6: METHODOLOGY

The methodology i.e. the course of action to be taken to achieve the goal of completion of research is as below.

**Primary data:** The primary data required for research work is the actual prevailing scenario of natural ventilation for building enclosed by adjacent buildings in rural areas. To collect this data site visit to the rural areas and observing the building plans, construction techniques, layout of buildings, prevailing lighting and ventilation conditions and means to achieve the same, efficiency of the existing methods of ventilation, their drawbacks and disadvantages. To collect this data by talking with the habitants especially housewives who have to stay in the houses, the problems they face with conventional methods of ventilation. Their views and suggestions on alternative methods of ventilation so that hygienic comfortable conditions prevail in such enclosed buildings. Also by talking with artisans, mistries, labors who are directly involved in the construction of conventional rural buildings. But found that these people are totally unaware of any other alternative means of natural ventilation for enclosed buildings and blindly followed the conventional methods (small openings at one or at the most two positions) for achieving natural ventilation of such enclosed buildings.

**Secondary or Additional data:** The secondary / additional data required for the research work is about the air flow direction, illumination index, room temperature during summer season and winter season and humidity indoor during rainy season, temperature difference during various seasons. The effects of all these parameters on the health of the habitants, and Track record of family history of habitants for at least two generations.

**Sources of data and its collection:** The data required will be collected by actual field visits in rural areas and studying the existing parameters and conditions inside the enclosed buildings. For this purpose two to three sites with varying orientation will be studied. The sun diagram and solar path for those particular sites will be studied. The wind direction and its velocity which plays vital role in the proposed research work will be studied thoroughly. The above data will be collected by field visits.
Scope of Work:

To define the boundaries of the proposed work the scope of study is restricted to the rural buildings enclosed on two or three sides by adjacent buildings. For the research work two case studies of construction work sites actually executed by selected.

First case study site is located on Dhule-Songir-Dondaicha Road at a distance of 35kms from Dhule city in village Chimthane of Tehsil Sindkheda District Dhule. The peculiarity of this site is that it is enclosed on three sides by adjoining buildings and on one side by existing building. I.e. site enclosed on four sides. As shown in fig.

Second case study site is located on Dhule-Kundane-Nimkhedi Road at a distance of 8kms from Dhule city in village Nimkhedi of Tehsil/District Dhule. This site is enclosed on three sides by adjoining buildings and abutting road front.

The usefulness of the research work is for entire society. In rural areas the ventilation of buildings enclosed by adjacent structures is a major problem faced by the society since ages but till date no one has focused attention towards this major problem. Engineers and Architects practicing in urban areas don’t wish to work in rural areas hence this problem is unsolved even today also. Therefore the usefulness of the research work to the entire society is the fact.

Secondly considerable amount of electricity saved due to the methodology is itself a great achievement for our NATION in the developing phase. The electricity generated may not be sufficient to satisfy demand. The cost of generating electricity is tremendous and our nation which is in developing phase has to invest huge funds for electricity generation. Instead if the research work results if adopted for rural housing at Government level, a considerable amount of
electricity would be saved. The funds thus saved can be utilized for some other needs of the society. We can say that unconventional sources of energy like sun and wind are utilized for natural ventilation of enclosed buildings in rural which otherwise remains untapped. The rain water falling on Fiber sheets can be collected on terrace and drained out by maintaining a proper slope by providing China mosaic treatment to terrace. Rainwater harvesting is thus achieved as a byproduct adopting this technique of natural ventilation of enclosed buildings in rural areas.

In spite of sincere and full hearted research work the following problems still exists.

1. The overall construction cost of work increases by about 14% to 16% due to extra network of beams at roof level to support double leaves of parapet walls thus leading to increase in construction cost. A cost saving alternative is possible for the same.

2. Through the inclined louvered ventilators dust particles along with flies, insects, debris such as leaves enter in the buildings especially while wind is blowing thus frequent sweeping and cleaning is an additional work which is cumbersome and tiring for housewives.

3. During winter season the inclined movable glass louvers are required to shut down by means of string attached to louvers. In case if these string/pulley doesn’t work then practically it is difficult to close these louvers manually. A pulley operating system can overcome this problem.

4. Dust particles accumulating on the top of Fiber sheets (for preventing entry of rain water and allow daylight) obstructs daylight and reduces indoor illumination have to be cleaned by spraying water on these sheets once or at the most twice in a year.

5. Since the roofs of enclosed buildings are easily accessed by neighbors/stranger’s the chances of breaking Fiber sheets exists due to stone pelting.