

TRAIL MATERIALS	ADA-COMPLIANT	PERMEABILITY	COST for Putnam Trail
<p>SOIL (no binder, with geotextile)*</p> 	<p>Yes. Compact soil surfaces are ADA-compliant and can be maintained.</p>	<p>90-100%</p>	<p>\$570,000***</p>
<p>STONE DUST (no binder, with geotextile)*</p> 	<p>Yes. Stone-dust surfaces are described by ABA Board as Best Practice. Built in NYS using highway funds for multi-user paths.</p>	<p>75%</p>	<p>\$620,000***</p>
<p>PSYLLIUM (as binder for stone dust and other aggregates)</p> 	<p>Natural substance used as binder. Makes other ADA surfaces firmer and more stable. Ecologically safe, decomposes naturally.</p>	<p>50-75% **</p>	<p>Add to the cost of the loose aggregate trail***: \$69,000 – to bind stone dust \$75,000 – to bind soil</p>
<p>ASPHALT</p> 	<p>Yes. But not appropriate for wetland areas. Not contextually appropriate (not a Best Practice) and has lower lifespan in wetlands. Causes 60% more erosion than permeable surface. Sealant releases PAH's through cracks.</p>	<p>0</p>	<p>\$1.3 million (based on cost estimates of a paved design proposed by Dept of Parks and Recreation in 2013) UPDATED</p>

<p>Fix the trail with a variety of natural materials without a full excavation****</p> 	<p>Yes, there are ways to make the current trail ADA compliant and fully accessible without conducting full excavation and without counting on capital money. The current budget, small grants such as those won by the Friends of VCP to fix the Kieran Trail, and volunteer labor can ensure that the problematic sections of the trail are fixed.</p>	<p>50 – 100% (permeability will vary if using</p>	<p>Under \$120,000****</p>
<p>WOOD CHIPS erosion reduction</p> 	<p>Yes, wood chips can be used to reduce erosion and encourage infiltration on firm ADA loose-aggregate trails.</p>	<p>100 % (does not reduce the permeability of the aggregate below)</p>	<p>Free. DPR has free access to wood chips from the Christmas tree recycling program and from its own trees</p>

*Without a geotextile, water seeps through the aggregate, seeps below and infiltrates to the side as well. If a geotextile has a close weave, it doesn't let much water through vertically, essentially stopping the precipitation from traveling further down. Instead, precipitation seeps into the aggregate matrix and is held in the voids between the aggregate. Then the water slowly infiltrates to the adjacent soils. This is called a permeable infiltration trail bed.

** A binder reduces the permeability of the trail by locking the loose aggregate in a more or less rigid matrix. This makes the trail surface firmer. The drainage happens in a similar fashion as with loose aggregates – vertical absorption and infiltration to adjacent soils.

***Estimates based on a 10' by 7,920' trail (approximate length of the Putnam Trail). Stone-dust and soil cost estimates compiled by an independent engineer.

****Proposed here is a method of fixing the trail and installing proper drainage section by section, using the existing trail crew and volunteer labor without conducting a full excavation. The budget for this sort of work is much lower as it incorporates the labor force that already exists in the city structure and utilizes sustainable methods. The cost estimate is based on the reparation of the Bridle Trail in VCP in 2001 which involved very similar repairs – culverting, drainage, surfacing. That project was carried out with a \$33,250 grant. The Bridle Trail is 2,200 feet long, which is about 1/3 of the 7920' long Putnam. We estimate that about 2/3 of the Putnam Trail needs repairs – about a third of it drains very well and is compact and stays intact even after severe storms. Multiplying the Bridle Trail sum by 2 and adjusting by approximately 1.8% inflation rate between 2001 and 2015, we get a sum just under \$120,000. Analysis: Margarita Eremeyev.