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Insights

**SOFT SURFACE NATURE TRAILS: PAVING THE
WAY FOR COMMUNITY RECREATION**

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Soft Surface Nature Trails: Paving the Way for Community Recreation

When families and individuals look for houses, they aren't only searching for a place to call home, but a community that fosters well-being, accessibility, and a culture that fits their needs and standards. Schools, entertainment, restaurants, and community amenities are all factors for people moving to a particular neighborhood or district. Another major selling point is a strong parks and recreation system. Residents want parks, trails, ponds, and other picturesque outdoor views and features to complement their place of living. In particular, soft-surface nature trails are becoming a popular amenity and community addition not only benefiting the residents, but also developers, municipalities, and master-planned communities.

Soft-surface nature trails, also known as singletrack or mountain bike trails, are not your average bike trail or sidewalk. In fact, they aren't made from concrete or pavement at all. Instead, singletrack trails are sustainably constructed to work with the land, while minimizing impact to the natural environment. They are designed to be built into the earth, making for a softer – and more affordable – trail option. These paths welcome many outdoor recreation enthusiasts, including mountain bikers, hikers, and trail runners. As the word describes, singletrack is a trail that has the width of a bicycle's handlebars and can include technical features such as switch-backs, hills, jumps, and rocky areas. Municipalities and developers are now beginning to incorporate singletrack trails into the design of their communities that allow residents to easily ride or hike to other parts of their neighborhood or town.

Did you Know?

When describing trails, soft-surface, singletrack, and mountain bike trails are interchangeable terms. These are not to be confused with concrete trails and sidewalks.

Pictured: Parks of Aledo Nature Trails
Photo courtesy of Justin Welborn



The Singletrack Advantage



Affordability

Contrary to concrete hike and bike trails and sidewalks that can cost up to one million dollars per mile, singletrack trails are much more affordable and generally cost a few thousand dollars per mile. Not only is the initial construction cost less, but the time it takes to see a return on investment (ROI) is much quicker. The economic impact for trails are based off of the number of vehicles that visit a trail per year, the average number of people in each vehicle, and the average dollars spent by each visitor. It usually takes just a few years, if not months, for developers and communities to prove ROI on mountain bike trails.



Promotes Outdoor Recreation

Singletrack trails are seen as a selling point for communities, providing another source of outdoor recreation, and promoting an active, healthy lifestyle. According to Outdoor Industry Association's 2017 report, the outdoor recreation economy generates \$59.2 billion in state and local tax revenue, and says that outdoor recreation creates "healthier communities, healthier economies, and healthier people."¹

The presence of mountain bike trails brings many different recreational groups out to a community. Since the trails are on public land, people from all over can mountain bike, hike, and run on the same trail. The longer the trails are in a community, the more used and admired they will become. Often, these trails are maintained by citizen volunteers or nonprofit mountain bike clubs. For instance, the DFW area has three 501c3 nonprofit organizations dedicated to the upkeep of their local trails: the Weatherford Mountain Bike Club, the Fort Worth Mountain Bikers' Association, and the Dallas Off Road Bicycle Association. These clubs provide citizen volunteers the opportunity to maintain the trails they use, while acting as advocates for the creation of more mountain bike trails in their community.



Puts Land to Use in a Sustainable Way

Oftentimes, residential developments and master planned communities have land that cannot be built upon. Whether it be land that is too steep, located in a floodplain, has significant regulatory constraints, or has been neglected, these areas can still be of use to the community by adding singletrack trails. Since they are built into the earth using natural materials, these trails are environmentally conscious while acting as an amenity to residents and the surrounding community.



Technological Advancements

Traditionally, designing and constructing singletrack trails required someone to explore a given area for several days, while relying on their memory as to where the proposed trail would be built. This method resulted in inefficient trail designs and decreased ease of use.

Now, with modern technology, singletrack trails are designed using AutoCAD (a drafting software), digital topography, high-resolution photography, and observations of the land on which the trail will be built. At BHB, we have the ability to design a trail in real world coordinates, examine the land via satellite imagery, and create a 3D model where the singletrack can be defined to maximize the trail user experience. This allows our engineers and designers to see a scaled model of the exact trail that will be built, extracting the need for guesswork on where the trail will be aligned. Everything needed to create the best built trail is within our office walls. Once a trail alignment design has been created, the information is uploaded to a handheld device that is taken to the field and allows the user to virtually hike the path before it is even constructed. This technology advantage allows BHB to design trails professionally, quickly make alignment revisions, and lets the contractor know exactly where the trail will be built.

¹ The Outdoor Recreation Economy. Outdoor Industry Association; Southwick Associates, Inc., 2017, www.imba.com/sites/default/files/content/resources/2018-06/OIA_RecEconomy_FINAL_Single2017.pdf.

Creating a Mountain Bike Trail Master Plan

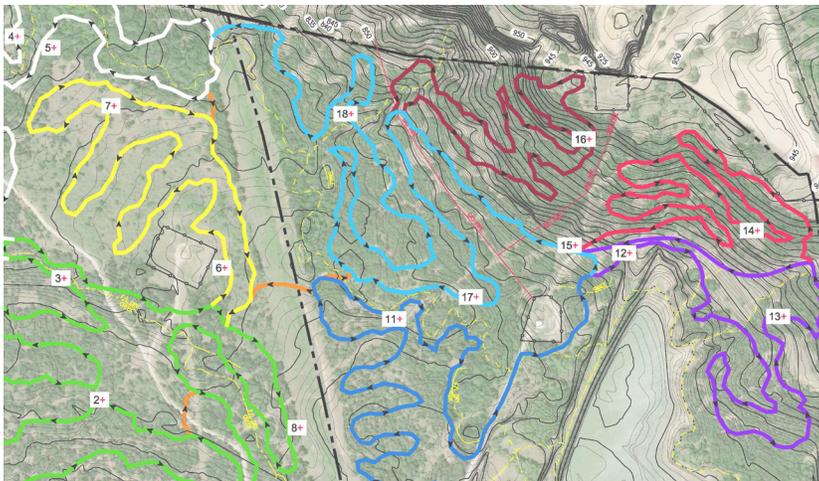
Creating a trail system within a community takes extensive planning and research, as well as visionaries and experts who understand the process. Funding for these trail projects can receive support from nonprofit, public, and/or private entities, as well as state and federal grants. For municipalities, it is important to keep in mind the culture and environment of that specific town or city, so that the trails seamlessly fit into the area.

The concept planning for singletrack trails provides an opportunity for cities to partner with developers for the design of a nature trail master plan. If a developer is building a subdivision, but a portion of that land is in a floodplain, the city can come in and work together to create an amenity for the public on the property the developer is unable to use. The result is a valuable community amenity that benefits everyone.

A Trail Design Built to Last

BHB's civil engineers and designers have designed over 23 miles of nature trails for local organizations, residential developments, and master-planned communities – with each project being funded differently. From pro bono projects to public and privately funded trails, we strategically design many types of singletrack, while working with developers and cities to come up with a park master plan so that trails become a part of the community.

Mountain bike trails affect their corresponding communities in unique ways. In the following project features, learn about two of BHB's largest soft-surface nature trail projects, their benefits, and the collaborative effort it took between multiple parties to get the trails successfully designed, built, and put to good use.



Creating the Path: BHB's Singletrack Design Experience



123,499 feet of trail



2,170 feet of elevation change

Mountain Biking Demographics

According to a member survey conducted by the International Mountain Bicycling Association (IMBA):²

 53% of members work in professional/managerial positions

 76% have a bachelor's degree or higher

 The average age is 44



² International Mountain Bicycling Association. 2016 Member Survey. 2016. https://www.imba.com/sites/default/files/IMBA_Member-Survey-Graphic_20160823.pdf

Quanah Hill: Singletrack Trail Funded by Nonprofit Adds to Weatherford's Landscape

Mountain bike trails are versatile when it comes to how they are funded. While some might be financed by a private developer, others may be publicly funded if being built by a municipality or master-planned community. Many trails, however, are built by non-profit mountain bike organizations that utilize volunteer man hours and donated services and funds. Not only do these clubs put in a lot of time and effort to create trails that anyone can use, but they also promote well-being and foster partnerships within the community.

Quanah Hill, one of BHB's recent trail projects was entirely funded and built by volunteers and local businesses donating their services. Located in Weatherford, Texas, Quanah Hill is a seven-mile singletrack trail stewarded by the non-profit Weatherford Mountain Bike Club (WMBC). Founded in 2014, the WMBC is volunteer-led with a mission to build sustainable singletrack trails in the Parker County region. These volunteers work collaboratively with the City of Weatherford Parks Department to create multi-use nature trails for county residents and visitors that want to enjoy recreational trail activities.



Volunteers gathered at Quanah Hill to help steward and build the trail.

Quanah Hill is considered an intermediate trail and provides beautiful views of Lake Weatherford. Complete with steep inclines, downhill runs, technical descents, and a trailhead, it is an enjoyable course for both novice and experienced bikers. The WMBC put in a lot of time for the project, and a majority of the volunteers can often be seen riding the trail they helped build – including Larry Colvin, one of BHB's own employees.

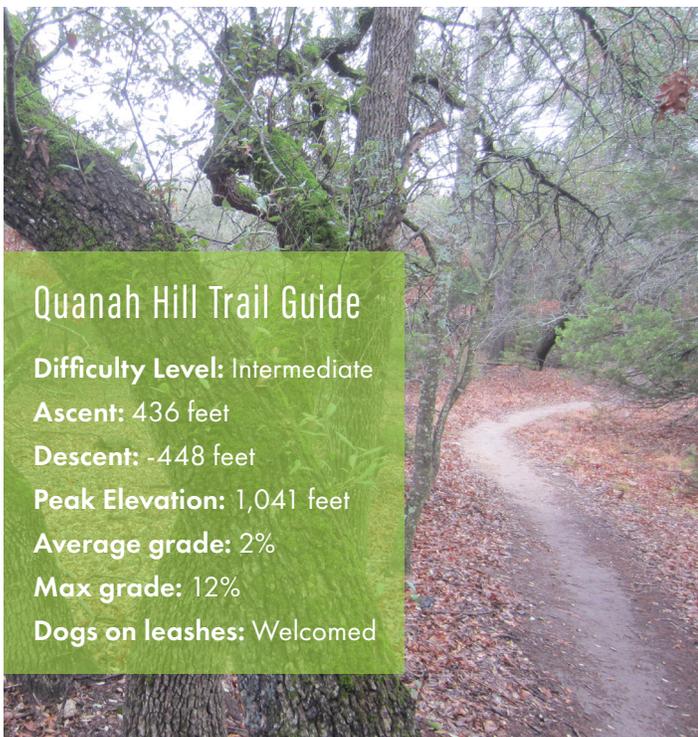
Colvin, a Senior Landscape and Civil Designer, has designed many nature trails for local organizations, residential developments, and master-planned communities. An avid mountain biker and President of the WMBC, Colvin's designs are based on his own experiences from biking on trails across Texas.

For this particular project, Colvin and the BHB team provided pro bono technical and software support for the WMBC to construct the project, and contributed high resolution aerial photographs, LiDAR topography, and AutoCAD services in order to create KMZ files containing geographic information for staking the proposed trail alignment. Additionally, BHB provided color trail maps for use in the trailhead kiosk and for WMBC fundraising events.

"The ROI in these types of trails is big, and Quanah Hill is the perfect example," said Colvin. "You can get your money back in months, not years."

In 2017, for example, nearly 11,500 vehicles had entered the Quanah Hill trailhead, equating to over 20,000 visitors. The economic impact of the trail is based off of how much each person spends while visiting Quanah Hill, such as buying gasoline, sales at local bicycle shops, and purchases at restaurants and grocery stores. By determining the average dollars spent per person, which was around \$12.15, the trail had an estimated annual economic impact of \$250,000.

Since the trailhead opened in 2016, Quanah Hill has become a popular spot for outdoor adventurers, and is now used as a case study for other developers and municipalities who are considering adding singletrack trails to their communities.



Quanah Hill Trail Guide

Difficulty Level: Intermediate

Ascent: 436 feet

Descent: -448 feet

Peak Elevation: 1,041 feet

Average grade: 2%

Max grade: 12%

Dogs on leashes: Welcomed

Endeavor Bridgeport: City Combines Multiple Recreational Sports Into One Adventure Park

You could say the City of Bridgeport is paving the way for how municipalities incorporate singletrack trails into their communities. Known as the Stagecoach Capital of Texas, the City takes pride in its rich Texas heritage, while evolving into a community passionate for recreational activities.

In 2016, BHB was asked by the City of Bridgeport to design 10 miles of soft surface, multi-use hiking and mountain biking trails in the 211-acre northwest section of the existing Endeavor Bridgeport Adventure Park. What started as the Northwest OHV Park, a 302-acre space for off-highway vehicle courses, local officials have worked for over a decade to provide multiple outdoor recreational activities for community members and visitors alike. BHB's largest singletrack project to date, the trails expanded the park to provide a dedicated area for non-motorized recreation.

The idea behind Endeavor Bridgeport Adventure Park was to bring these seemingly disparate outdoor activities together in one location for multiple user groups to enjoy. By investing in its own community, Bridgeport has seen growth in annual visitors, as well as an increase in citizens who enjoy their own amenities.

"Hiking trails give locals another nearby activity, and also bring a new kind of clientele to Bridgeport," said Chris Heasley, Bridgeport's Director of Parks & Recreation. "A regular park with a playground is a wonderful activity, but this is such a different dynamic that has no cost associated to the user. I would like to see more cities implement singletrack trails so that we could forge a large trail system together, rather than individual trail systems."

A project that had been in the works for several years, Heasley and his team knew they wanted trails that were built correctly and could withstand harsh weather conditions. After researching the best way to implement and professionally design trails, the City reached out to BHB for help.

"The fact that we had BHB come out and design our trail system is a large part of why we can effectively maintain our trails," said Heasley. "The firm's knowledge helped tremendously, and they specifically designed it so that it goes around areas that might cause problems in the future. At the end of the day, it was absolutely worth the investment to spend the money and have it built correctly."

From providing reviews of aerial photographs and contour maps, to field visits, preliminary design, walking the proposed trail route, and completing the final schematic design, Larry Colvin and the BHB team took a hands-on approach to the project from the very beginning. The park's natural conditions were embraced to provide suitable trail alignment for both hikers and bikers, while supporting wildlife habitats and a low maintenance trail. From beginner to advanced routes, the trails feature rolling contours to create a safe, fun, and challenging experience for outdoor enthusiasts.



Endeavor Bridgeport Trail Guide

Difficulty Level: Beginner to advanced

Trail Type: Cross country, loop,
singletrack, stacked loops

Trail Length: 10 miles

Elevation: 406 feet

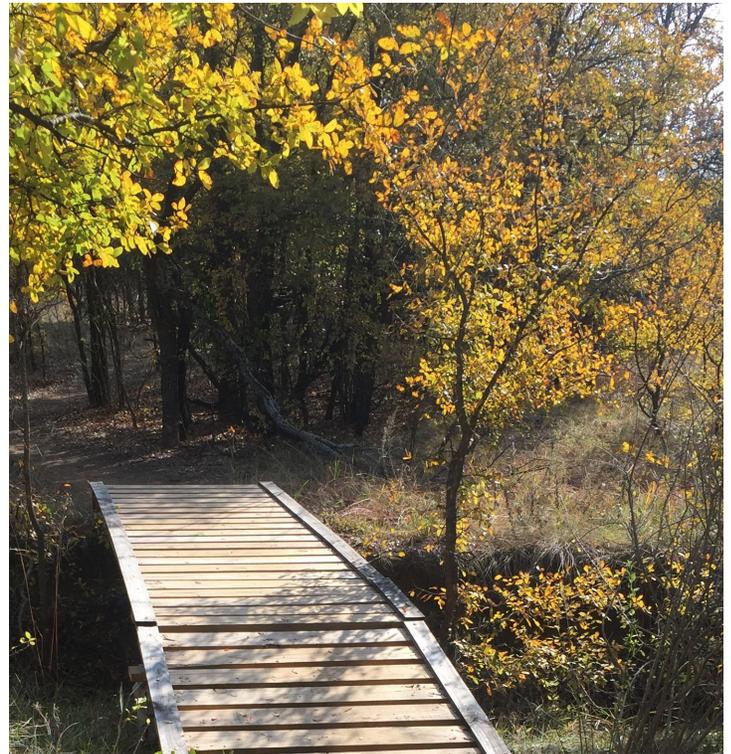
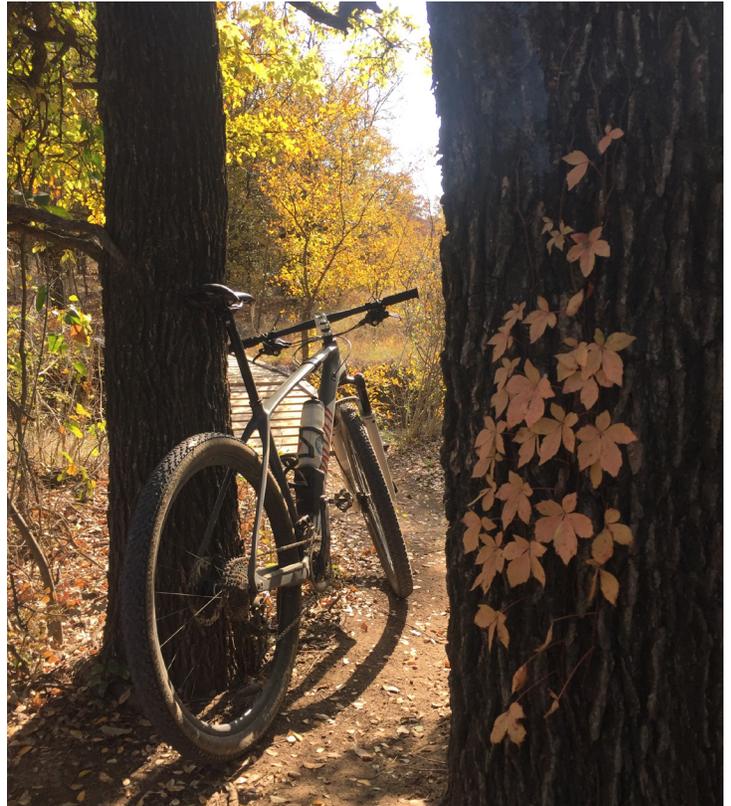
While the City oversees the maintenance of the trails, Bridgeport is also assisted by volunteers who help to keep them open as much as possible while ensuring the safety of everyone who uses the trail.

“The longer we have these trails and maintain them, people find ways to use them and incorporate them in their lives, whether that be hiking or biking,” said Seth Foster, Bridgeport’s Recreation Specialist. “I hope that we can continue to see a growing local population use them on a more frequent basis.”

Aside from avid and novice hikers and bikers, Bridgeport has also noticed a variety of unexpected user groups that take advantage of all Endeavor Bridgeport Adventure Park has to offer. From home school groups and boy scout troops, to police officers who are in need of a training space, the park is continuing to grow in both size and popularity. The trails will also be a stop on the ninth annual Texas Interscholastic Mountain Bike Race Series this year. For both Heasley and Foster, this is exactly what they want to see, and their vision for the park isn’t stopping there.

“Our next big project for the park is to build an off-road obstacle course, as well as expand the trails in the near future,” said Heasley. “Long-term, I would love to eventually see the park be complete with RV hookups, camp sites, education rooms, fishing ponds, and more.”

With nearby attractions such as Lake Bridgeport and Sid Richardson Scout Ranch, the addition of the park added to Bridgeport’s array of outdoor recreation and is setting a precedent for how municipalities can steward singletrack trails for their community, while fostering a culture of well-being.



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