

Rungsundet Bridge

Sogn & Fjordane Counties, Norway

Location: Norway

Contractor: Christie & Opsahl AS

Owner: Public Roads Authority



The Rugsundet Bridge is part of a mainland connection to the island Bremanger in Sogn County and Fjordane County in the western part of Norway. The bridge crosses the strait between Kolset on the mainland and Krakevik on the Rugsund Island.

The Bridge was originally designed as a 3-span, free cantilever, concrete box girder bridge, total length 311 meters (1,020 feet), with a main span of 172 meters (564 feet), assuming normal density concrete in all parts of the bridge. Norconsult AS of Norway conducted a peer review of the original design calculations and drawings on behalf of the owner, the Public Roads Authority. They proposed a redesign of the bridge incorporating the use of rotary kiln expanded lightweight aggregate concrete in part of the superstructure.

The lightweight aggregate was supplied by Stalite Structural, Salisbury, North Carolina, USA through Axion A/S of Tromsø, Norway. The use of lightweight aggregate concrete allowed the main span to be increased from 172 meters (564 feet) to 190 meters (623 feet). One of the most significant advantages of increasing the main span length was that the foundations could be moved to shallower water depth. This simplified the construction of the bridge considerably. It reduced the height of the pier columns and reduced the cost of the foundations.

A preliminary cost comparison between the two alternatives showed that the lightweight aggregate concrete alternative was at least 7% lower in cost than the original design. The Public Roads Department, therefore, decided to put both alternatives out to bid. When the bids were received, the lightweight aggregate concrete alternative was actually 15% lower in cost than the original normal density concrete design alternative.

This is the second bridge in Norway that used lightweight aggregate from Carolina Stalite Company. The first bridge was the Raftsundet Bridge completed in 1998 in northern Norway. The Raftsundet Bridge was a main span of 298 meters (977 feet). This was the first bridge project in Norway that the Public Road Authority allowed lightweight aggregate concrete to be pumped.

Built with

