Modern Indian Architecture
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Lecture 25
Impact of Western Architects: Louis I Kahn – Part 4

Hello students, I am coming to you live from the E-Learning Center at IIT Roorkee. When we are at this stage of our presentations, I would like to once again acknowledge the help of my team Shreya and Farhan who are working with me and the support of the E-Learning Center at IIT Roorkee bringing this material to you. Shall we move forward with the impact of Western architects and we are looking at Louis Kahn Part 4.

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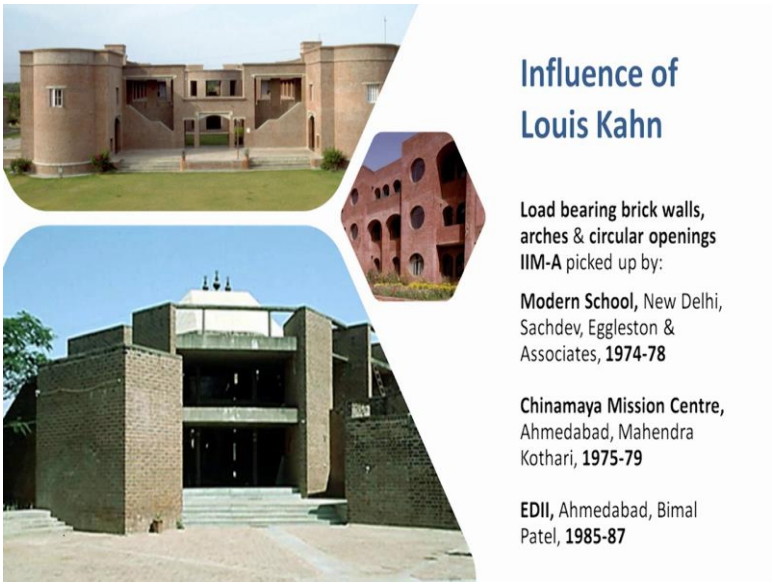

The influence of Louis Kahn, load bearing brick walls, arches and circular openings that he brought in IIM Ahmedabad. These are just the outward elements of the building. His contribution or his influence goes deeper than that into the spaces that he created. The kind of technology that was available to him, he made use of the same technology to create this amazing architecture that goes on to show that even when an architect is constrained by the kind of technology and materials, resources, even economic constraints that are there upon him in a project, he can still produce amazing architecture.

Because in those constraints he has to work to create those amazing spaces. The works of Corbusier and Louis Kahn are a reflection of that. So, here we have examples of buildings like the Modern School in New Delhi by Sachdev, Eggleston Associates 1974 to 78. This is Chinmaya Mission Center in Ahmedabad by Mahendra Kothari 75 to 79. And then we look at

the EDII building in Ahmedabad from 1985 to 87 by Bimal Patel. All these projects in exposed brick and exposed concrete, the kind of elements used here are a reflection of his influence , influence of Louis Kahn.

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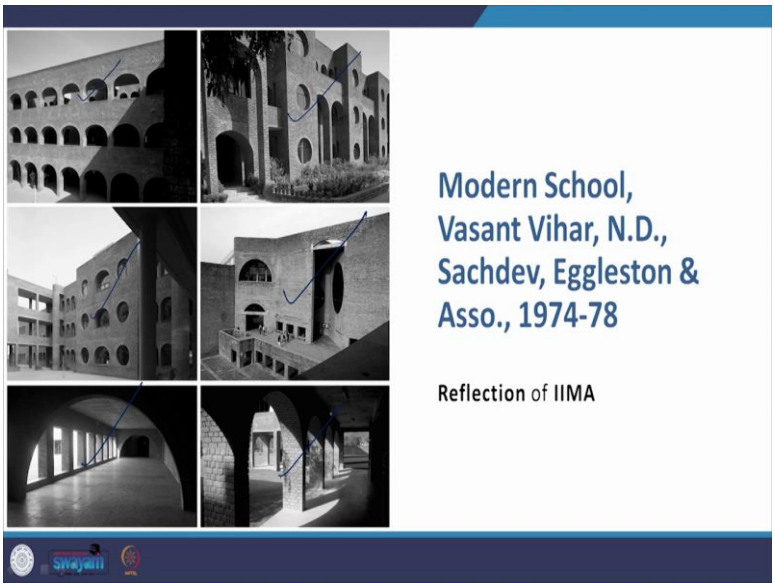

Modern school for example, the spaces the kind of form that has been created with the exposed brick is so close to that of IIM Ahmedabad. So, these are the corridors one above the other, the archwork and the circular cutouts that you see here. And then you find it here in IIM Ahmedabad. This kind of a corridor in IIM Ahmedabad and then you look at spaces here in modern school. So, you find the same kind of identity being reflected here.

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Or this one. This is extremely interesting because this kind of element was created in the National Assembly of Bangladesh. And you find it repeated here in the modern school.

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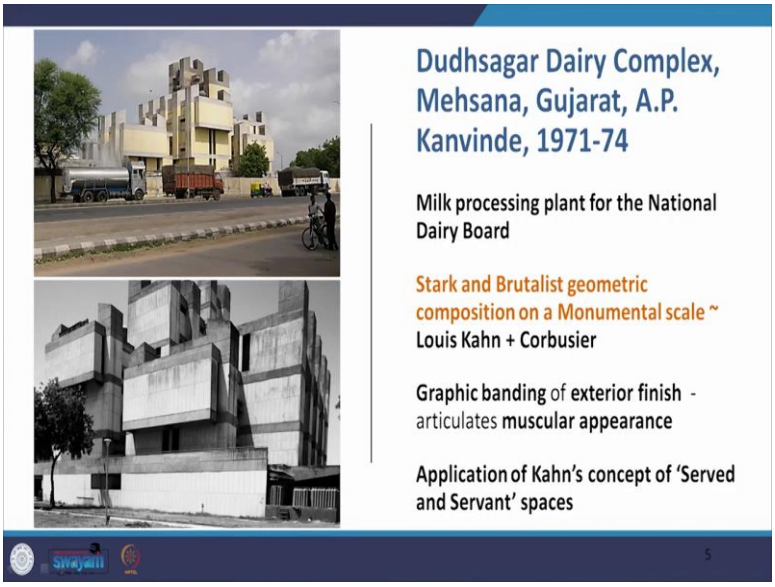

Then we have a project that looks nothing like IIM Ahmedabad. It is not an expose brick. It is a brutalist work. So, is it closer to the work of Corbusier, let us have a look. The Dudhsagar Dairy Complex which is under the ages of the National Dairy Development Board NDDB and this is a milk processing plant for the National Dairy Board, you might have heard of the name of Kurian, who was the person behind what was called as the White Revolution in India.

When milk production India really shot up it was something very, very closely parallel to the Green Revolution. There was a time in India when we had to import food from outside because we did not produce the amount of food that was needed by our population. And we went through some very dire times it was a very difficult period. And it was then that the Indian government of the time began the process of Green and White Revolution.

Today, we have surplus, we are one of the highest food producing grain producing countries in the world and on the largest production of milk happens in India. And this building is a kind of that moment, it gives you that historical takes you back into history to show what amazing things were done at the time. That is a very stark and brutalistic geometrical composition on a monumental scale.

So, when we talk of stark, when we talk of monumental we are reminded of Kahn. It is a geometric composition we are reminded of Kahn. It is brutalist, we are reminded of

Corbusier. Geometric is also a remembrance of Corbusier when we look at the works of the Capitol Complex in Chandigarh. There is a graphic banding of exterior finish, which articulates a very, it is a very muscular building, it is a very robust building. And there is also the application of the concept of servant and served spaces of Louis Kahn.

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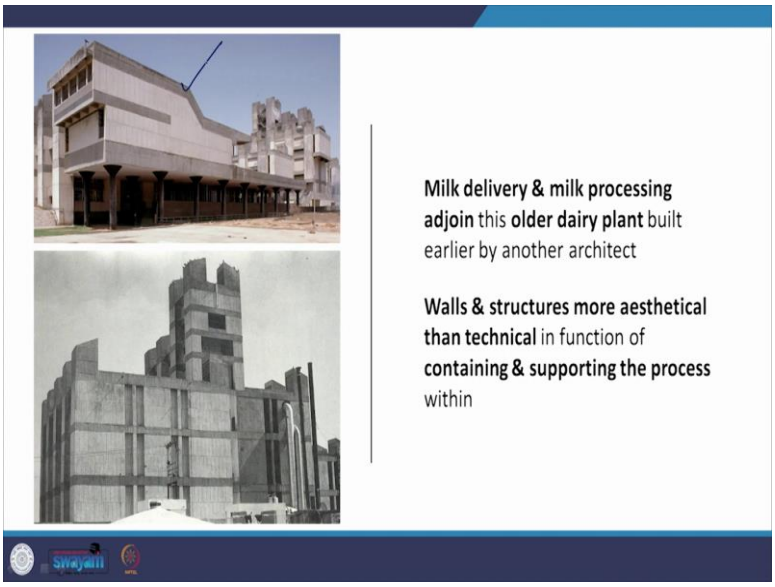

Milk delivery and milk processing adjoin an already existing in old dairy plant, which was built earlier by another architect. And the walls and structures that have been used here are more aesthetic than technical in the function of containing and supporting the process which is taking place within. This project is interesting in that what an architect can do in a very technical brief that has been given to him, milk processing, and he generates a building that is iconic, that is a reflection of the kind of work being done by Indian architecture.

There is also one more thing. This building also shows the change in the direction of architecture of A. P. Kanvinde. As you know, we looked at his works were a direct reflection of Bauhaus when we look at the Atera office building that he had done, when you look at the projects done under the CSIR, the various labs that he made, all of them are connected to Bauhaus. But then we move on 10 years ahead, from the 1950s into the 1960s and 70s.

Here, this is the beginning of the 70s. And we find Kanvinde changing, we find his buildings become more artistic, so to speak, more sculptural, there is a geometric expression in them. There is a very interesting massing about them. So, you find it here, you find it in the NDDB board office building, we look at a photograph of that later in this presentation, you find it there in a science center that you design in Delhi.

So, you find that change coming just as it happened in the case of say for example, Corbusier, he began with the pure international style geometry, which is cuboidal, white, planer, unornamented geometry and fine finished blocks, which was connected to the overall international style functionalism Bauhaus.

And then Corbusier shifted completely to a more sculptural, more robust, monumental, muscular expression in brutalism, you find that Unite d'Habitation and the buildings he did in India. And the same, in a sense parallelly, I feel is happening in the life of A. P. Kanvinde, there is a shift, and it is a major shift.

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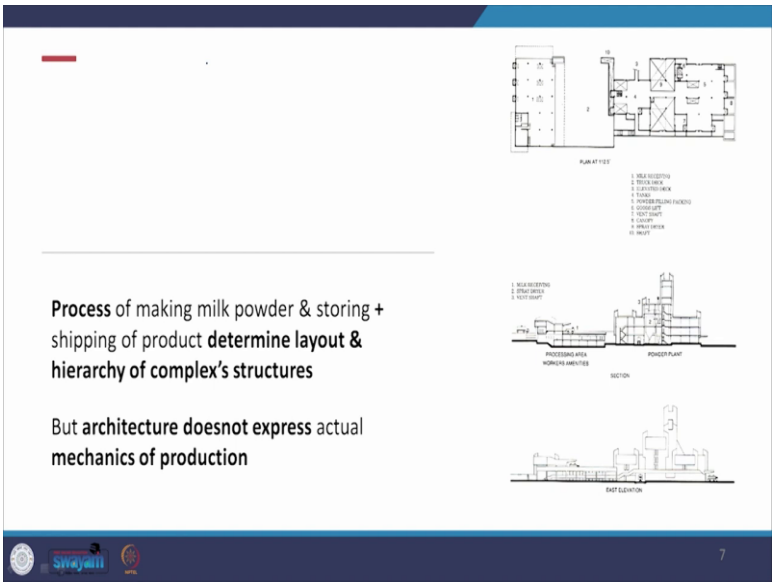

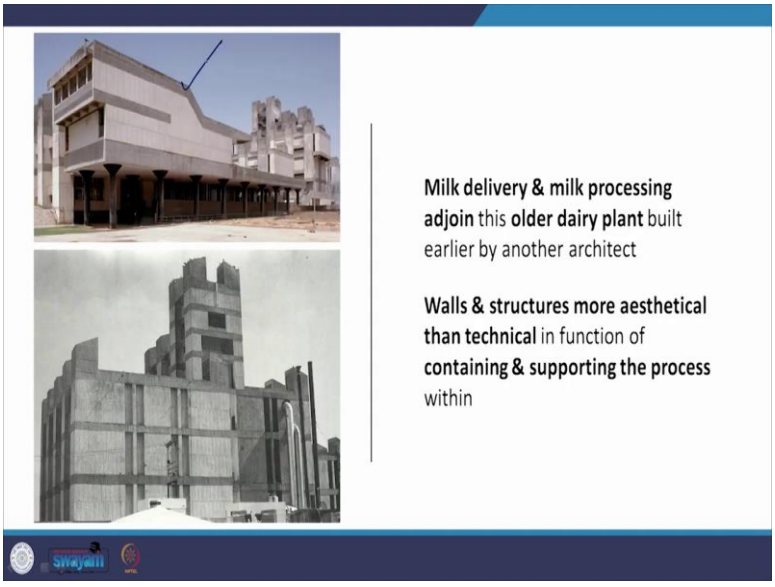

Now, coming back to this building, the process of making milk powder and storing and the shipping of the product determine the layout and hierarchy of the complex structures, but

architecture does not express the actual mechanics of production. Going back to this point, again, the walls and structures are more aesthetic than technical that means the architect has embodied the technical aspect into a very aesthetic, sculptural or geometric form.

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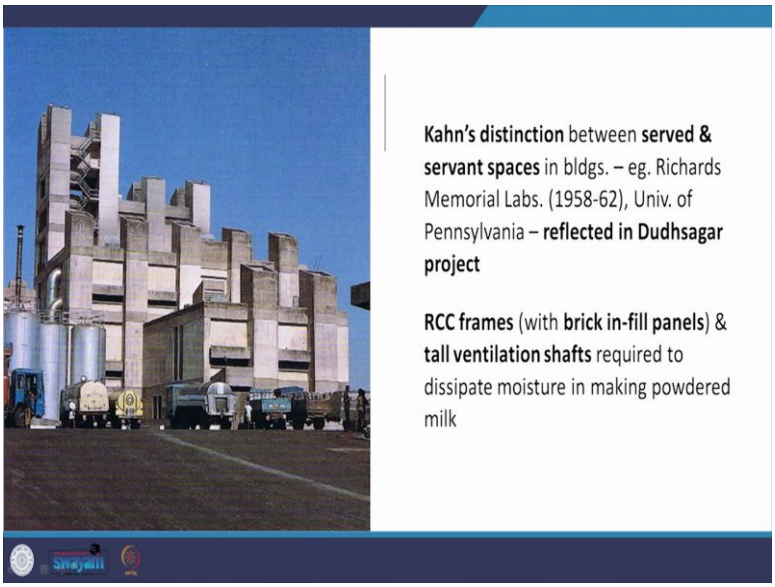

Kahn's distinction between servant and served spaces that we find in the Richards Memorial lab in the University of Pennsylvania is also reflected in Dudhsagar projects. Do make an attempt by taking the plan of the Dudhsagar project and identifying the served and the servant spaces. RCC frames with brick in-fill panels and tall ventilation shafts are required to dissipate the moisture that is used in making the powdered milk and we will come to this point again.

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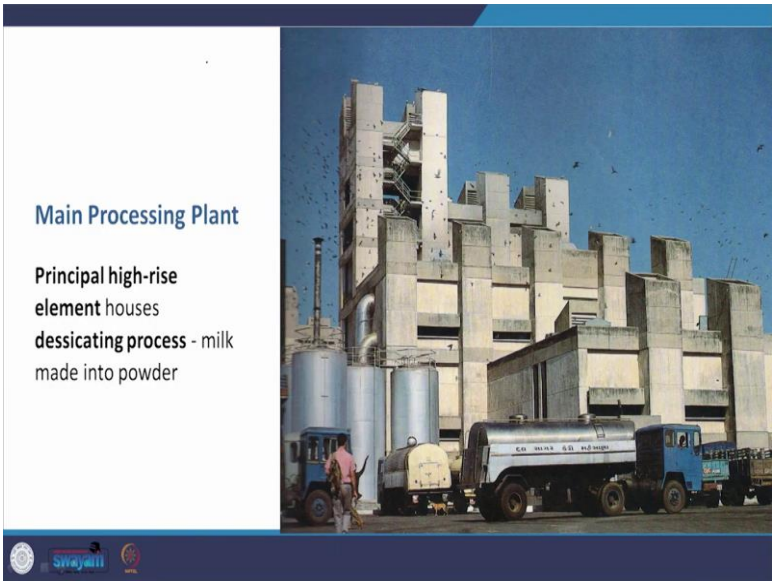

The main processing plant you find these high-rise elements these shafts rising up and contributing to this massing, and this high-rise element houses the desiccating processing and that is produced turning milk into milk powder.

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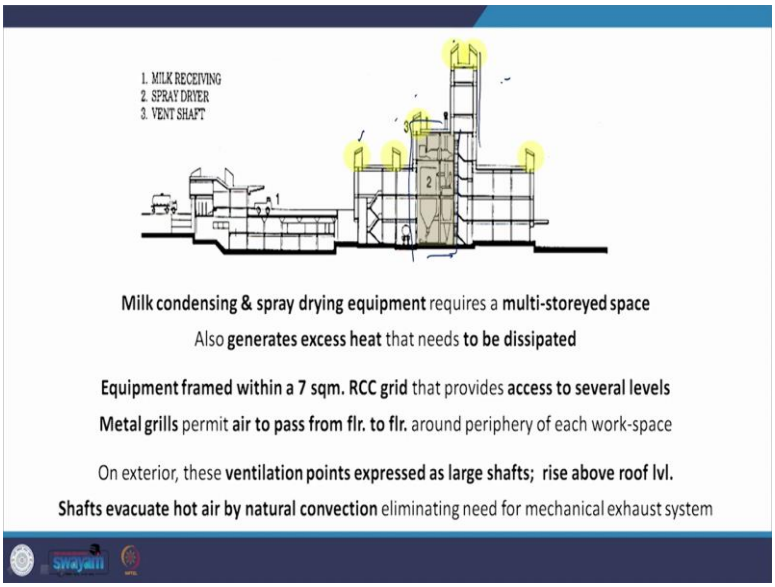

So, here we have it. The milk condensing and spray drying equipment requires a multi-storeyed space which is this. It also generates excess heat that needs to be dissipated. Therefore, the equipment is framed within a 7 square meter RCC grid, that provides access to several floors. Metal grills permit this air to pass from floor to floor around the periphery.

And the exterior, there are these ventilation points that are expressed as these vertical shafts that you see here. Let us go back again. These are the shafts that you see here. And the rise above the roof level standout and the shaft evacuate the hot air by natural convection thus eliminating the need of an mechanical exhaust system, something that we find in the buildings of the period, more approach of towards passive architecture, less dependence on things like mechanical air conditioning systems, etcetera in this case a mechanical exhaust system.

Primarily because of maybe constraint of budget or maybe those facilities were not so readily available or our budgets did not allow that kind of equipment to be used so readily in these buildings, architects were constrained by this, and therefore, they are forced to look at passive solutions. And I believe that resulted in these very interesting buildings, which were sustainable empirically, it was not the word sustainability and green did not exist at the time.

Then when we moved on, economy became much stronger post liberalization buildings. We became a global economy connected with other nations of world that kind of progress led to those buildings for example, in glass and steel or glass and RCC work where you could have complete active control in the building. It was affordable. Many multinationals established themselves in India, they brought in that kind of moolah that was needed to produce such kind of heavily energy dependent buildings.

But the consequence of that is, we are today in an era where there is a tremendous amount of carbon emissions from buildings, I may told you the figural earlier is 39 percent. India stands third in the total carbon emissions globally after US and China. It is a huge number. If the data is correct form, I believe the 1990s to today we have jumped more than 300 percent in carbon emissions.

And that is very clearly linked to liberalization when it happened. The immense jump in carbon emissions can be directly tagged to when we liberalized ourselves, when we really started building a huge amount of buildings, a lot of cities really developed very, very fast because of the growing economy and high GDP. But the consequence of that is what has happened in the carbon emissions. Now, that is not an Indian problem. It is an international problem. And therefore today, we are compelled to design our buildings sustainably make them green reduce carbon emissions, something that was a natural reaction of these architects at the time.

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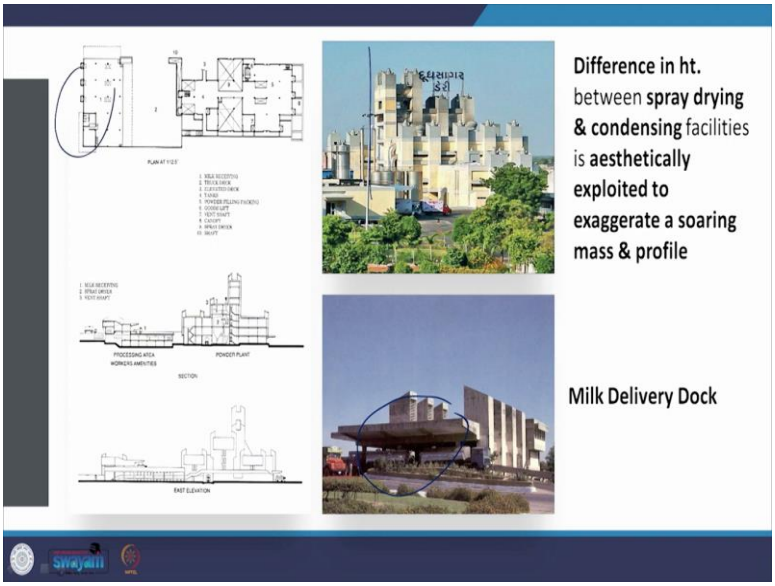

The difference in height between spray drying and condensing facilities has been aesthetically exploited by Kanvinde by providing this huge these shafts just go up and there is a variation in the heights and that creates this interesting form of the building. This is the milk delivery dock that you find here.

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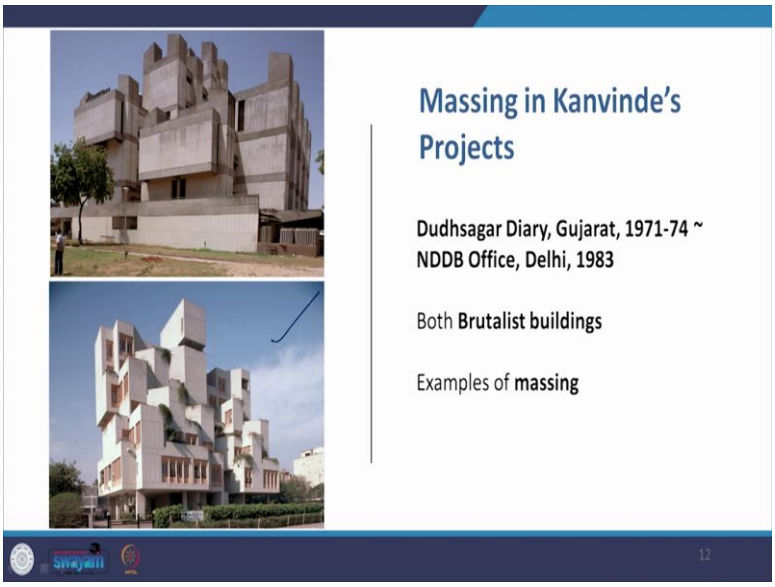

So, the massing in Kanvinde's project, what you find in the Dudhsagar Dairy project in 71 to 74. You find this an interesting massing in NDDB office building in Delhi in 1983. Both are brutalist buildings, and both are examples of massing. In fact, the massing of NDDB office building in Delhi was a very unique office building massing at that time, and really stood out from other office buildings.

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Let us come to the Entrepreneurship Development Institute of India EDII by Bimal Patel in 1987. This was established to augment the country's supply of entrepreneurs through education and training. 1985, a national competition was held to select the architect design EDII, which was won by Bimal Patel. And this project also won the Agha Khan Award for Architecture in 1992.

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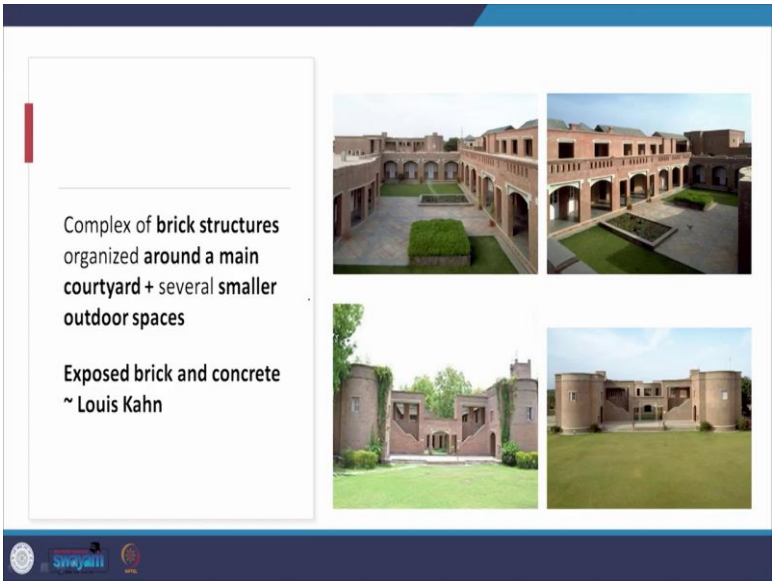

It is a complex of brick structures organized around a main courtyard with several outdoor spaces. It is exposed brick and concrete as you find in Louis Kahn's work. And then there are these other elements of Louis Kahn that you find the arches etcetera, and the stock brick facade that is there. Silent unornamented the same kind of identities IIM Ahmedabad though not so monumental.

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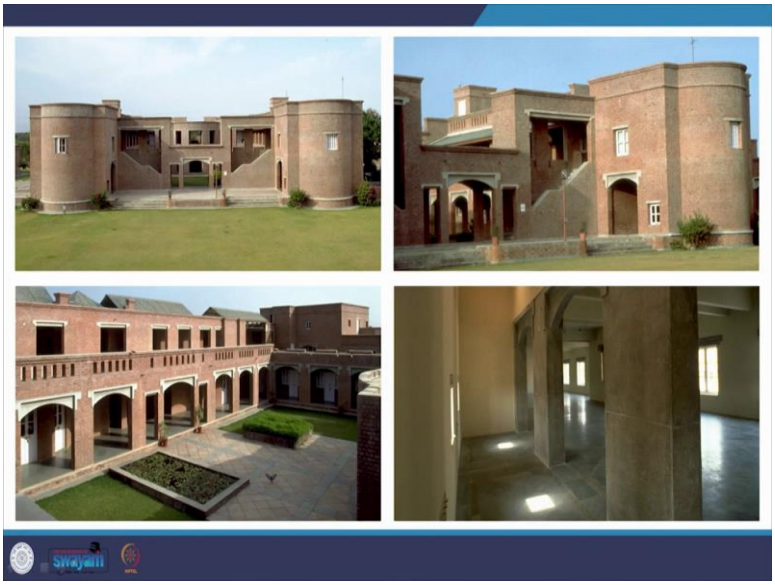

These are some of the pictures of the project.

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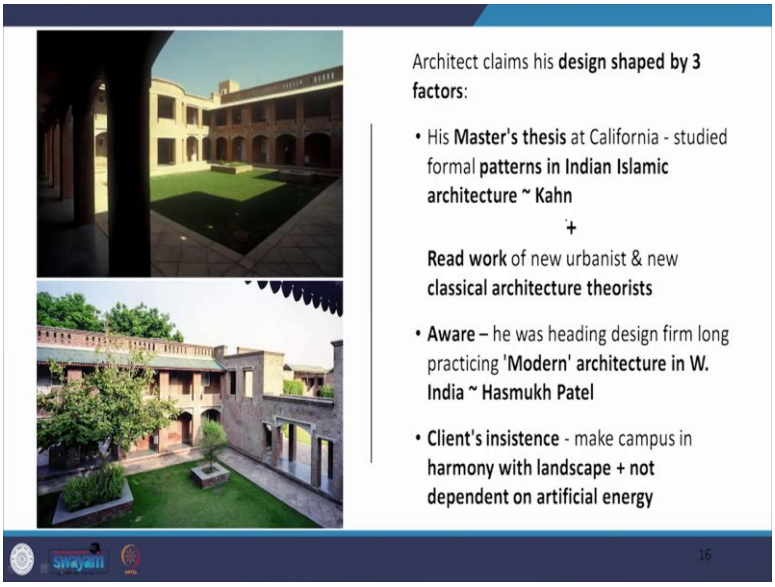

The architect claims that his design was shaped by three factors. Number one, his master's thesis when he was starting in California, he studied the formal patterns in Indian Islamic Architecture. Something that I pointed out earlier with regard to Louis Kahn that he was impressed by Islamic patterns. And we find that geometric shapes which are connected to those Islamic patterns.

Also, he read the work of a new urbanist, a new classical architecture theorists, and again, this is in connection to Louis Kahn, Louis Kahn was classically minded. Throughout his

architectural life, there was a part of his architecture, where this classical identity was reflected. Bimal Patel was also aware that he was heading a design firm, which was a very well established and very respected design firm in modern architecture. And the works that were done by his father Hasmukh C Patel. The client's insistence in this project was to make the campus in harmony with the surrounding landscape, and not to be dependent on artificial energy.

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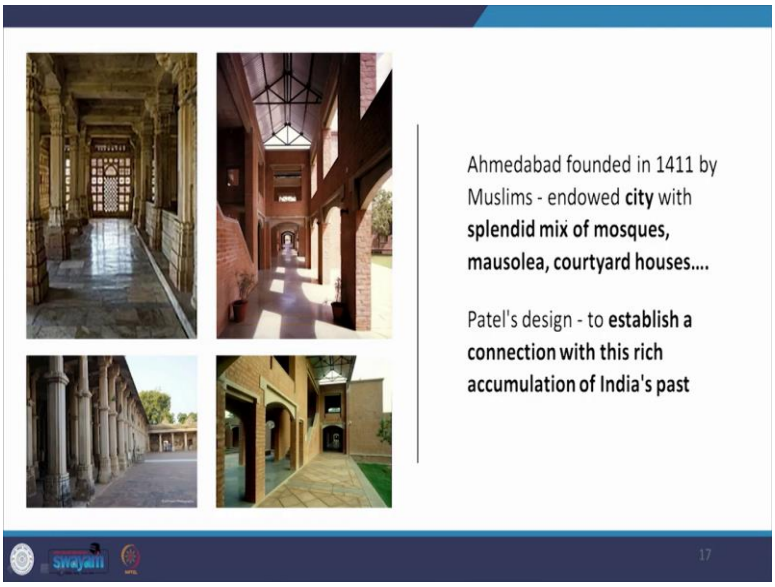

Ahmedabad was founded in 1411 by the Muslims and it is an endowed city having splendid mix of mosques, mausolea, courtyard houses, etcetera. And Patel picked up on that. His design is to establish a connection with this rich accumulation of India's past. So, for example, when you see this building when you see this corridor, and you have compared it with the brick corridor of Bimal Patel, when you see this kind of courtyard space with this corridor on the side, and you compare it with the work of Bimal Patel, it is not a one-to-one reflection, it is not like he just borrowed the form of the column in and put it here, he interpreted that in a modern form. But you see that when you look at it closely, you see the same kind of spaces appearing here.

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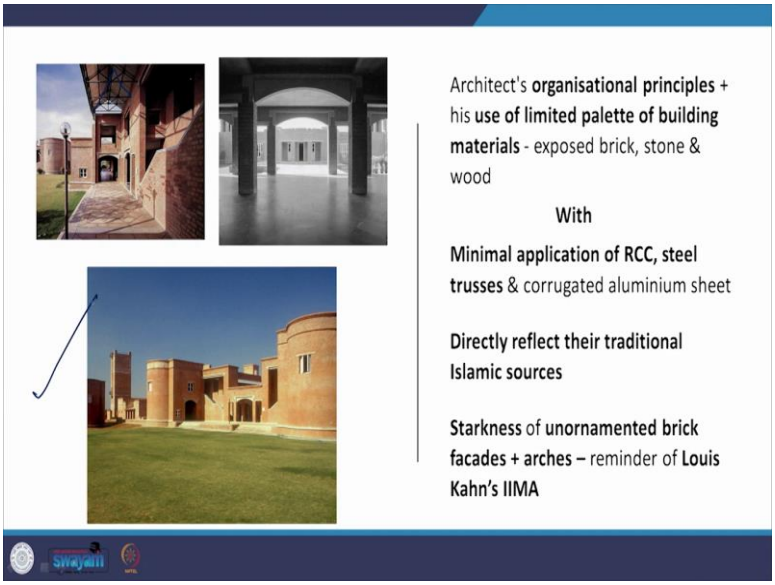

Now, the architect's organizational principles and his use of a limited palette of building materials in this case, exposed brick stone and wood with very minimal application of RCC, steel trusses. RCC of course, is used in the slab work, in beams, etcetera. And the use of corrugated aluminum sheet. Now, there is a use of that you find that, for example, in the trust that is created here.

It is also a direct reflection, like I said of Islamic sources, and this is the starkness in the unornamented brick facade and the arches that he has used, which is a reminder of Louis Kahn's IIM Ahmedabad. The difference being that is a more monumental project, the silence that you feel in this project, the kind of a sense of loneliness that is generated here. He generates that in IIM Ahmedabad. He generates at the Salk Institute. Bimal Patel tries to create that same feeling of serenity simplicity in this project.

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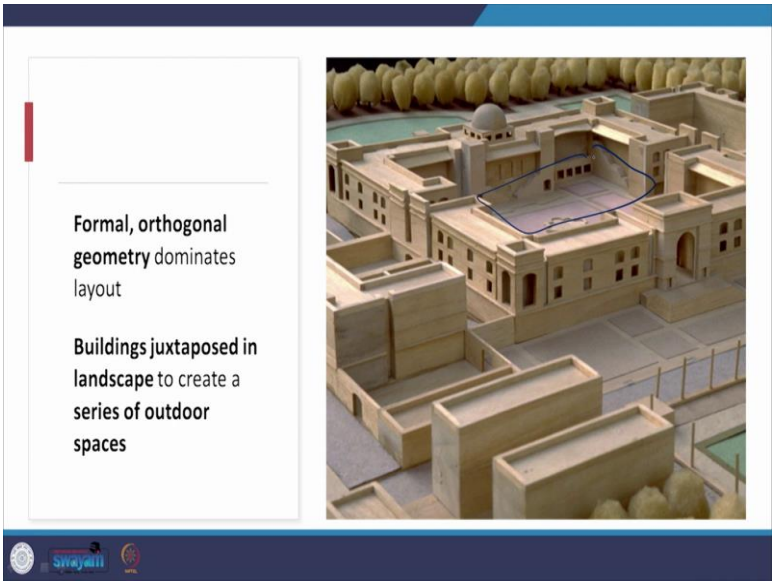

The formal orthogonal geometric dominates the layout of the project. These are the courts that have been created. And there are a series of courts, large and small. The buildings are juxtaposed in the landscape to create the series of outdoor spaces.

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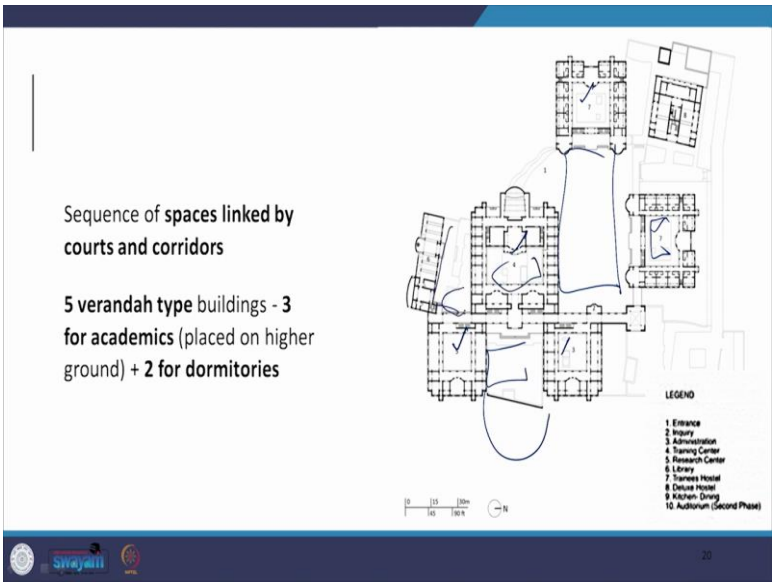

This is the plan layout of the project. The sequence of spaces are linked by courts and corridors, something that was there in traditional Indian architecture. In fact, we are already seeing an example of regional modernism or critical regionalism when we look at EDII, it is already there, in a sense in CEPT, Ahmedabad because it is a climate responsive project, one of the principles behind regional modernism.

Now, the word why I am using regional modernism, the word that you will find, the term you will find more often is critical regionalism, but somehow, regional modernism gels more with me, it is more simple to understand, it is a modernism that is having a regional context. So, there are five verandah type buildings here, three are academic, these three are academic and these two are dormitories.

And then there are series, this is the court created between them. This is another court because there is another building that is going to come up, we will show it in the next slide. And then there are a series of courts in between them, series of open spaces created in between them.

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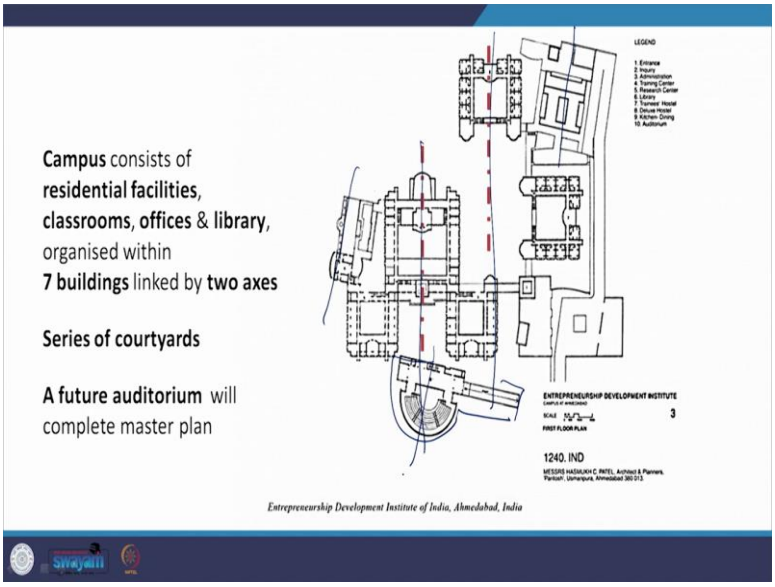

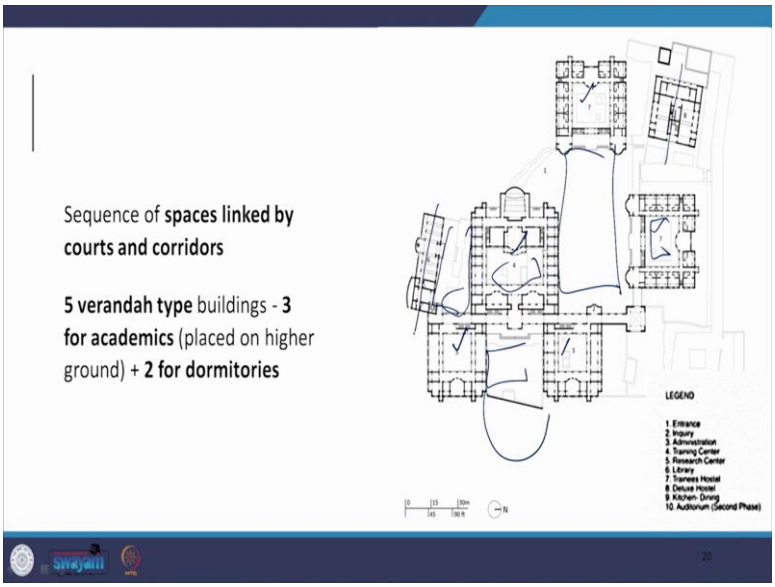

This is the building that was supposed to come later. It is a future auditorium. The campus consists of residential facilities, classrooms, offices, libraries, organized within the seven buildings linked by the, there are two axes, this is the one, this is the other. Please understand that this I believe is a conscious attempt by the architect to generate these kinds of spaces. Also, there is a diagonal space that he creates. What are you reminded of when you look at diagonal spaces. For example, here in the library, or here, or here in the future auditorium, I am reminded again of IIM Ahmedabad.

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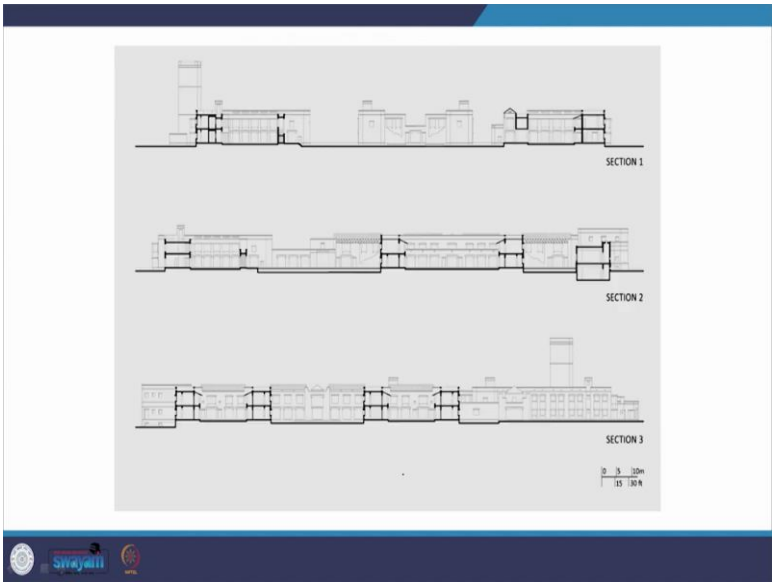

These are the sectional elevations of the building.

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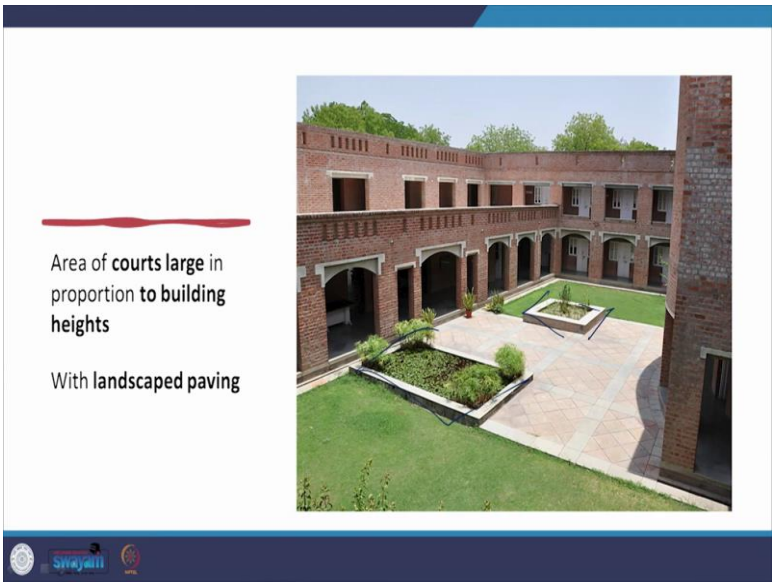

The area of the courts is large in proportion to building heights. Now when I say this, please look at an earlier point I made with regard to the building height and the courtyard space when I was talking about the Management Development Center in IIM Ahmedabad by Anant Raje, and I told you that he lowered the scale of the courtyard because of the comparatively human scale of the buildings, as compared to the monumental scale of the IIM buildings.

In the IIM building the LIK Plaza also has an monumentality. But in this case, it is not happening in the same way, the courtyard appears to be larger in comparison to the height of the building. Now, one thing that can be done when this happens, and I believe that is also happening here in Bimal Patel's work is by providing different elements within it to kind of give us a sense of lowering of that scale.

Now, I will give you an example you can look it up. In the 1970s and 80s, when LiqTech architecture came up in the West, that is very sleek glass buildings came up. One idea that came up during that time was that of an atrium space, enclosed in the building. There was a firm John Portman and Associates they did certain projects for the Hyatt Regency chain of hotels.

And these buildings had these massive atriums going all the ways in many, many stories. But what they did was that at the level, the ground level of the atrium they created small, small pockets of different spaces, sitting spaces, interacting spaces, etcetera. So, at that level, if you enter and you do feel the monumentality, the massiveness of the atrium space, but at the same time, because of these small spaces created all over the atrium, it brings down the scale perceptively to you, you do not get overawed by the atrium because of this.

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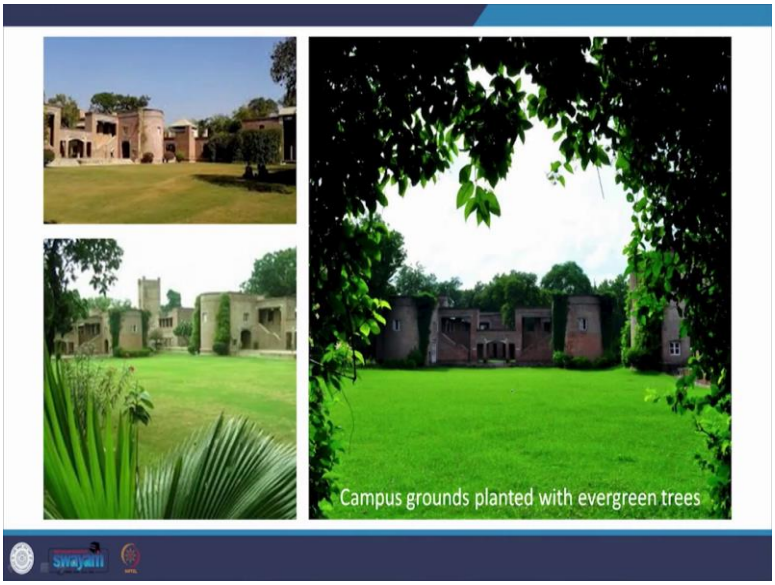

Now, here the campus grounds are planted with these evergreen trees. Again, something that has happened post the works of Corbusier and Kahn, I mean it is already their traditional Indian architecture, they just brought that and most of these architects relied heavily on the green areas to build the passive climate feature in the building.

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Kahn's impact is seen in the arches, the exposed brick and concrete, and the slit light that is coming from the top, but the parapets here, I told you that this is a part of the regional modernist context, when look at the parapet here, this is traditionally Indian. So, here Bimal Patel adds this identity. So, regional modernism or critical regionalism.

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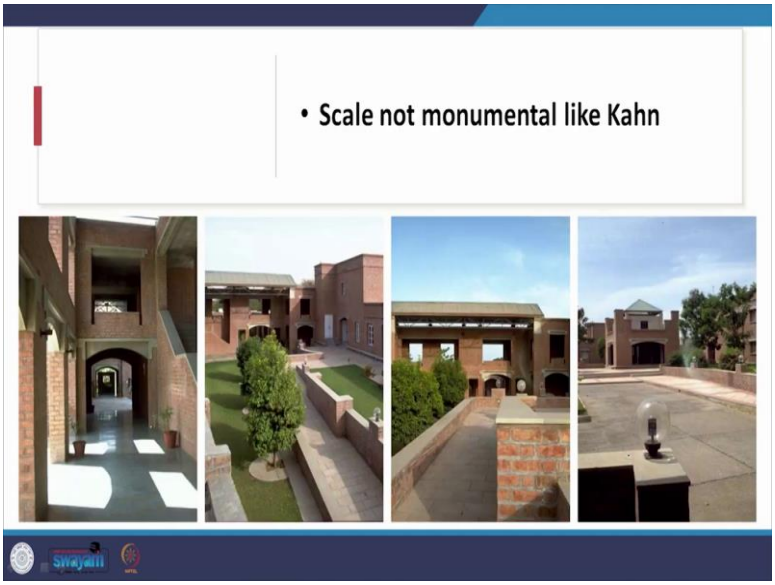

The scale is not monumental, like Kahn, I told you earlier.

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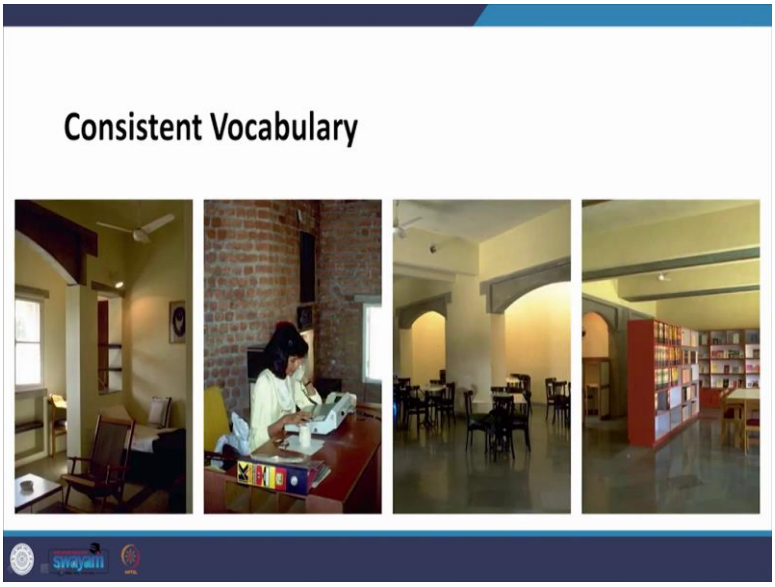

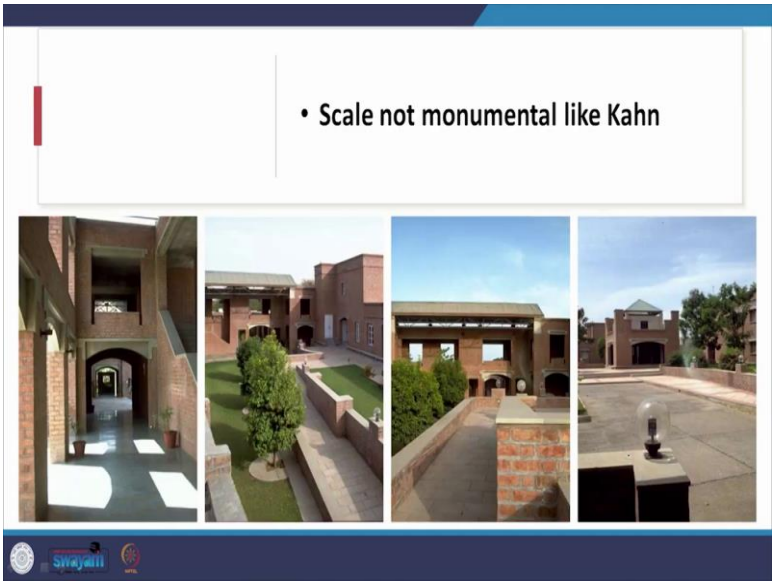

But there is a consistent vocabulary, whether it is on the outside, or whether it is in the interiors.

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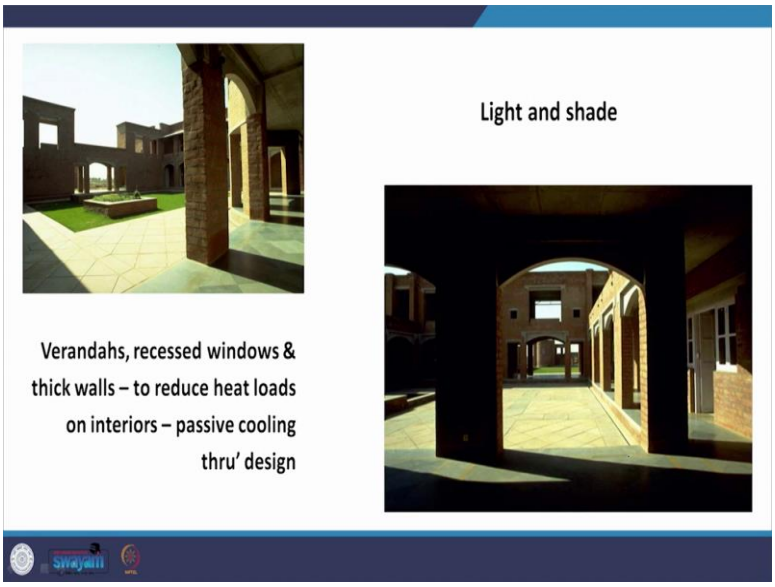

There is a play of light and shade something when which Louis Kahn was a master. The verandas, the recessed windows, then the thick walls reduce the heat loads in the interiors and passively, the building is passively cooled through the design. Again, you find these spaces and you find how much of the glare has tried to cut down.

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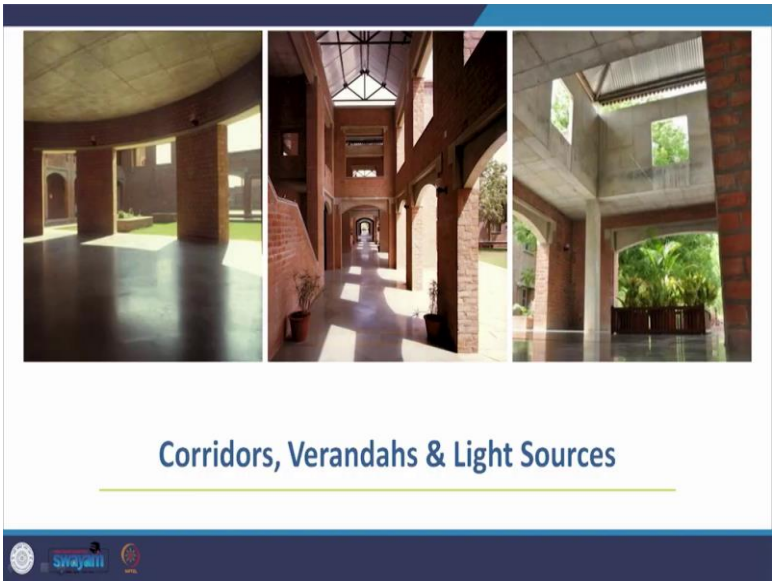

Corridors, verandas and light sources. This shows you the light coming in from the top.

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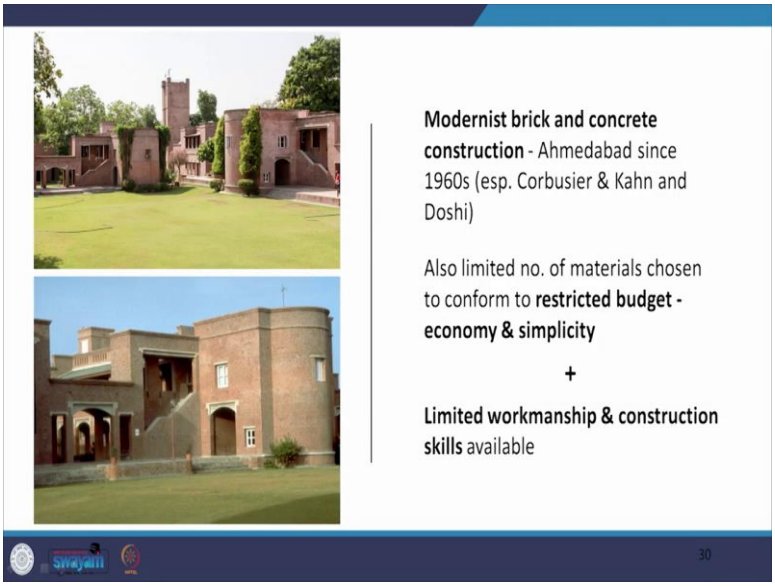

And this kind of brick and concrete construction, the 1960s in Ahmedabad, especially in the works of Corbusier and then Khan and Doshi and then onwards in many other architects. Also, there is a limited number of materials chosen because of restricted budget. So, there is economy and simplicity. This limited workmanship and construction skills available. So, that also impacts the project.

Again, I will repeat, constraints actually enhance the quality of these projects, rather than pulling them down because the architect with those constraints labors to bring make it as

efficient and beautiful as possible. So, he has to focus more on creating that kind of aesthetic quality through his design.

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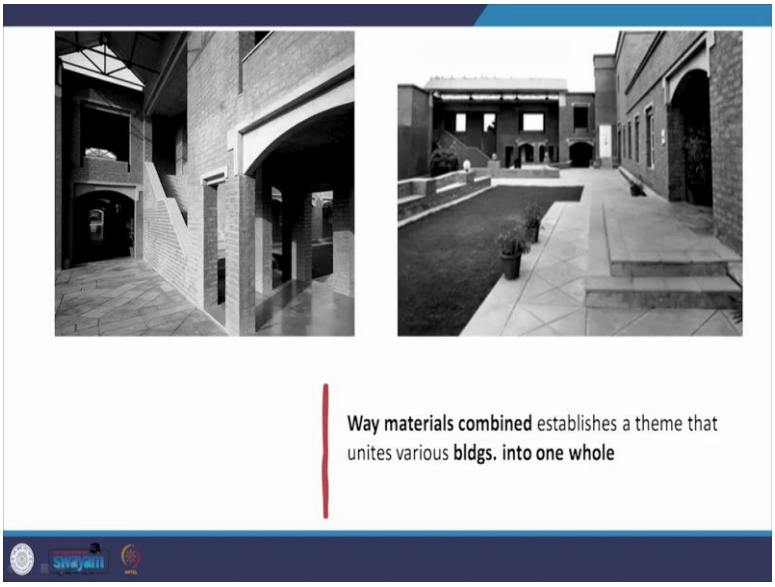

The way the materials have been combined establishes a theme that unites the various buildings into one whole.

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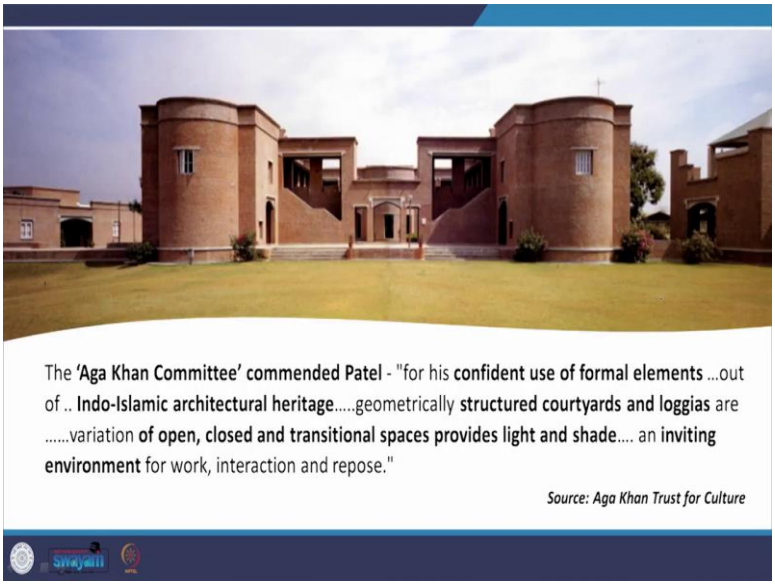

So, the Agha Khan Committee commended Patel for his confident use of formal elements out of Indo-Islamic architectural heritage, there are these geometrically structured courtyards and loggias. There is a variation of open, closed and transitional spaces providing light and shade. And there is an inviting environment for work, interaction, and just plain repose.

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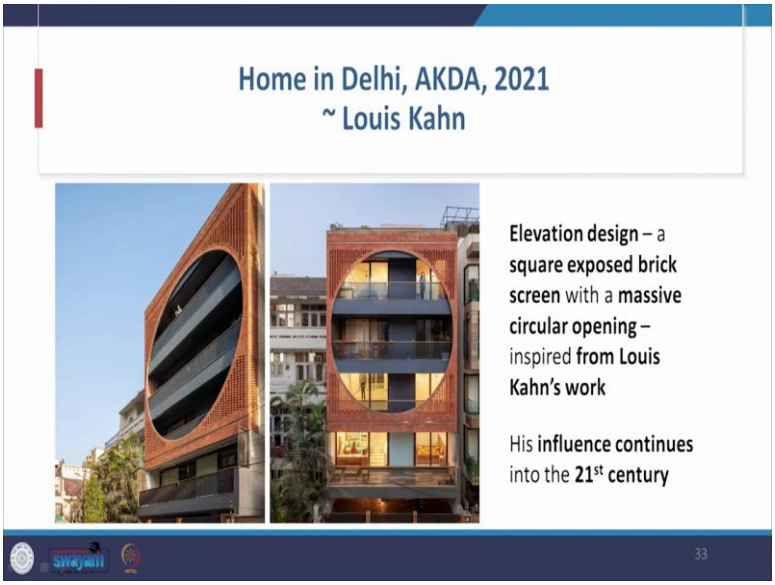

Now, the impact of Louis Kahn did not just end in the 80s. Here is a project in 2021, a home in Delhi by AKDA firm, and this again reminds you of Louis Kahn in this circular cutout in the elevation of the building. It is a square expose big screen with this massive circular opening inspired from Khan's work. His influence continues. Of course, this is a very direct immitation of Khan's work. I believe the principles continue of all these master architects of the time.

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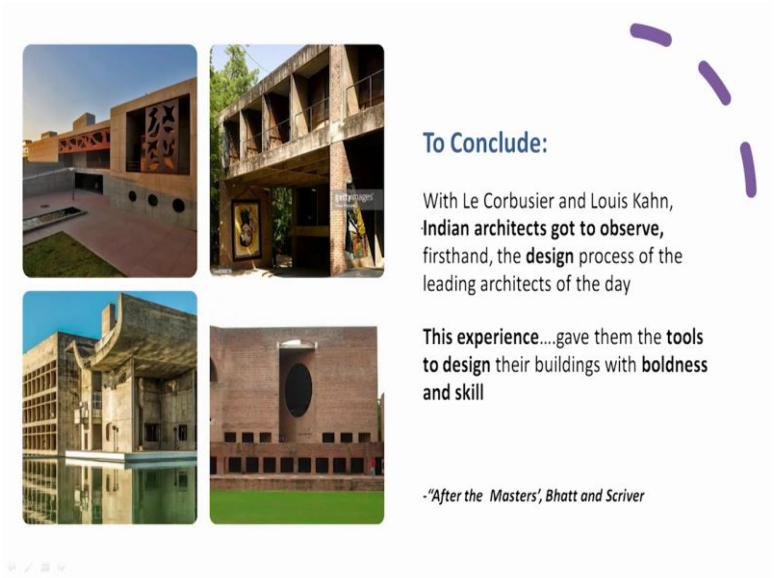

To conclude. With Corbusier and Louis Kahn, Indian architects got to observe firsthand the design process of the leading architects of the day. Now, I am making these points because we are wrapping up with these the impact of Western architects. We have looked at

Corbusier, Kahn and Walter Gropius. Now, this experience gave these Indian architects the tools to design their buildings with boldness and scale.

There are other projects that we will look in the days ahead, where I will tell you more about this statement that I have made here. With experience the second generation of Indian architects, earlier we were talking about the first generation that had studied in the west and come to India, now this is the second generation that followed them, they moved away from the direct influence of the masters.

Please remember, when we look at the first generation works, for example, Habib Rahman, A.P Kanvinde we see a direct influence, but as they move forward, the first generation also moves away from a very direct, you do not find a direct imitation, you find a kind of an indirect impact.

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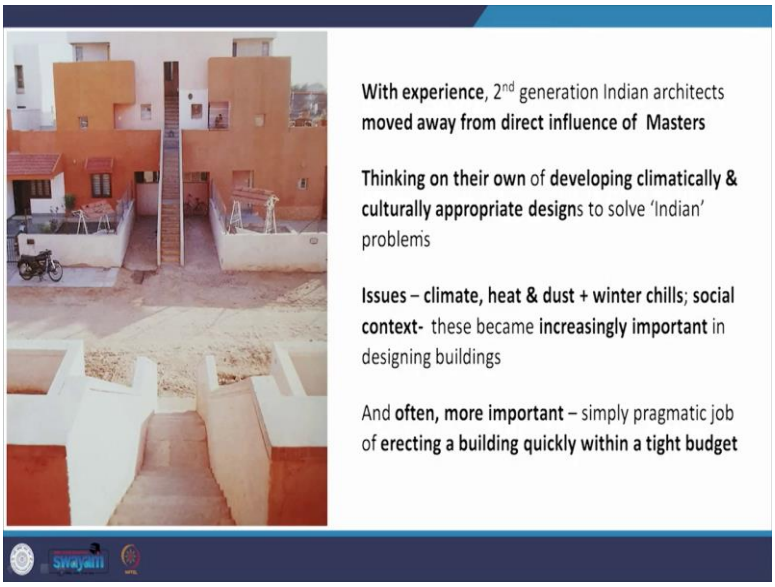

The thinking on their own of developing climatically and culturally appropriate design to solve Indian problems, something that modernist architecture in itself was could not do, it was just a faceless form all over the world that does not take away the fact that it brought about a radical change in building design or an architecture all over the world. That contribution can never be understated.

But there were typical Indian problems that have to be addressed. The issues like climate, heat, dust, winter chills, social context, all these became increasingly important design buildings by these architects and often more important than a simple pragmatic job of erecting a building quickly within a tight budget.

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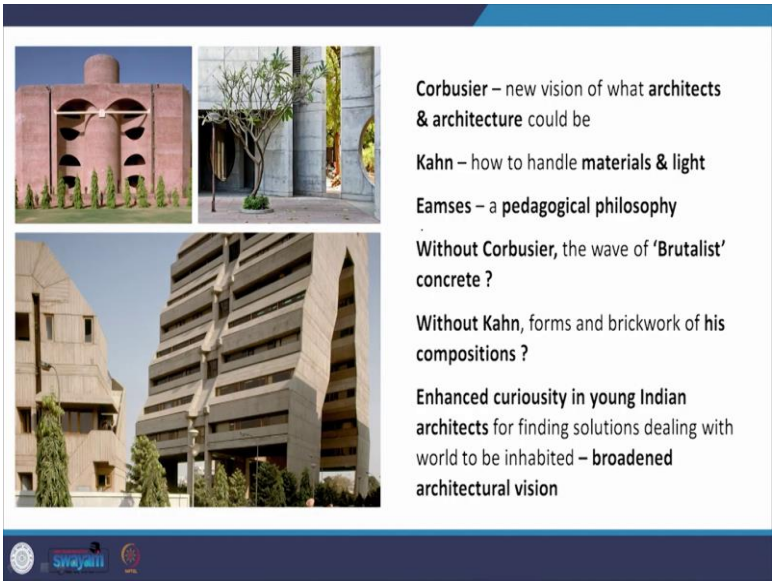

Corbusier gave them a new vision what architects and architecture could be, you can say in a sense, Corbusier and Gropius and Mies van der Rohe and all these architects would have attracted a lot of young people towards architecture. They were star architects of the time. Today the word starchitects is been coined to define Architects like Frank Gehry, Zaha Hadid, etcetera.

But I believe they were also rather than just saying starchitects we could call them masters. In Peter Scriver and Bhatt's book, this book is titled, After the Masters. Kahn taught us how to handle materials in light. Charles James and his wife taught us pedagogical philosophy. Without Corbusier would the wave of brutalist concrete have been seen in the world. Without Kahn would we learn about forms and brickwork of this composition.

As an enhanced curiosity in young Indian architects to find solutions dealing with the world to be inhabited, and they had a broader architectural vision as a result of these works in India. We will stop here. And with this, we end a look, a very brief and very limited look at what the Western architects gave us. They left us with a very rich legacy, all the way from the British times and post-independence, the British architects who continue to work in India, down to people all the way to people like Louie Kahn, etcetera.

They contributed immensely to the architectural education of young Indian architects. Not just in a classroom, but actually by the buildings that they design, they became the sources of our architectural education. Thank you so much. We will come back again to you and we will start with an introduction to critical regionalism. We will also have a presentation of what

might be called as an interlude. We will just stop in a presentation and go back to look at these ideas again, through some new projects, and see how the trend continues to develop. Thank you so much.