

Integrated Design Approach to Accessible Shelter for the Persons with Disabilities in Bangladesh



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Introduction

This paper considered the analysis of the baseline situation of shelter and basic services inclusion of accessibility of the disable in Bangladesh. Further the analysis has been done to find out the prevailing problems in the governmental and nongovernmental planning, policies and strategies of the country. Finally proposal has been provided through the policies, strategies and design guidelines to achieve a barrier free environmental planning and management of shelter design and development in consideration of the physical accessibility of the persons with disabilities in Bangladesh.

1 Shelter Situation Analysis

1.1 Basic General Data

Geography and Administration

In 1971 with a nine-month liberation war Bangladesh emerged as an independent and sovereign country with an area of 147,570 sq. km. Geographically the country is situated between 20° 34' and 26° 38' north latitude and between 88° 01' and 92° 41' east longitude. It is surrounded by India at its north, northeast and west, by Bay of Bengal at its south and Myanmar at its east. It is one of the largest delta regions in the world with having population of about 143.91 million (BBS 2007). The density of the country is 926 per sq km (BBS 2007) annually it is 1.6% that makes it one of the densely populated countries in the world. Dhaka is the capital of Bangladesh having population of about 12 million (BBS 2007), which is one of the mega cities in the world. More than 75% (BBS 2007) of the total population lives in rural areas. However, rapid urbanisation took place during the last few decades.



Figure 1: Bangladesh with 6 divisions



Figure 2: Destructed houses by natural disaster

It is one of the disaster prone countries in the world. The major disaster identified in Bangladesh is flood, which washed away every year about 18% of the country. Every year more than 20,000 people became homeless due to any

kind of natural disasters; causes thousands people need emergency shelter, which can often only be available in urban settlements (Bangladesh Urban & Shelter Sector review, June 1993) resulting unhygienic slum and squatter in the urban areas.

Administration

The Parliament of the Bangladesh is the single-house known as House of the Nation, in which the legislative powers of the Republic vested in. The Prime Minister is the leader of the house, who is the head of the Government, while President is the head of the state and the speaker presides over the Parliament. The country is organised into different units according to the administrative purposes, those are 6 divisions, 64 zila, 6 city corporations, 308 municipalities, 481 upazilas, 599 thanas and 4,498 unions (BBS 2007). Dhaka, Chittagong, Khulna, Rajshahi, Barishal and Sylhet are the 6 divisions contain the 6 city corporations under a Divisional Commissioner. Each of this division subdivided into 64 zilas, which are administered by a Deputy Commissioner. The zilas are subdivided into 481 upazilas and 599 thanas, which are divided into 4,498 unions, mouzas, and villages at the lowest level. In the urban areas the municipalities or Pourashavas have an elected Mayor or chairman and councillors.

Demography and Health

Demography

Majority of the people depends on agriculture but now days the country no longer depends predominantly on agriculture. Level of urbanisation is about 25% and its total urban population is about 30 million (Bangladesh National report, Human Settlements 2001) and by 2020 it is projected to be nearly 80 million, not much short of half the total (Bangladesh 2020 by World Bank and CUS).

Table 1: Growth Rate of the Country (BBS 20070)

Residence	2001	2002	2003	2004	2005	2006
National	1.40	1.53	1.50	1.50	1.49	1.49
Urban	1.02	1.29	1.32	1.34	1.29	1.31
Rural	1.54	1.59	1.55	1.55	1.58	1.57

Perhaps the growth rate is decline to some extent but still be higher than 3% in 2020 when the urbanization level would rise to nearly 40% and by 2035 it will statically become an urbanized country, with more than 50% of its population being urban.

The four major cities of Dhaka, Chittagong, Khulna, and Rajshahi contain almost half of the urban population. Dhaka, however, is estimated to receive 40% of rural urban migration (DMDP 1995-2015, Vol-1).

This rapid urbanization experiences emergence of various problems in the urban areas, particularly in the large cities, which include adequate access of shelter, social issues and poverty, environmental degradation, economic stagnancy and poor governance. All this needs a unique sense of emergency in policymaking today.

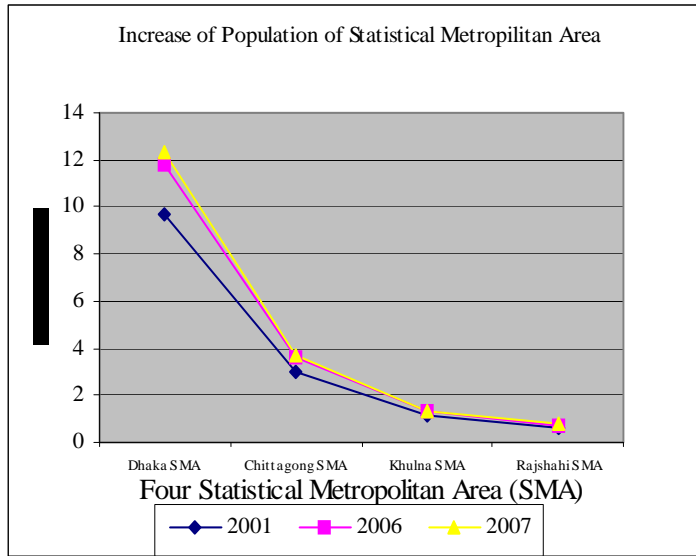


Figure 3: Population of Four Statistical Metropolitan Areas

Source: BBS 2007

Health

During 1991-1995 one of the most notable progresses was the decline in fertility rate from over 7 to 3.2 and the increase in child immunization rate from 10% to 70% and presently the birth rate is 20.6 per 1000 (BBS 2007). During 1995 in the field of public health, life expectancy for women of Bangladesh was 56 years, substantially below India’s 61, Pakistan’s 63, and Sri Lanka 74 years (Bangladesh 2020 by World Bank and CUS). But now in 2006 it has increased at 66.6 at national level whereas 68.3 at urban and 65.7 at rural level (BBS 2007).

Table 2: Crude Birth Rate by Residence per 1000 (BBS 2007)

	Year	National	Urban	Rural
The infant mortality rate in 2007 is 45 per 1000 live (BBS 2007). About 99.3 percent of children at national level are suffering	2001	18.9	13.6	20.7
	2003	20.9	17.9	21.7
	2005	20.7	17.8	21.7
	2006	20.6	17.5	21.7

of some degree of malnutrition (BBS 2007). The major reasons behind it are poverty, unhygienic shelter, inappropriate household feeding and eating patterns, inadequate dietary intake and poor access to the health services among the poor (Bangladesh 2020 by World Bank and CUS).

Economy

According to the World Bank Report 1992, Bangladesh belongs to the group of 43 low- income economies. The share of contribution to the Gross Domestic Product (GDP) by Agriculture of this country was 41% in 1965 declined it to 31% in 1990. The relative share of industry increased from 26% to 36% and the relative share of the service sector increased at slower rate from 32% to 35% as well during the same time period. Average annual growth rate of the GDP was 1.7% from 1965 to 1980 (against 4.9% in low income group of countries) and 4.3% from 1980 to 1990 (as against 6.1% in low income economies). During the 1980-1990 the average annual growth rates for agriculture, industry and service sector were 2.6%, 4.9% and 5.8% respectively compared to 3.9%, 8.2% and 6.5% respectively as well in the low income group of economies (Bangladesh Urban & Shelter Sector review, June 1993).

Table 3: Gross Domestic Product of Bangladesh (Source: 1. Bangladesh 2020 by World Bank and CUS, 2. BBS 2007)

Gross Domestic Product (GDP)	1995	2004-05	2005-06	2006-07
Per Capita Income	\$325	463	476	520
Real GDP growth (%)	5%	5.96%	6.63%	6.51%

more than half (52.49%) of primary school entrants dropping out before their completion of primary education, 49.5 (million) total civilian labour force whereas 47.4 (million) active civilian labour force (BBS 2007), Agriculture, already occupies 70% of the country's total land (mostly to produce rice for

domestic consumption) and contributed 28% of growth in the last decade. It is hoping that by 2020 industry could contribute as much as 40% of GDP double that of agriculture's and controlling a challenging demographic shift from the countryside to the city.

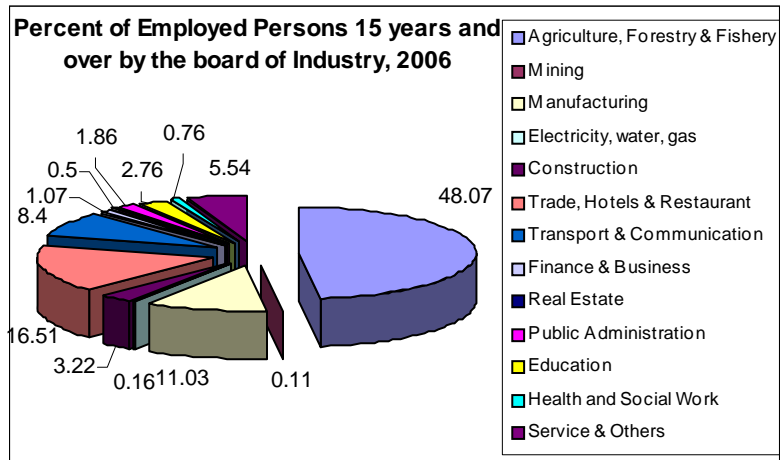


Figure 4: Percent of Employed Persons 15 years and over by the board of Industry, 2006 (BBS 2007)

Moreover, according to the Household and Expenditure Survey, 1988/89, it is found that 22.18% of Dhaka's urban population lives at or below the absolute poverty level¹, and a further 53.62% were defined as low income with monthly incomes below TK. 5000/month. Of this total, it is estimated that 46.6% cannot afford any improvement of their housing quality. The surveys also confirmed that 93% of all housing was provided through the private sector, of which 70% of all shelter was provided by the informal private sector, the majority of whom are individual owner builders (DMDP 1995-2015).

1.2 Shelter Related Fact and Figures

Access to Shelter

Housing Stock and Living standard

Rural or urban, the affluent and the poor must be sheltered and provided with necessary municipal services-water, sanitation, waste removal, transportation etc. to protect their health and to maximise their contributions to the country's economic growth. Particularly the needs of the poor, the lower income group and also the middle-income group are very hard to be satisfied. Presently, there is a fairly reasonable official housing policy, which implementation is being taken forward by the government, the private sectors and the NGOs. According to the

study (GOB-ADB, 1996) estimates that about 2.99 million urban poor households, (assuming household size 4.3) demand affordable low-income housing in the informal sector² among which approximately 1.2 million households (24% of total urban) living in urban slums and some 0.6 million more households (12%) either squatting or homeless. In addition, some 1.2 million households are living in other informal housing³ (Bangladesh 2020 by World Bank and CUS).

Supply of Land for housing and Tenure of Households

In the rural areas about more than 95% of the houses owned by landowner but in urban areas it drops to 60% and especially for Dhaka is only 30% (Bangladesh Urban and Shelter Sector Review 1993). This scenario reflects the relative difficulties in access to the land for housing; the major grounds of the difficulties are the limited supply of land, high demand, expensive land value and speculative land market. Besides these the other important issues are such institutional factors as poor tenurial and property rights, an outdated mode of keeping land records, absence of zoning, lack of proper property valuation, taxation and its collection, poor land use planning (by RAJUK and other development authorities), imperfect and limited information and, lastly low levels of urban services. During 1993-1998 the price of land increased annually at 50%. The average price of “raw land”⁴ in metropolitan areas has increased many folds over the last 15 years or so. Even the cheapest urban land costs over Tk. 200/sq. m. (\$ 5.20) and reaches around Tk. 3,000/ sq. m. and even more for saleable land in the urban fringe.

The available tenure pattern shows that 60% of the urban dwellings are owner occupied and 40% are rented. However, in Dhaka about 70% of the total housing stock is rented which is substantially different than other part of the country. A major portion, almost about 50%, of private rentals is slum type whilst another significant section is squatters illegally occupied in the government land.

¹ Poverty level: As defined by the percentage of population below the recommended calorie intake of 2122 kilo alorie/day/person (DMDP 1995-2015)

² Informal Sector: Out of these 13 million people or 3 million households approximately 40% or 1.2 million households live in slums or sub-standard housing (Islam 1993). The other 20% or 0.6 million households are squatters or are homeless at present (ADB 1996). As a whole it is defined as informal sector housing.

³ as for example rented housing, community or mess housing, sharing with friends or relatives etc.

Access to Education and Basic Services/Infrastructure

Presently, Bangladesh has succeeded dramatically in expanding access to the basic education during the last two decades, particularly among the girls. The general literacy rate increased to 55.69% for 5yrs+, 52.49% for 7 yrs+ and 53.68% for 15yrs+ and for the girls it is 47.56%, 49.11% and 48.82% for the 5 yrs+, 7 yrs+ and 15 yrs+ respectively. Also the non-formal NGOs introduced a vast network in the education sector especially besides the government.

In case of basic services a large sections of the urban population have no access to the municipality services. Only 40% have access to public water supplies and only Dhaka and Chittagong contained an extensive piped water networks. Similarly, only 25% of the urban populations have access to hygienic sanitation, and Dhaka is the only city with water borne sewerage system though only 15% of the populations are connected to it. In the case of solid waste, according to the recent data, approximately 5,000 tons of solid waste a day, city dwellers is expected to generate as much as 40,000-50,000 tons of solid waste daily in the year of 2020. Similarly, from the present demand of 645 gallons of water a day, the demand for water by the urban population will increase to an estimated 3, 300-4,200 gallons/day. Similar trends are also expected with respect to the demand for commercial energy, primary oil, final electricity, education and health services.

1.3 Housing Policy

It is estimated that within next 25 years about 9 million urban families will live in standard housing if nothing is done to address the urban housing problem (Bangladesh 2020 by World Bank and CUS). Managing this problem with a long-term perspective will require the preparation of a national housing needs assessments focusing on rapid-growth areas (Cities/town), addressing the needs of the urban poor. Special efforts would be needed to develop specialized housing finance institutions to meet the housing credit needs of lower income households. Encouraging the development of market-based housing finance institutions would be crucial for addressing resource constraints in the private sector, which have to play the major role in providing housing infrastructures.

⁴ Raw Land: Land which is not serviced, unfilled or otherwise unimproved

1.4 Actors in Shelter Delivery and their Roles

According to the constitution of Bangladesh, housing is one of the fundamental responsibilities of the State (Bangladesh National Report: Human Settlement 2001). The revised National Housing Policy of 1999 describes the future role of the government in the housing sector as that of a “Facilitator” or “enabler” rather than as a “provider” in order to access to land, infrastructure, services and credit, and to ensure availability of building materials at reasonable price and promote housing finance institutions. Actual construction of housing will generally be left to the private sector developers, the people themselves and the NGOs (Ministry of Housing and Public Works, 1999). The government bodies who act as public sectors, engaged for providing housing are Rajdhani Unnayan Kartipakkha (RAJUK)⁵, Publics Works Department (PWD), The Housing and Settlements Division (HSD), Department of Architecture and Semi-governmental and autonomous bodies. So far, the public sector provides housing for the people at a large scale as well as for its own employees and accounts for fewer than 4% of all urban housing including serviced site. Among them approximately 20% for government employees as rental flats and houses, 40% as serviced sites and 40% as housing units including up gradation (Bangladesh Urban and Shelter Sector Review 1993). It could be possible to increase the number of housing units at double in size by adding the loans provided by the Bangladesh House Building Finance Corporation and improving under the Slum Improvement Programme.

1.5 Shelter Design

Physical Planning and Shelter Quality

Presently, most of the urban informal shelter comprises temporary or semi permanent building materials (thatch, bamboo, etc.). Only a small portion of the urban dwelling units is constructed as permanent with brick wall and concrete roof. According to the 1991 census, in Dhaka about 39% households own their dwelling, whereas 53% pay rent and rest of live as rent-free. Only about 50% of the households have access to the tap water and most of the rest have a tube well supply. Merely 55% of households have a sanitary toilet service but the rest rely

⁵ RAJUK: Capital Development Authority of Bangladesh

on pit latrines or the open ground. Almost 70% have the service of electricity. Less than half the households in the city occupies the dwellings which are constructed with brick and cement-based materials; remaining 34% with bamboo, straw or jute stick walls, 16% with corrugated iron sheet walls and 6% with mud walls. However, 60% of households are protected by corrugated iron roofs and most of the rest have concrete slab roofs. Only 12% rely on straw, bamboo, jute or polythene sheets to protect them from the sun and rain.

According to the Asian Development Bank poverty study, 90% of households



Figure 5: Rural Homestead Figure 6: Construction of rural house Figure 7: Shelter in urban slum Area

of the urban poor of Dhaka City have only one main room while 65% have less than 100 square feet (9.3 square metres) with having walls and roofs are of only plastic sheets or woven split bamboo and floors are of beaten earth. About 30 per cent pay more than Tk 500 (UK£ 8.33) in rent for this accommodation but remaining most of them pays at least Tk 300 (UK£ 5) per month (Tipple A.G. and Ameen M.S).

Poverty, unemployment, inequality of income distribution, illiteracy, and frustration among the young generation causes the crimes and violence in the country with the rapid urbanization. Women and children are the frequent victims of different types of abuse like kidnapping, murder, rape, sexual harassment, dowry etc. In the access of shelter with the basic services the women and the disable are very much deprived in Bangladesh especially in the poorer communities. The effort should be given to understand their specific difficulties in the household activities and to get the access of infrastructure and services.

2 Organisation

Presently I am working as an assistant Professor in the Department of Architecture, the Ahsanullah University of Science and Technology, Dhaka,

Bangladesh, which is one of the leading universities in the private sector in Bangladesh. The university was established in 1995 and passed 13 years in its journey.

The Department of Architecture of the Ahsanullah University of Science and Technology plays a vital role in producing Architects in the private sector simultaneously with the public sectors as well and its success is praiseworthy. Every year about more than 40 students are passing out from this university with having a degree of Bachelor in Architecture. They are engaged with the different development works of the country; especially their successful contribution to the shelter design and construction is very much appreciable. A large portion of the Ahsanullah graduate Architects are now involved with the Real Estate Developer in the work of shelter design and construction to meet the increased demand of the housing and to use the optimal use of land in urban areas as well.

Being a faculty of the Department of Architecture of the Ahsanullah University of Science and Technology I feel proud to working for the shelter design and construction vis a vis the country's development activities.

3 Shelter Problem

3.1 Critical Analysis

In Bangladesh, about 5.6% of the total population suffers from some kind of disability (HI& NFOWD, 2005) where poverty is the big issue for the society. Approximately 8-9 million people in Bangladesh are suffering from different kinds of disability among whom 3 million are children and 7 million are adult. The persons of disability suffer a wide array of difficulties varying according to their type of disability. Beyond this, they are facing frequent physical and social barriers that are often equally unbearable. One such barrier is the accessibility to the built environment, which is merely an issue of physical mobility to get access in the shelter and infrastructure and services.

This particular category of the people is suffering for the basic needs because of their presence and their needs are not taken into account during the design, construction and maintenance of the shelter and other necessary services. To enhance the autonomy of them and their participation in the society, an integrated

design approach is necessary. However, presently it is vital issue to consider the accessibility of the people with disabilities in the basic needs and services and to provide a barrier free environment for their livelihood.

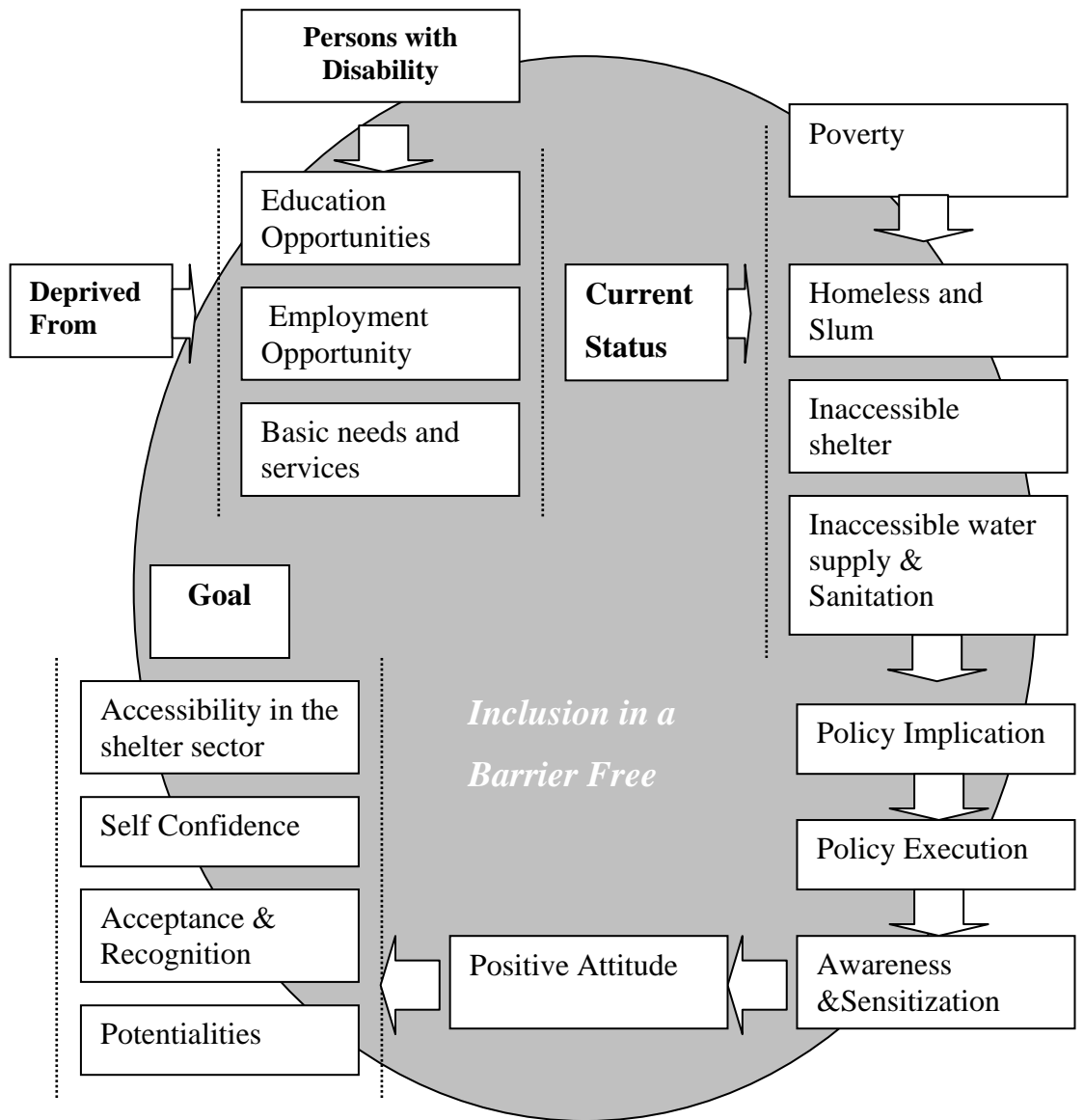


Figure 8: Accessibility in the built environment

Therefore, in designing and planning the environment, people those who are differently able should not be treated as a group requiring special treatment. Special measures should be avoided in favor of a more general approach. It should be based on the concept that people with disabilities can participate with others as usual in normal social life. This means, among other things, that people should be able to find employment, to go to ordinary schools, go shopping, visit friends, and

enjoy holidays and take 100 percent advantage of basic needs and services and neighborhood facilities. In Bangladesh, this participation is quite impossible for this particular group of people because of the presence of environmental barriers such as inaccessible steps, narrow doors, high curbs, inaccessible toilets and absence of lifts and ramps.

Taking all of this into account, people with disabilities have a large range of strategies that should be considered as design criteria,

- 1) Physical accessibility to the built environment that concern the required space which accommodates the human body and
- 2) Accessibility towards the social inclusion that create the atmosphere for the human persona.

To enhance the autonomy of this particular group of people and their participation in the society an integrated design approach is necessary to create a barrier free built environment in our country.

3.2 Problem of Accessibility to the Shelter

In the formal housing sector of the country's urban areas only 14% have the parking facilities but they are not marked with the international symbol of accessibility (Ability through Accessibility, September 2006). There is no provision of ramp and very few have the provision of lift in the both public and private housing sector. The required space for the turning radius of the wheel chair inside the house is hardly found. Besides, the situation of the toilets is not in the satisfactory level. Very few have the provision of English commode other than all are provided with the Indian pan system which is not accessible for the persons who are differently able.

On the other hand in the informal housing sector generally the slum settlements are very poor housing structure with very cheap and low quality materials such as old gunny bags, polythene, straw, bamboo, corrugated tin, etc. and have lower height in comparison with other normal structure. These are very high dense housing with very few or no paved streets inside. As the slum and squatter settlements are usually developed on the topographically unsuitable land, therefore, it is not accessible for the disabled and even for the general people. In our country the basic scenario of the slum area is each family house own only one

room inside is used for the multifunctional household activities which is extremely confined and congested and inadequate for a wheelchair user. Especially the slum houses which are constructed with the based on high platform on the canals, rivers and the low lying areas those are absolutely inaccessible for the disable people. The situation of the potable drinking water and the sanitation is out of question, no matter it is existing in the housing area or not. Very poor inaccessible sanitation facilities leave them susceptible to the health hazards from exposed excreta and wastes. The situations and the environment of these areas are miserable to live which is a great challenge for the persons with disabilities.



Figure 9: Inaccessible village road



Figure 10: Using sticks



Figure 11: Inaccessible plinth as varandah

However, almost the same scenario is prevailing for the accessibility in the rural areas of Bangladesh. The housing construction material of rural area is mostly based on bamboo, straw, mud and corrugated iron and a very few percentages are found with the constructed of brick and concrete materials. Most of the cases the floor of the rural houses constructed with beaten mud that is not userfriendly for this particular group of people especially for the crutch and stick users. The rubber stopper of the crutch or stick easily stuck into the mud floor and causes difficulties for them.

The housing structure of this area is one family belongs to one house with only one room with having a long wide plinth as varandah in front of. Generally, this varandah is occupied by the dwellers for their multi purpose household activities which make obstacles for the physically disabled and vision impaired persons. Moreover, absence of ramp at the plinth level, narrow entrance way, uneven and muddy courtyard, presence of threshold underneath of the door; makes difficult and complicated their movement all around their houses.

4. Proposal for Change and Improvement

Today a very large portion of country's population has some kind of functional disability affecting movement, vision or hearing or suffers from intellectual disability. Basic accessibility in the environment would ensure that there would be no barriers between people with disabilities and their participation in ordinary activities in the society. Its advantages are felt not only by this specific group of people but also by elderly people and by children as well. Therefore, it is important to apply specific requirements by flexible and adaptable solutions in planning and construction to get physical access to the housing for the persons with disabilities.

To achieve the objective for change and improvement of the present situation of the shelter the following recommendations with policies, program and planning is needed by which it might be possible to manage and integrate the design and planning solutions to accomplish sustainable accessible shelter in Bangladesh.

4.1 To Promote Right Based Approach

The United nation proclaimed the 'Universal declaration of Human Rights' to promote recognition of Fundamental rights and freedoms for the persons with disabilities that is "Reaffirming the universality, indivisibility, interdependence and interrelatedness of all human rights and fundamental freedoms and the need for persons with disabilities to be guaranteed their full enjoyment without discrimination" which has been signed by Bangladesh and prevailing for its constitution. Therefore, in our country, it is necessary to promote the level of social consciousness, attitudes, and the respect towards the constitutional rights of disable people which is prerequisites. The implementation of this right based approach will be depended on the strength of the legislation, the knowledge and skills of the professionals, the conscious involvement of the authorities, and the participation of the citizens in the process of promoting accessibility for the persons with disabilities which are as follows,

- The right to education requires accessible transportation systems, schools and teaching materials,

- The right to free movement requires accessible roads and transportation systems,
- The right to settle in any place requires, besides an accessible house, accessible water and sanitation facilities, shops, schools, public offices, etc in the neighbourhood,
- The right to vote requires accessible polling stations and voting materials,
- The right to self dependent by economically empowerment, and
- The right to recreation and leisure requires accessible facilities.

In 2001 the Bangladesh People with Disabilities Welfare Act was adopted according to the concerning of this United Nations Humans Rights Declaration. This Act introduced,

- To protect and safeguard the rights and dignity of the Persons with Disability,
- To ensure their participation in the national and social programmes and their general welfare; and
- The matters connected therewith or incidental thereto.

Therefore, according to this Act, it is required that every disable must get access in the physical environment such as any government building, court buildings, police station, terminals, airport, education buildings, housing, hospitals, public toilets, any recreations center, roads and transport etc. Hence, it is necessary to promote both international and national human rights approach as well to create a barrier free environment to facilitating the social acceptance, and the easy movement and communications of persons with disabilities in Bangladesh.

4.2 To Raising Awareness

In our country people are not aware about the social acceptance and the physical accessibility of the persons with disabilities to the built environment. Awareness raising is the major factor that makes people aware of them. Followings are the different measures to raise awareness among the people of our country about the access issues of that particular group of people.

- Awareness Raising at Urban Level

Need to raise awareness of access issues at urban level within each department or agency by consulting with concerned NGOs, universities and colleges, architects, town planner, builders, civic societies concerned with access, and health and rehabilitation centers. It has been also promoted by undertaking the human rights declaration, the literature surveys of information materials, related public awareness campaigns, organizing information sessions and seminars on access issues for the staff of the departments or agencies.

- Awareness Raising at Rural Level

Planning and design for the rural areas should consider the options presented by local solutions using locally available materials.

- i) At the very first identification of opinion leaders at the village level such as administrative heads, religious leaders, primary school teachers who are able to sensitise the local people regarding the disable people and their accessibility
- ii) Secondly use of folk or traditional media such as jatra⁶, puppetry play in local languages to convey the message regarding this issue.

- Awareness Raising at National Level

National Access Awareness should be required Campaigns through national media that aimed at encouraging government agencies, NGOs, private sector bodies and individuals to cooperate on access improvement. At the campaigns of national level the issue regarding disabilities must be integrated into the structure of a campaign at all levels. The national executive committee will need to consist of representatives from government agencies, NGOs, including organizations of persons with disabilities and the private sector. National Access Awareness Weeks can be organized as part of the campaign process to give new impetus to long-term endeavors. Progress should be reviewed according to the new goals yearly.

⁶ Jatra: It is a type of Folk drama. In Bangladesh Jatra is usually very pupolar in the rural area as media of recreation.

4.3 Implecation of the Tool “Strategic Environmental Assessment (SEA)” for Accessible Shelter Design

Strategic Environmental Assessment will be an important tool for the integrated design approach of accessible shelter which considered the policies, programme and planning solutions. By implementing this tool it is possible to execute sustainable shelter development with consideration of social inclusion in Bangladesh.

Implementation of Policy Instrument

Policy implementation is one of the most challenging aspects of Strategic Environmental Assessment. By implementation of followings policy instrument it would be possible to create a barrier free housing environment

a) Encourage Direct Government and Administrative Interventions

The government through administrative authorities plays an important role in deciding the construction regulations of housing and every other built structure. The concerned Government Administration executes the building construction regulation instrument directly to the project planning, design and construction in considering of physical accessibility. Under this instrument following measures should be undertaken by the government, those are

- To provide more attention to the required measurement of the every different criteria , such as; in layout plan, every detail drawing of ramp, stair, toilet, lift, window seal, etc. and as well as foreseeable needs of infrastructure and services for the persons with disabilities.
- To do public scrutiny to the construction of building by the authority to ensure the presence of the requirement of accessibility.
- To format planning activities at national, regional and local government development levels according to the requirements of accessibility.
- To encourage the involvement of the persons with disabilities in the social and economical activities ,
- To reviews, reshuffle; recheck the existing government policies and programs including the proper implementation of Bangladesh National Code of Building Construction, and Building Construction Rules and Regulation of every

municipality and city development authorities after certain period for the adaptations or newly construction of building structures with considering physical accessibility. Very recently in May 2008, the measures related to accessibility of persons with disability to the building structures are taken into account by the RAJUK through the Gazette of Building Construction Rules and Regulation.

- To provide attention by the governmental and non-governmental organization to integrating barrier-free design concerns as part of the planning and design provisions for slum improvement, rehabilitation and relocation programs and projects.

b) Economic Instrument

This policy focuses on increasing the involvement of various sectors of both private and public in the society to promote accessible housing and other built structure by publicizing the economic benefits. Implementation of this instrument the promotion of accessibility is encouraged by a combination of incentives, such as awarding government building contracts, soft loan, micro credit and finance for the construction or adaptation of the design elements according to the required access guideline.

Implementation of Program

Promote Program Initiated by Government Organization (GOs)

The Directorates of Social Welfare under the ministry of Social Welfare, Peoples Republic of Bangladesh is the concerned government authority (GOs) regarding all kinds of disable's welfare acts, rights and laws in Bangladesh. According to the circular of Prime Minister, Peoples Republic of Bangladesh on "The implementation of definite program and planning for the development of disables" the organisation initiated the following program to encourage the raising awareness for acceptance and participation of the persons with disabilities in the society.

- To provide special quota for the admission in every primary, secondary, college and university for the persons with disabilities and arrange to provide dialogue to the District Disable Welfare Committee

- To arrange separate ticket counter in the train station, bus terminal, waterways terminal, airport and Biman office for the disable to make their easy and comfortable travelling to everywhere in the country.
- To reserve specific seats in the bus, train, launch and steamer for the disables.
- To activate the general law of the country as disable law that is 10% quota is reserved for the disable for the employment.
- To provide free treatment to the disables at every government district hospital
- To provide them sanitation services at government level
- Establish training center at district level to providing training to the disable
- To provide ramp or slope, curve stair, audible signal for easy movement on the main road.

It is necessary to encourage all the professionals and people of the country to implement these programs immediately to raise awareness for the acceptance and to get access to the society for the persons with disabilities.

Promote Program Initiated by Non Government Organization (NGOs)

Now days there are several NGOs playing a vital role in the field of the development of disable issue in Bangladesh side by side of the Government Organisations. It needs to be promoted more to the NGOs and the other social and community organisations to encourage acceptance, participation and contribution of the persons with disabilities to the society. Centre for the Rehabilitation of the Paralysed (CRP), Handicap International (HI), Centre for Disable Development (CDD), Action for Disable Development (ADD), National Forum of Organizations Working with the Disabled (NFOWD) are in prime position who are working for these people to establish their rights and acceptance in the society. Inter-Life Bangladesh was another Swedish International NGO which had a great contribution in this sector. The programs that they are promoting are as follows,

- To build capacity to the local chairman, local head or leader to motivate and aware them regarding the social acceptance and the rights of disable by providing them training and different kinds of discussions

- To build capacity to the disable people by providing training on different issues,
- To take care of medical condition and treatment and providing them assistive devices
- To provide facilities and build capacity by providing training to the teachers to encourage their education
- To make them economically self sufficient providing opportunities for employment that they can effort accessible shelter.
- To encourage the initiative for shelter development in consideration of accessibility as risk and disaster management project ,which has already been done successfully by Handicap International (HI). The project was “Emergency help and rehabilitation” in Shriajgonj district including Shahzadpur to help 2000 devastated families with various types of works like emergency food supply, proper rehabilitation, disaster preparedness and management , housing construction etc. where persons with disability and gender had been given the highest priority. They constructed ramp and stair as twin approach, accessible twin toilet, kerb at thresh hold point of the door, accessible water supply.



Fig 12: Accessible twin toilet for the wheel chair user



Fig 13: Kerb ramp at the threshold point of the door



Fig 14: Twin track approach

Implementation of Planning and Design Solution as Action Plan

c) Contribution of the Expertise and professional

Role of Architect, Urban Planner, Engineer, Transport Engineer, Sociologist, and Lawyer is very much important to achieve accessible housing environment for the persons with disabilities. Combination of their skill, knowledge and attitude towards the accessibility can determine a sustainable accessible housing environment. It is to be mentioned that presently Architects of Bangladesh are

playing a vital to incorporate the required guidelines for the accessible built structure in the new RAJUK “Building Construction Rules and Regulations 2008” is the consequence of their consciousness which is the mandatory for all kind of public buildings. Without considering those measures the plan will not be approved by RAJUK for the implementation.

The associations of these professionals might take the following initiatives for the successful implementation of accessible built structure in the country.

- Adopt a team-building or partnership approach in working with persons with disabilities to improve the accessibility of the built environment.
- Organize an inspection team of association members and user groups to collect the both good and bad examples of accessible housing in our country.
- To ensure the members have information on the requirement for access, access design, as well as access solution and guidelines.
- On the basis of the collected information a documentation on guidelines of accessible housing and barrier-free Universal Designs will be prepared according to the international standard (Ref. to Annex 1)
- Strengthen international networking on access issues among professionals associations, including contacts between those in developed and developing countries.
- Actively encourage barrier-free design solution through the provision of fellowships, study, training, workshop, seminar and symposium opportunities and on-site technical exchanges between members, professors, professionals and students.
- Generate discussion in professional journals, newsletters and conferences on the development of designs for accessible housing as a shelter in a variety of social, economic and political contexts.
- Organize competitions and awards on accessible housing design by the association of the professionals like Institute of Engineers Bangladesh, Institute of Architects Bangladesh and other associations.

4.6 Conclusion

This study shows that though Bangladesh had an enormous lack in consideration of the need and demand of persons with disabilities but now days it

is trying to overcoming the situation both in urban and rural areas. It is necessary to analyse and synthesise the different policies from different authorities related to housing, infrastructure and services after every alternate certain years to determine the sustainable accessible shelter. It is also needed to take some initiative and approach by the NGOs, CBOs, any Private Organisation or the professionals to establish the rights and demand of the persons with disabilities to the society. The published document of Access Study “ Ability through accessibility – towards a barrier free environment for persons with disability” initiative was taken by HI and NFOWD executed by Inter-Life Bangladesh and CDD was a very prospective tool to change and incorporate the requirements of accessible built environment in the new Rules of Building Construction by the Ministry of Housing and Public Works, Government of Bangladesh. It brought a great change among the architects, engineers, planners as well as civil society in Bangladesh. Therefore, it is not so far to achieve a sustainable accessible housing in this country with the active participation of the people of all works with the increase in awareness and change in social attitudes towards the persons with disabilities.

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Annex 1

Planning Solution According to the Design Guide line

According to “Promotion of Non-Handicapping Physical Environments for Disabled Persons: Guidelines by United Nations, “ Accessibility Implementation Checklists” by UN Enable, “Fundamental Consideration of Accessibility” by InterLife-Bangladesh, “An Accessibility Manual for People with Disabilities” by CRP, “Is Salvador a Disabled City? Study into accessibility to the built physical environment of the city of Salvador” by V.I.D.A Brasil and “The Time Saver Standard” followings are some detail guidelines, which can help to provide reasonable means of access for all people in the housing of the country.

Parking

- 1) There should have accessible parking facilities.
- 2) The designated spaces should be wide enough with 2.44 m wide for car plus 1.52 m for access aisle.
- 3) The accessible parking spaces should be provided within 50 m distances of building entrances.
- 4) The accessible parking spaces should be marked by the international symbol of accessibility.
- 5) The parking spaces should be differentiated from the pedestrian path.

Stairs

- 6) The width of the stairs should be 0.90 m.
- 7) The landing length at the top and at bottom of the stairs should be not less than 1.5m.
- 8) The measurement of the riser should be between 75 mm - 0.17m.
- 9) The measurement of the tread should be 0.25 m – 0.32 m.
- 10) The treads should have a non-slip surface.
- 11) The handrails should be mounted at a height between 0.85 m and 0.90 m.
- 12) The handrail diameter of the stairs should be between 3.5 cm – 4.5 cm for easy to grip.

Ramps

- 13) There should be provision of ramped route next to stairs or steps.
- 14) The ratio of the ramp slope should be minimum 1:12 and maximum 1:20.
- 15) The width of the ramp should be at least 0.90 m that a wheel chair can pass easily.
- 16) The ramp should be protected from the both side with the rise of 0.45 m and more than 0.45 m.

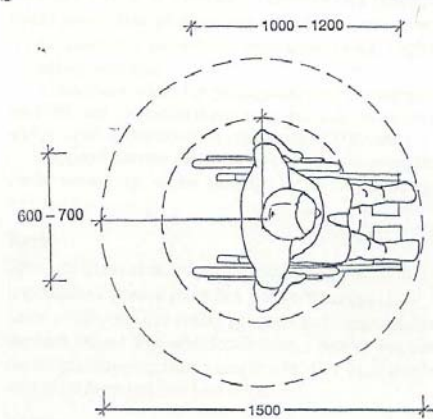


Fig 1: Floor spaces needed for maneuvering wheel chair

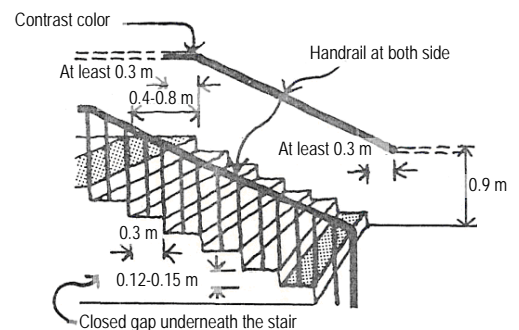


Fig 2: Stair

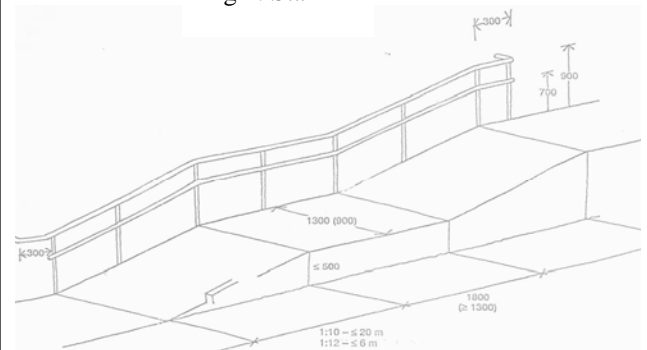


Fig 27: Ramp

- 17) The surface of the ramp should be non-slip.
- 18) The location of the ramp should be clearly identifiable and free from obstacles.
- 19) The measurement of landing should be of at least 1.20 m at length at every change in direction and at the top and bottom of the ramp.
- 20) There should be provision of ramp service with 0.8m widths for a wheel chair person to enter into the gallery of any public building structure.

Hand Rails and Railings

- 21) The handrails should be installed around all hazardous areas of the building.
- 22) The handrails should be mounted at the height of between 0.85m – 0.90 m.
- 23) The handrails should be easy to hold.
- 24) The railings should be needed to install securely that it can take the full weight of a person with physical disability.
- 25) Are the handrails easy to identify with contrast or bright color.

Entrance of the Building

- 26) The clear width of the entrance door should be minimum 0.80 m that a wheel chair can pass.
- 27) In case of multi storied building the lift should be provided at the nearest accessible place from the entrance door.
- 28) There should be needed a ramp beside the entry steps or stairs
- 29) The entrance landing dimensions should be not less than 1.2m that a wheel chair user can halt and open the door easily.
- 30) The surface of the landing at the entrance door should be non slippery.
- 31) The entrance doors should be needed to operate independently.

Internal Doors of the Buildings

- 32) The clear width of straight access of interior doors should be minimum 0.80 m that a wheelchair user can pass easily.
- 33) The door should be opened towards inside.
- 34) The color of the door and the doorframe should be painted with contrasting color.
- 35) The Door handles should be easy to hold by one hand.
- 36) The height of the manual door hardware should be (handle, lock, pulls, etc.) between 1.00 m – 1.2 m.

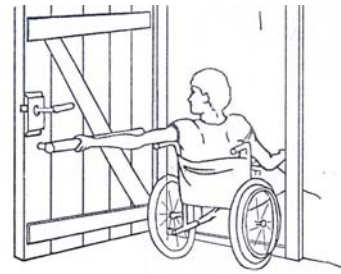


Fig.3: A horizontal bar fixed with the door



Fig 4: Minimum corridor space for a wheel chair person

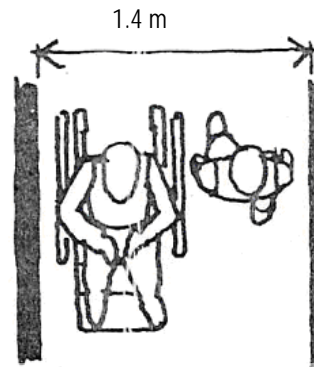


Fig 5: Minimum corridor space for a wheel chair person and a walking person

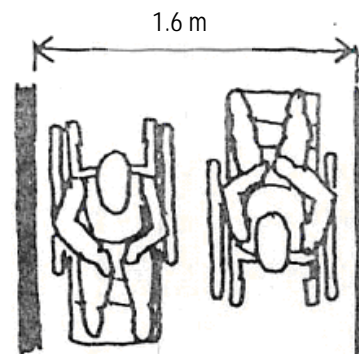


Fig 6: Minimum corridor space for two wheel chair person

- 37) If there is any doormat then the doormat should be flushed with the floor surface and securely attached to the floor at all edges.
- 38) If there is any threshold underneath the door then the threshold should not exceed 20mm high and should be beveled.

Corridors

- 39) The corridors should be free from obstructions for all type of people with disabilities.
- 40) The width of the corridor should be minimum 0.80 m for passing only one wheelchair, 1.6 m for passing two wheelchairs, 1.4 m for passing a wheelchair and a walking person.
- 41) The corridor width should be 1.50 m that possible to turn the wheelchairs.
- 42) There should be tactile marking on the corridor for person with visual impairment.

Toilets

- 43) There should be provision for at least one accessible toilet both for male and female toilet block
- 44) The accessible toilets should be identified by international symbol or sign
- 45) If possible the sign should be provided with Tactile or Braille marking.
- 46) The size of the toilet compartment should be minimum 1.7 m X 1.4m or 1.6 m X 1.5 m for wheelchair users.
- 47) There should be provision for 1.50 m X 1.50 m clear space inside the rest room for turning the wheelchair.
- 48) The toilet door should be open outward
- 49) The door width of the accessible toilet should be minimum 0.80 m that a wheel chair user can enter into the toilet.
- 50) The location of the handle of the accessible toilet should be at 1.22 m height.
- 51) The toilet doors should have extra spring closer to pull the door.
- 52) There should be provision for holding bar mounted on the wall around the water closet (commode/ indian pan) for the person with disability at 0.80m- 0.90 m height.
- 53) The holding bar should be securely attached that can withstand the body loads of a person with disabilities.

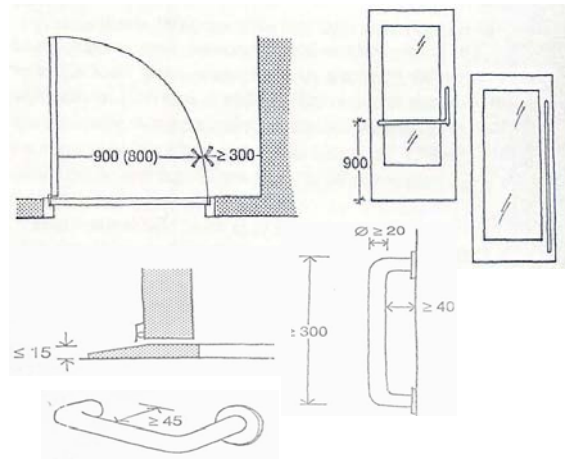


Fig 7: Door detail

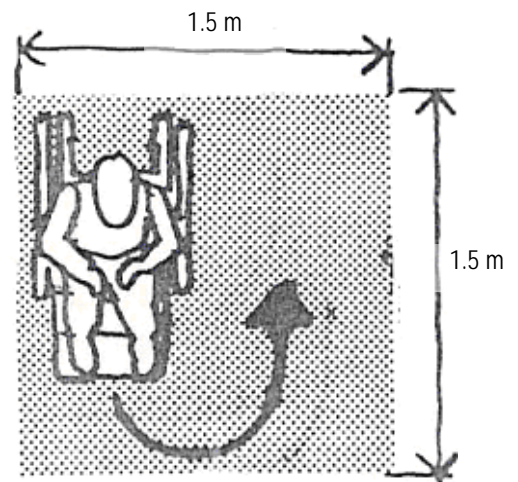


Fig 8: Minimum corridor space for a wheel chair person for 'U' turn

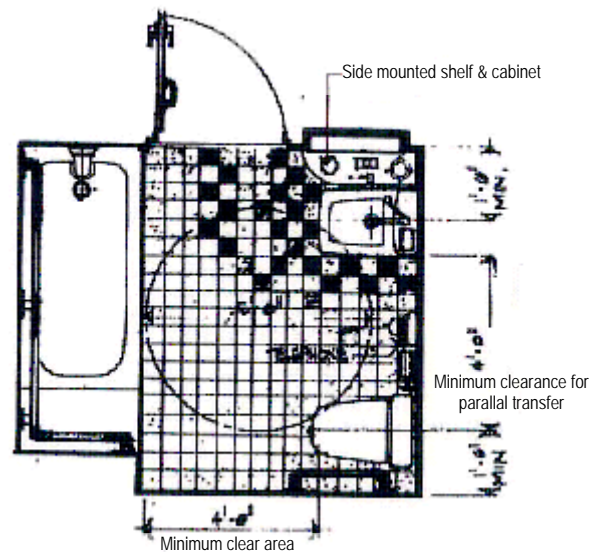


Fig 9: Bathroom arrangement for disabled

- 54) The distance between holding bar and the toilet seat should be between 0.45 m – 0.50 m.
- 55) There should be at least 1.00 m wide path to reach all fixtures inside the toilet
- 56) If it is commode, the height of the toilet seat should be between 0.43 m – 0.48 m.
- 57) If it is Indian pan, it should be accessible by installed false seat at 0.48 m height.
- 58) The accessible washbasin should be mounted at a height with 0.86 m (From the ground to top level of the washbasin)
- 59) The soap and other dispenses and hand dryers should be placed within 0.8 m – 1.1 m height
- 60) The waste water pipe of the washbasin of accessible toilet should be installed as wall mounted Plastic pipe or bottle trap.
- 61) All the handrails should be non-slip.
- 62) The floor of the toilet should be slip resistant, well drained and waterproof.
- 63) The lower edge of mirrors should be positioned at a height of 1.00m.
- 64) The toilet should be equipped with an alarm system.
- 65) The height of the push button of the alarm system on the wall should be between 1.00 m – 1.20 m.

Kitchen

- 66) In case of housing there should be needed to adapt the house privately. The door width of the kitchen should be minimum 0.8 m.
- 67) The inside clear space of the kitchen should be 1.7 m X 1.4 m for wheel chair users.
- 68) The height of the kitchen sink should be 0.8 m.
- 69) The height of the working table in the kitchen should be 0.8 m.
- 70) Height of the shelf in the kitchen should be between 0.57 m to 0.71 m
- 71) Floor of the kitchen should be slip resistant.

Furniture & Facilities

- 72) The foyer and lobby spaces of any house should be sufficiently lighted.
- 73) There should be facilities for both chair with handle and chair without handle in the living

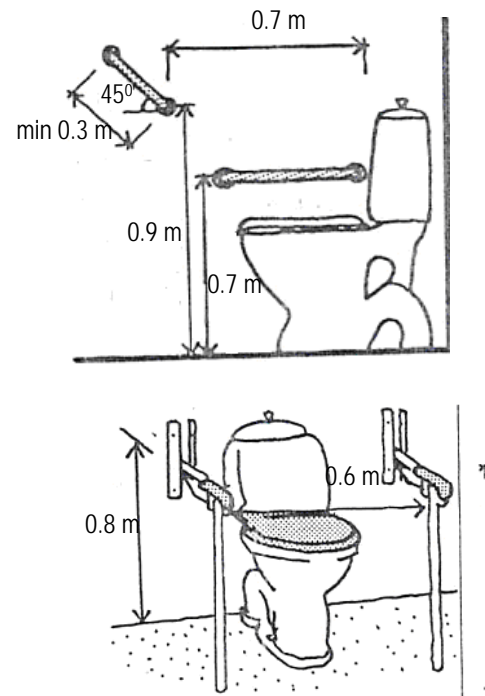


Fig 10: Handle position for WC

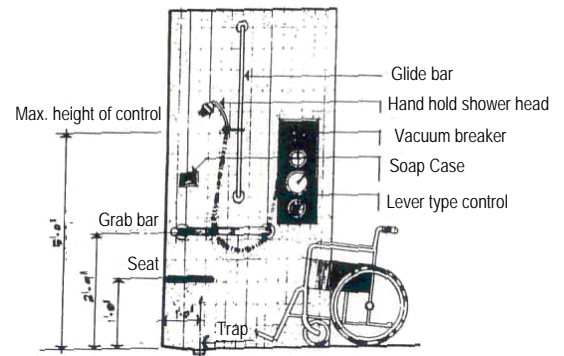


Fig 11: Shower

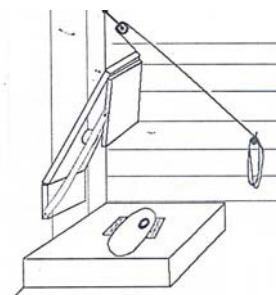


Fig 12: False seat for Indian Pan

- 74) The depth of the clear space at underneath of the desk as knee space for wheel chair users should be 0.76 m.
- 75) The lighting system should be well enough for the night.
- 76) There should be audible system in the house at certain extent for the person with visual impairment.
- 77) In case of all the danger area such as edges of the verandah, roof parapet, stair, steps, plinth be marked by bright light or bright color and raised edge or with protected by handrail.

Signage

- 78) Accessible spaces should be identified by the international symbol of accessibility
- 79) The directional signs should indicate the location of accessible facilities.
- 80) Information panels and wall-mounted signs should be placed between 0.90 m - 1.80 m height.
- 81) The signs should be clear, simple and easy to read.
- 82) The signs should be clear, with proportional lettering size and contrasting color.
- 83) There should be provision for information easily accessible in Braille.

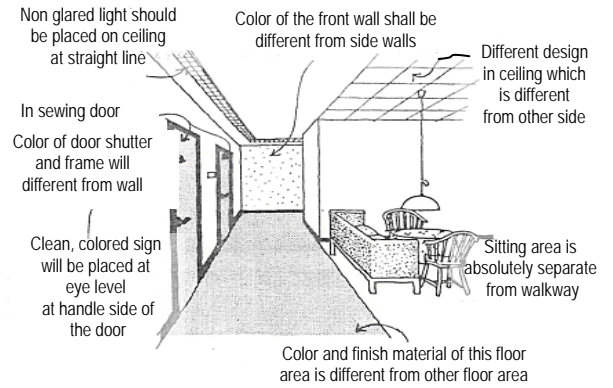


Fig 13: Adaptation of a living room according to the person with vision impairment