

## The “Specialty” In River Rider Cycle & Specialty

When I decided to open my own bicycle shop in 2002, I really wanted to be able to do something special to let people discover or rediscover the joy of cycling. Part of that would be quality equipment and proper fitting, but from my own experience I knew that many people needed something more than what off-the-shelf items could offer.

I was born with limited use and range of motion of my left hand and arm and began altering my bicycles in high school to allow safer operation with one hand braking and shifting. After earning a Associate of Science in Mechanical Engineering Technology and working for fourteen years as a mechanical designer in Rochester, I decided to use that experience to make cycling more available and enjoyable, as well as safer, for people with special needs such as my own. I use my design experience, knowledge and love of bicycles and the SolidWorks 3D modeling software on my home computer. I have also been working with a consortium called Rochester Area Consulting Engineers (**RACE**) on bicycle products and marketing some of the tools I have invented in my shop.

Many times it is simply a case of choosing alternate components or altering the arrangement of those components to achieve the correct result, but sometimes it takes a piece designed for a specific application. A gentleman in Wabasha couldn't ride his bike anymore because of limited mobility of one leg. He complained that one leg couldn't make as big of a circle when he pedaled. The solution was as simple as putting a shorter crank arm on that side.

On my road bike I was always having shoulder and neck pain on long rides from overextending my left arm to reach the handlebars. My left arm is shorter than my right from an injury at birth. I cut my handlebars and made a piece to insert into my bars to bring the left side on the handlebars toward me and inboard to accommodate the difference in reach. While showing this to a customer in the shop, he remarked that his left arm couldn't



reach as far because of breaking his collarbone and asked if I could do the same for him. These are the small things that bring back the joy of cycling.

I have included some photos of the modifications I have done to make my own bikes work for my situation. The first shows my road bike's offset handlebars and the brake cable splitter that ties the front and rear brakes

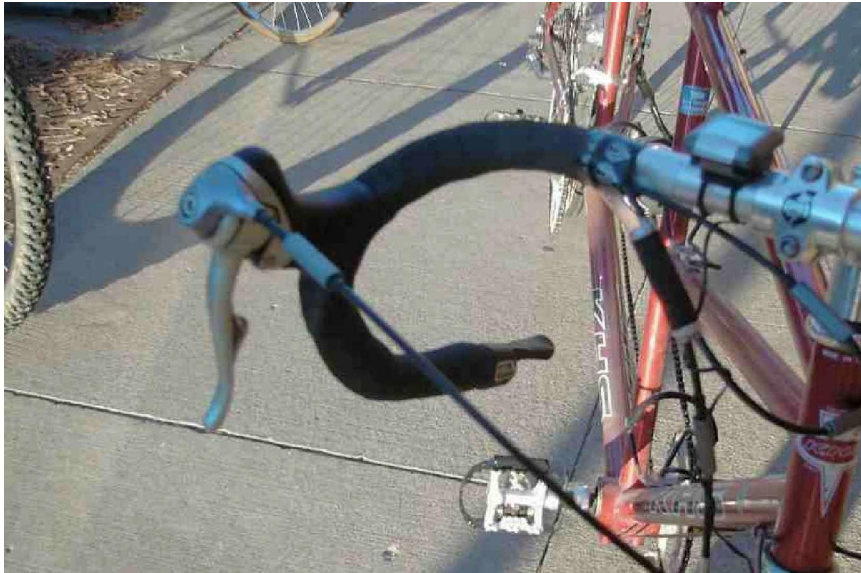
to the single right brake lever. The aluminum piece parallel to the stem rejoins the two halves of the bars and gives a 38mm offset rearward as well as moving the outer left hand edge of the bars inward about 15mm.

I installed in the rear brake cable what Shimano calls a power modulator, a force limiting device shown in the second photo.

This limits the amount of brake force applied to the rear brakes by placing a spring in the cable housing. As the brakes are applied, the force is equal front and back until the force equals that of the spring. Increasing force after that point is applied only to the front brakes allowing much harder braking without locking the rear wheel.



On the tandem my wife and I ride, the brakes again are joined with a splitter to operate from the right hand lever. This lever also shifts the rear derailleur (a Shimano 105 STI lever, a standard part).



The front derailleur is shifted using a bar end shifter on the end of the right drop bar. The handlebars have not yet been offset but will be altered prior to next season. The long wheelbase of the tandem and the weight of two riders made the brake force limiter

used on the road bike unnecessary on the tandem.

For a mountain bike it is much more critical to be able to control the front and rear braking separately. The picture below shows a left side shifter/brake lever combination reverse mounted on the right side operating the front derailleur and front brake. The rear



derailleur is operated with a grip type shifter. The rear brake lever is reversed so the two levers are together allowing two finger operation of each lever. This lets the rider have infinite control of front and rear braking as required for various types of terrain. The reach and leverage of each brake lever is individually adjustable to accommodate different hand sizes and strengths. The rear brake cable loops around and goes through the handlebars emerging on the left side of the stem clamp area to minimize potential damage on the trail.

These are a few examples of the things I have done to accommodate my love of cycling, but they are just a few of the possibilities. Each individual situation is different and needs individual attention, but the results can be wonderful!

Sincerely,  
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