CHAPTER VI

CONSTRUCTION

"Man builds houses but houses moulds man"
CONTENTS

1. INTRODUCTION.

2. MODES OF UNDERTAKING THE CONSTRUCTION WORK.
   2.1 Construction by selfhelp.
   2.2 Construction departmentally by employing workers on daily wages.
   2.3 Construction on labour contract.
   2.4 Work execution by dividing it in small contracts.
   2.5 Construction by contractors under the supervision of architect/Engineer of the society.
   2.6 Giving work to architect complete with supervision and construction on turn-key basis.

3. MODES USED FOR CONSTRUCTION BY CHSs.

4. OPINION OF MEMBERS REGARDING CONSTRUCTION WORK.
   4.1 Bad quality of material used.
   4.2 Bad masonry work.
   4.3 Unfair carpentry work.
   4.4 Unpleasing architectural design.
   4.5 High cost of construction.

5. QUALITY OF CONSTRUCTION.

6. COMPARISON WITH THE CONSTRUCTION WORK UNDERTAKEN BY THE PRIVATE INDIVIDUALS IN THE CHS.

7. SUGGESTIONS.
OBSERVATION:

DREAMING THE PLEASURE.

EXPERIENCING THE REALITY.
INTRODUCTION.

Housing is one of the three prime necessities of a human being. It is universally recognised that of the three basic needs of man, food, shelter & clothing, shelter is the most intricate and delicate problem.

House is the place where all the family members live together and spent major part of their time in the house. Therefore, the house should be such by which the family members would get maximum level of satisfaction. The level of satisfaction depends upon the quality of construction, cost of construction, the facilities and amenities available in that house.

The CHM is evolved with a view to provide better houses and to solve the housing problem. The main advantage of co-operative housing is two-fold. First of all, the beneficiaries can effect substantial saving in cost through group action, architectural planning can be done on a large scale, building materials can be obtained more cheaply when purchased in large quantities, full utilisation of men and equipment can be achieved on project basis, and above all, the profit of middlemen or speculators can be eliminated. Secondly, the planning, designing and construction of houses according to approved standards and on a community basis, which is inherent in co-operative housing, would facilitate more efficient and more satisfactory community
surroundings, minimising the danger of neighbourhoods developing into slum area. Co-operative housing, thus should act as a stimulus to better and cheaper housing and also helps in training people in co-operative way of living.

In view of the facts mentioned above, the study of the co-operative housing moment was undertaken to examine the quality and cost of construction of the houses, constructed through the co-operative housing societies in Yavatmal tahasil.

2. MODES OF UNDERTAKING THE CONSTRUCTION WORK.

Construction work of houses can be undertaken by the co-operative housing society in the following six ways.

1) Self help;
2) Departmentally by employing workers on daily wages;
3) On labour contract;
4) Work execution by dividing it in small contracts;
5) Contractor under the supervision of the Architect/Engineer of the society;
6) Giving work to Architect complete with supervision and construction on ‘turn key’ basis. The contractors are appointed by Architect and are responsible to the CHS.
2.1 CONSTRUCTION BY SELF HELP.

Under this method, the members can be asked to contribute labour or available building material with them. This may, ultimately, result in reducing the cost of construction. This method can be adopted if a co-operative society is in rural area or in semi-urban area or it is for economically weaker section.

2.2 CONSTRUCTION DEPARTMENTALLY BY EMPLOYING WORKERS ON DAILY WAGES.

Under this method, competent and experienced mistry or masons and other workers are employed on daily wage basis. Drawing and specifications are got prepared form the architect.

This method of construction have its own difficulties. The success depend on employment of the competent and experienced mistry or masons. There is every possibility of corruption if proper muster roll, for labours employed, is not maintained and the progress of work is not recorded daily. There may also be difficulty in hiring tools, plant, equipment’s and shuttering etc.

2.3 CONSTRUCTION ON LABOUR CONTRACT.

In a housing project 27 % of the cost goes to labour
whereas 73% of the cost go of material for construction.*

Under this method, the co-operative housing society should buy building material in bulk directly from the source or whole-sale dealers to obtain purchase economy. As far as possible preference should be given for ISI marked products. The labour contractor may also quote on per square foot or square meter basis. The payment of the contractor can be divided in following instalments to meet his periodical money need.

a) Plinth Level 15%
b) Door Level 10%
c) Roof level 25%
d) Inside plaster 10%
e) outside plaster 10%
f) After flooring 25%
g) After finishing 5%

For example if the covered area of house is 1000 sq. foot and the labour rate quoted is 40 per sq. foot, (assuming total construction cost @ Rs. 150 per sq. foot) the charges for the labour contractor will be Rs.40,000 which may be divided as shown above.

* - Information obtained from a leading architect in Yavatmal town during the course of discussion.
If the construction work is to be undertaken by the above method, then it is most essential to have a great care while executing the contract deed with the contractor. Under this method, there is a possibility of nonemployment of competent and experienced mistry. If some one item remained to be mentioned in the agreement, then it becomes very difficult to settle the payment against that item. Similarly, if some one contractor leave out the job, before its completion, then it becomes very difficult to execute the agreement, on the same basis, with another contractor.

2.4 WORK EXECUTION BY DIVIDING IT IN SMALL CONTRACTS.

In this method, the work is neither done departmentally nor a contractor is employed. The work is divided in small pieces and given on contract basis to good mistrys or masons. The contract may be given to workers on lumpsum basis or on the rate basis.

This method can be successfully adopted if the technical supervisor is appointed by the co-operative society. It is easy to handle efficient worker rather than big contractor.
2.5 CONSTRUCTION BY CONTRACTOR UNDER THE SUPERVISION OF THE ARCHITECT / ENGINEER OF THE SOCIETY.

Under this method a contractor is appointed to implement the project under the supervisor of an Architect / Engineer appointed by the co-operative society. There are several advantages in appointing a contractor provided a right selection has been made. The advantages are as under.

a) Technical expertise will be available from the contractor as he may be having sufficient technical staff.

b) Plant and equipment availability from the contractor.

c) Availability of experienced mistries or masons and other skilled and unskilled labour.

d) The contractor can provide his guidance, while purchasing the building material.

Advantages of appointing a contractor are mentioned above. But, if the right contractor is not selected it may create several problems such as

a) Sub standard work
b) Pilferage of materials
c) Delay in execution of work
d) Bad coordination with Architect/co-operative society
e) Wastage of material
f) Purchase and use of sub standard building material
g) Employment of untrained workers
h) Creation if unnecessary problems or extra items
i) Disputes and litigations.

The above mentioned problems can be minimised if a right contractor is selected.

2.6. **GIVING WORK TO ARCHITECT COMPLETE WITH SUPERVISION AND CONSTRUCTION ON 'TURN KEY BASIS'.**

Under this method, contract is given to architect. The architect get the work done by appointing contractor. In this case the CHS should see that the architect has a reputed firm and has good experienced supervisors. The society will have to face less problems under this method. Because it will have to deal with only one firm.

Thus, as discussed above a CHS may get its construction work done by any of the method suitable to it. Every method have its advantages as well as limitations or disadvantages. But if the IVth method is adopted for getting the construction work done, it is most advantages with regard to quality and cost of construction work.

3. **MODES USED FOR CONSTRUCTION BY CHSs.**

During the survey, it is observed that almost all the CHSs have got the construction work done either by appointing the contractors or by the members themselves at
their own accord. The CHSs which have got the work done by contractor are from the category, which have obtained the loan from MCHFS or state Govt. Since these CHSs have got their construction work done through the contractors, they have to face various problems rather than getting any advantages from them. This part is discussed here under.

4 OPINION OF MEMBERS REGARDING CONSTRUCTION WORK.

Out of 600 members 150 members are such members who have been allotted the plots by the CHS and the construction work is not undertaken by them. 150 members are such who have been allotted the plots by the CHSs but the construction work is undertaken by themselves by availing the finance facility from other sources such as HDFC, Deewan Housing, Finance Corporation, Hind Finance Corporation, LIC & Commercial banks etc. Therefore, the question on the point of construction was asked only to 300 members. Out of them 241 members represented that they are not satisfied with the construction work. The different reasons quoted by them for their dissatisfaction are as under.
Table No. 6.1

Table showing the reasons for dissatisfaction of the members for construction work.

<table>
<thead>
<tr>
<th>Reasons</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Bad quality of material used</td>
<td>111</td>
<td>37.08</td>
</tr>
<tr>
<td>2) Bad masonry work</td>
<td>195</td>
<td><strong>65.00</strong></td>
</tr>
<tr>
<td>3) Unfair carpentry work.</td>
<td>133</td>
<td>44.16</td>
</tr>
<tr>
<td>4) Unpleasing architectural design</td>
<td>146</td>
<td>48.57</td>
</tr>
<tr>
<td>5) High cost of construction</td>
<td>226</td>
<td>75.33</td>
</tr>
</tbody>
</table>

(Data collected through questionnaire, question No. 2.6)

4.1 BAD QUALITY OF MATERIAL USED.

The quality of construction work depends upon the quality of material used for the construction work. The following are the main constituents with regard to the construction of houses.

I) Bricks                              II) Cement
III) Sand                               IV) Stone aggregates
V) Brick aggregates                     VI) Water for cement concrete
VII) Batching concrete

IX) Mixing concrete by Machines


XII) Lime

XV) Sanitary-ware

XVII) Surkhi

XX) Paints & Varnishes

VIII) Mixing concrete with hand

X) Steel for concrete reinforcement

XII) Pozzolana Cement

XIV) Timber

XVI) Stone Dust

XIX) Fly ash

XXI) Building Hardware.

"Bad quality of material" is a qualitative statement and also a vague term. From this, one cannot know as to what the respondent mean to say. Therefore questions were asked to know what the respondents mean with regard to the bad quality of material used. The following data reveals the information in this respect.
Table No. 6.1 (A)

Table showing the various reasons regarding the bad quality of materials.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Reasons</th>
<th>No. of Respondents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Bad quality of bricks</td>
<td>198</td>
<td>66</td>
</tr>
<tr>
<td>II.</td>
<td>Inferior quality of cement</td>
<td>96</td>
<td>32</td>
</tr>
<tr>
<td>III.</td>
<td>Use of impure quality of sand</td>
<td>55</td>
<td>18.33</td>
</tr>
<tr>
<td>IV.</td>
<td>Use of impure stone aggregates</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>V.</td>
<td>Use of impure brick aggregates</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>VI.</td>
<td>Use of impure water for concrete</td>
<td>8</td>
<td>2.66</td>
</tr>
<tr>
<td>VII.</td>
<td>Improper proportion of water in preparing the concrete</td>
<td>11</td>
<td>3.66</td>
</tr>
<tr>
<td>VIII.</td>
<td>Mixing concrete with hand or phawada.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>IX.</td>
<td>Bad quality of steel for concrete Reinforcement</td>
<td>172</td>
<td>57.33</td>
</tr>
<tr>
<td>X.</td>
<td>Non utilisation of water proofing additives in cement concrete &amp; plasters</td>
<td>204</td>
<td>68</td>
</tr>
<tr>
<td>XI.</td>
<td>Use of bad quality of lime</td>
<td>58</td>
<td>19.33</td>
</tr>
<tr>
<td>XII.</td>
<td>Use of defective timber</td>
<td>205</td>
<td>68.33</td>
</tr>
<tr>
<td>XIII.</td>
<td>Non use of ISI marked Sanitary-wares</td>
<td>123</td>
<td>41.00</td>
</tr>
<tr>
<td>XIV.</td>
<td>Inferior quality of building hardware</td>
<td>97</td>
<td>32.33</td>
</tr>
<tr>
<td>XV.</td>
<td>Use of inferior quality of paints and varnishes</td>
<td>211</td>
<td>70.33</td>
</tr>
<tr>
<td>XVI.</td>
<td>Disproportionate Batching of concrete</td>
<td>197</td>
<td>64.00</td>
</tr>
</tbody>
</table>

(Source: The data collected through questionnaire Q. No. 2.6. A)
From the above data, it reveals that majority of the members are not satisfied with the material used for construction work. Though, it is a co-operative movement, the basic principles of co-operative movement are not observed. It proves that the construction work is done on the commercial line, so that the promoters, contractors and builders would get the maximum profit. The use of bad quality of material results in the construction of houses of inferior quality.

4.2 BAD MASONRY WORK

Even though the good quality of material is used for the construction work, one cannot expect of the fair quality of construction work, if the skilled masons are not employed for the construction work. Form the above data (Table No. 6.1) it is observed that 65% of the members are not satisfied with the masonry work. In this regard, the construction work in progress of a CHS was observed. It is observed that the skilled masons were not employed. The masons were employed on low rate of wages.

The researcher has also observed the completed construction work. It is observed that in almost all the CHSs, the construction work is of inferior quality e.g. Cracks on the wall, plaster is uncovered, Uneven level of flooring and tiles fittings, the work is not diagonal, Improper slope of slab and flooring etc.
4.3 UNFAIR CARPENTARY WORK

From the data given in table No. 6.1 it is observed that 44.16% of the members are not satisfied with the carpentry work. To find out the reasons of dissatisfaction the question was asked to members. The different reasons quoted by them are as under:

Table No. 6.1 (B)

Table Showing reasons for dissatisfaction towards carpentry work.

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Particulars</th>
<th>No. of respondents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Unfair quality of wood used</td>
<td>102</td>
<td>34.00</td>
</tr>
<tr>
<td>II.</td>
<td>Unskilled carpenters employed</td>
<td>67</td>
<td>22.33</td>
</tr>
<tr>
<td>III.</td>
<td>Inconvenient size of doors &amp; Windows</td>
<td>142</td>
<td>47.33</td>
</tr>
<tr>
<td>IV.</td>
<td>Low quality of hardware used</td>
<td>237</td>
<td>79.00</td>
</tr>
<tr>
<td>V.</td>
<td>Less thickness of flanks &amp; frames</td>
<td>84</td>
<td>28.00</td>
</tr>
<tr>
<td>VI.</td>
<td>Non use of teak wood</td>
<td>163</td>
<td>54.33</td>
</tr>
</tbody>
</table>

(Data collected through questionnaire question No. 2.6B)
The good carpentry work contributes to the good outlook of the house. Similarly use of good quality wood (specially teakwood) and hardware provides for security also. But from the above data it is observed that both these aspects are neglected.

The personal observation also confirms the above said contention.

4.4 UNPLEASING ARCHITECTURAL DESIGN.

Pleasing dwelling design is an inseparable part of modern living. This not only reduces the cost of construction, but also adds to the functional utility of each individual part of the house like kitchen, living room, bedroom, sanitation, baths etc. The functional needs of a house, though depends on occupant’s preferences and reactions, this also satisfy the structural requirement. Thus both these concepts are closely interlinked.

From the data given in table No. 6.1 it is observed that 146 members i.e. 48.57% members are not satisfied with the architectural work. To find out the reasons of dissatisfaction the question was asked to the members. The results are as under.
Table No. 6.1. (C)

Table showing the reasons for dissatisfaction towards architectural work.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Reasons</th>
<th>No. of Respondents</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I)</td>
<td>No cross Ventilation</td>
<td>122</td>
<td>40.66</td>
</tr>
<tr>
<td>II)</td>
<td>Improper arrangement of rooms</td>
<td>97</td>
<td>32.33</td>
</tr>
<tr>
<td>III)</td>
<td>Insufficient light</td>
<td>147</td>
<td>49</td>
</tr>
<tr>
<td>IV)</td>
<td>Bad sanitation arrangement</td>
<td>198</td>
<td>66</td>
</tr>
<tr>
<td>V)</td>
<td>Improper height of slab</td>
<td>191</td>
<td>63.66</td>
</tr>
<tr>
<td>VI)</td>
<td>Improper arrangement of doors</td>
<td>141</td>
<td>47</td>
</tr>
<tr>
<td>VII)</td>
<td>Improper height of doors</td>
<td>189</td>
<td>63</td>
</tr>
<tr>
<td>VIII)</td>
<td>Improper size of windows</td>
<td>167</td>
<td>55.66</td>
</tr>
<tr>
<td>IX)</td>
<td>No inbuilt almirah</td>
<td>153</td>
<td>51</td>
</tr>
<tr>
<td>X)</td>
<td>Improper electrification</td>
<td>93</td>
<td>31</td>
</tr>
<tr>
<td>XI)</td>
<td>Improper watertap fitting</td>
<td>54</td>
<td>18</td>
</tr>
<tr>
<td>XII)</td>
<td>Improper height of plinth</td>
<td>211</td>
<td>70.33</td>
</tr>
<tr>
<td>XIII)</td>
<td>In convenient size of the rooms</td>
<td>157</td>
<td>52.33</td>
</tr>
<tr>
<td>XIV)</td>
<td>Elevation of the building</td>
<td>121</td>
<td>40.33</td>
</tr>
</tbody>
</table>

(Source :- Data collected through questionnaire for member Q.No. 2.6 (c))
From the above data, it reveal that while designing the plan of houses of the CHSs, the conveniency of the members is not taken in to consideration. The promoters and builders got the design prepared, from the architect, which will be benefited to them commercially. It is also observed that the services of the architect are availed only for preparing the plans and then the contractor gets the work done through the persons appointed by him. It makes clear that the role of an Architect has not been fully recognised in the CHM in Yavatmal tahasil.

It is, therefore, suggested that the CHSs should not restrict the services of an architect only for preparing the plans, but it should also be availed when the construction work is in progress. It is because, architectural work is a science as well as it is an art. He has to conceive and produce a structure and create a firm aesthetics and practical consideration. The Architect keeps in view the place, time and the current trends in architecture while designing and planning. A model design, should interalia, be such as to minimise the construction cost so that the members may get the houses at a cheaper cost and they will get the satisfaction of living in a decent house. Similarly it will provide for their conveniency.

4.5 HIGH COST OF CONSTRUCTION.

The housing co-operatives have been striving to achieve cost effective housing. This has become a difficult proposition
in the wake of steep rise in the cost of land, building materials and labour.

At the same time, it is becoming increasingly important to achieve good quality construction so that the recurring cost of maintenance and repair of houses over a period of economic service life of the houses is minimised to the extent possible.

To know the opinion of the members, regarding the cost of construction of the houses allotted to them, the question was asked in the questionnaire, Q. No. 2.4. The results are as under.

**Table No. 6.1 (D)**

Table showing the opinion of the members regarding the cost of construction –

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>07</td>
<td>2.33</td>
</tr>
<tr>
<td>Moderate</td>
<td>67</td>
<td>22.34</td>
</tr>
<tr>
<td>High</td>
<td>183</td>
<td>61.00</td>
</tr>
<tr>
<td>Very high</td>
<td>43</td>
<td>14.33</td>
</tr>
<tr>
<td></td>
<td>300</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(Source: Data collected through questionnaire for members Q No. 2.4)
To have the abstract idea regarding the opinion of members towards cost of construction the terms of openion have been defined as under.

1. **Low** : If per sq.ft. cost of construction is below the 90% of the prevailing rate, it is low.

2. **Moderate** : If the per sq.ft. cost of construction is either 5% more or less than the prevailing rate or it is equal to prevailing rate.

3. **High** : If the per sq.ft. cost of construction is more than 15% of the prevailing rate.

4. **Very High** : If the per sq.ft. cost of construction is above 20% of the prevailing rate.

5. **Prevailing rate** : The standard rate as approved by the Govt. department i.e. public works departments.

From the above data given in table No. 6.1 (D) it reveals that –

1. The cost of construction of the 2.33% of the houses is low. In this regard it is observed that the members in this category belongs to the co-operative housing societies formed by the state government employees. In this category, it is also observed that the work of construction is entrusted to the member himself and he got it done.

2. In case of 22.34% of the members, the rate of construction is moderate. In this category it is observed that the construction work is undertaken either on
departmental basis or it has been entrusted to the member himself and he got it done at his own accord.

3. In case of 61% of the members the per square feet rate of construction is high. It is because the construction work of these members was entrusted to the contractors.

4. In case of 14.33% of the members, the per square feet rate of construction is very high. In this respect it has been observed that the construction work is done by the contractors who were either relatives of the promoters or the friends of the promoters.

In case of one CHS it is observed that the co-operative housing society is promoted by the builder but he himself did not acquired the membership of that co-operative housing society. Instead of it, he arranged some of his friends as the promoter members of the society and the presidentship was bestowed upon his 'Diwanji'.

From the above observations, it can be concluded that wherever, the construction work is done either on departmental basis or by the member himself the cost of construction remained to be low or moderate. But wherever the construction work is entrusted to the contractor or the builders the cost of construction remained to be high or very high. In this respect it has been noted that such societies are promoted by the contractors or builders themselves. They remained behind the curtain and formed the CHSs with the help of their friends and
relatives. After promotion of the CHS, the plots or tenements were allotted to the public at high cost. In such type of CHSs the members did not have any control upon the construction work. With the result that the cost of construction remained to be high or very high.

A survey was also undertaken to know the feelings of the members towards the cost of construction, the data is as under.

**Table No. 6.2**

Table showing the data regarding the feelings of the members towards the cost of construction.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Reasons → Response ↓</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Satisfied with the cost of construction percentage</td>
<td>46</td>
<td>09</td>
<td>67</td>
<td>02</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15.33</td>
<td>03</td>
<td>22.67</td>
<td>0.67</td>
<td>41.33</td>
</tr>
<tr>
<td></td>
<td>e</td>
<td>f</td>
<td>g</td>
<td></td>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>2</td>
<td>Unsatisfied with the cost of construction Percentage</td>
<td>57</td>
<td>114</td>
<td>05</td>
<td></td>
<td>176</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td>38</td>
<td>1.67</td>
<td></td>
<td>58.67</td>
</tr>
</tbody>
</table>

(Source: Data collected through questionnaire for members Q.NO.2.5)
a = The cost of construction is comparatively low
b = Construction is superior than other
c = Due to inflation cost seems to be reasonable
d = Other reasons for satisfaction
e = The cost of construction is comparatively high
f = The quality of construction is inferior than others
g = Other reasons for dissatisfaction

From the above table it is observed that 41.33% of the members are satisfied with the cost of construction. Out of 41.33 members 22.33% are such members who are satisfied, with the cost of construction, only because there is an inflationary trend in the market, otherwise they are not satisfied with the cost of construction. Only 15.33% members feels that the cost of construction is comparatively low.

Out of the 300 members 176 members are not satisfied with the cost of construction. It constitutes 58.67% of the total members. Out of that 57% members are not satisfied either because the cost of construction is high or the quality of construction is inferior. If the percentage under category ‘C’ is added to this it comes to 79.33% it is near about 80%. It means that 80% of the members are not satisfied with the cost of construction, what so ever the reason there may be. Such a high percentage of dissatisfaction is really noticeable. It has affected the CHM in Yavatmal tahasil.
5. QUALITY OF CONSTRUCTION.
(GENERAL OBSERVATIONS)

In the fore-going paragraphs the discussion regarding
the quality of construction and cost of construction, is based
upon the opinion of the members and the factual data collected
through the questionnaire. To confirm the above observations,
the researcher has also under-took the survey of the
construction work of CHS. In addition to the above defects, the
following defects, in the construction work, have been noticed.

I) Plinth is a projecting part of wall immediately above
ground. But the plinths of most of the houses are either at
ground level or below the ground level. Because of which
the level of flooring of the house is also below the road
level. In rainy season the water flows into the houses.

II) In some cases, it is observed that bricks are used to
construct the plinth instead of rubbles. It has affected the
sustaining capacity of the plinth and resulted in reducing
the life of houses.

III) It is also observed that trenches for the foundation work
were not dug up to the hard murum level. Because of that
there were the cracks to the walls. It has increased the
recurring cost of maintenance and repairs.

IV) No sufficient open space is left around the houses with
the result that the locality became conjunction. It has also
affected the privacy of the house dwellers.
V) No arrangement is made for removal of waste material by means of sewers. It has badly affected the hygiene and sanitation of the locality. It causes in increasing the viral diseases.

VI) It is observed that the wall compound is not constructed which has affected the security of the dwellers. Since, compound is not constructed it give rise to dispute among the neighbours regarding the boundary of their plots.

Due to above mentioned facts and defects, the members of the CHSs are reluctant to construct their houses through co-operative housing societies. Though they acquired the membership of the CHS, they preferred to construct their houses individually. Out of the 192 CHS in Yavatmal tahasil only 48 CHS have undertaken the construction work of houses departmentally or through contractor.

6. COMPARISION WITH THE CONSTRUCTION WORK UNDERTAKEN BY THE PRIVATE INDIVIDUALS IN THE CHS.

In the for-go-ing discussion it is observed that the 80% of the members are dissatisfied with the construction work, undertaken by the CHS, due to the quality and cost of construction work. Therefore, it is essential to compare it with the cost and quality of the houses constructed by the members themselves.
For the study purposes 600 members were selected out of which 150 members are such who have constructed their houses individually.

It is observed that, all the 150 members are satisfied with the cost and quality of construction work. The data was collected, through questionnaire, regarding their assessment towards cost of construction undertaken by themselves. The findings are as under

Table No. 6.3.
Table showing the data regarding the assessment of members regarding cost for the houses constructed by themselves.

<table>
<thead>
<tr>
<th>Assessment of cost of houses constructed independently</th>
<th>No. of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 10% of prevailing rate</td>
<td>27</td>
<td>18</td>
</tr>
<tr>
<td>More than 15% of prevailing rate</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>More than 20% of prevailing rate</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Less than 10% of prevailing rate</td>
<td>87</td>
<td>58</td>
</tr>
<tr>
<td>Less than 15% of prevailing rate</td>
<td>36</td>
<td>24</td>
</tr>
<tr>
<td>Less than 20% of prevailing rate</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
<td>100</td>
</tr>
</tbody>
</table>

(Source: Data collected through questionnaire for member Q.No.2.4A)
From the above data it reveals that 82% of the members are of the opinion that their cost of construction is less than the cost of construction undertaken through co-operative housing societies. Only 18% of the members quoted that their cost of construction is high in the range of 10 to 15%. The question was asked with regard to high cost of construction they responded that they have used superior quality of material e.g. tiles for flooring, sanitary wares, material for electrification, good quality of tick wood etc.

From the above discussion, it can be concluded that the co-operative housing movement in Yavatmal tahasil failed to create confidence in the people of Yavatmal tahasil to construct their houses through CHSs.

For development of the co-operative movement, in general and the Co-operative Housing Movement in particular, the following suggestions, with regard to the construction work, can be mentioned.

7. SUGGESTIONS.
   1. The construction work should be undertaken on co-operative basis, rather than entrusted it to the members.
   2. The members of the CHSs should be associated at all stages of planning and construction of houses.
3. The services of a legal advisor may be utilised for entering into agreement with the contractor / Architect.

4. The National Building Organisation and Central public works Department have prepared schedules of rates and specifications which may be utilised by the society as a standard.

5. Care should be taken to see that no over payment is made to the contractor.

6. Daily diary should be maintained with dates of execution of works and show number of days for which curing of concrete and cement works has been done and when to open the shuttering and centering.

7. A good room with strong door and lock should be constructed to be used as store.

8. A copy of all drawings should be kept at site. The drawings may be pasted on cloth for handling at site.

9. A progress chart may be prepared for timely, economic and smooth execution of the work. In consultation with the architect and contractor the society should try to see that the progress of the work is as per chart.

10. As far as possible, the CHS should undertake the responsibility for supply of the material.

11. For different type of work, different sub committees should be formed. e.g. Material Purchase Committee,
Finance Committee, Construction Supervision Committee etc.

12. The concerning members may be informed, whenever, the construction work is undertaken, so that he may also attend the construction work, if he thinks it necessary and if he can spare the time.

13. Whatever may be the mode of execution of works, the curing of all cement works, for minimum 7 days should be done to enforce and ensure better strength.

14. Up to 40% cost of steel can also be saved by use of high strength deformed or ribbed bars. In place of 12 mm round bar 10 mm deformed bar can be used. Similarly, for other sizes of bars also one diameter less can be used.