

## THE CORBEN BACKREST

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The goals of a backrest are to provide proper ergonomic support and a sense of security. Secondly, it should not detract from the aerodynamics of the bike, impair the good looks excessively, or impoverish you. And if it fits in the City system cases, so much the better.



*Most excellent and patient wife sitting for a mock-up test fitting.*

The Corbin back rest is improperly designed from an ergonomics perspective, large, high, ugly, wiggles loosely so as to the give passenger little sense of safety and confidence in the stability of the bike, and costs a fortune for no legitimate reason (like \$250). Not good.



*Now that's what I call a really fine backrest mock-up test.*



*I was fortunate to find this attractive plastic berry freezer bag to serve as a waterproof covering.*

Ergonomically speaking, the backrest should help maintain proper curvature of the lumbar curve — neither pressing against the curve to exaggerate it nor allowing the passenger to slouch and thus straighten the curve. I believe that straightening of the lumbar curve is a main contributor to riding discomfort. Therefore, a support pad is needed that runs from the upper buttocks to the lower half of the lumbar curve.



Visco-elastic foam yields to force and body temperature and doesn't bounce back nearly as strong as a spring obeying Hooke's Law (something to do with hysteresis behaviour). Made famous by the Swedish/NASA "Tempur-pedic" mattress, it seems just the right material to cradle a person's back, even if it is unclear to me what other applications it is ergonomically suitable for (including the doubts I and Consumer's Reports have about its use for mattresses). The premium quality is "5 pound" which feels positively gooey to the touch and is the densest readily available. In other words, the 2 inch foam piece "accepts" the person's curvature and doesn't push back the way neoprene or conventional upholstery would.

The frame is made from materials similar to the Corben parcel rack. The vertical piece is a 5/8-inch square rod, reduced to fit the idiosyncratic hole in the Corben seat and tapped with a metric 6-1 screw near to the bottom end. The wing-like portions are carved from 2 x 2 inch aluminum angle and soldered together. Tee-Nuts in the 3/8-inch plywood backing plate secure the pad/plate to the wings. The large freezer bag provided a convenient temporary means of covering.



*Aluminum solder is a fun material to work with. It melts at 750 degrees easily achieved with a Bernzomatic torch but otherwise acts very much like conventional tin-lead solder; doesn't even need any flux, provided the aluminum surfaces are fresh.*



*Tee-Nuts are visible. The visco-elastic foam was glued to the surface facing up in the picture using purpose-made aerosol glue.*

I worked with my favourite passenger (my charming wife), using mock-ups to establish the right dimensions to suit her.



*That's a large piece of ordinary foam and a scrap of wood used for mock-up test purposes.*