the Club, in the Club's sole discretion, the Club reserves the right to issue a Notice of Cancellation of remaining projects. Upon the issuance of the Notice of Cancellation, the contractor shall have fifteen (15) days to cure the deficiencies in the prior project to the Club's satisfaction. If the contractor is unwilling or unable to cure such deficiencies, the Notice of Cancellation will become effective at the end of the fifteen (15) day period, and the award of the additional projects will be deemed cancelled. In the event of a cancellation under this paragraph, both the Club and the contractor agree that each shall bear their respective costs, and the contractor shall not be entitled to any payment for the remaining projects that are the subject of the Notice of Cancellation.

SECTION 10: COMMUNICATION AND REQUEST FOR CLARIFICATIONS

10.1 Point of Contact

Questions concerning this proposal shall be via email and directed to:
Jim Shoberg jberg_21@hotmail.com &
Adam Sundberg adamsundbergdc@gmail.com
Verbal responses to questions are not binding.

10.2 Request for Clarifications

All requests for clarification shall be submitted via email to the project contact by Responses to all questions will be distributed via email to all respondents who requested a copy of the RFQ package.

10.3 Contact Protocol

Bidders SHALL NOT make any contact or communications with any member of the Evaluation Committee, or any other agent, officer, or representative of the Club or associated partners in regards to this solicitation.

10.4 Email Communication

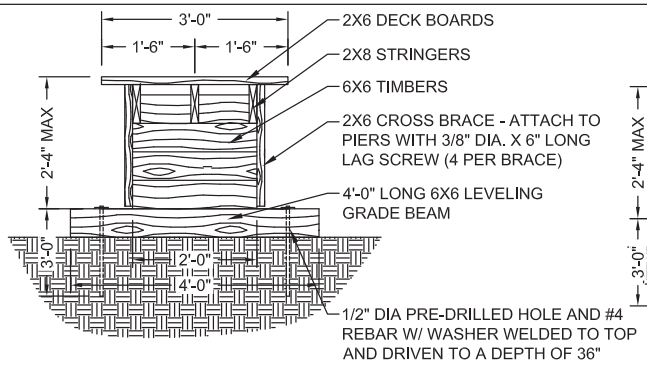
Email communication is the primary method of receiving and responding to written requests for clarification. It is solely the bidders' responsibility to ensure that they have received all emails distributed and that any emails they have sent to the project contact have been received.

SECTION 11: FINAL INSPECTION, SUBTANTIAL COMPLETION, RETAINAGE, WARRANTY AND PAYMENT

Upon the substantial completion of the contract work, the Club shall accompany the contractor on an inspection of the work to create a final punch list. All defects found in the work that do not meet the intent of the construction documents will be corrected before payment will be authorized.

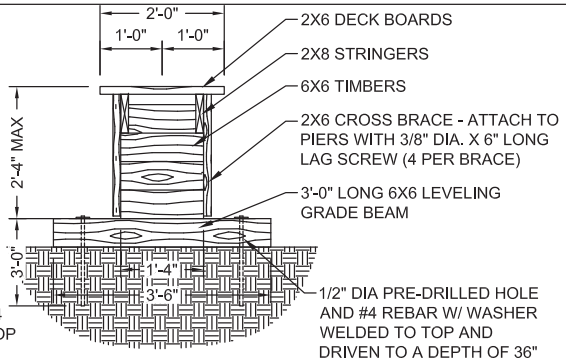
Substantial completion is defined as the point at which the requirements of the construction documents have been meet and the Club issues a letter of acceptance.

Final payment will be made upon substantial completion and approval of work per sub-project minus a 5% retainage. This retainage is held for a one year warranty period and starts on the date of substantial completion as outlined in the letter of acceptance.



36" WIDE BOARDWALK

NOT TO SCALE

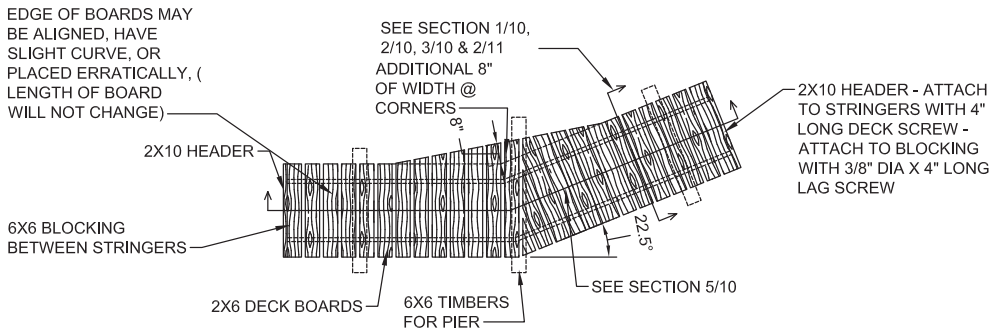


24" WIDE BOARDWALK

NOT TO SCALE

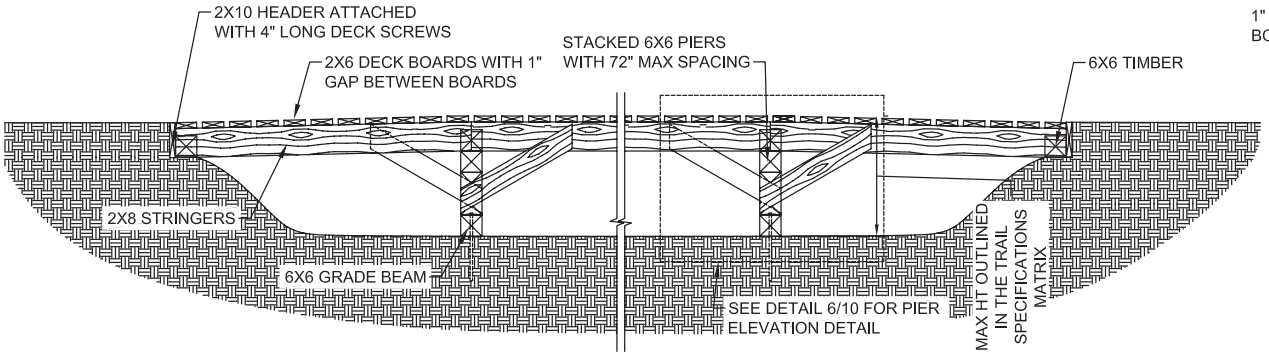
DETAIL NOTES:

1. FINAL BOARDWALK FIELD DESIGN IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE BASE ON THE ENGINEERED CONSTRUCTION DOCUMENTS HEREIN AND IN THE SPECIFICATIONS.
2. CONTRACTOR IS TO PROVIDE A TYPICAL BOARDWALK AND BRIDGE SHOP DRAWING THAT IS PLANNED TO BE CONSTRUCTED IN THE FIELD FOR APPROVAL BY THE LANDSCAPE ARCHITECT.
3. LUMBER SHALL BE SIZED TO THE FULL DIMENSIONS SHOWN ON THE PLANS UNLESS NOTED OTHERWISE. ALL LUMBER SHALL BE A ROT-RESISTANT SPECIES OR TREATED ACCORDING TO THE OPTIONS INDICATED IN THE SPECIFICATIONS.
4. ACCEPTABLE MATERIALS FOR THE DECK RIDING SURFACE MUST BE ROUGH CUT LUMBER AND INCLUDES: CEDAR, TAMARACK AND TREATED PINE. ALL OTHER LUMBER USED IN THE CONSTRUCTION CAN BE EITHER ROUGH CUT OR DIMENSIONAL TREATED PINE LUMBER.
5. ROT-RESISTANT TREATMENTS OTHER THAN THOSE LISTED MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO BIDDING.
6. LEVELING GRADE BEAMS SHALL BE SHIMMED AS NECESSARY TO MEET DESIRED PITCH OF STRUCTURE AND ANCHORED TO THE GROUND WITH A MINIMUM OF 36" LONG #5 REBAR DRIVEN THROUGH A PRE DRILLED HOLE IN THE TIMBER.
7. SELECT FASTENERS AND HARDWARE IN ACCORDANCE WITH THE SPECIFICATIONS
8. SIZES, LENGTHS AND EXTENT OF ALL BOARDWALKS, ROCK HARDENED TREAD, BRIDGES AND BERMS TO BE FIELD FIT AT TIME OF CONSTRUCTION.
9. BOARDWALK & BRIDGE CONSTRUCTION LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE CONTRACTOR AND SUBMITTED TO THE OWNER FOR APPROVAL.
10. CUT BRUSH AND SLASH MUST BE DISPOSED IN AN UPLAND LOCATION AND MUST BE KEPT OUT OF STREAMS, GULLIES, SWALES, WET AREAS, AND LOW AREAS. SEE SPECIFICATIONS FOR DETAILS.
10. NO EXCAVATION OR FILL PERMITTED IN WET AREAS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSULT WITH THE OWNER PRIOR TO DOING ANY WORK WITHIN SUSPECTED WET AREAS.
11. WOOD RAMPS OR STONE PITCHING MAY BE REQUIRED BEFORE AND AFTER BRIDGES AND BOARDWALKS. APPLICATION WILL BE DETERMINED IN THE FIELD, BY THE CONTRACTOR AND MUST BE APPROVED BY THE OWNER PRIOR TO CONSTRUCTION. PAYMENT FOR RAMPS WILL BE ADDED TO THE TOTAL LENGTH OF THE BOARDWALK AND PAYMENT FOR STONE PITCHING WILL BE PER THE UNIT BID PRICE OF ROCK ARMORING.



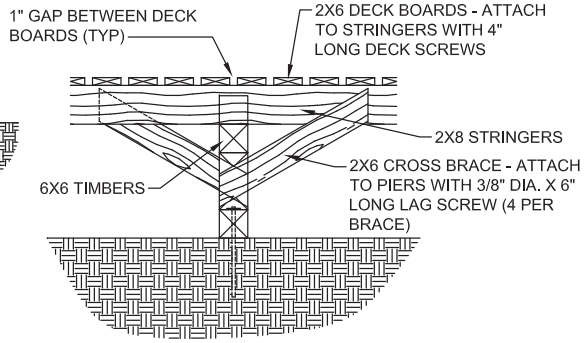
TYPICAL PLAN DETAIL OF BRIDGE (36" WIDE SHOWN)

NOT TO SCALE



TYPICAL ELEVATION DETAIL FOR BOARDWALK (WET AREA CROSSINGS)

NOT TO SCALE



TYPICAL ELEVATION @ PIER LOCATION

NOT TO SCALE

DETAIL NOTES:

1. FINAL BOARDWALK FIELD DESIGN IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE BASE ON THE ENGINEERED CONSTRUCTION DOCUMENTS HEREIN AND IN THE SPECIFICATIONS.
2. CONTRACTOR IS TO PROVIDE A TYPICAL BOARDWALK AND BRIDGE SHOP DRAWING THAT IS PLANNED TO BE CONSTRUCTED IN THE FIELD FOR APPROVAL BY THE LANDSCAPE ARCHITECT.
3. LUMBER SHALL BE SIZED TO THE FULL DIMENSIONS SHOWN ON THE PLANS UNLESS NOTED OTHERWISE. ALL LUMBER SHALL BE A ROT-RESISTANT SPECIES OR TREATED ACCORDING TO THE OPTIONS INDICATED IN THE SPECIFICATIONS.
4. ACCEPTABLE MATERIALS FOR THE DECK RIDING SURFACE MUST BE ROUGH CUT LUMBER AND INCLUDES: CEDAR, TAMARACK AND TREATED PINE. ALL OTHER LUMBER USED IN THE CONSTRUCTION CAN BE EITHER ROUGH CUT OR DIMENSIONAL TREATED PINE LUMBER.
5. ROT-RESISTANT TREATMENTS OTHER THAN THOSE LISTED MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO BIDDING.
6. LEVELING GRADE BEAMS SHALL BE SHIMMED AS NECESSARY TO MEET DESIRED PITCH OF STRUCTURE AND ANCHORED TO THE GROUND WITH A MINIMUM OF 36" LONG #5 REBAR DRIVEN THROUGH A PRE DRILLED HOLE IN THE TIMBER.
7. SELECT FASTENERS AND HARDWARE IN ACCORDANCE WITH THE SPECIFICATIONS
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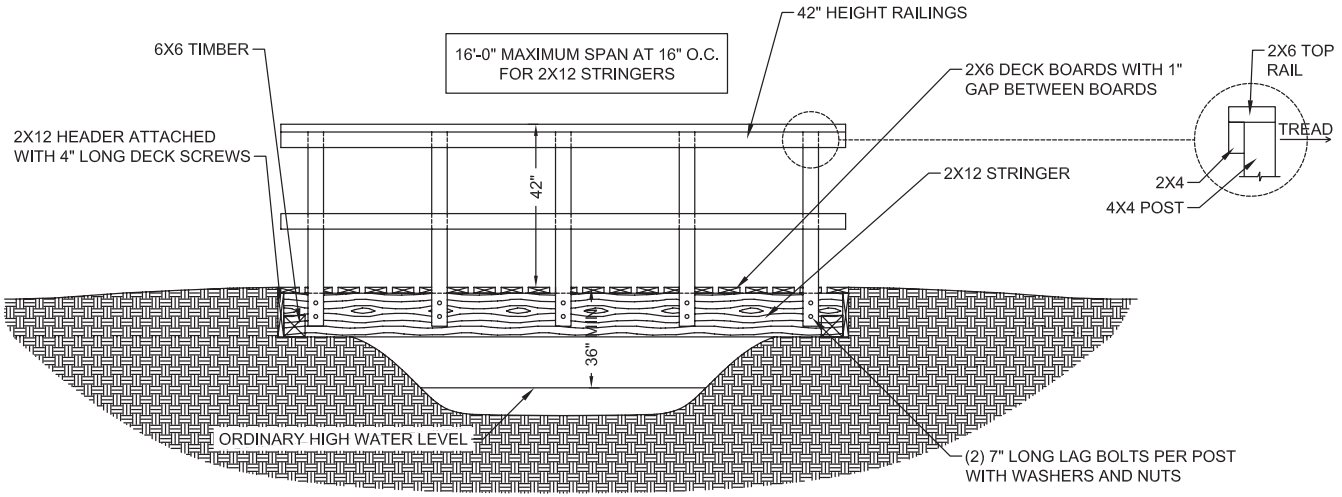
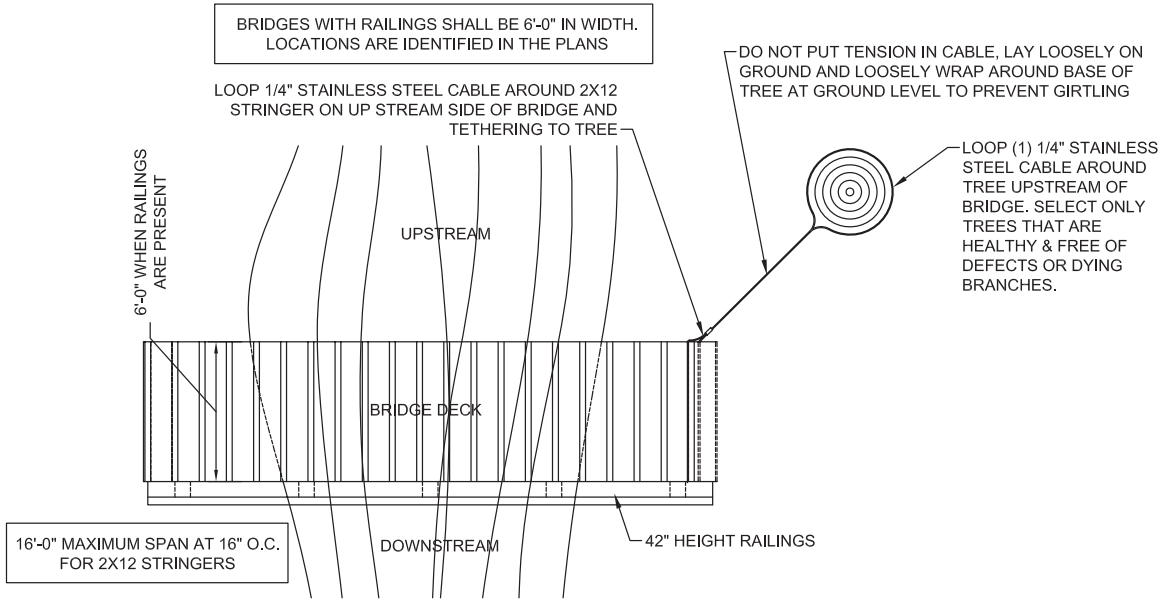
10. CUT BRUSH AND SLASH MUST BE DISPOSED IN AN UPLAND LOCATION AND MUST BE KEPT OUT OF STREAMS, GULLIES, SWALES, WET AREAS, AND LOW AREAS. SEE SPECIFICATIONS FOR DETAILS.
10. NO EXCAVATION OR FILL PERMITTED IN WET AREAS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSULT WITH THE OWNER PRIOR TO DOING ANY WORK WITHIN SUSPECTED WET AREAS.
11. WOOD RAMPS OR STONE PITCHING MAY BE REQUIRED BEFORE AND AFTER BRIDGES AND BOARDWALKS. APPLICATION WILL BE DETERMINED IN THE FIELD, BY THE CONTRACTOR AND MUST BE APPROVED BY THE OWNER PRIOR TO CONSTRUCTION. PAYMENT FOR RAMPS WILL BE ADDED TO THE TOTAL LENGTH OF THE BOARDWALK AND PAYMENT FOR STONE PITCHING WILL BE PER THE UNIT BID PRICE OF ROCK ARMORING.



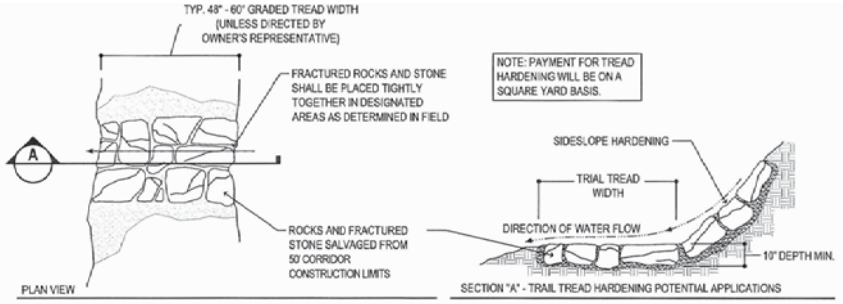
TYPICAL ELEVATION DETAIL FOR BRIDGE (CREEK CROSSINGS) 2/2

NOT TO SCALE



TYPICAL PLAN DETAIL FOR BRIDGE (CREEK CROSSINGS) 2/2

NOT TO SCALE



CONSTRUCTION NOTE:

BACKFILL BEDDING MATERIAL SHALL BE 3"- 6" OF 3/4" - CRUSHED ROCK. THE SAME CRUSHED ROCK CAN BE UTILIZED FOR FILL BETWEEN THE SET ROCK/STONE.

10" MINIMUM ROCK/STONE SET DEPTH.

SEAMS RUNNING IN THE DIRECTION OF TRAVEL SHALL BE MINIMIZED IN BOTH LENGTH AND WIDTH. SEAM WIDTH SHALL SHALL BE MINIMIZED AND SEAM STAGGERING SHALL BE USED WHERE POSSIBLE.

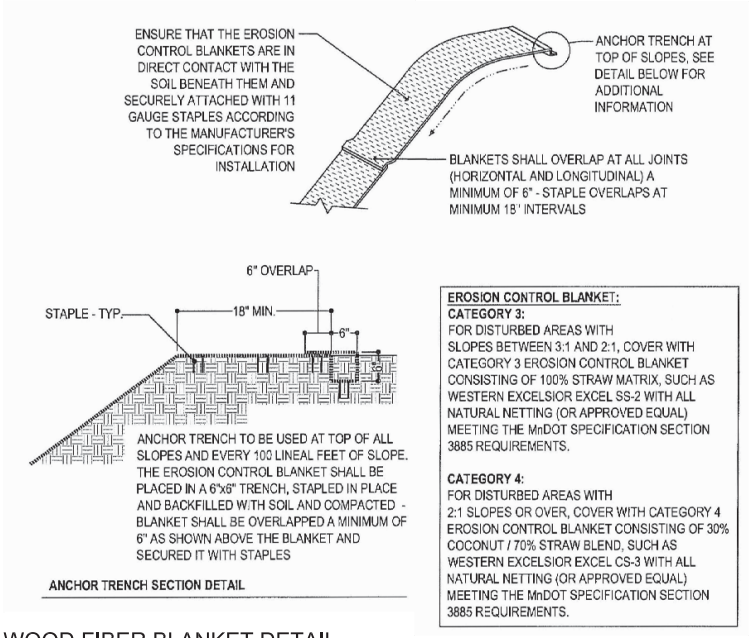
TRAIL TREAD ROCK ARMORING AND SIDESLOPE ARMORING DETAIL

NOT TO SCALE

1/3

SWPPP NOTES:

1. ALL DISTURBED AREAS NOT PART OF ACTIVE TREAD TO BE STABILIZED WITHIN 7 DAYS OF NOT BEING WORKED. SEE (SWPPP) STORM WATER POLLUTION PREVENTION PLAN FOR DETAILS.
2. WHENEVER POSSIBLE USE NATIVE DUFF MATERIALS FOUND IN THE TRAIL CORRIDOR AS A MULCH FOR COVERING SOIL EXPOSED BY BACKSLOPE AND DOWNSLOPE CUTS. WOOD CHIPS MADE FROM WOODY MATERIAL CLEARED AS A RESULT OF THE CORRIDOR CLEARING ARE AN ACCEPTABLE ALTERNATIVE TO NATIVE DUFF MULCH.
3. FOR SLOPE ANGELS UNDER 3:1 USE TEMPORARY EROSION CONTROL SEED MIX AND FOR DISTURBED AREAS THAT ARE LACKING ADEQUATE NATIVE DUFF MATERIAL.
4. FOR SLOPE ANGELS 3:1 AND OVER USE PERMANENT EROSION CONTROL SEED MIX AND EROSION CONTROL BLANKET FOR LAND SLIDE AREAS AND AREAS OF HEAVY DISTURBANCE. THESE AREAS MUST BE APPROVED BY THE OWNER.
5. SEE SWPPP FOR SEED MIX DETAILS.
6. AFTER COMPLETION OF ALL GRADING, THE TRAIL TREAD SHALL BE MECHANICALLY COMPACTED TO ITS SPECIFIED WIDTH USING A VIBRATORY PLATE, SHEEP'S FOOT, OR OTHER APPROVED EQUAL COMPACTOR.
7. CUT BRUSH AND SLASH MUST BE DISPOSED IN AN UPLAND LOCATION AND MUST BE KEPT OUT OF STREAMS, GULLIES, SWALES, WETLANDS, AND LOW AREAS. SEE SPECIFICATIONS FOR DETAILS.
8. NO EXCAVATION OR FILL PERMITTED IN WET & LOWLAND AREAS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONSULT WITH THE OWNER PRIOR TO DOING ANY WORK WITHIN SUSPECTED WET & LOWLAND AREAS.



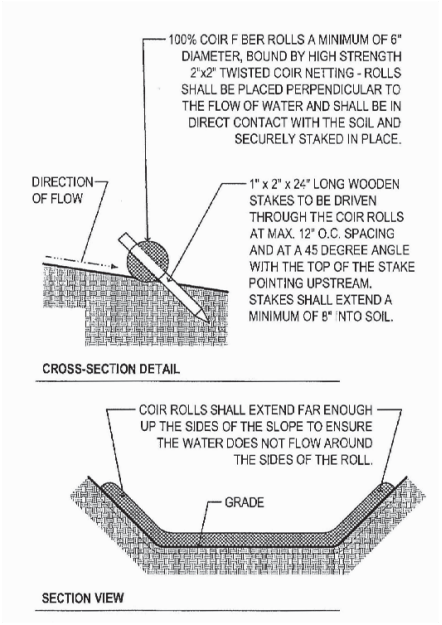
EROSION CONTROL BLANKET:
CATEGORY 3:
FOR DISTURBED AREAS WITH SLOPES BETWEEN 3:1 AND 2:1, COVER WITH CATEGORY 3 EROSION CONTROL BLANKET CONSISTING OF 100% STRAW MATRIX, SUCH AS WESTERN EXCELSIOR EXCEL SS-2 WITH ALL NATURAL NETTING (OR APPROVED EQUAL) MEETING THE MnDOT SPECIFICATION SECTION 3885 REQUIREMENTS.

CATEGORY 4:
FOR DISTURBED AREAS WITH 2:1 SLOPES OR OVER, COVER WITH CATEGORY 4 EROSION CONTROL BLANKET CONSISTING OF 30% COCONUT / 70% STRAW BLEND, SUCH AS WESTERN EXCELSIOR EXCEL CS-3 WITH ALL NATURAL NETTING (OR APPROVED EQUAL) MEETING THE MnDOT SPECIFICATION SECTION 3885 REQUIREMENTS.

WOOD FIBER BLANKET DETAIL

NOT TO SCALE

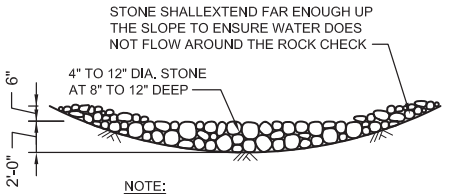
2/3



COIR ROLL DETAIL

NOT TO SCALE

3/3



NOTE:
ROCK CHECKS TO BE USED IN AREAS OF CONCENTRATED FLOW

FOR MULTIPLE OR SERIES OF CHECKS THE BOTTOM OF UPPER CHECK SHOULD BE SAME ELEVATION AS THE TOP OF THE LOWER CHECK TO PROVIDE FOR POOLING

NOTE:
PAYMENT FOR ROCK CHECKS WILL BE ON A SQUARE YARD BASIS.

DITCH CHECK SPACING

ROCK CHECK DETAIL

NOT TO SCALE

4/3

DATE: 03/08/16	DULUTH TRAVERSE TRAIL - PHASE IV	EROSION CONTROL DETAILS - EXHIBIT	SHEET 3/3

Trail Specifications Matrix
Duluth Traverse Trail System

Version: 1.7 (01/18/19)

Label	Working title	Difficulty Rating	Symbol[1]	Use	Directional	Feature Frequency[2]	Constructed Tread Width[3, 4]	Ave Trail Grade per 1000'	Max Trail Grade: climbing[5]	Max Trail Grade: descending[6]	Min Turn Radius	Max Turnpad Grade[7]	Max Berm/Turn Camber[8]	Corridor Width (4' above tread)	Corridor Height Minimum	Boardwalk Width	Exposure (without railing)	Unavoidable Obstacles	Avoidable Obstacles (over 50% of tread or less)	Rollable Feature Height (jumps, berms, etc.)	Roughasity (surface texture)[9]	Tread and trail features	Notes
Spec 1	Green Singletrack (Traditional bike optimized shared-use singletrack)	Easier	Green Circle	bike, foot	Two-Way	Low	48"	5%	20%	20%	10'	10%	15%	48"-72"	10-12'	48"	less the 36"	less then 2"	less then 6"	12"	low	Firm trail surface. May include rock armored section.	
Spec 2	Blue Singletrack (Traditional bike-optimized singletrack)	More Difficult	Blue Square	bike, foot	Two-Way	Medium	36"	7%	25%	50% (armored over 25%)	8'	15%	30%	36"-72"	8-12'	36"	less then 48"	less then 8"	less then 24"	24"	med	Modest rough tread is expected. May include steps and terraces.	May include features similar to those on easier "Bump and Pump" or "Jump" trails.
Spec 3	Black Singletrack (Traditional technical singletrack)	Most Difficult	Black Diamond	bike, foot	Preferred	High	18"	10%	50% (armored over 25%)	100% (armored over 25%)	6'	15%	50%	36"-48"	8-12'	24"	no limit	less then 18"	less then 48"	36"	high, some very high	Significant unavoidable obstacles are expected. May include steps, stairs, rock gardens, loose rock, and significantly exposed sections.	Seek out rocky ridges. Selective machine work to create very organic appearing rock strewn tread. Most rock and tread work is aimed at sustainability rather than ease of passage. Trials-
Spec 4	Green Flow Trail (Bump Pump) Singletrack	Easier	Green Circle	bike, foot	Preferred	High	48"	3-5%	20%	30% (armor as function of flow)	15'	10%	30%	48-72"	8-10'	48"	less the 36"	less then 2"	less then 6"	12"	low	Firm trail surface. Rollers and berms. May include rock surfaced sections.	The Lester River Trail in Lester Park, Enger Park Trail and the Upper Cathedral Trail in Mission Creek are examples of this spectrum
Spec 5	Blue Flow Trail (Bump Pump) Singletrack	More Difficult	Blue Square	bike, foot	Preferred	High	36"	7-10%	30%	100% (armor as function of flow)	10'	15%	50%	36"-72"	10'-12'	36"	less then 60"	less then 2"	less then 24"	24"	low	Firm trail surface. Rollers, roller doubles, berms predominate. May include significant armored sections.	Demonstration trail at Spirit Mtn is an example of the upper end of this spectrum.
Spec 6	Black Flow Trail (Bump Pump) Singletrack	Most Difficult	Black Diamond	bike	One-Way	High	36"	10-12%	n/a	150% (armor as function of flow)	7'	25%	150%	36"-72"	10'-12'	36"	less then 120"	less then 8"	less then 48"	36"	med	Firm trail surface. Rollers, roller doubles, berms predominate. May also include steps, stairs, rock gardens and exposed	
Spec 7	Green Jump	Easier	Green Circle	bike	One-Way	Medium	48"+	3-5%	n/a	30% (armor as function of flow)	20'	10%	150%	48-72"	10-12'	60"	less the 36"	less then 2"	less then 6"	18"	low	Smooth continuously cambered trail surface. Easily rollable jumps.	A green jump trail could fit within a stacked-loop system. Blue and Black are likely best done at a resort.
Spec 8	Blue Jump	More Difficult	Orange Pill, medium	bike	One-Way	Low	48"+	7-10%	n/a	100% (armor as function of flow)	15'	15%	∞%	48-72"	12'-15'	48"	less then 60"	less then 2"	less then 24"	30"	low	Smooth continuously cambered trail surface. May include significant armored sections. More complex jump	Complete berms, plan on extreme drainage solutions - sumps + culverts.
Spec 9	Black Jump	Most Difficult	Orange Pill, large	bike	One-Way	Low	48"+	10-12%	n/a	150% (armor as function of flow)	15'	25%	∞%	48-72"	12'-15'	48"	less then 120"	less then 8"	less then 48"	48"	med	Firm trail surface. May include rock surfaced sections. Some jumps may not be rollable.	Complete berms, plan on extreme drainage solutions - sumps + culverts.
Spec 10	Green Gravity	Easier	Orange Pill, small	bike	One-way	Medium	48"	7-10%	n/a	100% (armor as function of flow)	20'	15%	150%	48-72"	12'	60"	less the 36"	less then 18"	less then 24"	18"	high	Entry level downhill course. Will include rocks, steps, and terraces. Drops will be rollable.	For all DH types, potentially only at Spirit Mtn.
Spec 11	Blue Gravity	More Difficult	Orange Pill, medium	bike	One-way	Medium	36"	10-15%	n/a	∞% (mandatory drops	15'	25%	∞%	36"-72"	12'	48"	less then 60"	less then 48"	n/a	30"	very high	Intermediate level downhill course. Mandatory drops. Will include significant steps, stairs, rock gardens and exposed	
Spec 12	Black Gravity	Most Difficult	Orange Pill, large	bike	One-way	High	24"	15-20%	n/a	∞% (mandatory drops	15'	25%	∞%	36"-72"	12'	48"	less then 120"	less then 72"	n/a	48"	very high	Advanced level downhill course. Significant mandatory drops. Will include extreme terrain that has a high penalty	
Spec 13	Gateway trail	Easiest	White Circle	bike, foot, horse	Two-Way	low	48"+	3-5%	10%	15%	12'		10%		10-12'	60"							Very front-country, likely connected to a recreation park. Typically under a mile.
Spec 14	Accessible trail	Easiest		bike, foot, horse	Two-Way	none	36" min	0-5%	8.3%	8.3%	5' dia space						30"	less than or equal to 1/4"	none		low, surface must be firm and stable	Full tread with obstacles, where possible, should be seperated by a minimum of 48"	ADA, ABA, AASTHO spec trail.
Spec 15	Adaptive trail	Varies		bike, foot	Two-Way	varies																	ADA, ABA, AASTHO spec trail.

Footnotes...

1. Orange Pill Symbol assumes trails inside controlled-access facilities, like a bike park or resort.
2. Feature Frequency is averaged over long distances. Per 100': "low" = 2-3 features, "med" = 3-5 features, "high" = 5-10 features.
3. Constructed tread width may narrow over short distances to 50% of spec. Examples include rock or tree gateways.
4. Tread width also applies to bridges and boardwalks. Check with local regulations for overriding guidelines on width or any other requirements (height restrictions, railings, etc.).
5 & 6. Max grades climbing and descending refer to extremely short segments, 10 feet or less.
7. Turnpad grade measures the rise/fall across the turning surface at the base of any inslope.
8. Max camber is measured at the top of the inslope. More advanced berms will go to "vertical".
9. Roughasity attempts to capture average tread coarseness. Tread area with obstacles: "low" = less then 5%, "med" = less then 20%, "high" = over 20%, "very high" = over 50%.

General Notes!

Sustainable trails guidelines provide the foundation for all design + construction decisions ("half rule", frequent grade reversals, max grades function of soils + use, etc.).
All trails should have a minimum grade and camber (in/outslope) of 3% to ensure a well-drained tread.

EXHIBIT D

City of Duluth Incident/Injury Report

Supervisor to complete within 24 hours of incident/injury. If injury required treatment by a medical provider, attach medical documentation. Completed forms should be emailed to accidentreporting@duluthmn.gov.

Date of incident/injury:	☐ Employee ☐ Non-Employee	Department/Division:
Choose one that best describes this claim: ☐ Incident only, no medical care ☐ Medical only, no lost time ☐ Injury includes lost time		
Initial treatment sought: ☐ Hospital ER ☐ Clinic ☐ Refused to see MD / None		Doctor/clinic name, address, phone number:

Last name:	First name:		MI:	SSN:
Address:				
City:	State:	Zip code:	Phone:	Date of birth:
Date of hire:	Occupation:			Gender: ☐ Male ☐ Female

Did accident, injury, or incident occur on employer's premises? ☐ Yes ☐ No	Name and address of the place of the occurrence:

Time employee began work: _____ ☐ a.m. ☐ p.m. Time of accident, injury, or incident: _____ ☐ a.m. ☐ p.m.

Date employer notified of accident, injury, or incident: _____ Date employer notified of lost time: _____

First date of any lost time: _____ Return to work date: _____ RTW with restrictions: ☐ Yes ☐ No ☐ N/A

Describe the nature of the accident, injury, or incident. Be specific. Include body parts affected.

Describe the activities when the accident, injury, or incident occurred with details of how it happened.

What tools, equipment, machines, objects and/or substances were involved?

Incident investigation conducted: ☐ Yes ☐ No Date supervisor notified: _____ Date report completed: _____

Supervisor name: _____ Supervisor phone number: _____

Names and phone numbers of witnesses:

Incident was a result of: ☐ safety violation ☐ machine malfunction ☐ product defect ☐ motor vehicle accident ☐ N/A

Supervisor comments:

What actions have been taken to prevent recurrence?

City of Duluth Incident/Injury Report

CAUSE

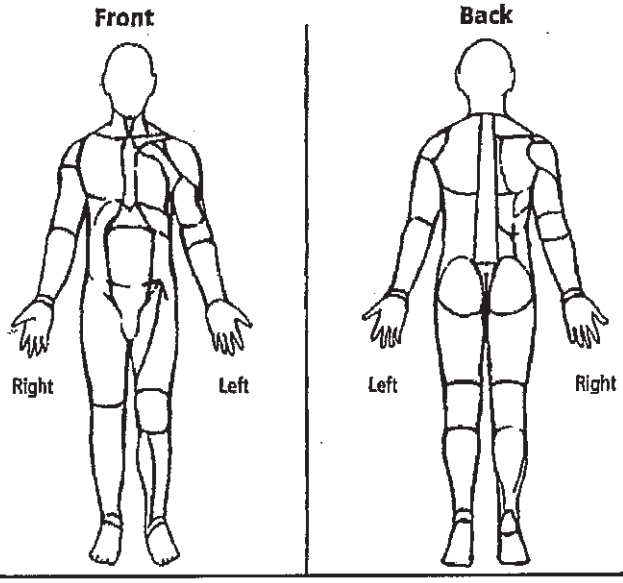
- ☐ Slip and fall
- ☐ Struck by equipment
- ☐ Lifting or moving
- ☐ Caught (in, on, or between)
- ☐ Needle puncture
- ☐ Object in eye (☐ Right ☐ Left)
- ☐ Repetitive/overuse
- ☐ Other (specify): _____

TYPE OF INJURY

- ☐ Scrape/bruise
- ☐ Sprain/strain
- ☐ Puncture wound
- ☐ Cut/laceration
- ☐ Concussion
- ☐ Bite
- ☐ Chemical burn/rash/breathing difficulties
- ☐ No apparent injury
- ☐ Other (specify): _____

MARK AREAS OF INJURY BELOW:

Areas can be marked by typing an "X" in the text box wherever needed.



COMPLETE FOR VEHICLE, EQUIPMENT, OR PROPERTY DAMAGE

For vehicle accidents: Attach sketch and additional information of how vehicle accident occurred.
Include street names, direction of travel, locations of vehicles, objects and traffic control devices (↑ North)

Incident Location:		Time of incident: _____ ☐ a.m. ☐ p.m.	
Police called: ☐ Yes ☐ No		Police Traffic Accident Report ICR #:	
City vehicle, property, or equipment involved	Description:		
	Vehicle #:	Make/Model:	Year:
	Describe damage:		
Non-city vehicle, property, or equipment involved	Owner full name:		☐ Driver ☐ Passenger ☐ Other
	Owner address:		
	Owner phone number:	Vehicle license #:	
	Make/Model:	Color:	Year:
	Describe damage:		

Weather conditions:	**Roadway conditions:**	**Light conditions:**
☐ Clear ☐ Wind	☐ Dry ☐ Mud	☐ Night
☐ Rain ☐ Cloudy	☐ Wet ☐ Paved	☐ Day
☐ Fog ☐ Sleet	☐ Snow ☐ Unpaved	☐ Good
☐ Snow	☐ Ice	☐ Poor

Approximate temperature: _____ °F
Estimated speed: _____ mph
Vehicle: ☐ Loaded ☐ Empty
What was load: _____
Drug and/or alcohol test? ☐ Yes ☐ No ☐ N/A

The Incident/Injury Form should be printed and signed by supervisor and employee. Completed forms can be scanned to accidentreporting@duluthmn.gov.

Supervisor Signature: _____ **Date:** _____

Employee Signature: _____ **Date:** _____

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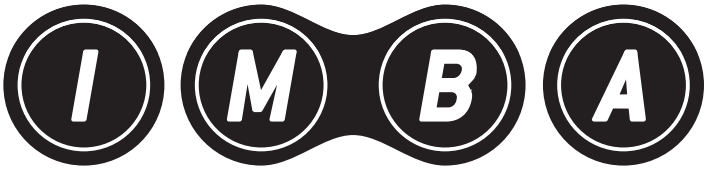


INTERNATIONAL MOUNTAIN BICYCLING ASSOCIATION

Duluth Traverse Signage and Wayfinding Standards

Duluth Traverse Signage and Wayfinding Standards

Table of Contents

Duluth Traverse Signage and Wayfinding Standards

1) Document Purpose

The purpose of this document is to define the Signage and Wayfinding Standard in order to develop a shared vision and understanding of the signage to be used on the Duluth Traverse multi-use trail system resulting in uniform signage across the Duluth Traverse Trail System. This document will be used by COGGS and City of Duluth personnel while designing, installing, and maintaining signage and wayfinding systems.

2) Compliance

Signage must comply with all the requirements of the land manager and governing bodies:

- The City of Duluth.
- St. Louis County
- Midway Township

Signage will be designed and installed with the intent of meeting the following sustainable trail building standards:

- *Trail Solutions; International Mountain Bike Association (IMBA)'s Guide to Building Sweet Singletrack;*
- *Managing Mountain Biking; International Mountain Bike Association (IMBA)'s Guide to Providing Great Riding*
- *Minnesota Department of Natural Resources' Trail Planning, Design and Development Guidelines.*
- *USDA's Trail Construction and Maintenance Notebook*

Pre-existing signage that does not comply with this document will be brought into compliance when replaced or when convenient to do so, provided that the old signage doesn't create any hazards, misunderstanding or other significant issues that would necessitate more immediate replacement.

3) Purpose of Signage

The purposes of a comprehensive signage program is to:

1. Allow the land managers to communicate to trail users.
2. Managing risk and the rapid and efficient deployment of emergency services.
3. Navigate trail users through the trail system.
4. Enhance trail users experience.
5. Provide information on the area.
6. Relate the trail to maps and other documentation.
7. Communicate allowable uses and expected behavior.
8. Meets the needs of everyone from the avid daily trail user to the first time trail user tourist.

What the signs should accomplish:

1. Trail Identification
2. Route Selection
3. Route Reassurance and Conformation
4. Guidance to destinations and key points of interest
5. Describe regulations and allowed uses
6. Location Identification
7. Visitor education about responsible recreation and trail etiquette
8. Resource protection
9. Risk and hazard description.

4) Categories of Signs

Signs can be divided into three categories:

1. Informational and Directional
2. Regulatory and Warning
3. Educational and Interpretive

5) Warning/Caution Signs

Warning/Caution signs will be placed as deemed appropriate to caution trail users of upcoming hazards of significant unexpected increased risk. They should be easy to see and placed close to the trail and far enough in advance of the hazard so that the trail users can easily see the sign and have enough time to read the sign, react to it, and slow down or take other appropriate action. It is particularly important to sign very challenging technical features like drop-offs, cliffs, and narrow bridges, which are some examples of features that should generally be signed. Significantly beyond difficulty category “B”-lines will normally have small caution signs marking their entrance.

6) Regulatory Signs

Keep the tone constructive and upbeat. Trail users are more apt to obey rules that are presented in a positive manner. Be polite but explicit.

7) Educational/Interpretative Signs

Should generally be located further off the trail (i.e. 4 feet off trail) in a clear area so trail users who stop and read them won't be blocking other trail traffic

8) Sign Placement

Sign placement should be strategic and frequent enough to meet the needs of the signage but striking a balance that doesn't become over intrusive in the trails users natural outdoor experience.

Signs will be located at the following areas:

1. Trail heads – Primary and Secondary trailheads
2. Trail Intersections
3. Crossing of Other Trail Systems and Roads
4. Warning Signs before upcoming hazards
5. Waymarks (Trail Reassurance Markers)
6. Special Points of Interest

9) Fiberglass Marker Post Standardization

The bulk of the trail signage will be posted on fiberglass marker posts wherever possible. COGGS is standardizing on a Rhino 4-Rail Fiberglass Post that is 72" long and brown in color with the PolyTech Coating. The PolyTech coating adds durability in sunlight and prevents fiberglass blooming and significantly extends the life of the post improving the sustainability and reducing the maintenance and replacement costs.

Rhino Marking & Protection Systems
www.trailmarking.com
Rhino P/N: F472C-N
1-800-522-4343

The bottom 18" of the sign will be buried into the earth using the appropriate installation tools for the soil type. There will typically be 54" of signpost protruding from the ground. 3" wide x typically 3" high adhesive labels will then be applied to the signpost to add the information desired to be displayed. The decals will normally be reflective. Reference the signpost installation instructions later in this document for more details on where to locate the signposts and how to install them.

10) Trail Head Kiosks

Trail head kiosks provide a broad array of information to the trail users to orient them to the trails. The main access point would be considered the Primary trailhead. Less frequently used access points can be considered secondary trailheads and generally would have less information but include the basics.

Signage at trail head kiosks should provide the following information at a minimum:

1. Indicate trail status as either open or closed or provide directions on how to determine status (i.e. phone number, webpage, Quick Response (QR) Codes, etc.)
2. Map with current location identified
3. Description of the nearby trails including difficulty rating, risks and hazards, trail lengths, elevation changes, and a brief write up describing the trail
4. Provide a simple list of trail rules, ethics, and etiquette tips
5. How to contact emergency services
6. Identify trail head facilities
7. Identify responsible Trail Stewards and provide contact information
8. Identify public land manager
9. Include information on how to become a member of COGGS and/or donate to the Duluth Traverse Trail System
10. Identify how to get any additional information on the trail and trail system (i.e. webpages, maps, QR Codes, etc.)

Optional Items:

11. Educational messages
12. Trail Registers
13. Secure boxes for collecting memberships, registrations, and donations
14. Storm Proof literature boxes for distributing maps and other pertinent literature
15. Tourist information
16. Recognition of land managers, trail partners and sponsors,
17. Message board (rides, workdays, meetings, etc.)

COGGS is planning on continuing to use the trail head kiosk standard that the city of Duluth has adopted and is currently using.

11) Trail Segment and Intersection Signage

Generally each trail segment will have a sign at both ends. If the trail crosses another significant trail from another trail system, especially one with incompatible uses, then that trail will be considered to subdivide that trail segment into two separate trail segments for signage purposes and a sign will placed on both sides of the split. If crossing a trail of incompatible use (i.e. Snowmobile Trail) then a reminder should also be posted showing the incompatible/compatible uses of the trails. Signage at trail intersections should provide the following information at a minimum:

- All significant trail intersections should have a trail map marked with a trail intersection identifier corresponding to that specific intersection.
- Each trail segment leaving a trail intersection should have Duluth Traverse Trail Logo or Trail Name Sticker, and Trail Difficulty Rating.
- All major trail intersections should have a trail map sign for trail users to refer to. Trail Intersection Maps will have the trail intersection identified.

The Following is the signage information that should be considered for installation on the signs at Trail Segments and Trail Intersections:

1. **Navigation**
   - **1.1. Trail Name -** Fit onto a standard 3" x 3" label and Color Code as appropriate to denote routes that connect multiple trails. Substitute trail name with Duluth Traverse Logo on segments of the spine trail.
   - **1.2. Trail Difficulty Rating -** Using IMBA standards – Spine Trail is normally Green circle.
   - 1.3. Direction to travel - if one-way (i.e. Do Not Enter or One-Way)
   - 1.4. Return to trail head directional indicator and distance. [As Deemed Appropriate]
   - 1.5. Distance to next intersection in miles or Kilometers [As Determined Necessary]
   - 1.6. Indication of special points of interest ahead on trail. [As Deemed Appropriate]
2. Trail Usage Information (Periodically or as appropriate)
   - 2.1. Multi-use Logo that identifies trail for human powered silent sport uses (i.e. Bike, Run, Snowshoe)
   - 2.2. Disallowed uses (i.e. Snowmobiling, Horses, ATV's, etc.)
   - 2.3. Trail Etiquette (Periodically as appropriate – Mix-it-up and vary the Signage)
   - 2.4. Leash free dog status.
3. Recognition
   - 3.1. COGGS logo
   - 3.2. City of Duluth logo
   - 3.3. County logo if trail is entering County land [When Entering St. Louis County Land]
   - 3.4. Other Trail Partners as Appropriate (i.e. Hartley Nature Center)

Note: Labels in **BOLD** above are normally required.

12) Trail Intersection Identifier

Each trail intersection identifier will begin with an alpha code to identify the trail center within the Duluth Traverse Trail System:

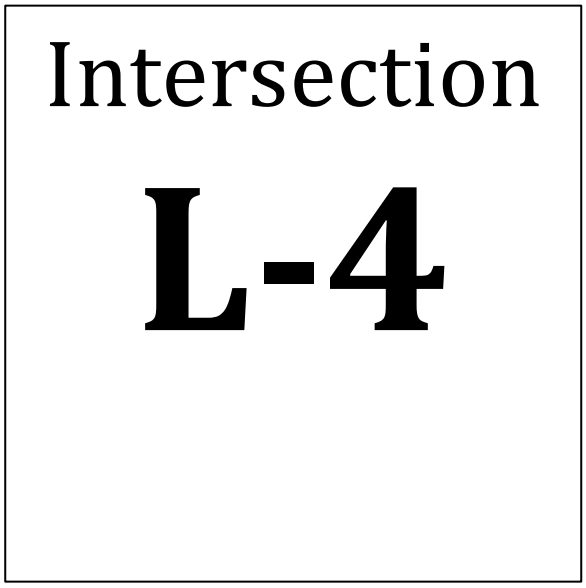
- L-Lester
- H-Hartley
- P-Piedmont
- B-Brewer
- S-Spirit Mountain
- M-Mission
- DT-Duluth Traverse Trail (Spine Trail/Connector Trail)

The Alpha Code for the Trail Center will be followed by a numeric intersection code that is reset for each trail center. The Duluth Traverse will have an alpha code of "DT" followed by a numeric intersection identifier code that won't reset and run from West to East. If intersection is added after the trail intersections are numbered then resort to a decimal number to indicate a trail between two currently established numbered intersections:

Examples of Trail Intersection identifiers: L-1, M-12, DT-7, DT-7.5

DT spine trail supercedes the codes for the other trails. The DT spine trail will have a corridor identified all the way through the trail system which will include some on street sections.

The trail maps provided at the intersection should be updated to match current version of published trail maps that are sold or distributed to the public to ensure consistency.



13) Signage for Trail Crossings

Before crossing Trail (on Backside of Signpost)

- Yield or Stop as appropriate.
    - "Stop" – "Warning Trail Crossing" stickers on all crossings of snowmobile and paved multi-use trails.
    - "Yield" – "Caution Trail Crossing" stickers on all ski trail crossings.
    - "Caution Trail Crossing" stickers for Superior Hiking Trail or other single-track trails. (Confirm SHTA's desired marking method)

After crossing Trail (on frontside of post)

- Standard Trail Intersection Signage (i.e Trail Name, Trail Difficulty) with the following additional signage as appropriate:
- Multi-Use - Human Powered Traffic Only
- As Appropriate:
    - No Motorized Vehicles
        - No ATVs
        - No Motorcycles
        - No Snowmobiles
        - No Electric Bicycles
    - No Horses
    - Leash free dog status

14) Signage for Road Crossings

Street crossings will need to be marked with appropriate “Trail Xing”, Minnesota Department Of Transportation (DOT) “STOP” or “YIELD” signs, Crosswalk Signs and painted crosswalk markings, pedestrian “STOP” or “YIELD” signs. Coordinate with MNDOT, County Highway Department, or City of Duluth Engineering Department as appropriate based on the jurisdiction for the road being crossed for specific requirements.

15) Distance Markers

Trail Distance Markers will normally only be provided on intersection maps but could also be provided as deemed appropriate. May be appropriate for longer uninterrupted trail segment sections such as the DWP trail. Consider that trail distance markers can be used to help emergency services personnel find a location on the trail.

16) Fonts

Lettering on all signs should be an easy to read font like Gothic, Highway Gothic, Century Gothic, Helvetica, Lucida Grande, or other similar fonts. Where ever possible make the fonts consistent to make the look and feel of the signage consistent. A font for custom COGGS signage will be selected when designs for trail name and multi-use logo signage are designed.

17) Trail Difficulty

To be objectively rated per the IMBA Trail Difficulty Rating System that establishes 5 difficulty Levels (Easiest, Easy, More Difficult, Very Difficult, and Extremely Difficult) based on four objective criteria (tread width, tread surface, trail grade, Natural obstacles and technical trail features).

Trail Difficulty Rating System

	Easiest White Circle	Easy Green Circle	More Difficult Blue Square	Very Difficult Black Diamond	Extremely Difficult Dbl. Black Diamond
Trail Width	72" or more	36" or more	24" or more	12" or more	6" or more
Tread Surface	Hardened or surfaced	Firm and stable	Mostly stable with some variability	Widely variable	Widely variable and unpredictable
Average Trail Grade	Less than 5%	5% or less	10% or less	15% or less	20% or more
Maximum Trail Grade	Max 10%	Max 15%	Max 15% or greater	Max 15% or greater	Max 15% or greater
Natural Obstacles and Technical Trail Features (TTF)	None	Unavoidable obstacles 2" tall or less Avoidable obstacles may be present Unavoidable bridges 36" or wider	Unavoidable obstacles 8" tall or less Avoidable obstacles may be present Unavoidable bridges 24" or wider TTF's 2' high or less, width of deck is greater than 1/2 the height	Unavoidable obstacles 15" tall or less Avoidable obstacles may be present May include loose rocks Unavoidable bridges 24" or wider TTF's 4' high or less, width of deck is less than 1/2 the height Short sections may exceed criteria	Unavoidable obstacles 15" tall or greater Avoidable obstacles may be present May include loose rocks Unavoidable bridges 24" or narrower TTF's 4' high or greater, width of deck is unpredictable Many sections may exceed criteria

Reference IMBA's Managing Mountain Biking and Providing Great Riding for further details pages 220-223.

18) IMBA Trail Rules

The following IMBA rules would make a great basis for trail rules posted at the trailhead kiosks. They could potentially be modified/customized or amended as deemed appropriate.

IMBA developed the "Rules of the Trail" to promote responsible and courteous conduct on shared-use trails. Keep in mind that conventions for yielding and passing may vary in different locations, or with traffic conditions.

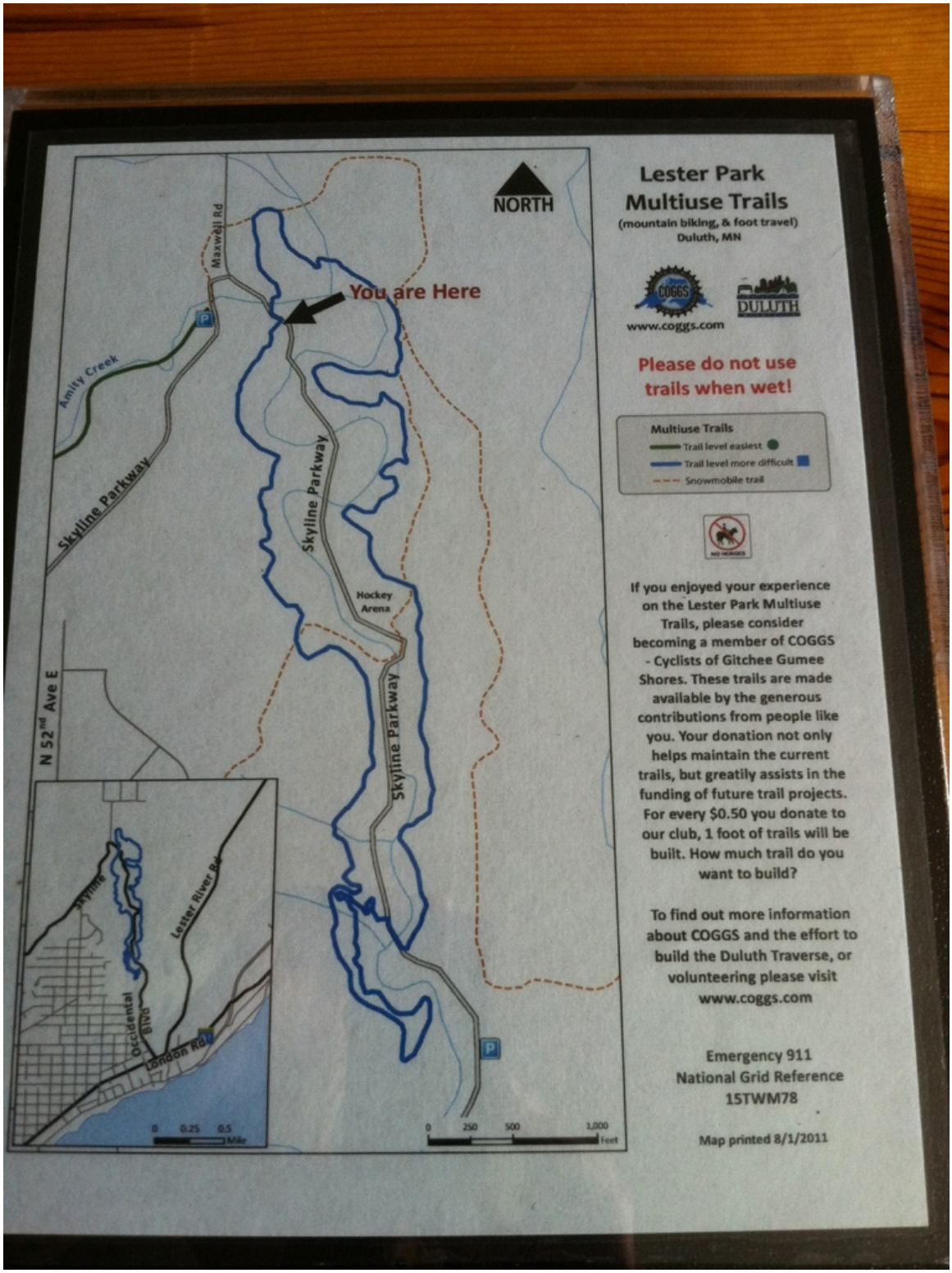
1. **Ride Open Trails:** Respect trail and road closures — ask a land manager for clarification if you are uncertain about the status of a trail. Do not trespass on private land. Obtain permits or other authorization as required. Be aware that bicycles are not permitted in areas protected as state or federal Wilderness.
2. **Leave No Trace:** Be sensitive to the dirt beneath you. Wet and muddy trails are more vulnerable to damage than dry ones. When the trail is soft, consider other riding options. This also means staying on existing trails and not creating new ones. Don't cut switchbacks. Be sure to pack out at least as much as you pack in.
3. **Control Your Bicycle:** Inattention for even a moment could put yourself and others at risk. Obey all bicycle speed regulations and recommendations, and ride within your limits.
4. **Yield Appropriately:** Do your utmost to let your fellow trail users know you're coming — a friendly greeting or bell ring are good methods. Try to anticipate other trail users as you ride around corners. Bicyclists should yield to other non-motorized trail users, unless the trail is clearly signed for bike-only travel. Bicyclists traveling downhill should yield to ones headed uphill, unless the trail is clearly signed for one-way or downhill-only traffic. In general, strive to make each pass a safe and courteous one.
5. **Never Scare Animals:** Animals are easily startled by an unannounced approach, a sudden movement or a loud noise. Give animals enough room and time to adjust to you. When passing horses, use special care and follow directions from the horseback riders (ask if uncertain). Running cattle and disturbing wildlife are serious offenses.
6. **Plan Ahead:** Know your equipment, your ability and the area in which you are riding and prepare accordingly. Strive to be self-sufficient: keep your equipment in good repair and carry necessary supplies for changes in weather or other conditions. Always wear a helmet and appropriate safety gear.

19) Recommended Safety Tip and Trail Etiquette

The following are a collection of safety tips, trail etiquette and rules that have been collected from various sources. Some of these are duplicative with the IMBA Rules of the Trail while others are unique. What actually should be posted at the trail head kiosks and on trail literature should probably be determined by a COGGS and City Committee.

1. Use at your own risk
2. Always ride in control
3. Share the trail with other trail users
4. Bikes yield to pedestrians
5. Bikes should politely signal when approaching pedestrians or other trail users (i.e "Rider Back!")
6. Human powered traffic only
7. Recommended to ride with partner
8. Recommended to carry cell phone for emergencies
9. Wear a helmet and other protective gear as appropriate
10. Dress for the anticipated range of weather
11. Carry food and water as appropriate for the length of the ride.
12. Be prepared
13. Don't ride on closed or muddy trails
14. Don't trespass on private land.
15. Respect the trail wildlife, environment, and other trail users
16. Stay on the trail. Don't make shortcuts.
17. Don't spook animals
18. Ride slowly on crowded trails and when other trail users are present
19. Pass with courtesy and care
20. Don't build unauthorized trails
21. Do not litter - leave no trace (www.LNT.org)
22. Call 911 to report emergencies or suspected criminal activities (i.e. vandalism)
23. Be a good samaritan if someone needs your help.
24. Keep your bike in good working order.
25. Carry bike repair tools and know how to use them (i.e. Tube, Pump, Tire Irons, Patch Kit, Multi-tool)
26. Consider joining and/or donate to COGGS to support the trails

20) Examples of Waterproof Map Cases With Replaceable Maps



21) Labels for Sign Posts

The following are examples of 3" wide stickers that can be purchased and applied to signage as appropriate. Some of the labels are commercially available and others are labels that are custom designed and made. The custom stickers customize the look of the trail and fill in gaps where commercially available stickers are not available. All stickers should be ordered in reflective versions.

22) COGGS/IMBA and Land Manager Logos

The following Logos will be made into custom labels to be used on signage:

COGGS/IMBA Logo (3" W x 4" High) – Rockart P/N: 60-1076

City of Duluth Logo - Rockart P/N: 60-1078

St. Louis County Logo (3" W x 1" H) – Rhino P/N: 9/13 DK-31R-CNTYSTLS-1

23) Duluth Traverse Trail Logo

This logo will be used to mark the Duluth Traverse Trail (aks "Spine Trail") which will be the beginner level spine trail crossing Duluth.

Rockart P/N: 60-1077

24) Unique Local Multi-Use Label

For denoting the Duluth Traverse Trail System's multi-use quality, a unique logo will be developed by COGGS. The label will be printed on a standard 3" x 3" reflective label. The following are some of the key information the new logo should convey:

1. That it is a Human Powered Silent Sport Multi-Use Trail
2. Show the primary intended use of mountain biking as well as the other more common secondary uses, trail runner/hiker, and snowshoer.
3. Illustrate the year round use of the trail (i.e. Red/Orange for Fall, Green for Spring/Summer, Blue/White for Winter)
4. Promote harmony of the various trail users
5. Identify COGGS in a small way
6. Convey a sense of motion

25) Trail Name

Trail name label will be ordered in the standard 3” x 3” design. Source and P/N To Be Assigned. Trail name labels may be color coded in a consistent manner for quick identification of loops and routes that connect multiple named trails segments (i.e. Color Coded Border).

Illustration of a Trail Name Sign
Actual Artwork to Be Developed
Source TBD
P/N to be Assigned By Trail Name

26) Trail Crossing Signs

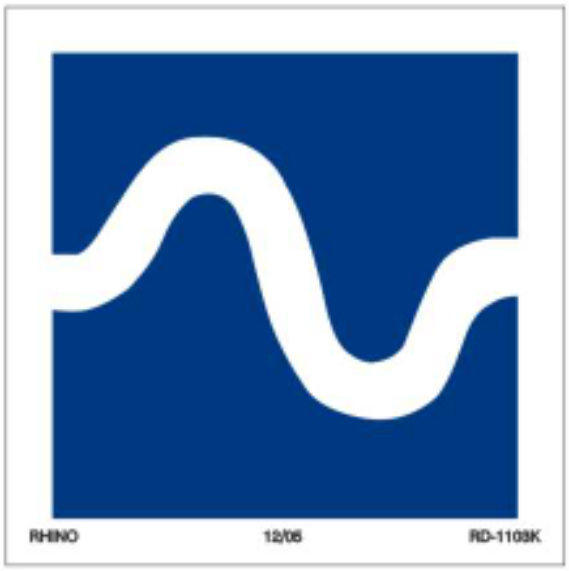
Custom Trail Crossing Warning and/or Caution labels will be ordered in the standard 3” x 3” size out of reflective material. No suitable commercial sign was identified. Actual artwork to be developed and likely will incorporate the standardized warning and caution logos with “Trail Crossing” text.

Warning Trail Crossing – Source TBD
P/N: TBD

Caution Trail Crossing – Source TBD
P/N: TBD

27) Trail Difficulty Decals

Easy (Green Circle) Rhino P/N: RD-1102KR



More Difficult (Blue Square) Rhino P/N: RD-1103KR

Very Difficult (Black Diamond) Rhino P/N: RD-1104KR

White Circle Label Design to Be Established by COGGS/IMBA

Easiest (White Circle) and Extremely Difficult (Double Black Diamond) Source and P/N To Be Assigned

28) Stop and Yield Signs

Stop – Rockart P/N: 60-722

Yield – Rockart P/N: 60-746

Stop Crossing Ahead (3" W x 14" H) –
Rockart P/N: 60-233

29) One-Way and 2-Way Signs

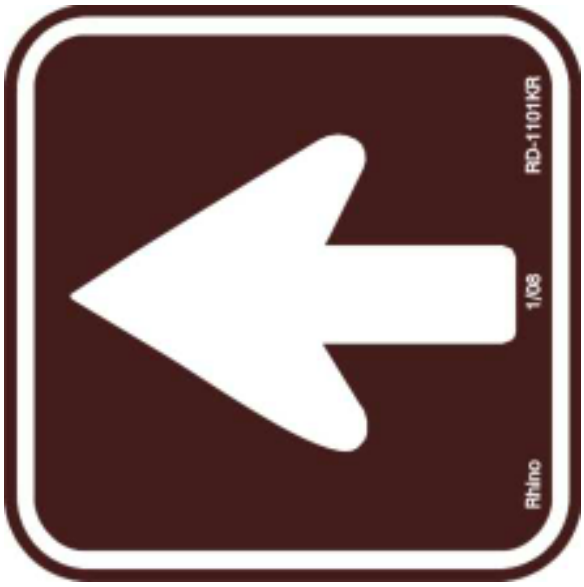
Do Not Enter – Rhino P/N: RD-1135KR

Wrong Way – Rockart P/N: 60-733

One Way – Rhino P/N: RD-1122KR

Caution 2-Way Trail – Rockart P/N: 60-747

30) Directional Signs



Directional Arrow (Rotatable) – Rhino P/N: RD-1101KR

Directional Arrows – Rhino P/N: RD-1071KR

31) Trail Courtesy Signs

Trail Courtesy – Rockart P/N: 10-733

Share The Trail – Rhino P/N: RD-1156KR

Yield to Uphill Traffic – Rockart P/N: 10-224

Responsible Riding Helps – Rockart P/N: 60-674

Please Don't Skid – Rockart P/N: 60-766

Ride It Don't Slide It – Rockart P/N: 60-767

Use Only When Dry – Rockart P/N: 10-280

Tread Lightly – Rockart P/N: 40-132

Protect American's Resources – Rockart P/N: 30-144

Rockart P/N: 40-182

32) Disallowed Use Signs

No Horses – Rhino P/N: RD-1012KRN

No Snowmobiles – Rhino P/N: RD-1004KRN

No ATV's – Rhino P/N: RD-1011KRN

No Motorized Vehicles – Rhino P/N: RD-1153KR

33) Caution Signs

Caution Ahead – Rhino P/N: TBD

Caution Bridge Ahead – Rhino P/N: 1145KR

Caution Creek Crossing – Rhino P/N: DK-33R-CREEK

Caution Stream Crossing – Rhino P/N: RD-1144KR

Steep Hill – Rhino P/N: DK-33R-HILL

Steep Hill for Bikens – Rhino P/N: RD-1121KR

Caution Steep Rocky Rough – Rockart
P/N: 60-753

34) Trail Signs

Stay On Trail – Rhino RD-1119KR

Stay On Existing Trail – Rhino RD-1128KR

Trail Closed for Restoration and Erosion Control – Rhino P/N: RD-1138KR

Trail – Rhino P/N: RD30KR

Trail Head – Rockart P/N: 60-582

Trail Head – Rockart P/N: 10-204

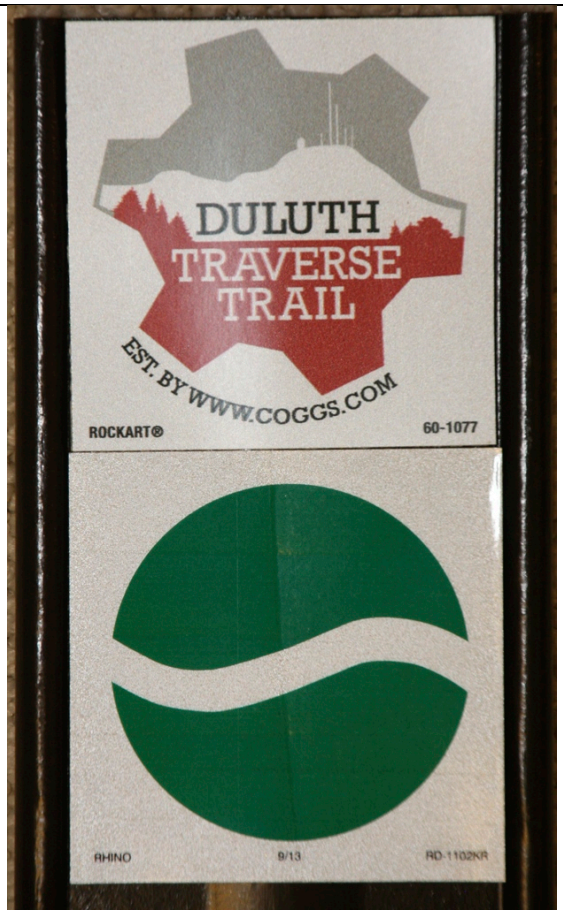
Mile Marker – Rockart P/N: 10-154

Trail Miles – Rockart P/N: 10-285

Trail Closed - Rhino P/N: TBD

35) Examples of Navigation Labels on Sign Posts

Required Signage Leaving Trail Intersection



Required Spine Trail Signage Leaving Trail Intersection

Named Trail to the Right

36) Labels on Back of Signs Approaching Intersections

Backside of Sign Post Before Crossing Superior Hiking Trail (As Needed)

Backside of Sign Post Before Crossing Cross-Country Ski Trail

Backside of Sign Before Crossing Snowmobile Trail or Paved Multi-Use Trail

Backside of Sign Post Approaching Road Crossing to Help Introduce Required DOT Signage (As Needed)

Backside of Sign Post Before Entering Duluth Traverse Intersection #7 (Tenative mapless intersection or all along DT intersection)

Backside of Sign Post Before Entering Lester Intersection #4 – Note: Not all Trails Entering an Intersection get a Yield Sign. Priority Higher Traffic Trails may pass through without a yield

Trail Continues to the Right

37) Appropriate Use Labels

Below Required Trail Signage after Crossing a Snowmobile Trail

Below Required Trail Signage after Crossing a Trail Frequented by both Snowmobiles and Horses

Example of a Multi-Use Trail Label Paired with a Trail Etiquette Label

Example of Recognition Stackup
COGGS
City of Duluth
St. Louis County (County Owned Property)

38) Examples of More Labels on Signposts

Example of Required Signage on an Advanced Trail with a two-way trail reminder due to limited sightlines or after leaving a one-way trail

39) Label Positioning Table

Distance from Top of Post to top of label	General Categories	Labels on Front Side of Post Leaving Intersection	Labels on Back Side of Sign Post Approaching Intersection
0”	**Navigation Info**	Trail Name or Duluth Traverse Trail Logo (if applicable)	Stop or Yield (as appropriate)
3”		Trail Difficulty Rating Label	Caution/Warning Trail/Road Crossing
6”		Two-way or one-way (as appropriate)	Trail Intersection Identifier (As appropriate)
9”		Blank Space or Overflow	Direction Arrow of where trail continues (As appropriate)
12”		Blank Space for Seperation	Backside of Post Typically Devoid of Labels
15”	**Trail Usage Info**	Multi-use Label and or Share the Trail (as needed)	
18”		No Snowmbiles, Horses or ATV’s (as needed)	
21”		Blank Space or Overflow	
24”		Blank Space for Seperation	
27”	**Recognition Area**	COGGS/IMBA Label	
31”		City of Duluth Label for Recognition (3” high)(as needed)	
34”		St. Louis County Label for Recognition on entering county property (1" high) or Other Trail Partners as Appropriate	
35”-54”	Portion of Post Typically Devoid of Labels		
54”-72”	Portion of Post Buried In Ground		

BOLDED = Absolute positioning for starting signage categories for signage consistency and to allow labels to be added gradually and still allow for separation of categories.

There should always be at least one 3” space between categories of labels to break them up and make the easier to understand and more aesthetically appealing.

40) Label Positioning Examples

Non-DT Spine Trail Minimum Signage At Top Plus Recognition on Non-County Land at 27”

DT Trail Minimum Signage At Top Plus County Land Recognition at 27”

Multi-Use Logo at 15" Added

Multi-Use Logo paired with a Trail Etiquette Label

	
Navigational Arrow Added	DT Spine Trail Sign Leaving a Snowmobile Trail Intersection with Recognition Signage for County Land

Maxed out Sign Posts – Worst Case (Not Typical)

41) Fiberglass Marker Post Installation

Rhino Installation Tools

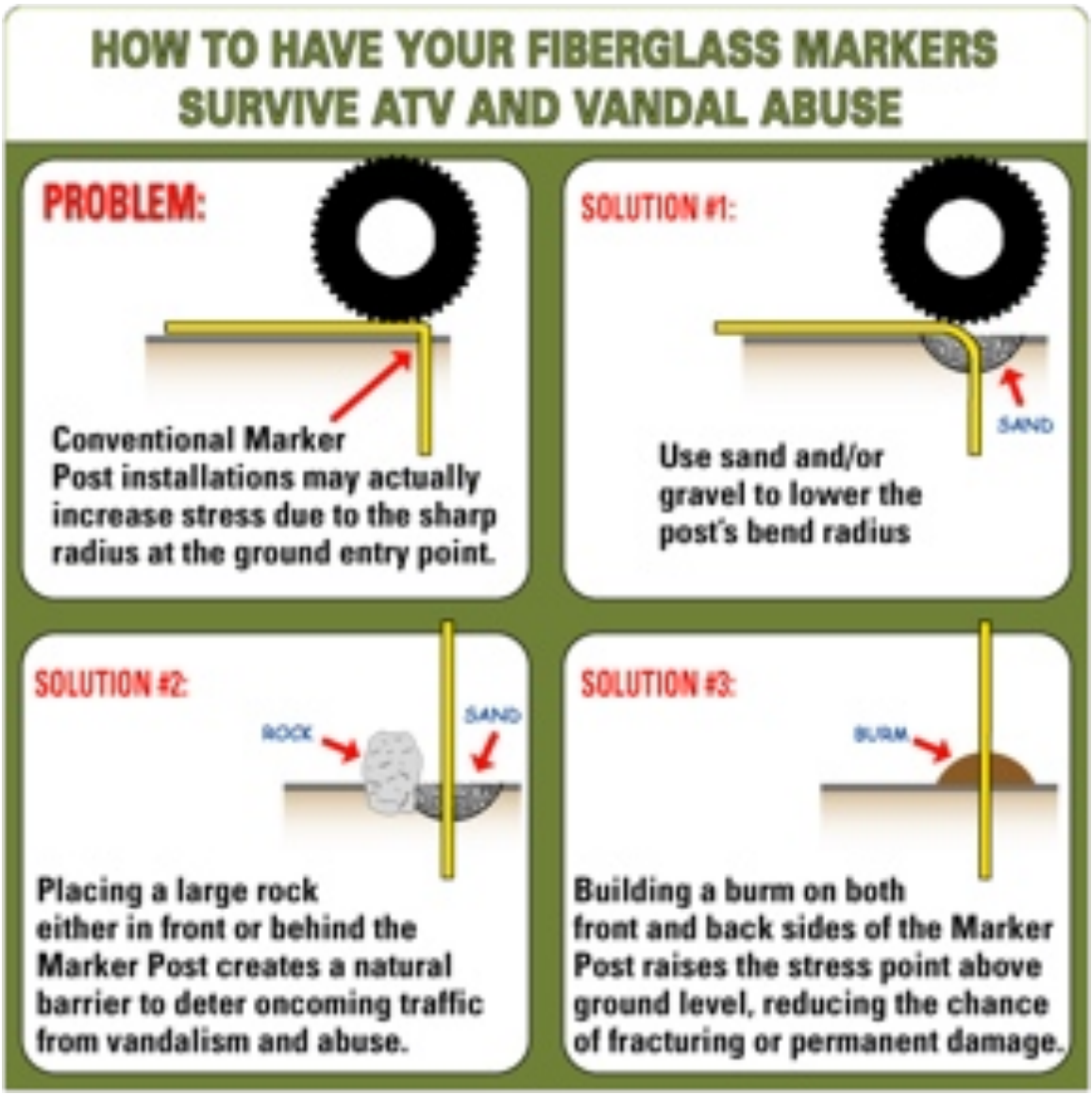
PHD-100 Flat Post Pilot Hole Driver
FPD-54 Long Flat Post Driver 54"

Safety Equipment

Eye Protection
Heavy work gloves

Fiberglass Marker Post Installation Procedure

1. If post isn't already marked with an installation depth sticker or mark. Mark post 48" down from the top of the post.
2. Select location for post installation. Location Criteria:
    - On right hand side of the entrance to the trail segment being marked.
    - 18"-24" off to the side of the right hand side of the treadway edge.
    - Set into the woods enough where it won't interfere with groomers, snowmobiles on other trails intersecting the trail. Signpost should be at least slightly recessed into the woods from other trees, rocks or other obstructions that would stop groomers and snowmobiles from hitting the signpost before it would hit the natural obstacles.
    - Signpost should be easily visibile from trail intersection and not be blocked by foliage. Consider the growth of nearby vegetation when selecting a location. If installing the signs in leafless months consider the foliage that would be present in the summer months.
    - Alternative locations or mounting methods can be used if the soil is too rocky or there are other issues with the standardized location. Variances should be done in a thoughtful and as consistent of a manner as possible.
3. Consider the signposts location and its susceptibility of getting run over by a vehicle or vandalized. Dig a small pit approximately 6" deep preferably with chamfered or convex sides to prevent a post that is bent flush to the ground from being broken off over too tight of a radius where it meets the ground. Reference the diagram below that illustrates the problem and possible solutions. Implement the other solutions if more appropriate for the particular situation.



4. Use pilot hole driver to drive a hole at least 24" deep. The Pilot Hole Driver is a quick way to prepare the ground when a starter hole is necessary. Follow this procedure:
    - Align driver spade in the position you wish the marker to face.
    - Use blows until spade is driven into the ground and driver stop is level with the ground.
    - Remove driver with upward stroke and proceed with normal installation.
5. Load post into the long flat post driver with pointed end out of the post outside of the driver and pointing down to the ground.
6. Drive post into hole/location until the mark 48" from the top of the post and approximately 24" from the bottom of the post is flush with the surrounding

ground surface. Don't drive the signpost to the bottom of a hole made for the signpost. Be sure to keep it flush with the surrounding ground so the sign protrudes 48". Be careful not to force a post if it hits to much resistance or you can split or break the sign post. Instead move the installation location slightly to try and find a spot without a rock or other hinderance that impedes the signpost installation. Drive marker with light taps into the ground with your foot braced against it to control buck- ling. Repeat until you reach burial depth of black line on post, while maintaining correct alignment of marker. If post can't be driven in all the way to 24" then it is okay to stop at 18" to 24".

7. Remove post driver.
8. Pull on signpost to verify that it is firmly installed.
9. If present, fill in the small hole around he post with sand, gravel, or some other material that is soft and will allow the post to bend in a gentle arc if it is pressed flush against the ground.

40) Label Installation

Tools

Alcohol (or acetone)
Clean cloths
Scissors
Tape Measure

Safety Equipment

Eye protection
Chemical Resistant Gloves

Label Installation Procedure

1. Clean application surface with alcohol (or acetone) and a clean cloth. Make sure there is no dust and debris.
2. Peal back ½" of the decal backing and trip to expose only a ½" strip of the decal's adhesive.
3. Position and apply exposed adhesive to the prepped surface area. Do these steps for all labels being applied before proceeding to the next steps for all the labels.
4. Now peel the remaining backing from the strip decal, smoothing down the actual decal as you go. Do not stretch the decal.
5. With a clean cloth firmly smooth all edges of the strip decal ensuring a secure hold to the surface.

41) Trail Assurance Markers (Waymarks) (Tentative – Not to be Implemented Until Need is Determined and Design is Worked Out)

Trail assurance markers or waymarkers are confirmations posted along the trail that assure the trail user that they are still on the trail and that they haven't wandered off the trail.

- A trail assurance marker should be placed soon after every trail or road crossing.
- Spacing of reassurance markers will strike a balance that minimizes their obtrusiveness in a wild environment and prevents trail users from losing their way. Trail assurance markers should be placed as frequently as necessary to ensure that people don't get separated from the trail but minimized as much as possible so as not to distract from the natural setting. In areas where the trail corridor is obvious they can be placed less frequently and in areas where the trail corridor is difficult to follow they should be placed very tight to the point where you can see the next trail marker as you pass the last one. Trail Assurance markers in general should be placed no more frequently than what is necessary to avoid losing the trail.
- In general reassurance markers are typically placed at least every 500 feet (0.10 of a mile) but this is only a guideline and again depends on the terrain and the level of obtrusiveness acceptable in the section of trail.
- The amount of reassurance markers will depend on the how visually obvious the trail corridor is during all 4-seasons without a visible treadway that may be covered by leaves or snow at certain times of the year.
- Don't overuse them if the route is easy to follow.

Waymarker sign information:

1) Color COGGS/IMBA Logo at a minimum or along the Duluth Traverse Spine trail a Color DT logo instead.
2) Nylon backer can be colorcoded to match loops.

Mounting Waymarks:
The nylon backer will be secured to trees with either a nail or short screw approved by City of Duluth tree personnel. Preferably a tamper resistant stainless steel woodscrew or steel nail without any coatings like zinc and copper which can be harmful to some trees.

42) Example of Trail Assurance Markers (Waymarkers) (Tentative)

Shown with Standard COGGS/IMBA Color Label and 5x5 White Nylon Backer

43) Trail Stewards (Tentative)

Trail user groups like COGGS assigns a trail steward for each section of trail that they oversee. The trail steward is responsible for maintaining and/or organizing trail work to maintain those sections of trail that they are responsible for. The trail stewards will coordinate with the COGGS volunteers and membership as appropriate, Duluth Parks Volunteer Coordinator, and professional trail builders as appropriate. The City Parks Department and volunteer coordinator will also coordinate with the identified trail steward.

Trail Stewards should review existing trail maps and trail databases at least annually. This is done typically at the end of the trail building and maintenance season, and either sign off on existing information or submit additions, deletions, or changes to the existing information.

As trail stewards change, or at least once a year at a minimum, each user group will review their assigned trail stewards for the trail sections they maintain and either verify the trail steward is still responsible for that section or submit a new trail steward. The user group will also include the following contact information for the trail steward:

1. Name
2. Address
3. Home Phone
4. Work Phone
5. Mobile Phone
6. E-mail Address

44) Trail Maintenance (Tentative)

The following is the typical trail maintenance performed each season:

1. Trail is closed after snowmelt turns trail soft and muddy.
2. Trail is audited and any issues identified are scheduled for repair and trail database is updated as appropriate.
3. Trail is reopened after frost comes out of the ground and the trail treadway is dried out.
4. Midsummer growth that is encroaching on the treadway is cut back with DR Mower or brush cutter as necessary so that trail users can see the treadway.
5. The trail treadway is cleared of organic material with a backpack leaf blower or rakes after most of the leaves have dropped off of the trees.
6. A summary of volunteer efforts and in-kind monetary donations invested into the parks and trails is assembled and turned into the City of Duluth volunteer coordinator by each volunteer organization like COGGS.

The following is performed as necessary throughout the season:

1. Trail is closed after large rainstorms or snowfall turn the trail treadway soft and muddy and then reopened after the trail treadway dries out. Trail stewards must pay particular attention to the trail in fall as freeze up occurs because the trail is more sensitive to damage as the frost is going into the ground and any ruts formed can be frozen into the treadway for the entire winter season.
2. Downed trees are removed from the trail or can be turned into challenge features if appropriate for the difficulty level of the trail. This is repeated through out the season as needed after windstorms and whenever downed trees are identified.
3. Repairs to trail treadway, structures, and signage are made as issues are identified.
4. Trail features are replaced at the end of their useful life. Wood features like boardwalks are expected to last at least 20 years.
5. Trail GIS information, maps, and the trail database are updated whenever reroutes or new sections of trail are made.

45) Trail GIS Information (Tentative)

The city will maintain a trail GIS database with the assistance of Trail User Groups like COGGS. The city uses TBD GIS software. GPS information should be provided in TBD format. The GIS information should include:

- Official maintained trails
- Planned trails
- Unofficial Neighborhood/User Defined trails

46) Trail Database (Tentative)

The Duluth Parks Department will maintain a Trail database with the assistance of Trail User Groups like COGGS. The following are some database fields that should be included for trail sections:

1. Trail Section Name
2. Trail area (i.e. Lester, Hartley, Piedmont, Magney Snively, etc…)
3. Trail Section Start and GPS Coordinates
4. Trail Section Finish and GPS Coordinates
5. Distance in hundreths of a mile (i.e. X.XX miles or Kilometers (i.e. Ski Trails))
6. Difficulty Rating (if applicable – i.e. beginner, intermediate, expert, etc…)
7. Trail Type (SHT, Multi-use, Horse, Snowmobile, XC Ski)
8. Trail Surface (i.e. Paved, Natural Surface, Gravel, etc…)
9. Responsible User Group
10. Trail Steward
11. Date Installed
12. Value at Installation (Labor and Materials)
13. Expected Service Life
14. Last audit date

15. Condition at last audit.

The following are some database fields that should be maintained for Trail Features:

1. Type of Feature
2. Detailed Description of Feature
3. Trail area.
4. Trail section name
5. GPS Coordinates of Feature
6. Date Installed
7. Value at Installation (Labor and Materials)
8. Expected Service Life
9. Last audit date
10. Condition at last audit

Man made trail features:

- Signs
- Boardwalks
- Stairs
- Benches
- Tables
- Bermed and Contoured Turns
- Jumps
- Retaining Walls
- Tread Rock Armoring
- Bridges
- Skinnies
- Other challenge features

47) Map Handouts (Tentative)

Private for profit companies are planned to design, make, and distribute maps. They sell advertising in the maps to pay for their activities. The Duluth parks department will provide the necessary information, and approve what is to be printed by the map making companies.

Maps will be distributed at the following locations at a minimum:

1. Park Headquarters
2. Duluth City Hall
3. Chamber of Commerce
4. Visit Duluth
5. Hotels/Motels, Bead and Breakfasts, etc.
6. Local Bike Shops (i.e. Ski Hut, Continental Bike and Ski, Twin Ports Cyclery, Stewarts Wheel Goods, etc.)

7. Athletic Shoe Stores (i.e. Duluth Running Company, Trail Fitters, Duluth Pack, etc.)
8. Local Ski Shops (i.e. Ski Hut, Continental Bike and Ski, etc.)
9. Spirit Mountain
10. Hartley Nature Center
11. Tourist Information Spots

Other Likely Points of Distribution:

12. Restaurants
13. Grocery Stores (i.e. Whole Foods Coop)
14. Other Tourist Attractions
15. Other Locations as appropriate.

48) Trail Audits (Tentative)

At least annually, trail stewards will audit their assigned trails and trail features and verify the database is still current and that the feature is still in serviceable condition. Any issues need to be resolved or the city notified and the database adjusted accordingly. The purpose of the audit is to:

1. Inventory trail features
2. Determine vandalism and rates
3. Monitor wear and tear

49) Trail Issue Reporting (Tentative)

The general public can report trail issues in the following ways:

1. E-mail – TBD
2. Webpage – TBD
3. Facebook - TBD
4. Mail - TBD
5. Telephone – (218) XXX-XXXX
6. City Sourced Ap [When Available for City of Duluth]

These reporting avenues should be published for trail users on:

1. City Park Website
2. Appropriate City Park Literature
3. City Park Facebook Site
4. Trail Maps
5. Trail head signs and kiosks.
6. Other opportunities as they are made available.

50) Donation Reporting (Tentative)

Trail User Groups like COGGS periodically, and at least annually will report the following invested into the parks and trails to the Duluth Parks Volunteer Coordinator:

- Volunteer hours
- In-kind donations of materials
- Money spent by on professional labor hired by the volunteer organization
- Money spent on materials by the volunteer organization

A final report should be made at the conclusion of each calendar year at a minimum.

The following information should be maintained by each volunteer organization on each in-kind donation as well as investment of money into the parks and trails by the organization:

1. Name of Volunteer/Donator
2. Date of Work/Donation
3. Approximate Start Time
4. Approximate Hours Worked
5. Location of Work
6. Type of Work Done
7. Estimated Market Value of In-Kind donation of materials
8. Market value of professional labor/services invested by the organization or donator.
9. Market value of materials invested by the organization or donator

THE DULUTH TRAVERSE TRAIL OPERATIONS AND MANAGEMENT PLAN

CONFLUENCE

DATE, JANUARY 2017

DULUTH PARKS
Fun Places, Great Spaces!

ACKNOWLEDGMENTS

Consultants

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Applied Trails Research

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- Pamela Schmitt, Fundraising Director
- Adam Sundberg, Past Chairperson

Minnesota Land Trust + Photography

- Hansi Johnson - Director of Recreational Lands

CITY OF DULUTH

Mayor

- Emily Larson, Mayor

City Council Members

- Zack Filipovich
- Jay Fosle
- Howie Hanson
- Barb Russ
- Joel Sipress
- Elissa Hansen
- Noah Hobbs
- Gary Anderson
- Em Westerlund

Parks Commission

- John Schmidt - President
- Erik Torch - Vice Presdsident
- Dean Vogtman
- Tjaard Breewuer
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- Michael Schraepfer
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CONTENTS

OPERATIONS + MANAGEMENT

1. Introduction

The goal of the Operations and Management (O&M) Plan is to ensure that the Duluth Traverse Trail System (Duluth Traverse) is operated in an efficient and safe manner for trail and adjacent uses. This O&M Plan identifies possible responsibilities, tasks, procedures, measures to estimated operation and trail maintenance costs, and other aspects related to the management of the Duluth Traverse. The City of Duluth may adopt modified or add additional policies as future conditions warrant.

The O&M Plan addresses specific strategies to guide the content of a "User Agreement" between the City of Duluth and COGGS to ensure that adequate standards are accounted for to protect the City/COGGS investment for the Duluth Traverse, as well as the users of the trail system.

While the Duluth Traverse is a well-designed and largely professionally constructed trail system, it will require some amount of regular maintenance. Natural elements such as climatic events, soil conditions, hydrologic patterns, forest succession, along with human elements related to use patterns and amounts, special events, and changing desires of the public will necessitate an actively managed facility. Ignoring this necessity can result in substandard trail conditions that damage natural resources, reduce the quality of the user experience, endanger public safety and demonstrate a lack of diligence in mitigating hazards.

The operation of the Duluth Traverse consists of the day-to-day management of trail use. These tasks include maintenance of the trail tread, but also include trash collection, trailhead upkeep, law enforcement, marketing, special events, map and brochure updates, and other functional considerations. Policies regarding the regulatory operation of the Duluth Traverse, such as permitted uses (bike and pedestrian) or directionality (two-way use) have been developed prior to construction. However, these decisions should not be seen as rigid, and can be altered based on location, need, season, amount of visitation, special events, or other factors.

Operations also include the:

- Completion of trail condition/ maintenance logs, coordination with City operations, capital needs development, and project implementation;
- Preparation of the trails for use, such as potentially weed trimming in the spring and summer, blowing leaves in Fall or grooming trails in Winter;

- Review of trail conditions following special events, significant storms, and land management activities such as prescribed burns, restoration, or vegetation management, and
- Interfacing and outreach with users, including updating trail condition and closure information, tracking and updating external electronic- or paper-based trail information, and collaboration with volunteer, youth services and event groups.

Vision Statement

The Duluth Traverse is a bike-optimized, multi-use natural surface trail designed to provide a nationally significant mountain biking experience, connect people to Duluth's beautiful natural places, and exemplify best practices for environmentally sustainable trail design and management. The system is developed to best serve the recreational needs of the region, State of Minnesota, and the citizens of Duluth.

Guiding Principals

Connect People, Parks, and Trails

Provide a contiguous natural surface trail from one end of Duluth to the other. Build a multi-use trail optimized for bike use that connects neighborhoods and people to parks and green spaces. Complement and connect to Duluth's other trail systems and provide a variety of different trails for users of various skill levels.

Long-Term Sustainability

Identify best management practices and procedures to ensure long-term success. Utilize and integrate new technologies to improve maintenance efficiency, safety, collaboration, and community building.

Educate All Users

Provide clear and engaging signage, kiosks, and wayfinding to promote neighborhood access, efficiency, safety, and social etiquette education. Develop a culture of educated trail users that protect the environment and respect each other.

Protect and Restore the Environment

Utilize best practices for environmentally sustainable trail design, construction and management. Maximize opportunities for viewshed protection, natural resource preservation, and sensitive area protection and education.

Equity and Access

Maximize accessibility for all users by ensuring Duluth Traverse Spine Trail is green level designated. Be respectful to adjacent landowners, neighbors, and other outdoor recreation users in the area. Connect underserved neighborhoods and explore methods to reduce barriers to mountain biking for all residents.

Establish a Uniquely Duluth Destination

Create a nationally significant destination level mountain bike trail system in the green spaces of an urban environment. Enhance the lives of residents and encourage tourism growth. Provide connections to regional trails and parks. Work toward the development of adequate facilities to handle local and tourist populations during peak use times.

Foster Partnerships and Community

Actively seek partnerships across disciplines and user groups to improve opportunities for Duluth's outdoor recreation users. Develop a stronger community through collaborative development and protection of Duluth's unique outdoor recreation resources. Share knowledge and resources among user groups.

Duluth Traverse Trail Components

Since 2008, this partnership has been working toward the completion of a groundbreaking urban single-track mountain biking trail of over 100-miles along the ridge line of Duluth. This is the first urban mountain bike-focused trail system of its kind within an urban environment. The 100 + mile trail system consists of the following:

- Duluth Traverse Spine - 44 mile two-way single track that traverses Duluth and connects parks and trail centers
- Trail Centers - 60 + miles of single track trails with a range of skill levels and variety of terrain connected to the Traverse Spine.
- Bike Skills Parks - Currently Spirit Mountain provides a variety of bike park activities that cater to a range of riding enthusiasts and racers. Additional bike park components, such as technical trail

features, beginner skills development areas and additional bike park locations, may be integrated into the connected trail system.

- Neighborhood Connectors - short trail segments to connect Duluth's neighborhoods directly to the Traverse Spine Trail.

Mountain bike-focused trail management of the Duluth Traverse will stress the maintenance of a highest quality mountain biking experience, including connectivity throughout the entire system, a diverse array of riding, progression of challenge throughout the system, regional connectivity to mountain bike trail systems outside the City, and facility amenities that cater to the needs of mountain bikers. This management focus introduces some additional techniques and decision making than would be typical for a multi-use trail where there is no preferred and managed use that has been developed through planning, design, and construction.

As the leading partner in the development of the Duluth Traverse, the Cyclists of Gitchee Gumee Shores (COGGS) have committed to significant assistance in the ongoing management of the trail system. COGGS and other citizen groups will need to work collaboratively and have a common understanding of best practices for managing risk, protecting natural resources, reducing conflict, and cost of ongoing management of the Duluth Traverse.

2. RISK MANAGEMENT

The primary driver of Duluth Traverse operations is to maintain a trail system and its attendant facilities in a manner that provides a high quality mountain biking experience while minimizing negative impacts to the surrounding natural resources. Inviting the public onto natural landscapes means that these visitors are leaving a relatively controlled environment of public built infrastructure and entering an environment that is largely outside of departmental control. The only built features of this environment are the trails themselves, features such as bridges or boardwalks, and trailside signage. Where trail use is the activity that the City is providing, a number of potential hazards exist; Climatic and trail conditions, wildlife, vegetation, human interactions, access and navigation all introduce risk into a recreational activity. When multiple factors compound, the risk ratio becomes higher and consequences often increase. A plan that puts reasonable safeguards in place reduces the total risk and thereby often lowers potential consequences. Diligent operational planning and implementation can provide safeguards relative to these hazards, and thus risk to Duluth Traverse trail users can be managed.

Risk is inherent to all activities. As the City promotes the public's use of their land for various activities, they are necessarily in the business of managing risk. Primarily, this management action is focused on promoting public safety and the duty to warn when potential hazards exist.

At its simplest, this relationship can be depicted symbolically as:

RISK = HAZARDS/ SAFEGUARDS

Exposure to hazards can never be fully eliminated, nor can safeguards be fully realized. A risk management program will be used as a means to reduce the ratio of hazards to safeguards, thereby increasing safety while demonstrating the exercise of reasonable care. The fundamental purpose for risk management is to prevent risk from occurring, or reduce exposure to hazard, and will include conducting analyses for system safety, feature safety, liability and third party assumption of risk.

Managing risk on trails involves developing safeguards at the levels of facility development, public outreach, and operational diligence. Specifically, this includes:

- Proper design and construction
- Measured progression of difficulty
- Appropriate signage and mapping resources
- Consistent maintenance assessments
- Hazard removal
- Practical incident response plan, and
- Diligent record keeping

The necessity of a well developed operations and maintenance plan, including risk management strategies, increases with density of trail use and variety of route and challenge options. With the Duluth Traverse Trail System designed for use and enjoyment by mountain bikes, there are some additional factors to consider, including the potential speeds of riders of different ability levels, where and how to mitigate that speed in relation to slower users, and where and how to encourage the increase in speed to properly negotiate sections of trail. This last point is particularly salient to risk management when man-made obstacles are planned and built into a trail. Typically called Technical Trail Features (TTFs), much of the risk incurred in negotiating these structures comes from a combination of a lack of appropriate skill and speed.

Trail users make decisions and take actions based on their personal perception of risk, rather than on some objectively derived measure of threat. For some, riding a bike on a trail seems to be insurmountably risky, while others don't flinch at the thought of jumping their bike 30-feet through the air. A land management agency providing recreation for these two very different people could not possibly create a situation that the former perceives as safe enough to undertake or potentially risky enough for the latter to shy away from. While risk can never be completely removed and the perception of risk can be wildly different from one individual to another, a solid risk management plan for the Duluth Traverse will strive to reduce unforeseen hazards and increase the public awareness of the potential hazards that are known to exist. Easy-to-comprehend information to recreationists about what to expect in their trail experience and whom to alert when an incident occurs or conditions of the trails have substantially altered, the vast majority of users are satisfied, can safely navigate and negotiate the trails, and comply with reasonable regulations.

Duluth Traverse Risk Management Strategies

1.) Facility Development

From parking lot ingress/egress to the design and construction specifications of the trails, a number of facets are important to consider from the standpoint of risk. This plan focuses on the trail-related aspects rather than the transportation or other brick and mortar facility development, but a holistic approach is important for visitor enjoyment and providing public safety.

2.) Trail Design

Managing risk on trails starts with good trail system design. The overall Duluth Traverse Trail System design intends to manage access by funneling use to managed trail access nodes (major and minor trailheads at Trail Centers) where information can be transferred from the City to visitors. Leaving the Trail Centers, the Duluth Traverse spine is designed in a linear manner to make navigation simple, reduce the potential of a visitor becoming lost and risking exposure to changing conditions or fatigue, and encourage users to remain on the trail rather than attempt to "improve" their experience by creating a short cut or new trail. The on-the-ground design of the Duluth Traverse is squarely focused on trail alignments that maximize the opportunity for a sustainable trail surface over time, minimal maintenance requirements, and maximum protection for adjacent natural resources. When a broad spectrum of trail users and desired experiences anticipated, the design of the Duluth Traverse spine endeavors to provide a high quality experience to the broadest level of use by maintaining low trail gradients and a relatively wide trail tread to provide a beginner-friendly experience.

3.) Trail Construction

Duluth Traverse trail construction meets the clearing, width, grade, obstruction, and compaction specifications developed by the informed, professional design process. This indicates that the facility is being developed and managed in a manner to minimize unforeseen hazards and provide the safeguards that are desired and appropriate for the range of trails and visitors the system is intended to service. This quality control concept is important for beginning the due diligence process related to later trail maintenance assessment and mitigative actions of the physical maintenance or alteration of the trail location.

4.) Progressive User Experience

The Duluth Traverse Trail System, with its urban or heavily used context, is purpose-developed to address the differentiation in length, technical difficulty, and trail-related features that provide safeguards through creating a better defined experience. A high percentage of trail users are motivated by personal progression, whether that is related to lowering the amount of time needed to navigate a trail or being challenged to negotiate features along the trail. Both items are related closely to a trail user's satisfaction with their trail experience. The Duluth Traverse defines the provided experience through the trail design process and feasible construction specifications to realize this vision. The beginner-friendly Duluth Traverse spin is designed in a manner that less skilled visitors can safely experience. This is clearly differentiated from other trails at Duluth Traverse Trail Centers through specifications that allow for more difficult trails in terms of physical stamina and/or technical ability needed to negotiate the trail. When fully built out, this trail system design scheme serves a broader variety of visitors and allows for individuals to progress with their stamina or skills and become "safer" trail users without forcing them into a situation that is beyond their capabilities. Conversely, providing higher level options in the trail difficulty spectrum provide an experience desired by those with more stamina or technical abilities, which reduces the probability that those visitors will either attempt to create their own desired experience or traverse the shorter and less challenging trails at speeds that inherently raises the level of hazard present.

Finally, riders should not be able to advance more than one difficulty level at a time – for example, the Duluth Traverse spine does connect directly to most difficult trails. At Trail Centers, more difficult trails that contain most difficult level features are only offered with a ride around option. Duluth Traverse trails do not dead end into a trail with a higher difficulty level so that trail users are not forced into accessing trails that may be demonstrably above their skill level or desired experience.

5.) Technical Trail Features (TTF)

A step-wise progression in trail difficulty, especially with mountain bike trails, often includes feature development within the trail

corridor. On intermediate skill level trails within the Duluth Traverse Trail System, these features should be placed on the periphery of the trail corridor as optional riding features. On higher technical difficulty level trails, these may be within the trail and include mandatory riding obstacles. Technical trail features can be developed from natural terrain or may be engineered. TTFs may have warning and/or interpretive signs associated with their presence.

Risk management-related uses of technical trail features may include their development at trail intersections to indicate a trail of increased challenge, along a difficult trail to slow users down before a trail section requiring slow speeds to navigate, or to attract skilled riders away from less difficult trails that may be more heavily used. Where these features are developed as options, the visually clear pathway is along the main trunk of the trail. Where developed as "qualifiers" for more difficult trails, they should be built in a manner where riding around the feature is discouraged and difficult. Where possible the TTF type should match the type of features to be expected further down the trail. For example, a narrow log ride that must be ridden slowly is not likely the best type of TTF for a trail designed for high speeds, unless it is used as a mandatory speed mitigation feature with lower consequences for failure than a section of trail immediately following.

Technical trail features, as human-made features used as part of the trail, should be constructed and maintained to a degree that the forces encountered as a result of trail use will not result in the feature degrading in lateral or vertical stability. Features built from dimensional lumber should be built to local, residential deck development standards for loads, but with less stringent requirements for footings and fasteners. Features constructed of natural materials such as rocks and logs should be developed with the sturdiest materials available and embedded or secured to the ground surface so that no movement occurs under riding loads. Features constructed of dirt should meet the same compaction levels as the trail tread and take-off and landing angles should be rigorously checked. All TTFs should be test ridden repeatedly, at varying speeds, over time to assure that entrance sight lines and exit angles are sufficient to keep users on the trail.

6.) Fall Zones

While trails are surrounded by features that could introduce hazards, from tree branches, to rocks, to noxious vegetation, it is important to remove unforeseen hazards from the trail corridor during construction. Stobs from cut trees or branches are dug out entirely or cut flush with the tree trunk, "widow maker" trees are to be removed as soon as practicable, and areas surrounding technical trail features are made free of sharp protruding objects that can be feasibly removed.

7.) Signage

A well-placed and easy-to-comprehend signage program will be one of the most effective strategies to promote public safety and warn trail users of potential hazards on the Duluth Traverse Trail System. Some regulations and immunities, such as hours of operation, managed uses, and public assumption of risk should be on all signage, but will be tempered with information directly related to promoting safety on the trails. Priority is placed on employing a consistent and intuitive set of symbols or short phrases that are relatively universally understood. This is especially important for youth and non-English speaking visitors. All signs should be clearly visible from the angle and eye level of trail users. Signs within the trail system are natural locations for trail users to congregate after an incident. A geo-location is recommended on the body of the sign so that managing agency or emergency personnel can efficiently respond to public reports of changing trail conditions or incidents. The ease of trail users to understand the opportunities presented and the ability to navigate those opportunities are the keys to successful Duluth Traverse trail management.

8.) Maps/Brochures

Maps, brochures, and web-based information are vital to providing information on the Duluth Traverse, planning for access and desired experiences, and providing methods of getting more involved. An accurate maps will help provide confidence to trail users that they are correctly navigating the trail system and choosing an trail that meets their stamina, time, and experiential desires. It is recommended that resources, like signs, are created with sensitivity to information overload. Contact information for the City, COGGS and other local volunteer groups, updated trail conditions, and known schedules for events or trainings should be included in order to direct comments or future interactions.

9.) Volunteer Stewardship

The maintenance of the Duluth Traverse Trail System is a key operational risk management strategy. A well-trained and engaged community of volunteers can handle much of the regular maintenance assessments, duties, and record-keeping. Volunteers, through crew leader organizers, should have basic training in work place safety, proper use of tools, and trail maintenance skills along with clear expectations of what the City desires are related to their work. A well-developed volunteer management and incident reporting system can alert the City to trail maintenance issues and new potential hazards so that hazard mitigation is efficient and those actions are recorded prior to any incident that endangers public safety or natural resource health.

Maintenance is a very important component of risk management. While the design and construction goals always focus on sustainability, all trails need periodic maintenance. Sustainably built trails and features that see a reasonable amount of use will require much less maintenance than trails that are not designed and constructed in a sustainable manner. Whether the maintenance is completed by professionals or volunteers, a program should be developed to assess and log maintenance actions. This provides documentation that is important in demonstrating operational diligence as well as determining where, if any, consistent problem areas require an altered approach.

10.) User Education/Training

Signs are great for very concise messaging, but it's very difficult to provide explanations, interpretation, or details related to user etiquette and natural resource protection. The City and COGGS are planning for programming that introduces residents to the trail system and provides the background and training desired to transform passive users of the Duluth Traverse into advocates, volunteers, and community supporters for trail system. Educated, engaged visitors often become peer-to-peer information sources themselves, working through local organizations and assisting with the promotion of public safety, proper use of property, and in the management of a City's trails. Skills training, through self-paced development at skills training areas, and likely through partner- or Parks-led programming will help build individual skills and decision-making processes, creating inherently safer trail users. In short, trail systems can be thought of as any other brick and mortar recreational facility, needing programming/training opportunities to manage an informed and safer user base.

11.) Maintenance Assessments

Maintenance assessments will provide important documentation related to the City and COGGS' operational diligence in providing an experience that is free of unforeseen hazards. A regular record of the condition of known and new problem areas can help streamline the physical maintenance activities and prioritize maintenance that mitigates potential hazards. The City will always remain the repository of this information, and will make decisions regarding whether maintenance activities will be undertaken by City staff, COGGS, or contractually.

Special attention should be paid to the assessment of constructed features, such as bridges, boardwalks and TTFs. These features typically have a more limited life span than the trails on which they are developed. Maintenance assessment of these features should reflect the status of the feature relative to the forces it is likely to encounter and should include the maintenance of fall zone areas immediately surrounding the feature. Records of these inspections should be kept on file. Features which fail inspection will be closed temporarily until they can be repaired unless the needed repair does not immediately threaten the structural stability of the feature, in which case a deadline should be set for re-inspection or repair.

12.) Hazard Removal

When maintenance assessments determine that potential unforeseen hazards exist, a protocol should be determined for the removal of those hazards. While typical drainage and corridor clearing maintenance accomplished by COGGS volunteers will reduce some minor hazards such as blind corners or ruts that could cause a tripping hazard, hazards such as "widow maker" trees, culvert and bridge work, and other activities that require heavy, potentially dangerous work and/or machines should be undertaken by a paid and certified trail crew or City staff. When hazard potential is mitigated, either by removing the hazard or closing/altering the trail, a Work Completed Memo should note the mitigation action and provide photographic evidence of the condition the trail after the maintenance procedure.

13.) Incident Response Planning

Systems for responding to incidents on trails are very important on large, heavily used trail systems like the Duluth Traverse. Protocols should be implemented for minimizing a situation of potentially compounding hazards, demonstrating diligence in responding to situations, and providing confidence to users that a well-managed experience with minimal unforeseen hazards is being maintained. Whether the incident in question is related to a sudden and substantial climatic event, development of a hazard on the trail, or an accident, a protocol should be established that dictates the immediate and future response. This system can be reflected by signage and messaging on the property so that visitors or peer-to-peer groups can assist the agency in providing oversight.

14.) Record Keeping

With staff and volunteer changes over time and a large trail system, consistent file development and record keeping is vital for maintaining continuity in trail system management and demonstrating diligence is minimizing unforeseen hazards and properly warning the public about potential hazards on the Duluth Traverse Trail System. Good records can also help streamline and prioritize the maintenance and incident response process, potentially allowing the City to dictate actions without direct knowledge of the specific situation. Records should be kept in an organized manner, and for the foreseable future, so that the trail management process can be optimized over time.

3. NATURAL RESOURCE MANAGEMENT AND SUSTAINABILITY BEST PRACTICES

Trails are regarded as essential facilities in Duluth's parks and forests. They provide access to remote areas, accommodate a diverse array of recreational activities, and protect resources by concentrating visitor trampling on narrow and resistant tread surfaces. The Duluth Traverse Trail System has generally been designed and constructed rather than "walked in". This construction process removes vegetation and excavates soils, changes may be considered "unavoidable," in contrast to "avoidable" post-construction degradation from their subsequent use (e.g., trail widening, erosion, muddiness), or from the development and degradation of informal visitor-created trails.

Common environmental impacts associated with recreational use of trails include:

- Vegetation loss and compositional changes
- Soil compaction
- Erosion
- Muddiness
- Degraded water quality
- Disruption of wildlife

Vegetation Impacts and Management

On the Duluth Traverse Trail System, most vegetation has typically been removed by construction, maintenance, and visitor use. This impact is necessary and "unavoidable" in order to provide a clear route for trail users. One goal of trail construction and maintenance is to provide a trail only wide enough to accommodate the intended use. Trails made wider than this through visitor use or erosion represent a form of "avoidable" impact. For example, a doubling of trail width represents a doubling of the area of intensive trampling disturbance. Wider trails also expose substantially greater amounts of soil to erosion by wind or water.

The creation and maintenance of trail corridors removes shrubs and trees, allowing greater sunlight exposure that favors a different set of groundcover plants within trail corridors. Occasional trailside trampling within trail corridors also favors the replacement of fragile plants with those more resistant to trampling traffic. For example, shade-tolerant but fragile broadleaved herbs are frequently replaced by grasses and sedges that are trampling-resistant and require more sunlight to survive. Trail construction, use, and maintenance can also be harmful when trails divide sensitive or rare plant communities.

Trampling

Trampling is the action of crushing or treading upon vegetation, either by foot or tire - contributes to a wide range of vegetation impacts, including damage to plant leaves, stems, and roots, reduction in vegetation height, change in the composition of species, and loss of plants and vegetative cover. Trampling associated with "avoidable" off-trail traffic can quickly break down vegetation cover and create a visible route that attracts additional use. Complete loss of vegetation cover occurs quickly in shady forested areas, less quickly in open areas with resistant grassy vegetation. Regardless, studies have consistently revealed that most impact occurs with initial or low use, with a diminishing increase in impact associated with increasing levels of traffic. Once trampling occurs, vegetative recovery can be a very slow process.

Compositional changes in the vegetation along trail corridors can have both beneficial and adverse effects. Trampling-resistant plants provide a durable groundcover that reduces soil loss by wind and water runoff, and root systems that stabilize soils against displacement by heavy traffic. The ecological impacts of such compositional changes are not fully known, except when non-native vegetation is introduced to and spreads along trail corridors. Many of these species are disturbance-associated and are naturally limited to areas where the vegetation is routinely trampled or cut back. However, a few non-native species, once introduced to trail corridors, are able to out-compete native plants and spread away from the trail corridor in undisturbed habitats. Some of these species form dense cover that crowd out or displace native plants. These "invasive" species are particularly undesirable and land managers actively seek to prevent their introduction and spread. Unfortunately their removal is difficult and expensive.

On the Duluth Traverse Trail System, impacts to vegetation can be avoided or minimized through careful trail design, construction, maintenance, and management of visitor use, including:

- Designing trails that provide the experience that trail users seek to reduce

their desire to venture off-trail.

- Locating trails away from rare plants and animals and from sensitive or critical habitats of other species.
- Keeping trails narrow to reduce the total area of intensive tread disturbance, slow trail users, and minimize vegetation and soil impacts.
- Limiting vegetation disturbance outside the corridor when constructing trails.
- Locating trails on side-hills where possible. Constructing a side-hill trail requires greater initial vegetation and soil disturbance but sloping topography above and below the trail bench clearly define the tread and concentrate traffic on it. Trails in flatter terrain or along the fall line may involve less initial disturbance but allow excessive future tread widening and off-tread trampling, which favor non-native plants.

Considerations for maintaining and managing the Duluth Traverse Trail System to avoid unnecessary ongoing impacts to vegetation:

- While it is necessary to keep the trail corridor free of obstructing vegetation, such work should seek to avoid "day-lighting" the trail corridor when possible. Excessive opening of the overstory allows greater sunlight penetration that permits greater vegetation compositional change and potential colonization by non-native plants.
- An active maintenance program that removes tree falls and maintains a stable and predictable tread that encourages visitors to remain on the intended narrow tread. A variety of maintenance actions can discourage trail widening, such as only cutting a narrow section out of trees that fall across the trail, limiting the width of vegetation trimming, and defining trail borders with logs, rocks, or other objects that won't impede drainage.
- Trailhead and trailside education and messaging to discourage off-trail travel, which can quickly lead to the establishment of informal user-created trails that unnecessarily remove vegetation cover and potentially spread non-native plants. Such routes often degrade rapidly and are abandoned in favor of adjacent new routes, which unnecessarily magnify the extent and severity of trampling damage.
- Educate users to be aware of their ability to carry non-native plant seeds on their bikes or clothing, and encourage them to remove seeds by washing mud from bikes, tires, shoes, and clothing. Preventing the introduction of non-natives is key, as their subsequent removal is difficult and costly.
- Educate users about low impact riding practices, including braking modulation, speed control, and utilizing the middle of the trail rather than riding around moist areas.

Soils Impacts and Management

The creation and use of the Duluth Traverse Trail System inherently resulted in soil disturbance. Some loss of soil may be considered an acceptable and unavoidable form of impact on trails. As with vegetation loss, much soil disturbance occurs in the initial construction and use of the trail. During trail construction, surface organic materials (e.g., twigs, leaves, and needles) and organic soils are removed from treads; trails built on sidehill locations require more extensive excavation, but the underlying mineral soils that are compacted during construction and initial use form a durable tread substrate that supports trail traffic.

In contrast, post-construction soil displacement, erosion, and muddiness represent core forms of avoidable trail impact that require sustained management attention to avoid long-lasting resource degradation. This degradation can reduce the utility of trails as recreation facilities and diminish the quality of user experiences. For example, soil erosion exposes rocks and plant roots, creating a rutted and uneven tread surface. Erosion can also be self-perpetuating when treads erode below the surrounding soil level, hindering efforts to divert water from the trail and causing accelerated erosion and muddiness. Similarly, excessive muddiness renders trails less usable and aggravates tread widening and associated vegetation loss as visitors seek to circumvent mud holes and wet soils.

Users notice obvious forms of trail impact, such as excessive muddiness and eroded ruts and tree roots, and those impacts can degrade the quality of user experiences. Such conditions also

increase the difficulty of travel and may reduce user safety. Remedying these soil impacts can also require substantial rehabilitation costs. A primary trail management objective within the Duluth Traverse Trail System is the prevention of excessive soil impacts.

The four common forms of soil degradation on trails include:

- Compaction
- Muddiness
- Displacement
- Erosion

Compaction

Soil compaction is caused by the weight of trail users and their equipment, which passes through feet or tires to the tread surface. Compacted soils are denser and less permeable to water, which increases water runoff. However, compacted soils also resist erosion and soil displacement and provide durable treads that support traffic. From this perspective, soil compaction is considered beneficial, and it is an unavoidable form of trail impact. Furthermore, a primary resource protection goal is to limit trailside impacts by concentrating traffic on a narrow tread. Success in achieving this objective will necessarily result in higher levels of soil compaction.

The process of compacting the soil can present a challenge, especially on newly constructed trails. While mechanical compaction during tread construction provides a firm trail surface, initial use compacts the portions of the tread that receive the greatest traffic, generally the center. The associated lowering of the tread surface creates a slightly cupped cross-section that intercepts and collects surface water. In flat terrain this water can pool or form muddy sections; in sloping terrain the water is channeled down the trail, gaining in volume, speed, and erosive potential.

Displacement

Trail users also push soil laterally, causing displacement and development of ruts, berms, or cupped treads. Soil displacement is particularly evident when soils are damp or loose and when users are moving at higher rates of speed, turning, braking, or other movements that create more lateral force. Soil can also be caught footwear or tire treads, flicked to the side or carried some distance and dropped. Regardless of the mechanism, soil is generally displaced from the tread center to the sides, elevating inslopes or berms, and compounding drainage problems.

Muddiness

When trails are located in areas of poor drainage or across highly organic or clay soils that hold moisture, tread muddiness can become a persistent problem. Muddiness in the Duluth area is most commonly associated with locations where water flows across or becomes trapped within flat or low-lying areas or where trails traverse through the area's highly expansive clay soils. Soil compaction, displacement, and erosion can exacerbate or create problems with muddiness by causing cupped treads that collect water during rainfall or snowmelt. Thus, muddiness can occur even along trails where there is sufficient natural drainage. Subsequent traffic skirts these problem spots, compacting soils along the edges, widening mud holes and tread width, and sometimes creating braided trails that circumvent muddy sections.

Erosion

Soil erosion is an indirect and largely avoidable impact of trails and trail use. Soil is generally caused by flowing water more than trail use. To avoid erosion, the Duluth Traverse trails are generally constructed with an outsloped tread that naturally sheds runoff and/or regular grade reversals that minimize the watershed size and potential water volume and velocity moving down the trail. However, subsequent use compacts and/or displaces soils over time to create a slightly cupped or insloped tread surface that can intercept and hold/carry water, potentially picking up soil particles, carrying them in a downhill direction, and eroding the tread surface.

Loose, uncompacted soil particles are most prone to soil erosion, so trail uses that loosen or detach soils contribute to higher erosion rates. Erosion potential is closely related to trail grade because water becomes substantially more erosive with increasing slope. The size of the watershed draining to a section of trail is also influential - larger volumes of water are substantially more erosive.

Water and the sediment it carries will continue down the trail until a natural or constructed feature diverts it off the tread. Such features include a natural or constructed reversal in grade, an outsloped tread, rocks or tree roots,

or a constructed drainage dip. Once the water slows, it drops its sediment load, filling in tread drainage features and causing them to fail if not periodically maintained. Sediment can also be carried directly into watercourses, creating secondary impacts to aquatic systems. Properly designed drainage features are designed to divert water from the trail at a speed sufficient to carry the sediment load well below the tread, where vegetation and organic litter can filter out sediments.

Soils Management Implications

Development of the Duluth Traverse Trail System has included significant steps to avoid and minimize soil-related impacts, including:

- Discouraging off-trail travel. Informal trails created by off-trail travel frequently have steep grades and fall-line alignments that quickly erode, particularly in the absence of tread maintenance.
- Designing trails with sustainable grades and avoiding fall-line alignments.
- When possible, build trails in dry, cohesive soils that easily compact and contain a larger percentage of coarse material or rocks. These soils better resist erosion and displacement by tires and feet.
- Minimizing tread muddiness by avoiding flat terrain, wet and expansive clay soils, and drainage-bottom locations.
- Using frequent grade reversals to remove water from trail treads.

Other strategies are more temporary in nature and will require periodic maintenance to keep them effective:

- While the use of a substantial outslope (e.g., 5 percent) helps remove water from trail tread, it is rarely a long-term solution. Tread cupping and berm development will generally occur within a few years after tread construction. If it is not possible to install additional grade reversals, reshape the tread to reestablish an out sloped tread surface periodically, it is recommended to install wheel-friendly drainage dips or other drainage structures to help water flow off the trail.
- When sufficient drainage is a long-term challenge, hardening the trail with rock or aggregate or trail relocation will be considered.
- In flatter areas, trail treads will be elevated and crowned, potentially with rock, aggregate, or boardwalk to prevent muddiness.
- Discouraging or prohibiting the use of trails that are prone to seasonal muddiness.

Water Resources Impacts and Management

Trails and their use can affect water quality. Trail-related impacts to water resources can include the introduction of soils, nutrients, and pathogenic organisms (e.g., Giardia), and alter the patterns of surface water drainage. In practice, most of these impacts are avoidable, and properly designed and maintained trails should not degrade water quality.

Poorly sited and/or maintained trails can be eroded by water, with tread sediments carried off by runoff. Generally, if water control features such as knicks, grade reversals and outsloped treads are used to divert runoff from trails, the water drops its sediment close to trails where it is trapped and held by organic litter and vegetation. The minimal soils that erode from well designed and maintained trails rarely enter water bodies, except potentially where trails cross streams or run close to shorelines and lack adequate tread drainage features.

Trails that are close to water resources require special consideration in their design and management to prevent the introduction of suspended sediments into bodies of water. Eroded soil that enters water bodies can increase water turbidity and cause sedimentation that can affect aquatic organisms. Poorly designed trails can also alter hydrologic functions - for instance, trails can intercept and divert water from seeps or springs, which serve important ecological functions. In those situations, water can flow along the tread, leading to muddiness or erosion and, in the case of cupped and eroded treads, the water may flow some distance before it is diverted off the trail, changing the ecology of small wetland or riparian areas.

Water Resources Management Implications

The same Duluth Traverse Trail System design, construction, and maintenance measures that help minimize vegetation and soil impacts also apply to water. Additional management efforts to protect water resources include:

- Avoiding, where possible, trail proximity to water resources.
- Minimizing the number of stream crossings and siting crossings at narrow, stable locations that provide durable trail surface and limited trail length in these sensitive areas.
- Designing water crossings so the trail descends into and climbs out of the steam crossing, preventing stream water from flowing down the trail.
- Armoring portions of trails near stream crossings, where necessary, with rock, or aggregate to prevent erosion.
- Developing bridges, culverts, or armored fords where necessary to provide a sustainable crossing while allowing for unhindered water flow and aquatic species movement.

Wildlife Impacts and Management

Trails and trail users can also affect wildlife. Trails may degrade or fragment wildlife habitat, or alter the activities of nearby animals, causing avoidance behavior in some and food-related attraction behavior in others. While most forms of trail impact are limited to a narrow trail corridor, disturbance of wildlife can extend considerably further into natural landscapes. Even very localized disturbance can harm rare or endangered species.

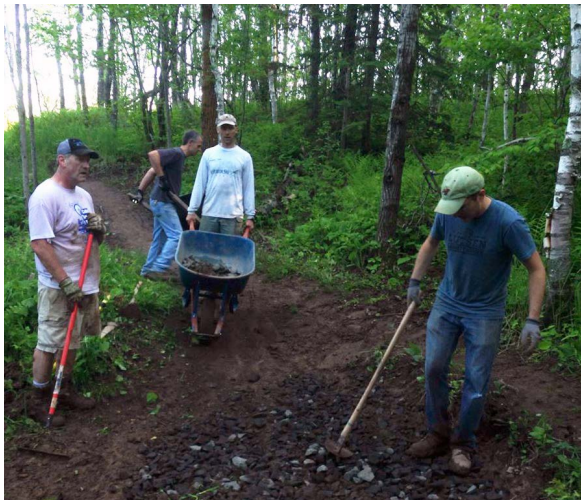
Different animals respond differently to the presence of trail users. Most wildlife species readily adapt or become "habituated" to consistent and non-threatening recreational activities. For example, animals may notice but not move away from humans on a frequently used trail. This is fortunate, as it can allow high quality wildlife viewing experiences for visitors and cause little or no impact to wildlife. Other forms of habituation, however, are less desirable. Visitors who feed wildlife, intentionally or from dropped food, can contribute to the development of food-related attraction behavior that can turn wild animals and birds into beggars.

Avoidance behavior is generally an innate response that is magnified by visitor behaviors perceived as threatening, such as loud sounds, off-trail travel, travel in the direction of wildlife, and sudden movements. When animals flee from disturbance by trail users, they expend energy, which is particularly dangerous for them in winter months when food is scarce. When animals move away from a disturbance, they leave preferred or prime habitat and move, either permanently or temporarily, to secondary habitat that may not meet their needs for food, water, or cover.

Wildlife Management Implications

Many potential impacts to wildlife in the Duluth Traverse Trail System have been avoided by ensuring that trails avoid the most sensitive or critical wildlife habitats, including those of rare and non-rare species, including:

- Routing trails to avoid riparian or wetland areas to the greatest extent practicable, as these areas often function as high-use wildlife corridors.
- Providing etiquette and educational messaging that encourages trail users not to harass, feed, or approach wildlife.



» *Photo Credit: COGGS*

4. USER MANAGEMENT AND SUSTAINABILITY

The challenges faced by the management of the Duluth Traverse Trail System can be broadly summarized as maintaining user safety, protecting natural resources, and providing high quality user experiences. This interface is dynamic and will require consistent appraisal by the City and its Partners to assure the trail facility continues to be manageable with the resources available.

TRAIL DEVELOPMENT POLICY- NEW TRAILS AND FACILITIES

The Duluth Traverse Trail System Mini Master Plan specifically identifies the original vision of 104 miles (84 miles currently complete) of natural surface, shared-use, mountain bike-optimized trails throughout Duluth. That vision was conceived through multiple, previous plans and approved through a vigorous Environmental Assessment Worksheet (EAW) process.

Through public outreach, additional trail connections and facilities were requested that had not been previously identified. These trails and future concepts that seek to become part of the overall Duluth Traverse Trail System will require separate processes to be vetted, based on their individual merit and community need. This process endeavors to evaluate the purpose, need and ongoing management capacity of potential additions. Proposals will be evaluated on multiple factors.

Project Proposal Request

The process identified herein is generally reflective of typical expectations that other park development projects in the City are held to. All new trail development that is not considered regular maintenance, a sustainability upgrade, or a trail relocation, any of which must remain within the existing 50' wide trail corridor, must go through the City Parks Project Proposal Request Process. Improvement projects associated with the Duluth Traverse Trail System will follow the process, including:

1. A written justification of the project purpose and need. Each question in the Project Evaluation Criteria (see below) shall be answered. When evaluation criteria cannot be answered without additional response by the City, Park, stakeholders, or affected property/ neighborhood representatives, a proposed outreach process should be included for review by the City.
    a. Exemption A- If a proposed new trail or major trail relocation (outside the 50' existing trail corridor) is part of an existing council approved mini-masterplan and also included in the Duluth Traverse Trail mini-masterplan, then only administrative approval from Parks Staff is necessary with accompanying public announcement, as determined by Parks Staff

    b. Exemption B- If additional riding routes or features within the 50' corridor are proposed, to provide a diversity of trail experience or to meet the intended experience of the trail, approval is required by parks staff and/or any partner organizations directly involved in the management and/or programming of a green space, such as Hawk Ridge Bird Observatory, Chester Bowl Improvement Club, Spirit Mountain, Hartley Nature Center and like organizations. The approval also must be consistent with the intent of any underlying council approved Mini-Masterplans.

2. A determination on environmental permitting needs will be made by the Local Government Unit (LGU) - Planning Department – such as an Environmental Assessment Worksheet update or any other environmental permitting needs prior to approval. This is very likely a necessary step as any new trails proposal outside of the original 104 mile vision were not evaluated in the original EAW or subsequent updates.
3. Upon initial City review, and as deemed necessary by Parks staff, the Proposed Project will undergo public engagement. This engagement will include at minimum a mailer, public announcement, and/or a public meeting. Projects that are not included in any existing mini-masterplan must be addressed with a separate public process closely tied to the existing mini-master planning process. If the

new trail proposal is in an existing City Park with an existing Council-approved masterplan, then that masterplan must be updated following the public process. The Duluth Traverse mini-masterplan does not supersede the recommendations set forth in the previously developed park planning document.

Project Evaluation Criteria

1. Legal property access and management consistency
    a. Is all property that the proposed trail occupies secured through City ownership, easement or other permanent agreement that allows the recreation usage of the trail to continue uninterrupted and retain a quality recreational experience within that trail corridor?
    b. Is the proposed trail consistent with maintenance needs, programmatic activities, underlying land ownership, neighborhood usage, zoning, mini-master planning status and other operating factors of the park/area? Of note, significant properties within in city limits are socially identified as parks space but are actually tax-forfeit properties managed by Saint Louis County. These parks include but are not limited to upper Lester, all of Piedmont, the outer parcels that make up Brewer and the eastern half of Mission Creek (Rodney Paine Forest Preserve).
    c. Is the proposed trail's management consistent with and within the existing capacity of public resources (i.e. City or County Emergency Response, policing, trash management, etc.)?
2. Trail Maintenance and long term sustainability
    a. Can the proposed trail facility be developed following best industry practices for sustainability in design and maintenance?
    b. Does the proposed trail enhance or compromise the status as a Gold Level IMBA Ride Center as currently defined by the International Mountain Bike Association. This high level of quality expectation in maintenance carried out in a sustainable way by the City and is Partners (i.e. COGGS) contributes directly to the experience that makes the Duluth Traverse Trail System a nationally significant trail system.
3. Social acceptance and usage management
    a. Is the proposed trail supported by the adjacent neighborhoods/ communities, as demonstrated through an open public outreach process that includes community leaders, homeowners, and businesses.
    b. How does the proposed trail enhance the community's access to the Duluth Traverse?
    c. How does the proposed trail mitigate potential impacts to adjacent property owners or park users including parking, view sheds, and interactions with other trails (i.e. proximity, intersections, navigability, etc.)?

Balancing these evaluation factors in a manner that is legal, provides long-term durability, and is desired by effected communities, while not shutting down the energy and creativity that COGGS/Partners bring to the table, is key to making the Traverse a highly valued community amenity and world class destination trail facility.

USER CONFLICTS

The Duluth Traverse Trail System seeks to be a model urban and destination trail system that provides an incredible mountain biking experience. The trail system will be managed to allow other uses, as well. Trail users will congregate to the Duluth Traverse Trail System for a multitude of reasons. Adventure, exercise, mental relaxation, nature contemplation, and social engagement all bring people out to these selected paths. One concept unites every trail user- the desire for an experience idealized within their mind. More simply, they want to have a good time. When this experience suffers, it is human nature to attempt to assign blame. And it's also human nature to assign that

blame, whether justified or not, to those seen as different or not having the same values. This natural human tendency has driven the idea of trail user conflicts, especially on multi-use trails such as the Duluth Traverse.

These challenges are interrelated and cannot be effectively addressed in isolation. To address these challenges, the City and its partners can employ a wide array of physical and management options such as trail design, information and education, user involvement, and regulations and enforcement. Past research has consistently found that most outdoor recreationists are satisfied with their recreation experiences. Likewise, most trail experiences on multi-use trails are probably enjoyable and satisfying. Conflicts among trail users do exist, however, and these conflicts can have serious consequences.

Conflict on trails can best be defined as "goal interference attributed to another's behavior". As such, trail conflicts can and do occur among different user groups, among different users within the same user group, and as a result of factors not related to users' trail activities at all. In fact, no actual contact among users need occur for conflict to be felt. Conflict has been found to be related to activity style (mode of travel, level of technology, environmental dominance, etc.), focus of trip, expectations, attitudes toward and perceptions of the environment, level of tolerance for others, and different norms held by different users. Conflict is often asymmetrical (i.e., one group resents another, but the reverse is not true).

User Management Implications

Thoughtful development of the Duluth Traverse trails will drastically reduce the potential for conflicts between different types of trail users, including:

- Designing trails that help to minimize speed differentials, improve sight lines, and reduce the potential for startling.
- Developing routes that take visitors to desired destinations and keep them away from sensitive areas or non-compatible situations.
- Constructing trailheads that help frame the trail experience and basic etiquette expected. At the core of this etiquette is the encouragement of a trail user's responsibility to leave the land as it was found and outreach regarding the ongoing need for trail stewardship assistance.

Conflicts are still likely to occur within the Duluth Traverse Trail System. Management of future conflicts will be addressed by (excerpted from Dr. Roger Moore's (NCSU) "Conflicts On Multiple-Use Trails: Synthesis Of The Literature And State Of The Practice" (1994):

1. Recognize Conflict as Goal Interference -- Do not treat conflict as an inherent incompatibility among different trail activities, but goal interference attributed to another's behavior.

2. Provide Adequate Trail Opportunities -- Offer adequate trail mileage and provide opportunities for a variety of trail experiences. This will help reduce congestion and allow users to choose the conditions that are best suited to the experiences they desire.

3. Minimize Number of Contacts in Problem Areas -- Each contact among trail users (as well as contact with evidence of others) has the potential to result in conflict. So, as a general rule, reduce the number of user contacts whenever possible. This is especially true in congested areas and at trailheads. Disperse use and provide separate trails where necessary after careful consideration of the additional environmental impact and lost opportunities for positive interactions this may cause.

4. Involve Users as Early as Possible -- Identify the present and likely future users of each trail and involve them in the process of avoiding and resolving conflicts as early as possible, preferably before conflicts occur. For proposed trails, possible conflicts and their solutions should be addressed during the planning and design stage with the involvement of prospective users. New and emerging uses should be anticipated and addressed as early as possible with the involvement of participants. Likewise, existing and developing conflicts on present trails need to be faced quickly and addressed with the participation of those affected.

5. Understand User Needs -- Determine the motivations, desired experiences, norms, setting preferences, and other needs of the present and likely future users of each trail. This "customer" information is critical for anticipating and managing conflicts.

6. Identify the Actual Sources of Conflict -- Help users to identify the specific tangible causes of

any conflicts they are experiencing. In other words, get beyond emotions and stereotypes as quickly as possible, and get to the roots of any problems that exist.

7. Work with Affected Users -- Work with all parties involved to reach mutually agreeable solutions to these specific issues. Users who are not involved as part of the solution are more likely to be part of the problem now and in the future.

8. Promote Trail Etiquette -- Minimize the possibility that any particular trail contact will result in conflict by actively and aggressively promoting responsible trail behavior. Target these educational efforts, get the information into users' hands as early as possible, and present it in interesting and understandable ways.

9. Encourage Positive Interaction Among Different Users -- Trail users are usually not as different from one another as they believe. Providing positive interactions both on and off the trail will help break down barriers and stereotypes, and build understanding, good will, and cooperation. This can be accomplished through a variety of strategies such as sponsoring "user swaps," joint trail-building or maintenance projects, filming trail-sharing videos, and forming Trail Advisory Councils.

10. Favor "Light-Handed Management" -- Use the most "light-handed approaches" that will achieve area objectives. This is essential in order to provide the freedom of choice and natural environments that are so important to trail-based recreation. Intrusive design and coercive management are not compatible with high-quality trail experiences.

11. Monitor Progress -- Monitor the ongoing effectiveness of the decisions made and programs implemented.

5. MAINTENANCE

OPERATING RESPONSIBILITIES AND PROCEDURES

The Duluth Traverse Trail System is a City of Duluth facility that is under the management direction of the Parks and Recreation Department. As a public facility, the trail system will require ongoing efforts to maintain standards for natural resource protection and trail durability. Historically, natural surface trails within Duluth have been co-managed by private organizations working in partnership with the City. These partnerships have been semi-formal in the past, with partner groups collaborating with the City regarding trail priorities and reporting back to the City when improvements are complete. While these efforts have provided measured improvements, they have largely been accomplished only with the leadership of City staff and long-time club trail stewards.

As the Duluth Traverse Trail System is finalized, the scale of trail maintenance activities throughout the year will require a more standardized approach for facility maintenance, public collaboration, and operational implementation. Specifically, this includes:

- Seasonal maintenance assessments
- Trail issue prioritization
- Public assistance in trail condition reporting
- City, COGGS, and Spirit Mountain trail crew implementation planning, and
- Stewardship education and involvement on a greater scale

A higher level of organization and transparency in responsibilities will allow the City and its partners to track and assess maintenance progress, conduct planning for trail improvements, and adjust workforce allocation over time.

City Responsibilities

Current and prospective future City staffing levels with trail-related duties limit the amount of on-the-ground assessment and management of the trail system. Staff will function most efficiently as overall information managers and the central organizational entity between existing and developing stewardship partners. This will be accomplished through diligent trail maintenance data management, regular review of public trail incident/condition reporting via electronic means (initially working with the Social Pinpoint application employed in the public planning process for the Duluth Traverse Master Plan), decision making regarding trail issue prioritization, and organization of semi-annual trail maintenance progress review and planning sessions with trail stewardship partners.

Partner Responsibilities

Stewardship partners, including COGGS and Spirit Mountain, will initially hold primary responsibility for trail maintenance implementation. Some City assistance will be available on an annual basis, but this assistance will be prioritized for unforeseen or larger issues that require equipment and support that is generally beyond the capacity of partner trail crews. As stewardship partners realize quality management, it will be advantageous to develop a stewardship training educational outreach program that engenders additional partnerships with neighborhood support groups, “friends of” park/trail center organizations, and youth groups. These developing partnerships can be augmented with annual trail events that engage larger groups of citizen stewards in basic trail maintenance activities.

Maintenance Planning and Reporting Procedures

It is recommended that City Parks and Recreation Department staff organize regular meetings with partner stewardship organizations to coalesce trail maintenance assessments results into priorities, responsible parties, and general project implementation schedules.

Partner organizations should work toward the development of regularly scheduled Work Detail Reports that include staffing/volunteer levels of engagement, trail maintenance duties undertaken (by location and length of trail or number of features maintained), and photographs of pre- and post-maintenance condition. The work detail reports can then be provided to City Staff for filing, evaluation of planned versus implemented maintenance activities, and subsequent assessment and planning. The frequency of these reports needs to be mutually agreed upon by the partner organizations involved.

» *Winter Trail Grooming, Photo Credit: COGGS*

City Staff is responsible to review general public incident and condition reporting and make a management decision regarding the level of response required. Significant issues that must be immediately handled to provide for public safety or mitigate obvious hazards will be reported to the appropriate trail management partner (City or stewardship organization). In these cases, project implementation will be scheduled for the earliest date practicable considering labor, material, and/or machine needs. Upon incident response, the partner organization should communicate the results of the response to the City for review and filing.

It is recommended that on a quarterly basis, City Staff aggregate the public trail condition reporting and provide the appropriate stewardship partner organizations with a Quarterly Maintenance Report that serves as an addendum to the semi-annual work plan. This information be processed by the stewardship partner for the subsequent quarter's trail maintenance planning, implementation, and reporting.

It is also recommended that City Staff annually review all prepared reporting and calculate the level and value of partner stewardship, rates of project accomplishment relative to different tasks, organizations and/or event types, and overall progress relative to meeting trail standards.

TRAIL MAINTENANCE PLAN

Trail maintenance begins immediately following construction and is an ongoing regular aspect of park operations. The objective of sustainable rail design and quality trail construction is to minimize the need for maintenance. However, in order to ensure visitor safety and resource protection, a system of regular inspection followed by routine and necessary maintenance is imperative. Maintenance is the key to maximizing the investment in the Duluth Traverse Trail System.

The condition and resulting maintenance demands of a trail are affected by the amount and type of use the trail receives. Each trail has a usage limit. The usage limit however, is determined by more than just the amount of use. The usage limit is influenced by the following factors: environmental conditions impacting the trail, quality of site selection, ground cover and terrain, trail construction, adherence to maintenance requirements, and the volume and types of trail use. Changes to any of the influencing factors may require modifications in the usage limit through the assessment and inspection process. Modifications could include re-routing the trail, restrictions on type or season of use, improvements to tread surface or water drainage structures, and potentially even closing the trail. As previously described, the best safeguard against liability problems is to perform periodic inspections and maintenance to trails and support facilities. Documenting these regular inspections can prove adherence to legal duties and significantly reduce the chance of incurring liability claims. To ensure that trail standards are met and users and resources are protected, it is recommended a systematic approach of regular inspection and maintenance be undertaken on the entire Duluth Traverse Trail System. Trails that fail to meet standards should then be considered for closure until such time they can be brought up to standards.

6. STANDARDS

The standards are described in 6 categories--Trail Log and Inspections, Vegetation Maintenance, Tread Maintenance, Drainage Maintenance, Structure Maintenance and Sign Maintenance. Organizational elements of trail construction are in bold within these categories.

A. Trail Log and Inspection

1. It is recommended that a trail log be prepared for each trail. Inspection of each trail should be conducted at least four times a year, utilizing the Trail Log and Inspection Form. Log and inspections are dated when conducted and issued to the City for review and filed.

2. Conditions identified through the inspection that fail to meet standards are corrected in a timely manner, or the trail is closed.

B. Vegetation Maintenance

1. Vegetation shall be cleared such that the Trail Corridor has the required vertical and horizontal sight lines clearance dictated by the specifications.

2. Trimming and pruning activity should be done in a responsible manner, minimizing impacts/hazards to users and the resource. See Work Instructions for Vegetation Maintenance under Routine Maintenance Activities section of this chapter.

3. Trees identified as posing a hazard to trail users shall be removed by certified tree fellers.

4. Appropriate vistas are maintained by periodically removing or thinning vegetation.

» *Photo Credit: COGGS*

C. Tread Maintenance

1. The Trail Tread shall be in good condition and free of hazards.

2. The tread shall be maintained in the original design condition and/or outsloped with intact surface. See Work Instructions for Tread Maintenance under Routine Maintenance Activities.

3. Surface material shall be replaced and/or added, when its absence causes erosion, ruts, or other undesirable conditions.

D. Drainage Maintenance

1. Surface Water Control measures must be sufficient and adequately functioning to prevent erosion, sedimentation, and loss of the trail tread, and serve to preserve the integrity of the trail construction. This includes regular cleaning and repair of culverts, deberming, knicks, and rolling grade dips, and the installation of new devices to eliminate standing water or erosion problems when reshaping the tread does not solve the problem.

E. Structure Maintenance

1. All structures, including boardwalks, bridges, culverts, etc. are functional and intact, and must not subject the user to any hazard. Routine inspections indicate where repair and replacement is needed--check for structural integrity, user safety and resource protection.

F. Sign Maintenance

1. All trailheads, intersections and junctions are clearly marked, and signs are in good condition.

2. Signage is placed as described in the Development Plan and conforming to the City's Signage and Wayfinding Plan.

EVALUATION & INSPECTION

Systematic, documented and regular inspection of all trails provides the mechanism to ensure that visitor safety and protection of the resources is achieved. However, unless inspections are followed by actual maintenance it is only an exercise in documenting unacceptable

conditions. If actual maintenance cannot follow the identification of unsafe or unacceptable conditions, the trail should be temporarily closed until corrections can be made.

A. Methods

It is recommended that the trails are inspected a minimum of four times a year, including 1) after winter to establish maintenance needs prior to the season of use, 2) early mid-season in concert with a first corridor brushing, 3) late mid-season in concert with a second corridor brushing, and 4) post-leaf-off to rectify any issues and prepare for winter grooming.

1. Trail Log and Inspection System

Initially, the Trail Log information is completed describing and inventorying the physical features of the trail. The log is completed one time in the life of the trail, unless changes to the trail occur, requiring an updating of the log. The log provides important details to efficiently maintain the trail. Trail features should be located and described using a measuring wheel or gps, measuring distances from the beginning of the trail and or coordinates. The inventoried information is entered on the form and serves as a reference to complete the inspection.

When quarterly inspections are conducted, the form has the log information preprinted on it. Inspection results are recorded in the spaces provided. A new form may be completed each time an inspection is done, or a spreadsheet could be set up and used showing the conditions of previous inspections at each subsequent inspection.

When inspections are conducted, any routine work should be completed at the time of inspection, such as removing down wood, trimming overhanging branches, picking up trash and performing minor repairs to structures. This not only precludes the need to list this work as "needed", but efficiently utilizes the time of the person conducting the inspection, and saves time of a second trip.

The completed Trail Log and Inspection Forms shall then be kept on file to serve as documentation of the inspections, reference for maintenance work when performed, and as a handy reference of a description of the trail when inquiries are made. The City Parks and Recreation is responsible for ensuring that the Inspection files are kept up to date.

ROUTINE & PREVENTATIVE MAINTENANCE

A. Equipment and Personnel Considerations

Nothing can be more critical to the success or failure of a maintenance program than properly preparing for the job. Common tools needed for trail maintenance include lopping shears, chain saws, hoes, mcleods, rakes, shovels, and/or leaf blowers. In addition, fuel, oil, and safety equipment must be carried along. Specialized, mechanized equipment may be required during some trail maintenance, including a skid steer, small excavator, tracked loader, and vibratory compactor. Always follow manufacturer's operating and safety instructions when using this type of equipment, and be sure that all personnel are trained prior to machine operation.

B. Routine Maintenance/General Trail Operations Activities

Routine trail maintenance includes basic tasks required to keep the trail in an acceptable operating condition. Tasks to be performed include trimming intrusive growth, removing limbs or logs from the trail, cleaning debris and built-up sediment from culverts, ditches and other water control structures, cleaning debris and/or trimming growth from around boardwalks and other such structures, trash pickup, and cleaning/trimming around signs. Felling of leaning or hazardous trees may be required, but shall be performed only by certified individuals.

Routine trail work may be performed by an individual, a small crew of workers, or group of trained volunteers. Routine maintenance shall occur at least following (and/or in conjunction with) the inspections, and after major storms. Strive for conducting monthly trail maintenance tours.

The routine trail maintenance work instructions are activities one would do to achieve the maintenance standards described earlier in this chapter. The work instructions are organized in categories to parallel the trail standards.

1. Vegetation Maintenance- Work Instructions

- Side branches extending into the trail corridor should be cut flush with the parent branch or stem, leaving no stubs and allowing for natural healing to take place (do not use an axe).
- Trees and brush outside the tread should be cut as close to the ground as possible, leaving no sharp-pointed stumps or stems. Stumps should be treated with herbicides to prevent regrowth and sprouting (approved herbicides only). Holes left from stumps must be filled and tightly packed.
- Small trees and shrubs within the tread should be grubbed out to prevent tripping, and holes should be filled and compacted.
- If the majority of one side of a tree needs to be pruned to meet trail corridor width standards, prune the other side to make it symmetrical or remove the tree.
- Any fallen tree lying on or over a trail should be removed, or if a large tree, the portion lying across the trail. Cuts should be made to allow the cut section to be rolled free with minimum effort. If possible, the entire windfall or the portion below the uphill cut should be rolled below the trail.
- Debris from clearing and pruning should be disposed of by chipping or removed from the trail corridor. Debris may be used for control of traffic or erosion. Slash should be scattered on the downhill side of a trail.

2. Tread Maintenance- Work Instructions

- Restore the tread to its original design condition, free of stumps and shrub roots; it should be smooth and firm; fill any holes creating by rock or stump removal.
- Tread should be outsloped so that it is lower on the downhill side, except where insloped tread has been established.
- Remove accumulated slough from the inside slope and reshape the tread to restore outslope.
- Remove accumulated berm from the downhill side of the tread and restore outslope.
- Check for and prevent trail creep by placement of border logs or rocks (but do not interfere with desired drainage).
- Replace surfacing that has been removed; add surfacing when the natural surface has been damaged or destroyed or when the existing material is unstable.

3. Drainage Maintenance- Work Instructions

- Clean out and repair culverts, puncheons/bridges, knicks, and rolling grade dips.
- Add surface water control structures where needed to eliminate standing water or erosion problems, when reshaping the tread or deberming won't solve the drainage situation.

4. Structure Maintenance- Work Instructions

- Routine inspections should indicate where repair and replacement is needed; check for structural integrity, user safety, and resource protection.
- Major repairs become a separate project from routine trail maintenance.

5. Sign Maintenance- Work Instructions

- Signs should be cleaned and the supporting frame trimmed around, so that the sign is very visible and readable.
- Damage to sign or frame should be repaired or replaced.

C. Preventative Maintenance and Resource Management Projects

If, during the course of an inspection or routine maintenance tour of the trails, a problem is identified that requires more than routine effort to correct, then these items should be brought to the attention of the Parks & Recreation Manager. Depending on the condition and significance of the item(s) in question, the trail may require temporary closure. For example, a rotten and deteriorating bridge that renders a trail unsafe would require the trail to be closed until repairs have been completed.

Non-significant issues that may require planning, design, and implementation time shall be submitted to the appropriate staff member (Parks & Recreation Manager) for incorporation into the current operations plan and project schedule. Depending on the scope of the project, it may

need to be incorporated into the following year's budget as a preventative maintenance or resource management project. Significant projects that need time for planning, would likely require trail closures and rerouting.

The annual budget/operations plan shall include trail maintenance activities as both routine operations and preventative maintenance that are implemented on the existing trail tread and corridor and/or resource management projects that alter the trail tread or corridor. Routine operations and preventative maintenance do not require formal Parks approval beyond the annual operations plan. Resource management projects that fall within the 50' trail corridor do not require written approval, but should be outlined in the annual operations plan. If a resource management project undertaken to mitigate an issue that has developed after the operations plan was developed, the work can be cataloged with an altered alignment, photos, and an accounting of resources (work hours and cost) to accomplish the work.

A few examples of each type of project are listed below.

Preventative Maintenance Projects could include:

- Painting/staining/sealing bridges, benches and walks
- Replacement of rotten or deteriorating structures
- Sign replacement and upgrade
- Addition of culverts, rolling grade dips/ knicks, or other structures
- Replenishment or addition of surfacing material

Resource Management Projects could include:

- Construction of bridges or puncheons over sensitive, eroded, or perpetually wet areas
- Construction of retaining walls, cribbing, or other structures to manage slope stability problems
- Armoring or regrading/surfacing trail to manage seasonally wet areas
- Re-routing of trails to avoid unstable or sensitive areas where an improved location and alignment meeting the trail specification is feasible within a 50' corridor of the existing trail
- Herbicide application to eliminate or reduce unwanted plant species

D. Trail Redevelopment and Closure

When the Trail Fails to Meet Standards

In cases where the trail specifications or resource degrading conditions cannot be met within the 50' trail corridor, trail redevelopment and closure should be considered as an alternative to attempting to repair the trail. Closure is then an attempt to naturalize the trail and its surrounding resources and either bring the trail back to standards or to eliminate the trail altogether. The Trail Log and Inspection Form should reflect substandard conditions that led to the closing.

1. Temporary or Seasonal Closure

Temporary closure may allow areas that have undergone maintenance to be left undisturbed for a period of time to allow for adequate stabilization. Also, temporary closure will allow for the area to rehabilitate to a condition that will bring the trail back up to standards. If a portion of trail needs to be temporarily closed, re-routing may be necessary for that period of time unless the whole trail is to be closed. It is important for the temporary closure to last long enough for proper stabilization and re-vegetation.

Seasonal closure would allow for the trail to be closed during times of the year that may impact the quality of the trail, or to wildlife resources. Examples of reasons for seasonal closure are reducing use and impacts during wetter times of the year or when staff/volunteer capacity cannot adequately keep up with maintenance needs, when conditions are not safe for use, to minimize impacts to wildlife during sensitive periods of migration or reproduction, or to eliminate visitor interference with Parks & Recreation operations such as deer hunts, prescribed burns, logging, etc.

2. Major Trail Relocation and Permanent Closure

When Resource Management Projects cannot be feasibly accomplished within the 50' trail corridor, trail redevelopment will be considered. The redevelopment process must be approved by Parks through a Project Proposal Request, utilizing Exemption A. The major trail relocation will be planned and constructed to meet the standards and specifications of the trail it is replacing.

Permanent closure will prepare the trail to undergo natural succession to its original habitat and watershed hydrology; the goal is to make the area both appear and function as if the trail never had existed. This alternative should

be chosen if the trail's condition is beyond repair or if impacts of the trail despite routine maintenance are unacceptable.

3. Trail Evacuation

There are occasions when the trails should be temporarily evacuated, such as during or following severe storms, emergencies or other incidents. Appropriate signage, outlining severe conditions and evacuation navigation should be in place for efficiently closing and evacuating the trails during these situations.

E. Techniques for Closing a Trail

When closing a trail, whether temporarily or permanently, the trail should be given the opportunity for its natural features to rehabilitate or for areas that have undergone maintenance or construction to properly stabilize. A common reason for closure is to allow for unsafe conditions to be corrected or eliminated. Naturalizing a trail or simple restoration may consist of blocking new shortcuts and allowing the vegetation to recover. Complex restoration projects include obliterating the trail, re-contouring, and planting native species. Careful monitoring and follow-up are necessary to ensure that the goal is achieved.

Each abandoned trail shall be closed. This is true whether an entire trail or portion of a trail is permanently or temporarily abandoned. If the trail is not blocked to prevent use, then the goal of the closure, whether temporary or permanent, may not be achieved. Closure is particularly important if stabilization and re-vegetation are being attempted. The abandoned tread shall be blocked to all traffic, re-contoured, and disguised to prevent users from being tempted to utilize the closed route. This work shall be conducted for all segments of an abandoned trail that is visible from trails that remain open.

If the closed trail has eroded into a trench, fill the visible ends to bring the level back up to the original ground level and install check dams and erosion control blankets as necessary to protect the fill. Checkdams can be locally sourced rock or logs from dead trees on site or charred logs (surface charring preserves the wood without chemical treatment).

In other areas of severe erosion, which are not visible from other established trails or access points, build checkdams in the bottom of the trench to prevent it from becoming any deeper.

In less-eroded areas, scarify (break up and loosen) compacted soil and reseed it with a native seed mix matching nearby vegetation.

Blend the visible ends of the closed trail into the surrounding undisturbed area by extending adjacent vegetation patterns, fallen trees and branches, and other natural objects into the closed end.

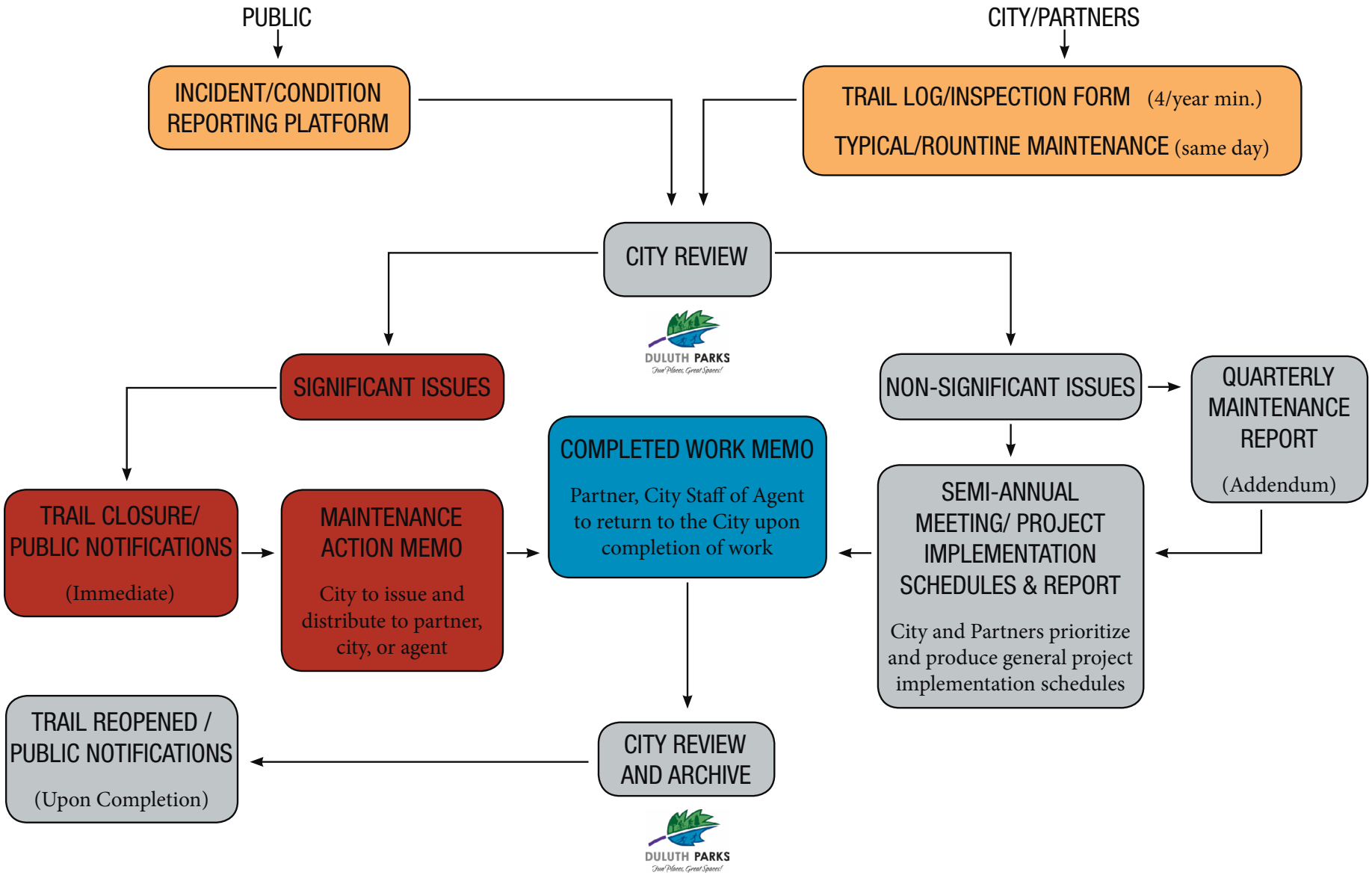
Emulate natural patterns -- plant dead stumps with their roots buried, drop dead branches under trees as if they fell off the tree, and cover the bare ground with a natural layer of organic debris (needles under conifers, leaves under under deciduous trees, dry grass in grassy areas). Often, these techniques can visually erase a trail without vegetative plantings.

APPENDIX

MAINTENANCE MATRIX SUMMARY			
TASK	NOTES	FREQUENCY	RESPONSIBLE PARTY
A-1. TRAIL INCIDENT/ CONDITION REPORTING	COGGS reports to the City using provided platform (Social PinPoint and email).	ONGOING	COGGS
	Trail Log Inspection & Typical/Routine Maintenance (same day)	4X/YR (recommended)	COGGS
B-1. REVIEW TRAIL CONDITIONS AND PRIORITIZE ISSUES	Decide level of response required: Significant Issue v. Non-Significant Issue Decide who is responsible: typical/routine or atypical work	MONTHLY (recommended)	CITY
C-1. ISSUE MAINTENANCE ACTION MEMO	For significant issues only. See D-1 for non-significant issues. Partners/City for typical/routine maintenance work Hire and Manage Contracts for Consultants/agents for atypical maintenance work.	AS NEEDED	CITY
C-2. TYPICAL/ROUTINE MAINTENANCE	Work such as blind corners, tree rut removal, obstacle removal, etc. Partners are to notify City of routine maintenance goals for season and report back to City with actual trail maintenance duties undertaken at end of the season.	AS NEEDED	COGGS
C-3. ATYPICAL MAINTENANCE	Culvert and bridge work, felling of leaning or hazardous trees, jobs that require heavy machinery and/or are potentially dangerous	AS NEEDED	CITY, CONSULTANTS/ HIRED AGENTS
D.1 CITY-PARTNER MEETINGS	To review non-significant issues, coalesce trail log/inspection results into priorities, responsible parties, and general project implementation schedules City to provide document of meeting decisions to partners and file in City archives.	SEMI-ANNUAL	CITY, COGGS
D.2 ISSUE QUARTERLY MAINTENANCE REPORTS	Non-significant issues update as addendum to the semi-annual report	QUARTERLY	CITY

» *Maintenance Matrix Summary*

MAINTENANCE ACTION CHART



» *Maintenance Action Chart*