



Directorate of Outcome Outcome Report(Event/Activity Organized @ AUH)

1. General Information

Date: 22/04/2022

Event Type: Workshop

Event Title: Sustainable Building Practices

Venue: Construction Yard, AUH

Organized by(School): ASAP

Student Participation*: No. of Students from AUH (Course wise):-B.ARCH- 20, B.Plan- 1, M.Plan- 7

Faculty Participation*: No. of Faculty Members from AUH (Deptt. wise):- 11

Participation from outside AUH*: No. of Students & Faculty Members- Nil

(Enclose attendance sheets in given format)

Event Coordinator(s) with designation: Dr. Pallavi Sharma (Professor), Ar. Geetika Verma (Assistant Professor II), Ar. Meghna Vij (Assistant Professor),, Ar. Raghav Agrawal (Assistant Professor)

Details of Expert/Speaker/Resource Person/Judge:

SN	Country Name	Expert Name	Organization Name	Designation	Specialization	Contact No.	E-mail Id	Address	Major Areas where Amity can Collaborate with expert	CV of Expert (Yes/ No)
1					NA					

2. Outcome of the Event with Time Lines (Proposed/Achieved)

Envisaged Outcome	Tangible/ Intangible	Achieved/ Proposed	Target date & responsibilities (if proposed)	Details of outcome
1. Outcome related to Academia Connect				
a) Collaborations for Research Papers / Conference Papers/ Book Chapter etc.	NA			
b) Collaborations & MOU for Research Guidance [PhD, PG & UG (summer training, Dissertation)] & Projects/Use of Instruments etc.	NA			
c) Collaboration for Funded Projects	NA			
2. Outcome related to Industry Connect				
a) Placement	NA			
b) Collaborations for Research Papers	NA			
c) Collaborations & MOU for Research Guidance [PhD, PG & UG (summer training, Dissertation)] & Projects/Use of Instruments	NA			
d) Collaboration for Funded Projects	NA			
3. Outcome related to Society Outreach				
a) Benefit to society in terms of Health & Hygiene	NA			
b) Benefit to society in terms of Education	NA			
4. Outcome related to Students Learning & Grooming				
Learning from the workshop: <ul style="list-style-type: none"> Using the Pythagoras rule. Usage of tools on site. Using earth rammer. Curing of bricks and its importance. Understanding of timing of drying mortar. 				

5. Any other

The workshop started by dividing the participants into three distinct groups and each was assigned a different task.

- Group 1- Bench made from bricks using the rat trap bond.
- Group 2- 4.5ft high Jaali wall make from bricks.
- Group 3- Bench made from bricks using cavity walls.

3. Event Report along with glimpses of the event (Photographs)

3.1 **General Introduction of the Event** - Amity School of Architecture and Planning, Haryana organized a building material and construction workshop on the occasion of International Earth Day 2022.

3.2 **Objectives of the Event**- The purpose of the workshop was to develop a general understanding of basic building techniques amongst the students, get some practical knowledge.

Procedure for Group 1:

The process of building a bench using rat trap bond starts with providing plain and strong bedding. To provide bedding the team started digging with the help of a spade of 4 to 6-inch-deep pits in the ground in L shape. After emptying the pit, the ground is made a plain surface with the help of an earth rammer and the ground is made moist with water.

After achieving a plain surface, mixture of mortar of ratio 1:5:3 is prepared. Now the PCC is laid with the mixture of broken bricks to achieve the strong foundation. To begin the procedure of laying the bricks we first make sure that the L shape of the bench is in a proper right angle using a thread and the 3:4:5 rules (Pythagoras theorem). The pattern of laying bricks is mentioned in the attached drawing given below. These drawing were referred to understand the laying pattern for the bricks. Each layer was laid carefully, and the mortar was again put in between and above the bricks. After laying each layer the thread is elevated according to the increasing height to keep the angle of the bench correct. Along with this to make sure the bench is erected vertically in a proper manner the usage of a plumb bob is made, it is used after laying each layer of bricks. A total of 5 layers of bricks are erected vertically to achieve a height of nearly 575mm.

Materials used- Bricks, Cement, Sand, trowel, spade

Learning from the workshop:

- Using the 3:4:5 rule (Pythagoras theorem)
- Usage of tools on site.
- Using an earth rammer.
- Curing of bricks and its importance.
- Understanding of timing of drying mortar.

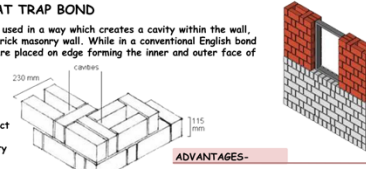
RAT TRAP BOND

The rat trap bond is a masonry technique, where the bricks are used in a way which creates a cavity within the wall, while maintaining the same wall thickness as for a conventional brick masonry wall. While in a conventional English bond or Flemish bond, bricks are laid flat, in a Rat trap bond, they are placed on edge forming the inner and outer face of the wall, with cross bricks bridging the two faces.

WHERE TO USE?

It is suitable for use, wherever one-brick thick wall is required. Since its original dissemination in Kerala in the 1970s by architect Laurie Baker, rat trap bond has been extensively used in every category of building from large institutional complexes, community buildings.

Government offices/village panchayats, individual homes both for high income and middle income and also in government supported EWS housing programs.








ADVANTAGES-

- The cavities in the masonry act as thermal insulators. Thus, the interiors remain cooler in summer and warmer in winter.
- Rat Trap masonry uses fewer bricks and mortar reducing the cost of masonry up to 30%, when compared with conventional brick masonry.
- The number of bricks used in the construction of rat trap masonry is 470, whereas, in conventional masonry, it is 550.
- Walls constructed using rat trap masonry can be used as load-bearing as well as a thick partition wall.
- As this type of masonry has 30% of cavities, the dead load of the structure is reduced which in turn reduces the structure supporting members such as column and footing.

BRICKS-

- The bricks should be of standard size, the variation isn't accepted.
- The brick should be perfectly rectangular in shape with straight and sharp edges and corner.
- The bricks should be uniform in size.
- The bricks should have compressive ratio as standard as the quality of the bricks should not degrade.

Types of bricks can be used for the construction of Rat Trap bond

				
Common burnt clay bricks Used in general work	Engineering Bricks Offer excellent load bearing capacity	Sand lime bricks Offer excellent strength	Concrete bricks Provide excellent aesthetic presence	Fly ash clay bricks may expand when in contact with moisture

DISADVANTAGES-

- Due to the formation of cavities in the masonry, the building does not provide good sound insulations.
- Skilled labour is required to construct this type of masonry.
- Frequent cleaning of external surface required if not plastered.
- Special care and attention to be given while designing and constructing rat trap bond masonry.



Bond Explanation

Completion of Rat Trap Bond

Procedure for Group 2:

The process of making jail wall began with providing a well prepared foundation around 5" deep. After that PCC was prepared by mixing cement water sand and brick pieces together. The PCC mixture was laid in the bedding. The next step was to lay 3 course of bricks. After that the design of the jali wall was started, which was made 900mm.

Learning from the workshop:

- Usage of tools on site.
- Using an earth rammer.
- Curing of bricks and its importance.

ASAP AMITY UNIVERSITY HARYANA **JALI**

Jali describes a perforated stone screen, usually within ornamental pattern. Containing minute carved, delicate geometrical and floral designs, these perforated screens were an integral component of Mughal architecture. Constructed primarily using marble or sandstone, their form includes windows, railings, dividers and outer walls, which provided ventilation and screening from light, imbuing their surroundings with a calm, cool and airy environment.

MATERIALS USED-

Jali was in modern context is constructed with different materials like concrete, lightweight concrete, bricks, fly ash, Stone, Wood, MDF, PVC Sheets, Stainless steel, Acrylic, Terracotta etc. We can even find precast perforated blocks all around the world which is used mainly for interior partitions as well as walls for corridors and verandahs.

ADVANTAGES-

Curtainment of Heat-
The apertures in the Jali allow the ingress of heat during the day. By blocking the direct entry point of sunlight, Jali makes a pleasant interior.

Jalis control light:
Jalis are a great replacement or accompaniment for windows as they block off the glare but welcome the much-needed filtered daylight without fully obstructing the view outside.

Stimulation of Air-
Jali plays a vital role in acting as a panel that controls the compression and release of cooled air inside the house. In simple terms, Jali is the mechanical version of an air-conditioning compressor.

Jalis aid seclusion:
Jalis let us see out but not be seen - though this largely depends on the size of the slits (apertures) and how much light they let through. Such perforated screens are often also used in the exteriors of homes, as skylights, windows, partition walls, railings, door panels and more. They are also great for hiding bathroom vents and piping systems.

Shadow patterns are a plus-
The perforations cast dappled shadows and light on the indoor walls and floors that dance and move with changing angles of the sun.

APPLICATIONS-

Application of jali walls can be seen in partition walls, parapet walls, stair-railing, screens, ventilator even in boundary walls for in gardens. Jali walls when used in boundary walls for gardens to be beneficial as it regulates the flow of light and air and also prevents unwanted animals and peeps to enter the garden.

PARTITION JALI WALL

Bond Explanation



Completion of Jali

Procedure for Group 3:

The process of building a cavity wall bench starts with providing plain and strong bedding. To provide bedding the team started digging a 4 to 6-inch-deep pits in the ground in L shape. After emptying the pit, the ground is made a plain surface with the help of an earth rammer and the ground is made moist with water. Now a mixture of brick dust and pcc is made and laid into the pit and again made plain with the help of the earth rammer.

After achieving a plain surface, mixture of mortar of ratio 1:5:3 is prepared. A thin layer of this mixture is put on the rammed pcc and brick dust. To begin the procedure of laying the bricks we first make sure that the L shape of the bench is in a proper right angle using a thread and the 3:4:5 rule (Pythagoras theorem). The pattern of laying bricks is mentioned in the attached drawing given below. These drawing were referred to understand the laying pattern for the bricks. Each layer was laid carefully, and the mortar was again put in between and above the bricks. After laying each layer the thread is elevated according to the increasing height to keep the angle of the bench correct. Along with this to make sure the bench is erected vertically in a proper manner the usage of a plumb bob is made, it is used after laying each layer of bricks. After every two layers 3 sheets of thermocol were stuffed in between the wall and butterfly ties were laid on the horizontal plane surface achieved. A total of 6 layers of bricks are erected vertically to achieve a height of nearly 450mm.

Materials used- Bricks, Cement, Sand, thermocols for insulation, trowel, spade

Learning from the workshop:

- Using the 3:4:5 rule.
- Usage of tools on site.
- Using a pump bob.
- Using an earth rammer.
- Breaking a brick into a three-quarter closure bat.
- Curing of bricks and its importance.
- Understanding of timing of drying mortar.

ASAP AMITY UNIVERSITY HARYANA **CAVITY WALLS**

1. Total no of bricks:- 160
 2. Cement sand Ratio:- 1:5
 3. Total no of thermocol sheets:- 6(375mm x 800mm x 15mm thick)
 4. Total no of Butterfly ties:- 18
 5. Tool Requirements:- Trowel, Bolster chisel with blade, brick layers, building line, spirit level

Bond Explanation



Completion of Cavity Wall

The workshop helps students to understand the procedures and the intricacy of work on site. Also help to understand the value of labors work and their hardship. The practical scenario on site is very different than the theoretical learning. The workshop was also a playful and bonding experience for the department.

3.3 Brief about the address/talk of speakers

3.3 Photographs with caption (also share high resolution JPEG files of photographs)



Site preparation



Preparation of mortar



Brick Placement



Brick Placement



Cavity Wall -After every two layers 3 sheets of thermocol were stuffed in between the wall and butterfly ties were laid on the horizontal plane surface achieved



Jali Wall



Rat Trap Bond



Cavity Wall



Group Picture- ASAP

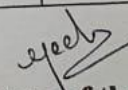
3.3 Scanned copy of attendance sheets

Attendance Sheet of Faculty Members (AUH)				
Event Title:Date:				
S.No.	Participant Faculty Name	School	Designation	Signature
1	Dr. Ila Gupta	ASAP	Director	<i>Ila Gupta</i>
2	Dr. Pallavi Sharma	ASAP	Professor	<i>Pallavi Sharma</i>
3	Dr. DoreshorKhwairakpam	ASAP	Associate Professor	<i>Doreshor Khwairakpam</i>
4	Ar. Geetika Verma	ASAP	Assistant Professor II	<i>Geetika Verma</i>
5	Ar. MeghnaVij	ASAP	Assistant Professor I	<i>Meghna Vij</i>
6	Ar. AgrawalRaghav	ASAP	Assistant Professor I	<i>Raghav Agrawal</i>
7	Ar. MeenuBabu	ASAP	Assistant Professor I	<i>Meenu Babu</i>
8	Ms. HarneetKaur	ASAP	Assistant Professor II	<i>Harneet Kaur</i>
9	Dr. Shashi Mehta	ASAP	Assistant Professor I	<i>Shashi Mehta</i>
10	Mr. Nitish Kumar	ASAP	Assistant Professor I	<i>Nitish Kumar</i>
11	Mr. Siddharth P. Bettajewargi	ASAP	Assistant Professor III	<i>Siddharth P. Bettajewargi</i>
				<i>Geetika Verma</i> Name & Signature of the Event Coordinator

Attendance Sheet of Students (AUH)

Event Title: Date:

S.No.	Participant Name	School	Programme & Semester	Signature
1	K. Naveena	ASAP	B. Arch, 8 th Sem	Naveena
2	Priyamvada D	ASAP	B. Arch, 8 th Sem	Priyamvada
3	Shivang Kuman	ASAP	B. Arch, 8 th Sem	Shivang
4	Vidur Sharma	ASAP	B. Arch, 8 th Sem	Vidur
5	Divisti Shing	ASAP	B. Arch, 8 th Sem	Divisti
6	Zwabi	ASAP	B. Arch, 8 th Sem	Zwabi
7	Aadithya	ASAP	B. Arch, 8 th Sem	Aadithya
8	Mohit Yadav	ASAP	B. Arch, 8 th Sem	Mohit
9	Ganpati	ASAP	B. Plan 1 st Sem	Ganpati
10	Hitesh	ASAP	M. Plan 1 st Sem	Hitesh
11	Lokesh	ASAP	M. Plan 1 st Sem	Lokesh
12	Rohit	ASAP	M. Plan 1 st Sem	Rohit
13	Akul	ASAP	M. Plan 1 st Sem	Akul
14	Marcia	ASAP	M. Plan 1 st Sem	Marcia
15	Ashmita	ASAP	M. Plan 1 st Sem	Ashmita
16	Ashvin	ASAP	M. Plan 1 st Sem	Ashvin
17	Ralak	ASAP	B. Arch 1 st Sem	Ralak
18	Shubham	ASAP	B. Arch 2 nd Sem	Shubham
19	Simran	ASAP	B. Arch 2 nd Sem	Simran
20	Sonia	ASAP	B. Arch 2 nd Sem	Sonia
21	Samuel	ASAP	B. Arch 2 nd Sem	Samuel
22	Sukhdeep	ASAP	B. Arch 2 nd Sem	Sukhdeep
23	Pritha	ASAP	B. Arch 3 rd Sem	Pritha
24	Anjul	ASAP	B. Arch 4 th Sem	Anjul
25	Manish	ASAP	B. Arch 4 th Sem	Manish
26	Yashika	ASAP	B. Arch 6 th Sem	Yashika
27	Nishant	ASAP	B. Arch 6 th Sem	Nishant
28	Sunny	ASAP	B. Arch 6 th Sem	Sunny


 Name & Signature of the Event Coordinator

Signature of HOI

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