‘Green building design’

Schematic presentation for application of
Green building design principle

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Preamble

The concept of ‘ Green building ‘ is known to architectural practice. It is acceptable worldwide and solutions are being adopted based on the same principle to suit the conditions of various regions. The following article is suitable for Sangli and Kolhapur region but may be adopted anywhere as a principle.

Brief

The article focuses the plots in general in Sangli and Kolhapur with house being the center of attention but may be applicable to any other type of structure and parcel of land. The article may be applied for buildings designed within the framework of ‘Vastushastra’ principles as well as for structures guided by freedom of organization of spaces as a principle for designing.

In the region under consideration the natural wind flow is from southwest and sun movement is east southwest. Hence for natural cooling the habitable rooms need to be oriented towards west. Also as parts of structure, which get affected by radiation, are mainly southern and eastern sides, a system of insulation is required for natural cooling for the same.

Description

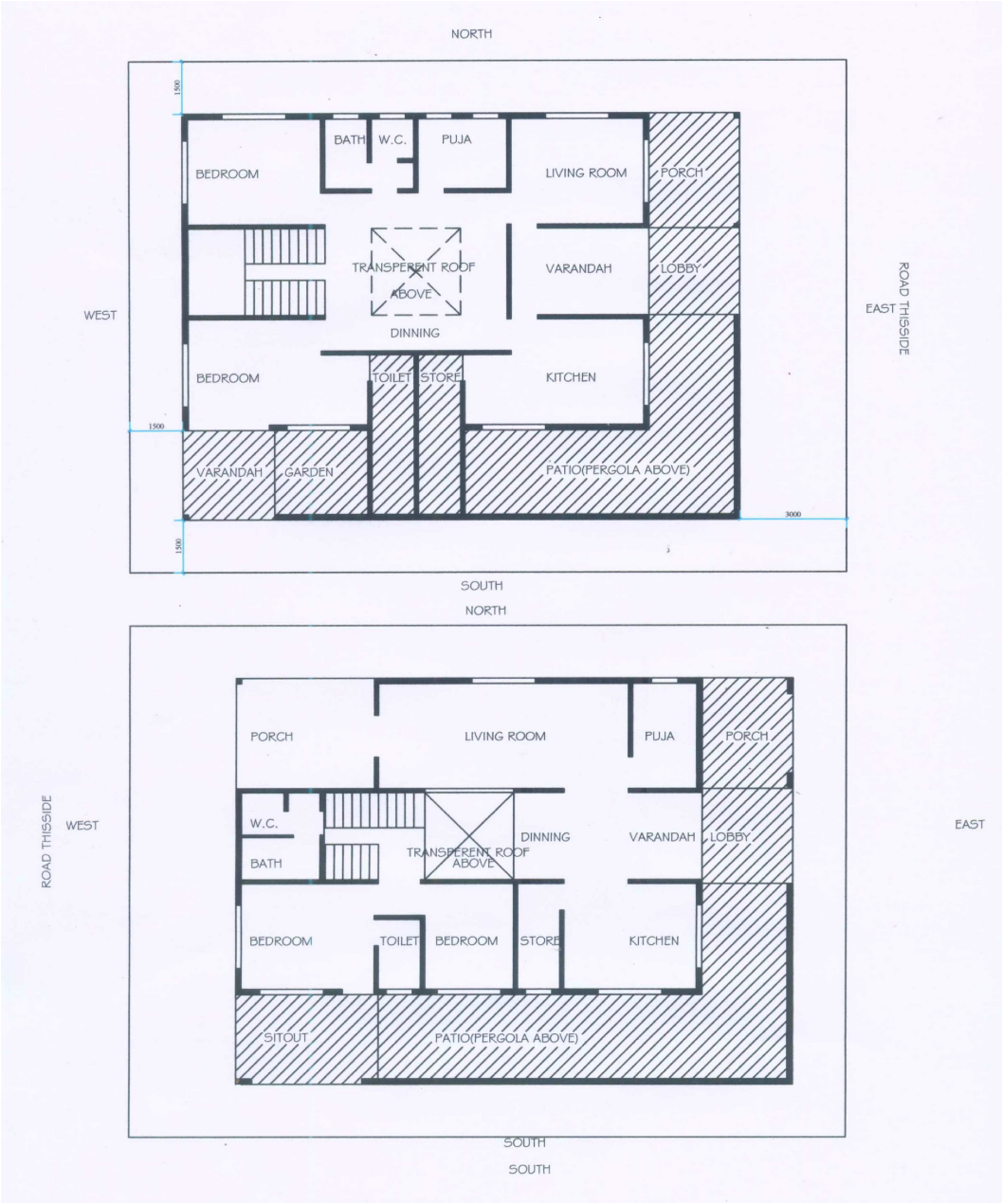
The article considers two types of systems. The first one being natural cooling of the house or a building designed by using ‘Vastushastra’ principles and the other one being an artificial system based on the principles of natural heating and air flow offering freedom for orientation of uses.

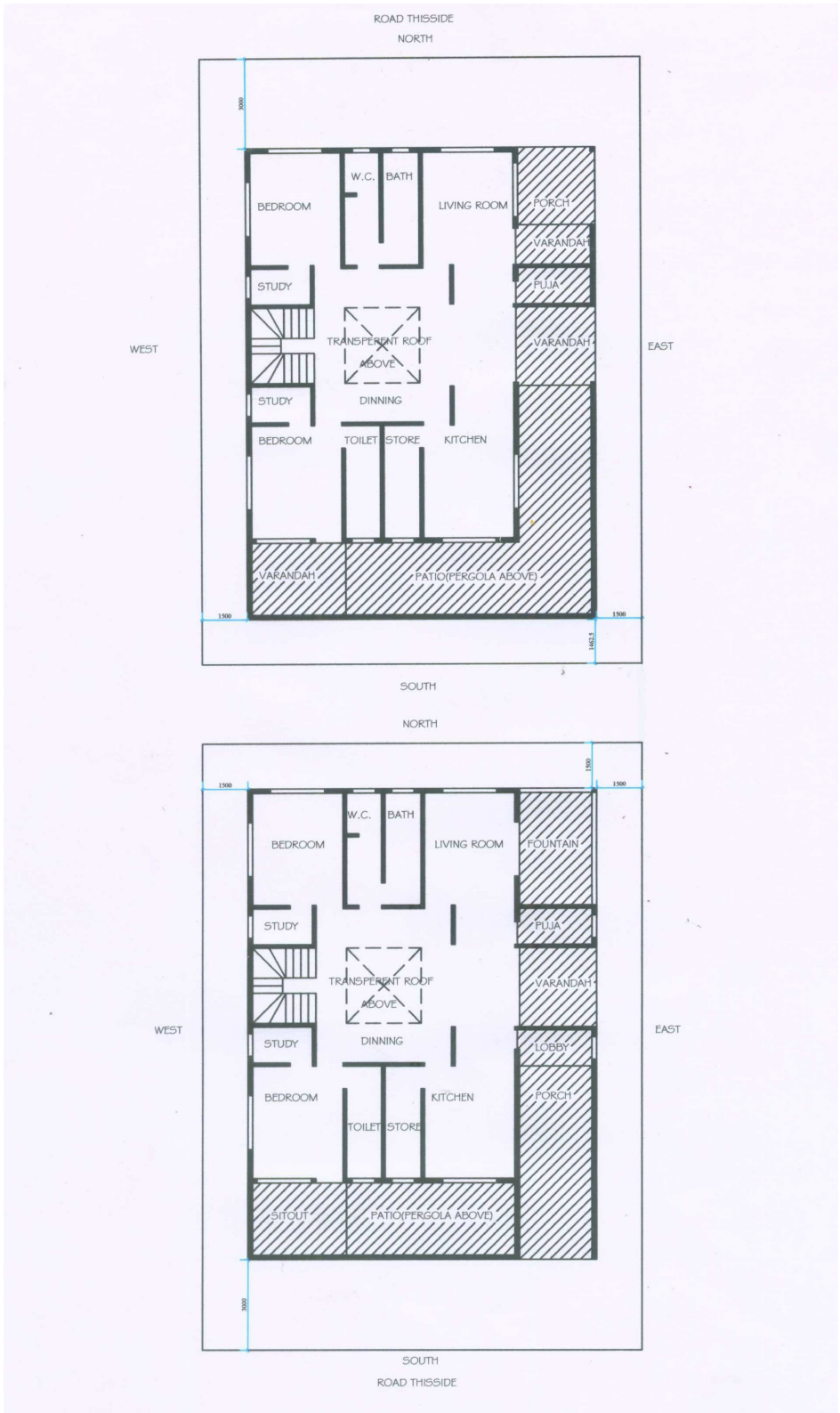
Alternative A

In the initial system an additional bay of spaces, which are not habitable, is created next to the uses oriented within the framework of law where radiation affects most. Also the area around center of the house is utilized for a common purpose such as dinning so that it can also be used as a circulation area. It is covered by a transparent roof with a system for natural ventilation. This offers

possibility for circulation of incoming and outgoing air currents generating a level of comfort within the house.

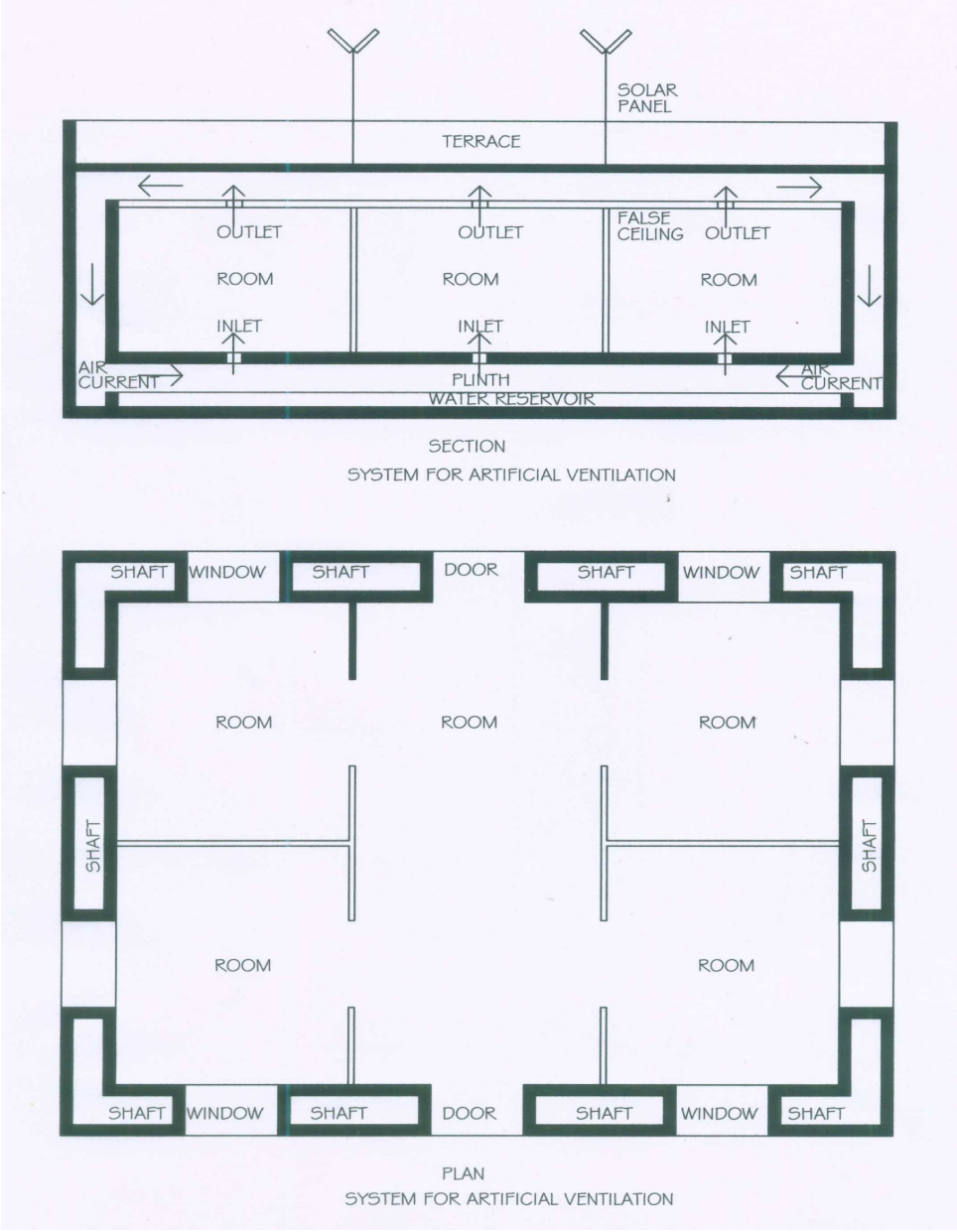
Following are the possible alternatives based on the orientation of plots for various road frontages. The plots are considered to be oriented parallel to north-south or east-west axes




ROAD THISSIDE
NORTH
3000
W.C.
BATH
BEDROOM
LIVING ROOM
PORCH
VARANDAH
PUJA
STUDY
TRANSPERENT ROOF ABOVE
VARANDAH
WEST
EAST
STUDY
DINNING
BEDROOM
TOILET
STORE
KITCHEN
VARANDAH
PATIO(PERGOLA ABOVE)
1500
1500
1402.5
SOUTH
NORTH
1500
1500
1500
W.C.
BATH
BEDROOM
LIVING ROOM
FOUNTAIN
STUDY
PUJA
TRANSPERENT ROOF ABOVE
VARANDAH
WEST
EAST
STUDY
DINNING
LOBBY
BEDROOM
KITCHEN
PORCH
TOILET
STORE
SITOUT
PATIO(PERGOLA ABOVE)
3000
SOUTH
ROAD THISSIDE

Alternative B

The other option explores an artificial system guided by principles of natural heating and airflow so as to provide draughts of cool air for areas inside the building.
The sketch for this system is as follows



As shown in the drawing a system of shafts is created using double wall construction around the house or building. The plinth is used for storage of rainwater collected from terraces for most part of the following year. A false ceiling is created below the roof of the building. A connection of area above the false ceiling to the external shafts creates a passage for air circulation. An artificial air current based on the principles of heating and airflow is created using solar radiation. The air from the shaft is allowed to be flown through the compartment below the plinth where water is collected. The cooled air in the chamber below plinth is allowed to enter inside the rooms through the openings in the floor. The warm air is collected through the openings in the ceiling and is recycled to effect a continuous circulation of air within the house.