AR6017-URBAN HOUSING

LECTURE-01

UNIT- III

HOUSING STANDARDS

Housing Standards

Urban development planning, formulation and implementation guidelines.

So these are nothing but a set of standards that define a thing that serves as a basis of comparison or a thing recognized for a model for initiation. So in other words we could say it has a set of guidelines or rules in order to set some especial standards. So now the question is if there are no standards what is the situation? The answer is very simple the situation becomes chaotic, it's miserable so we need a set of rules or guidelines for us to build our build environments. So what is the need for it?

The need for safeguarding the physical, mental and social health of the people, and of course standards vary from people to people. You, me and others cannot have the same standard in the same comfort levels. So the standards basically vary from the different climatic contacts, different geographical location and different customs and especially different levels of income, so we are going to look at the different especial standards set for all these different categories especially taken into consideration housing.

This image is metaphorically a very interesting image telling us about informing us about the chaos, so you see a bus which goes inside a closed road and you see a person who is taking up a ladder and certain side of two wheelers or three wheelers in the same road so this is certain amount of chaos which indicates that people are more towards their self-interest they lack self-discipline and more importantly they do not care about what is the neighbors need or what the neighbors do or what the city wants . The self-interest more dominates than the honor, virtue, justice, fairness, equality and integrity. We don't construct build an

environments depending on our neighbors or considering the city into account but we do for ourselves on what we like.

So to start with standards we have basically two categories, the one is the minimum category which reflects the level of living and it is determined by the housing standard directly and the second is the volitional category which are nothing but unforced category of standards, which is surplus social acceptability, this reflects the actual living situations. The minimum standards are nothing but the basic required level of standard required for an especial requirement for a particular person of a lowest level of income, this is a basic need of our society but volitional is a more luxurious category on depending on their level of income and different categories you could per custom it.

Characteristic of standards are basically relative, they vary from time to time and of course place to place and they do not have a general applicability.

Before we get into the standards we need to know the major land uses. Land use are nothing but these are set of use given to a particular land according to certain master plans given by the development authorities. So the basic includes the residential, recreational, institutional, religious, industrial, roads and pathways and open spaces. So these set of land use there are different classifications of building under which the standards come in but the before going into the building we need know how the different sizes or the type of house being affected a type according to the family. So these are the different factors which in 3 parts to the first US family sites it depends on how many people is on the house will the average family household size in India 4.5. The second is family composition how many people and what are the different age groups how many male and female compositions and how many elderly in all these category come under the family compositions. The next four categories are almost interlinking to each other one is education, occupation, income, Affordability. These four are the major aspects which actually Guide a particular person to afford a particular house on different space sets of standards.

So in India the major standards for the minimum requirement varies from minimum size of the room, height, location, ventilation and efficient designs. The

minimum size of the room depends on what purpose the room is intended to and for that purpose what amount of furniture is required and mostly in a small spaces irregular in aerospace should be avoided.

For example a space to be design for dining room should definitely accommodated dining table with four or six chairs depending on needs and wardrobe facilities for store groceries or say some other cutlery items.

So the height of the room should ensure the minimum volumetric quantity of air for user and location should be based on the basic Cardinal directions in order to ensure sufficient amount of direct sunlight to fall inside the room. The ventilation doors and windows to support and facilities ventilation and more importantly cross ventilation.

The efficient design always depends on proper relationship between the arrangement of the rooms and more in order to ensure comfort and convenience to the user are going to look inside that, so in India the minimum standard is one room with or without a separate kitchen and especially the basic requirements are sanitary code line.

Building Bye-Laws

So we look at in India in the form of National Building Code of India which is established in 1970 and it has different series and latest version is what the code of India on 2005 to the provisions of this code are intended to serve as a model of an adoption by the public Agencies especially the Public Works Department and other government construction department, local authorities and other construction agencies.

So the NBC is published by the Bureau of Indian Standards and as discussed we have 3 different editions in 1970-83 and 2005 and the building bye-laws are important thing of the Bureau of Indian Standards which set out the minimum provision standards design from the National Building code by different organ development town planning and municipal authorities.

The main objectives of these bye-laws are the first the proper utilization of space and safeguard people from the public hazard and safety and health aspects and more importantly for a disciplined and systematic growth of towns in buildings.

From the next the first importance and so will be today looking at different standards are the basic category of all those and the first fall in the building from front set back are frontage, as the image shows the front set back is nothing but the distance between the edge of the road and to the edge of the building line which reach is 4 metres in the frontage is nothing but the clear span of the front of the building with a bunch of the road.

So why do we need to give this front set back. Simple in order for the government to acquire the land for future expansion of roads this front set back is obviously necessity and the other advantages of giving a setback is the most sight distance at the corner of a given and you also give a minimum set back space from the road so that it acts as a buffer in terms of pollution as well as health hazards.

The first category we are going to look at the ordinary residential buildings in the buildings that fall under this category are residential clinics, dispensaries, nursing homes, corporate and institutional guesthouses, cottage industries and nursery school.

The major thing you need to look about plot its nothing but a site area the one which is highlighted at the plot and the red one is nothing but the built of floor area. So the floor area for this category of building should not be more than or equal to 300 square metres and for this category the Maximum height permissible is ground + 1 should two floor to be built, so this kind of building and these set of things which any planners or designer, we should take into consideration before designing the building.

So the main is about the frontage the building frontage, front set back, side set back and the major parking requirement which is a constraint in nowadays growing metropolis is there no parking available especially in commercial and institutional buildings. The parking requirement is another major thing and

designers has to do print before the design of the projects and the last thing is about the height and the mass, which responds to the width of the road.

So these sum of the basic standards, where are designers has other the first is about the plinth. So this torrential rain in Chennai has proven to be a disco is an especially for your people, who are not given the maximum plinth Heights. The plinth height nothing but the amount of rays which will give from the ground level to the finish floor level.

So the minimum you need to give is about the 450 mm and parapet wall which is on the top of the building should vary from a height of 1.05-1.2 metres. Next is the boundary wall which is in your site in the plot area should be covered by a boundary wall of a maximum height of 5 feet. So that there is a clear inside and outside vision and up to 2.4 metres. You could actually extended the norms of the 2.4 metres in a case where the top 0.9 metres should be open and with subject to permission from the authorities. So in case of corner plot there is a restricted 0.75 metres for a length of 10 metres in the front and the balance height might be in an open types, so clearly the distinction says that 1.5 metres should be the height and the remaining whatever you go on tops can be of open type subject to the permission from the authorities.

Next is the height of the building, which is always subjected to the width of the road. So it depends on different constituencies' corporations and municipality on how much you can go based on the width of the road and the last is about the area limitation and more important for a designer on the floor area ratio (FAR) floor spaces index. It is nothing but the maximum amount of built up area you could go on a particular plots. So FAR is nothing but the total covered Area on all the floor divided the plot area. This actually gives you the maximum amount of built up area and FAR or FSI always expressed in terms of percentage is expressed in terms of numbers. So these are certain definitions which one might have to remember the first thing the maximum plot extended nothing but the extent with your plot extension either side of the road and the total distance that is the length by the width. The minimum frontage is the minimum frontage you have to give a butting the Main Road, the line of the building which was the butting main road.

Maximum road width is the depending on the category of building the going to choose the site location should be dependent on the width of the road. So width should be there is a minimum category of width, you might have to choose a maximum height is depending on the maximum number of floor you go including the rooftops and headroom of the staircase. A minimum space between the buildings is nothing but the gap between the two adjacent buildings, FSI were looking at the floor area to the plot ratio and the last is the setback the minimum set back buffer for you create beyond your building line.

So some of the other standard according to the National Building Code of reference is the habitable room categories. So the minimum standards for any habitable room according to the BIS and NBC are 9.5 in terms of a minimum area given for a habitable room and width 2.4 metres has one sides and height you could go for 2.75 metres clear from the floor. Finish floor level to the bottom most part of ceiling. So increase you're going to give a minimum AC duct or false ceiling kind of atmosphere the minimum headroom clearance you need to give is 2.4 metres. So in case there are two categories of rooms one should be with the minimum of 9.5 metres square and other to be with the minimum area of 7.5 metres and width 2.4 metres or 2.1 metres respectively is the minimum size of one side of the room.

Next is the kitchen, kitchen store and kitchen dining categories where hierarchy the area minimum special requirement increase from 4.5 metres square to 7.5 metres square and the minimum size of one of the width is 1.8 to 2.1, so it actually varies accordingly in a kitchen it has to sufficiently support the counter as well as a range Sink as well as the refrigerator. So the minimum requirement of the room depends on the minimum furniture to be accommodated the particular room. The Other requirement also include the floor should be impermeable, so that water doesn't penetrate unless separate pantry provider means for washing kitchen utensils which I'll be lead directly through a sink or trapped connections through the waste pipe. The sewage in the salvage water has to be planned as a minimal special standards. So the Next is the bathroom water closets for bath and Water closet category with the minimum area starts from 1.8 metres square. So

in case of a bathroom and water closets. Water closets are nothing but it's like a modern day Powder Room.

Where you're Just a commutated the closets so the minimum area required is 1.1 metres and no minimum size is that has to be given it has to accommodate of closets and maybe a corner basin and height of those should be a minimum of 2 metres and sanitary Cove Line should be maintained in such a way that there is another bathroom on top of it and there are no other rooms, so in case there are there is a room are either above a toilet or below toilets. A proper water tight situation has to be provided to avoid Water leakage is inside the room. The last categories about the store room garage in staircase where the minimum area should be 3 to 12.5 inches of garage for 12.5 metres square accommodate car and the minimum with the staircase should be 1 metres and the minimum clear head room to be at the top of the house should be of 2.2 metres for residential building the minimum tread and rise of a building should be 250 and 190 respectively. The other category to be known by any designer is about the open space reserved area. OSR so according to the plot area which is been purchased are there is a certain amount of land which is being lead to the government in order for public parks design or playground designs.

So this is in order this is given in order to give a breathing space for the particular society. So for the first 3000 square metres of land. So there is no reservation needed. The red one marked here the reserved area plots this reserved area is given only II and III category, where is plot areas between 3000 to 10000 metres square, 10% of the area excluding the roads, which shown here to be given. In case as you need to get that area so in order to maximize a builders profit show in lieu of that there reserved land and you can give cash equivalent but if you land areas about 10000 metres square, 10% has to be definitely given and there is no exchange of cash in terms of this area.

So are the final requirement is about the open space around the building so the front open space always depends on the width of street fronting which over there. so the front 7.5 metres to 30 metres the width basically very slow 1.5 to 6 and hierarchy increasingly and side in the rear open space always depends on the

height of the building so that it doesn't cash shadow and the other buildings. So for a minimum of height of 10 metres or left 3 store building the spaces left around the building at 3 metres hierarchy increases from 53 metres height to 16 metres wide open space.

The next we moving into the UDPFI standards, which is nothing but cities are growing and towns are growing. The new urban Centre are developing and cities grow in carve take care of manner. So there is a need for the urban developers, to developed certain set of guidelines for the city to move in a proper and orderly directions and these urban centers has to be properly designs in order to promote orderly development and healthy living environment for the people, who dwell in the city.

So for this purpose there was a workshop created and out of which resulted in the formulation of Urban Development plans formulation and implementation guidance. So these are basically of four categories which varies from a perspective plan to a plan of project of scheme.

The perspective plan is a long-term agency which is set by the government or ministry in terms of 20 or 25 years or a long term goal set in terms of maps and diagrams by master plan and it includes stage goals on policies and development of a particular area and development plan is nothing but a smaller version of it, which has Framework for 5 years which also includes the socio economic and spatial development of urban centers. The third categories the annual plan which is lead annually which gives you the details of the ongoing and the new projects which are to be bound to be Constructions on cities and the last is basically the plans of project so it gives you details about the working layout cost of developing the source of income and finance and inventory costs by a public or a Private agency.

Norms and Standards

The norms and Standards according to UDPFI are classified into 5 major things starting from distribution of land use to traffic and transportation. So today we

are going to look at few different categories and the minimum special standards for all these categories.

The distribution of land use includes the development of the average area densities, workforce and depends on how many people are going to be in the area and lastly the proposed land use structure on a particular plain area. So the urban center are classified based on these as you see in this diagram based on the settlement type is classified as small to large cities and in terms of population. So the plane and the hill area topographically classified so it varies from a population of less than 50,000 which case accommodation small towns for more than 5 lakh population it goes into large cities. So this is a basic urban centers classification based on populations. Now depend on the land use the population placed as per the land use in a particular hectare has to be calculated. So again the small towns to metro cities is very based on persons living for hectare of land, so if it's 75 to 125 people living per hectare plans, it is to be small towns and if it's 125 to 175 it's a large Metro city but nowadays metro cities are growing in terms of accommodations more than 1000 per hectare, so its adversely Growing.

Next the proposed land use structure based in urban centers this is according to the land use category on residential, commercial, industrial layout as you saw in the first category on basic land uses. Now interesting you could see as it moves from small to metro cities the residential category components that is the percentage of the developed area having residential accommodation drips down from 45 to 35, whereas the other categories from commercial to transportation and communication has a proper growth or hierarchy increases from small to large cities but actually in through cases in reality this is vice a versa.

Next category is Infrastructures, which is much needed in a city in any growth or any Metropolitan cities which is basically physical as well as social infrastructure. The physical infrastructure include water supply, drainage, sewage, salvage, electricity and solid waste disposal. Where the social infrastructure is community facility starting from educational, Healthcare, social cultural facilities, police and fire stations.

So to start with infrastructure for water supply where is the minimum requirement which is calculated in terms of liters per capita and in case of a small towns the liters per capita for absolute minimum that is minimum required things for a particular small town is 70 liters per capita and the desirable amount is 100 lpcd and for a large Metro it includes 135 to 150 which also includes washing, cooking, building and other water provisions. So this is per capita average consume per percentage, per day in our country. So this is calculated based on that and From non-domestic purposes like firefighting and public purpose it is from small town 10 to 15 and for the large metro city 32 to 35 liters of Capita as needed.

Next is moving on to Electricity the average number calculation for electricity is 2 Kilowatt per household. The household having family size of 4.5 and for the city level, it also includes the domestic, commercial, industrial and other uses and for this Minimum requirements 1 electric substation of 11 kilowatts 11,000 watt has to be given for a population of 15,000 and the fire station the minimum requirement for a fire station is there needs to be one fire station or Fire Sub Station within the vicinity of 1 to 3 kilometers to serve fire hazard purposes and area for those fire with residential accommodation has to be 1 hectare and the area of a fire substation with the sub fire station 0.60 hectare coming to solid waste disposal this is the major things and needed for any society and India ranks and top especially in e-waste another Municipal solid waste where we have more than 2 million tons segregated and annually. We have 2.5 million tons, which have been recycled. So in this the garbage is removed and dumped in a sanitary landfills are in some cases it is converted into composed, as citizens of India we need to promote this kind of composed, especially in terms of solid waste to manage or waste.

So that we are cities of Metropolitan cities doesn't become a dump yard and on the Thumb Rule The generation of waste varies from a quarter of a kg per capita in small town, to about half a kg per capita in large in metro cities.

So moving on the social cultural facilities from community room to social Cultural Centre from a small city to medium City and a large City. We have different

hierarchy are categories, so for a small town we can give a community room for a population 1 for 5,000 people with area of 660 square metres and especially for music drama, Drama Centre wear for the population of 1,00,000 has to be serve and you need a minimum of that theatre category of 1000 square metres and lastly for a social Cultural Centre for population of more than million. To all the million plus cities will have all these facilities depending on different districts and the neighborhood and one city will of a population of a million will have the social Cultural Centre for an area of 15 hectares.

Next category comes under the commercial facilities of Hierarchy of commercial Centre, Area of commercial centers and distribution of shops. This is the major economic line of the city which gives a trademarks of different distribution of smallest shops to the largest shops.

So the housing cluster for a population of 1000 to 4000 can have a cluster Centre with an accommodate, it smaller petty shops for economic vantage and community 25000 to 1 lakh could have a community centre and the city of more than 5 million could have a city centre. This also reflect with the category of Central business district where all the major commercial and industrial notes or located in a particular place like in case of Chennai, we have in the guindy, industrial estate. As an industrial notes and commercial centre or a Paris corner would be the corner City Centre for those people are arterial Road for the major notes for the commercial activities.

Next we move on to area commercial Centre. So it starts from commercial Centre for area of 1000 persons per square metres, which includes 220 and number of shops to be given as 1 for 110 and hierarchy increases to District Centre of 880 area per 1000 square metres and 1 for 300 persons has to be given. These are the calculations of minimum area for a commercial Centre to be design.

Moving on recreational facilities again for a smaller house in cluster 3 to 4 local Park or playground could be designs maybe like a housing Township and as it moves on hierarchy for overall town or city a breathing space of 10 to 12 square metres per person has to be left in terms of a commercial park or playground open Space or Centers.

So that type varies from small Centre 1 to 1.2 hectare for 1000 persons and large cities is 1.2 to 1.4 hectares for 1000 persons. So always all these facilities from commercial centre to recreation depends on the number of people, who are going to utilize the facility.

Moving on to the traffic and transportation. Which was the last part of a lecture, it includes the classification of urban roads and design standards of urban roads.

So it starts from arterial to local street, were width of the street always depends on how much traffic is going to accommodate and how much would be the speed of traffic. Say for example for 80 kilometer per hour mode of transportation and arterial roads to width has to be 50 to 60 metres. which is more a national highway on Expressway and it moves on the Sub arterial or collector Street or maybe a local streets, Where the speed has reduced for the two wheeler of 30 kilometers per hour, where the average width of the road to be 10 to 20 metres. The other cross sectional elements which we need to take care while designing these urban roads are the single Lane with kerbs or dis-promotes pedestrian specialties of people who are walking in. So two lane with kerbs to be with the minimum with 7 metres or 6 lane with and without kerbs to be with the minimum with 21 metres.

The last part is the smaller element of the transportation, where the foot path of the side, walk to accommodate, people who are walking in it. In this poster a walkable city. So all people walking in a single direction of a capacity of 1220 or both directions. The people walking to and fro to accommodate the population of 800. The required width of the footpath to be 1.5 metres and hierarchy moves on as you could see for accommodate 6000 in the single way or 4000 in the two way to abort the required with a 4 metres.