

# **Construction Method for Erosion Control Dam making the most use of Thinned Wood --- New technology with due consideration to environment, landscape and cost**

**Site of the dam: Fujitani valley, Seki City, Gifu Prefecture, JAPAN**

**Supervisor: Sabo Division, Construction and Management Bureau, Gifu Prefecture**

## **1. Introduction**

Fujitani valley is a torrent situated in the area of Kamino, Seki city in Gifu Prefecture.

The dam, which is designed to prevent disasters due to flash flood and associated sediment transportation, was constructed in the period from 2002 to 2005.

The dam is featured by the face of which material is, initially, thinned wood used for concrete placement works.

Mold forms, in general, are removed as soon as concrete placement works at a certain section are completed, but, in this case, the mold forms are not removed. The dam looks therefore like a wooden structure which fits in well with natural environment. (Figure1)

## **2. Definitive Plan of the Dam**

**Catchment area: 0.15 km<sup>2</sup>**

**Crest Length: 63.0m**

**Dam height: 7.0m Concrete volume: 1,580m<sup>3</sup>**

**Sediment Storage Capacity: 4,510m**

**Dimension of the Mold Form: 176m<sup>2</sup>**

**Project Cost: ¥157million (US\$1 million)**

## **3. Background of the Project**

As much as 82% of the area, 8,659 km<sup>2</sup> out of 10,596 km<sup>2</sup>, of Gifu Prefecture is covered with dense forests. The forests have however got devastated because of sharp reduction in demands of wood and associated poor maintenance practices.

The Sabo Project is therefore implemented aiming at killing two birds with one stone by thinning forests and conserving environments of the valley.

## **4. Planning Criteria of the Prohject**

The Project was planned and implemented with due consideration to the following points;

- (1) cost of the mold forms made of thinned wood
- (2) environment conservation in order to protect the habitat of fireflies
- (3) landscape of the area in which a few houses and a road are located  
(Figure2, 3)

**5. Advantages of the Mold Form made of Thinned Wood**

The advantages of the use of the mold form made of thinned wood are as follows;

- (1) cost reduction by using unhusked wood
- (2) reduction in waste wood by using nonsorted wood
- (3) stimulation in local traditional paper industry by using locally available paper ,  
Mino – Washi, to fill gaps on forms
- (4) vegetation cover on the face  
the thinned wood, due to decay, provides wild grasses with good nursery bed
- (5) both thinned wood and paper are decomposed naturally  
(Photo1, 2, 3)

**6. Cost Estimation**

The cost for the project was reduced by ¥3,000 each square meter of mold form and by ¥900,000 in the lump sum

**Comparison of the unit cost of the mold form**

	unhusked thinned wood	ready-made wood
wood	1,820	4,680
labor	2,764	2,764
truck crane	256	256
miscellaneous	6,115	6,115
total	10,955	13,815

**7. Environment Conservation**

Specific considerations to natural environment are required in the project area because the area is featured by fireflies, Seki-Hotaru, and is designated as the natural environment conservation area.

Local people of the area, by organizing specific group, have therefore devoted themselves to preserve the Genji fireflies and their environments and requested the project to pay special attention in implementing the project.

The project was therefore implemented by taking specific means as follows;

- (1) used specific bricks for revetment works along the valley and valley bed in order to provide fireflies with comfortable nursery bed,**
- (2) vegetation covers on the earth cut and filled**
- (3) worked out the implementation program in closer consultation with local people for successful environment conservation**

## **8. Conclusion**

**Concrete placement works employing new technology by using materials such as thinned wood and locally available paper for mold form was, though this was the first case, successful because of closer cooperation with the people of the union of the forestry cooperatives of Gifu Prefecture and local people living in the project area.**

**Possible changes in mold forms left on the face and developments in vegetation cover must be closely monitored and technology acquired must be improved and further applied.**