

## ROBERTS MCCUBBIN PRIMARY SCHOOL BOX HILL, VIC, AUSTRALIA

### ENVIRONMENTAL/GEOTECHNICAL ENGINEERING/GABION ROCK BANK

**Product:** Maccaferri Galmac (95% Zn 5% Al Mischmetal Alloy) Coated Gabions

#### Project Information

The woven mesh Gabion "Rock Banks" at Roberts McCubbin Primary School are designed to passively assist the ventilation system in providing cool air into the classrooms during the summer months.

The concept is that the rocks store energy, so that in summer they are colder than the hot summer sun (and air) during the day and so air drawn through the Gabion rock bank will be cooled by the rocks prior to being introduced into the classrooms at a low level (near the floor). Also, in winter, the rocks will be warmer than the cold night air, so in the mornings the air can again be drawn through the rocks to help the heating of the classrooms.

#### How Does It Work?

The earliest published example of how this can be applied is the system designed by consulting engineers Ove Arup and Partners and architect Pearce Partnership for the Harare International School in Zimbabwe. Here, the active energy storage system is based on cages of loose rock that act as thermal batteries. Supply air to the school's classrooms is pumped through steel cages containing locally sourced granite pitching stone, after which the tempered supply air enters the classrooms through low-level grilles. During summer nights cool air is blown through the building via the rock stores, which are cooled by the very cold night air that is a feature of the local climate. The ventilation system purges the rocks of heat to 20°C, providing 4-5°C pre-heat the next morning. The system also functions efficiently during the winter months, when Harare experiences chilly mornings followed by pleasantly warm afternoons. By operating the low energy fans during daytime hours only, afternoon heat is stored in the rocks, subsequently producing several degrees of preheating to the early morning supply air. In operation, the classrooms are consistently 3-5°C cooler than the external temperature.

Client name:

ROBERTS MCCUBBIN PRIMARY SCHOOL

Gabion Contractor:

GROUNDTECH

Architect:

1:1 ARCHITECTS PTY LTD

Product used:

GALMAC+PVC COATED GABIONS

Construction date:

MAY 2008



Gabion Rock Bank

Date: May 2008



Close Up Of The "Cut Outs"

Date: May 2008



Prior To Placement Of The Suspended Concrete Floor Slab

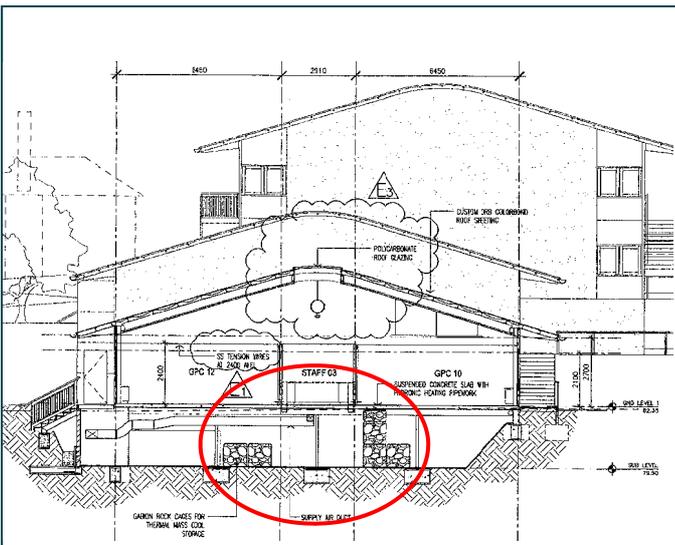


Gabion Rock Bank

Date: May 2008

## What is a Rock Bank?

The cooling source for a building's cooling requirement is what is described as a rock pile thermal storage cooling system or 'rock bank'. These systems are unique and require specialist design. When designed correctly they are effective in providing a passive source of cooling, particularly in the autumn and spring seasonal months. Several woven mesh Gabion "Rock Banks" exist in Australia.



Typical Detail Of Gabions

Date: Sep 2007



Gabion Rock Bank With Steel Work

Date: May 2008

## Maccaferri Australia Pty Ltd

22 Powers Road, Seven Hills, NSW, 2147 - Australia  
PO Box 575, Seven Hills, NSW, 1730

Tel. (+2) 8825 6300 - Fax (+2) 8825 6399

E-mail: sales@maccaferri.com.au - Web site: www.maccaferri.com.au

The information presented herein is, to the best of our knowledge and belief, correct and is subject to periodic review and revision. The validity of the information relative to the subsoil, hydraulic and other engineering conditions must be ascertained by a suitably qualified person. No warranty is either expressed or implied. Unauthorised reproduction or distribution is prohibited. Copyright is vested in Maccaferri or Maccaferri's Principal where applicable.