



1996 PRIZE BRIDGE AWARD: SPECIAL PURPOSE TUDOR ROAD TRAIL CROSSING



FOR YEARS, THE STATE OF ALASKA AND MUNICIPALITY OF ANCHORAGE had studied ways of crossing the busy, five-lane Tudor Road with a multi-purpose trail—without success. Close proximity to high voltage power lines, buried utilities, close clearance tolerances, and the desire to have a smooth, continuous crossing with grades less than 5% for use by bikers, the handicapped, and sled dog teams presented difficult design problems.

The solution was made possible through the use of steel and structural solutions not often considered in conventional approaches.

A geometric window with 17' road and 23' power line clearance could only be met with a curved bridge, both vertical and horizontal, with no supports other than at abutments.

Aesthetics demanded by the trail easement property owner also limited the use of sprawling superstructures in favor of more massive landscaped abutments.

The 160' span, restrained, 80-degree curved, torsionally-stable, double box-girder orthotropic solution with massive pile-supported concrete abutments was the final solution. The property owner later stated "The bridge is more than I ever expected. If you (i.e., design engineer) ever need a recommendation, just have them call me."

Steel decks have long had the problem of surfacing or overlay disbanding. For this project, bonding layer impact testing to -70 degrees F produced a solution. A high-solids urethane was found which bonds to the sand-blasted steel deck. Pea gravel broadcast into the bonding layer provided traction for conventional asphalt concrete overlay paving.

High seismic ground movement and large thermal changes were easily handled by the curved bridge with no need for any joints.

Long-term steel protection from corrosion and discoloration was addressed

through the use of spray metalizing with a color coat overlay.

The bridge, because of its torsional strength and lightweight, was assembled near the crossing, moved, and lifted in one piece. Tudor Road closure was limited to only 24 hours.

The public usually does not comment on engineering works, but in this case, phone calls and media coverage raved about the bridge aesthetics. Even the dogs in the sled dog racing teams seem to enjoy the crossing.

Project Team

Designer:
Petratovich, Nottingham & Drage, Inc.
Anchorage

Landscape Consultant:
Group III Design
Wasilla, AK

General Contractor:
Construction & Rigging, Inc.
Anchorage

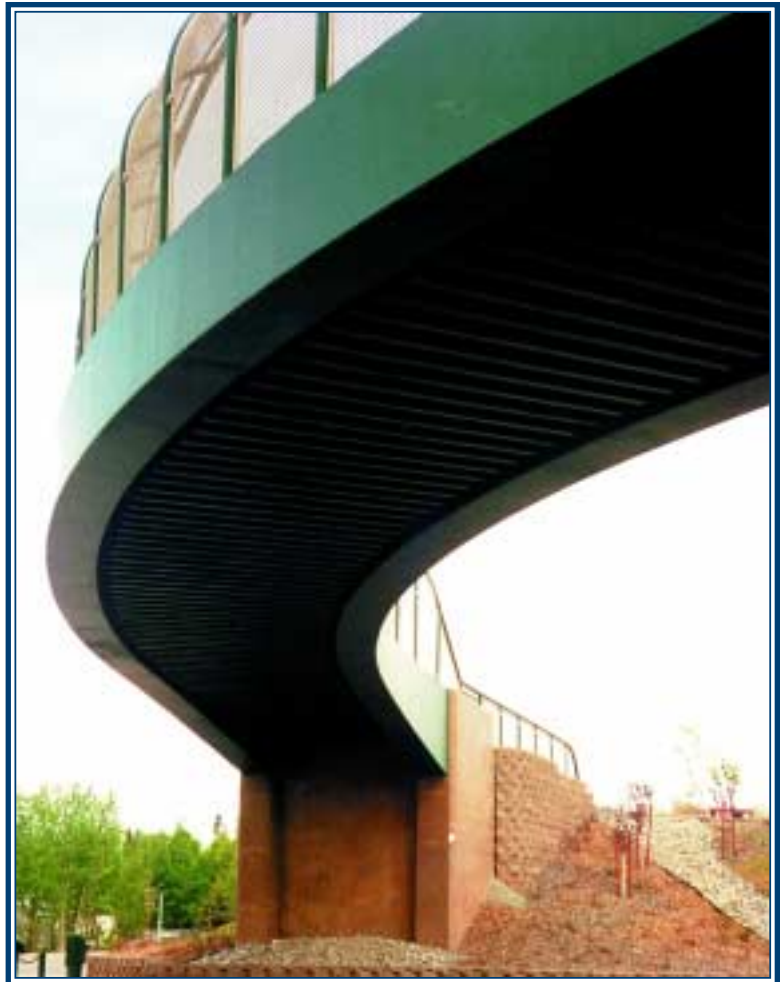
Fabricator:
Universal Structural, Inc.
Vancouver, WA*

Erector:
Steel Engineering & Erection, Inc.
Anchorage

Owner:
Municipality of Anchorage

Judges Comments:

“A very beautiful and graceful solution given the site constraints”



Project Data

Steel wt./sq. ft. of deck:
83 lbs.

Cost:
\$1.4 million

Steel Tonnage:
100



**Please note that red text denotes an AISC member*