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What's Under Foot?

Multi-use Trail Surfacing Options

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When approaching a trail project, trail designers and local agency representatives often assume their trail will be surfaced with asphalt or perhaps concrete if budget allows. These are some of the most common and acceptable materials used on trails. But this may not be what local residents had in mind when the trail idea was initially conceived. Or, local residents may not have considered the trail surface until a specific surface was proposed, and then suddenly everyone has an opinion. Trails typically serve a transportation function but most trail users do not want a trail to appear as a mini-roadway. This often leads designers into an exploration of possible trail surfacing options.

These conflicts often lead designers into exploring possible trail surfacing options (of which there are more every year), including:

- traditional asphalt and concrete
- permeable asphalt and concrete
- commercial soil stabilizers
- geotextile confinement systems
- chip seal
- crusher fines
- limestone treated surfaces
- rubberized surfaces, such as "Nike Grind"
- organic surfaces, such as bark mulch and wood planer shavings
- agricultural by-products, such as filbert shells
- wood, in the form of boardwalks

In arriving at a recommended trail surface, several key criteria should be considered including:

- **Initial Capital Cost** – Trail surface costs vary dramatically and dollars to build trails are scarce. Construction costs include excavation, subbase preparation, aggregate base placement, and application of the selected trail surface. Costs can vary from a low of around \$2.00/SF for a bark mulch trail, up to \$12-\$13/SF for a rubberized surface.
- **Maintenance and Long Term Durability** – The anticipated life of a trail surface can vary from a single year (bark surface in a moist climate) to 25+ years (concrete). In addition, each trail surface has varying maintenance needs that will require regular to sporadic inspections and follow up depending on the material selected. Some surface repairs can be made with volunteer effort such as on a bark surface trail, while other such as a concrete surface will require skilled craftsmen to perform the repair.
- **Existing Soil and Environmental Conditions** – Soil conditions are a given and play a critical role in surfacing selection. Rail-to-trail projects are often gifted with an excellent

base to build a trail on. But a surface such as chip seal has a greater chance of developing a wash boarding effect over time due to "railroad tie memory." In addition, when considering the use of a permeable concrete or asphalt surface, the success rate of these surfaces is directly correlated to the permeability of the soil and climatic conditions. The lower the permeability and moisture, the greater risk of failure.

- **Availability of Materials** – A great trail surface in one area of the country may prove cost-prohibitive in another area due to availability of materials. Limestone-treated trail surfaces are common in the eastern US, but unheard of in the west due to a lack of limestone. There are also some environmentally sound ideas such as the use of recycled glass in asphalt (called "Glassphalt"), but because this is not done on a large scale basis, finding a source for the glass aggregate may prove difficult.
- **Anticipate Use/Functionality** – Who are the anticipated users of the trail? Will the trail surface need to accommodate equestrians, wheelchairs, maintenance vehicles, bicycles, etc.? Multiple use trails attempt to meet the needs of all anticipated trail users. But this may not be feasible with a single trail surface. Consider the shoulder area as a usable surface, making it wide enough for use by those preferring a softer material. Each surface also has varying degrees of roughness and therefore accommodates varying users. In-line skates, for example, cannot be used on a chip seal surface or most permeable concrete surfaces due to the coarseness of the finished surface.
- **Funding Source** – The funding source for the trail may dictate the trail surface characteristics. If the trail has federal funds and is being administered through a state DOT, the state DOT will need to review and approve the selected trail surface.
- **Susceptibility to Vandalism** – Trail surfaces are not usually thought of as being susceptible to vandalism, but the characteristics of the varying surfaces do lend themselves to a variety of vandalism including movement of materials such as gravel or bark, graffiti on hard surfaces, arson (wood and rubber surfaces), and deformation.
- **Aesthetics** – Each trail surface has varying aesthetic characteristics that should fit with the overall design concept desired for the project.