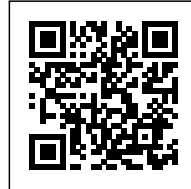




VISHRANTHI OFFICE

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Vishranthi Office

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Located on a busy stretch of Lloyds Road in Chennai, this commercial building is nestled among a row of old residences, a few apartments and scrappy little shops and stores dotting this busy streetscape. Located on the corner of the main road and a bylane, the building faces north towards the main road, east towards the bylane, west and south towards two old residences.



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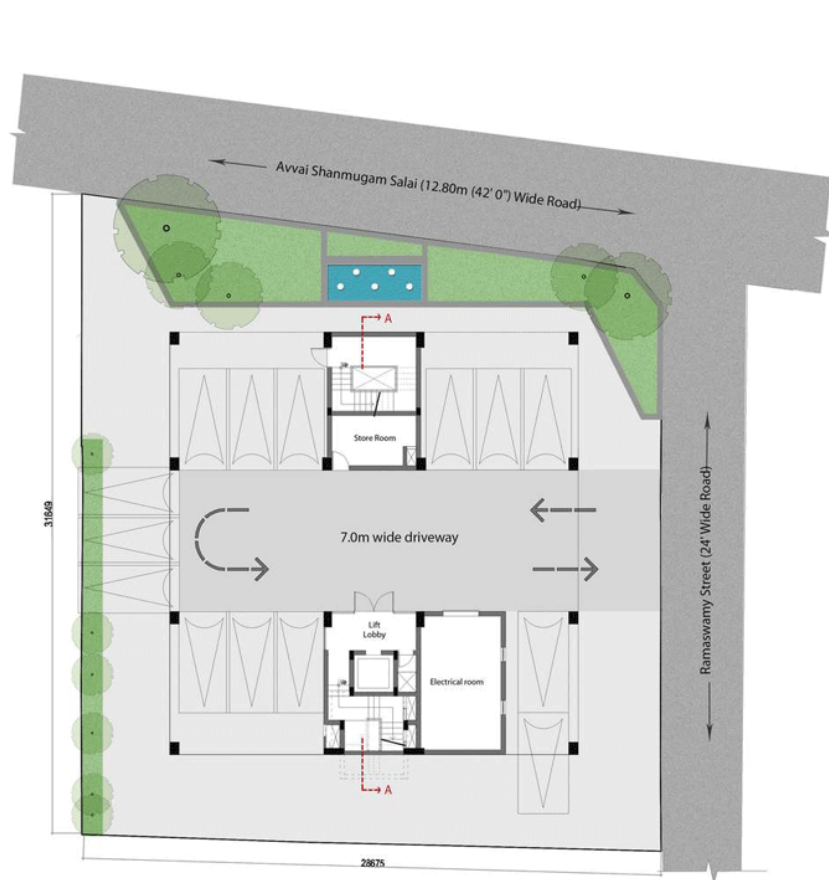
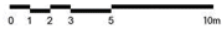


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Design Intent

Our main architectural intent, apart from providing the clear floor plate for the office indoors, was to work on a passive method of providing a better indoor environment: providing well-distributed natural light, reducing the load on the air conditioning requirement and ensuring the noise from the street below was kept out, to the best extent possible.

Site Plan



Plans

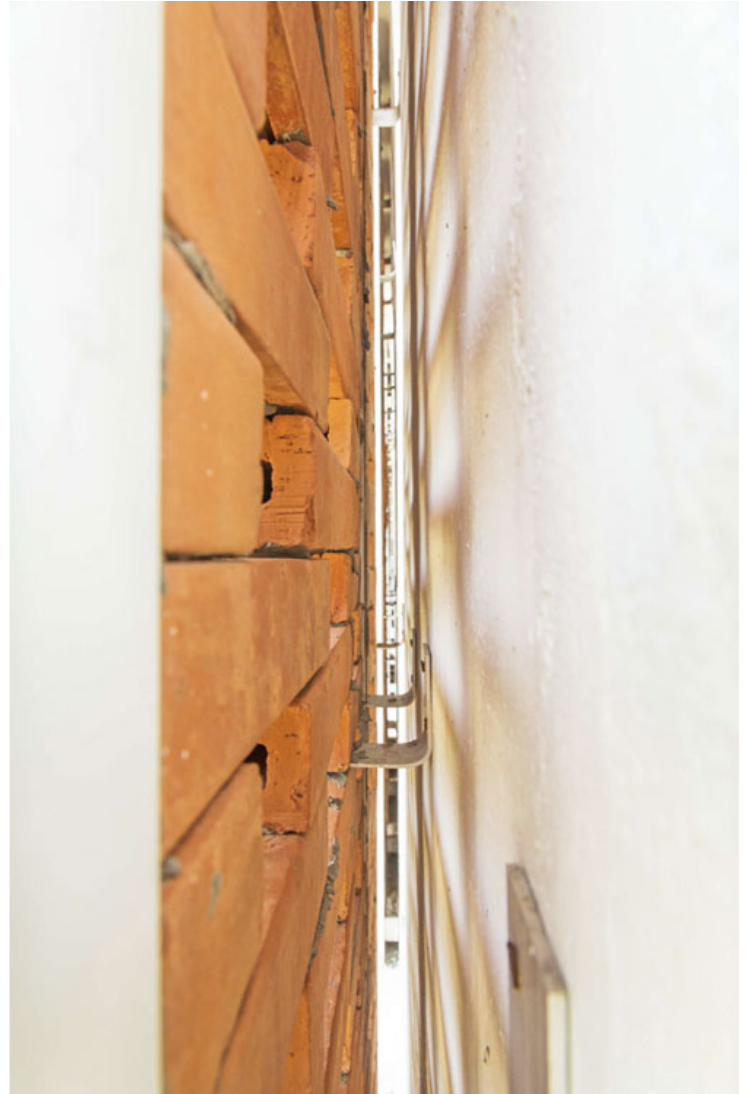
KSM Architecture

Section - AA



Section

This architectural intent manifested itself in the form of a skin wall along the north, east and west sides of the building. Our first point of reference was a traditional brick jali screen wall. Stretcher courses, staggered at every alternate course, create the play of mass and void. We took this basic jali screen geometry and looked to tweak it to suit our requirement.



Materials

Our first material choice was to go with a flatter and longer brick (300 Wx100 D x 50 H). The brick is hollow, with two cavities running along the length of the brick. Our reason for choosing this brick is because of its lightweight nature, its air cavity which allows for less thermal heat gain, and also because of its accurate dimensions and finished edges.

The overall façade of the building is divided and broken down into clear panels of 600 mm each with white aluminum mullions that define the edges. The infill skin space in between the mullions is divided into two distinct types: a panel for light and a performance jali screen panel.

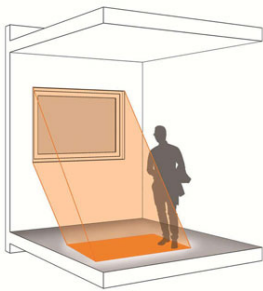
Light Distribution

The panels for light are distributed evenly across the floor plate, allowing for even natural light to be distributed through the floor space. This way, no distinct bright spots and dark spots are created within the indoor space. The aluminum joinery, which spans from beam bottom to floor level, allows the light to bounce and multiply by reflecting off the white-colored floor and ceiling.

CONVENTIONAL WINDOW

A window in the conventional orientation and proportion lets in a large volume of light. The multiple use of these windows results in patches of bright and dark area within a single space.

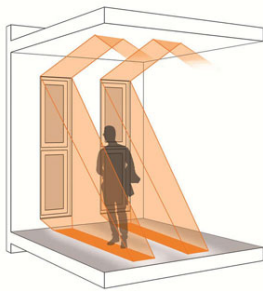
Since this window terminates at the lintel with a high sill, there is little opportunity for reflected light to be bounced off the floor and ceiling.



VERTICAL SLOT WINDOW & LIGHT DISTRIBUTION

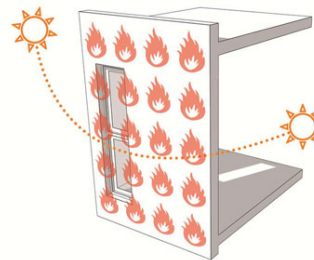
The vertical slot proportion allows for light to be distributed evenly across the floor plate, allowing for natural light to be well distributed through the floor space.

Using multiple windows of this proportion at close intervals aims to eliminate distinct bright spots and dark spots, created within the indoor space. The aluminum joinery which spans from beam bottom to floor level, allows the light to bounce and multiply, by reflecting off the white coloured floor and ceiling.



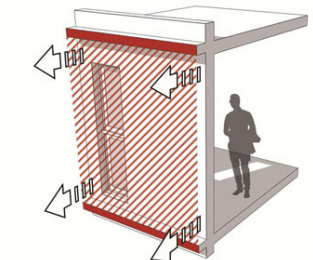
HEAT GAIN

The surfaces of the built mass which face East, North & West are subject to a high amount of solar radiation. This translates as heat gain within the built environment.

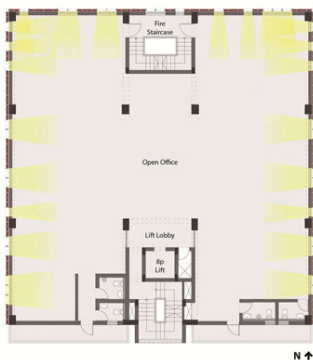


PROJECTING CONCRETE SUPPORTS

A solution to reduce heat gain manifested itself in the form of a skin wall along the north, east and western sides of the building. The support structure for the skin cladding is an extension of the concrete slab at every level, a 200mm projected concrete rib.

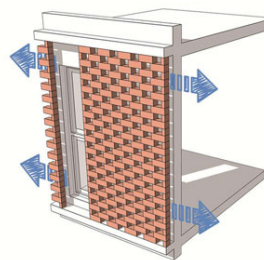


Typical Level Plan - Internal light distribution



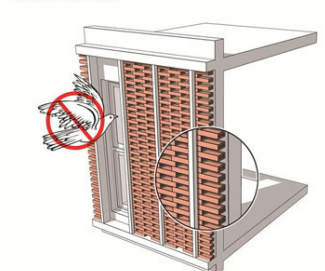
BRICK JALI SCREEN WITH AIR CAVITY

The skin wall is a traditional brick jali screen with the stretcher course staggered at every alternate course creating the play of mass and void. The support structure for the jali screen was extended beyond the dimensions of a brick, resulting in the jali screen being placed away from the external walls. This air cavity acts as a 'Thermal Break'.



SELF VENTILATING PERFORMANCE JALI SCREEN

An alternative to the standard brick was to use a locally available hollow brick which served two purposes. The ventilating nature of hollow brick core, the voids between the bricks and the ventilated air cavity between the brickwork and the block work all ensure that there is very little direct heat transferred from exterior face to the indoor environment. The 50mm width of the brick proved too narrow for prolific nesting birds like pigeons to perch, thus making the skin facade roost resistant.

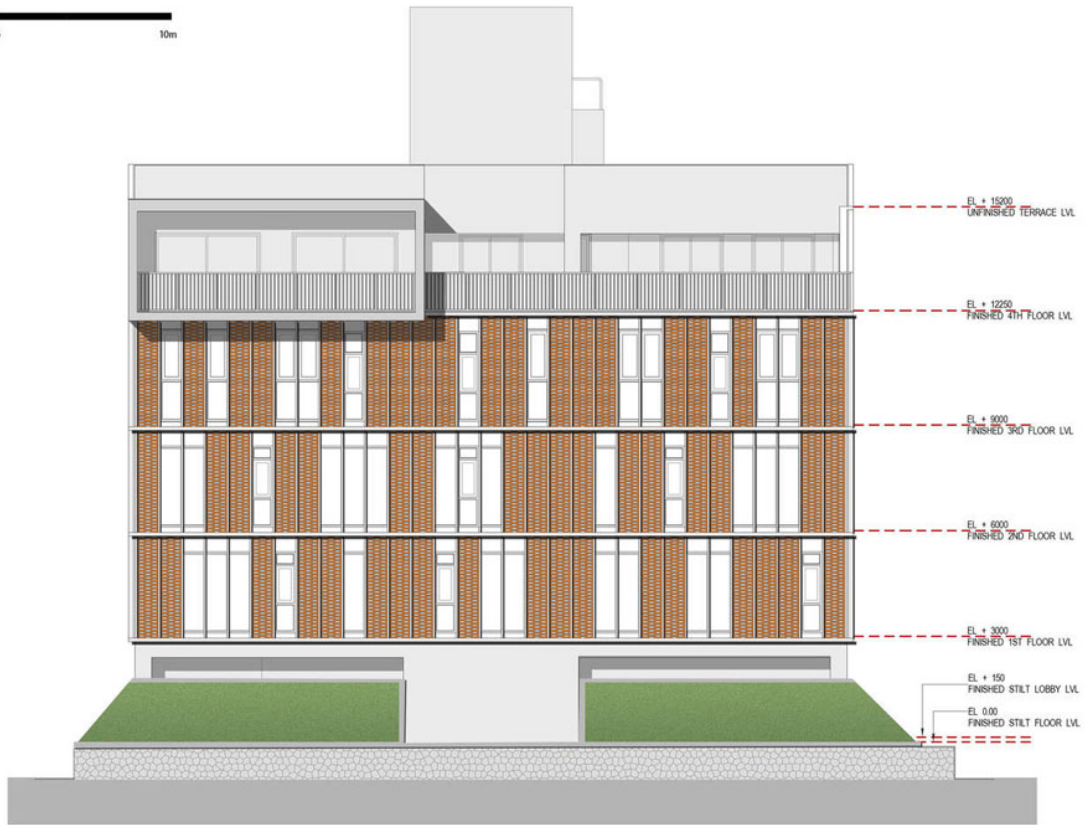


Efficiency Measures

Performance Jali Screen Panel

The performance jali screen panel itself is comprised of three distinct zones: the outer exposed brick jali screen wall of 100 mm; a 50 mm freely ventilated air cavity; and a 200 mm two-sided plastered concrete block work wall on the office indoor side. The ventilating nature of the hollow brick core, the voids between the bricks, and the ventilated air cavity between the brickwork and the block work all ensure that there is very little direct heat transferred from the exterior face to the indoor environment. In fact, the inner block work wall almost never receives direct sunlight at any time of the day, as the jali screen edge soaks in the heat and vents it out through the various air cavities. This will greatly reduce the heat radiated within the indoor space and, in turn, will reduce the load on the air conditioning systems.

North Elevation



North Elevation

On the northern face of the building is the main road, which is fairly busy and can be quite noisy at times. Using the same panelized performance jali screen to the northern face, we are looking to reduce the level of penetration of this noise to a great extent. The pixelated façade, with its air cavities, allows these noisy disturbances to attenuate and fade before they enter the office interior, thus keeping the indoor space relatively disturbance free from unwanted noises.



Roost Resistance

A standard problem faced with jali screen walls in urban situations has been the roosting of pigeons

and other similar birds. This has always been a problem and has been tackled in many ways, like using nylon guide wire, metal spikes, low voltage electrical wires, etc. Our awareness of this problem was another critical reason we chose the 50 mm wide brick. The bricks are bonded by a cement-based adhesive, not a conventional 10 mm mortar joint, allowing us to ensure the voids are just fractionally larger than 50 mm in height. Because 50 mm is too small for prolific nesters like pigeons to roost in, it made this jali screen wall roost-resistant.

Modular Zeri Wastage Jali Screen

The construction of the brick jali screen was to ensure that we have near zero percent wastage of material. The 300 L x 150 B x 50 H brick is used in full, as well as in site-cut sizes of 230 mm and 70 mm, ensuring that there is no wastage. The adhesive used to bond the brick is also applied as a thin layer, 3 mm thick, with a small trowel. There is no removal of extra mortar, no spillage and no wastage. Each brick jali screen was further modularized into panels of 600 mm in width, bound by aluminum mullions.

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