1116-VR-2962   **Jian He*** (`hexiaodong9@163.com`), Department of Mathematics, Northeastern University, No.11, Lane 3, WenHua Road, Shenyang, Liaoning 110819, Peoples Rep of China, and **Aihua Li** (`lia@mail.montclair.edu`), Department of Mathematics, Montclair State University, 1 Normal Avenue, Montclair, NJ 07043. *Mathematics and art meet at a beautiful bridge - a calculus problem derived.*

A calculus problem is derived based on the shape and projection of a well-known bridge, Sanhao Bridge, located in the city of Shenyang, China. Sanhao bridge has won the world's highest prize for bridge design, the "Eugene C. Figg Medal", and the Global Road Achievement Award in 2009. The biggest characteristic of the bridge is its two large skew arches, shaped like the wings of a butterfly from afar. Seen from one end of the bridge, the outlines of the two skew arches reflect two intersecting curves. The beautiful shape of each arch can be viewed as a combination of a partial circle and a segment of a parabola. How to get the mathematical expression of the outline curve? This article creates a problem that asks students to model the outline of one arch with an optimized enclosed area or arc length. Real date on measurement of the bridge is used. The problem is approachable by college students and advanced high school students. It also can be used by calculus instructors as a real world model. This project presents a great example of beautiful combination of mathematics and art. (Received September 23, 2015)