

# "ASHIANA ANNEXE"

TECHNOLOGY INNOVATIONS DEMONSTRATION BUILDING  
AT  
THE PRESIDENT'S BODYGUARD ESTATE  
DEHRADUN



PROJECT SUMMARY

1. Name of Work :	Technology Innovations Demonstration Building Project at the Ashiana, President Estate
2. Expenditure Sanction Amount & Date :	Rs. 2,69,80,000/- dated 03.08.2016
3. Work Order Amount & Date :	Rs. 1,99,80,610/- dated 29.08.2016
4. Period of Completion :	10 Months
5. Date of Foundation :	27.09.2016
6. Date of Inauguration :	10.07.2017
7. Agency :	M/s Prashak Techno Enterprises Pvt. Ltd.
8. Plinth Area & Storey :	803.60 sq.m., Ground + 1

SALIENT FEATURES OF THE DEPLOYED TECHNOLOGY INNOVATIONS

- Green, Disaster resilient, sustainable and affordable "Onsite natural sanitation system integrated Building Technology Solutions with local soil as the key building material.
- Compacted Intermeshing® Blocks (CIB) manufactured from local soil using Cold compaction technique.
- CIB's have novel structural voids for intermittent horizontal and vertical reinforcement to enable appropriate structural strength obviating use of beams, columns and concrete lintels. The voids in the CIB also enables natural air curtain against temperature, noise pollution and water penetration.
- Peggable Contoured® Flat roofing comprising Joist and Contoured Pans which enables enhanced load bearing capacity.
- Inclined multi-baffles® Reactor (AIBR) system which enables a significantly better digestion of faecal matter resulting in significantly lower particulate effluent discharge.
- Uniquely constructed Lotus shaped wetland (CW) comprising horizontal and sub surface flow CW units with scientifically defined levels and hydraulic profile.
- Treated water after appropriate aeration is safely dischargeable for irrigation and non drinking usage, enabling mitigation of disease risk and ensuring Health and well being of residents and the community.



RESIDENTIAL AREA (Ground Floor)	210.64 SQ.M.
RESIDENTIAL AREA (First Floor)	216.58 SQ.M.
AREA OF STAIRCASE, PASSAGE & COMMON AREAS (Ground Floor)	181.94 SQ.M.
AREA OF STAIRCASE, PASSAGE & COMMON AREAS (First Floor)	175.99 SQ.M.

TOTAL B/UP AREA OF BUILDING	785.15 SQ.M.
AREA OF STAIRCASE CAP	18.45 SQ.M.

CARPET AREA OF ROOM_1	48.30 SQ.M.
CARPET AREA OF ROOM_2	33.39 SQ.M.
CARPET AREA OF ROOM_3	26.30 SQ.M.





Side Elevation



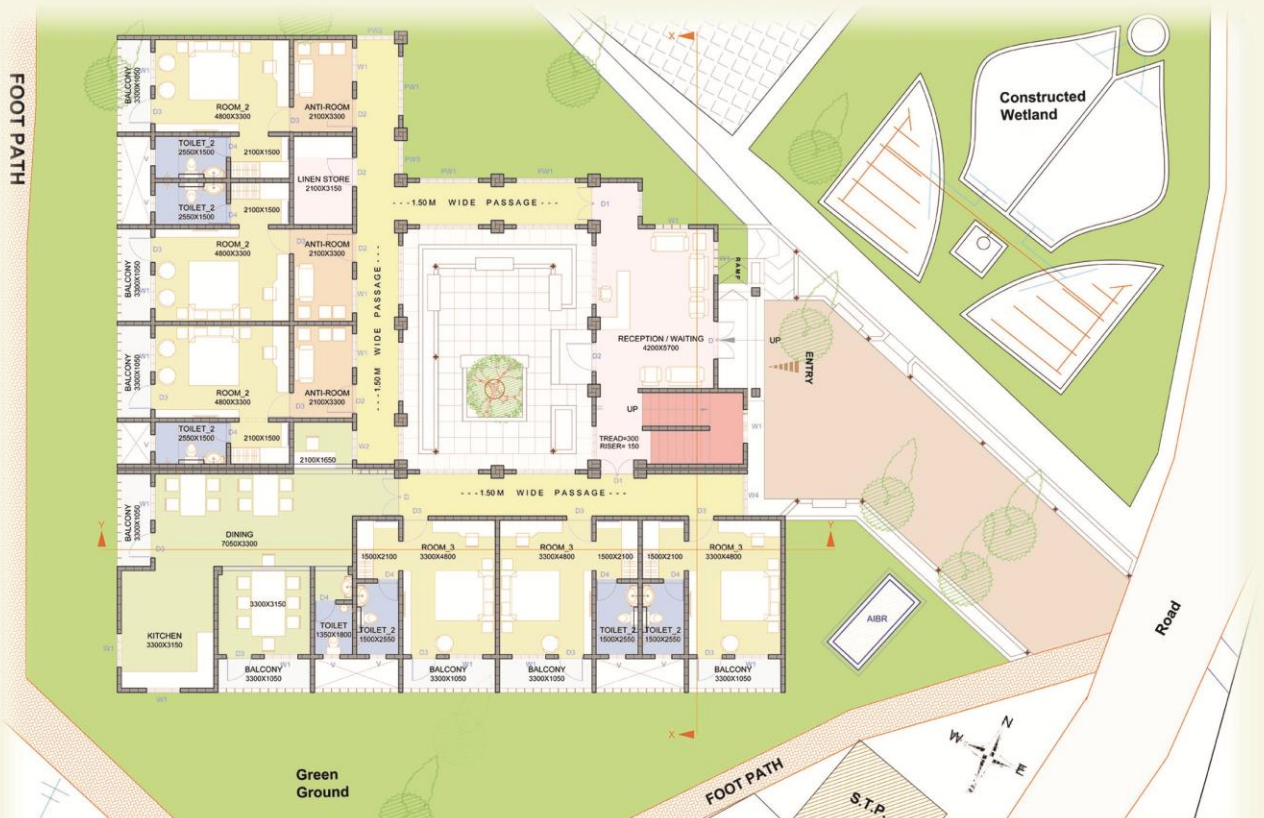
Front Elevation



ROOM TYPE 2



ROOM TYPE 3



Site Plan



FOUNDATION CEREMONY



First Floor Plan



View showing skyline of the structure



Rear view showing balconies



View showing rear facade & terrace



Top view showing terrace & CW



View showing entrance and foreground



STAGES OF MANUFACTURING



Machine Installation



Manufacturing Shed



Soil Sieving



CIB Manufacturing



CIB Stacking



Pan Manufacturing



Pan Curing



Joist Manufacturing



## STAGES OF CONSTRUCTION



Soling



Laying of PCC reinforcement



Filling and soling of foundation



Laying of first layer of bricks



Laying of bricks



Laying of joists



Laying of pans and filling



Laying of slab reinforcement





Slab Curing



Terrace Waterproofing



Plumbing in Toilets



False Ceiling Work



Kitchen Work



Courtyard Landscaping



External Plaster Work



AIBR Construction



Constructed Wetland Waterproofing



Painting



BEFORE



Site photos before construction

AFTER



Front Facade



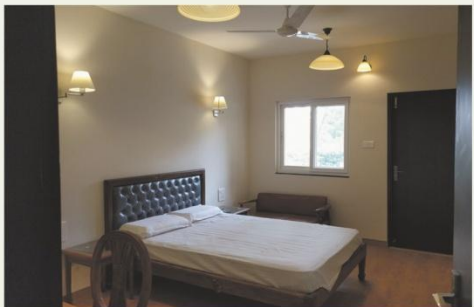
External Landscape with Entranceway



Central Courtyard



Toilet



Guest room



Main Entrance





# AIT

Asian Institute of Technology



MOU exchange with AIT

The Asian Institute of Technology (AIT), founded in 1959, is an international institution for higher education based in Thailand.

Its aim is to "promote technological change and sustainable development" in the Asia- Pacific region, through higher education, research and outreach.

The novel Habitech-NivaraTantra onsite Sanitation integrated Housing Technology solutions have been researched and developed at AIT.

The Building Technology Solutions have been developed at the Habitech Center under AIT solutions at AIT whereas the On-site Sanitation Management Technology Solutions have been developed under the NATS (Naturally Acceptable & Technically Sustainable) initiative of School of Environment Resources & Development at AIT.

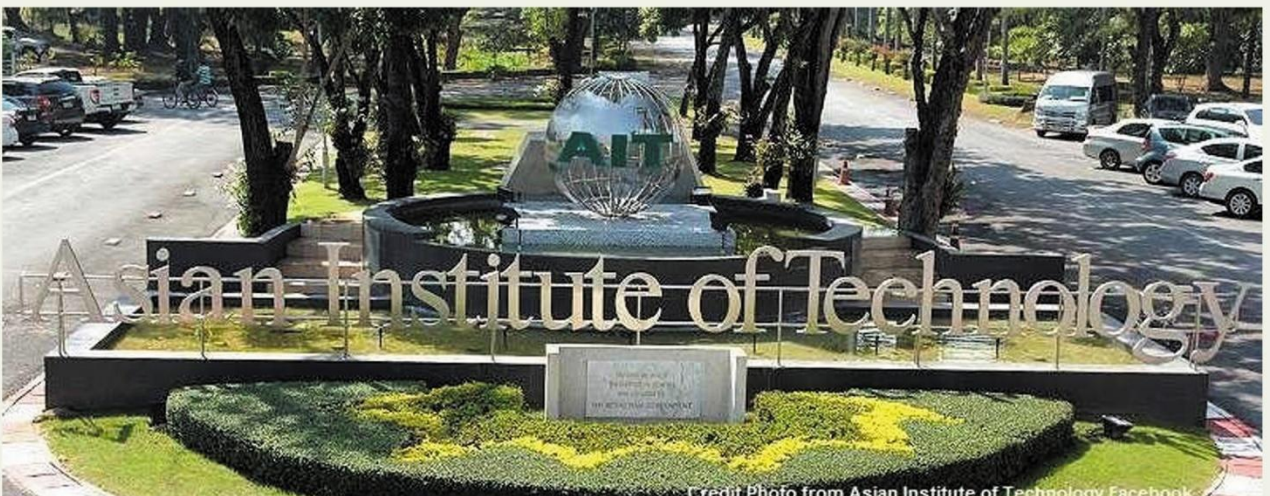
The President of AIT, Prof. Worsak Kanok-Nukulchai himself is a renowned Structural Engineer from University Of Berkley.

These technology solutions have Intellectual Property vide a portfolio of patent filings owned by AIT and managed by Prashak.

Two Indians (Prashak CEO – Dr. Praful Naik and Professor Siddharth Jabade) are co-inventors in the patents filed for these technology solutions.



MOU exchange with NATS



Credit Photo from Asian Institute of Technology Facebook

Asian Institute of Technology, Thailand



**Habitech-NivaraTantra® Building Technology Solutions Innovative Sanitation Integrated  
Community Housing Enabling Community Participation & Empowerment  
In Institutionalizing Affordable Housing / Buildings  
“SMARTGRAM - INTEGRATED SMART SETTLEMENTS”  
Sustainable, Cost Effective, Green, Innovative Building Technology and Systems**

**Habitech-NivaraTantra® Building & Onsite Natural Sanitation Technology Solutions**

The Housing / Building Structure technology comprises two key innovations :

"Compacted Intermeshing®" Blocks (CIB) made from local soil judiciously mixed with stabilizers and additives. The production of compacted intermeshing blocks is an entirely green process using novel, simple to use, manual press equipment (operable by unskilled people) for small projects and high pressure Hydraulic press system (operable by unskilled people after short training) for large projects and unlike conventional brick making process, it does not require kilns / furnace to fire the blocks.



Compacted Intermeshing® Blocks (CIB)

These blocks have novel structural voids for intermittent horizontal and vertical reinforcement to enable appropriate structural strength obviating use of beams, columns and concrete lintels. The voids in the CIB also enable natural air curtain against temperature, noise pollution and water penetration.



Curing of Blocks

"Peggable Contoured®" flat roofing structure comprising Joist and contoured pans manufactured with the help of novel joist and pan making equipment leading to a flat roof with significantly higher load bearing capacity with much lesser amount of Cement as compared to conventional flat roofs.



Pan & Joist based flat roof



Slab preparation

This innovative technology solution enables creation of state of the art, disaster resilient environmental friendly, green and cost-effective building structures of ground plus two levels using local materials and resources (unskilled manpower including women) with significantly lower use of Cement and Steel, resulting in low carbon foot print, gender equality and an effective financial inclusion model.

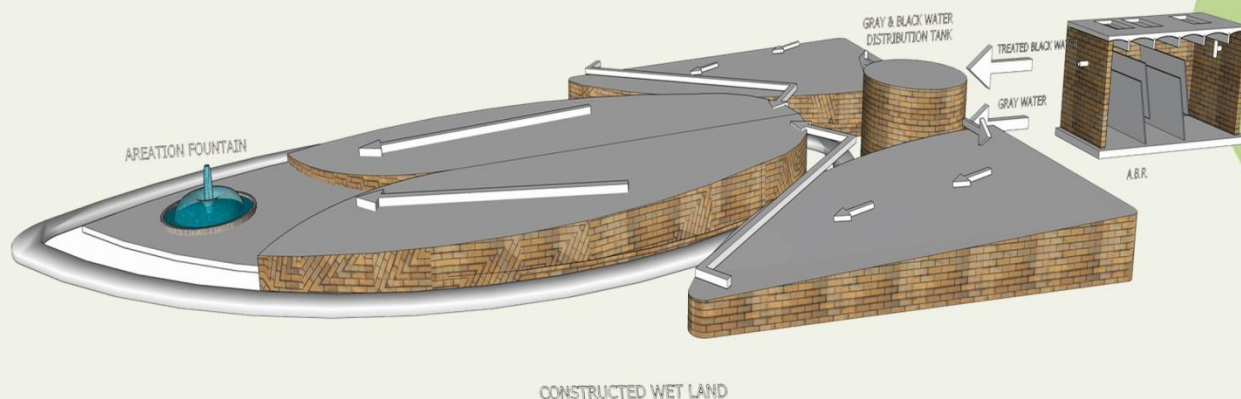


## The Onsite Natural Sanitation technology comprises two key innovations :

A novel Anaerobic "Inclined multi-baffles®" reactor (AIBR) system which enables a significantly better digestion of fecal matter resulting in significantly lower particulate effluent discharge.

The effluent discharged from AIBR is treated in a uniquely constructed wetland (CW) comprising horizontal and sub surface flow CW units

with scientifically defined levels and hydraulic profile and the treated water after appropriate aeration is safely dischargeable for irrigation and non drinking usage, enabling mitigation of disease risk and ensuring health and well being of residents and the community.



The above features makes the technology cater to the unmet need of the market – a long term durable structure integrated with onsite natural sanitation management system which is sustainable, disaster resilient, green solution for

construction structures including housing, empowering masses to build their own house in a very simplistic and most cost affordable way (enables an overall 15-30% cost advantage over conventional systems).



Phang NGA Project



Sanitation system at Phi-Phi Island

Habitech-NivaraTantra® - the integrated Innovative Building & Sanitation Technology solutions results in accomplishment of multiple value outcomes including breaking the shackles of dependency on construction skills and financial ability and empowering lay people to bring to reality, the creation of respectful, robust and habitable social housing community more particularly for the rural masses including the bottom of the pyramid comprising Economically Weaker Sections (EWS) & Low Income Group (LIG) communities.





REGISTERED OFFICE:  
Prashak Techno Enterprises Pvt. Ltd.  
D-101, 10 Kasturkunj  
ICS Colony, Bhosale Nagar  
Pune - 411007, Maharashtra India  
Telefax: +91 20 25529364

direct@prashak.com  
www.prashak.com



ARCHITECTS :  
**GROU PH I**  
ARCHITECTS AND DESIGNERS  
www.groupphi.com

STRUCTURAL :  
Parag Parandekar Consulting Engineers

PRASHAK TECHNO ENTERPRISES LOGO, SMARTGRAM, HABITECH-NIVARATANTRA, COMPACTED INTERMESHING, PEGGABLE CONTOURED, AND INCLINED-MULTI BAFFLES ARE REGISTERED TRADE MARKS OF PRASHAK TECHNO ENTERPRISES.



**AIT**  
Asian Institute of Technology



**Habitech** CENTER  
Building Systems

