Arati 3

India / Auroville, Tamil Nadu
12.001885, 79.8156512
Client Name: Auroville Foundation
Project website: http://www.shamadalvi.com/project/arati
249,99,58,0.6

Project Description

Forming part of a larger community, Arati 3 consists of 2 apartment buildings having 12 apartments with a mix of studio, single, double & three bedrooms units.. The buildings are flanked on the south face by an internal road towards which all living room balconies open out to while the quieter areas such as bedrooms & study face inner gardens. An open central staircase opens the building to both - inner gardens as well as outer street. One of the key features of the project are the multiple levels at which the apartments are put, creating for each apartment an individual landing foyer. Other key features are its micro balconies which allow opening out the long French windows for a sit out. The boxing of the balconies give additional protection against the harsh sun and strong monsoon rains. The frame structure uses cavity infill walls with a vermiculite fill for insulation. Aerated fly ash bricks used on the roof tops reduces heat gain on the upper levels. Integrating other infrastructural features such as storm water management, waste water recycling and reuse and low maintenance garden.

Building Details

Type of Building
Residential apartments

Type of project
New project

Site Area
2950 m²

Number of Floors
Ground + 2

Type of unit
Studio

Number of units
2

Area of unit
64 m²

Type of unit
1 BHK

Number of units
2

Area of unit
85;93 m²

Type of unit
2 BHK

Number of units
2

Area of unit
140 m²

Type of unit
2 BHK

Number of units
2

Area of unit
150 m²

Type of unit
2 BHK

Number of units
2

Area of unit
160; 170 m²

Type of unit
3 BHK

Number of units
3

Area of unit
180; 200; 220 m²

Gross floor area
Arati 3A building – 815 sqm; Arati 3B building – 815 sqm m²

Net floor area
905 m²

Non Air-conditioned area
Arati 3A building – 674.5 sqm; Arati 3B building – 662.5 sqm m²

Total Cost
INR 3,05,86,406 /- including infrastructure & interior fit outs.

Cost per m²
INR 15,750/- for bldg 01 (started in Sept 2008) & 17,500/- for bldg 02 (started in June 2010) including infrastructure but without interior fit outs (wardrobes / cabinetry / air conditioning / other extras); 18,750/- average for both buildings including infrastructure & interior fit outs

Year of completion
2010, 2012 (the two separate building constructions were staggered)

Year of occupancy
2010, 2012 (the two separate building constructions were staggered)

Project Team

Organisation
Shama Dalvi Architects

Website
www.shamadalvi.com

General contractor
Aurovikas constructions

Structural Engineer
La Première Construction, (Structural Consultant & Engineering Contractors)

Architech
Shama Dalvi

Architect's profile
• 1993: Bachelor of Architecture Goa College of Architecture • Shama Dalvi began her architecture profession as an apprentice in Auroville after graduating. The apprentice years made her aware for the need of a sustainable development responsive to the environment and its depleting natural resources. She started her independent practice two years after with a keen inclination to attribute an environmental sensitivity to her architecture. In 1995, she set up her studio, Shama Dalvi Architects (SDA) .

MEP consultants
Aqua Engineers, Shama Dalvi Architects

Electrical engineer
Mr GunaSelvam

Landscape Architect
Shama Dalvi Architects

Lighting design
Shama Dalvi Architects

Project manager
Shama Dalvi Architects, Mr Ulrich Blass

Environmental Consultant
Shama Dalvi Architects

Other (Please specify)
Sound Wizard Sound Engineers

Climate Analysis

Describe the local climate
• The climate in Auroville can be classified as "Tropical (winter) monsoon climate" (Am in the Köppen climate classification scheme) • The average rainfall is 1,230 mm. a year. The main rainy season is from October to January with a shorter spell between July - August • The average maximum temperature is 32.2 °C (90.0 °F), average minimum 20 °C (68 °F). May and June are the hottest months with occasional showers.

Design Approach

Concept
Forming part of a larger community of apartment buildings, Arati 3 is the ‘outer face’ of the community. Carrying the role of an interactive building on the streetscape, the design goal is to enable street side interaction with the residents.

Site integration
Direct access given to buildings from street which is on the south. Additional ramp access from the north side from parking garages.

Building design
Expanding on the concept of interaction between street & the residences, all living room balconies face the street while the quieter areas such as the bedrooms and study face inner gardens. Passer by’s can chat up with friends on the balconies. An open central staircase opens the building to both – the inner gardens as well as the outer street. One of the key features of this project are the multiple levels at which the apartments are put, creating for each apartment an individual landing foyer without having a neighbour directly opposite. The other key features are its box balconies which allow just enough space to open out the long French windows and sit out. The boxing of the balconies also give additional protection against the harsh sun and the strong monsoon rains, preventing both from entering into the rooms. Integrating other infrastructural features such as storm water management, waste water recycling and reuse and a low maintenance garden, Arati 3 encourages interaction between people without compromising on privacy or noise intrusion.

Special Feature

Natural Lighting

• Inset Balconies and utility spaces provide self shading (cost implication – medium) • Use of landscape planting to shade building (cost implication – low)

Water efficiency

• Separate water meter installed for every apartment as well as common area utilities • Use of water saving fixtures and fittings in bathrooms & kitchens – only high efficiency water fixtures used • Passive RWH system to collect roof runoffs from the buildings as well as surface run-off. Involves supportive soft landscaping, swales to slow and capture run-off, multiple small ponds to capture the run-off and divert into larger recharge pond. • Sealed anaerobic WWTP for recycling 100% of the black & grey water generated • Automated timer system installed along with the drip & sprinkler iirrigation system for gardens. 60% of irrigation is through drip which reduces evaporation.

Passive heating/cooling

• Orientation of bldgs with longer sides along North-South axis, short walls on east-west (cost implication – none) • Spaces used more during the day such as living rooms are placed on the south face while less used spaces such as bedrooms placed on the north (cost implication – none) • Smaller window openings with deep shading devices on North façade reduce the amount of heat entering the rooms on north (cost implication – none) • Use of Aerocon (fly ash) blocks on roof terrace (cost implication – high) • Open terraces surfaced with reflective ceramic tiles to reduce heat island effect and exhibit high reflectivity (cost implication – medium) • Use of vermiculite in cavity walls on North, East & West sides (cost implication – medium)

Cost effective features

• Reduce waste by - use of ready mix concrete • Design has minimal footprint by tightly connecting functions and stacking floor plans effectively • Reduce waste by - use of good quality shuttering to prevent leaks through gaps during concreting. • Design of floor plates simplified to smaller spans that would utilize less steel & concrete. • Design of spaces to minimize circulation spaces within apartment

Eco-friendly features

• vermiculite and tar sheet infill between slabs for sound insulation, • Use of ready mix concrete for controlled and waste-less construction • Use of precast elements for sills, lintels • Use of plastic sheeting for water curing to reduce water usage during water curing of concrete elements • Recycled wood used for all joinery works • Use of landscaping for shading building • Permeable loose fill pathways in landscaping • Use of soft landscaping features to address soil erosion, proper channeling of roof runoffs to control erosion • A combination of earth bunds, ground cover and mulching in the process of filtering, directing & storing roof and surface runoffs • Electric charging facility provided in parking garages for charging electric vehicles

Other features

• anutone sound absorption panels around window openings, extra • Sand fill in plinth for termite protection • Seating areas provided along walkways • Amenities (toilets, foot wash) provided in common areas • Waste segregation at source by providing separate bins in each building. • Area provided for kitchen waste commonly collected for composting. Compost thus created, used in gardens around the building • All construction debris such as broken bricks, rubble used under pathways as base for percolating top layer

Energy systems

Interior Lighting

200

Exterior Lighting

30

Ceiling Fans

58

Air-conditioning

9 units installed, provisions made for 26 units (in various rooms)in total

Lift

none

Energy efficient systems

CFL’s installed in all apartments back in 2010; however, meanwhile as LED’s are freely available in the market, residents are shifting to LED fittings. Timer system installed on drip & sprinkler irrigation system for the gardens Auto shut off timer installed for common stairwells such that when switched on, switch off happens within 3 minutes.

Energy efficient systems

3 numbers of solar water heaters installed by different individuals (totally 12 units) On grid type Solar PV setup installed for one 3-bedroom & solar PV setup for backup installed on one 2 bedroom apartment

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