

AVEI NEWSLETTER



Sunrise on a New Year: may 2020 bring you all of what you need!

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The Earth Institute wishes you a healthy and prosperous beginning to 2020! After a quiet end to the year with members of our team traveling, we are gearing up for the new decade.

The team has had some interesting opportunities to collaborate on research into the use of alternative materials for block production, as well as some small construction projects around Auroville. Training courses have been solidly booked, with many traveling from abroad to take part. A new module for the website is almost ready and will greatly improve the experience of signing up for training courses. And a new partner Auroville unit will soon be offering high quality CSEB to Auroville and the larger region.

The end of the year has seen an unexpected last hurrah for the monsoon and the Earth Institute measured a total rainfall of 1097 mm for the year, a little short of the annual average.

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

The Decade in Review

The second decade of this century (and millennium) has come to a close and the Earth Institute has many achievements that reflect the areas it has worked in over this ten-year period. As hindsight can distill what has stood out as major breakthroughs, what better time than the beginning of 2020 to look back and identify the construction projects, publications, awards, and events that have stood the test of time. This timeline aims to share the highlights of the 2010s in the areas of design and construction, research, training, publication, and dissemination. ■



Satprem presented at the **Tech4Dev International Conference** in 2012 hosted by the UNESCO Chair in Technologies for Development at Ecole Polytechnique Fédérale de Lausanne



Kaza Eco-Community Centre: This community center, funded by Spiti Projects and designed by the Earth Institute, was completed in 2015 in Spiti Valley, high up in the Himalayas. It showcases the region's traditional methods of rammed earth with added earthquake resistance through design strategies and reinforcement, and a trombe wall for passive solar heating.

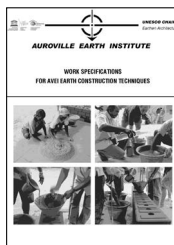
New **CSEB Design** course begun in 2012

New **Earth & Bamboo** course offered in conjunction with AGP Workshops and Bamboo Centre begun in 2015



AVEI's participation for the first time in the annual **Architerre festivals** in Algiers, Algeria in 2010

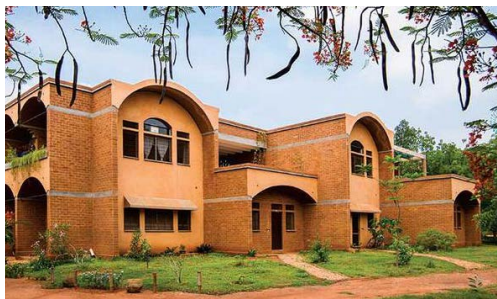
Publication in 2013 of **Work Specifications for AVEI Earth Construction Techniques**



Earth USA 2015 Satprem and Lara presented at **Earth USA** in 2015 in Santa Fe, USA



Prince Sultan Bin Salman Award for Urban Heritage, Al Turath Foundation, 2010, for Al Medy Mosque in Riyadh, Saudi Arabia



Realization Community: This residential community in Auroville was completed by the Earth Institute in 2012. Composed of 17 apartments spread over 1,752 m² on two to three floors, the buildings featured CSEB construction with vaulted roofing and other appropriate building technologies.

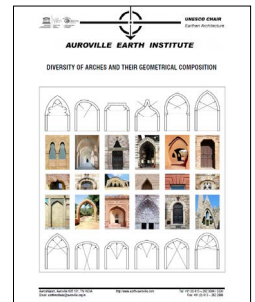


Visitor Centre PEC Road: A Poured Earth Concrete (PEC) road was completed in 2015 at the Visitor Centre parking in Auroville. Building on the experiences of two other PEC road experiments at the Earth Institute premises, the road had pre-cast PEC curbs and a wearing course mix stabilized 8% cement and 3.3% lime.

Translation of **Earthen Architecture Today** from French into English by Lara & Hilary, published by Museo in 2017



Sharanam Centre for Rural Development (Phase II): In 2018, the Earth Institute finished the second phase of the Sharanam campus, which included dormitory facilities and a conference hall, with concept design by Lara. The one- and two-story structures for the dormitories all featured CSEB walls and vaulted roofs whereas the conference hall featured poured earth concrete walls covered with a conical vault with a maximum span of 15 m – one of the largest spans in the world for an earthen vault.



Completion in 2019 of a new AVEI publication by Satprem entitled **Diversity of Arches and Their Geometrical Composition**

New **Bioclimatic Earth** design studio offered through a collaboration between Omar and Lara begun in 2016



First international Low Carbon Award for the Kaza Eco-Community Centre at Construction21's Green Building & City Solutions Awards, given in 2016 during the COP22

Open House at Earth Institute and **Rammed Earth Stele** at Unity Pavilion in honor of Auroville's 50th anniversary in 2018



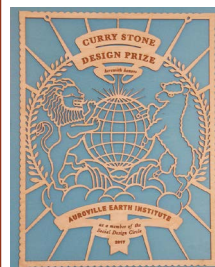
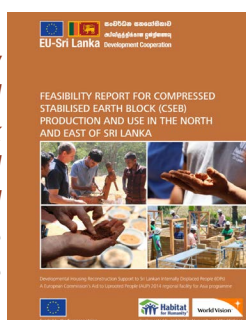
Lara presented at **IASS 2018** in Boston, USA



Satprem and Lara presented at **Terra 2016** in Lyon, France

Beginning in 2017 of collaboration on EU-funded **"Homes not Houses"** project in Sri Lanka with Habitat for Humanity Sri Lanka and World Vision Lanka

Publication in 2017 of Lara and Satprem's **Feasibility report for compressed stabilised earth block (CSEB) production and use in the north and east of Sri Lanka** by the Publications Office of the European Union



Member of the **Social Design Circle** from the Curry Stone Design Prize in 2017

New **Wind Turbines** workshop taught by Ayyappan begun in 2018

Publication of a case study of the Sharanam vault by Lara, Satprem, and Mahesh in **ELSEVIER Structures** in 2018



Research on Alternative Materials for Blocks

Due to the Earth Institute’s technical expertise and testing capabilities, the team has been contacted several times this year to test alternative materials for block production.

Waste material blocks

Over the summer, Auroville waste disposal service, EcoService, asked the Earth Institute to produce a series of blocks made primarily with shredded waste materials like polystyrene and plastic. EcoService does a commendable job at attempting to reduce landfill through encouraging low-waste lifestyles, educating about waste segregation, and finding ways to sell and recycle the segregated waste. This research aims to help them find ways of using the waste they collect in the development of additional infrastructure on their campus.

Five mixes were developed with varying levels of polystyrene, yellow packaging, plastic packaging, soil, and cement. The blocks were then tested in compression and were found to be very spongy, which meant that the compressive strength was not really relevant as they did not break. However, as they demonstrate significant deflection under load, they would only be suitable for boundary walls or sheds with a light roof.



Mixing shredded polystyrene with water, soil, and cement ; various finished samples



Foundry sand blocks

In November, the Earth Institute initiated a research project to study the potential of foundry sand for use in block production. Foundry sand is used in foundry casting processes to form around the mold. Its composition can be summarized as primarily silica-rich sea sand, bentonite clay, a small amount of coal powder, and water. Foundry sand can be reused multiple times for casting, but eventually it must be discarded.

The Earth Institute was contacted by a company in Bangalore that produces cast iron products. They were interested in finding a way to recycle their foundry sand once it needed to be discarded. As a result, the Earth Institute agreed to produce a series of compressed blocks

using the discarded foundry sand, bentonite, water, and stabilization with either cement or lime.

Twenty samples with cement stabilization and twenty with lime stabilization were produced and have been curing since late November. These will undergo compression testing in January. ■



Foundry sand blocks awaiting testing

Visitors to AVEI

In November, the Earth Institute received a visit from Mr. N.K. Negi, chief architect of the Public Works Department in Himachal Pradesh. Satprem was introduced to Mr. Negi through Joan Pollack of Spiti Projects and Mr. Negi came to explore how the Earth Institute could collaborate with the Public Works Department to develop a building code or specification for the Spiti Valley region that would foster techniques like rammed earth and trombe wall. These techniques had been previously demonstrated to great approval in the Kaza Eco-Community Centre, which was designed by the Earth Institute for Spiti Projects. Mr. Negi's initiative to further promote these building techniques in Spiti Valley is an excellent next step and we hope this project will be able to be carried forward. ■

New Team Member

The Earth Institute has welcomed a returning member to the office.

Angelica

Although I grew up in the urban set up of Bogota, the capital of Colombia, I was fortunate to get away from the busy city every weekend and visit our family house in Anapoima, a quaint little town 2 hours away from

Bogota. Here I was able to explore groves of mango and guava trees, bamboo, flowers, cotton, coffee, lots of birds and a wonderful net of anthills. This time of my childhood and these memories continue to inspire me to try always to see the bigger picture of nature.

I went on to study architecture in Bogota, and during my last year of studies came to India to do my internship at the Earth Institute in Auroville for six months in 2012. In 2014, life brought me back to Auroville. This time I volunteered at Sacred Groves for a year. While building for this project, I saw shelter not as a built object but a basic human necessity, and its deep relationship with food, water and ecology in nourishing the human soul. This inspired me to learn about farming and I started this journey with Pebble Garden, Auroville.

Also, during this time, I met the person I would share my life with. We both shared the same passion and were developing the curiosity to learn more about how to grow our own food even before we build our house. These questions led us on an exploration of culture of farming and life in India. We lived in Kodaikanal for a year and a half, farming, planting trees, building a wattle and daub cow shed while living in the middle of a forest. Later on we moved to the Himalayas where we rented a one-acre piece of land in which we developed grounded skills in farming, understanding natural succession and evolution in a real

and raw context. I also had the opportunity to design an adobe house for our friends who shifted their lives to a rural context.

In mid 2019 we packed our home and with a more solid set of skills we returned to Auroville, a place where natural succession is represented in many forms and where we are planning to continue this learning.

I joined the Earth Institute again in November 2019 and I have the intention to explore the idea of bringing together research about the importance of soil and its manifestations in shelter, food, clothing etc., exploring how versatile, alive and dynamic it is through a permanent exhibition at the campus. ■

Recent Training Courses

The Earth Institute has held a series of well-attended training courses over the past three months. In October, Omar and Lara co-taught Bioclimatic Earth design studio, which attracted 17 students from all over India, as well as France, the United Kingdom, and Oman.

Training courses continued in December with CSEB Intensive and AVD Intensive taught over two consecutive weeks. Both courses had over 30 trainees enrolled, with a very international composition representing India, France, Algeria, Spain, Kuwait, Turkey, the United



States, and South Africa, as well as a group of 17 participants from Australia during the first week.

The month closed with a two-day awareness program for a group from Hubli where students were introduced to the basics of earth construction through lectures, demonstrations of CSEB production, and the opportunity to build simple arches. ■

**AVEI Training Course
Schedule for 2020**

March

2nd to 7th : AVD Intensive
9th to 14th : CSEB Design
16th to 21st : CSEB Production
23rd to 28th : CSEB Masonry

April

13th to 27th : Bioclimatic Earth

June

1st to 6th : Ferrocement
15th to 20th : AVD Theory
22nd to 27th : AVD Masonry

July

6th to 11th : CSEB Design
13th to 18th : CSEB Production
20th to 25th : CSEB Masonry

August

10th to 24th : Bioclimatic Earth

September

31/8 to 5th : CSEB Production
7th to 12th : CSEB Masonry
14th to 19th : AVD Theory
21st to 26th : AVD Masonry

November

2nd to 7th : Wind Generator

December

30/11 to 5th : CSEB Intensive
7th to 12th : AVD Intensive
14th to 28th : Bioclimatic Earth

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Our training course coordinator Saravanan has welcomed a new baby girl, Akshita!