

### A) Site Selection and Planning

The site is located in an Institutional Land-use zoning delineated under Delhi Master plan 2021 located in Zone J South Delhi II. The distance from main entrance gate to the main arterial road (Mehrauli-Badarpur Road) is within the range of walk-able distance of 300 meters. Most employees in CSE take public transport making the center accessible through existing public mode of transportation.



*Photo02: Sustainable Site Planning at AAGC and CSE, Source: CSE Library*

The site is planned with a basic objective to conserve the natural resources by integrated built and non-built spaces. The pavement surrounding the buildings designed in a manner to reduce the hardness of the site and allows for maximum percolation of water, minerals and essential microbes. This helps to maintain the surrounding landscape aerated, livable and self sustainable. An annual maintenance required ensuring the site planning and monitoring that generally includes tree plantation, cropping, gardening, organic manure spreading, rain-water harvesting system check etc., as part of building performance management.

### B) Building Planning and Construction

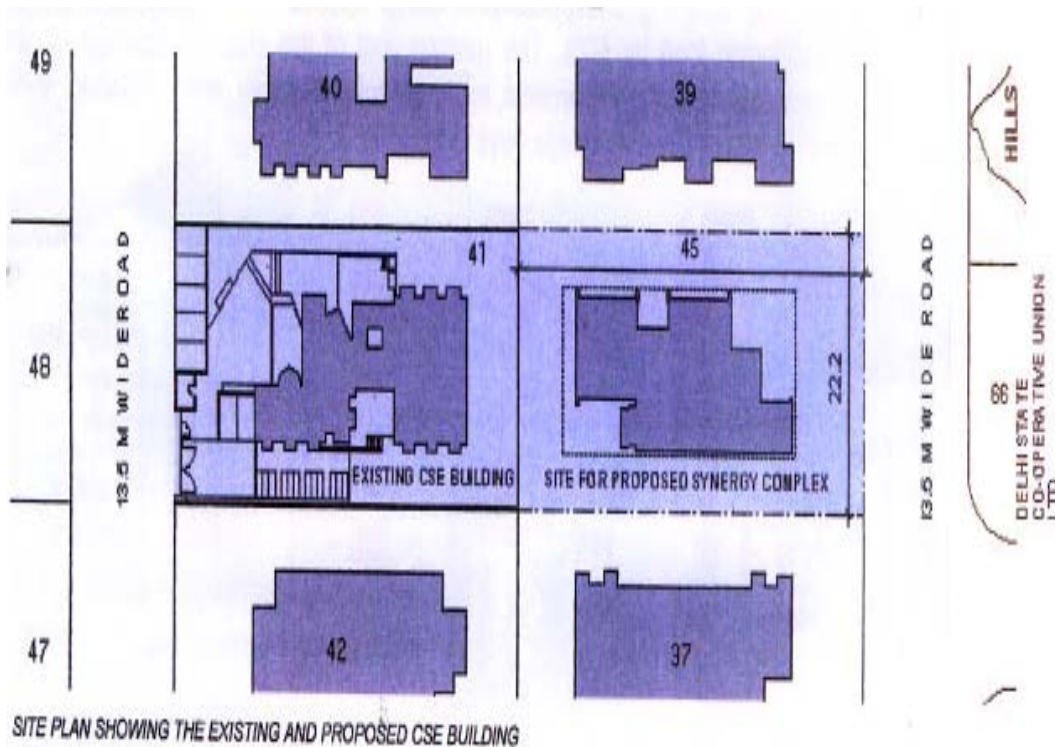
With resource efficient landscaping and water management techniques as part of sustainable site planning implemented at site-level resulting into reduction in the Heat Island Effect. Heat Island Effect is a phenomenon occurring due to extensive buildings, roads and hard concrete pavement construction leading to heating of surfaces and heat reflection into the building surroundings air. It is responsible for rise in air temperature in the urban housing areas and also increases air condition cost for building occupants. Both, Main building and AAGC designed with considerable green space around the building. As a result buildings not only succeed to maintain its ecological climate by shading through green cover and soft cover to avoid soil erosion, but building also has achieved optimum indoor air temperature of 28<sup>0</sup> C. However, in summer a both

active and passive cooling technique required to work interchangeably and maintains the comfortable built environment.



*Photo 03: Building Planning and Construction Phase, Source: CSE Library.*

The North-South orientation of the site allows larger side of the building to face East and West direction which is solar heat intensive direction. It is causing disadvantageously on overall building planning and building indoor performance resulting in to high energy cost to keep building cool, especially during summer time. But effectively designed massing, suitable fenestration sizes and ecological building managed to reduce the overall burden of energy cost without compromising on the building aesthetics.

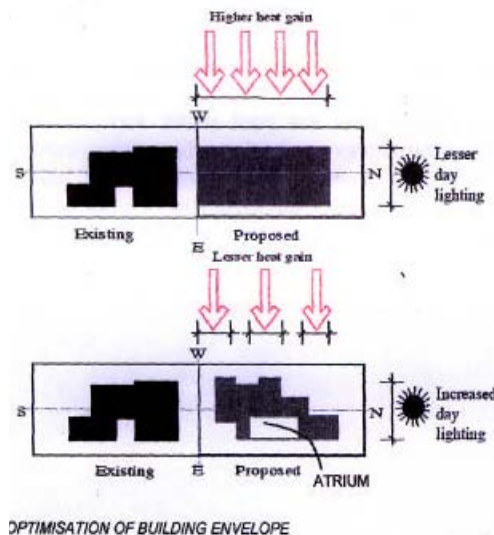


*Figure 01: Site Plan of CSE and AAGC Buildings*



*Photo 04: Rain-Water Harvesting Pit in AAGC and Paving Techniques*

The energy conscious professionals engaged then at initial planning and design stage of both the buildings have proposed with insulation cavity walls on the east and west. It is desired to achieve a substantial difference from the outside temperature. Internally the east wall shall be supplemented as exhibition wall for its full acts as a thermal barrier as well. A staircase located by its side establishes the vertical connectivity between various floors.



*Figure 02: Building Massing for Effective use of Day-lighting through Orientation*

Based on the reduced energy consumption and waste recycling techniques for conserving natural resources at site level, the built form display series of cascading open terraces used to collect and conserve the rain-water to percolate inside the ground to recharge the wells.



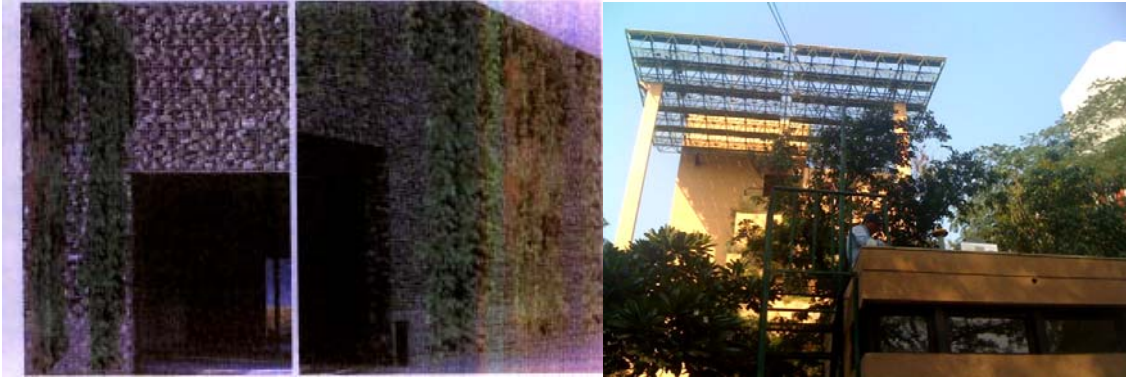


Photo 05: Cascading Open Terraces and Ecological Wall

The textured building façade is embellished with clay and greeneries to enhance the insulation effect by allowing natural vegetation and shading. This ultimately reduces the surface temperature of building due to Solar Heat Gain during peak summer weather condition. Further, the ecological wall adds up to the CSE's identity to be self sustainable and organizational commitment to sustainable environmental development. Also, in order to minimize the solar heat gain from Roof, the series of terrace acts as green element. The top cover of plastered soil acts as natural insulating material spread evenly over open terraces, which is also used for landscaping. During winter season the same terraces acts as social place and during summer it acts as insulation keeping the indoor environment at comfortable level.

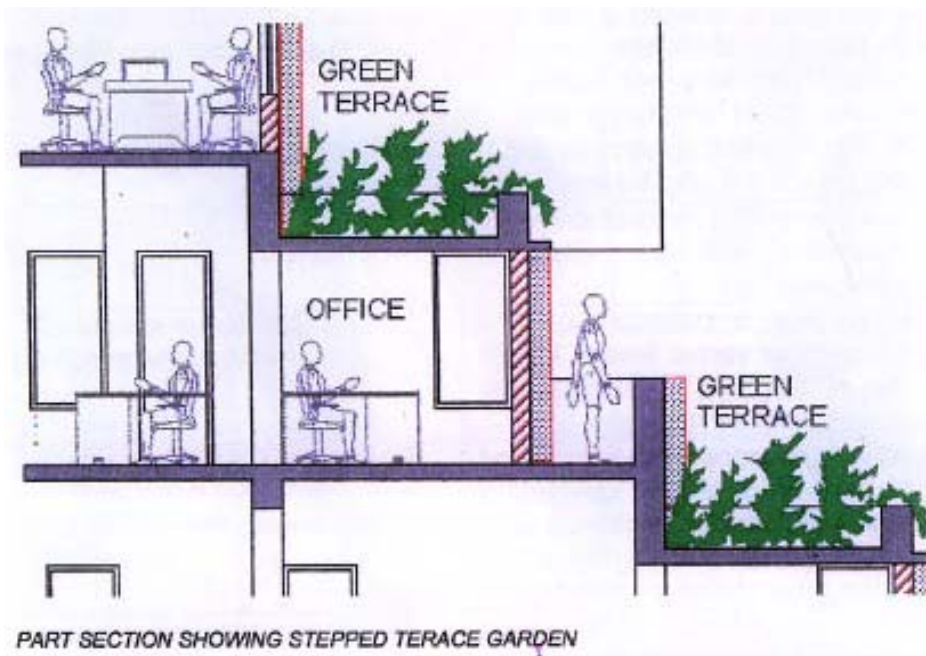


Figure 03: Green Terrace implemented in Main CSE building