

B.ARCHITECTURE
ARCHITECT CONSERVATION AR 6016
LECTURE – 6
UNIT – III
INTRODUCTION TO CONSERVATION

Case Studies of Palaces in Chettinad:

A case study for preservation here is the chettinad palace in Kanadukathan which is in Tamil Nadu. This is the Chettinad palace and the village is situated in the kanadukathan near karaikudi. This is owned by the chettinad family of the owners of chettinad cements. This was built by Anamalai chettiyar who was the founder of Indian Bank and the Annamalai University in Chidambaram. Like I mentioned before, when a building is in disuse and the people who own it are not able to maintain it then only the concept of adaptive reuse comes into place. But in terms of the chettinad palace in kanadukathan, even though it is not used as a residence on everyday basis because of its size and everything, the different family members do visit the place regularly and monitoring the site is never an issue. So this is typical case study for the preservation of a heritage building. Now you look at the entrance of the palace. Here is the outside view and right next to the palace is another house a treasure house as all things at chettinad, you have the furniture, ornaments, vessels, everything that is pertaining to chettinad architecture. This is the inner entrance court, the private entrance for special people and dining. This is the gallery around the patio, the entrance and the courtyard and starting off the images so that you get the idea of majesticness, the hinder, before we go into

the building in details. It is very important to visually understand the building before we start talking about it. The walls are made of baked bricks, You have plastering which is done by the chettinad lime plaster which is literally a secret recipe because how many times it is done now by different people it is still not giving the same finish. Initially the styles that were used the tiles were Spanish later on based on the Spanish tiles, the athankudi tiles came into being which is nothing but the cement tiles, Italian marble is being used as flooring, you have pillars that are completely made of barmese and many houses have turrets like structures. You have elaborate guard houses on the terrace that you can see over here and these are the basic building materials that are used in the palace. Here inside the interiors you can see the authentic chettinad house that you need to see, you will see open courtyard which is very important in this style of architecture. Again you see the pillars that are very common, the wooden pillars and the handcrafted cement in aathankudi tiles. The match box like structure seems like, it has very train carriage . Chettinad houses are actually built on rectangular traversal plot and it stretches across 2 streets, you have the front door in 1 street and the rear door in 2nd street and it is a linear plan that goes in and carriage after carriage are other rooms that you see. Looking in front the main threshold eye actually travels in a straight line covering every courtyard and finally then you have diminishing rectangle of light leading to the back door. In terms of construction technique we have the madras roof which is important. Hand made floor tiles from athangudi are laid on the madras terrace roof patterns with the joists imported from Burma as battens are melamine bhurma teak. Then the lime plaster of chettinad lime plaster which is used for whitewashing the walls which consists of lime and egg white. This is another few photographs design. Now we think of construction techniques and materials. It is decorative, It is elaborate, it is beautifully done

and is imported as well. Eventhough it is reflection of chettiyar kind of life style, it is a reflection because they were trades people. They travelled wildly to east station countries like Indonesia, Burma and places like that as well as Europe. So it is a reflection of both balance and the house is reflected not only kind of living but also artefacts, art products from across the countries. You have chandeliers from Italy, teak from Burma, crockery from Indonesia, crystals from Europe and wall to wall mirrors from Belgium. The woodwork and stone work was inspired that of the houses in France and other European destinations. So what they basically did was, they kind of inspired by whatever they saw and grandeur in terms of europen style of architecture , but they brought it down to their kind of living which was finally happening in their hometown of kanadukathan.

A typical chettinad construction: The huge elaborately carved teak front door, with image of Lakshmi. Then pillared corridors running on each side that lead into individual rooms and each rooms is given to one son and then you have triangular slot for the provision of a lamp then large dining spaces. The third courtyard was meant for the women folk and the nalakuttai – 4th courtyard is comprised of kitchen. So when you think of large dining spaces, you would think, why would you need large dining spaces. The main characteristic of chettinad house was built as a symbol of status. So it is a symbol of status for them to say that 200-250 people ate in their house. The kitchen did not cater only for the family members but to the entire people because they were trading communities because people would travel, come and meet them, they would exchanges products, things, money like that, so that had to be done in safe environment. So they dint have the concept of hotels, motels at that point of time. So it was done in similar fashion. So courtyards played a very important role and the rooms surrounding the courtyard ensured that from

the exterior people couldn't come in. It is only one way axis so safety was ensured because they were trades people, money and precious goods were very much in abundance in the house and the 3rd courtyard was for the women folk because right behind here in the kitchen, there were open space for women to hang out, gossip and things like that. And nalangattai – kitchen was again with courtyard because large scale cooking would also take place and along with small cooking for the family members. And today what is the purpose of large kitchen is, now any chettinad family has a wedding or any big function for their child or anything, it is done in these houses and mansions. So the large scale places are not lost till day, it gets used at least couple of times a year

Construction: The evolution of a whole way of life, from culture and history to the use of materials and new technologies, to an understanding of the environmental factors which is from Europe, Indonesia and other countries. And you can see many of the windows with orange segment shapes here with grilled doors because safety was an issue. Ventilators on top and basketwork was something that emerged as decorative enough and is flourishing till date. This is central courtyard surrounded by teak collins pillars and there is combination of scarlet tiles and sloping roofs to ensure rain water doesn't enter the courtyard. The construction material, décor items and furnishings were mostly imported that where inspired from European and French style. This is the private entrance which still our authentic family of the chettiyar live in. This gives them the private access, with in the house, with in a secluded fashion. Like I mentioned before, for trading people, a sense of safety and security was required, where you can enter the house only one way and the leave the house the same way. Having a back door was only meant from the kitchen area and 4th courtyard. This is the dining hall where at

least 250 people can seat on either side, traditional kind of dining where people squat on the floor, you can see a central door which again leads to inner courtyard. This is the entrance showing the details of the façade treatment with the combination of vibrant colors again. You have red, yellow, white green, there is contrasting they are trying to express over here which also accentuates the openings. If you look at the opening here, the grill work is green and the contrast the red wall with white brick wall and stone work. And you have the idle of lakshmi, which is embedded which is very important for trading people. You have turrets like structure, the watch towers in higher level, where you can see people coming from distance. This is replicated even in the compound wall. The sense of compound wall was the sense of security required by these people. While they came, the people knew that they came with abundance of precious material or money and when people who travel came to meet them, it would be money and other kinds of precious materials. This is the view of one of the chettinad houses. The brothers house you see here is nearly 120 years old. This is the massive column of woods that you see with lot of details, marble flooring over here and its not number of stones over here, it is 1 single marble stone and you have teak doors leading to different rooms, chandliers imported and massive wooden columns. Here upper corridors you have arcades connecting the bed rooms with twin circular columns. You can see the madras terrace roof right here and the parapet detailing in the floor above even here you have the use of vibrant colors here yellow red green. You can see the detail in wood work over here. This is the true jewel of every chettinad house. The courtyard and the sloping roof leading to the courtyard. This actually helps drain the rain water. In the olden days they have the huge brass and bronze pot where the rain water would triple down and get collected. That was their method of rain water harvesting. This is the nalangkattai which is the 4th courtyard

which proves to be the kitchen. This is done in the roof detail where they can actually store kitchen tools like arna kadai which is nothing but cutting tools like cutting knives and cutting bolts. These are the traditional tools used by them, which can be stored in a very safe and dignified way without happening the view and spoiling the view of the house. If we think of the planning concept, it's actually believed to be right from the kaveripoompattinam. This is the belief actually. That is how a chettinad house is come into being. The planning concept is reflection of their occupation and their style of living. The interiors is a reflection of where they have been and where they have come from. Because they are trades people they constantly travel to south Asian countries as we all Europe. So this is a reflection of that and then you have the fact that they were traders and safety was an issue. They needed the house and the building to be safe from the outside and so they had courtyards punctured into the plan which ensured there was adequate light and ventilation. And the dictated introverted planning was to make sure that there was not multiple access and people couldn't enter the house easily. The scale of spaces in the kalyana bhojana hall was determined at that point of time itself to ensure the religious and family festivals would take place only in the house. Chettiyars usually don't take up wedding halls, function halls to conduct family functions. They make sure that they go back to home town and do it in these mansions and palaces.

Spatial organization: You have service space, multi purpose open space and feasting space. Reception area, a pattagasalai- which is where you will have the discussion between the trades people, the men of the house, this is the raised platform. This is connected between the courtyard and the central living area. This is secure and secluded place which is even used off storage of

material, money or any such things. It acts like buffer between outer room and inner room.

SEISMIC Retrofitting:

Now from the chettinad case study we have learnt, how exactly, a house can be or a building can be preserved when funding is not an issue. Now we come back to the monuments in our country which is where we look at the monuments in the country. There are majority of stone and brick in the structure. So when you are thinking of masonry structure and stone structures of such massive size built at that point of time, obviously there has been a lot of wear and tear in the structure. So it is very important that with change in time even to retro fit these buildings, especially to protect them from disasters like earthquake. So a principle difference between normal structure and heritage structure is, yes it is important that retrofitting is done but it cannot be done, any which way we want but we have to keep in mind the integrity of the building is not hampered or patched upon. So we have to make a judicious selection of the application needs such that the heritage value is not tampered with at the same time the aim of retrofitting is that it is safe and secure for the generations to come. So it is multi disciplinary with a branch of science called conservation engineering. So it is important that, yes it is branch of engineering but they have to be aware of the intricacies of the building or the history of the building and make sure that the historically authentic building is not tampered with necessarily. If it is traditional building of technology used or a monumental structure, techniques used will be pretty much same.

What are the steps involved.

We have screening and evaluation, screening just tells us what level of retrofitting will be required. Based on the area, the

building will be situated in. And based on the screening the next evaluation process comes into being, where detailed information is processed on buildings with medium to high priority as a result of screening exercise. So the objective is to identify the vulnerability of the structural and non-structural systems and the components to the seismic loads.

Now we take 2 common examples we use for repairing a historic structure. How do we strengthen a masonry wall? The usual problem in a masonry wall is cracks. How we go about repairing these cracks. The cracks can be repaired by grout injection in case of excessive damaged walls. In addition to the grout injection, the area around will ought to be cemented or coated with cement concrete and this is where we have the kind of cracks and what are the kind of things we need to deal with recommended procedure. When the crack is less than 1mm it is injected with epoxy, when it is with 0.3 to 3mm it is injection with cement grout that contains shrinkage reducing admixture. And when it is greater than 10 mm it is reconstruction of damaged area with new brick units. This is how a reconstruction panel usually works with mesh and staples. This is spacing of mesh of 0.3 m and 0.5 and then mesh is placed so that the wall is reinforced and held together. How would you go about re pointing dead joints. The resistance of a wall with vertical and lateral loads can be improved by replacing the parts of the existing deteriorated mortar. So let's go to the image over here. Here you have the mortar that has been removed and the grey portion is the existing mortar. Now what do you do, obviously this part has become weak now. There is no mortar which is supporting the existing brick unit. So a section of a wall is re pointed by moving these bed joints. Cement mortar is added and make sure that structurally these joints have been stabilized.

So what are the 3 important preservation principles we undertake when we retrofit a project.

1. It should be preserved and retained to the greatest extent possible and not replaced by current materials that are just to seismically reinforce it.
2. Any seismic retrofitting system that is added or will be added that is hidden or exposed should respect the character of the building and the integrity of the historic building and the visually compatible with its design.
3. Seismic work should be reversible to the greatest extent possible and allow for any future or improved systems that is developed, we should be able to remove what we are doing today.

Making Historic Properties Accessible:

Next part of making the historic building, approachable to the current context is, how do you make it accessible. Historically old buildings have never been acceptable or approachable to people with disabilities. It been recent years where emphasis has been placed based on this and the preserving history significant property even though it is important, it is also important that they are accessible to people with disabilities.

So how can these modifications be made?

What kind of modifications can be made, sometimes it is as simple as just providing extensive ramp or sometimes even interior or exterior changes are required.

Again you have 3 step approach to identify and implement accessibility modifications

1. Review the historical significance property and identify the character defining features
2. Assess the property's existing and required level of accessibility and the required level of accessibility
3. Evaluate accessibility options with in a preservation context

Yes you have to make it accessible but at what price what price is the building willing to pay or are you willing to compromise so that is the question we need to ask ourselves

So how do we improve accessibility on the following priorities?

1. The main entrance has to be accessible, only then the public can enter the building. So we need to have plain and prominent public entrance that is accessible including a path or gate that is like ramp.
2. Then we need to have access to goods, services like if we are having café.
3. Providing accessible rest room facilities.
4. Creating access to amenities and secondary spaces. For instance there is stair case and you are going to upper floor, you need to make sure that elevator is provided, if its not possible within the historic fabric, it may be taken to the outside and an enclosure can be added on for it, for later date

Readily achievable accessible options: what can be done without hampering the site too much with the level of sight in the entrance we have to create a designated parking space so if a handicapped person is coming, they don't have to walk too much from the entrance. So we have to install basic ramps not to hamper the integrity of the building. Now coming to the interiors, we need to re-arrange the tables, displays and

furniture which is very narrow or a wheel chair can pass through. An elevator has raised buttons, a blind person or handicap person may use it. You need to offset the hinges to increase the space in doorways. Usually in some tall buildings, the doorways would be narrow and something has to be done. Restrooms are very important. If an existing restroom cannot be tampered with, it is better to build new restrooms following the accessibility standards where you have bathroom mirror, higher toilet seat, insulate the lavatory pipes so prevent burns. You re arrange to toilet partitions such that you increase the maneuvering space where a wheel chair can enter. You install grab bars in the toilet stalls.

Heritage Site Management:

Now we come onto the culmination of this unit which is heritage site management. We have seen a case study of preservation, we have seen how seismicly retro fit and make a site accessible to general public, like handicapped people and everybody. Now how these principles overall we are going to apply in a heritage site management project. When we think of wall heritage site, the main thing is to conserve the values for which it is recognized that is the 1st primary aim. It is a particular kind of criteria that has been selected. So any work we do should not hamper the criteria. Now the planning process, we have to take an inventory of the existing resources.

Next we have to categorise and evaluate those resources and finally from that inventory, you need to determine the priorities for legislation, finances, personnel, equipment, interpretation, marketing etc. Now basic planning requirements, Cultural sites need a comprehensive regulatory plan. So what does this include you have boundary survey and description. So

boundary actually de markets your site clearly and if required a buffer zone is provided and it's an urban set up. You need to make sure the building surrounding the site and not hampering the heritage characters of the building by having very large sinages, very tall buildings which are obstructing the sky lines.

Next you have the land use plan. the comprehensive land use plan should include any near by settlements and full corridor to the nearest urban center as an urban site, the boundary lines and buffer zones should all be de marketed, so it can help us protect the historic streetscape. The most important thing is the conservation/site plan, this de-eliminates the pertinent continent issues analysis these issues and determines what are scientific limitations this site will have and the concept of what kind of tourism can be attached to this site, the vision and the opportunity that can be offered to visitors. Continuing from the conservation plan is the utility and service plan. Now that you have decided its going to be open for tourist you need to have conveniences like electricity, water, telephone, fire and police which are not only helpful for tourist people but also health conservation efforts. These services are important but not so that the integrity of the site be jeopardised. Now the community development plan. The quality of life of the people in the vicinity of the site and the surrounding areas has a major tell on the quality of the quality of the tourism at the heritage site. Community development plan will not only support the economic of this but also the cultural and employment side of it with the community and tourism centre.

What is tourism plan?

Tourism plan officials should also be consulted when a conservation plan is being made. Any over lays that are there, they should recognize the goals, the physical limits and the

opportunities that are there. Transportation is no.1 criteria that we need to think about, to and fro from the site and at the site if it is very large. What kind of guests service are you willing to provide accommodations, food, toilet facilities, what level, do you expect that to stay over night or if they are going to go back and forth, how does that work. Site tours, training or licensing of guides, travel information or interpretation. Finally museum installation, visitor paths, information signs admission asks, sales outlets, souvenirs for tourist people etc. Now conservation plan and tourism plan both are very important. Next stage is how you co-ordinate and make sure that conservation and tourism plan go hand in hand. Sometimes what the land use plan will do is right next to heritage building, it will allow for 8 storey structure or a barren parking lot place with hocking cars, vehicles and things like that. So to avoid all these we have to ensure that conservation and tourism planning go hand in hand and then the overall planning should also be involved, so that such risks and wastes can also be avoided.