

AVEI NEWSLETTER



Eco-Community Center construction in Kaza, Spiti Valley, India

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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

**Eco-Community Center
in Spiti Valley**

In 2011, the Auroville Earth Institute took on a project to design and build a community center in the remote Himalayan town of Kaza, Spiti Valley, Himachal Pradesh. Designed by the Institute's architecture team, the ground floor of the community center will include a dental and optical clinic, a center for vernacular craft, a small library, and a kitchen and café. The first floor will be devoted to guest accommodations for villagers traveling to Kaza from remote outlying regions.

The project is being sponsored by The Spiti Projects, under the leadership of Joan Pollock. The Spiti Projects is a charity oper-



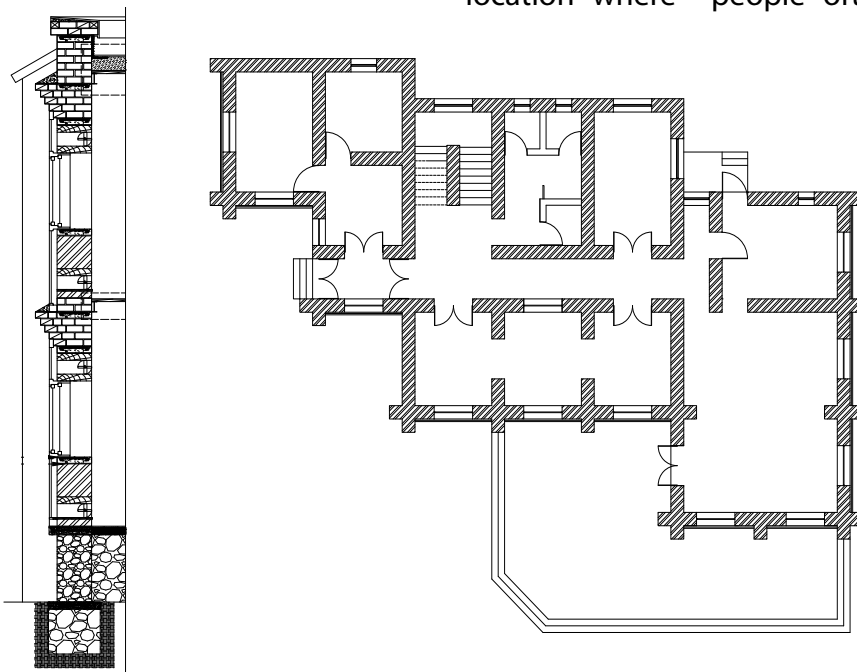
Rendering of the Kaza Eco-Community Center

ating in Spiti since 20 years, which is committed to environmental and conservation issues and which aims to help improve the health, hygiene and general wellbeing of the people of the Spiti Valley. The community centre is meant to respond to the need for specialized clinics and community services, in a location where people often

have to travel over 50 km to reach medical facilities. Optical clinics are particularly of need at this altitude, where high UV radiation, thin atmosphere and reflected light from the mountain faces are damaging to eyesight.

Website: <http://www.spiti.org/>

The building, which consists of a stone masonry foundation, CSEB elements, and rammed earth walls, has been designed especially for the harsh winter climate of Spiti. Trombe walls have been incorporated for passive heating of the building during the winter. The trombe wall system incorporates a large glass facade 7 cm from a rammed earth wall, which creates an air space between the facade and the mass wall. Solar radiation penetrates the glass facade to heat the rammed earth and the air in the cavity, the hot air rises, and is drawn by convection into the building through a small ventilator. This creates a one-way, passive convection



Section showing trombe wall and ground floor plan of community center



circuit through the building, which increases thermal gain and keeps inside temperatures well above freezing without the assistance of a conventional heating system.

The Earth Institute initially designed a traditional roof system, furthering research it had previously done at the Nako Monastery, Spiti. However, finally a composite roof system with steel beams and earth filling was chosen, because wood was not locally available.



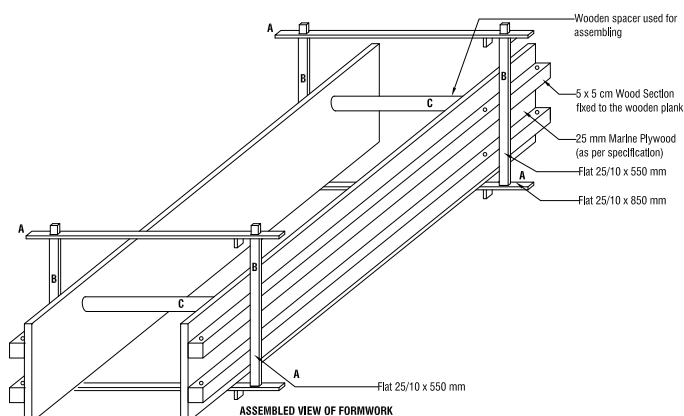
Rammed earth with the vernacular “wet” technique of Spiti Valley

As the region is prone to seismic activity, earthquake-resistant features have been incorporated. The building has been dimensioned for seismic resistance, and buttress walls have been added for lateral stability. Since vertical reinforcement can be problematic in rammed earth, extensive horizontal reinforcement has been used. This includes horizontal ring beams with the Earth Institute’s CSEB U-block system and bamboo reinforcement embedded into the rammed

earth walls and buttresses at critical corners of the building. Special rammed earth formworks have been designed, adapted from the traditional rammed earth formwork of Spiti, to incorporate these seismic resistance elements.

In June, Satprem Maïni and Lara Davis travelled to Spiti to supervise the plinth and damp proof course construction, to organize the team of local masons and unskilled workers, and to initiate

the construction of the rammed earth. T. Ayyappan joined them to supervise and assist with the formworks for the rammed earth walls, and then Lara stayed on to supervise the beginning of the rammed earth construction. With Satprem, Lara, and Ayyappan now back in Auroville, the site supervision has been taken over by architect Swati Negi. She will oversee the work for the coming two months until weather forces the construction site to close for the season.



Straight section of designed rammed earth formwork



Rammed earth walls built up to the sill level

Concrete vs. Earth in the Spiti Valley

Editorial: Lara Davis

Kaza is a remote mountain town – at 3,650 meters and 10 hours off-road from Manali – which demonstrates the complexity of modern and traditional ways of living and building in the Himalayas. The harsh conditions of Kaza include lows of -35°C and as much as 2 meters of snowfall during the winter season, which lasts as long as 6 months of the year. During this time, there is no passage in or out of the valley, and people must subsist with no electricity or running water in their homes. The constraints on building are enormous. The length of the entire construction season – between snowmelt and snowfall – is typically only 5 months. Few raw materials are available in the valley (e.g. trees and wood are very sparse at this altitude), and most construction materials must be brought by truck from Manali, Chandigarh or Delhi. Even in the summer season, with 35°C highs, rain or unseasonal snowfall can easily close the precarious mountain roads, seriously delaying the delivery of equipment and materials. In this environment, both modern and traditional means are needed for buildings to get built.

Despite its apparent distance from the rest of the world, the rolling shutters in Kaza's market are – like throughout India – painted with the logos of cement companies. Concrete block and reinforced



Crew member of the Kaza Community Center construction laying CSEB

concrete are accepted as the more modern building materials; however, the local people acknowledge that the lifespan of concrete is short compared to the traditional rammed earth buildings of the Spiti Valley. Earth and cement still compete in the construction market of Kaza.

The traditional rammed earth technique has been used in Spiti Valley for hundreds of years, for homes and temples alike. Rammed earth serves as a very effective thermal mass wall, insulating a building from outside cold without freezing and making it highly appropriate for the climate of Spiti. The local technique uses raw earth with a high moisture content, which is rammed with less compression than typical. This entrains more air into the earth and increases its insulating properties. High Lamas recently visiting Kaza lectured to Kazans about the need to continue building with the local rammed earth to suit the climate. But there is so much

changing right now in Kaza – including the climate. There is much more rain in the Spiti Valley now than in the past. The villagers know that concrete buildings are much colder in the winter than earthen buildings (e.g. imagine walking on a concrete floor in -35°C weather). But they still ask, is this technique worth preserving, or should this change also?

To stop building with rammed earth would compromise a whole way of living in the valley. Yet, hybrid systems, which combine vernacular techniques and new technologies, can be very effective solutions here. So far, the techniques demonstrated in the community center designed by the Auroville Earth Institute have attracted local master masons, contractors, village elders, Buddhist monks, and shop owners in Kaza. We hope that it will continue to slowly win the interest of local people, and perhaps also contribute to a renewed acceptance for building with earth. ■

Partnership with Hindustan University, Chennai

The Auroville Earth Institute was contacted by Hindustan University in Chennai to form a partnership between the two institutions to promote appropriate building technologies such as CSEB. Hindustan University envisages the establishment of a center for appropriate building technologies on its campus.

On the 5th of June, Satprem Maïni and Lara Davis traveled to Chennai to meet with the dean of the Architecture Department, Dr. Ravi Kumar Bhargava, the vice chancellor of the school, and several other upper administration experts. During this meeting, they were able to explore options for this future partnership.

On the 11th of July, Satprem gave an introductory day-long seminar on earth architecture on the Hindustan campus which covered the topics of traditional and modern earth building techniques, CSEB, building with arches, vaults & domes, and the disaster-resistant qualities of earth architecture. Four hundred students attended this lecture series and were invited to further their knowledge by attending courses specially organized for Hindustan University students and faculty at the Earth Institute.

The Earth Institute now plans to

offer a week-long intensive course on CSEB production, conducted for the interested students and faculty from Hindustan University. This course will take place in August at the Earth Institute's premises. With this course as a starting point, the Earth Institute hopes to further the main objective of the UNESCO Chair for Earthen Architecture, which is to "accelerate the research and development worldwide, and the dissemination of scientific and technical know-how on earthen architecture amongst the higher education institutions". ■



Poster for the lecture at Hindustan U.

Update of "Our Team" Page on the AVEI Website

The Auroville Earth Institute has updated the "Our Team" section of its webpage to incorporate the photos and biographies of its entire staff. This change stems from the desire to recognize and celebrate the diversity of backgrounds and skills found within the Earth Institute team.

In addition to Satprem Maïni and T. Ayyappan, who head the Institute and whose tireless management and expertise have shaped the progress of the Earth Institute, the staff members are varied in their competencies. Included are those involved in conceptual work, such as the architects and researchers, as well as those involved in construction, such as the masons and blockmakers. There are also individuals involved in dissemination through teaching and training, as well as individuals in support roles devoted to IT, accounting, maintenance, coordination, and librarianship.

We invite you to meet each of them at:

http://www.earth-auroville.com/our_team_en.php ■

AVEI in the Press

Newly launched architecture magazine DesignDetail covered CSEB and the Earth Institute's key role in promoting its use in the May-July 2013 issue of the magazine. In a two page article displaying several photographs of the Earth Institute's finest work, the article touched upon the ecological and economical aspects of CSEB as well as its suitability in a variety of architectural applications.

To see the e-edition of this issue, visit :

<http://bit.ly/11Klg9a> ■

Meet Our New team Members!

The architecture department welcomed a new architect and intern in June.

Rushank

Rushank V Mishra is an architect at the Auroville Earth Institute. He is a Graduate from the School of Planning and Architecture, Bhopal and the recipient of a Diploma in Architecture Assistantship from Aryabhat Polytechnic, Delhi. Apart from architecture he likes to explore poetry, fiction writing, painting, photography and dance.

During his academics, he was shortlisted in the NSDC, Universal Design at SPA Bhopal and participated as a Delegate in BHOPAL 2011, mAAN in Bhopal. He was a part of Rang Vidhusak as an actor and also volunteered at the NGO, Muskaan, an association that works to empower the differently abled. He is a founder of Humanolic Architecture network also.

For him Architecture is a journey towards consciousness and self exploration. As a student he attended a workshop on AVD techniques in Auroville.

He dreams to spread the awareness of earth as a construction material to the masses. After working for 2 years and finished few projects as a freelancer, now he is on a journey towards the consciousness in architecture with the Earth Institute.

Anubhav

Working as an intern, Anubhav Basak has joined Auroville Earth Institute to explore the immense capabilities of earth materials that could create a harmonious confluence of modern designs and materials. Currently pursuing his higher education at Dehradun Institute of Technology, Dehradun, he worked with Integrated architects. He was awarded 0.1% certificate from Central Board of Secondary Education and a gold medal in a web designing competition for 3 consecutive years. The colourful side of Varanasi and

its ghats encouraged his interest in photography. He has presented realistic sketches to a few social organizations, including Pt.Kishan Maharaj. He took part in the construction of a Bamboo shelter in Mawra Gram in Nainital with local villagers for social, cultural and spiritual awakening. He had presented seminars in promotion of Architecture at the school level too.

Architecture for him is to achieve inner peace through spaces and the feeling of "!" when one encounters a place or a thing. He completed his animation courses during schooling and CSEB workshop recently. His dream in architecture is to blend and connect past and modernity in future that stands ageless! ■

Overview of June & July Training Courses at AVEI

During the months of June and July, the Earth Institute held seven weeks of training courses at its facilities. It kicked off the courses with a one-week course on ferrocement, followed by AVD Theory and AVD Masonry. In July, the courses began with the newly created CSEB Design course which is a workshop specially conceived for architects and architecture students to teach the theory of CSEB construction and to give the opportunity for guided design exercises. The rest



of July was devoted to intensive courses, with two separate weeks of CSEB courses and one week of AVD courses.

During these two months, the Earth Institute welcomed 156 ar-

chitecture students, engineers, architects, and contractors, of which 148 were Indian, two were Spanish, one was Bangladeshi, one was American, one was Swiss, one was Thai, one was Canadian, and one was French. ■



Students taking part in the ferrocement course

AVEI Training Course Schedule for 2013

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



Activities of Our Local and International Partners

Fundraising for Eco-Construction Pavilion in Senegal

We invite you to learn about this exciting project in Senegal to educate about Sustainable Development and to support the continued construction of the educational center at: <http://www.mymajorcompany.com/projects/promouvoir-l-eco-construction-au-senegal>

CSEB Workshop in Southern France with Touraterre

The French organization Touraterre is inviting architects and architecture students to take part in its workshop in L'Isle-sur-Sorgues, Provence, France. Over the course of this workshop, par-

ticipants will design and build a terrace-café for a retirement community using CSEB. Dates are from the 7th to the 29th of September 2013 during which students can join for two or three weeks. For further information or to register, contact : touraterre@gmail.com

Eco-Productive Cities, Auroville

Auroville Green Practices Workshops is offering a three-day seminar from 5 to 7 September covering sustainable development for the urban setting. Visit their site for more information: <http://aurovilleretreat.mailerlite.com/d4v1r5/17556311/z6h0/814797927>

AVEI Newsletter

Issue 11 - July 2013
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Editor-in-Chief:
Hilary D. Smith

Auroville Earth Institute
Auroshilpam
Auroville 605 101 T.N.
India

Tel.: +91 (0) 413 - 262 3330
/ 262 3064
Fax: +91 (0) 413 - 262 2886

www.earth-auroville.com

info@earth-auroville.com
training@earth-auroville.com