Site Analysis and Planning

Lecture 14

Welcome to UGC lecture series for B.Architecture. Today's topic is Site analysis and Planning. Subject code - AR 6512. Unit 5 - Site planning and Site layout Principle. Lecture 14.

Presentation Outline - First Introduction, then we are going to see Classification of Roads, different types of roads, how are they classified. Then we are going to move into Parking Criteria, different types of parking on what has to be done and what should be done in order to design according to it. We can design our road systems with less traffic congestion and it is much more beneficial for the users.

Vehicular and Pedestrian Circulation - Non-urban roads within the country are classified into six types; Expressways, National Highways and State Highways. The different types of highways present between one location to another far off location, it usually carries goods and commodities in large quantities and it is very wide. It is also classified into; Major District roads, Other district roads and Village roads. These three are comparatively lesser in scale but it takes up more population because the inter city roads has a lot of a people commuting these roads on a daily basis. But the width and the size of the road is much lesser when compared to Expressways, because expressways is the one that's going to take care of a lot of heavy vehicles but whereas these are our everyday public and private transportation.

Expressways -

The purpose of expressways would be to cater for motility of large volumes of motor traffic at high speeds. They connect major areas of increasing visitor count and they are intended to serve trips of medium and long length in between prominent residential areas, industrial or business concentrations and the central business district. Expressways is a type of road network that's mainly used to transfer goods or commodities from one area to another. It's used to move heavy vehicles with raw materials or goods. Vehicle parking, loading and unloading of products and passengers and pedestrian traffic are not allowed on these kinds of highways. As we know, since expressways are going to connect between two main areas, we cannot entertain people stopping at every point, that will delay the process of goods being transferred from one point to another. The whole road system is designed in such a way it does not promote parking or intersection or making U-turns so that goods can be transferred in a short duration and much more quickly.

National Highways - These include the main highways running throughout the distance and the breadth of the country connection major parts, highways of adjoining countries, State capitals, large commercial and tourist centers, etc. National highways are roads that connect within the

country or within the state. These are mainly used by the public as well as the goods to get transferred. When the public use it, it is mainly done to commute from one place to a really far off place. When goods get transferred or it is being distributed from a major place to within the city or a district.

State Highways - These include main arterial routes of any state connecting district headquarters and major cities in the state and connecting these with National Highways of the neighbouring states. State highways is the road system that is going to run within your state. National Highways is the one that runs throughout the country. The goods that is being taken from the national highways is finally going to get transferred to the state highways, which is going distribute all the raw materials or products via the State highways. You can see in the picture, a lot of difference in the picture, how broad an expressway is and how your national and state highway are.

Major district roads - These are essential roads within a district serving parts of production and markets and linking these together or while using the main highways. These are major district roads which are going to connected to your state highways from which everything is going to get transferred and distributed in an even more smaller scale. When you have these segregations, there is a lot of time saved for the commodities to get transferred from one district to another. Say for example, you are taking some goods from one district to another district. There are a lot of intermediate smaller districts, you can avoid going through all these smaller districts but just taking the state highways. A lot of time is saved and efficiency in transferring these goods is better as well. All the roads have been designed in such a way that people do not waste much time in going inside and coming out.

Other District Roads - They are streets serving non-urban areas of production and providing them with outlet to market centers, headquarters or other main roads. These are other district roads, the main roads that we use on a daily basis to commute to work, colleges and offices. The other district roads connects us to the actual site of daily requirement spaces.

Village roads - These are roads joining villages or group of villages with each other and also to the nearest road of any higher class urban roads. Village roads are much smaller when compared to other district roads and state highway roads, this is going to be much more narrow because the population that is going to use this road is less when compared to the city roads. These are the roads that connect within a village or also connects a group of villages.

Urban roads are classified into the following five categories - Expressways, Arterial Streets, Sub-arterial streets, Collector Streets and Local Streets. Looking at just the urban level, within the

urban scenario, we have five different classifications of roles, this is the list, let's look into each one of them in detail.

Expressways - The function of expressways is similar regardless of the traverse through urban areas or non-cities. It is very similar to what we saw Expressways do. It transports goods in large quantities within an urban setup.

Arterial Streets - This system of streets, together with expressways where they exist, serve as the key network for thorough traffic flow. These roadways may generally be spaced under 1-5 km in huge developed central business places and at 8km or maybe more in sparsely developed urban fringes. The arterial streets are generally divided highways with full or partial access parking, loading and unloading activities are usually restricted and regulate Pedestrians to cross only at intersections. This type of road is the one that is going to connect to an expressway to a much more district road. The streets that connect expressways and district roads can be called as arterial roads. The width is comparatively lesser than expressway but more than the district roads. It is the place at which you are going to segregate your goods, where loading and offloading can happen. So that it does not disturb the city activity and also promotes faster transportation systems.

Sub-arterial Streets - these include functionally much like arterial streets but with somewhat lower level of travel mobility. Their spacing is different from about 0-5 km in the central downtown to 3 - 5 km inside the suburban fringes. Sub-arterial roads are usually of length of 0-5km which are going to connect your arterial roads and district roads. These are roads that are mainly used for travel mobility.

Collector Streets - the function of collector streets should be to collect visitors from nearby streets and feed it for the arterial and sub-arterial streets or vice versa. These are the main node points from which the population is going to get divided or going to take their own pathways to get to their final destination. These may be located in residential neighbourhoods, commercial areas and industrial areas usually, complete approach is granted on these roadways from abutting properties. This is the road that is going to connect to your local street from where you are taken to your site or development.

Local streets - these are intended mainly to supply the use of abutting properly and normally will not carry substantial amounts of traffic. Majority of visits in urban areas originate from or terminate on these roads. The local streets are the ones we move around on a daily basis. These connect the main roads to the actual street level. Local streets could possibly be non-

commercial, commercial or industrial, depending on the predominant use of the nearby area. They permit unrestricted parking and pedestrian movements.

Local streets can be a combination of complete silent road to a commercial road, it depends on which area these streets are situated within.

Parking

Auto Parking Basic Parking Rule. Do not park any vehicle on the part of a road where traffic is flowing. Drive the vehicle off the road onto the shoulder while stopping. Parking is an important aspect in site planning and layout principle, so that we do not create any traffic congestion or stop the public from moving around. We need to make sensible parking arrangements. It not only satisfies the people who are using it but also accommodates for the number of growth and can be used for the increasing growth pattern. Do not park in space where one does not have a clear view for at least 50 meters in both directions. While designing a parking space, we must be sure, we must create a parcel of parking from where you can almost 50m on either side so that you have a clear vision of what is happening in the clear space.

Do not park in a place that blocks a vehicle already parked by a sidewalk, crosswalk, pedestrian crossing or road entrance. We must be sure each building has their own parking space and it does not block any building or any activity that's already happening on the street. Do not park near the public entrance to a hotel, theatre or public hall when it is open to the public. It cannot be entertained to park your vehicle in front of a building. People who are going inside the building, will not have space to get inside if you have parked in such a way. We must make sure buildings are not hindered by parking. Do not park near any intersection or roundabouts. If you are parking near the intersection or roundabout, the person who is coming behind you will not know if there is a vehicle in front of him or if there is any obstruction on the road that is happening or any construction movement that is happening. In order to give a clear vision of what is going to happen, parking should be avoided in corners. Park the vehicle on the left side in the direction of the traffic. In India we are using left side driving, we should provide parking on the left side or in the direction of the traffic. Let's look into different types of parking.

Parallel Parking - The term parallel parking means parking the vehicle in a line i.e front to rear. The parking area should be one and half times stronger than the vehicle to be parked. Parallel parking is parking two cars parallel to each other and perpendicular to the street. The length that is required for parking has to be one and a half times the length of the vehicle that is going to be parked. Say for example you have a large parking and the length of the large car is say 5m, we need 5m + 2.5m = 7.5m length of parking space Check the following rules for parallel parking -

Slowly reverse into the space provided for parking, turning the steering wheel anticlockwise. You need to make sure your vehicle can be parked, can be reversed and it can have a steering wheel which can ensure that your vehice can come out straight. These are the illustrations that have to be followed while parallely parking so that the width of the road that is abutting your parking is wide enough to do all that's required. Ensure you have cleared the vehicle ahead. When you take your vehicle outside, your movement should not be stopped because there is something else that's restricting the movement, you should make sure the roads on which the movement is going to happen is not blocked.

After seeing the outside rear corner of the vehicle in front of your space, turn the steering wheel clockwise. Bring the vehicle in line with the curb. As you see this is a curve, you need to make sure your curve is perpendicular to your parking line. You must design in such a way that your roads have a space to do a complete straight parking to the curb line. If the vehicle is not parallel to the curb, drive forward to straighten. Make sure the wheels of the car are straight. It has to be completely perpendicular to the curb line and has to fall parallel to each vehicle.

Angular Parking - The term angular parking means parking the vehicle at an angle to the curb of the road. The following basic rules is to be followed in angular parking. Parallel parking is parking vehicles completely perpendicular to a curb wall. Angular parking is parking at an angle in relationship to the curb wall so that you can save more space and parking is much more easier and effective compared to parallel parking.

The rules that have to be followed are - First and foremost look through the mirrors and over the shoulder for traffic behind you. Give the left indicator to signal to the vehicle behind that you intend to park the vehicle. You must make sure you have points to see if a vehicle is coming from behind, so that we can keep a place in which you can see a concave lens through which you get the vision of what's happening behind so that you don't hit any vehicle that's coming from behind. Steer into the provided parking space and straighten the wheels. Keep equal distance on both sides, pull the handbrakes and shift into first or reverse gear. When you park your vehicle, you must be sure it is parked within the space allotted for one vehicle and it does not intrude with other spaces. It can be effectively followed and the harmony can be kept throughout.

Perpendicular Parking - By perpendicular parking it means that parking at right angle of the road curb. Always reverse the vehicle in the parking space so that you can exit comfortably. Pass ahead of the parked vehicle next to available space. Turn the steering anticlockwise and reverse slowly until you are in the centre of the parking space. Close the window and lock the

vehicle. When you go for a perpendicular parking it is also a parking type that is completely perpendicular and forms a 90 degree to the curb wall. This type of parking can be used when you have space available for parking design which is more when compared to your angular parking. You must ensure you have the right space for your turning or taking your reverse.

Precautions while passing parked vehicles - Be careful while passing by a parked vehicle. Never open the door without looking. Beware, a child might be playing or can come in front your vehicle hidden. While designing it, you must be sensitive about what must be happening in the corner or if it can be avoided and what type of safety measures can be taken. To design all that, you must be sure about the cause of the problem. In an emergency, if you have to stop by the side of the road, make sure the stop is very short. When you are taking your vehicle outside or when you are having a closed parking lot, there must be a provision for a safety and emergency exit. If there is a fire, there must be an emergency exit and say a fire extinguisher in a short distance to take it and use it effectively to stop the fire with a minimum damage.

What not to do while parking? Do not park on the foot path, near traffic crossing, roundabouts or turns, on the main road, where your vehicle obstructs traffic. So you must ensure your design does not encourage such type of activity. You must ensure you have good parking space and your parking space is properly maintained with safety amenities and it does not intrude vehicular movements so that all this can be avoided. You should be sensitive about where parking cannot be done at all so that those type of situations can be avoided.

Let's summarize what we have learnt in this whole presentation as learning outcomes. First we looked into importance of vehicular and pedestrian circulation. Then we moved on to looking at classification of various road network. We saw different types of road networks which carry goods and commodities and other road networks that carry people and connect to one another like express highways to individual village roads. Importance of car parking and circulation network. We looked into how car parking can be done, what are the different types of car parking and how effectively it can be designed. We also saw the Do's and Dont's while parking design consideration to give a much more clear understanding of how design improvements can be made.

Now, let's summarize with a few questions for the students. Why is it significant to understand about circulation of pedestrian and vehicular movement in master planning design? How are roads classified? Explain briefly. What are the parking design considerations? What is the difference between angular parking and parallel parking? Thank you!