

# AVEI NEWSLETTER



*Archi'Terre workshop on "Plasters", Algiers*

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Please feel free to share this newsletter with your friends and colleagues as we spread the knowledge of earth architecture to the world!

Earthily yours,  
The AVEI Team

**AVEI consults on a Nari Gandhi House**

Satprem Maïni and Lara Davis traveled to Bombay in the beginning of April for an evaluation visit of a house designed and built by the renowned architect Nari Gandhi. Satprem and Lara have provided expert consultation to the owner, architect Mr. Kinner Nayak, for the non-invasive restoration of this exemplary building, including temporary support and phased repair of the masonry during roof restoration work.

Nari Gandhi was an emblematic Indian architect of the organic architecture movement during the 20th century. Educated at the Sir J.J. School of Architecture in Bombay, he also spent time studying under Frank Lloyd Wright at the Taliesin studios. While living an extremely simple and strict life, he devoted all his energies to his creative architectural expression, which defied conventional architectural norms in its incorporation of various building materials and its interaction with space and nature.



*Interior of the Revdanda House by Ar. Nari Gandhi*

This particular residence created by Nari Gandhi, located in Revdanda, south of Bombay, was constructed during the 1970's at the behest of regular client and friend Sadruddin H Daya. It incorporates arches and open rooms giving off onto the gardens and the plantation beyond. The materials include terra cotta tiles and bricks as well as wood from the plantation.

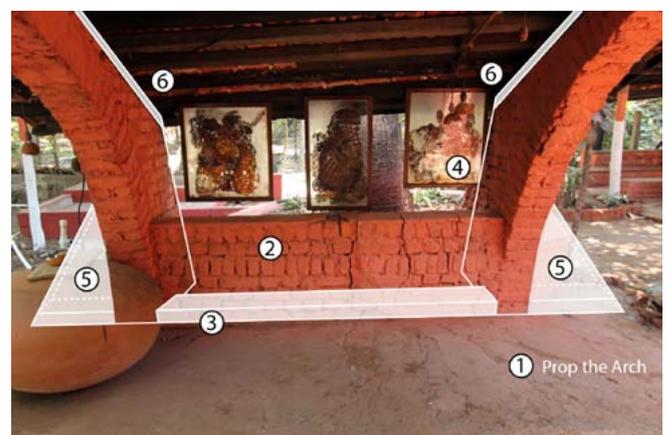
While minor pathologies have developed over the years in the masonry, most of these are not dangerous pathologies

and primarily add to the rough aesthetic of the building (e.g., tilting walls and uneven bond patterns). However, the roof must be completely dismantled due to rotting and deflecting beams and purlins, and this will require some of the arches to be additionally supported to cope with the changing distribution of loads.

The advisory reporting will allow the building to be safely restored, with the most minimal intervention to insure the stability of the arches and the longevity of this architectural masterpiece.



*Collapsed arch requiring reconstruction*



*Tilting arches at tree well requiring tie-back*

### A practical experiment in stabilized rammed earth for roads

At the request of Sunil Rastogi from Aeonian Earth Solutions in Bombay, the Auroville Earth Institute conducted applied research on a stabilized rammed earth road in the driveway of the Earth Institute on 28 March. The goal of the research was to test the product EC-100 as a stabilizer for rammed earth roads. EC-100 is a cementitious stabilizer produced by MJ GreenTech in Korea, which Aeonian Earth Solutions has successfully used for CSEB stabilization with soils including greater silty and clayey soil fines.

Due to the volume of material required for manual mixing and the narrow time window of application after the stabilizer is activated, the entire Earth Institute team was mobilized. The earth and stabilizer were mixed by hand, evenly screeded, and then compressed using a motorized road roller. Three different mix



*Manual mixing*

ratios were employed; the first employed red soil with EC-100 stabilization, the second incorporated both EC-100 and portland cement stabilization, and the final mix employed only portland cement stabilization.

No laboratory tests have been performed for this applied research, but the results are being evaluated based upon visual performance criteria, including observation for pathologies such as shrinkage, cracking, pitting, depressions, and erosion.

The initial evaluation of the stabilized rammed earth road application has indicated that EC-100 alone is not sufficient for the stabilization of continuous segments of road. Future testing may be done using Condor SS as a road stabilizer, and will later incorporate mechanical mixing machines for larger quantities of even, road surface applications. ■

### basin-SA shares about the Auram 6000

On 28 April, the basin-South Asia regional knowledge platform shared an article about the Auram 6000 press, entitled "Auram 6000: Forthcoming Technology for Compressed Stabilised Earth Block Production", as part of its fortnightly email alerts.

Basin-South Asia is a platform to enable and promote the sharing of knowledge for sustainable habitats and livelihoods for rural poor in South Asia.

<http://www.basinsa.net/> ■



*Applying and compressing the mixtures*

**Satprem and Lara return to Algeria for Archi'Terre 2013**

Satprem Maini and Lara Davis returned to Algiers for the third annual Archi'Terre conference, organized by the Algerian Ministry of Culture and held at the Ecole Polytechnique d'Architecture et d'Urbanisme d'Alger (EPAU).

From 20 to 25 April, events took place in the gardens of EPAU and in Riad el-Feth cultural center. The opening ceremonies included a performance by "Terra Efimera" (Ephemeral Earth), a Spanish performing group who center their performances around the central character of 'earth'. These performances dis-



*Satprem demonstrating the stability of an arch*

play transient images made from earth applied on a back-illuminated cloth accompanied only by music.

A pavillion was set up in the EPAU gardens with 3000 book titles

about earth architecture and cultural heritage preservation as well as materials from the previous exhibitions "From Earth and Clay" and "Earths, from Africa and Beyond".

Daily practical workshops were given on the topics of "arches, vaults, & domes", "rammed earth", "adobe & CSEB", and "plasters". Two days of seminars were held with presentations on the various methods for building with earth as well as overviews of traditional and contemporary earthen architecture.

Lara and Satprem led the six-person instructor team for the arches, vaults, & domes workshop. From 60 to 80 people were able to attend the workshops each day. Satprem also gave a presentation in French on the first day on CSEB architecture during the seminar, "Building with earth: initiation to building techniques".

**And South to the Wilaya of Ghardaïa**

After Archi'Terre, Lara and Satprem participated in a visit of the architecturally-significant M'Zab Valley region, which centers around the town of Ghardaïa on the northern edge of the Sahara desert in Algeria. Ghardaïa is notable for its vernacular architecture built from textured lime-plastered earth

and stone that incorporates many levels interconnected by small staircases, enclosed terraces, and small window openings. These features serve both to minimize solar gain and to permit women to pass through their houses unobserved. They visited several houses and public buildings that exhibited this unique architecture. ■



### Lara presents at International Seminar | Earth Architecture in Porto

Lara Davis was invited to give a lecture at the "International Seminar | Earth Architecture" hosted on the 2-3 May by the Centro de Inovação em Arquitetura e Modos de Habitar (CIAMH, the Center for Innovation in Architecture and Methods of Dwelling) at the Faculty of Architecture, University of Porto, Portugal. This two day conference brought speakers together from Portugal, the UK, France, and India. Presentations covered topics of knowledge transfer in the field of earth architecture, sustainable and economical use of earth in construction, and various social initiatives in the field.

Lara presented a lecture entitled "Earth in the Field: Hazards, Contingencies, and Best Practice in Fieldwork", which outlined basic knowledge required in the construction of vaulted earthen masonry, technical contingencies encountered during practice in the field, and best-practice preparation for fieldwork. The lecture closed with a best-practice case study of the Al Medy Mosque, designed and built by AVEI in Riyadh.

<http://www.arquiteturadetera.com/>



### Site visit to the Mairie Building, Pondicherry

Satprem and Lara were invited by Ajit Koujalgi of INTACH Pondicherry (Indian National Trust for Art and Cultural Heritage) to join in on a site inspection of the Mairie building in Pondicherry.

The inspection of the building was led by Professor Arun Menon and Professor C.V.R. Murty from the Structural Engineering Division, Department of Civil Engineering at the Indian Institute of Technology (IIT Madras). The goal of the inspection was to assess the possibilities for restoration and seismic retrofitting of this historic building on the Pondicherry waterfront. The Mairie building, like many unreinforced masonry buildings of its period in the region, is built with walls of rubble masonry and earth fill and ceiling systems of Madras terracing. This is to be considered by INTACH as a test case for the conservation of other historic masonry buildings in the state.

INTACH works with the Government of Pondicherry and the public to conserve the architectural heritage of Pondicherry. To read more about their work, visit:

<http://www.intachpondicherry.org/English/home.aspx>

### Chairman Singh visits the Nataraja Temple

Dr. Karan Singh visited the Sri Karneswar Nataraja Temple and met with Satprem Maïni in early April. The temple, sponsored by Dr. Singh and built by the Auroville Earth Institute in 2006, is located 12 km north of Auroville on the beach. The temple is a pyramidal structure composed of CSEB brick, with an internal pointed dome housing a shrine dedicated to Shiva, lord of the Dance.

They discussed the possibility of building of a small shop next to the temple to serve the needs of visiting pilgrims and tourists. ■



*The Sri Karneswar Nataraja Temple, viewed from outside and inside*

### Meet our new intern!

The architecture department welcomed a new intern in April.

#### *Clément*

Clément Duvoux joined the Earth Institute as a trainee architect for a four month internship. He is interested in self-help construction and sustainable community housing. He received a Bachelor's degree from the Nantes School of Architecture in France. While studying architecture in Mexico, he started to get interested in earth construction techniques. He took one year off school to work in architectural firms and improve his skills in sustainable design and its constructive aspects. He worked as a trainee at Carlos Ferrater & Associates, Barcelona during the last semester. In the coming school year, he will begin a Master's at the Grenoble School of Architecture in France to study vernacular architecture and holistic design. ■



*AVEI team members on the Kodaikanal office trip in May*

### Farewell to Richard

Richard Presley left the Earth Institute to return to the US in mid-May. During his five month stay in Auroville, he efficiently worked to perfect the Auram 6000 press and to establish the testing protocol for the Earth Institute's laboratory. He has left a great mark on the Earth Institute and we hope to have him back among us in the future. ■

### April training courses

In April, the Earth Institute conducted two weeks of training courses on CSEB production and use. Thirty trainees attended, representing eight countries: twenty-two from India, two from the UK, and one from Gambia, Germany, Nigeria, Saudi Arabia, Singapore, and the USA. In addition to the CSEB coursework, the course also included a component of rammed earth. ■

### Training Course Schedule for 2013

#### *June*

3rd to 8th - Ferrocement  
10th to 15th - AVD Theory  
17th to 22nd - AVD Masonry

#### *July*

1st to 6th - CSEB Design  
8th to 13th - CSEB Intensive  
15th to 20th - AVD Intensive  
22nd to 27th - CSEB Intensive

#### *September*

2nd to 7th - AVD Theory  
9th to 14th - AVD Masonry  
16th to 21st - CSEB Production  
23rd to 28th - CSEB Masonry

#### *December*

9th to 14th - AVD Theory  
16th to 21st - AVD Masonry

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