

Maryland Park Service

Natural Surface Trail Specifications Matrix¹

| | Easier (Green) | More Difficult (Blue) | Very Difficult (Black) |
|--|---|---|--|
| Constructed Tread Width (typical)² | 36" | 30" | 18" |
| Ave Trail Grade per 1000' | 5% | 7% | 10% |
| Max Trail Grade^{3,4} | 15% | 20% | 30% (armored over 20%) |
| Min Turn Radius⁵ | 10' | 8' | 6' |
| Max Turnpad Grade⁶ | 5% | 15% | 15% |
| Corridor Width (4' above tread) | 48"-72" | 36"-72" | 36"-48" |
| Corridor Height (typical) | 8' (humans) / 10' (horses) | 8' (humans) / 10' (horses) | 8' (humans) / 10' (horses) |
| Exposure (direct, without railing)⁷ | less than 18" | less than 48" | no limit |
| Unavoidable Obstacles | less than 2" | less than 8" | less than 18" |
| Avoidable Obstacles (over 50% of tread or less) | less than 6" | less than 24" | less than 36" |
| Roughness (surface texture)⁸ | low | med, some high | high, some very high |
| Tread and trail features | Firm trail surface. Any rock armored sections are constructed to have minimal height variation. | Modest rough tread (relative to local landscape) and occasional unavoidable obstacles are expected. | Significant unavoidable obstacles are expected. May include steps, terraces, extended rock gardens, loose rock, significantly exposure. |
| Notes | Expect to significantly modify local terrain to meet trail specs; removing rock, avoiding tree species with surface root systems. | | Seek out rocky ridges. Selective machine work to create a defined but organic appearing tread. Most rock and tread work is aimed at sustainability and definition rather than ease of passage. |

Footnotes...

1. Matrix establishes a general baseline. It is understood landscape conditions may dictate exceptions. Consult with project manager for specific situations.
2. Constructed tread width may narrow over short distances to 50% of spec. Examples include rock or tree gateways.
3. Max grades refer to extremely short segments, approximately 20 feet.
4. Listed grades assume high-quality clay-based soil with rock. Lower quality sandy soils will reduce value.
5. Unless constrained by landscape elements, turns should maintain a consistent radius.
6. Turnpad grade measures the rise/fall across the turning surface at the base of any inslope.
7. Additional exposure may be acceptable via widening tread to permit timid users to escape.
8. Roughness attempts to capture average tread coarseness. Tread area with obstacles: "low" = less than 5%, "med" = less than 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.).
- Grade reversals are required in all trails, at least every 100 feet.
- All trails should have a minimum grade and camber (in/outslope) of 3% to ensure a well-drained tread.
- Trails are required to have a cambered tread and drain regardless of local terrain. In flat areas this may necessitate a "lift and tilt" or other terrain-modifying construction technique.