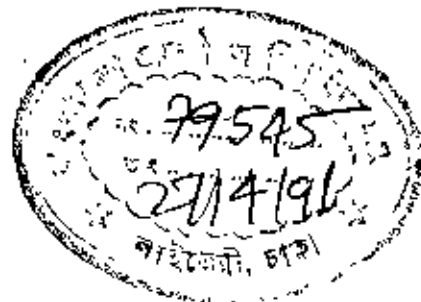


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HOUSING FOR LOW-INCOME GROUP :
A CASE STUDY OF GANAKTULI SWEEPERS COLONY

A Project Report
by
Aminur Rahman

Submitted to the Department of Urban and Regional Planning of
Bangladesh University of Engineering and Technology, Dhaka
in Partial fulfillment of the requirements for the degree.



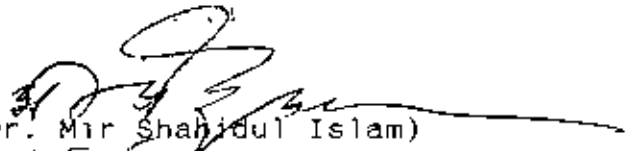
POST GRADUATE DIPLOMA IN URBAN AND REGIONAL PLANNING
UNDER AIT-BUET PROGRAMME.

August 1990

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ABSTRACT :

The term urban poor refers to the hundreds of thousands of people living in miserable subhuman condition in the modern cities . In the cities of these developing and underdeveloped countries, these people are the by-product of hasty industrialization, ever increasing over population and continuous migration from rural areas.

The target group of the present project is perhaps the most neglected and deprived section of government employees. This group mostly live in squatters or slums and their resettlement issues to be thought about. They virtually cannot pay for land. The present project calls for "Upgrading" and "Redevelopment" of the colony, honoring their socio-cultural pattern of life and incorporating in it components of contemporary living within affordable limits.



1.1 THE URBAN POOR OF BANGLADESH

The term Urban Poor refers to the hundreds of thousand of people living in miserable sub-human conditions in the modern cities. In the cities of the developing and underdeveloped countries, these people are the byproduct of hasty industrialisation, ever increasing over population and continuous migration from rural areas (Shakur, 1979).

In Bangladesh, for their low income, the urban poor are among the most deprived groups in society. In many cases, many adult members of the family have hardly any income. they live in extremely unhygenic conditions, in "Bustees" or ghettos, in alleys or in slums or shanties, in some cases even under open sky. slums may be found any where in a city. Usually there is no electricity or water supply or sewerage system. Filth, garbage, disease, crime and violence abound in the area. Hundreds of families might be chasing too little utility services. Dhaka is beset with many problems, including the problem of housing. People pay more than fifty percent of their earning as house rents for their accommodation (BBS, 1980-90). At Present only ten percent of the government employees in Dhaka are provided with temporary government residential accommodation (BBS, 1980-90). For this arrangement, the employees pay a part of their salary as house rent. They pay house rent at a rate proportionate to their

basic salary. on the other hand, the Government spends a substantial amount of money for the maintenance of these houses. The employees occupying government houses have to vacate them at the time of their retirement: at an age when they are usually not able to do any job or manage a new shelter for themselves with their reduced income. the target group of the present project, i.e. low income group sweepers who are on master-role terms, is perhaps the most neglected and deprived section of government employees. This group mostly live in slums and their resettlement at little or no cost is a fundamental issue to be thought about. They cannot pay for land. The present project calls for "Upgradation" and "Re-development" of Dhaka Municipality sweepers colony at Ganaktuli in regard to their socio-cultural pattern of life and incorporating in it the components of contemporary living within affordable limits (Helaluzzaman, 1981)

1.2 SECTORAL CONSIDERATIONS

Generally there are two main types of development plans for such poverty stricken areas in all underdeveloped or developed countries. They are :

1. **Physical Upgrading Programmes** : Progressive upgrading plans have been launched with success in many countries of Latin

America, Uganda, Pakistan, India and Indonesia. "Housing", an international journal, refers to ten upgrading projects being undertaken in Senegal, Nicaragua, India, Botswana, Jamaica, Tanzania, Zambia, Indonesia, El Salvador and Korea. All these ten projects, represent a big leap in the field of upgrading the bustee dwellers in the developing countries. By not removing the area of squatter settlement but improving on the existing structures one could create a sense of security among the squatters and at the same time help them seek jobs and utility services. This principle was also adopted by projects in Calcutta, Indonesia, Zambia, Jamaica and Tanzania. In the case of urban cities of Bangladesh, India and Pakistan these slums are located in vital positions from where it is easy to seek jobs and other essential requirements. There are enough potentials to reform their conditions with better service facilities.

2. **Site & Service Programmes :** In what is termed as site and service programme, people of poverty stricken poor environmental areas are reallocated into better conditions (with basic service facilities, sometimes even with basic housing infrastructure).

So far in Bangladesh there has been very little attempt at physical upgrading of dilapidated low income poor environmental communities-although the cases are either the same or even worse than places mentioned earlier. It is particularly similar to the



The People





The community



conditions of Calcutta, India and Karachi, Pakistan, the environmental condition is particularly alarming in poor urban communities of Bangladesh and it has become essential that programmes are undertaken to protect the interest of the great number of urban communities. There are no organised service to cater for the various needs of this growing segment of population or to assist them in improving their own conditions.

1.3 AN OVERVIEW OF THE HOUSING PRACTICE

(The study attempts to see the possibility of home-ownership right for lower income group of government employees, as a step towards solving the ever growing housing problem.)

Home ownership in Bangladesh has not been taken up as a scheme yet. During the last few decades the Soviet Union (where, as a matter of policy, private property is not allowed) have embarked on a programme of selling government owned apartments to tenants, assisted by the provision of very low interest mortgage finance" (Angel, et al, 1983. Yeh (1976) observes that home ownership scheme can generate a quicker return of capital than renting. The analysis of the cost structure of public housing shows that the only possible reduction of selling price of future home-ownership scheme is through land subsidies and a lower profit margin (Yeh, 1976). Evaluating the situation in

Bangladesh . Rahman(1978) recommended that "efforts should be made to evolve a rational policy regarding the home-ownership entity of the public servants".

The short review made above reveals that home-ownership concept is an accepted idea in many countries. The study of Rahman also supports this contention. It is, therefore, logical to assume that home-ownership, in the Bangladeshi context, has future potential.

1.4 PROPOSED SCOPE OF THE PROJECT

It has also been proved in different underdeveloped countries that there are important pre-requisites for a successful upgrading planning process of a community which depend greatly on participation of the community itself. A study of 16 low-income urban communities conducted by the Centre for Urban Studies (CUS,1980) has identified several neighbourhoods with cohesive community potentials. But the site regarding this project was not included within the scope of the above mentioned research work. So a detailed amount of data on the physical and environmental conditions, socio-economic characteristics of the residents was not available. Thus it was necessary to conduct a social survey, physical survey and attitudinal surveys of the leaders and some of the residents. In order to determine their

priorities for improving the area and their ideas on how this might be achieved.

The primary activity of the research will be to try to devise detailed design solutions for the Housing problems of the neighbourhood. Such as designing improved drains, reorganizing the land use and improving the efficiency of the use of space.

1.5 OBJECTIVES OF THE STUDY

1. To explore the various possibilities of efficient physical upgrading with minimum investment.
2. To examine the potential for mobilizing community participation in physical upgrading.
3. To develop a housing design standard which might be applicable not only in this community but also in other similar communities.

1.6 METHODOLOGY

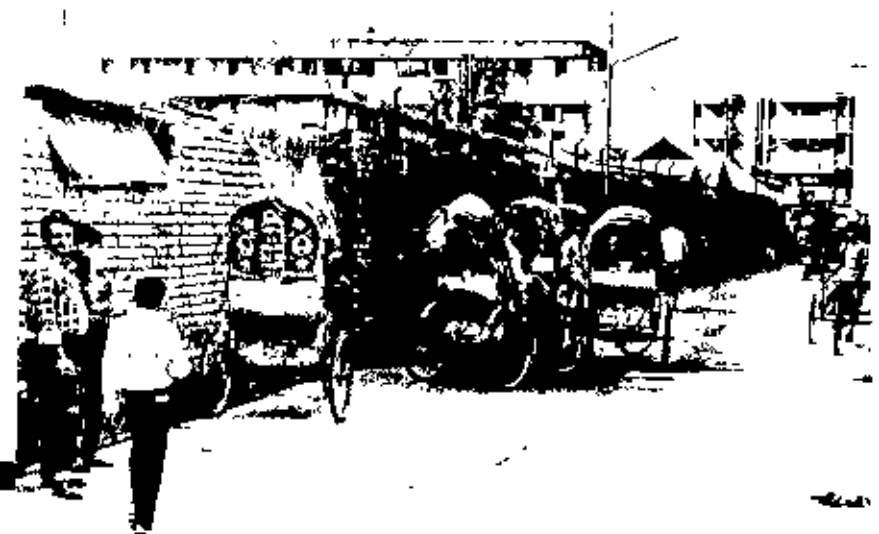
1. Physical and social survey of Ganaktuli sweepers colony including housing, sanitations and other services facilities.
2. Examining an upgrading scheme in collaboration with the community and its leaders.



DHAKA CITY GUIDE MAP

0 500 1000 1500 feet

3. Preparing alternative design solutions for housing, sanitation and other community facilities.
4. Preparing as far as possible a cost estimate, financing plan and implementation programme for such design.



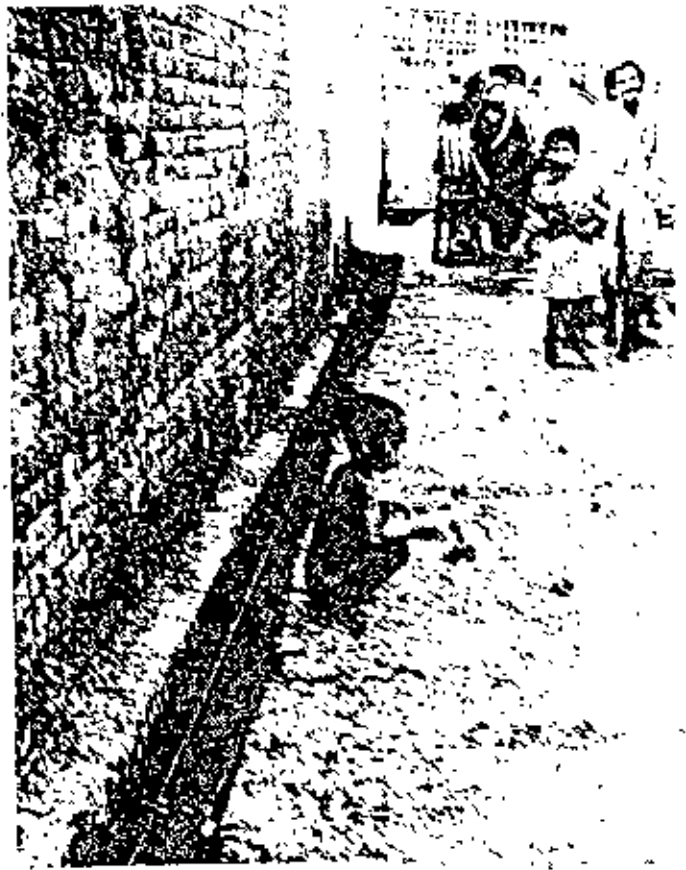
Entry towards the site



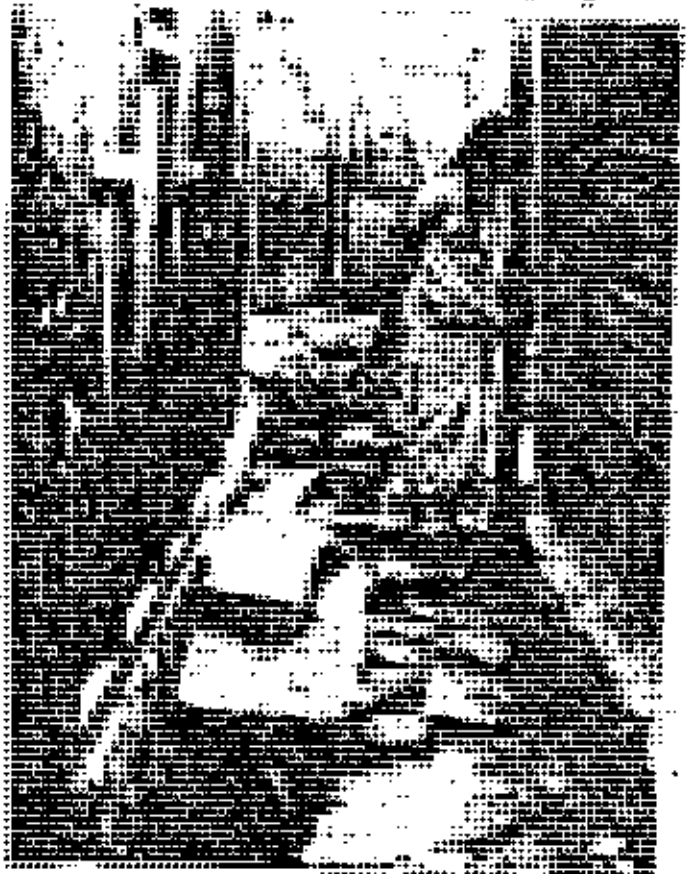
Shops in front of
the site



Entry to the mosque

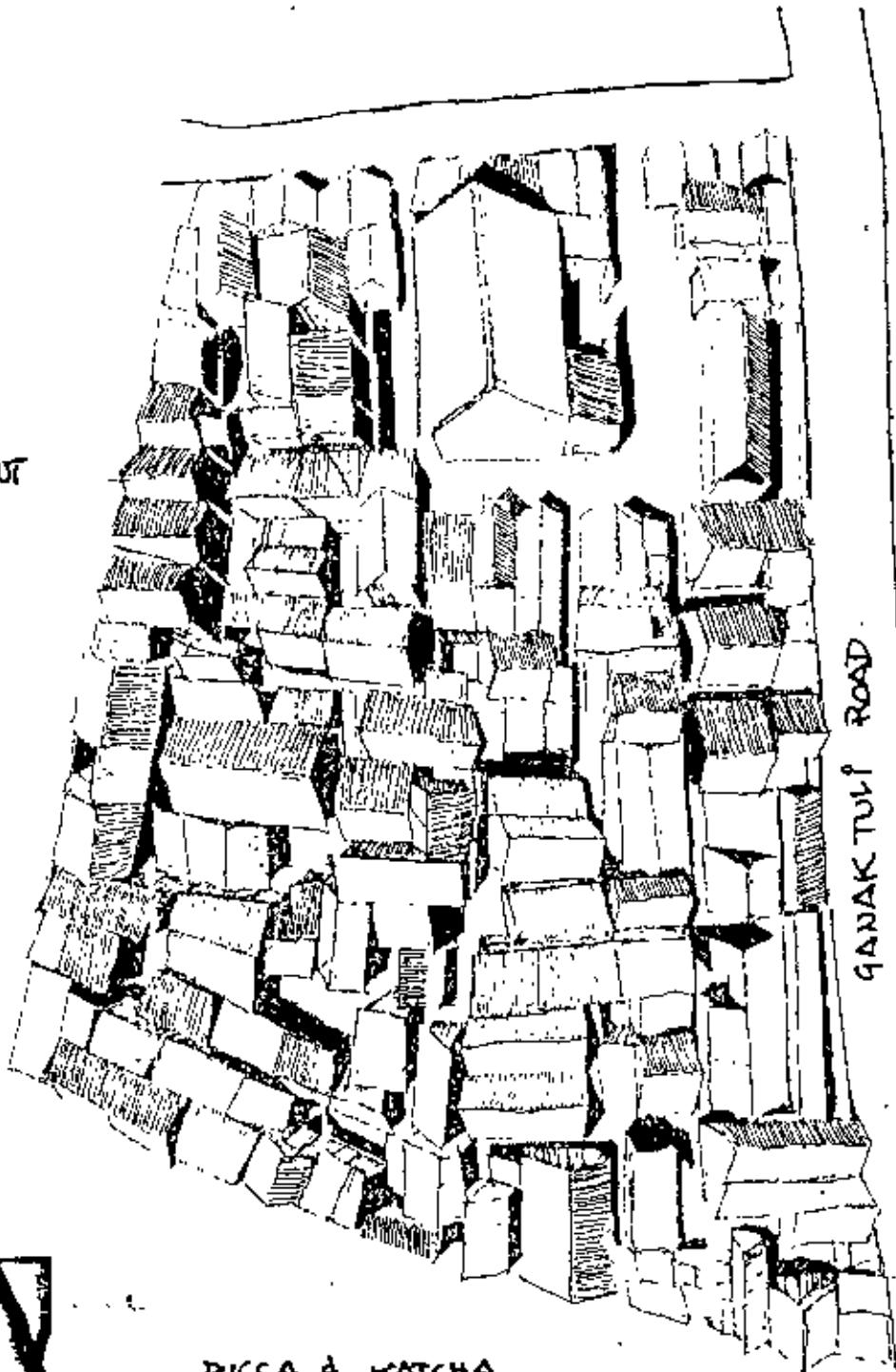


over pouring drains



HINDU SEAGENT (4 STOREY PERMANENT STRUCTURE)

PRIVATE PLOT
SEMI PERMANENT
STRUCTURE.



B.D.R. CAMPUS
6 STOREY
STRUCTURE

GANAK TULI ROAD

PICCA & KATCHA
STRUCTURE.
PRIVATE PLOT

EXISTING CONDITION



2.1 AN INTRODUCTION TO THE STUDY AREA

The project site is located near the first gate of Bangladesh Rifles (BDR) campus, Azimpur, Dhaka on an area of 0.353 ha (3530 m²). There are three segments of sweepers colony, of which two consist of muslim population and the third of hindu population. These three segments form a residential neighbourhood, out of which one community of 165 households (H.H.) was selected for this project.

At present there are one primary school, a mosque and seven shops within the project site. All other social facilities required for the survival of a settlement, such as high schools, bus routes, markets, post offices, hospitals, parks, cinema halls etc. are available within reasonable proximity from the neighbourhood. Physical infrastructure, like gas, electricity, water mains and sewerage, road communication with the rest of the city, is also present within the vicinity of the site. The housing units are approximately 12.5 m² in size and are made up of temporary materials. Average family size is 6.5. There are nine toilets and three water points for the whole colony.

No repair or maintenance work was done for a long time. The drains are over flowing community water supply is inadequate and

faulty toilets provided on community basis are beyond repair. According to the residents whatever repair and improvements are done in the colony are done by themselves: they would have made further improvement had it been their own property.

2.2 SOCIAL DEMOGRAPHIC SURVEY

2.2.a Social survey. In 1946, these people shifted from Palashi to Ganaktuli. The land was, however, provided by the Government. Ninety percent of the total population migrated from Comilla, while the rest migrated from Faridpur district. All the inhabitants living within this area are muslims. Initially a total number of 75 families. (i.e. 300 persons) approximately, settled within this area. Plots were allotted to each family according to family size and the decision of the "Panchayet". In 1965, various utility facilities (e.g. waterline, toilets) were provided and a primary school was set up by the Government. Later, in 1968, the inhabitants, on their own initiative, set up a mosque.

2.2.b Social organization : The local "Panchayet" consists of eleven members. The main purposes of the "Panchayet" are as follows:

- a) Informing local complaints to the Municipal Corporation through the Chairman of ward number 22.
- b) Proper management through solving various problems within the community .

c) Raising of funds for the following activities-

- i) Social activities
- ii) Educational activities
- iii) Religious activities.

Relationship with supra-local Bodies :

The "Panchayet" acts as a media in establishing relationship between the people and the various supra-local bodies (e.g. Dhaka Municipal Corporation, Dhaka WASA) when the "Panchayet" fails to settle any local problem or dispute, the matter is informed to the ward chairman.

Opinion of Supra Bodies regarding this settlement :

1. This land was provided by the Government for them to settle on temporary basis. So, the government provided very little facilities to them.
2. At present, the government is thinking for the betterment/well-being of the inhabitants through providing multistoried flats (colony), etc.

2.2.c Present Condition

a) Panchayet :

i) Funds raised by the "Panchayet" are invariably low . As such it becomes quite difficult for the "Panchayet" to meet its expenses. Besides, they rather prefer to spend their savings for consumer items.

ii) Poverty level is so high that it becomes impossible for each family to meet its own expenses. Besides, they rather prefer to invest their own savings for consumer items.

iii) Most of the inhabitants have little initiative regarding development works because they have a risk of being evicted at any moment.

b) Mosque:

i) The mosque and its compound included two additional rooms—one for the imam and the other put on rent (for Taka 200 per month).

ii) The mosque accommodated a total number of approximately 200 persons.

iii) The mosque is provided with utility services like electricity and water. It has been informed that some of the nearby dwellers took illegal connection from the mosque and pay

taka 15 monthly to the mosque committee.

iv) The mosque serves the purpose of madrasa. Students are required to pay Taka 5 monthly as their tuition fees.

c) School

i) The school (Classes I-V) is being run by the Government since 1974. No tuition fees are required and students are provided with free books.

ii) At present, the school has about 165 students. This figure includes about 320 girl students.

iii) There are three Government employed teachers in this school.

iv) The school is also used for various social activities (e.g. marriage ceremony, "Panchayet" meetings, etc.)

v) At present lack of adequate accommodation is the main problem.

2.2.d Remarks about the above the Findings.

Joint family is predominant in most of the houses. A few houses contain nuclear families. There are also some extended families. Most of them are the authorised sweepers of Dhaka Municipal Corporation (D.M.C.). Supplementary income comes from shop-keeping, rickshaw pulling, part-time factory job, etc. Affinity towards work is more than that towards education though we find some children going to school. At present, women are mainly involved with their household works. This is

mainly due to their conservative attitude. A small percentage of the women works as Municipality sweepers/shop-keepers. Though among the children, affinity towards education is less than affinity towards works, they are very conscious of the overall situation. Family income has gradually increased and simultaneously their standard of living is also becoming higher. People living within this area are also becoming more and more conscious day by day. So it can be concluded that they have an optimistic future. Conflicts among the inhabitants are mainly due to the following reasons :

- a) Property
- b) Sharing of water taps .
- c) Livestock's/poultry, etc.



too little utilities-
shared by too many



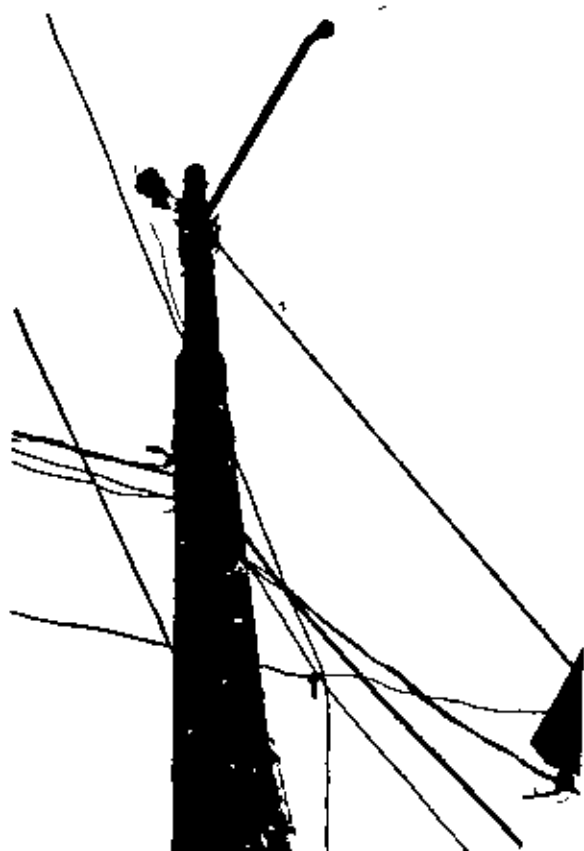




storage for the leandays



cooki ng



Faulty connection

3.1 ATTITUDE SURVEY RESPONSE

An attitude survey of the people was carried out to discover what they feel their problems are, which problems are bothering them most, their future plans about staying in that place and also to examine the potential for community participation for any sort of development and their response to site and service programmes, the potential for development, the potential for upgrading service facilities etc. It was also meant to verify certain physical social and economical data like population, number of households, occupation, place of work, rent, size and condition of the housing units. For this reason twenty five households were surveyed covering the entire locality. There were certain problems in carrying out the survey, e.g. the questions had to be made as possible to the respondents since most of them are illiterate. Of course even then some of the respondent could not understand some particular questions they were quite indifferent to answering them. Like arranging the problems regarding the service facilities in order of priorities. Hence only two priorities were tabulated. Response to the question about income was also not accurate since either they were shy or wanted to hide the exact figure. Survey was done on Sunday from 4 to 7 P.M. (considering most heads of households would be available

at that time). Reaction to this attitude survey was a sort of indifference amongst responders. The majority of them were not enthusiastic about the questions. Some of the respondents even complained that there had been a few other surveys done in this area but till then nothing had happened. So they were not very optimistic about this survey either. For a better understanding of the responses to this attitude survey the answers are presented in a tabular form following each question. (Annexure I)

Structured interviews with twenty five households in the community gave an out line for any future scheme for the community. The survey in the Hindu section, where government accommodation is provided shows that the residents pay a monthly rent of Tk. 275/- per holding. Each HH is provided with electricity but does not have any gas connection. Water supply is however there in the site for community use. Each holding is about 14.6 m² including a room (3.25m x 3m) and a kitchenette (1.35m x 3m). The brief survey reveals that each employee has a fixed salary of Tk. 1200/- per month. When asked about any other source of income the answer was negative but indirect questions revealed that their monthly expenditure is about Tk.2,000/- on an average which they manage from a second job. Survey disclosed that if inmates are allowed to own their holdings on hirepurchase basis, they will manage to pay Tk. 5,000/- on an average as down payment. It also reveals that the members have the

capacity to pay Tk. 200/- on an average as monthly installments without and with gas facilities respectively.

3.2 IDENTIFICATION OF PROBLEMS

The problems in the study area are of a varied nature and can be classified variously depending upon various considerations and the way they are viewed. The same is true for the establishment of priorities of problems for solution. From physical observation and discussions with various types of people (including the ward commissioner) of the locality, and also from an analysis of the responses of attitude survey in the same are the problems of the area may be classified under following heads.

a. POOR ECONOMIC CONDITIONS :

b. SOCIAL CONSTRAINTS :

- i. Family size is generally beyond manageable limits with respect to income
- ii. Lack of education

c. PHYSICAL PROBLEMS :

- i. Poor basic service facilities; poor sewerage system, poor rain water disposal system, insufficient provisions for drinking water, garbage disposal etc.
- ii. Poor housing in respect of both size and material of construction.

4.1 DESIGN CONCEPT

Turner (1958) truly says "Housing is a process rather than a product". So we have to concentrate on what we are giving to the community in its socio-cultural and economic context. What we can do is to assist them by making some provisions to develop their living pattern and help them avail better community facilities. The approach of imposing some thing on their living style is impractical and sure to fail as proved through such attempts all over the world. Through proposing a new environment we should be careful so that the user may find his image reflected in it with a development in living standard.

Housing is a gradual and continuous process which grow with owners requirements and his earning capacity and has a great variety. This cultural/religious determinates of the environment and it is relatively easy for the people to adjust the spaces to suit their own preferred life style.

Hence the concept to propose some frame structures of suitable grid with roof and some of the community ad utility facilities e.g. toilets, water resource, gas, electricity, drainage , walk ways, primary school, mosque and open spaces and the freedom for the users to develop their own houaes according to their needs, choices and affordable limits to give it a more sensible character.

Today one serious problem is urban poverty and slums, people living and lying on the pavements all around the city. Urban living involves a small room of 80 to 90 sft. the room the cell is the only element in a whole system of spaces that people need. In rural areas people are poor perhaps more poorer than the urban areas but it has a far different expression. There is always space to meet and talk, to cook, wash clothes and a place for the children to play. All these activities do not need a covered enclosure most of them any occur in an open space with a very close relationship with the covered space according to privacy. So we have to learn from our traditional rural housing pattern which is a very natural solution to this problem.

This system is hierarchical

* Firstly the space needed by the family for
exclusive private use

- Cooking
- Sleeping
- Storing etc.

* Secondly the areas of intimate contact i.e. The front doorstep
where children play,
people chat with his
neighbour.

* Thirdly Neighbourhood meeting
plane (e.g. water

resource in city
water taps) where a
person part with his
community.

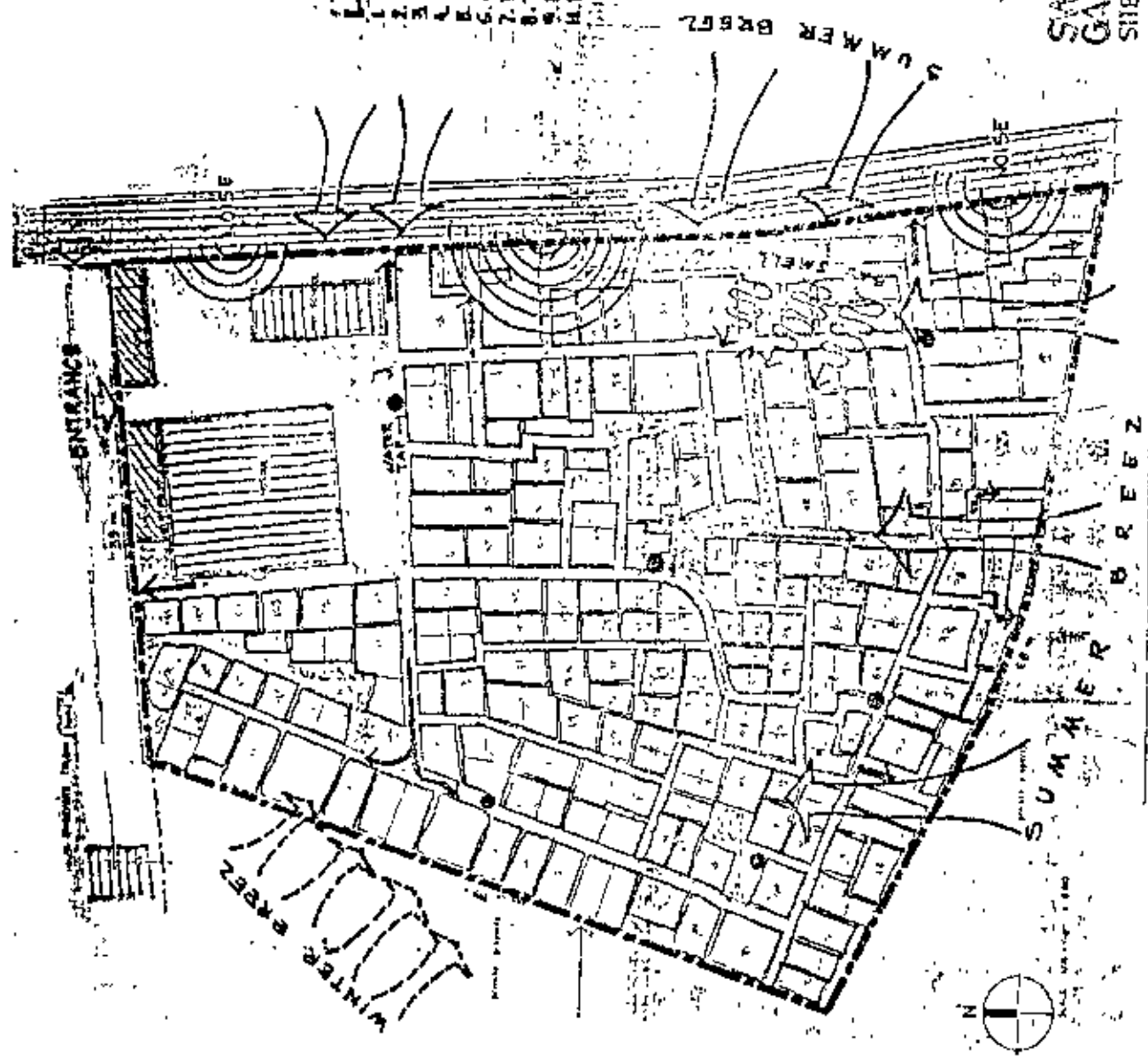
* Finally A large open space,
mosque maidan etc.

4.2 PROJECT FORMULATION

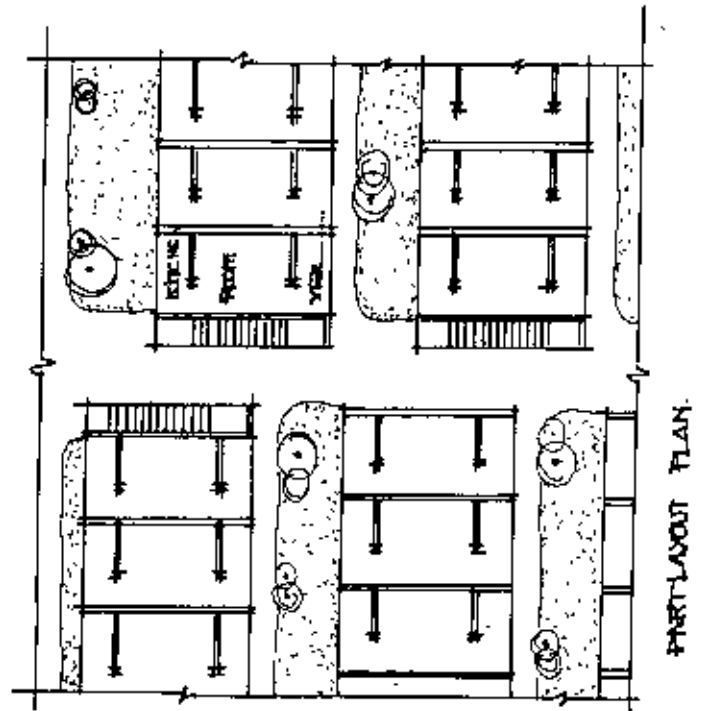
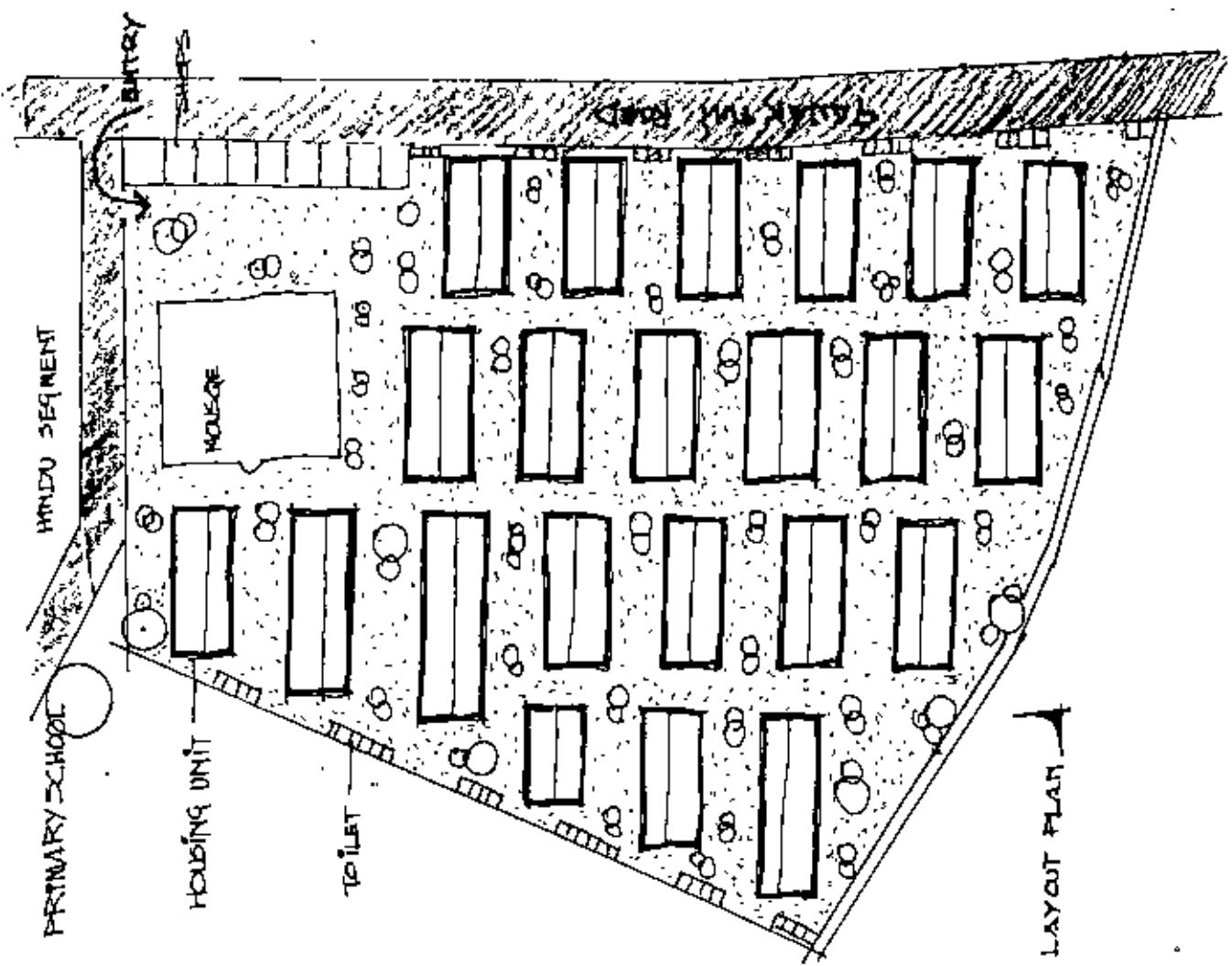
4.2.a Density and Units : An ideal two stored row house density per hectare would be 62 household of 60 m² family. Reducing the unit size by about 3 to 4 times i.e. 20 m² to 15 m² a density of 150 H.H./ha to 250 H.H. ha can be achieved, theoretically which conforms to various housing institutions by laws. A survey carried out in some "Bustees" at Dhaka shows the density as high as 500 to 750 HH/ha . with only 5% to 15% open space, which is unhygienic by any standards. Maximum built-up area to open-space ratio allowed by RAJUK bye-laws is about 50% that too considering ideal light, ventilation, vehicular traffic, etc. A survey shows, two types of government housing are presently available for the target group at Dhaka i.e., four storied buildings and semi-pucca one storied row houses. As per PWD schedule of rates 1985, a multistoried building of available type would cost about Tk. 3,000/m² on the other hand semi pucca (C.I.sheet roofing over brick walls) structures cost comes to about Tk.2,500/m².

**SWEEPERS COLONY,
GANAKTULY, BHAKA
SITE ANALYSIS**

- LEGEND**
- 1. COVERED AREA
 - 2. OPEN AREA
 - 3. WINDY
 - 4. SHADY
 - 5. COMMUNITY FACILITIES
 - 6. WATER TAP
 - 7. TUBS
 - 8. SPACINGS
 - 9. PROTECT AREA



**SWEEPERS COLONY,
GAMAKTULY, DHAKA
PROPOSED LAYOUT PLAN.**



4.2.b Material of Construction : Pre-cast (P.C) components developed by various housing and building research organisations of the world are always cheaper than conventional construction. The components developed or adopted by HBRI for Bangladeshi situation, if utilized properly, can give a saving in the order of 25% to 50% with respect to overall cost of construction" Potential P.C. components of HBRI are as follows

Proceedings of seminar by HBRI (1984)

- i) Roofing/Flooring F.C. channel , folded plate, L- pannel,D.C.Tiles and stabilized soil Block, etc.
- ii) Walling and support-Pocket Footing and Hollow Column, Ekra wall, Gypsum Board, etc.
- iii) Sunshade/Door - F.C. or R.C.C. frames and sunshade, etc. window frames.

4.2.c Layout of the Site : It can be inferred that preferred housing type would be one or two storied structures with about 50% open area. In the proposed layout, existing mosque would be kept as it is, but the primary school is proposed to be shifted from existing location to combine it with the primary school located at the adjacent hindu segment. A health centre and shops are proposed along the 5 m wide road at the eastern edge of the

central neighbourhood space. The pathways pattern is almost gridiron. Major building to building spacing is more than 3 m along east-west axis to funnel in desirable south and south-east wind into the site. Out of the total 165 proposed H.H.90 units are located on the ground floor and the rest 75 units on first floor, which gives a total floor area (including mosque) of 3250m². Thus a Floor Area Ratio (FAR) of 0.92 and open space Ratio(OSR) of 52% is achieved.

4.2.d Housing Unit Design : During Housing unit design, cost was considered as the main factor and therefore dormitory type concept was developed. Individual housing units of 6m x 3m =18m² size are proposed, which include a verandah and a kitchenette, each 1.25 m wide on the south & north respectively. In the ground floor verandahs are independent. A meter wide p.c.stair leads to the first floor the common verandah. Each unit is provided with gas and electricity but water supply is on community basis. Adequate number of water taps are located underneath the stair landing for house hold use. Total cost (excluding land value) of proposed unit, as per HBRI & PWD schedule rates is Tk. 27,6000/- on an average (Annexure, Table 4)

4.3 AFFORDIBILITY AND EXECUTION

Financial institutions like House Building Finance Corporation

(HBFC) offers loans in Dhaka city at 10.5% interest rate in cities and at 5% in the upazilas, both repayable in a period of 25 years. It has been found that down payment capacity of the H.H. is Tk. 5,000/-. As the total cost of each unit is Tk.27,600/- so the cost recovery will be Tk.22,600/- given the capital recovery factor of 0.0709 and 0.1144 for 5% and 10.5% interest rates over the 25 years of repayment period respectively. So the monthly repayment amount to Tk.133/- and Tk. 215/- respectively and total affordability of each H.H. is Tk. 350/- . If a maximum amount of Tk. 100/- is deducted on amount of monthly expenditure on services, maintenance, community subacriptions, taxes etc. then the members can afford to pay Tk.250/- as maximum monthly installment.

5.1 POLICIES AND RECOMMENDATIONS

1. The security of tenure, ownership of land should be guaranteed.
2. Priorities assigned by the inhabitants must be respected
3. Community participation should be ensured.

5.2 CONCLUSION

The total project may be sponsored by the government or some voluntary agency as a fixed capital, which the government may recover to invest for similar other projects. In calculating the total cost of the project, the land is assumed to be free as in previous low-cost settlements programmes of the government. The proposed concept of low-rise, high density housing with low-cost innovative pre-cast materials is introduced here and shown to be most suitable for the "Upgradation" and "Re-development" of low-income group "Bustes".

ANNEXURE I

RESPONSE TO ATTITUDE SURVEY

Table. 1. Satisfaction on the existing facilities in the community

Amenities	Satisfied		Not satisfied	
	Number of respondents	% of respondents	Number of respondents	% of respondents
Water supply	1	4%	24	96%
Electricity	10	40%	15	60%
Drainage	3	12%	22	88%
Garbage disposal	9	36%	16	64%
Toilet	2	8%	23	92%
Gas	0	-	25	100%

Source : Questionnaire survey on the site.

Table. 2 .Identification of the most important problem which is to be solved.

Problem	Number of respondents	% of the respondents
Housing	17	68%
Water supply	5	20%
Toilet facility	2	8%
Electricity supply	1	4%
Drainage	-	-
Garbage disposal	-	-

Source : Questionnaire survey on the site.

Table 3 : Urgency of the development of the above mentioned provisions on the area .

Comment	Number of respondents	% of the respondents
Yes	24	96%
No	-	0
No remark	1	4

Source : Questionnaire survey on the site.

Table 4 : Means to solve the problems.

	Number of respondents	% of respondents
Government	4	16%
Government + people	4	16%
Co-operative community participaton'	15	60%
I don't know	2	8%

Source : Questionnaire survey on the site.

Table 5 : Description of house structure

Description of the house	Number of respondents	% of the respondents
Kuchha Kuchha Kuchha Plinth + Wall + Roof	18	72%
Pucca Kuchha Kuchha Plinth + Wall + Roof	6	24%
Pucca Pucca Kuchha Plinth + Wall + Roof	1	4%
Pucca Pucca Pucca Plinth + Wall + Roof	-	-

Source : Questionnaire survey on the site.

Table 6 : Community participation in the upgrading scheme.

Question	Answer			
	Yes		No	
	Num.	%	Num.	%
a. Are you ready to pay money if the area is upgraded ?	19	79%	6	21%
b. Are you willing to work & spare hrs/day for community development?	21	84%	4	16%

Source : Questionnaire survey on the site

Table 7 : Place of work

Place of work	Number of the respondents	% of the respondents
Gulistan area	4	16%
Within the ganaktuli area	5	18%
Minto Road area	14	59%
Not fixed	2	7%

Source : Questionnaire survey on the site

Table 8': The total income of family

Income (Taka per month) of family	Number of the respondents	% of the respondents
Below 1000	-	-
1000-1500	2	6%
1500-2000	3	14%
2000-2500	15	61%
2500-3000	5	19%

Source : Questionnaire survey on the site.

ANNEXURE -II

Cost Estimation of the unit (According to 1986 PWD Rate)

Table 1 : Ground Floor Unit

Description	Unit rate (Tk.)	Quantity	Total cost (Tk.)
1. Earth work foundation	140.00/-cum	1.7 cum	238.00
2. Foundation work	295.00/rm	7.6 m	2,242.00
3. Gr. floor flooring at finished level (with stablized soil block)	130.00/sqm	17.0 sqm	2,210.00
4. 25 cm brick wall upto ground floor roof level (2. & m ht.)	355.00/sqm	17.0 sqm	6,035.00
5. Ground floor roofing with pre-cast F.C. channel	460.00/sqm	18.6 sqm	8,556.00
6. 12 cm brick wall upto ground floor roof level	170.00/sqm	8.7 sq.	1,479.00
7. All interior wall plaster	32.00/sqm	50.0 sqm	1,600.00
8. RCC F.C. door & window frame	70.00/sqm	10.5 rm	735.00
9. Wooden shatter 25 mm thick for door & window.	500.00/sqm	5.6 sqm	2,750.00
10. Window grills make of M.S. rod	400.00/sqm	4.0 sqm	1,600.00
11. RCC P.C. Lintel with sunshade	130.00/rm	1.25 m	162.50
12. White washing three coats (interior)	2.70/sqm	50.0 sqm	135.00
13. Electrical works lump sum(L.S.)			200.00
14. Gas connection L.S.			1,000.00
Total			28,942.50

Say Tk. 28,950.00 roughly.

Table 2 : First Floor of the unit.

Description	Unit rate (Tk.)	Quantity	Total cost (Tk.)
1. 25 cm brick wall upto roof level	255.00/sqm	13.0 sqm	4,615.00
2. Roofing with P.C. L-panel	300.00/sqm	15.0 sqm	4,500.00
3. 12 cm brick wall upto roof level	170.00/sqm	7.0 sqm	1,190.00
4. All interior wall plaster	32.00/sqm	42.5 sqm	1,360.00
5. RCC P.C. door & window frames	70.00/rm	10.5 m	735.00
6. Wooden shutter 25 mm th. for door & window.	500.00/sqm	5.5 sqm	2,750.00
7. Window grills made of M.S.rod	400.00/sqm	4.0 sqm	1,600.00.
8. White washing three coats (interior)	2.70/sqm	50.0 sqm	135.00
9. Electrical works L.S.			200.00
10. Gas connection L.S.			1,000.00
11. Varanda beam	120.00/rm	3.0 m	360.00
12. Cast-in-situ roof over veranda	460.00/sqm	3.7 sqm	1,702.00
13. Staircase without roof			3,000.00
- RCC P.C. Planks			
- F.C.slab for landing			
- 25 cm/25 cm brick col.			
- G.I.pipe hand rail			
Total :			23,147.00

Say Tk. 23,150.00 roughly.

Table 3 : Other Common Expenses for the Community

Description	Unit rate (Tk.)	Quantity	Total cost (Tk.)
1. Site preparation	3.00/sqm	2,780 sqm	8,340.00
2. Paths or walkways(brick soling under herring bone bond)	180.00/sqm	460 sqm	82,800.00
3. Surface drains	200.00/rm	240 m	48,000.00
4. Water line with 25 mm & 18 mm dia G.I.pipe.	105.00/rm	180 m	18,900.00
5. Electricity main line (230 volt).	260.00/rm	200 m	52,000.00
Total			2,10,040.00

Table 4 : Calculation of Total unit cost

Description	Unit rate (Tk.)	Quantity	Total cost (Tk.)
1. Ground floor(assuming single storied same cost)n from Table 1.	28,950/-	90 (units)	26,05,500/-
2. First floor from Table	23,150/-	75 (units)	17,36,250/-
3. Assuming that shops, health centres ect. will be build later on gradually from monthly subscription. Expenses on other common facilities of the community will be from Table 3.			2,10,040/-
Total Project Cost :			45,51,790/-

So, each house holds 'Unit cost'
in Total.....45,51,790/--165 =27,586.60

Tk. 27,600/-.

Table 5 : Calculation of Monthly Repayment for the Individual House Holds :

TOTAL PER UNIT COST	= Tk. 27,600/- from Table 4.
Down Payment	= Tk. 5,000/-from intervies results

	Tk. 22,600/-

Therefore, Tk. 22,600/- in total per house hold is to be borrowed from financial institutions.

Total amount to be borrowed in Tk.	Amortazition period	Interest rate in %	Capital recovery factor	monthly repayment in Tk.

22,600.00	25 years	5.0	0.0709	133.53

		10.5	0.1144	215.45

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