

Cumberland Trail State Park and State Scenic Trail

Trail Construction: Morgan Creek Bridge- Gap in Laurel Bluffs

Points 313 -332

The construction is for the continuation of the Cumberland Trail within the Laurel-Snow State Natural Area in Rhea County. The contract requires construction on a very steep slope through multiple boulder fields. The section of trail may require hand-building and rock work, but equipment is acceptable. Constructed features must comply the attached definitions and specifications on pages 2-5.

Access to Point 313 of the construction area requires crossing Richland Creek by foot within Laurel-Snow SNA. During high water the crossing may not be possible. During low water the crossing is not difficult. The crossing point shall be most feasible within 100 yards upstream or downstream from the Morgan Creek confluence. The access to Point 332 of the construction area can be made by OHV from Tennessee State Hwy 30 via a forest road on State property after October 15, 2023.

Definitions:

1. *Switchback* – A switchback is a structure that allows a trail to make a change in direction, over a very short turning radius, by splitting the difference in the grade change between the uphill (in sloped) leg and the downhill (out sloped) leg. The turning platform itself is slightly crowned at the center. The uphill leg is in sloped so it that it can go below the natural grade of the hillside. This will, in turn, minimize the amount of fill needed to raise the lower leg.
2. *Hand-Build* – Hand-build refers to a section of trail that the trail designers have deemed unsuitable for machine work (ex. Ditch Witch). This may be due to terrain, slope, rock fields, accessibility issues or other circumstance. Hand built trail is achieved with hand tools such as McLeods, pick mattocks, hoes, etc. All trail construction shall meet the specifications and standards established in the USDA's Trail Construction and Maintenance Notebook, 2007 Edition. (Tread chapter, beginning on page 57). Any deviation or alternatives from those specifications will need approval by a designated State Parks representative.
3. *Rock Stairs* - Rock stairs are structures built of stone that allow hikers to navigate in steep terrain more easily. Rock staircases should be installed in areas where the grade exceeds 12-15%, or where the grade may otherwise cause erosion problems.
Rock stair installation should use the following specifications:
 - Start from the bottom and build up. Tuck each step behind the step above it whenever possible.
 - Keep tread depth between 12 in. and 18 in.
 - Step rocks should be large and heavy. Once properly placed, rock steps shall not move, even when weight is shifted on top of them.
 - Individual steps (rise) shall be not higher than 8" to maintain hiker comfort.

- Steps shall be level from side to side and have a flat stepping surface. The staircase should be roughly as wide as the existing trail. Use crushed rock for fill, not soil. Pack the crush firmly with hammers and then top with a layer of mineral soil.
 - Incorporate gargoyles on the sides of steps to guide users and prevent fill from washing out around the steps. Gargoyles should be low-profile, large, stable, and not appealing as a stepping surface.
 - *Gargoyle* – large and often ugly stones placed on either side of steps to help travelers on a trail see the steps for use.
4. *Rock Work* – The term rock work refers to a section of trail that is to be constructed within an area that contains many stones. These areas may require rock stairs, pavers, or crushed stone to create a defined walking area. These areas may also require simple removal of large stones to complete a hand constructed trail. Anytime that stones are used in the construction of trail, they should be large, stable, and not move when walked upon or when weight is shifted upon them.
 5. *Heavy Rock Work* – Heavy rock work is the same principles as “rock work” but when used in Cumberland Trail specifications, contractors should expect either very large stones, a longer distance of rock work, or a combination of both. Soil may be unavailable in these areas and the trail may need to be constructed completely of stone.
 6. *Pavers*- Pavers refer to large flat stones that are used as trail tread for hikers to walk upon. Pavers differ from rock stairs in that they do not gain elevation. Pavers should be embedded or heavy enough to be stable when walked upon or when weight is shifted upon them.
 7. *Drain* – Drain refers to a vertically ditched area that the trail will cross horizontally. These drains are usually caused by water runoff and will not have major water flow outside of wet weather circumstances. To construct trail in a drain, contractors should construct a sustainable walking surface in between the two edges of the drain. Examples of a sustainable walking surface inside a drain include, but may not be limited to a rock culvert, French drain, turnpike, or steppingstones that do not impede water flow. Rock stairs may be required on one or both sides of the drain, depending on the slope.
 8. *Side Hill*- Side hill refers to a section of designed trail that is on steep terrain. This area of trail shall require a full bench construction to create a smooth and level walking surface. Full bench construction is the process of excavating into the hillside until the full width of the trail is achieved. All the excavated material is placed down slope of the trail or removed from the site.

Trail Construction Description:

The contractor shall complete the following for each section listed below.

- 313- 314: Trail Construction begins here at the Morgan Creek Bridge site. Trail is on moderately-to-steeply sloped terrain for 150 ft. at which point construction of a switchback 1 is required.

After exiting the switchback, the trail shall continue for 150 ft. until reaching an old roadbed. The trail section shall require a bench cut.

- 314- 315: Trail continues upon an old roadbed. Trail tread shall not be wider than 36 inches. Small trees and vegetation shall require removal. From the beginning of roadbed there shall be a drain crossing in .17 miles by the contractor. The drain crossing shall be constructed to create sustainable trail without impeding water flow. Total amount of trail constructed on roadbed shall be 1/3 mile.
- 315- 316: Trail exits roadbed, the terrain becomes slightly rocky, and rockwork may be required for 150 ft. At that point, a bench cut shall be required on slightly sloped hillside with scattered rock throughout.
- 316- 317: Terrain steepens greatly. A bench cut is required on the steep hillside for 150 ft. before the required construction of switchback 2. After exiting the switchback, the bench cut shall continue for 150 ft., then construction of switchback 3 is required. After exiting the switchback, the bench cut shall continue for 150 ft., then construction of switchback 4 is required.
- 317- 318: Trail continues on a steep hillside with scattered rock throughout. Rock work is required to stabilize the tread. At this point, construction crosses a small boulder field for 120-150 ft., requiring rockwork before reaching switchback 5. After exiting the switchback, rockwork shall continue for roughly 150 ft.
- 318-319: Trail continues on a moderately sloped hillside – a bench cut shall be required. Switchback 6 shall then be required. After exiting the switchback, a bench cut shall be continued for 150 ft. At that point, switchback 7 is required.
- 319-320: A rock staircase shall be required for 20-30 ft. After exiting the staircase, a bench cut is required. Terrain in this area is steeply sloped.
- 320-321: The trail shall climb around small bluff nose. This section shall require a rock staircase. After a climb, switchback 8 shall be constructed. After exiting the switchback, a bench cut is required up a very steep slope for 75 ft.
- 321-322: Switchback 9 is required. After exiting the switchback, a bench cut is required on moderately sloped terrain for 200-250 ft. until reaching the edge of the bluff line. Near bluff edge rockwork is required for 30 ft.
- 322-323: The trail shall follow along the bluff line. Terrain is relatively flat. Scattered rock within the trail tread shall require removal or seating when unstable.
- 323-324: Construction of a rock stairway shall be required for 30 ft. After exiting the stairway, there shall be a slight turn. At that point, a rock stairway shall be required for 100 ft. After exiting the stairway, switchback 10 is required. After exiting switchback, a bench cut is required for 20 ft., then a rock structure must be constructed to cross a rock ledge.
- 324- 325: Terrain is on a moderately-sloped hillside. A bench cut is required. The section is covered with scattered rock throughout. Unstable rock within the trail tread or likely to move into the trail tread should be removed.
- 325-326: A switchback 11 is required. After exiting the switchback, a bench cut is required on a moderately-sloped hillside. Scattered rock throughout the section shall require removal if appearing likely to slip into the trail tread. Some small vegetation in area shall require removal to maintain the required trail corridor.

- 326-327: Switchback 12 or a climbing turn must be constructed in this area. After exiting, a bench cut is required on slightly sloped hillside. Heavy vegetation in area shall require removal by contractor.
- 327-328: Switchback 13 is required in this area. After exiting, a bench cut is required on moderately sloped hillside. Small vegetation and scattered rocks in area require removal within the trail corridor by contractor.
- 328-329: Switchback 14 is required in this area. After exiting, a bench cut is required on moderately sloped hillside for 150 ft. before entering a second required switchback -switchback 15. After exiting switchback 15, a bench cut on very steep terrain is required.
- 329-330: Terrain in the area is slightly sloped. A bench cut shall be required. Removal of some vegetation in area is required.
- 330-331: Construction of switchback 16 is required. After exiting the switchback, the terrain is slightly sloped. A bench cut is required.
- 331-332: At this point the trail shall enter a gap in the bluff line, the end point of trail construction.

Specifications:

1. Trail construction
 - a. All trail construction shall meet the specifications and standards for sustainable backcountry trail for full bench trail construction, outlined by author David Salisbury in his *"Complete Guide to Trail Building and Maintenance"* book, unless an alternative is approved by a designated State Parks representative and approved.
 - b. The contractor is responsible for providing all trail-building tools and transportation. Trail building machinery shall be restricted to electric and gas operated hand tools and mini skid steer systems with a wheel or track width of 42 inches or less.
 - c. The trail must be designed to provide a long-lasting, sustainable, back country trail that can be crossed by novice hikers with moderate effort.
 - i. Due to the nature of the terrain and location of the project, the trail section shall not be designated as an Americans with Disabilities (ADA) compliant trail.
 - ii. The trail shall be designed for hiking and foot traffic only.
 - d. Prior to the start of construction, the State shall provide the contractor with a daily contact list for the designated park staff member from the Cumberland Trail Scenic Park. The list shall identify the points of contact for issues, questions, and design modifications/exceptions.
 - e. The trail corridor includes the trail tread, back slope, out slope, and ceiling above the trail tread.
 - i. The trail corridor should be cleared by removing small trees and limbs to open a "6-foot-wide by 8-foot-tall box".

- ii. Trees with diameter of 4 inches including roots system shall be removed if in trail tread.
 - iii. Trees 4 inches in diameter in trail corridor but not in trail tread can be cut down to ground.
 - iv. Trees alive or dead with diameter greater than 4 inches cannot be removed unless authorized for the purpose of moving machinery for trail construction. The removal of these trees must be approved by the designated park staff member.
 - f. The trail tread shall be a minimum of 30 inches with a full or solid bench.
 - i. Fill material shall not be used to gain trail width.
 - ii. In areas where rock and trees cannot be removed, a minimum 18 inches of trail tread is acceptable for up to 3 feet of the trail length and must maintain the same trail grade.
 - g. The trail tread must have an out slope of 3% - 6% to ensure proper drainage.
 - i. Roots and rock that pose a tripping hazard shall be fully removed.
 - ii. The trail back slope should be at an angle that resembles the slope of the terrain.
2. Project Access:
- a. Access to Point 313 of the construction area requires crossing Richland Creek by foot within Laurel-Snow SNA. During high water the crossing may not be possible. During low water the crossing is not difficult. The crossing point shall be most feasible within 100 yards upstream or downstream from the Morgan Creek confluence. The access to Point 332 of the construction area can be made by OHV from Tennessee State Hwy 30 via a forest road on State property after October 15, 2023.
 - b. The trail design is designated by the Cumberland Trail Staff with a series of plastic, orange marking tape tied to trees throughout the project area.
 - i. The orange plastic markers are referred to as flags and the series of flags is referred to as the flag line.
 - ii. The knot side of the flag on the tree designates the trail corridor.
 - iii. The contractor shall follow the flag line for the construction of the trail.
 - iv. The contractor can implement minor changes in the trail design based on their knowledge and experience; however, the contractor must have approval from a designated park staff member for any major changes made to the design.
 - v. Minor changes of trail design must stay within 10 yards of the original design, any change in design that deviates farther is defined as major and shall need approval.
 - c. In sections where there is little to no mineral soil, the trail should be built using rock material from the area surrounding the trail.

- i. The trail tread shall be accomplished by "puzzling or armoring" the rock together or using existing, local rocks to build steps.
 - ii. Steps should have a rise of 8 -10 inches maximum for most of the section.
 - iii. The maximum limit can be adjusted for unique situations and only for less than 10 percent of the section.
 - iv. The contractor can determine the best method for puzzling/armoring and step construction. However, the contractor must gain approval from the designated park staff member if the rock steps shall exceed 10 inches in rise.
3. Project must be complete no later than August 21, 2024. Extensions can be made due to inclement weather, however, any extensions must be approved in writing by the State.