

## **B. Architecture**

### **Structure and Architecture (AR6006)**

#### **History of Structural Design in the post Industrial Period**

#### **Lecture - 13**

##### **HSBC Headquarters, Hong Kong**

This building was conceived during a sensitive period in the former colony's history, the brief for the Hong Kong and Shanghai Bank Headquarters was a statement of confidence: to create "the best banking building in the world".

Through a process of questioning and challenging- including the involvement of a feng shui geomancer-the project addressed the nature of banking in Hong Kong and how it should be expressed in built form. With all this expression and feng shui geomancer and brief bill as simple and as powerful as the best bank building in the entire world so Norman Foster give us this building this is the HSBC building here see the dromedary scalene of Hong Kong this is one of the interior views of the building where you can see the structural bracing systems and here we can see the open offices where people are working and these are the different floors and this is the basic system that you see here. From the concept to completion it took 7 years for the building to be entirely build. The building is 180 meters tall with 47 storeys and four basement levels. The building has a modular design consisting of five steel modules prefabricated in the UK near Glasgow and shipped to Hong Kong. About 30,000 tons of steel and 4,500 tons of aluminium were used in the building 30.000 tons of steel and 4,500 tons of aluminium to create this monsters building that you see in front of us and what you see in the picture on the left is the night view of this portion of the building something more massive and elegant.

In doing so it virtually reinvented the office tower. The requirement to build in excess of a million square feet in a short timescale suggested a high degree of prefabrication, including factory-finished modules, while the need to build downwards and upwards simultaneously led to the

adoption of a suspension structure, with pairs of steel masts arranged in three bays. The brief was simple but powerful they need to buy the best bank in the world and they need to get it simple and they need to have complete the entire building in 7 years which means that 7 years to build an excess of million square feet of office space is a massive massive work for which one needs to be extremely careful about the technology he uses because that is why foster used high tech factory finished modules and very high degree of prefabrication in this building. As a result, the building form is articulated in a stepped profile of three individual towers, respectively twenty-nine, thirty-six and forty-four storeys high, which creates floors of varying width and depth and allow for garden terraces. The tdx structure allowed another radical move, pushing the service cores to the perimeter to create deep-plan floors around a ten-storey atrium. They need not put the services inside the middle of the building because they have pushed to the periphery it was very radical move that because on the inside instead of putting the services and blocking the entire view of the building from another this people were able to create beautiful atrium behind the mirror and with all the services going on the sites it was very clever move because they have bigger floor plan area for people to work and enjoy the working this is another evening view of The Hong Kong Shanghai Banking corporation which is right in the middle here. Here we see the different buildings the first building, second building or third building. A mirrored 'sunscoop' reflects sunlight down through the atrium to the floor of public plaza below-a sheltered space, which at weekends has become a lively picnic spot.

From the plaza, escalators rise up through the glass underbelly to the banking hall, which was conceived as a 'shop window for banking'. The 'bridges' that span between the masts define double-height reception areas that break down the scale of the building both visually and socially. Here you see the grand lobby in this place which becomes the picnic spot during the weekends. This is the top of the building where you can see the structural elements of the building where you can see the different ways and which the heights the building placed and the volumes the difference in volumes creates the terrace in between so that it can move up and enjoy the outside exterior.

A unique system of movement through the building combines lifts high-speed lifts to the reception spaces with escalators beyond, reflecting village-like cluster of office floors. From the outset, the bank placed a high priority on flexibility. Interestingly, over the years, it has been able to reconfigure office layouts with ease, even incorporating a large dealers

room into one floor – a move that could not have been anticipating when the building was designed.

These are the escalators that we are talking about massive escalators that lead from the ground floor to the banking floor on the top which they call it the single window floor which is on top. This is one of the concept design drawing which is on foster made look at the three buildings shorter building and the taller ones look at how he drawn the sketch and how the building turned out to be which will be amazingly how architects are able to conceive the building at such an early stage and when they are able to design the building exactly the way they wanted this kind of building with the helipad on the top view on the side they exactly wanted this and looking amazingly how the architect are able to conceive the building at such an early stage and when they are able to design the building exactly they wanted this kind of building with the helipad on the top with views on the side they exactly wanted this and look at how amazingly clever the architect being able to visualise everything what they want right from the beginning of the project itself. This is the portion outside the front lobby famous picnic spot in the weekends people can enjoy this area.

Martin Pawley says about HSBC Headquarters "Foster and his team were working on the other side of the world, in another culture with a simultaneously cosmopolitan and native face. In the end, the building was not the creation of electronic international banking, nor a semi-colonial gift from an old power to a younger one; its design grew, more than anything else from an unprecedented act of learning." This is the scale model of the building in which you can see the different service codes and different things which are designed.

Martin Pawley also says that "Legend has it that Foster received only one directive from the bank director Roy Munden when he won the architectural competition for the job in 1979 – 'build me the best bank in the world'. When the architect got down to business the only other directive that emerged was 'keep it simple'. This is the picture of they were talking about this place being the lobby space is used as we can get a wit. So this is the other way in which people export the weekend picnic in the area of the lobby of the building.

Ray Guy says that "The bank is very fluid in its staff movements. The design had to reflect that and it also had to reflect the changes that are coming into banking. We were the first electronic bank in the Far East and the rest of the world has now caught up; now we are taking a ten-year step and the building has had to reflect that. It has also had to confront

everyday changes within the building because we approximately 50 per cent of this building every year in terms of office accommodation, so flexibility had to be built into the building."

This is the another view of the another model which they made cut lobby of the office areas. Foster himself talks about the building "Many buildings are statements of confidence in the future, so they are inextricably linked to the political processes which generate their need, and some of that is really highly symbolic. The Bank was certainly no exceptions. It was very considered move, as a vehicle to enhance the prosperity of that particular bank, which has since moved dramatically into the world league. But it was also a symbol of confidence in the future of the colony." By symbol of confidence Norman Foster means the brief that was given to him. Imagine an architect getting an brief which says only these few words build me the best bank in the world. It's a mark of confidence to say that they already know that they are the best bank in the world they just need the building to accommodate their facilities and their services in their premises they just wanted the best building to compliment the best banking system they already have look at the amount the confidence they have that is the symbol of confidence which the foster is taking about here. These are the some of the picture of how the building features different languages the building tries to use they tried out different colours schemes.

Chris Abel says about the HSBC Headquarters that "There is a lot more that is Gothic than Classical in all this structural and spatial magic, contrary statements about Foster's work notwithstanding. If the 'medieval' services towers, 'flying braces' and incomplete appearance of the building had not already promoted that idea, then the soaring proportions of the atrium and the great translucent eastern window, easily justify the building's popular description as a 'cathedral of commerce.' Chris Abel compares this building to a medieval cathifil there he compares the different feature of this building and puts it in his own way he says that there is lot more of it which is gothic rather than classical which creates the spacial magic and he calls the flying braces compares with the flying buttresses of gothic structures and he has the idea of the light has brought into the building and he also tries to compare the soral proportion of atrium with respect to the proportion of nave witch create in the time period and he also says that this building is an epidemic of 'cathedral of commerce' so it's actually a cathedral but not a gothic or classical cathedral but it is a moral cathedral for modern dy commerce that we should be proud of.

High Pearman says that "The aesthetic of the Hong Kong Bank is wholly result of its method of construction, an aesthetic that is not confined to the exterior, but permeates the whole internal life of the building. At every suspended in the sky, every structural component evidently has an important role within the load-bearing capacity. It is both earnest and restless, and quite unlike a conventional office tower, where big efforts are made to make the internal spaces as neutral as those found in any low-rise building."

"By lifting the main body of the building above the ground and creating a glass underbelly we allowed banking to be seen as a dynamic activity; the banking hall becomes a showcase to be viewed from the plaza below." Because plaza is the place where the people gather during the weekends its very very crowded its almost looking like a picnic spot that's what to say about the place what foster want to do was instead of boarding up all the windows and painting the walls in neutral shades in such a way that to create a boarding way office is not his type of building he wanted the building to show its power and show its confidence so he throwed the view open from the plaza to the banking area from the plaza below they were able to see the banking area that is the confidence the which the bank has installed and Norman Foster by he also confidently created this view complementing the brief which he has to sink.

Stephen Gardiner says the communication again; the building is the village, the office group is the community, the escalator is the lane. In Foster's imagery, you could call them that." Stephen Gardiner is a critic and he says that its all about communication he compares he compares every component of the building with the community with the neighbourhood that we live and he called the entire group as community and the escalators has little lanes which people keeps move from one area to another and whole building he compares it with the village thereby in fosters imagery he called them little pockets of neighbourhood in a big village that is what the HSBC banking is about create a network of closely neat officials so that they become like a family there is a sense of belonging that is one they could join hands to create the most powerful bank in the world.

## **Hearst Tower, New York City**

Next famous building that we gonna look at is in the city of New York is called the Hearst Tower. The first look at the building is a diamond shaped building with lot of jags and cuts whole quantity of glass and steel on outside with very very traditional and contrasting background for the first

5 or 6 floors in the ground level this short contrasting upto this 6 floors and then to the remaining floors. Hearst Tower revives a dream from the 1920s when publishing magnate William Randolph Hearst envisaged Columbus Circles a new media quarter in Manhattan. Hearst commissioned a six-storey Art Deco block on Eighth Avenue, anticipating that it would eventually form the base for a tower, though no such scheme was ever advanced.

This is the six storey Art Deco building that has commissioned earlier although the advancement in this building was not emphasised earlier but he imagined that this hard Art Deco building would be the base for any new addition and this building the sharp lines of the Art Deco building and the sharp lines of the contemporary expression matches its course look at the sharp lines which the foster had created here and the sharper line which the Art Deco building got. Echoing an approach developed in the Reichstag and the Great court the British museum, the challenge is designing such a tower at seventy years remove was to establish a creative dialogue between old and new. The new tower rises above the old building to a height of forty-four-storeys, linked on the outside by a skirt of glazing that encourages an impression of the tower floating weightlessly above the base. Here there is a 70 years old building on the base 6 storey building Foster need to design a building which rises above this building to another 44 floors he needs to design this building at modern age this is what the foster comes up with this is high star with the view and this is the open space which has designed look at the four storey high space that he is trying to produced. At the base of the tower, the main special event is a lobby that occupies the entire floor plate of the old building and rises up through six floors. Like a bustling town square, this dramatic square provides access to two parts of the building.

It incorporates the min elevator lobby, the Hearst staff cafeteria and auditorium, and mezzanine levels for meetings and special functions. This is the main lobby which they were talking about this inside of the building this is how you see the Hearst building from the park. Structurally, the tower has a triangular 'diagrid' form – a highly efficient solution that uses 20 per cent less steel than a conventionally framed structure.

When the corners cut back between the diagonals, it creates a distinctive faceted silhouette on the Manhattan skyline. The building is also significant in environmental terms. 85 percent of steel used in the building is recycled steel. This is the lobby which they were talking about you can see the office cafeteria the first 6 floors is mainly connected lobby

which has connections to the all part of the building. Its heating and air-conditioning equipment utilizes outside air for cooling and ventilation for nine months of the year, and it consumes 25 per cent less energy than an equivalent office building that complies minimally with the respective state and city codes.

As a result, it was the first office building in Manhattan to achieve a gold rating under the US Green building Council's leadership in Energy and Environment Design (LEED) programme. This is an another view of a lobby. As a company, Hearst places a high value on the quality of the working environment – something it believes will become increasingly important to its staff in the future – and it is hoped that Hearst's experience may herald the construction of more environmentally sensitive buildings in the city. The floor of the atrium is paved with heat conductive limestone. Polyethylene tube is embedded under the floor and filled with circulating water for cooling in the summer and heating in the winter.

This is the main escalator which we are talking about. The rain collected on the roof is collected in the tank in the basement for use in the cooling system, to irrigate plants and for the water sculpture in the main lobby. The atrium features the escalators which run through a 3 storey water sculpture titled Icefall, a wide waterfall built with thousands of glass panels, which cools and humidifies the lobby air. The water element is complemented by a 70 - foot – tall (21 m) fresco painting titled River lines by artist Richard Long. This is the water feature they are talking about. Here is the water feature and this is the fresco painting they are talking about and here you can see the Art Deco building entrance of the building and how this building takes off from this Art Deco base. The building envelope was designed to limit glare from how angle sun during the early mornings and the evenings.

The massing was predetermined by the footprint of the existing Hearst building. The design of the tower sought to protect the existing podium, whilst extending the building with a distinctive new tower. To minimise the solar gain, the building envelope contains high performance low emission glass, with integral roller blinds which can be used to reduce glare. The building is overshadowed by the surrounding buildings so large skylights were used at the podium level to bring daylight into the atrium space.

The atrium contains a radiant floor, a tempered water wall and the temperature controlled walls. In the office spaces, an economiser cycle on the AHUs provide fresh air ventilation for 75% of year. The design

included an upgrade to the local subway station, and reinstated an entrance within the building, giving the direct access to transport.

This is the famous triangular diagrid which they were talking about which reduces more than 20% of structural steel that is being used in the building because if we use a square grid we use two sides of the square because one and two sides now diagonal of the square is always less than the sum of the two sides of the triangle so diagonal always saves lot of material for us.

The diagrid structure uses 20% less steel than a conventionally framed structure, and it was built using 85% recycled steel. Locally sourced materials are used throughout.

Harvested rainwater from the roof is fed into a central tank and used for irrigation and to feed the water feature. This alongside water efficient fixture and fittings, has led to a 30% reduction in water usage compared to a typical building. This is the height of the building comparison with the neighbouring buildings so he is talking about how this building is over shaded by the neighbouring tall building such that they need to create the sun scoop's so that they can bring in the light from the external to the lobby. The design ensured that all existing trees on site were protected, and to ensure their long term vitality, they are now irrigated through the rainwater harvesting system.

The design preserved the façade of the existing structure and establishes a creative dialogue between the old and new. The forty – two – storey tower rises above the old building and has resulted in an award winning addition to the New York Sky line. This is the section of the building in the base level here you can see the Art Deco building exterior which is preserved for the first six floors and they have remodelled the entire space this provides for the structure firming of remaining floors for the two floors here is the famous entrance lobby with the water wall feature this is the fresco painting we spoke about this is the structure model of the building being worked with scale model. Nicolai Ouroussoff says that "In a certain age the Hearst Tower deeply comforting: a building with the confidence in its own values."

Richard Lacayo the Time magazine states that When the Hearst people chose Foster, "they knew they were getting an international star. Still, they might not have suspected he would give them the best building to appear in New York City in decades". This is during construction this is



lobby and this is fame as the glass panel ice sculpture which they use water in this space.

Here is the long list of awards the which the Hearst Tower got and I am not going to bother going to read everything and these going to let you read through this two slides this gonna stretch for the other slide too so this is the long list of awards including the RIBA international Award and you also see the AIA award here.