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# Deai Bridge & Todoro Bridge

DEAI BRIDGE & TODORO BRIDGE / KIYOKAWA

おおいだ豊後大野ジオパーク  
Oita Bungoono Geopark



### Area Information

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### Roadside Station Kiyokawa

1574-1 Kiyokawacho-Sunada, Bungo-Ono, Oita Prefecture  
Tel: 0974-35-2117 Parking Capacity: 88 cars  
Open Hours: 7:30 AM - 6:00 PM  
At this station, stores and restaurants provide a wide variety of local specialties such as clean peach, golden sesame, and processed foods using them.

Oita Bungo-Ono Geopark Promotion Council <http://bungo-ohno.com>  
Bungo-Ono City Commerce and Tourism Division, 1200 Miemachi-Ichiba, Bungo-Ono, Oita Prefecture 879-7198, Japan  
TEL: 0974-22-1001 (main) FAX: 0974-22-1426



DEAI BRIDGE & TODORO BRIDGE / KIYOKAWA

Magnificent view  
of the largest and  
second largest bridges

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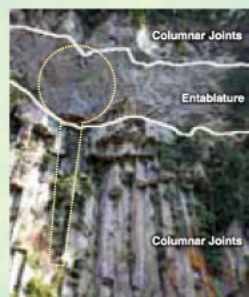
# Deai Bridge and Todoro Bridge

The Deai and Todoro stone bridges were built during the end of Taisho era (1912-1926) and the beginning of Showa era (1926-1989). It may seem strange that these two large stone bridges were built so close together. The reason was partially because the two bridges were built for different purposes, but the deep, vertically-walled valleys and volcanic rocks created by the eruption of Mount Aso 90,000 years ago also influenced the placement. The Todoro bridge has the largest arch in Japan, and the Deai bridge has the 2nd largest. People and nature worked together to create this fantastic geographical site.

#### 4 Ladle Rock (Shakushi-iwa)

The columnar joints are the handle, and the entablature above is the bowl. The entablature section is irregular columns that did not have vertical cracks during the cooling period. It probably resulted from the accumulation of pyroclastic flow.

It looked like a ladle to the local people.



Ladle

#### 2 Todoroki Bridge

The Todoroki Bridge was constructed in 1934 by the local forestry office as a part of the railway that was laid to carry logs from Mt. Katamuki on the Okudake River. The bridge had to be large and sturdy to support the rail and train. The arch on the right bank measures 32.1 meters and the arch on the left is 26.2 meters. The distance between the water surface and girder is 27 meters. Both the Deai and Todoroki bridges were built completely of Aso ignimbrite.



Todoroki Bridge when under construction. This clearly shows how they made the arch.

#### 1 Deai Bridge

The Deai bridge was built in 1924 to connect the Todoroki area on the right bank of the Okudake river to the Hiraishi area on the left. The footbridge has an arch span of 29.3 meters, the 2nd longest in Japan following the adjacent Todoroki bridge. Juko Sakai, who lived in the region, is listed as the mason. The bridge is 32.2 meters long and 3.9 meters wide.

It took a lot of stones to make the bridges. It must have been hard to collect so many.

We can find many rocks in rivers and on cliffs.



Geoguide

#### Traces of Pyroclastic Flow in Aso and Columnar Joints

The huge eruption of Mt. Aso 90,000 years ago generated a large pyroclastic flow that covered the majority of Kyushu Island, including the entire lowland area of Taketa, Bungo-Ono, and Usuki east of the mountain. Aso ignimbrite is found in these areas.

Pyroclastic flow consists of a huge amount of very hot volcanic gas, lava, pumice stone, and volcanic ash at temperatures as high as 300 to 700 degrees centigrade that flows rapidly down the sides of the volcano reaching speeds of more than 100km/h. The accumulated deposits continued to melt in the extreme heat but eventually began to cool. During the cooling process, vertical cracks appeared in the rock due to contraction and came to look like bundles of pencils. These cracks are called columnar joints.

#### Image of the pyroclastic flow path from Mt. Aso



It looks like a curtain. It is amazing to know that this was created naturally.

#### The canyon was formed by the eruption of Mt. Aso and the Okudake River



The Okudake River is believed to have existed before the eruption of Mt. Aso 90,000 years ago.

Mt. Aso erupted 90,000 years ago, creating a massive pyroclastic flow.

Pyroclastic flow travels downhill. A large amount of pyroclastic flow pooled along the river.

Pyroclastic flow that pooled along the river melted again by its own heat, and gradually cooled.

The Okudake River again flew into the area where the land covered by the pyroclastic flow was still lower than the surrounding areas.

The flow of the Okudake River eroded the vertical cracks in the hard rock to form the deep valley.

## This is a product of nature's blessing and people's wishes

Pyroclastic flow from Mt. Aso 90,000 years ago covered most of the Bungo-Ono region, then cooled and hardened to become Aso ignimbrite. During the cooling process, vertical cracks appeared in the rock. These were eroded by the Okudake River to create a box canyon that looks like a large ditch. The valley presented an obstacle to people in the area until the Edo period (1603-1867), when bridge building techniques were brought to the area. Aso ignimbrite for the bridges was cut from the cliff.