Modern Indian Architecture
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Lecture 34
Point - Blocks and High Rises – Part 1

Hello students, today will do a 2 part series starting from today on point blocks and high rises. Now, with the advent of liberalization or liberalizing of our economy India, one regional building typology that came into India was the high rise building or the tall building, also, now, the skyscraper in India.

Now, I am being selective about using the term tall building, high rise building, skyscraper because a skyscraper refers to a tall building, which is greater than equal to 150 meters, only now in the 21st century, for the example, in the last probably 10 years, we are seeing these plus 150 meter buildings in India, which are skyscrapers.

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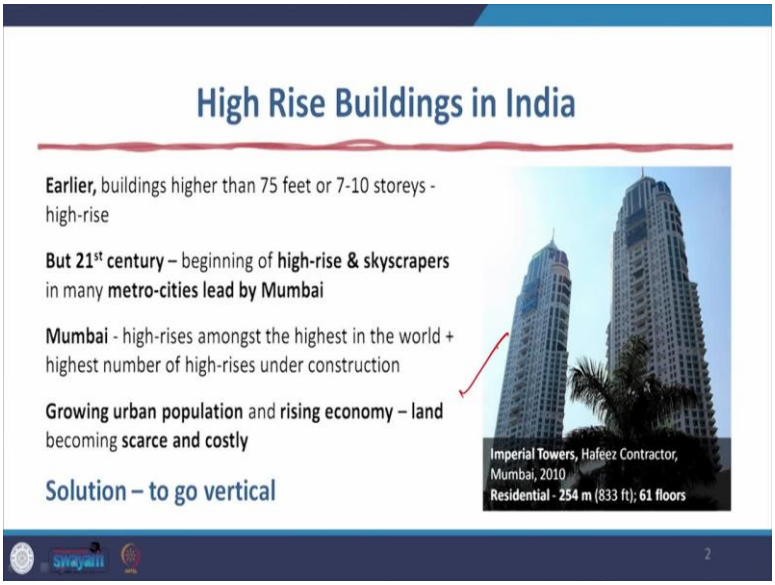

Now, earlier, the buildings in India higher than 75 feet or up to 7 to 10 storeys termed as high rise, but in the 21st century, with the beginning of high rises and skyscrapers, which are happening in many metro cities in India today. And the lead has been taken by Mumbai, which is having the highest number of high rise buildings, one of the highest in the world, and highest number of high rises under construction.

Now, why is this happening? What is happening in our metropolitan cities is with regard to high rise construction is exactly similar to what happened in Chicago in the last part of the 19th century 1880s, approximately on that time, and that was that a lot of people started

moving into the city of Chicago in urban center, or a financial center, and as a result of this vast increase of population, they were compelled to go vertical.

The same thing is happening in our metro area, metro cities across the country, not only the major ones, that is Delhi, Mumbai, Kolkata, and Chennai, Bangalore, Pune, Lucknow and many other cities, it is happening. That is growing urban population and rising economy land is becoming scarce and costly, and therefore the solution is to go vertical.

The picture that you see here is of a very iconic skyscraper in India. One of the first the Imperial Towers by Hafeez contractor in Mumbai in 2010, the storey is 54 meters high and has 61 floors.

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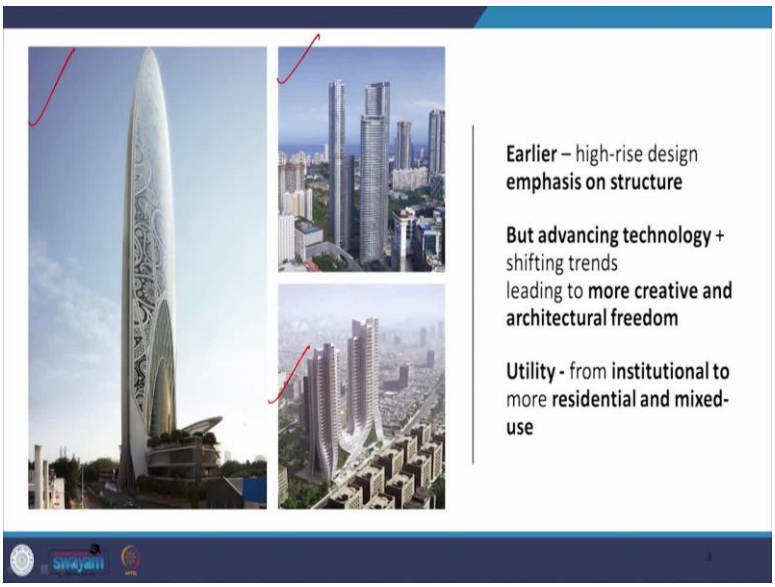

Now, earlier high rise design was predominantly focused on the structural system. But with advancing technology, not only India I am talking globally with advancing technology, and shifting trends have led to creative, more creative, and more there is much more architectural freedom in the design of skyscrapers.

So if you look in the west or let us look in the Middle East, Dubai, Burj Khalifa, or other skyscrapers coming, for example, the Shard in London or even the Swiss Re building in London, the Hong Kong and Shanghai Banking Corporation that was very back in the 1970s, early 1980s. The buildings of that time and then the new buildings, the latest skyscrapers that are coming up globally, have got amazingly creative forms.

Earlier when the skyscrapers began, it was predominantly a cuboidal block. And it was a moment of frame construction of steel and glass, with Fazlur Khan, who was a Bangladeshi structural engineer, joining Skidmore, Owings and Merrill, he was the first one to start exploring different ways in which skyscrapers could be put together. So his, he was responsible for the taping form of the John Hancock Center in Chicago. He was responsible for the bundled tube system of the Sears Tower, which at one time was the tallest building in the world.

And he brought in these new ideas with regard to the structural system possibilities in skyscrapers. But with the advent of new computational digital technology and new tools today, globally, there has been not only a boom in the design of skyscrapers because the same pattern of urban growth is happening all over the world in every city is in need of skyscrapers, tall buildings, but also this kind of creativity and architectural freedom for example, in this skyscraper that is proposed in Mumbai called namaste tower and this one which is already come up the one world, one world towers by the Lodha group and this is another building that is ideally proposed in Mumbai.

So, not only that, the utility of the buildings earlier these buildings are predominantly connected with either an institutional purpose or corporates, but now, more residential and mixed use skyscrapers are being built.

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Innovative materials are also being used for example, in India autoclaved aerated autoclaved blocks are being used and they are substituting conventional infill materials like bricks for

example, as you can see here, these infill material here in this case are these AAC blocks and these are becoming widely acceptable.

Similar advancements are also taking with regard taking place with regard to for example, the building technology required to make such skyscrapers that means, the whole systems the contractors need to be so, high along with that the idea of constructions technologies like the monolithic construction also, sometimes commonly called by a trade name, Mies van construction, which is basically an aluminium form work that is laid on the side along with the reinforcement and concrete is poured into it.

So, when you take out the aluminium panels, the entire system is completely a monolithic construction completely homogeneous. And the idea of having green buildings in skyscrapers like this tall building, the GAIL Jubilee tower in Noida, which is 24 storeys high is a green building it was it is said to be probably the greenest building in India today.

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Now, this picture actually, I have put up just to show you that this tendency to build skyscrapers in India is not to restrict only to Mumbai, this building ,The 42 has come up in Kolkata it is upcoming, and it is 249 meters high with 65 floors. Now, high rise buildings have advantages, economic advantages, because they contribute to sustainability by minimizing the building footprint.

So the economic and the sustainability advantages that we are able to save on land, that is economic advantage, the sustainability advantages we are saving on, for example, agricultural land, and increasing the green cover. These are residential buildings. The advantages that we

can house a large number of families within one single built form on a limited footprint. And we can thus have more floor area for public spaces.

Also, the advantages are that we can provide abundant amenities put together with easy accessibility to recreation parks, swimming pools, and school shopping facilities, and other community services. So all in all, this works together as a very early homogeneous model, in the modern times when time is really become a very expensive commodity. Time for each one of us, is very short and if these are easily accessible, it makes life easier.

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Now, there was a study done by the corporation of London for tall buildings and sustainability and they came up with this conclusion, I am quoting and I quote, skyscrapers are not only an inevitable building form, they are also more environmentally sustainable than smaller buildings, tall office buildings are becoming increasingly necessary as a result of efficient use of limited land.

So, there is a definite advantage to build tall, it is not that there of course, there are many other issues that are connected with regard to the negative impact of skyscrapers and we are we right now do not have the scope to go to all those aspects. But this is another example of a skyscraper in another city, Bangalore, the Mantri Pinnacle came up in 2013, 153 meters just touching the skyscraper bar with 46 floors.

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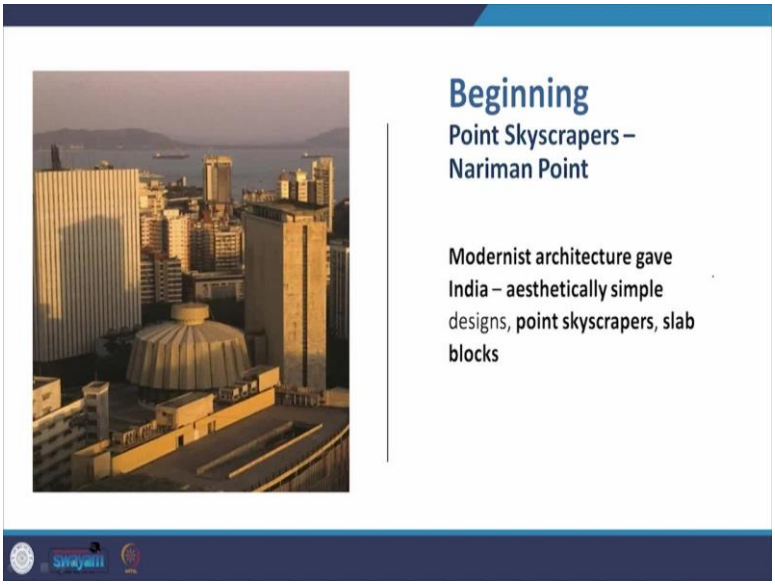

Now, the beginning. The beginning was made with these point blocks that came up at Nariman Point in Mumbai, and modernist architecture gave them to India with aesthetically simple point skyscrapers and slab blocks very similar to what was coming up in the west. The only difference is that concessions were made for the materials available in India to the technology available in India and the climate of India. As an other buildings have started, the same conditions became constraints when they were building in India.

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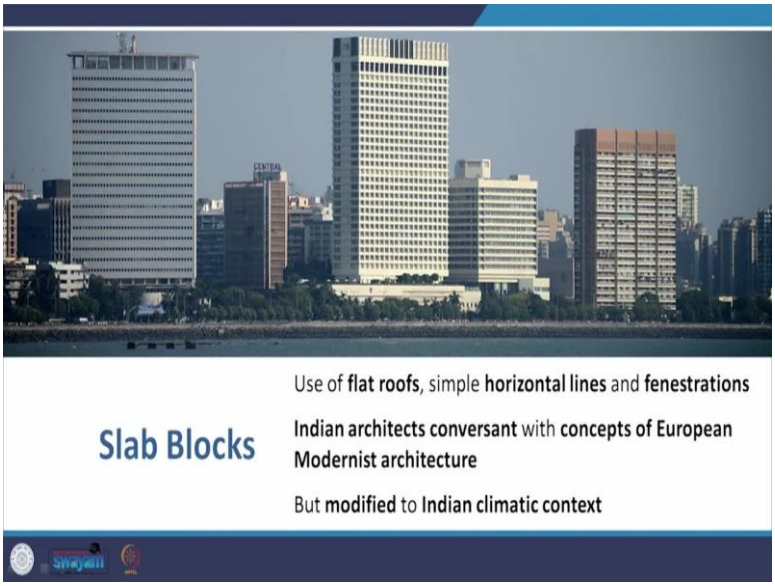

So, the slab blocks that came up this is a series of slab blocks along marine drive use a flat two simple horizontal lines and fenestrations. And these are not like the slab blocks of wedge which were glass and steel sleek slab blocks. These were made of RCC and glass,

fenestrations with smaller there were some breakers and louvers, etc. provided to account for the climatic conditions.

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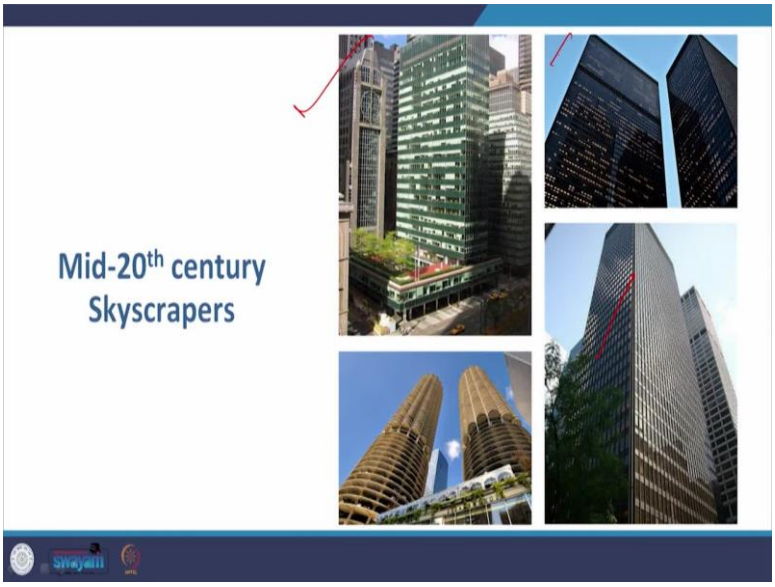

And Indian architects showed by this time, at this time, but conversant with the concepts of European modernist architecture. But like I said, these buildings were also again modified for Indian climate. Now, in the mid 20th century, these kinds of skyscrapers were coming up in the west, like the Lever house in New York or the Seagram Building. This is again another building by Mies van der Rohe. So these buildings were coming up, these are all four of them are in America.

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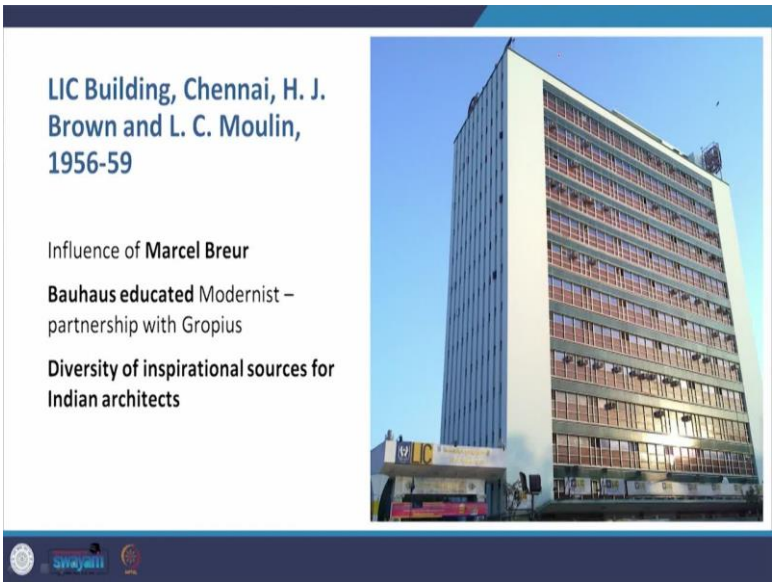

On the other hand, in India in the mid 20th, this is 1956 to 59. This building, the LIC building, which came up with Chennai was made by Western architects H. J. Brown and L. C. Moulin. And this was the influence of Marcel Breur, please do look up his work online to be able to make the link between this work and that Marcel Breur. The only thing I can point out here is that Marcel Breur was Bauhaus educated modernist, and he has partnered with Gropius. So this idea of Bauhaus continued. It is a very simple slab block. And it has there were a diversity of inspirational sources that were available for Indian architects when they began their adventure with tall buildings.

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This is the pictures of the LIC building.

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And then the other there is one more building on Marine Drive which is the NCPA apartments Nariman Point. And this is actually showing you apartments that apartments were also coming up.

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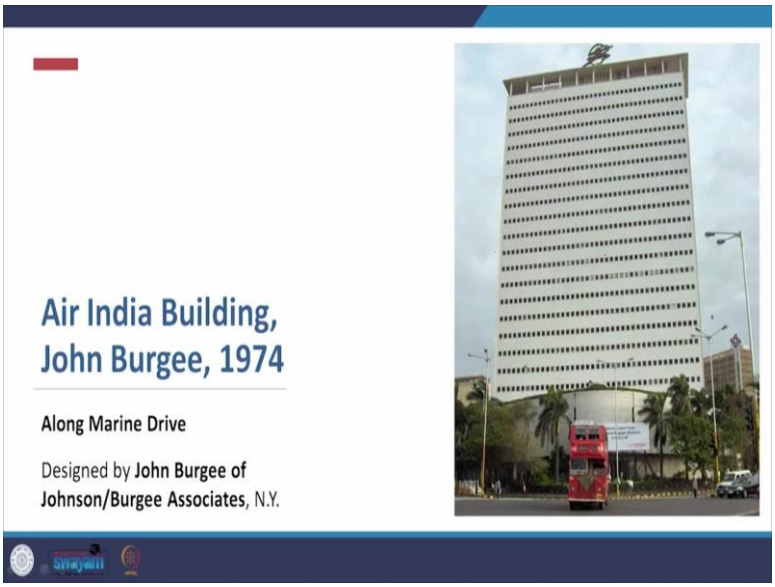

Then the Air India Building that was designed by John Burgee, who was an associate of Philip Johnson, John Burgee associates in New York and it came up in 1974.

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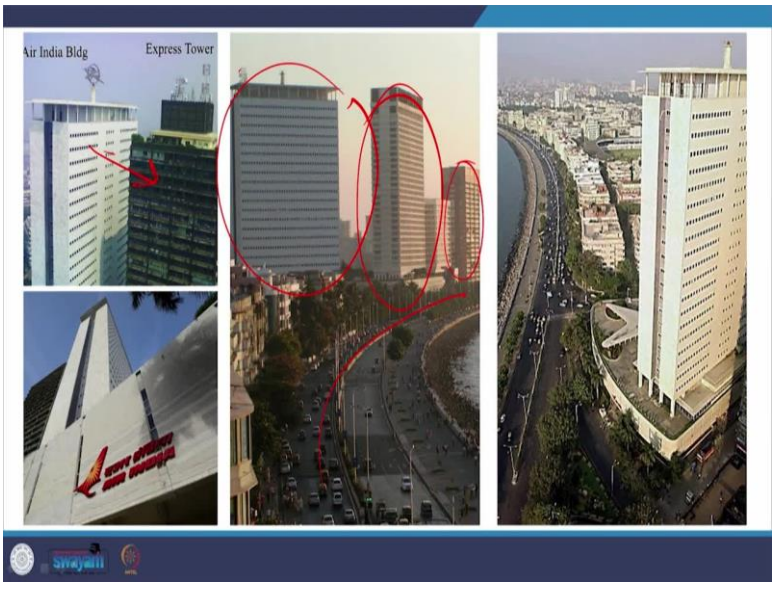

But as you can see, this building also is again modified to suit Indian technology and climatic conditions. Now, these along the marine life are these important buildings, the Air India building, behind the Air India Building is the Indian Express building which is not visible in

the photograph. Then we have the Trident hotel, the part of the Oberoi chain and beyond it is the NCPA apartment block.

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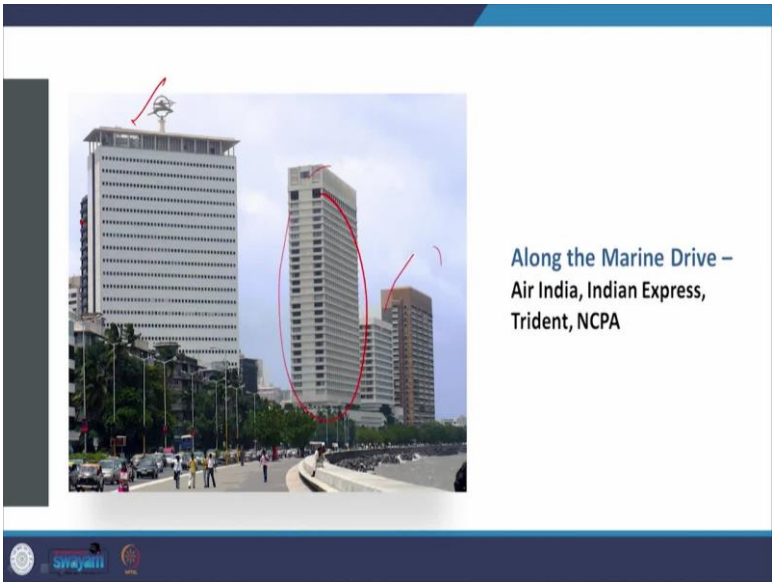

Now so here it is, this is the Air India building the Indian Express behind it, the hotel trident, and then this is the NCPA building.

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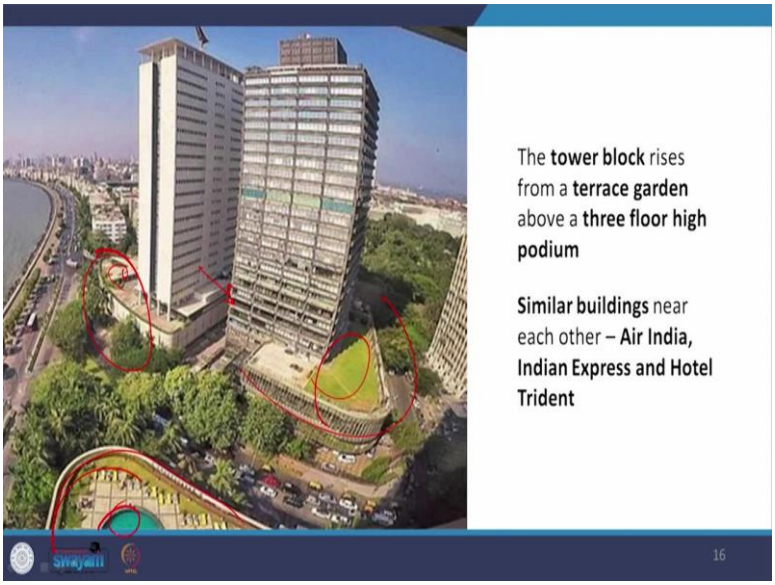

Now these tower blocks when they rise up, they rose from a terrace garden above a three floor high podium. So we find that happening in the Air India building there is a podium and there is a terrace garden here. We find that in the Indian Express building behind it, this is a

podium which is having a roof garden, and the picture has been taken from the Trident Hotel. So you can see the roof garden with the swimming pool of the Trident Hotel.

So all three have the same basic composition. There is a podium over which is a roof garden and then the main slab block rises up from there.

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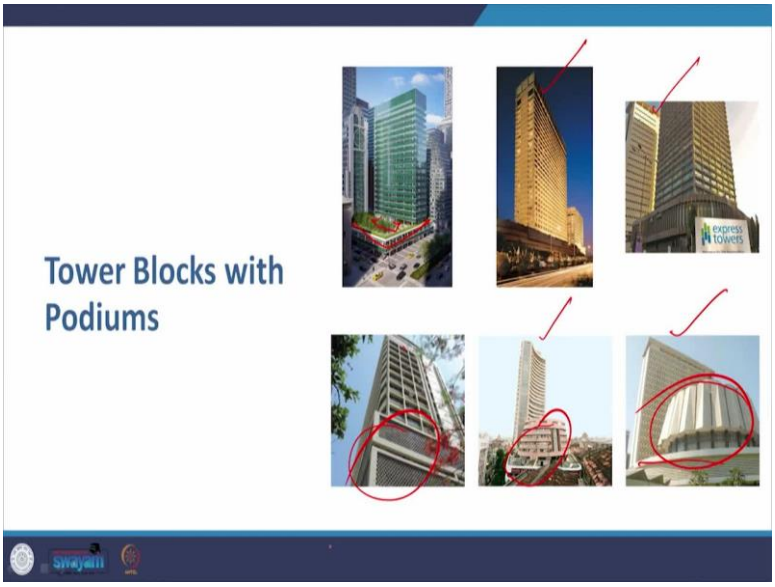

Now these tower blocks with podiums, an idea that we first probably one of the first example was a Lever house designed by Skidmore, Owings and Merrill, just across the road or adjacent to the Seagram building. They both came up at approximately, the same time the Lever House and the Seagram Building, Lever house came up earlier. But the essential idea is Miesian because the idea of this glass and steel slab block had already been brought in by Mies into America when he came from Europe and he escaped Germany during the World War.

And he came to America he had started with the Lakeshore drive apartments, and then he explored the idea in greater detail the Seagram Building, Seagram Building, please look up the picture online if you have not, is supposed to be the most beautiful one of the if not the, if not the most beautiful, one of the most beautiful skyscrapers of the 20th century such tremendous proportion.

Now Lever house is adjacent or across the road to that and so what you have here is the podium. Now, this is not a completely unified podium in the lever house, because it has got a courtyard within the podium. And thus the idea is been explored here in the Trident, it is in the Indian Express building, it is in the Security Exchange Board building in Mumbai, this

has this podium, and then I think this is the Vidhan Sabha, which also has this podium and this I believe, is the main legislative assembly part, this building again has a podium. So this tower blocks with podiums became a wrecking idea of tall buildings in Mumbai.

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So, then here we have it this is the lever house. Now, the difference between for example, Indian Express building, and Lever house was this. The Indian Express building, which is designed is only a tall building designed by Joseph Allen Stein. And the Indian Express building in this building, he provided these balconies and these balconies also served as sunshades to protect direct sun and rain falling on the complete glass facade on the inside.

That is the outer glass facade has balconies in front of it to prevent the direct impact of the sun and the rain, while occupants get a tremendous view of the Arabian Sea on one side and the city and the Harbor on the other side. Unlike in the lever house, when it is complete glass on the front there is no need of sunshades or louvres to be provided there. So there is this is the difference that climate has made.

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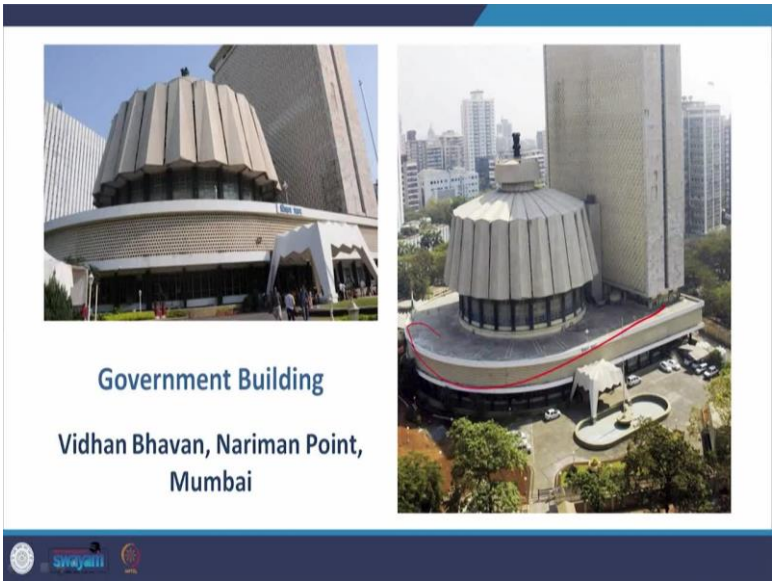

This is what I was talking about the government building the Vidhan Bhavan at Nariman Point, and again, this has this lovely podium.

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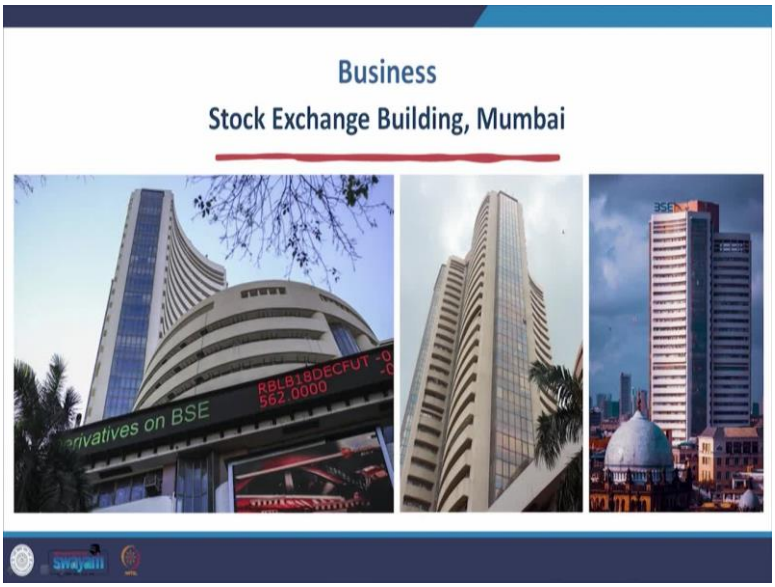

And we have a business building a corporate so to speak, building, the Stock Exchange building in Mumbai.

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And thus, the Emerging Skyline of Mumbai started happening, the financial center of India started evolving with all these tall buildings. One of them that came up in 1970 was the World Trade Center. That is the first I believe, if I am not mistaken, the first skyscraper in India 155.9 meters tall 35 storeys. Now, while this was happening in the 70s, and then in the 80s, in India.

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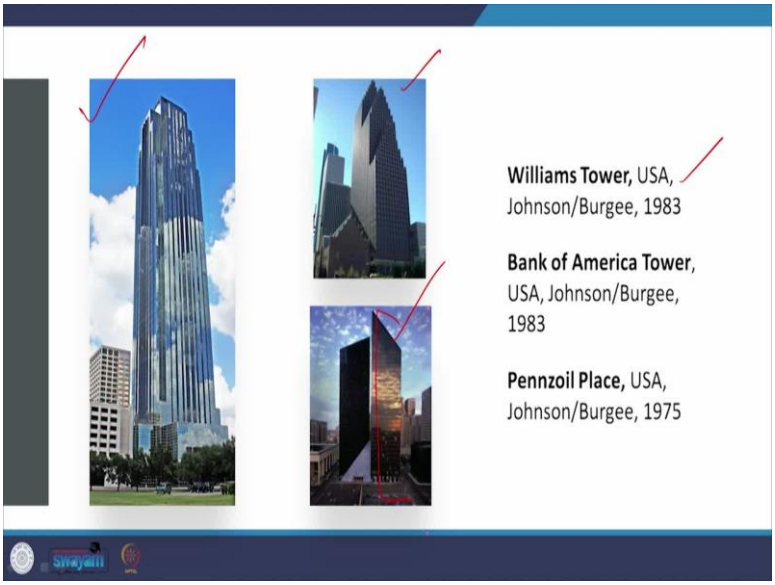

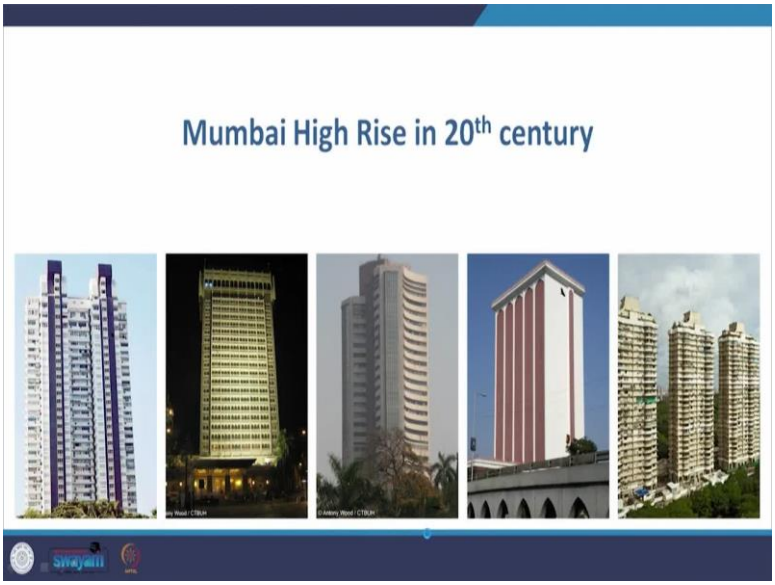

This was what was happening in the West in America, for example, the buildings that were coming up with like sleek this is called, I believe, Charles Jencks called is that slick tech architecture, completely sleek glass on these, these buildings like the Williams tower. And the interesting thing is, this has been designed, all these three buildings have been designed by the same firm that design the Air India building in India, the now designing the sleek glass, the Williams tower in 1983, the Bank of America building in 1983, and then the Pennzoil place in the US in 1975. As you can see, this is like a block of glasses, such as the glass on the facade.

Now, so if this is the kind of high rise of skyscrapers side coming up in the West, this slick tech architecture, this was what was happening in Mumbai in the 20th century, high rise building that came up like for example, this is the addition, this tower is the addition to the old Taj Mahal hotel and then there are these other buildings that came up.

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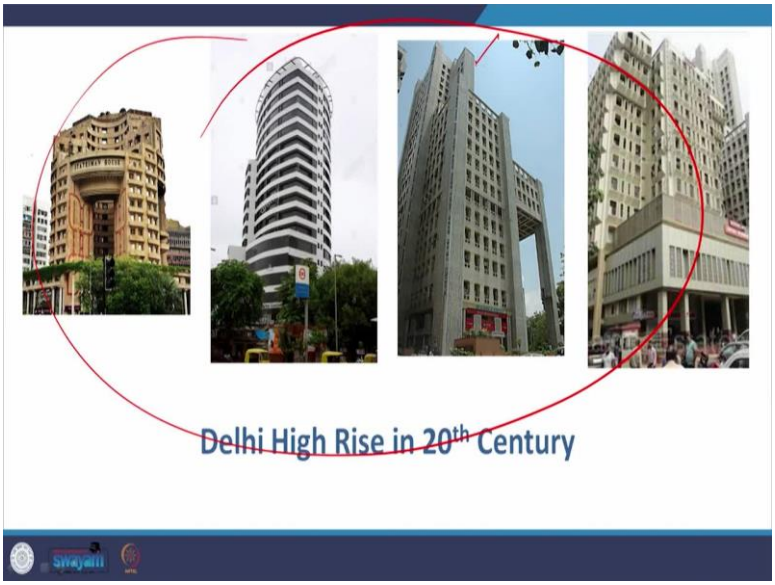

While then you also had its own run with high rise buildings in the 20th century, all of them coming up like this is the building designed by C. P. Kukreja associates near Connaught place and all these buildings in fact, are just of Connaught place in the same belt in Delhi.

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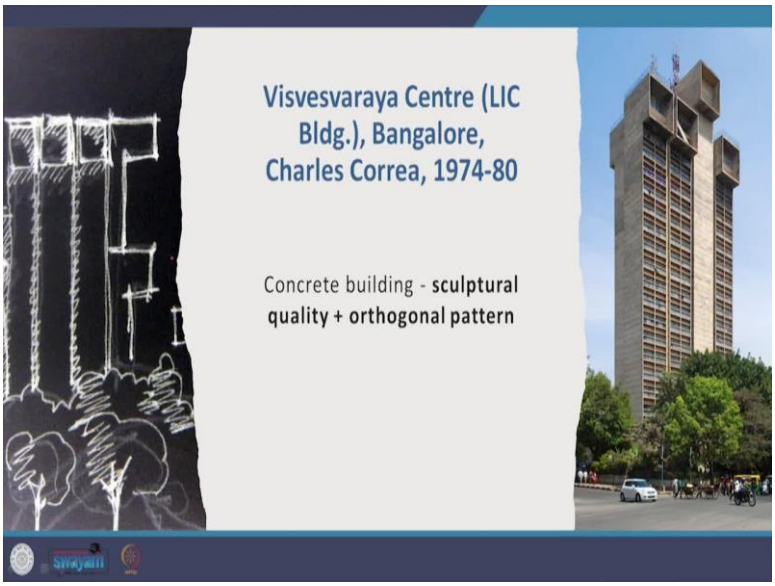

Other ideas were explored not only to Charles Correa design, the Kanchanjunga building which was 84 meters high, which is a residential or an apartment building. He also designed the Visvesvaraya Center, this is an LIC building in Bangalore, and there is an interesting thing Charles Correa designed three buildings for the LIC, one was the LIC Jeevan Bharti building in Delhi, I had studied that with you where the steel louvre has been provided over

that building, facing towards Connaught place and then there is the LIC building in Mauritius, which also has that pergola and freestanding column. We discussed that.

And then this was the Visvesvaraya center LIC. Now those two LIC building Charles Correa they would be different because they had the pergola and the freestanding column. And they were not very tall, they had maybe a 7 or 8 floors and that was it. The LIC Delhi was raised on a podium, the LIC Mauritius had these terrace gardens in them. And but this LIC building in Bangalore was actually a tall building, different from contrasting from the other two.

This is a concrete building. It is a sculptural quality and orthogonal pattern. There is a small interesting history behind it. I have gone as an undergraduate student in third year for a class tour with my batchmates. And we were staying in Bangalore and in the early morning, we were going for breakfast from where we were staying. And as we were walking down the road, we saw this building.

And we remember who the architect was. But one thing that struck me, struck us was this is a this was an amazingly interesting building. Very different from a standard cuboidal glass, RCC in glass block or steel in glass block, having these features at the top and the way the building has been put together.

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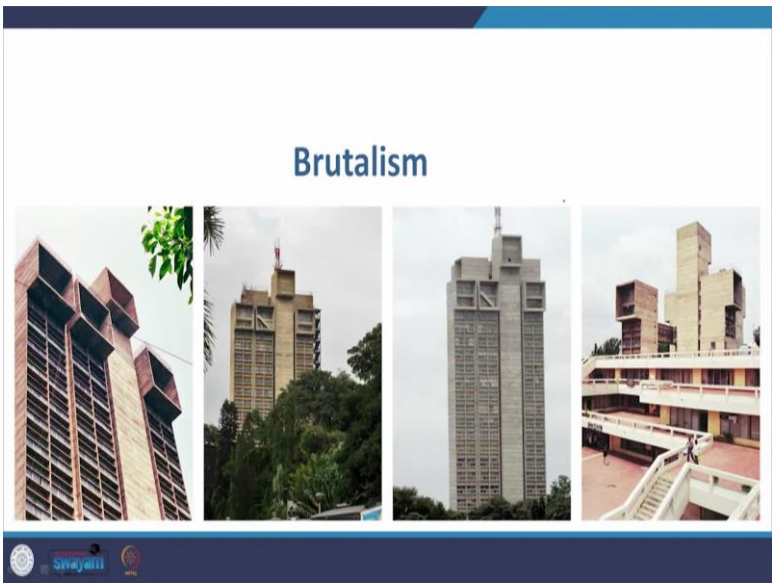

Not only that, it is brutalist. And later on, I came to know, this is a building by Charles Correa, there is one thing that I would like to add here and I do not know whether you found that or not to be true. You will be when you come across good architecture, a building when you cross you are going to a city building is interesting.

Generally, you will find that there is a known man behind that. Because that building has been done lot of care. The interest that it is generating in you is because it has been it has that unique selling point, that unique thing about it in the way the building is the form of the building. So this building was a brutalist building it is in raw concrete. These are the images of that.

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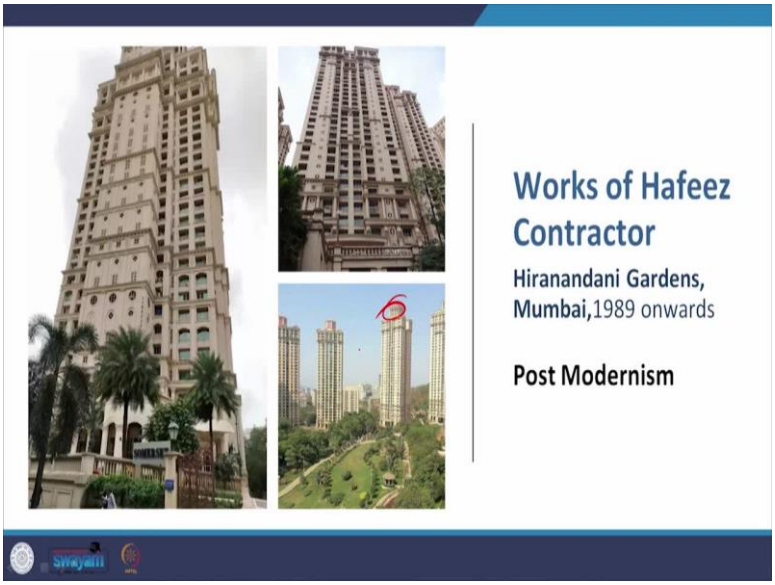

And then we had in the 1980s. The works of Hafeez contractor, which is in a completely different direction, because he followed post modernism now post modernism is completely different from critical regionalism. Critical regionalism borrows his inspiration from traditional vernacular architecture, post modernism, as in this case, he borrowed his is his inspiration was, for example, classical architecture, Greek and Roman architecture, for example, the features in it , the columns in it and the roof that the elements already provided.

Like, for example, you see here, it is like a classical temple mounted on top of the building. Now, of course, there has been a quite a bit of controversy about these ideas. But there is no doubt that these buildings were have been appreciated by the people Hiranandani apartments one of the prominent urban design projects in Mumbai. And these buildings came up in the Hiranandani gardens from 1989 onwards.

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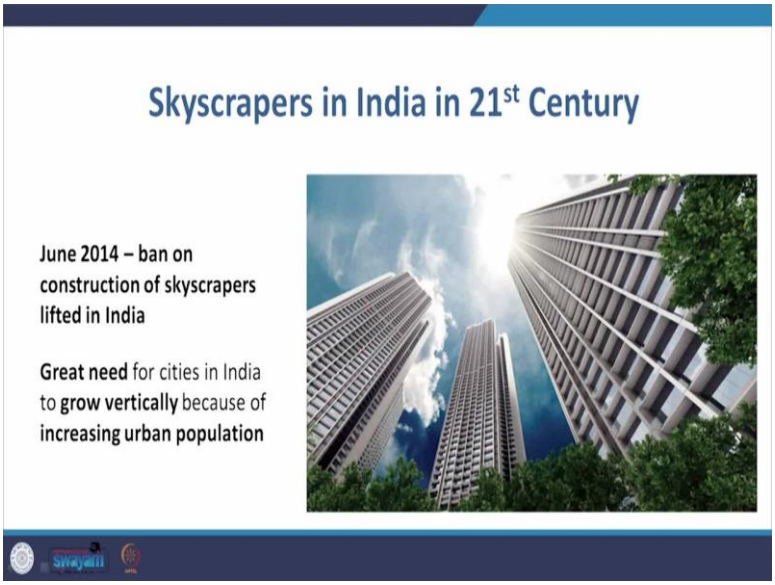

Now, then came the skyscrapers in India in the 21st century, from June 2014, the ban on the construction of skyscrapers that is building greater than equal to 150 meters was lifted in India, this was done because there is a great need for cities in India to grow vertically, because of the increasing urban population and rising economy.

One thing I would like to add, and you can actually see for yourself, every country that rises economically, generally goes towards building skyscrapers. It is a kind of a connection between a strong, upcoming economy and the built form that it creates in its urban environment.

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By 2025, the Mumbai Skyline will be more or less cohesive as number of skyscrapers that are right now in the process of completion would have reached their completion milestones. And these images that you see of being constructed buildings would finally come to an end, and these buildings would shine in the urban scape of Mumbai.

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Now, this image is actually comparison from across the waters of Manhattan, and in this case, Mumbai, so I have tried to kind of draw a comparison of the tall buildings of skyscrapers of Manhattan versus the skyline that is now developing in Mumbai. Of course, the tallest of the buildings is lower. But this it is a similar kind of skyline. It seems to be evolving and both, interestingly happened to be the financial centers of their countries.

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But there is also the tale of two cities. It is a very famous book, as you know, by Charles Dickens, and the tale of two cities is this, the amazing contrast of living on one side. And this is a very, very, very, I cannot even call it interesting because it is so sad, here is a clear line, demarcating the built up area of Mumbai versus the slums on this side, and the clear line, demarcating that.

So also here you see the skyline of the upwardly mobile, urban middle class, upper middle class of Mumbai, versus the shanties and the slum areas of Mumbai. So that is also a sad reality of our metro cities, particularly Mumbai.

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Now the skyscrapers in India in the 21st century in Mumbai, currently, there are 71 between 150 to 450 meters that have been approved, and 65 of them are residential in Kolkata, 4 are functional 7 are being constructed Ahmedabad 13 between 200 to 410 meters, Hyderabad, Bangalore, Delhi are also looking at the building of skyscrapers.

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Now, skyscrapers in the 21st century. Earlier, there was a reluctance to build skyscrapers. Number 1, because there was a ban, number 2 because of poor infrastructure, lack of expertise in construction technologies, and unorganized sectoral development in the construction industry. But there is a great demand of a growing economy with 700 to 900 million square meters of residential commercial space near every year in our country today.

So this now, in the 21st century, no lack of expertise of architects and construction professionals who are capable of building these skyscrapers independently high rise projects, up to 200 to 250 meters. Now, more, along with that, there are many international structural and mechanical engineering and plumbing consultants who have set shop in India and are working from India, assisting these projects.

In super tall buildings that is beyond 300 kilometers. There is a need of international collaboration to gain better understanding. But that will come very soon. So many model of time that Indian architects and builders will be able to capture that. Contractors also need to perfect their understanding of planning the logistics of such tall buildings, the site surveys the safety systems required during construction and also focus on the finished product the finishing quality of the skyscrapers.

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Now, the availability of modern technology, the quick-paced construction, the high finish quality, which is mirroring the western technologies, and there are global standards and quality control that we are seeing in the skyscrapers in India today.

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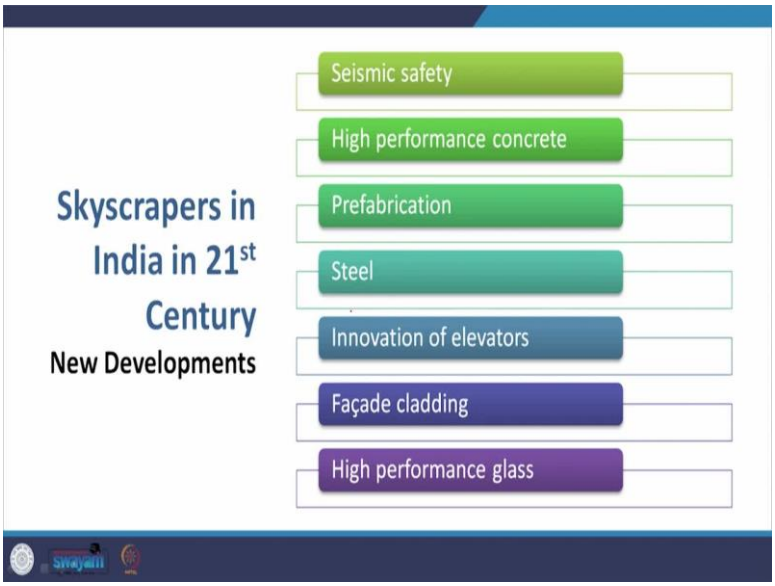

Now, there are a few things that we find which are new developments in tall buildings or skyscrapers, this seismic safety, use of high performance concrete, prefab, the use of steel or I will also say better quality steel, innovation in terms of elevators, facade cladding, and high performance glass again, with respect to thermal comfort, etc.

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So here we have an example of Mondeal Heights in Ahmedabad. I am taking a building of the normal circuit of Mumbai, Delhi, etc. to look at Ahmedabad, which is a business landmark in Sarkhej on the Gandhinagar highway, with 47,600 square meters of area and 70 meters of height. It is an exclusive mix of urban structure with top technical standards. And it is a heaven for India's modern business world.

That it is reflective of Ahmedabad and the buildings plays with these shifting elements. As you can see, it is not just a cuboidal block rising straight up, it is playing with shifting the block and also with the way the angles its angular. It is not a straight line. So it is a grid of open, transparent and close semi transparent and close rectangles that you see on the facade. Whereas these close rectangles, and then are these open rectangles all over the façade.

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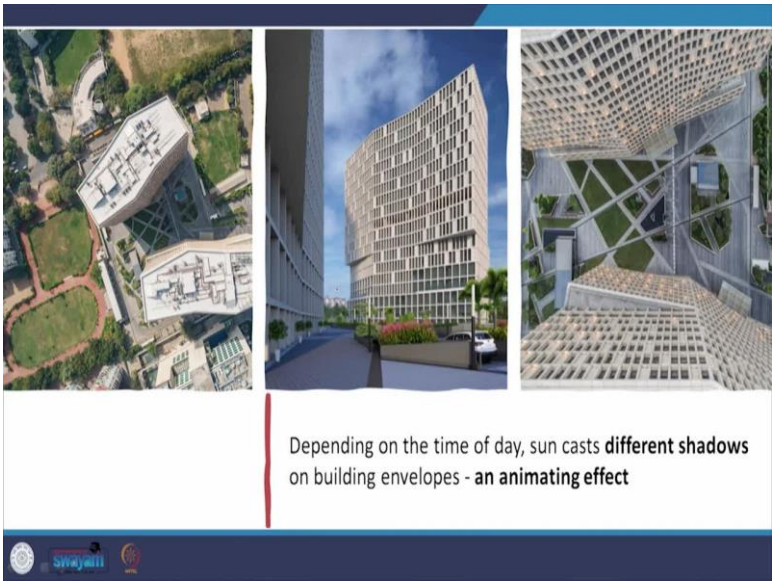

And because of the firm of the building, the sun casts, different animated shadows on the ground. And these are the interior spaces there are these generous office spaces, which is becoming a hallmark of skyscrapers because top class facilities and amenities are provided for conferences, for other facilities within the building. Along with that, there is a casino there is an exclusive clubhouse, a fitness center and wellness areas.

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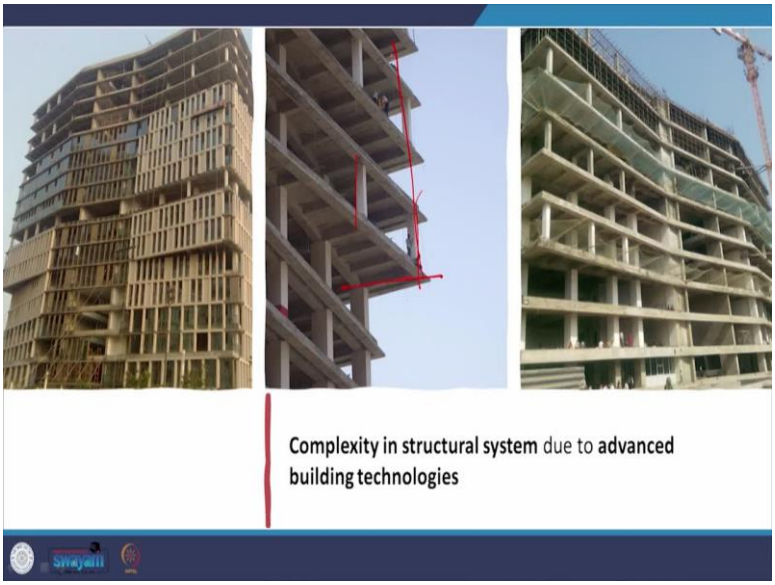

Now, the structural system is complex. That is what I talked about creative and architectural freedom. As you can see, this part of the structural system is very interesting. It is cantilevered out and then the columns are standing on top of that cantilever, and then these floors are going up. So this would have required quite a lot of quite a bit of ingenuity to come up with the form a structural system like that.

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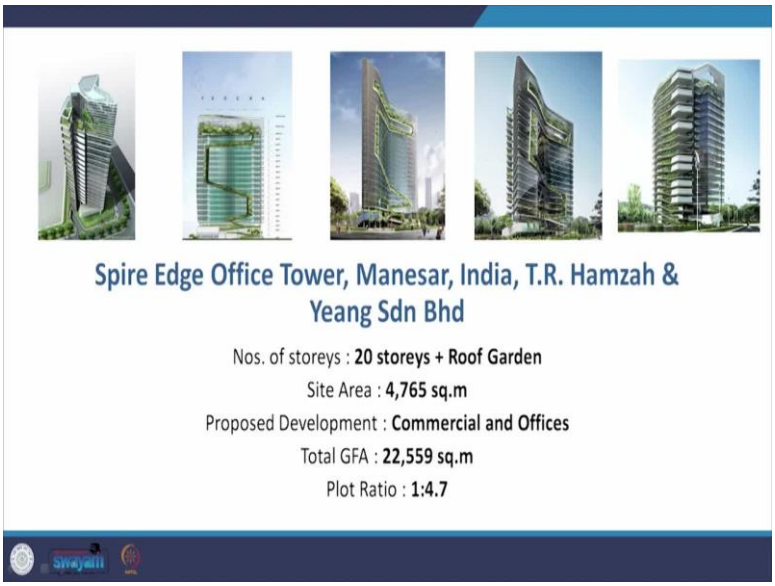

Now, this particular building has never been built. But this gives us an idea of the attempt made in India to make green buildings. This was planned a long time back. More than a decade back I believe, the spire edge office tower in Manesar by T. R. Hamzah and Ken

Yeang associates, Ken Yeang architects and it is supposed to have 20 storeys with the roof garden and but this building never materialized.

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Now, this picture actually shows you what is happening to residential high rises in New York today. There in glass and steel, and the tallest residential building in the world has recently come up in New York I believe, if I am not mistaken, it is this one. I forget the name. You can look it up online.

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The difference is they are also building the skyscraper residential blocks in India but we are making them in glass and RCC not in glass and steel. And we are also having balconies, etc.

We are having different kinds of illustrations to account for the climatic conditions. So I will end here with this presentation. And I will continue from here in the next presentation to talk about other point blocks and some of the futuristic or rather blocks or skyscrapers that are going to come up in the days to come. Thank You.