

## QUESTIONS FOR WEBINAR:

### Trail Construction Costs, Risks, and Tips for Success

July 14, 2021

**Ashley asks:** What can communities or groups do to cover liability insurance on shared bicycles and single track trails?

**Margie answers:** I am not expert in liability insurance for landowners or managers as it pertains to users of trails. I suggest you contact the International Mountain Biking Association as they have likely encountered this specific issue as it relates to bicycles and single-track trails. IMBA might know of providers for such liability insurance, or your community is likely to have an umbrella policy that already covers this situation. Give your agent a call and ask.

**Bill asks:** Are there specific websites you use to search for bidding opportunities?

**Margie answered:** We certainly watch for any appropriate opportunities that come through the Professional Trail Builders Association. Anyone who has that project can contact PTBA to distribute the project to all PTBA members. We are currently completely booked through referrals and repeat clients. We are not currently looking at sites such as FED BIZ OPS or other places for bidding opportunities. We are very fortunate to be able to have repeat clients and referrals within the state. We did use FED BIZ OPS and a few other sites when we were starting our business but now, we also use the state and local procurements from organizations like county governments, state parks, the environment department, game and fish and other agencies. Many agencies in New Mexico now use price agreements. These agreements are renewable and request pricing for specific activities or type of work. Multiple providers are typically awarded for each price agreement. When the agency has a project, they feel we are qualified for, they request a cost estimate. If the cost, scope, and schedule are acceptable to the agency, they issue a purchase order for the work. We are fortunate to not have to bid many jobs.

**Do you ever do estimates for long term maintenance costs? Or estimates for longevity/ life span time frames for new construction?**

**Margie answered:** We do not give definitive lifetime or longevity estimates on trails we construct, though our goal is for them to look like they have always been there and to last forever.

We do not currently provide maintenance with our client, but we have been hired to “fix” trails that have experienced problems or need maintenance. Most of our clients have staff, trail stewards, “friends’ groups,” or volunteer groups that handle routine maintenance. I have seen information on one trail provider’s website which includes this information: “\$2500-12,000 per mile for construction” and “\$2500-6000 per mile for maintenance.” Our view is that both construction and maintenance are dependent upon the trail type, the user type, and the amount of use.

We do not quote life span or longevity for a new trail. A trail can last for decades if it is properly constructed and maintained, yet every trail requires maintenance. The type of users, the frequency of use, the weather, and other factors impact the amount of required maintenance. The best way to know how much it costs to maintain a trail, record all maintenance activities and the time required to complete the activities. We often provide clients with a “prescription” of maintenance tasks such as: trimming corridor (annually for many trails), cleaning drains, replacing worn or missing signs, etc. A few words about weather are appropriate here. In our area, we are experiencing less frequent but more severe storm events.

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**Christina asks:** Are there features for reporting a trail maintenance need? E.g. a location that tends to flooding, maybe a scan code on a post with instructions to scan if a problem is identified.

**Margie answered:** That's a supercool idea. I know that there are many technology innovations that could apply here. I suggest you contact NOHVCC as many of their user groups are technology endowed and experienced. I have seen QR codes for the way finding but not for maintenance. We like the AVENZA app for construction activities. In addition to following a trail alignment with AVENZA we mark locations that need attention. You might contact the AVENZA team (their technical support is excellent) to inquire about mechanisms for trail users to report maintenance needs. I know of several trail organizations that simply ask users to email the GPS coordinates along with a few notes to a specific email address or a website if they see anything that needs attention. I imagine there might also be people on this webinar have experience using maintenance logging systems.

**You very clearly mentioned terrain and weather increase risk. Are there any common amenity requests that tend to be problematic?**

**Margie answered:** A few amenity requests can be problematic. High quality, long lasting signage is expensive, but it is worth the expense. As a result, it is important to have a plan for signage. Remember, you can implement signage or wayfinding systems in phases. For example, phase 1 might be the trailhead signage and trail system map. Phase 2 might be assurance markers. Phase 3 could include interpretive information.

Other amenities that can be problematic are shelters, kiosks, bridges, other structures. Many suppliers of these structures require 6-10 weeks for delivery. Post pandemic issues are causing additional challenges due to material and labor shortages. The bottom line is to plan and place orders well in advance of the installation dates.

**Christopher asks:** Will there be discussion about the pros and cons of natural wood vs composite decking for bridges and structures?

**Margie answered:** Though we did not cover this in the webinar, here are some considerations for selecting bridge materials.

1. Access – some sites do not lend themselves to bringing in large, heavy bridge support structures (steel or wood). If a location is in the wilderness or a sensitive area (such as a wild and scenic river), machines are prohibited. For these locations, we prefer composite bridges. (The quality of engineering, ease of constructability, and longevity of the composite bridges by E.T. TECHTONICS, now part of Creative Composites Group, are top notch!)
2. Aesthetics – some customers have wood structures in the area and prefer to match materials. If the decking material is wood, plan to replace it depending on weather and frequency of use.
3. User preferences – consider the needs of the users for each structure. For example, equestrian bridges need to have decking “bumpers” and accessibility issues might require certain features to be included.

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**Jeff asks:** After building resort DH trails w/ berms rocks & roots for experienced users, I'm now building a wide uphill trail on a steep rocky slope for new, elderly Mountain Bikers. How does trail width/sifting more rock/Lg. radius turns on steep side slope affect bid/time?

**Margie answered:** Structures such as wide climbing turns on steep slopes are significant structures and need to be identified during the bidding phase. Suggestions for minimizing the cost of constructing such structures include: 1) provide for machine access during construction; and 2) given the likelihood that the downhill side will need a retaining wall or other reinforcement, brainstorm with your builder about the best materials for the reinforcement. We advise staying away from wood for these reinforcements, as they rot and must be replaced over time.

**Jim asks:** Are all your projects done as fixed price contracts?

**Margie answered:** Yes, I would guess that 95% of our projects are done as fixed price contracts. If a change in scope is requested by a client, we review our cost estimate, and if a significant additional cost or reduction in cost is warranted, we discuss this with the client. We like our clients to be able to know that they are going to get the whole job done for a certain amount of money. We manage our resources -- equipment and crews -- to get that job done.

**Julie asks:** Do you have any recommendations for managing (minimizing) engineering and/or permitting costs? How can I avoid runaway costs in the design/engineering phase of a trail project?

**Margie answered:** Consider doing a trail project as a design/build instead of a design by one entity (or engineering firm) and construction by another supplier. We find that there are cost efficiencies for the client in design/build arrangements, if the trail service provider has design and construction expertise. Good trail specifications (defining corridor and tread width, grade, outslope, challenge level, etc.) and screens for qualified providers are what are needed if you go the design/build route. Giving the qualified builder some latitude to put the trail exactly where it needs to be for the most sustainable, high quality result, will reduce the risk that an unforeseen obstacle will delay the project.

I realize that some entities require engineering to be separate from construction, so, if you are in this situation, here is one approach. Give the engineering firm a clear scope and budget limit, then monitor the progress and budget. I understand the many professionals (engineers and surveyors included) prefer to quote a cost per hour, but this arrangement lacks the incentive to do the job most efficiently. If the firm is unwilling to entertain a fixed budget contract, you might find a different provider.

**Nanci asks:** To protect large (12"+) tree roots from trees along trails: 1) what is a safe offset distance in feet to put the trail and 2) can gravel or other geomembrane that holds permeable aggregate for the trail surface be placed ON top of the existing grade?

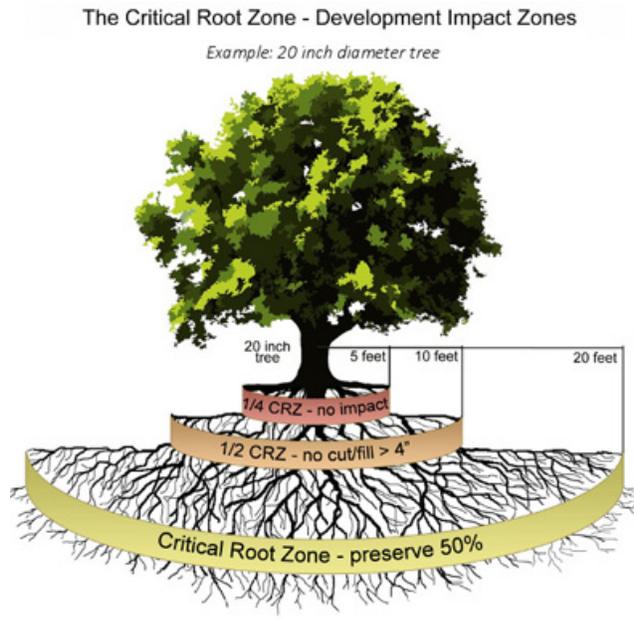
**Margie answered:** Thank you for the question about protecting resources like large trees. The very short answer to this is the following... the height and breadth of the branches tell you how big the root system is. The root system is equivalent in size to the branches, though it is all underground. If you have a heritage tree or other live feature that you want to be sure is not impacted by the trail, keep the trail out of the area where the roots are, or in other words the safe offset distance is roughly the branch drip line. I realize this isn't possible to do in some cases, so here are some rules of thumb for minimizing

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impact based on the “CRITICAL ROOT ZONE.” (See image below). Remember that compaction of the tread (from trail uses) is as detrimental to the root zone as is soil disturbance, so adding gravel or geomembrane is not a solution. In addition, roots are normally closer to the surface on the downhill side of a tree and are hence more likely to suffer ground disturbance impacts than roots on the uphill side. My advice is if you have a historic tree or feature, make your trail go nearby so that users can enjoy the tree, but don't touch the soil beneath the branch drip line and don't put the tread within the branch drip line.



1/4 CRZ → avoid all impact  
1/2 CRZ → no cut or fill >4'  
CRZ → preserve 50%

**Pauline asks:** How do you set your prices for Planning and Design work? Are you members of the Professional Trail Builders Association?

**Margie answered:** We set our prices for planning and design based on the number of hours we expect to spend on the specific client request. Office time as well as time in the field to view the site are included in our calculations. Yes, we have been members of PTBA since 2006. I also served on the board of directors for PTBA for several years.

**Peggy asks:** Margie mentioned investing in volunteer training--are there any recommendations as to what type of training and where we might find resources?

**Margie answered:** Great question, Peggy. I think training opportunities vary from location to location. I would start by encouraging your volunteers to take some of the basic training and webinars that are offered by American Trails. Ask that the volunteers invest in both classroom learning and field learning. Is very important to get your volunteers out on a project where trail professionals are working, if possible. The NOHVCC “Great Trails” workshops and guidebook are exceptionally well done and apply to motorized as well as non-motorized trails. The International Mountain Bike Association has also been active with volunteer training opportunities.

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**Troy asks:** What is your biggest gripe about clients relative to trail construction costs, risks, and opportunities?

**Margie answered:** Our biggest gripe about clients on this topic. That is a very good question. Our biggest gripe is when clients issue requests for proposals that do not acknowledge the risks we have talked about. For example, clients who include a liquidated damages clause but offer no allowance for inclement weather or other events outside the proposer's control.

**Will asks:** Is it true that PTBA only allows membership for for-profit companies only?

**Margie answered:** Yes, thanks for the question. PTBA is currently focused and limited to those trail service companies who are in the business to make a profit. There have been discussions over the years about including other trail providers who are not for-profit companies, but your understanding of the current membership criteria is correct. PTBA's priority is making sure that the businesses who are members are professional and successful. Topics addressed by PTBA relate to those concerns of private sector businesses, such as bonding and insurance, certifications, and, of course knowledge of the trade.