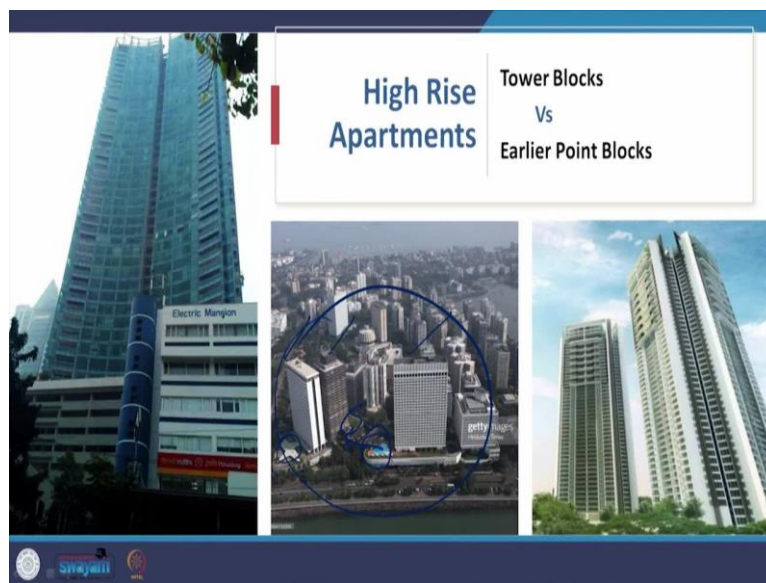


**Modern Indian Architecture**  
**Professor P. S. Chani**  
**Department of Architecture & Planning**  
**Indian Institute of Technology, Roorkee**  
**Lecture 35**  
**Point-Blocks and High Rises - Part 2**

Hello students, we will continue with our study of point blocks and high rises. This is part 2 of the presentation. And if you remember my lecture, which I have taken in the first, the first part of it, when I talk to you about the coming in are the rise of high rise construction and skyscrapers in India, particularly after the post liberalization, in the post liberalization era.

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There were high rises in the pre liberalization era, I talked to you about it yesterday that even buildings as tall as 7 to 10 storeys were considered as high rises. And we had looked at the reason why there is such an exponential or rather a very major rise in high rise buildings across the country. And the reasons I told you very similar to what happened in Chicago school that because of the increase in the urban population and because of rising economy, particularly let us take the case of Mumbai, which is the financial center of India, the financial capital of India, the demand of land was more and more became scarce and more and more costly.

And the only solution was to go vertical, a very similar thing had persisted during the time of the Chicago school movement around the 1880s in America, in Chicago, and so, they also had to go vertical, it was a practical solution in solving the problem of this rising population and constantly growing economy. And so, also in India, post liberalization there has been a

shooting up off these high rises all across the country, it is not being concentrated only in the mega policies, so to speak of Delhi and Mumbai, etc. but also in Bangalore, Pune, Lucknow, Ahmedabad all over the country, Gandhi Nagar I will show you an example today, where they are taking deep root.

And of course, this whole Rush is being led by Mumbai, which has the highest, one of the highest number of high rise buildings in the world, and probably the highest number of high rises under construction. And so many of them are now skyscrapers and predominantly the skyscrapers are, have the high rise building construction in India. Earlier used to be focused on institutional buildings or even corporate buildings. But more and more the focus has shifted to residential buildings and mixed use buildings.

Now, this slide actually shows you what I talked to you last in the last session when I told you about the rise of point blocks in India with the advent of the modernist movement or the idea that modernist movement brought in India. And this led to the development of slab blocks and point blocks, very similar to what was already happening in the West. But whereas they were working in glass and steel, we were working in RCC and glass and we also had provision of louvres we took the example of Indian Express building and compared it with the lever house where it was just plain glass in the lever house.

In Indian Express building style provided these balconies which worked as sunshade to cut off the direct sun and rain falling on the glass facade, whereas the glass facade provided these ample views towards the Arabian Sea and the harbor in the city on the other side. So, again, climate has played a major role in redefining the tall building, or skyscraper construction in India. We have not had this slick tech skyscraper that I talked to you about yesterday.

And I had compared to the example of John Burgee of Philip Johnson, John Burgee associates, who had designed the Air India building. And in the 1980s. I showed you some example of that slick tech sleek glass architecture with the same form in America, which was so different from the Air India building. Because in that building, though, a slab block Air India building had those small fenestrations so that we could accommodate for the hot and humid climate of Mumbai.

We had also taken this classic set of buildings in along the Marine Drive. And in this picture also you can see all 4 of them The Air India building, The Indian Express building behind it,

the hotel Trident building and that which is not visible, which is towards the right side is the NCPA apartment block.

And we had also talked about it yesterday. But, for example, these 3, and in this picture, it is even clearer that these 3 buildings have this 3 storey podium, over this the slab block is rising. And all 3 have this terrace garden as you can see here in the Air India building in the Indian Express building. And this is the Trident hotel and the picture I showed yesterday was the shot that had been taken from the poolside from somewhere here, looking towards the podiums of Air India and the Indian Express building.

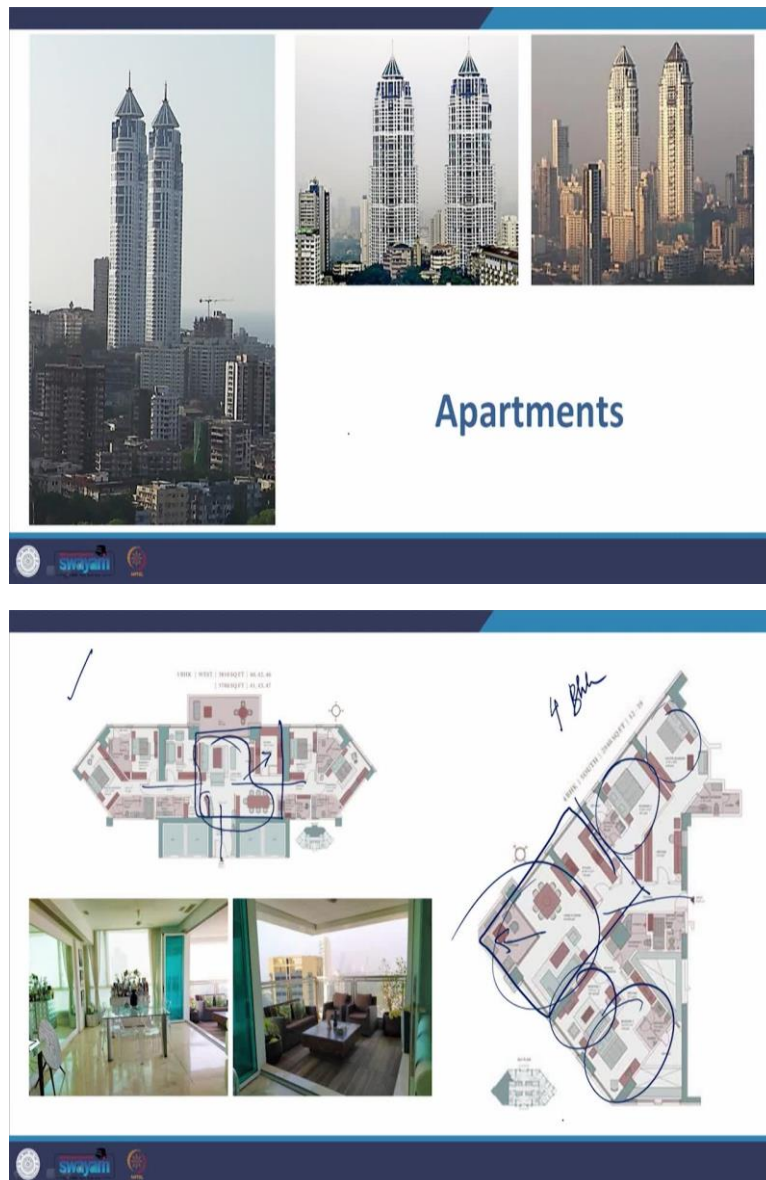
Then we have also seen a series of buildings like the Stock Exchange building, the Vidhan Sabha building in Mumbai, etc. which also had a similar concept of a multi leveled podium block over this the slab block is rising. And I told you that this idea had also originated in America. And I believe the first building having that idea in the modern times was the Lever House, which had that podium over which the slab block arose.

Only thing was, in their case, the podium also had a courtyard in between, and that was one of the differences but that idea then came up in many buildings in Mumbai. Now, coming to today's presentation, we are now seeing in the 21st century as I had also shown you some of the examples yesterday, of the rise of the tower blocks, skyscrapers, any building greater than or equal to 150 meters I mentioned yesterday, is considered a skyscraper.

When the definition actually came up during the Chicago school, it simply meant a building that is scraping in the sky so the term skyscrapers and in those days, even a 8 or 10 storey building was considered as creeping the sky or a skyscraper, but that definition is far gone. Now, it is greater than equal 150 meters.

And in many cases, we are looking at super tall buildings which are greater than 300 meters. Now, these are the examples let us come to the focus of the skyscrapers or the tall buildings in India, which is the residential construction or apartments.

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This is the Imperial towers , work by Hafeez contractor around 2010. I have shown you this example yesterday. Now, going a little deeper, we are looking at the plan of for these apartments and they are very lavish , much of the residential development that is taking place in these skyscrapers or these really tall buildings is luxurious and are serving to the higher or the highest income bracket in our country.

Predominantly, because of the economics of construction these buildings are very expensive to build. And they are provided with lavish facilities yesterday I told you that when these buildings come up, there is the we had seen the advantages there is the advantage of sustainability because we are having a very small physical footprint. And therefore we can

save on agricultural land cover or even provide large green cover. Moreover all our facilities our economized within a tall building like that.

The added advantages the amenities or the community spaces, or recreational spaces can all be housed close to each other, and it can be given access to a large number of people because they are all housed vertically. Of course, as I mentioned yesterday there are many other problems associated with tall buildings.

Let me give you one example , if such a large number of people are staying in one tall building that is this is running into probably a couple of 1000 people also or more the amount of parking spaces required to be provided, the kinds of facilities to be provided, the systems to be provided, reach up humongously large form and this requires a huge amount of engineering technology that goes into it.

I also told you yesterday that India now has the capability not only to make skyscrapers but even super tall skyscrapers and we are reaching to a point where we will have in house capability totally to make them I have also mentioned that many of the experts required to work on these skyscrapers, MEP consultants and HVAC consultants were internationally known and they are working globally have set up shop in India and that is too our advantage.

Of course, I had also mentioned that the contractors have to up their game because these buildings require a very high level of finished quality, very high level of precision work. And therefore, that is an area where we really have to build up our game in the construction work and it is already happening. There have been teething problems, I will consider an example in front of you, which is an actual building that has been built and there have been problems.

But teething troubles are bound to happen when something happening for the past nearly 100 years across the world has only really picked up momentum in the last 20 to 25 years. So here we have Hafeez contractor's, Imperial Towers, you can see it is a lavish building. And generally, the apartments designed cannot be like a bungalow design or detached house design, where you can have even ample open and semi open spaces, you can have a large amount of flexibility, they plan their functional, and their meeting the needs of a very high income bracket family have to be somewhat compact.

And you can see here as you enter in there is a small bar space here and then you have the and this will continue that the as you walk in the, there is a free flowing space accommodating the living room and dining area and that is connected to an open kitchen.

Now, this kind of format is already there in our houses, and the same format is being repeated in flats and apartments across the country, even across the globe, because this gives the feeling of openness in a in a somewhat compact space, this one large space subdivided into separate spaces creates that feeling of openness and feeling of a large space.

And so, this is pretty common , among there are these bedrooms towards the right and the left are the master bedrooms for example, in this case, we have large units provided now this can the apartments can range from anything from 2 BHK to 5 BHK this particular apartment is a 5 BHK apartment and for example if you walk in this is a 4 BHK apartment that you see here.

And so you walk in and you have your again the kitchen space and living dining area is housed as one free flowing space along with an attached balcony now this is an Indian edition. These balconies normally are not there in the Western world and but we are providing balconies now when would be an issue at higher levels but I believe that is being taken care of.

And then you have bedroom number 1, bedroom number 2, bedroom number 3, and bedroom number 4 and as you can see they are providing these apartments there are multiple problems which simply we do not have the time to cover. Services is a big problem provision of washroom facilities and the ventilation provisions for them something that you study at a very rudimentary level for example at your undergraduate program becomes a very very complicated process as we go in for skyscrapers.

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So, this is the further part or plans of the Imperial Towers, you can see this is a duplex apartment. This is the 5 BHK duplex and there are the other plans.

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Then there is another part of the Imperial Towers this is the existing Imperial Tower by Hafeez contractor. A much taller Imperial 3 designed by Adrian Smith and Gordon Gill commonly known as A S plus G G. Their form is coming up with these Imperial 3 this next to the Imperial towers and the SD corporation which is behind this is wanting to go in for this third building. This is an ongoing construction. And the whole experience expertise and reputation is behind this project.

And this is of two real estate developers coming together Shapoorji Pallonji and the Dilip Thacker group.

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Then there is the Raheja group which is also been playing a very key role as one of the key players in developing these high rise apartment blocks. So we have the Raheja Viverea in Mumbai, which is a LEED registered residential project , it is already completed. It is one of Mumbai's green structures.

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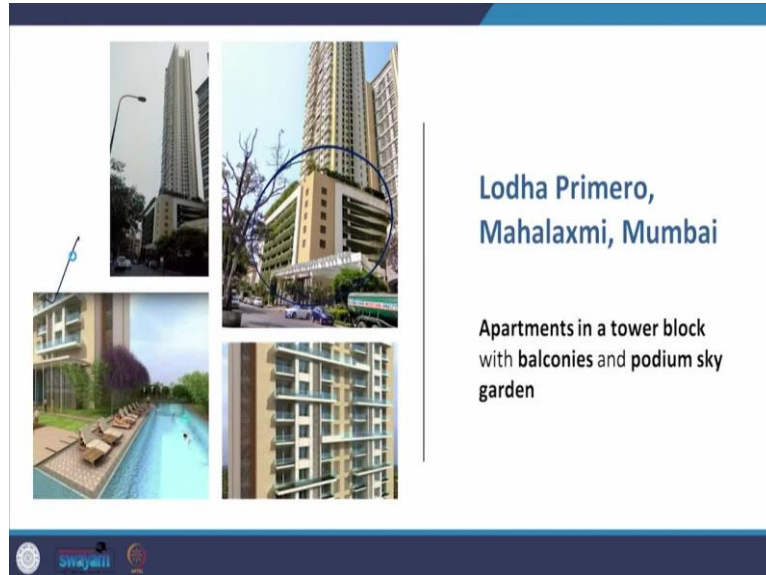


And as you can see the plan, it is a fairly elaborately lavish plan as you enter in there is again, this common space that you see here, the kitchen along with the living and the dining area. And then you have another common study on the side. And there are balconies on different sides, there is a lengthy balcony up front, this is the view of this balcony looking towards the sea.



And then you have adjoining bedrooms, bedroom number 1, bedroom number 2, bedroom number 3, bedroom number 4, and even the kitchen has got a central island. So this is a fairly, fairly lavish apartments even among lavish apartments visa vie the amount of space provided.

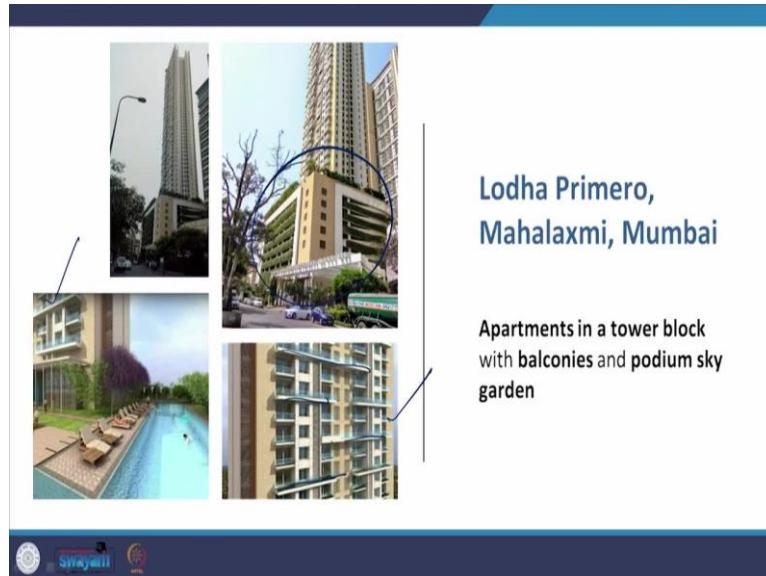
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Then we have the Lodha group, which is also another key player, the Lodha Primero in Mahalaxmi in Mumbai and this apartments in a tower block, like I said, nearly in all of them we find, there are balconies. Another idea that is found in many of these apartment blocks is they have a podium, as you can see in the Lodha Primero. And on top of the podium is a sky garden or a roof garden with swimming pools and recreation facilities as this picture shows.

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So when we move forward, we see here this is the site plan. And this is how the apartments are laid out so there are 4 apartments to this floor, there are these 2 BHK apartments on this side and there are 3 BHK apartments on the other side. And then there are so this is a series of floors and then the 49th and 51st floor, the design was supposed to have a one of the apartment was removed. And that was replaced by this sky garden. So that was what it was supposed to be but please look up this data to be more clear about it. But was this finally executed?

So here we have the balconies as you can see, and the balconies are also staggered, as you can see that there are the long balconies. And there are this is staggering done all across the facade of the building.

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Then there is the Lodha Fiorenza. Now the initial studies pictures examples that I am showing you are of more regularly organized the floor plans. So this one is also already up and running. And this is the view the very large, the free flowing space within the apartment. And this is the podium level recreational space or the podium level garden.

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And you can see the view of the podium level space also from the top. And there we have it. This is now, what I have done is I have organized the plan with the north point in the same direction. So the site plan and the view this pool indicative here the pool image shown is how it is being shown here. And then this plan, the floor plans are rising above it and these are the way the apartments have been laid out.

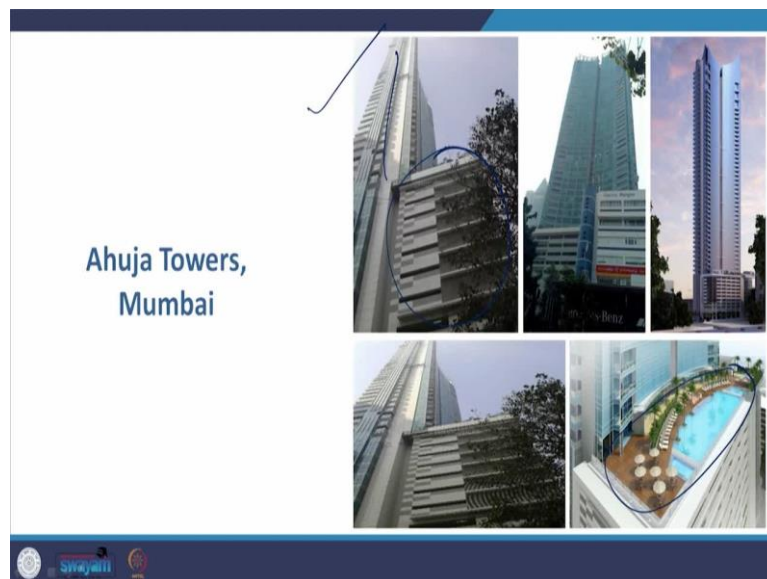
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Then there is the Lodha Bellissimo A, B, and C which is 221 meters high in Mumbai 53 floors residential apartment block, exclusive project with world class facilities including conference rooms and concierge services and excellent landscaping.

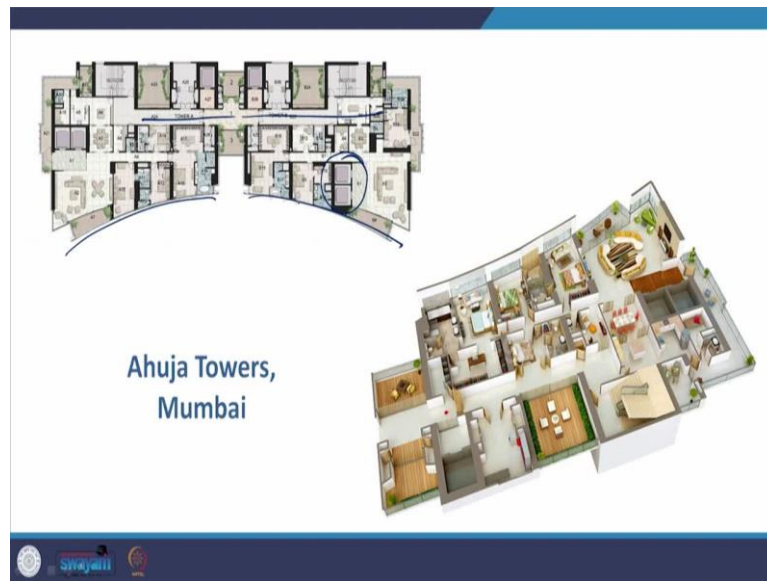
Now please understand that even in this very high bracket living style, there are a series of brackets within them. So, it can range from a few crores to 10s of crores it can it can grow from a lower end of the high level market to the upper end even of the high level high bracket market and these are the floor plans of this project.

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Then there is the Ahuja group this is the Ahuja Towers in Mumbai again you see that in the design that they have come up with this is the built final building. This again has this podium arrangement this series of floors adjoining the tower block and this is the roof garden that is provided with the pool.

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And these are the plans now, these are very standard plans. Of course, I told you yesterday also one of the things that was happening in the high rises earlier was the essential focus was on the structural system. But now we are far more creative in architectural freedom and one of the ways in which we are able to do that is because we have amazing structural abilities today and that leads to us playing with the form of the building and thus are able to create spaces of a different type not standard squarish or rectangular floor plans of apartments, but they are different for example, here we are able to get this kind of a curve and then there are these two apartments on either side of the elevator section.

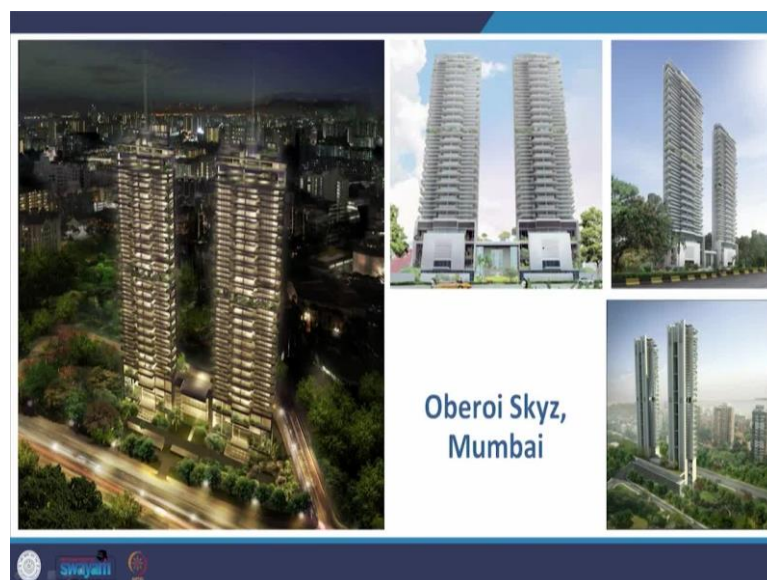
And in fact, if because I was talking about the higher end of the high end market, as you can see, there are these elevators which are part of the apartment These are private elevators leading into the apartment itself.

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Then the Sky City which is coming up at Borivali in Mumbai to 210 meters 67 floors high. And now I am coming to the kind of apartments in which wings come out from the central space. So there are these 3 apartments which are opening which are moving outwards from the central space and this is the layout as you walk in the kitchen. Kitchen is right at the opening and again this forms the free flowing area and then you have bedroom number 1, 2, and 3. So this is how this has been done.

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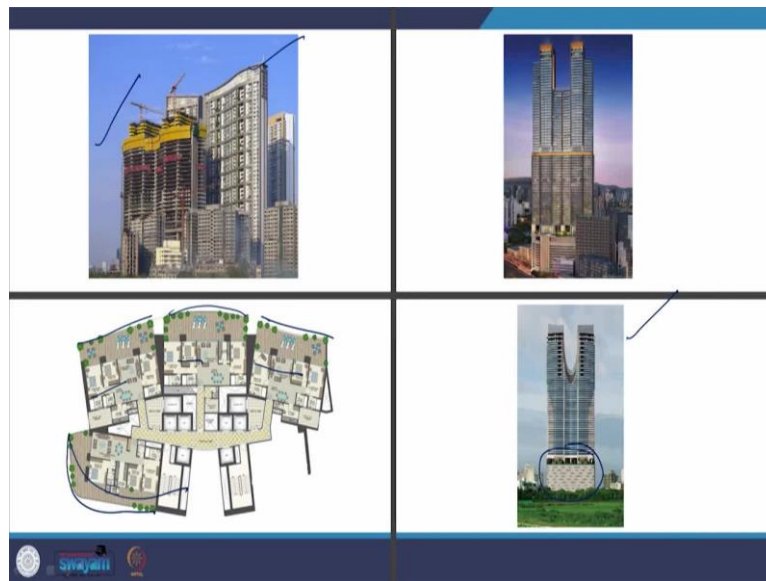
Oberoi Skyz in Mumbai. GIFT Diamond Tower in Gandhinagar. And this I believe, is a corporate building. It is a 410 meter building that is supposed proposed 86 floors high.

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Then there is the Lokhandwala Minerva, in Mumbai, which is under construction is supposed to be 303 meters high, 82 floors developed by the Lokhandwala Infrastructure group. Again, it is got these lavish 3 to 5 BHK apartments, even 4 and a half BHK luxury and 6 BHK duplexes.

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And this is the construction that is going on. This is I believe, close to Lodha Bellissimo, this is Lodha Bellissimo at the back. And this is the way final building is supposed to be again, if you can see this is about this podium level design over which the terrace garden is supposed to be. And here again, as you walk in there are these three apartments on this side and one large apartment on this side and it is got this balcony completely all around the apartment and these are full length balconies provided to each of the apartments.

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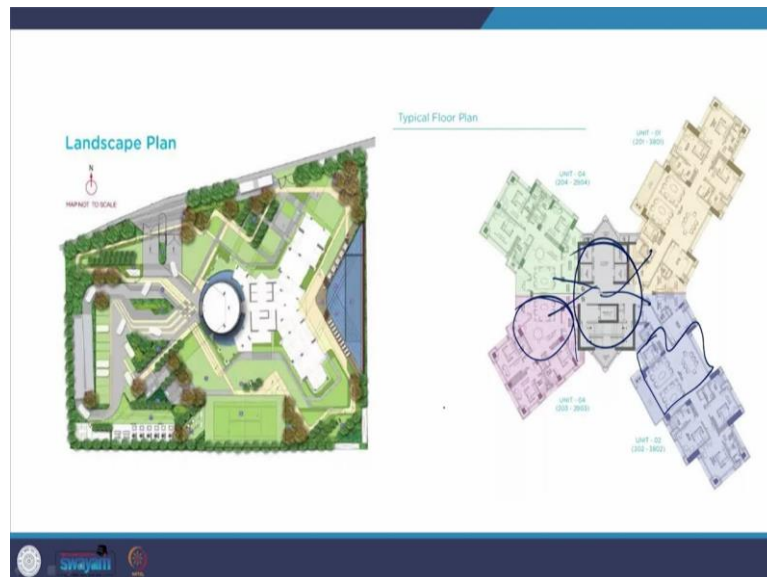


Then there is the Mantri Pinnacle. Remember that I have shown you this in the previous presentation, when I was trying to indicate you that high rise or tower block construction is not just confined to Mumbai, even I have given the example of The 42 building in Kolkata



and I talked about the Mantri Pinnacle in Bangalore, which is a residential building for 153 meters high I told you, it is just touching the ban for skyscraper with 46 floors. And it is the tallest building in South India with 3, 4 to 5 bedroom apartments and penthouses and having luxurious amenities, as in all the projects we have seen mentioned today.

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So this is the overall landscape plan. And as you can see, again, I mentioned this series of projects that I am showing you have this room kind of arrangement. So there are these two apartments here, and then two on the side, they are opening outwards from the central area, this is the service area with the elevators in the staircase. Again, you can keep on seeing the same repetitive model of the kitchen, the living in the dining space being one common space or free flowing space.

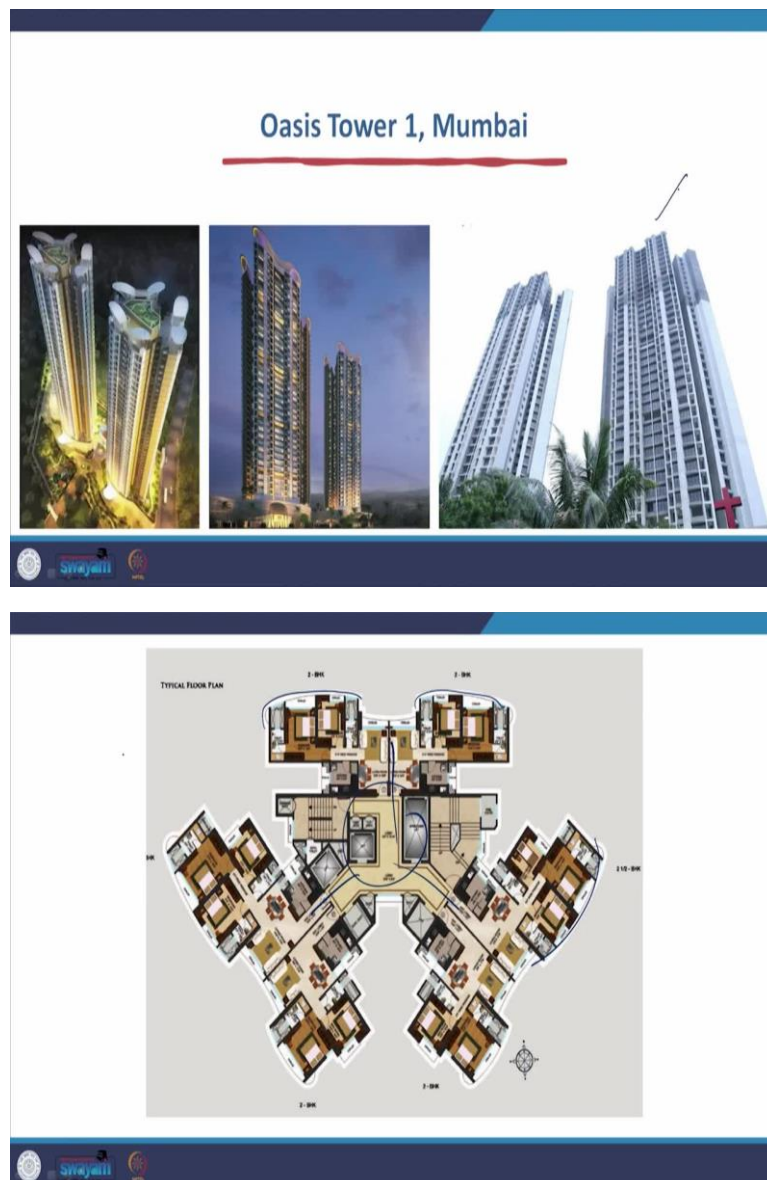
If you move in here, here you have it, this space and so, that is a representative model that we keep seeing and this is one thing that you will find that the structure, conceptual structure of the floor plan of residences in the 20th century, walking into the 21st century, has hardly seen any major upgrade from what came in with the advent of modern architecture, and particularly the idea of free flowing spaces of Frank Lloyd Wright.

So when he came up with the concept of these free flowing spaces of living room and dining space as one common one free flowing space. And then then it graduated to the younger generation of European architects like Corbusier and Mies, etc. This idea has continued upgrades have happened, it is like saying that a particular technology, essentially,

conceptually is still the same only upgrades are happening, incremental upgrades are happening.

So if I look at these apartments, I do not find anything radically new. All the projects I have shown you, this is the play of overall arrangement. Conceptually, it is pretty much the same.

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Oasis Tower 1 come has already it is coming up in Mumbai, most of it has been completed. And this is again, like I showed you that this is a common space and then the beams radiating outwards. This is the arrangement. And it is got this curved plate on the outside this curved wall that you see here, if you look at it very carefully in a finished view of the building.

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And then we come up to skyscrapers that are circular or elliptical or rounded. And here is the Supertech supernova, which is coming up in Noida. This, as you can see here is that , this apartment, as you enter in has got these bedrooms in this manner. So you have the living room, and the kitchen and dining space here. You walk in, I am sorry, the kitchen is probably, this is a bigger kitchen, which is connected to this area. And then you have 1, 2 bedrooms is another land space here. And then there is a third bedroom. So this is the overall elliptical shape of the building.

And this apartment that we are seeing is this particular edge apartment on this side. And it is got this long balcony, which is in front of all the rooms and the amazing thing is that all the rooms have got the view towards the outside. So this is a very novel idea that all the views are provided from all the rooms looking as a vast expanse like this, which is a very good idea and technology is enabling us to do that. Providing us this expansive view like this, because of the structural abilities that we have today.

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The image contains two promotional graphics for Supertech Northeye in Noida. The top graphic is a vertical advertisement with a blue header and footer. The main content is divided into three columns. The left column features a tall skyscraper with the text 'NORTH EYE', 'NORTH INDIA'S TALLEST BUILDING', and 'INTERNATIONAL TRIP ON BERTON SPOTBOOKING'. The middle column has a dark background with white text: 'SPECIAL PAYMENT PLAN PAY 40% NOW, 60% ON POSSESSION', 'FIRST TIME CORPORATE SUITE IN NORTH INDIA'S MOST ICONIC BUILDING', 'FULLY FURNISHED CORPORATE SUITES STARTING @ RS 88.9 LAKHS COME & SEE ACTUAL VIEW FROM 41<sup>ST</sup> FLOOR', 'FULLY FURNISHED STUDIO APARTMENTS STARTING @ RS 38.7 LAKHS EARN RS 20000/- MONTHLY', and 'RETAIL SPACE INVESTMENT STARTING @ RS 15 LAKHS WITH PPA RENTAL GUARANTEE'. The right column shows a night view of the building. The bottom graphic is titled 'Studio Apartments' and shows four floor plan diagrams: two 3D cutaway views of individual units and two 2D top-down views of the building's circular layout, one labeled 'OPEN TO SKY'.

Supertech Northeye is also coming up in Noida. And in this Supertech Northeye there is the upcoming concept of studio apartments, studio apartments are those that are having living space or a lounge with a kitchenette, and 1 bedroom and attached bathroom. It is predominantly focused on bachelor's, or even for people who travel internationally, or people who travel frequently. And they are in a particular city very, very often, maybe for larger periods of time.

And they want some kind of personalized service away from a hotel. So they end up purchasing the studio apartments which are more like lavish suites. And they are they have concierge services within the building that take care of all the needs of the client. And

whether it is laundry whether it is, it provides you facilities exactly like a top class 5 star hotel, but this is your own personal space.

And there is also the idea of shared rental arrangement where when the person is not using the studio apartment, you can rent it out and thus you can get some kind of return on his investment. But so here we have the studio apartment as you walk down this corridor your 1 studio apartment 2 and 3. If you look at this one, it is very simple. Its got the bedroom attached to the living area and is a kitchenette. So it is a very simple format. So also here and so also here, but if you walk in this one is a more elaborate one.

Because as you walk in, there is a servant's room. There is an open kitchen with the dining area and living space and then there is one big lavish bedroom that has been provided with a sitting space and an attached bathroom. But this is a standard apartment in the building. It is a 3 bedroom apartment, rather a 4 bedroom apartment that has been provided. And as you can see now here you can say that yes, some changes are being made because these skyscrapers and the apartments are being modified to for because of the shape is playing a very important role aesthetically and therefore, as you walk in this is an elongated the free plan is elongated and you have these the dining area and the kitchen and then along this these bedrooms 4 bedrooms have been provided.

So, conceptually the idea remains the same only arrangement vise changes are taking place because of the built form.

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**World One Tower, Mumbai**

**Height: 442 m; 117 floors**

Constructed by Lodha Group

Design - Pei Cobb Freed & Partners and  
Leslie E. Robertson Associates



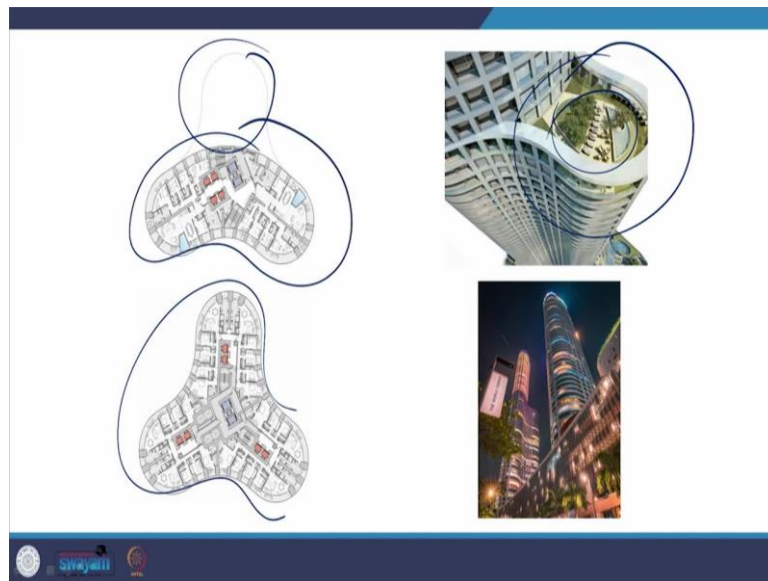
At the bottom of the slide, there are logos for 'Swayam' and 'Swayam'.

Now, let us come to probably the best known example of a skyscraper residential building in India, the World One Tower by the Lodha group in Mumbai.

Now, this building was supposed to go up to 447 meters with a width of 42 meters with 117 floors. So, if you look at this image, you can see that this was supposed to be really tall. And at one time this would have been supposed to be the tallest residential building in the world. But actually, the tallest residential building exists in New York in Manhattan. And now, this building's height was also cut down, as you can see from the actual building, if you compare it to the picture, you can see that much of this part has been taken out if you compare it to this block, you can see that the overall height has been decreased.

And this is designed by Pei Cobb Freed & Partners along with Leslie E. Robertson Associates. So this company, so that is also indicative of like I mentioned to you agents within government. So there are many foreign architectural firms who have got tremendous experience in making these structurally complex skyscrapers coming into India and making these buildings.

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Now, this is about a series of floor plans that are very interesting, because the building, for example, in this part, it stops, one part stops here. So this is a roof garden, with swimming pools and recreation facilities, and the other continues upwards. So the building continues like this. And then this part gets cut off and the building continues to rise with these apartments.

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And then the number of types of apartments within this whole set of buildings, the World One Tower they are varied. One way of trying to understand these apartment plans is that just keep your eyes focused on the service area. So if you keep your eye focused on the surface

area of the elevator, for example, you can then be able to decipher these complex plans of this plan, the one that you see here is a fairly big plan.

This is one single apartment clearly only lavish it has got this entire living space here. It is very, very elaborate kitchen attached with the servant's room, and it is duplex. It is got a floor above it also. And it is got an exercise area, a gym, and very, very lavish arrangement. It is got its own private elevator also within it.

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And then there are the other apartment shapes, so to speak, of plans that come up because of the curvilinear form of the world one tower, these are the other plans. Now the way to look at it is , this is the overall form. So this plan responds to this one, this, this one, and so on and so forth.

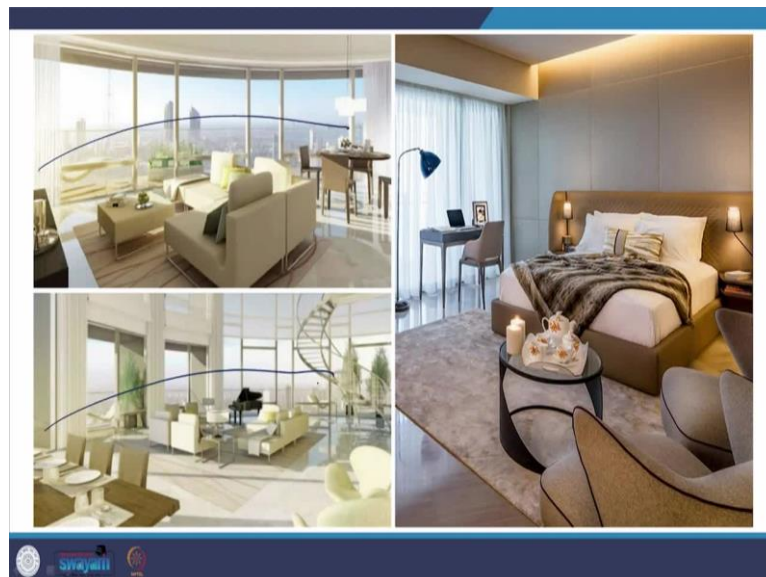


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These are the views. And you can see these amazing balconies and they are repeated in all the apartments you seen today, the extensive use of glass, because one of the things that that is so important and for which people pay a premium price is the view at that height with the clean air people want that amazing view as much as possible. So that is what architects try to capture or builders try to capture.

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So here it is, you can see the views that the animated views and you can see the amazing view this project is providing to the occupant. Now if you want to see how the actual apartment looks, please go to YouTube. There are quite a few videos there of the world one tower actual apartments and you can have a look at the finished product.

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**NCR RISING**

With a number of its newly proposed buildings slated to rise past the 150m mark, the NCR is set to break into the skyscraper club

<b>Supertech Supernova</b>   Noida 80 floors/300m	<b>Raheja Revanta</b>   Gurgaon 57 floors/NA
<b>Supertech North Eye</b>   Noida 60 floors/255m	<b>Raheja Phoenix</b>   Delhi 54 floors/190m
<b>Ireo Victory Valley</b>   Gurgaon 51 floors/NA	

All the projects are in the proposed construction stage

**But Mumbai still ahead**

**World One | Worli**  
117 floors/442m

**Palais Royale | Lower Part**  
67 floors/320m

**Skyscrapers in NCR and Mumbai**

Then this slide actually shows that NCR region Delhi and its satellite area is also trying to come up with the skyscrapers as also Mumbai, and many are proposed by the supertech group that is a supertech supernova, there is a Raheja Revanta etc, etc.

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**Skyscrapers Forms – The Future**

Now, these slides that I am showing you a couple of them are trying to show you the various skyscraper forms that are being thought of, amongst in upcoming skyscrapers in the proposed whether there will be finally built or not, we cannot be sure about that. But these firms are to pose these skyscrapers pose and you can see they are amazingly radical and interesting forms very, like what is happening globally.

So, in this way, India is pretty much caught up, caught up, it is catching up, or it is nearly caught up with global trends and we are seeing the Indian global citizen who travels frequently abroad and has a global lifestyle is being afforded the same kind of a luxurious lifestyle and facilities as you would find in any other premium city of the world.

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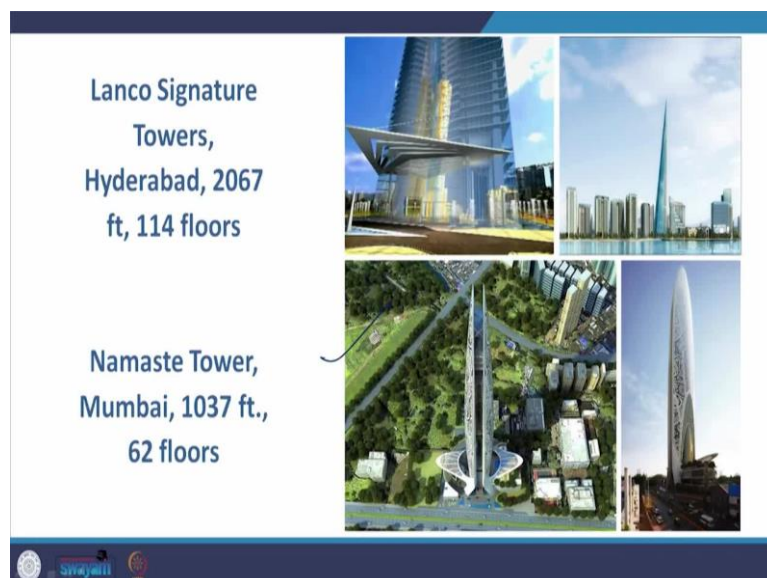
These are some of the other forms that are being proposed , this one. And then like for example, the Indra Tower, which I have just explained a little bit more because this is even unique amongst the peoples from the future. It is supposed to be 300 meters high, 80 floors, by the Wadhwa group. And the designer design team behind it is James Law Cybertecture, you can look it up online regarding this form.

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And the concept is that of a single drop of water, which is freely dropping into the water and the shape it takes up because of gravity and dynamic properties. And that is what is supposed to be there are different depths of balconies that are provided along the facade of the Indra tower, and the emphasis is on the views. So because of this shape, it is providing a vast view of the sea for each unit. And the structuring design happens to get combination of various structural systems. So this is what it is supposed to be.

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Then there is the Lanco Tower, the Lanco Signature Towers in Hyderabad. Now, this is the 2067 feet, I am sorry, I should have converted into meters divided by three, it is a very tall building, close to, I believe, sorry, close to 700 meters 600 plus meters high. The namaste

tower in Mumbai is close to 350 meters high 1037 feet, I am dividing it simply by a round number of three. And so 114 floors in Hyderabad and 62 floors in the amazingly iconic Namaste tower in Mumbai.

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This slide actually shows an idea that was proposed and explored but never finally executed. Idea was very simple. You have a skyscraper block. And this was supposed to actually be for the slum dwellers of Dharavi. And where it was supposed to do was that each of the dwellers will be provided an apartment a small scale apartment in this tower, and the apartments will be made out of shipping crates, the shipping units that are there that the cargo units that are there those cuboidal units, they will make up these apartments as you can see here, very colorful, and they would be plugged into the skyscraper.

Very similar to the idea Unite de habitation where Corbusier plugged in the apartments into the block. So, this was supposed to this is supposed to be the frame in which these shipping containers, shipping containers would be plugged in. And thus we would have this this section shows these the shipping containers are plugged in and each of these shipping containers or the unit of multiple of these unit would serve as the low income group apartments but it was never finally executed.

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So thus we come to the idea of affordable housing in India. One of the ways in which high rises is impacting in Indian building sector is with regard to affordable housing, because we know that we need approximately 2 million units per year to meet the growing demand for housing in urban areas. And the Prime Minister Awaz Yojna PMAY is in high gear to try to meet this need corporation like the NBCC, the CPWD, etc., are working to in this area to provide this middle income, low income and EWS housing for the middle class and lower middle class.

And, of course, these are not high rises, the ones that you have seen, these are probably 8 to 10 storeys high, but they are very needed today this is the meet of the matter in India with regard to affordable housing.

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Now, affordable housing in India is also running into a lot of issues, because this is not quite affordable as we would count it to be. About 30 lakh house is in MIG. 50 lakh house is an MIG and EWS will be 5 lakh rupees. So that is not quite, we are not quite at home or comfortable with the idea of these dwellings being so expensive for the common man. Very difficult to be able to provide that kind of money or what mechanism should we have is a totally separate topic. We have totally out of a number of lectures and modules this time.

It is a very important topic that must be studied. I do hope that some of you will take the initiative to study the issue of affordable housing. This continues to be a burning problem for India right from the time of India's Independence, a lot of effort has been made or solutions have tried to be we have tried to find architecture like B. V. Doshi. We studied examples with you of Aranea housing and I studied Belapur housing and other such attempts made by them at various levels to find a solution.

But we are still nowhere in sight of a solution that will be workable for millions of units across the country. I will end here with this series on point blocks and high rises. I am quite aware of the fact that this presentations, the two that I have shown you are just a summarized version of a very vast number of buildings being built in the sector. And there is a lot of interest that is being generated in this area. I do hope that you will take time out and go to a net, go to literature and read more about this topic. Thank you.