Modern Indian Architecture
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Lecture 29
Critical Regionalism in Indian Architecture - Part 2

Hello students, we once again come back to study critical regionalism in modern Indian architecture. And today we will be looking at part 2. Before I begin this presentation today, when I start the discussion, I would once again like to thank the people who have been assisting me in this work, because no work is a one man endeavour or a one man show. There is an entire team that works with him, assist him, labours with him to build the work.

So I have my research scholar, Farhan Asim, I have my project associate Shreya Rai. And I have an entire team at E-learning centre, Sarath is one of those people who are helping me in this work. And of course, there is the entire setup of IIT Roorkee, which is also assisting and helping us.

Why do I say this? This is something like what you would encounter when you if you if and when you go into architectural practice, that it is supposed to be a team work, where one person coordinates the team, but there is a whole range of people who are a part of that team when they work together. And therefore, I am truly grateful to all these people who are helping me in this work. I know that many times, I have tested their patience with my, laxness and laziness.

But fortunately, we have been able to reach to the 29th presentation in the series of the 29th module today. There is another thing I would like to say, progress seems to have been slow. Today, we will be looking at the building somewhere in the 1990's 80's and 90's. Now there is a reason why that is. And I will tell you why. Firstly, my endeavour is not to teach you chronologically my endeavour is to teach you how architecture evolved.

And for that, I have to focus on certain iconic buildings or case studies that have made a major impact or that are major milestones in modern Indian architecture. The study of this, any one of these buildings is like a master class in understanding critical response or response to architecture in India with regard to technology, materials, climate, available resources and manpower, and our own traditions, and cultural value systems. All of that incorporated in these case studies or these buildings.

So what do we learn from these, we learn concepts and principles from these buildings, there will be innumerable number of buildings today, in the world of social media, with the boom

in digital technology, there are probably 100's of 1000's of buildings that are available on the click of a button even many, many buildings in India.

And that is very good, because there are extremely interesting architectural works that are taking that are coming up in smaller towns and cities in India that would never have seen the light of day in the print media. Because accessing them reaching them would have been so difficult.

But today, because it is so easy that anybody passing by that particular project, any student of architecture, anybody interested in buildings can take pictures and just simply post them on Facebook or Instagram or any other such medium. And in a matter of maybe minutes or hours, that building has gone to so many wide audience and over time, it is easily accessible to so many of us. Easily, putting up digital write up and blogs concerning buildings by interested students or interested writers is much easier.

And disseminating that information is also much easier. That is why there is such a boom but what gets left behind is the fundamental understanding of what goes behind designing a building that will truly stand the test of time. That is why these buildings not only are a labour of love that I am showing you through these representations, but they are also buildings from which you can learn how to design.

Also you can learn how to assess modern architecture, based on the principles taught in these buildings. Of course they are not perfect, no building can ever be perfect. But there are a lot of issues that are dealt with in these buildings that you can then study other buildings through them. Therefore, I encourage you to study this in the classroom with me, and then go back and look at 21st century Indian buildings. By younger architects and younger architectural firms, which were working all over India, in smaller, even tire two and tire three cities and coming up with in very, very interesting and beautiful projects.

The other thing is this, whenever, particularly in architecture. In architecture, a time gap is needed to assess a building or study a building in its totality. It has to run over a certain period of time, people have to have used it , experienced the architecture, others who are interested, would should have come with a scholarly or an academic interest in studied the building, and then we start writing about it.

So even in the digital period, there is always a lag of maybe several years before, a rarely scholarly study is done on any particular building. That is why, if I were to pick up an

immediate building of 2020 and talk about it, I would have very limited information to discuss regarding that building. I would have to rely on some very limited amount of scholarly information.

Whereas some of these buildings that I am talking about are known internationally, they have been studied very deeply and analysed with regard to many, many factors. Like I said, they are not perfect, there are flaws in it. And maybe this is my deficiency that I am not discussing the flaws of these buildings, as much as I should have pointed out some of them. I do try to wherever I can get to it.

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And the other thing of course is , this auditing part, this gap is needed in order to truly understand and appreciate a building. So, let us again come to the definition of what is critical regionalism the right balance between the rational approach of modernism club together with alocally rooted architectural tradition of a particular region. This could be any country it could be Finland, Japan, Brazil, anywhere in South America, anywhere, any part of the world, in our case, our country.

So, it is a variant of modern architecture. It is not traditional architecture, its modern architecture in a traditional idiom, it has got greater respect towards the climate, topography, local materials and sociological complexities of a particular place. Like for example, the National Institute of Immunology by Raj Rawal 1981, or again, the French Embassy Staff Quarters by him in 1967.

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So six things we talk about, we look at history, climate, local materials, ecology, culture and technology or technological sustainability. Six factors that come together in critical regionalism.

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We had last time seen the use of traditional materials and methods in the work of U. C. Jane in Jodhpur University. We have also seen for example, the way he has designed the Brise soleil for example, in Jodhpur University and the Balotra City Hall, and how that is akin to the modern brise soleil of Corbusier, but different because it responds to the climate of Rajasthan, it is used it is built using local materials.

He rejected the glass and steel approach as most critical regional architects have done. Designs are also deeply rooted in the local culture and modern structural solutions are under a creative design. Again, refer back to the example of Jodhpur University. The four lecture theatres have this corridor in between them covered with a pergola and the pergola the width of the corridor is defined by the weight of the available or the length of the available stone beam.

So, the stone beams that make up the pergola their length defines the width of the corridor and that is, but the organization of the lecture theatres in a step formation is typically a modern way of putting together a lecture theatre.

Now, there is also a focus on both outdoor spaces and terraces, because particularly in composite climate, hot and dry climate and tropical conditions, these spaces are very valuable. So, we come to the dictum proposed by Charles Correa, a form follows function was a dictum that was the backbone of modernism. Then Charles Correa gave a dictum for Indian architecture or modern Indian architecture form follows climate.

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That is form in India plays a climate plays a very important role in the kind of forms we evolve. Now, this may not be fully understandable by your generation, because you come across a whole lot of buildings that have nothing to do with the external climate, they are hermetically sealed glass block buildings or completely, actively controlled buildings with no link to the climate. And therefore these buildings do not have the principle of form follows climate, they are predominantly confined to maybe a functional, quality is more important, et cetera. We will come to that point later.

Let us see why this kind of climate responsive architecture developed in India. Our constraint turned out to be a blessing. The problem was that there was a lack of technology, or unaffordability with regard to centrally conditioned buildings in India. As a result of that, the architects were constrained to design in accordance with the climatic conditions. And the advantage of that was that there was a focus on the built form, the built form itself had to be climatically responsive.

So if I am making in hot and dry in Rajasthan, or I am making in hot and humid in Mumbai, or I am making in composite in Delhi or making in cold condition in Kashmir, I have to keep the climate in mind.

So, therefore, no building based on this would be, it would be very region specific. It would be a modern building, built for a modern use and a modern generation, but it will respond to the local climate, that in itself makes it a critical regional building. If I were to remove every other factor involved in critical regionalism, I would remove culture, I would remove every other constraint this one constraint would be enough to make it a critical regional building because it is responding to a regional context because of the climate.

So the advantage was the focus was on the built form, it had to be an innovative design solution and the indoor thermal comfort had to be achieved by the design of the building itself, not by some active control system, that we are tending to use today.

So, the tried and tested lessons of traditional architecture also came in handy. Why? Because each region, the people of that region, over centuries have used those ideas in developing their architecture. They did not have the technology of the modern times, conditioning or heating or cooling or any other technology that we use today to condition our buildings, did not have that, they did not have incandescent bulbs even. So, lighting had to be taken from day lighting.

The lifestyle also was controlled like that, they used to work during the day they used to sleep when it became night because it become completely dark, there is no light. So, they sleep early, and they wake up with the dawn as soon as it is light. So, that they could make maximum benefit of the day. So, even the lifestyle was governed by the outdoor climate, by the sunrise and the sunset.

Today, that is a very simple thing you can understand , your life is not controlled by that, your life is controlled by active systems, you have conditioned buildings, you have lighting,

so you can work through the night and sleep through the day. It does not make a difference to you today. Buildings have behaved in a similar manner.

Today our buildings have negated climate and therefore we need not to focus too much on the traditional design form of a region. We can have like I had shown you in the last presentation. Globally the cities all over the world look alike so much so that if I were to remove the names on that particular slide we are shown in different cities would be very difficult for you to identify which city is which.

So, the use of these tried and tested principles that have evolved over centuries in a region were then adopted by these architects in modern architecture. Whether it was the Kala Academy in Goa by Charles Correa, or the ICGEB building in New Delhi by Raj Rawal or the NIFL in by Archohm in 2014, in Uttar Pradesh, or Sangath by Doshi in 1980 in Ahmedabad.

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So advantage through traditional architecture turned out to be that iconic building forms and aesthetic gave rise to a truly modern Indian architecture. And this was an application of cultural and regional contexts along with climate, it was evident in the spaces in the materials.

So again, you see for example, the YMCA housing by the design group in 1963, The FTI building by Anant Raje in 1983 , British Council Correa in 1992 in Delhi and one of the very interesting buildings not by an architect but by an artist Satish Gujral the Belgian embassy in 1985.

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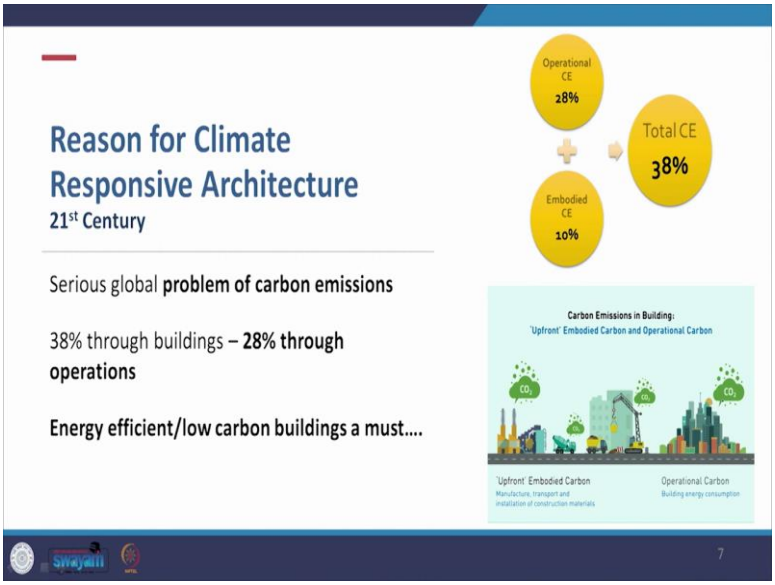

Reason for climate responsive architecture in 21st century. There are serious now, why am I stating this? I am telling you why we need to go back to this. There has been a period when we have gone to active control buildings, when we have started making buildings that are glass and steel buildings that are glass and RCC buildings completely enclosed, having nothing to do with the climate outside.

So, whether the building was in Mumbai, Bangalore, Delhi or any other place, it was identical. And whether it was in these cities or cities in Europe or the Middle East or in America, they are identical. Now, coming back to the problem in the 21st century, the whole cycle is coming around. Why? Because you have got a serious global problem of carbon emissions, 38 percent of carbon emissions are through buildings 28 percent through operating the building.

Therefore, we need to have energy efficient low carbon buildings, because we have committed ourselves, our prime minister is committed that India will become carbon neutral by 2070. Therefore, buildings have to really pull up the socks and our architects have to pull up their socks and make the buildings low carbon. The only way to do that is to make them energy efficient. That is one of the biggest ways in which we can the most significant way in which we can do that.

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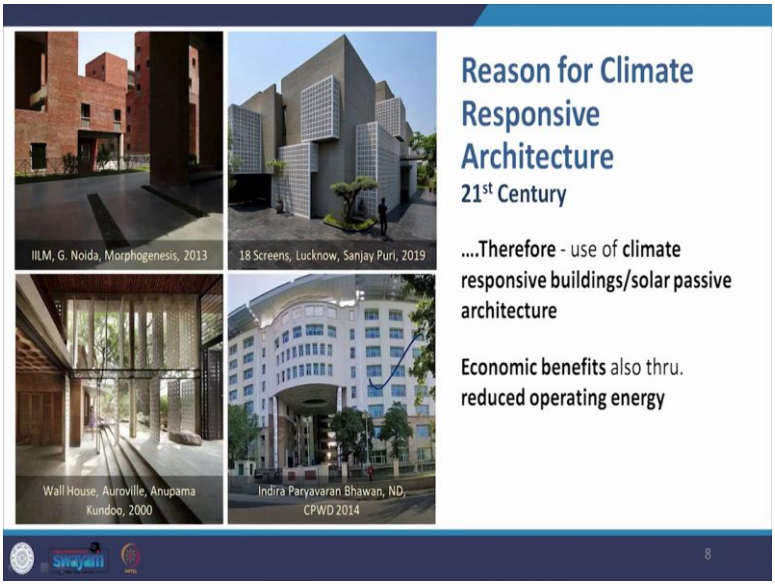

Now, therefore, the use of climate responsive architecture, solar passive architecture becomes vitally important. We see that appearing in these 21st century buildings. We see that in the IILM building by morphogenesis 2013 in Noida, we see that in Sanjay Puri house 18 Screens in Lucknow 2019. We see that in the wall house in Auroville by Anupama Kundoo in 2000 and we see that in the Indira Paryavaran Bhawan by CPWD in 2014.

So, there is a whole coming back to an architecture which is modern but that is also governed by the climate or is climatically responsive. There are also economic benefits by reducing operating energy obviously, but that is for another time.

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Now, when we design energy efficient or green buildings today, these are the aspects we focus on three different types. Number one, the highly engineered the hermetically sealed like a normal actively controlled building, but they are designed in a manner to achieve high energy efficiency within active control. That means the building may not be directly dependent on the outdoor climate, but the building is designed in a manner that it is highly energy efficient with the very system that it is using.

So, there is no impact of external climate, but the engineering solution is highly efficient. For example, the Cisco building in Bangalore. Second, use of climate responsive solar passive techniques, totally dependent on that not on technology as done by Antonin Raymond in the first modernist building he built or Corbusier or Doshi or Correa or this house by Shirish Beri in Kolhapur.

Third, hybrid mode, advanced as well as climatically responsive, as done in the IGBC building in Hyderabad by Karan Grover, the first platinum rated green building, I believe in the world and definitely in India. And here he has used both. He has used passive techniques, but he also used active techniques, used active methods like PV panels he has used active methods by using highly energy efficient systems within the building to make it a green building or a bio climatically sound climatically responsive building .

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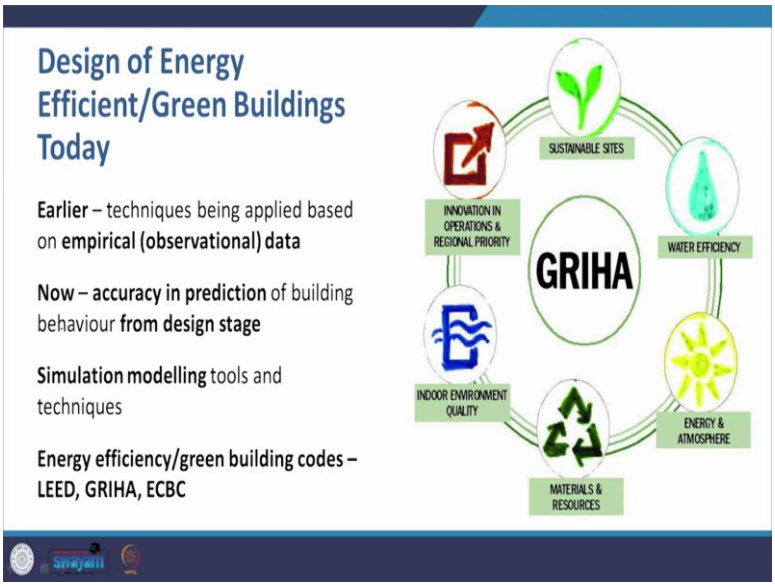

Now, earlier the techniques being applied were based on observational data. It was based on the data of a traditional architecture of a region. It was empirical data, but now there is accuracy in our prediction of building behaviour from the design stage, because we have got the simulation modelling or digital tools and techniques to predict that behaviour.

And that is why today if for example, morphogenesis designs the jalis of Pearl Academy, which we will study as a case study. They design that with proper solar analysis. It is not some kind of a random hit and trial based on some traditional model, but it is a traditional model adapted to a modern building with a proper sound energy analysis. The building, once erected will behave in a certain manner that has already been mathematically predicted. Therefore, we have also got energy efficiency green building code like, LEED, GRIHA, ECBC energy conservation building code etcetera to design these buildings.

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Let us, come to the case studies of critical regionalism. Just some examples of critical regional buildings. Of course, this is not the ones we will be studying but like the Young Women's Christian Association building in Dwarka by morphogenesis 2017, IIM Bangalore by Doshi 1983, Cidade De Goa by Charles Correa 82 and the parliament library by Raj Rewal 1981 to 2003.

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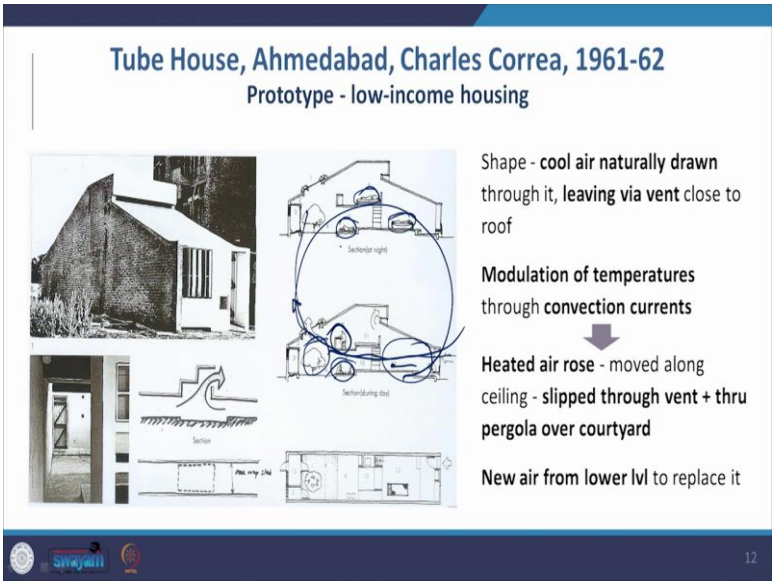

Let us come to the tube house in Ahmedabad by Charles Correa in 1961 to 62. It is a prototype low income housing and it is shape is , designed in such a manner to bring cool air naturally drawn into the building and leaving via vent which is close to the roof, creating a natural convection current and thus modulating the temperature within the building.

So whence the air flows in and the hot air rises, moves out through the pergola which is at the back in the courtyard of the tube house and therefore, this kind of a current is created. The hot air rises up and moves out and cold air moves in again into the building and into the living spaces.

And you see here there are levels within the overall volume, there is this level here and then you have a few steps and there is this arrangement provided at a higher level. And this serves the section in the daytime where the person is for example studying, people are sitting and working underneath it in a verandah and there is a courtyard at the back and this is the living room.

Now at night, this entire space arrangement changes this becomes a sleeping platform, sleeping platform, sleeping area. So, Correa designs a low cost project by providing multiple use of spaces at the daytime and in the night time. Now, this new air from lower level is replaced by fresh air coming in as the hot air rises, I have told you the current being created.

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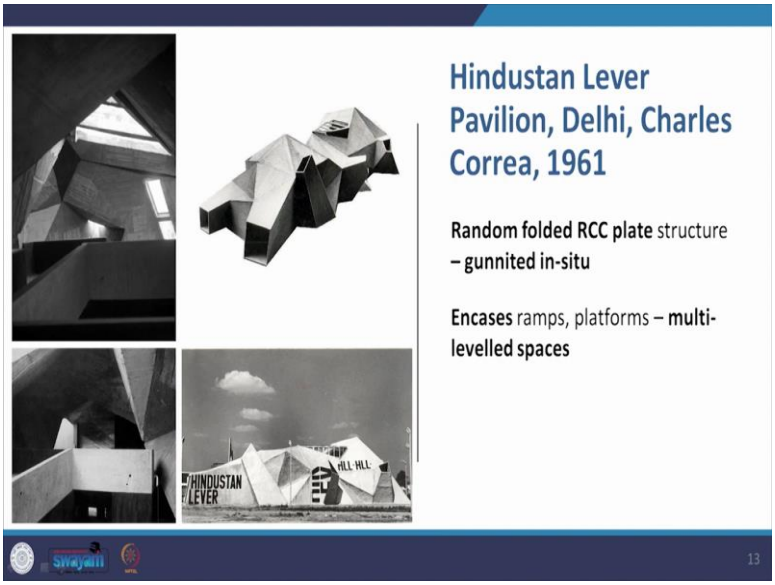

And now, he took the same idea into another project the Hindustan Lever project Hindustan Lever pavilion in 1961. It was a random folded RCC plate designed structure in gunnited in-situ concrete that means concrete cast on site through kind of a gun mechanism, it is like a gun shoots the concrete. So it is a brutalist building in folded RCC plate structure. Now within it is encased all these ramps and platforms and multi-levelled spaces, that was very simple in cube house gets very complex in the Hindustan Lever pavilion.

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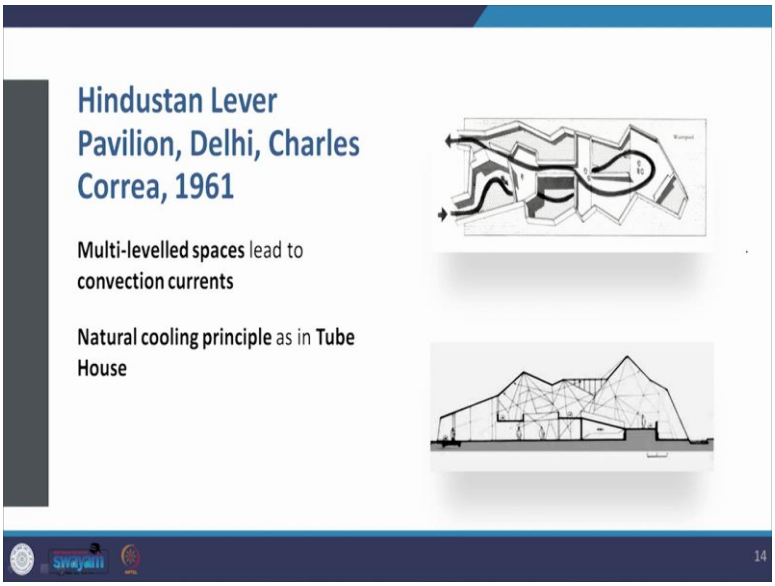

Now here again, not only is the convection current created, but also it is the multilevel spaces that lead to the generation of the convection current. One of the things that we keep in mind when we want to produce convection currents is to have enough height in the project.

So, that is why if you look at some of the old buildings, the bungalows during the colonial times you find them they have got lot of height, even a buildings made in the Mughal times, there is enough height, because they knew hot air will rise up, it will go up and the cool air will stay below and where you have your living space, you will have cool air.

So, that would help in the generation how, because it is a modern building and levels are important here. Therefore, the levels within this larger envelope are able to create that height as in the tube house, so also in the Hindustan Lever pavilion. Therefore, this natural cooling principle functions here also.

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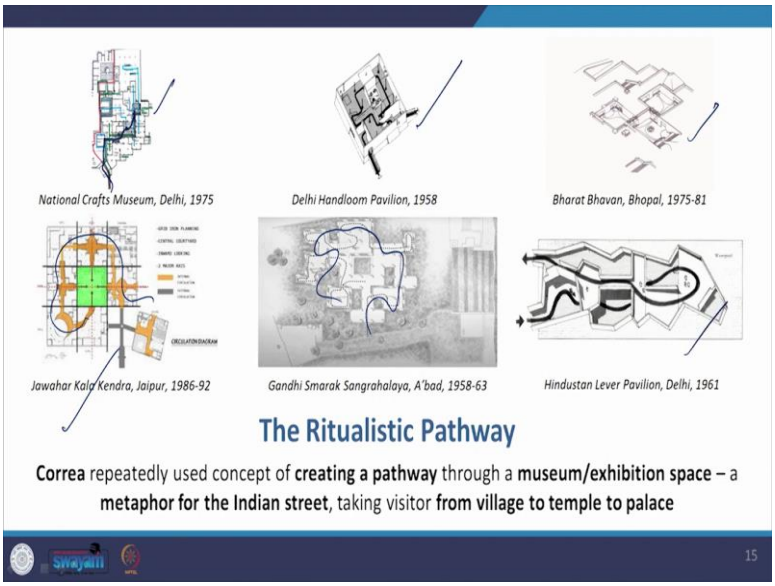

Now, there is also the architectural part of it, like I told, the very reason of this climatic, the very fact that there was a climatic response, led them to innovative design solutions, led them to explore tradition and culture and led them to create spaces that were responding to what an modern Indian building would be.

The ritualistic pathway is one of those things that Charles Correa repeatedly used in his projects. For example, what is it? It is like the concept of creating a pathway through a museum or an exhibition space, which is like an Indian street that is a metaphor for an Indian street, like the way you would move in an Indian village or the way you would move in a temple or the way you would move in a palace.

So, you find that in the National Craft Museum, he creates a ritualistic pathway so that you can follow the exhibits as you move along. He did that earlier in 1958 in the Delhi Handloom pavilion, he does that in multi levels in a subterranean structure in the Bharat Bhavan in

Bhopal in 1975 to 81. He does he creates this kind of a moving a pathway in Jawahar Kala Kendra, he did that in the village form of the Gandhi Smarak Sangrahalaya as you move through it and also in the Hindustan Lever pavilion in 1961.

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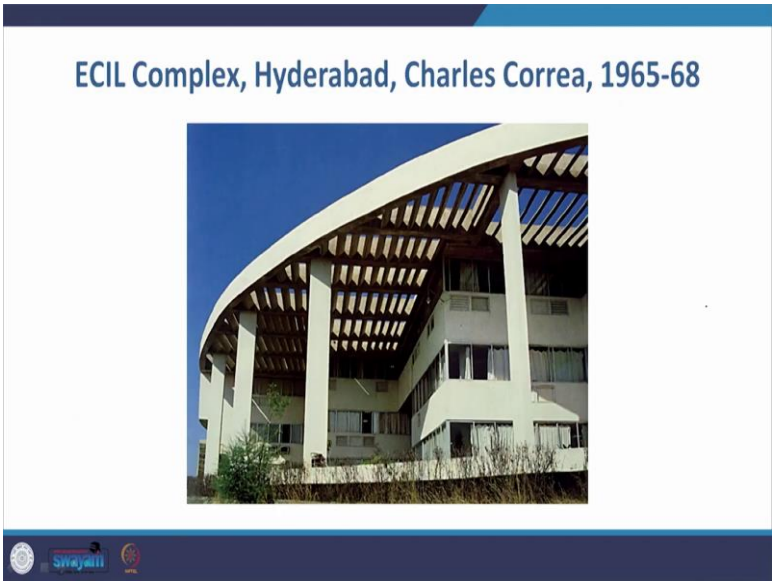

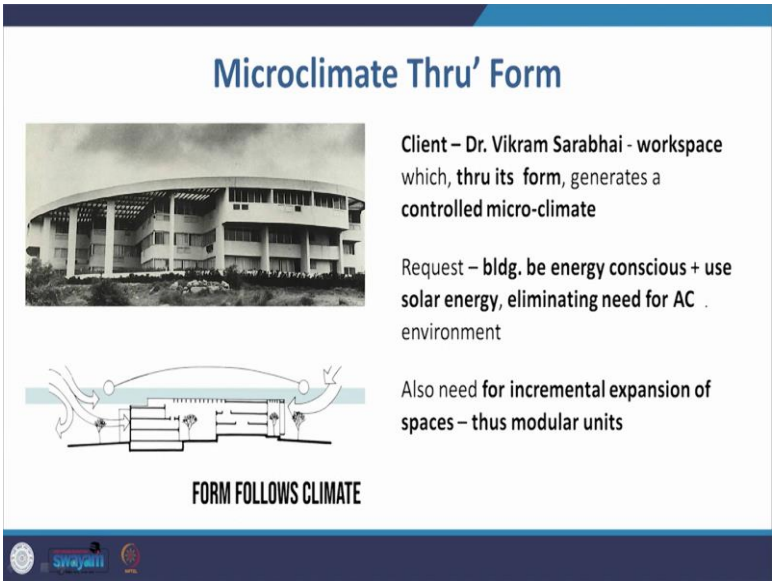

Let us come to the ECIL complex in Hyderabad in 1965 to 68. The client was Doctor Vikram Sarabhai the workspace, which through its form, it generates a controlled microclimate. That is what he wanted, that it should generate its own microclimate. And the request was to make the building energy conscious then in the 60s and use solar energy eliminating need for air conditioning environment. Therefore, there was also a need for incremental expansion through modular units. Now incrementality has always been an important part of the work of Charles Correa.

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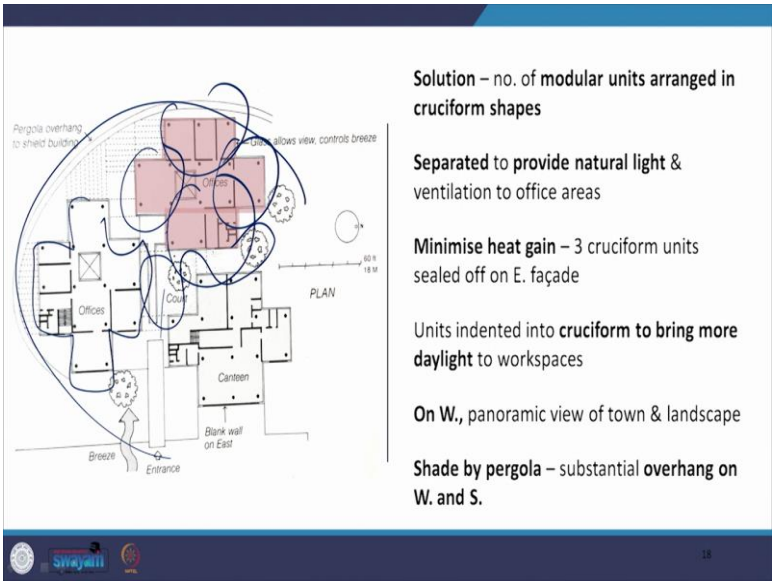

Now, the solution was a number of modular units that were arranged in a cruciform shape. This is a for example, one unit, this is that one unit. It is separated to provide natural light and ventilation to the office area. So, there are separate modular units that are put together around for example, a courtyard, ramps, pathways and there is an overarching pergola on top of the whole thing, and this is done to create that microclimate to minimize the heat gain.

These three cruciform units were sealed off from the east side, the units were indented into cruciform to bring more daylight into the workspaces, so that if it was one building, you would get daylight from four sides and then the interiors would remain void of natural light, but because these are cruciform plans, independent of each other, each area is able to get ample amount of diffused light into the area. On the west is a panoramic view that they have to capture and overall is the shade by the pergola with a substantial overhang towards the west in the south.

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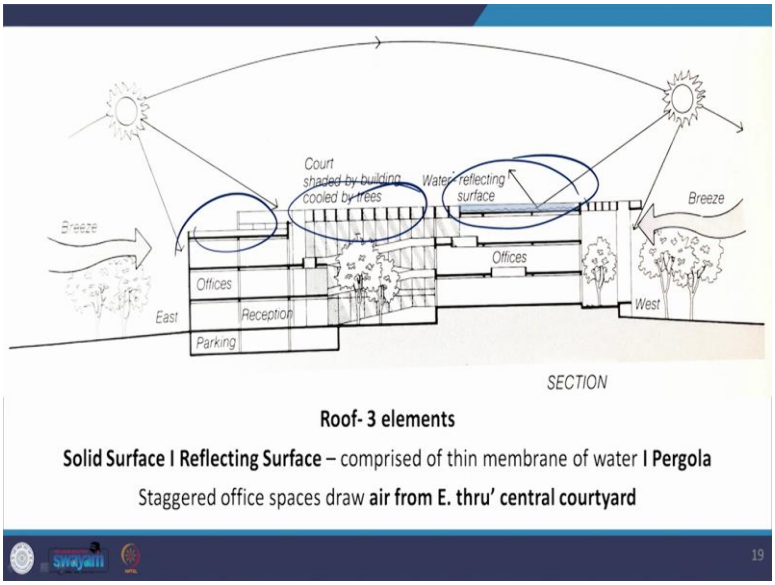

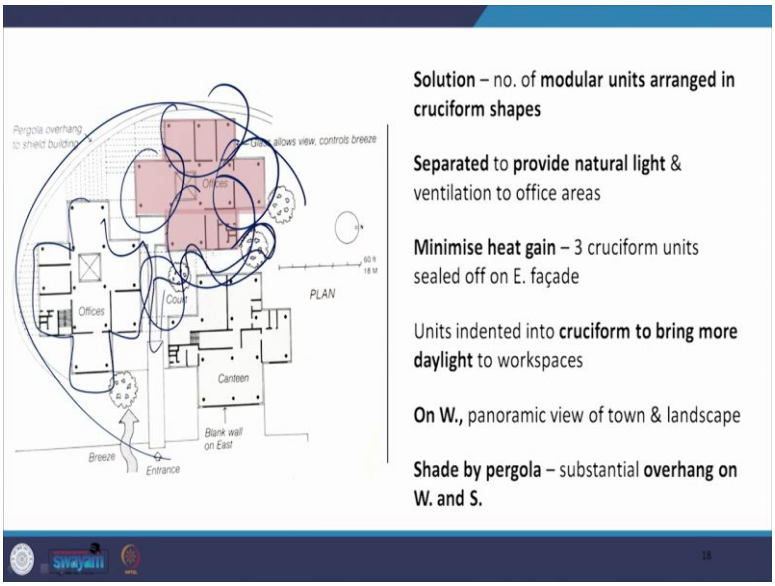

Now, the roof itself has three ways in which he designed the roof element or rather the three elements in it , there is a solid surface. Then there is a pergola surface or the pergola roof and then there is a water reflecting surface that Charles Correa tried out. This was not an experiment that moved on into other buildings. He tried it out in the ECIL building, and there were staggered office spaces that draw air from the east and then the air moves through the central courtyard space into the cruciform modular units.

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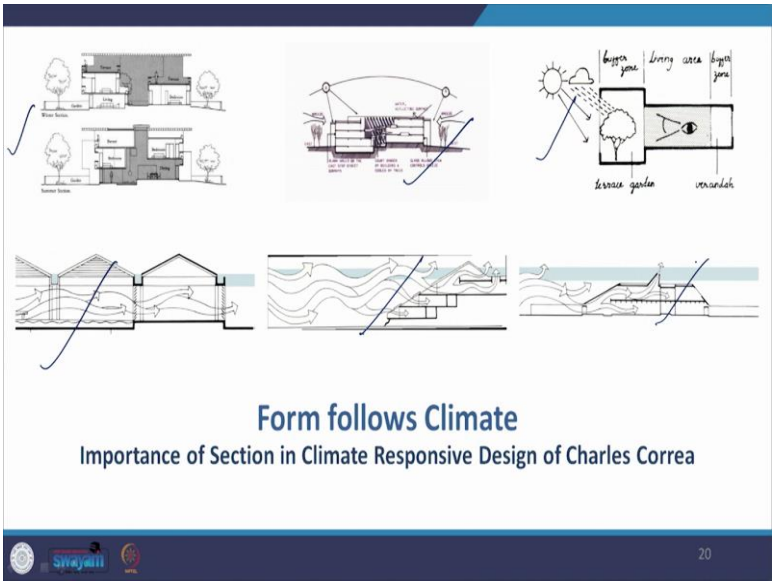

Now form follows climate, the importance of the section in a climate responsive design of Charles Correa. Now, if you remember, in the Shodhan House also I discussed the importance of the section, I discussed the important section then with regard to climate and also discussed the section with regard to the wrong plan of Adolf Loos. Here, you have already seen the section in the Parekh house, where we talked about the winter section and the summer section.

Then we see the ECIL building that I just talked about, we will look at the Kanchenjunga building, where again the section is created to respond to the climate of Mumbai, the Gandhi Smarak Sangrahalaya, the Kovalam Beach Resort and Ramakrishna house, all of them the section defines the climatic response of the building.

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And here is a comparison of how buildings or rather tall buildings have undergone a change and the cycle has, it has come back to the same point. This is Kanchenjunga climatically responsive building , critical regional building designed by Charles Correa in Mumbai, somewhere in the 80s.

Then come this period in the 21st century, we go tall skyscrapers, this building residential apartments in Mumbai , glass and RCC actively controlled mostly, of course, there are balconies and all that also residential block, but intensively what you find is this, again, in this project, which is coming up, I think it is a project that is still coming up, I believe in Gurugram or Noida, please forgive me for that we will be discussing this project. It is morphogenesis work that is coming up and here as you can find there are a series of terraces throughout the building.

This building is very similar if you want to understand this building more clearly. And we will be studying it as case study will try to relate to the Commerce Bank of Norman Foster, but it is also related to the Kanchenjunga building with the kind of terraces Charles Correa created. They are also creating the terraces of course, the materials have changed. There is more use of glass et cetera. But the overall form of this building by morphogenesis is totally defined by the climatic response.

So climatic responsive buildings, are passive design, conditioned buildings like this are active designs. But we are once again coming back to climate responsiveness and I am really grateful for that.

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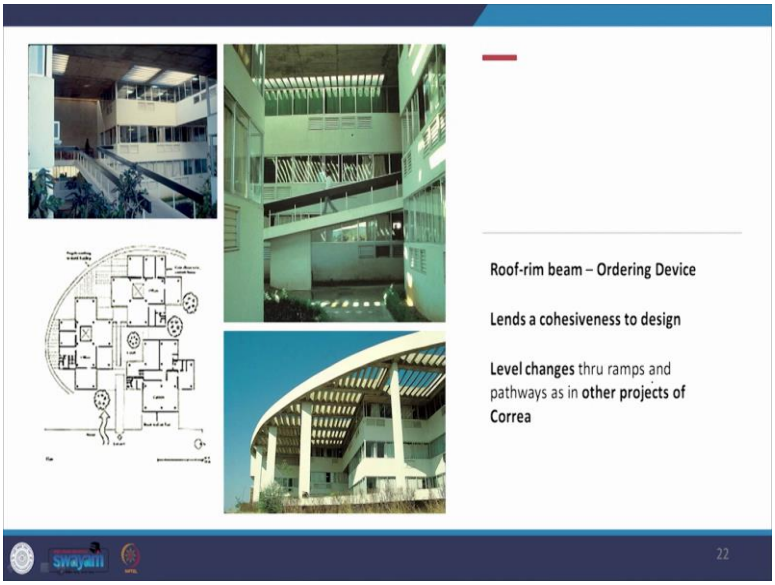

Now the roof beam that was provided, rather the pergola that is provided also acts as an ordering device it lends cohesiveness to the overall design. The level changes take place within it through ramps and pathways as in other projects of Charles Correa and it continues to remain one of the minor works of Charles Correa.

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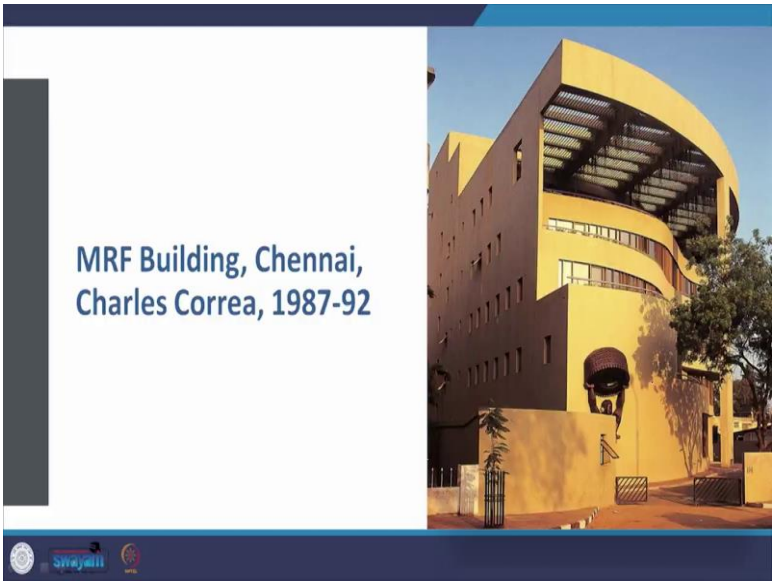

Now he carried on the same idea in the MRF building in Chennai. I will go a little fast now so you can quickly wrap it up already I am taking quite a long time today 1987 to 92.

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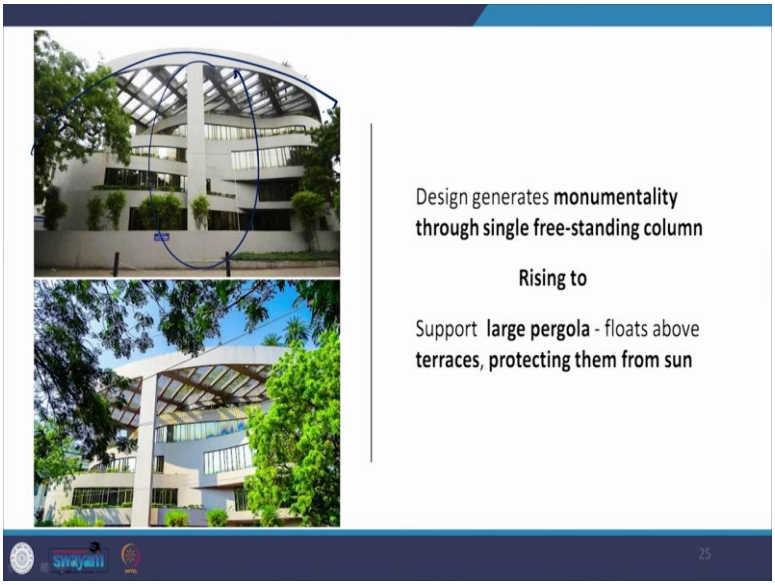

The design generates monumentality through a single freestanding column and there is a pergola on top. So, this pergola also has the roof garden and the overall building is protected by the direct radiation of the sun.

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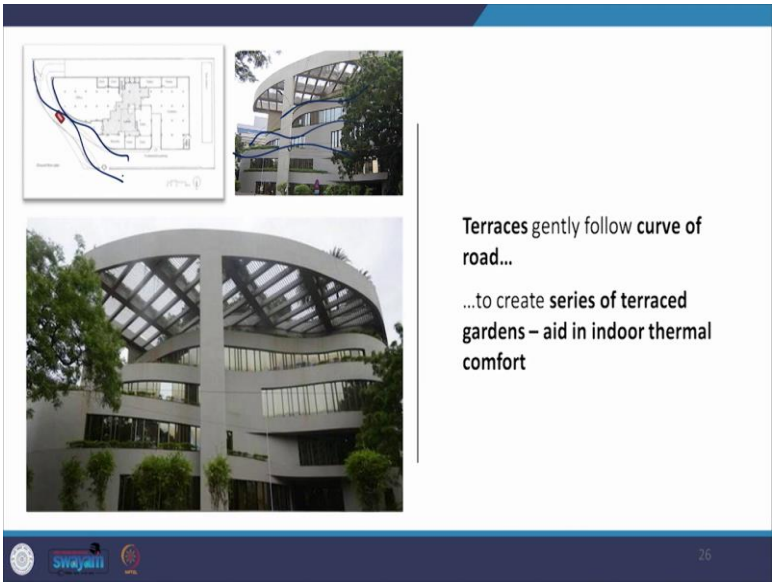

The terraces gently flow there are different terraces at every level, underneath the pergola and they flow along with the curve of the road that you see this curve and , these are how the terraces are created. To create a series of terrace gardens which aid in the indoor thermal comfort.

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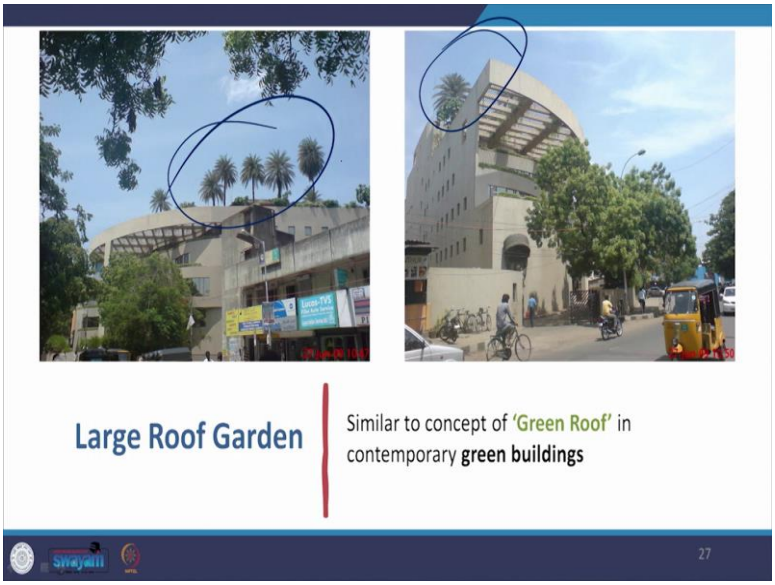

And as you can see, there is a terrace garden at the top also, it is very similar to the contemporary concept of a green roof. Something that we are now defining clearly was coming to them very naturally and organically at the time.

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These are some of the views of MRF building I will take our time just go through them later.

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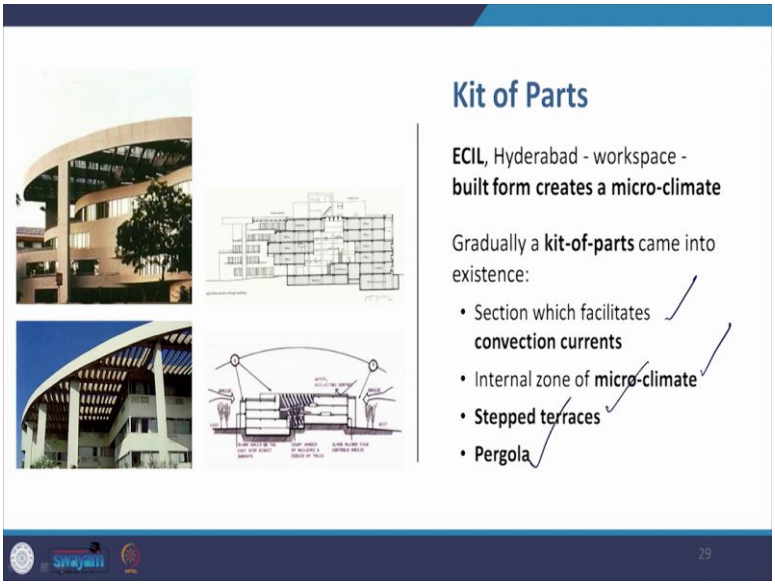

And then because of these projects Charles Correa developed a kit of parts that means a kit putting together and you can come up with a building through that. So, leading on from the ECIL Hyderabad, he was able to develop a built form that creates its own microclimate. And this kit of parts contain a section which will facilitate a convection current and internal zone of microclimate, step terraces and a pergola.

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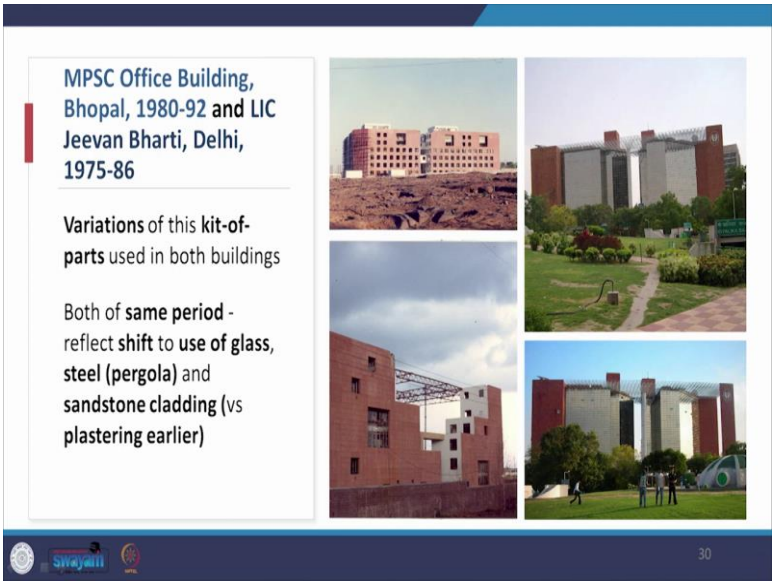

And then we find that same kind of parts being used in the Madhya Pradesh state corporation office building in Bhopal, 1980 to 92 and the LIC Jeevan Bharti building in Delhi from 1975 to 86. Variations of this kit-of-parts in both these buildings, both of them are of the same period in that they reflect a shift in the material configuration in Charles Correa work. We

find the use of glass we find the use of steel in the pergola we find the use of sandstone as a cladding material versus plastering before and of course, he was using the RCC frame earlier also. So we find that in both these buildings.

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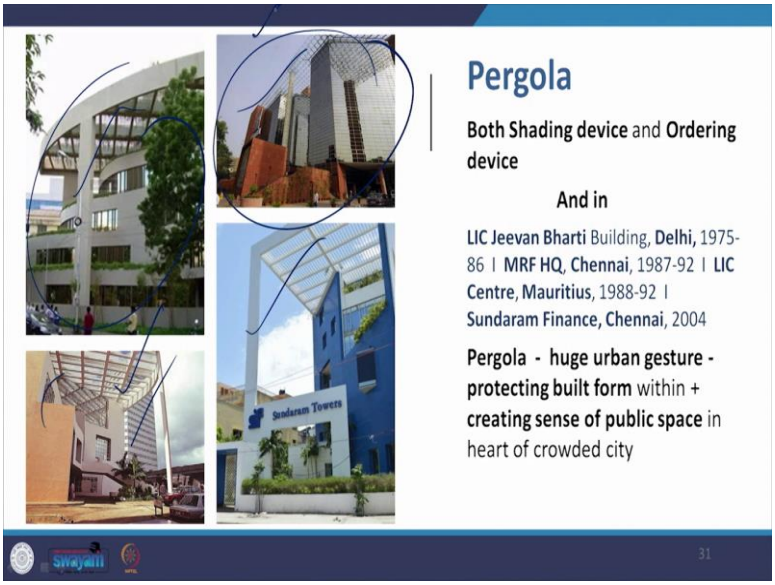

Now the pergola itself is a shading device and an ordering device in the works of Charles Correa, and he repeatedly uses that. In fact, it became a kind of identifying symbol of the projects of Charles Correa, there are many identification, points that help you to know okay, this building probably could be that of Charles Correa, but one of them is the pergola.

So you find that in the Jeevan Bharti building, the MRF headquarters, the LIC centre that is in Mauritius and the Sundaram finance in Chennai that it was done in 2004. It is a huge urban gesture protecting the built form within and creating a sense of public space in the heart of a crowded city, as in the case of all of them in Connaught place and this is in Jeevan Bharti building in Delhi and in each of them.

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And the pergola is connected is joined with the pilotis, the free standing column and gives it that gravitas that strength in it and you find that in Mauritius, MRF HQ, ECIL building , Sundaram and here again, this is in steel and then you have exposed concrete freestanding column in the LIC building.

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And another buildings also like this building in Goa and other buildings, you find them this is in Jawahar Kala Kendra you again find the pergola with the freestanding column. And of course, there is a pergola in the British Consulate building but not a free standing column.

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So we will end here and we will continue with other case studies in the next presentation. Thank you.