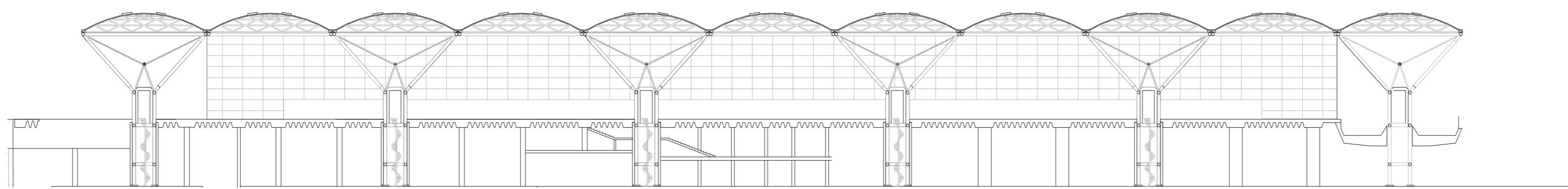
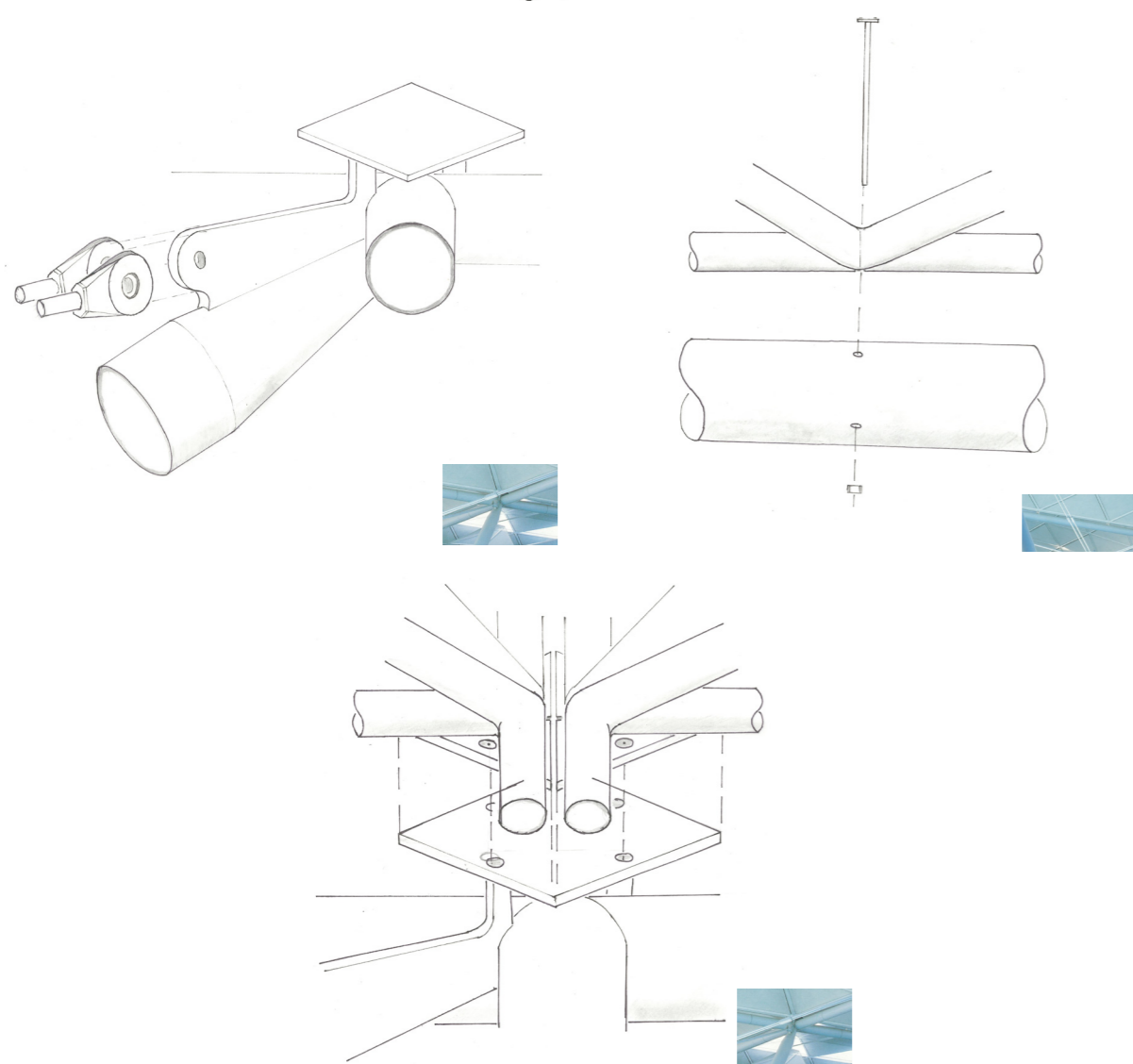


STANSTED AIRPORT

Foster & Associates 1991



SEQUENCE OF STRUCTURE CONSTRUCTION



STRUCTURAL CONNECTION DETAILS

Stansted airport is located south east of London in Essex in the UK. Originally an old Army air base in 1984 it was purposed that the airport would be redeveloped to become a passenger airport to service London and its surrounds. The first criteria of the airport were based around keeping it as simplistic as possible and making it as light and convenient as possible. They wanted to change the old concept of airport travel from stressful environment to as easy going and make the process fluid. The second criteria were to make building fit in and blend with its surrounding terrain.

The airports master plan was broken into orderly and articulated zones for various activities. All passengers processing is based on the one level with arrivals and departures working on the same level side by side. The use of one major zone of passenger activity where passengers mainly have linear routes makes the building feel light and convenient while keeping the space within the building compact and making moving distance within minimal.

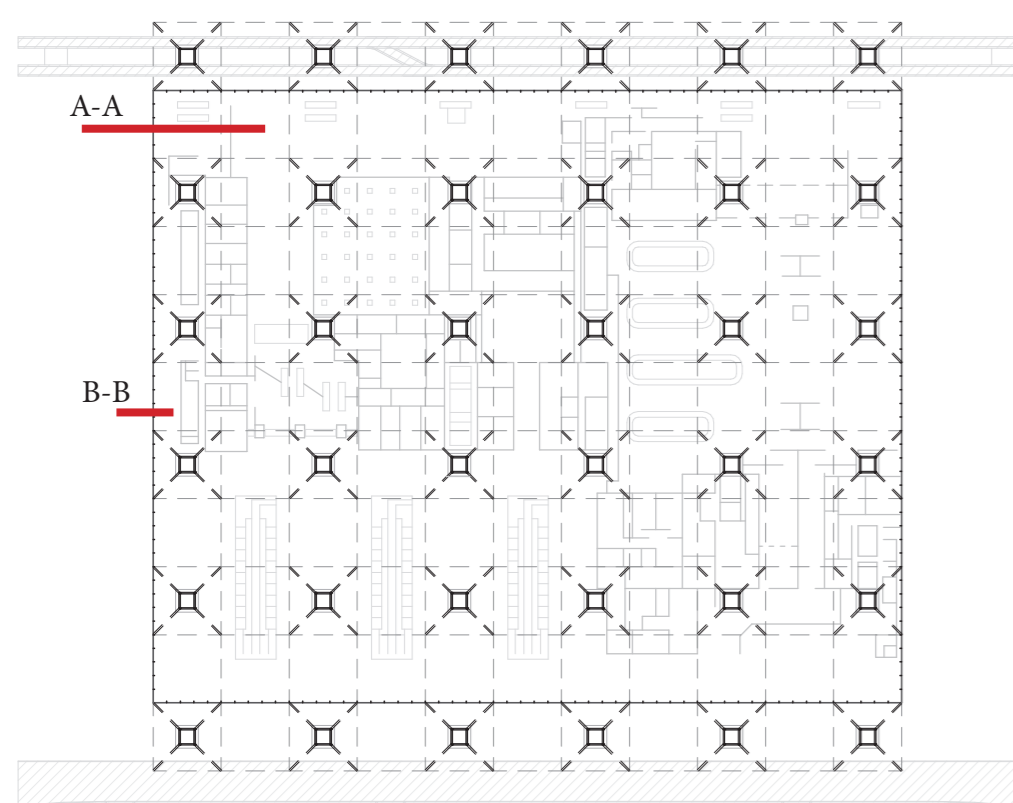
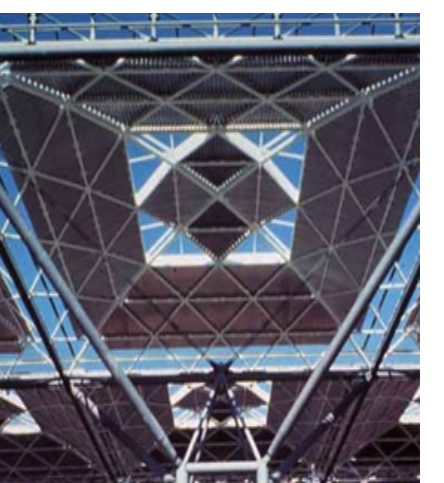
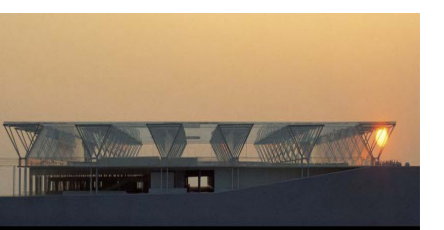
In 1986 the building work on Stansted started with the main architect Sir William foster and Partners and main engineer on the project being Martin Manning.

The structural design process in Stansted majorly contradicts the main element of simplicity in the building. The structural design is anything but simplistic. The structure is mainly based on the idea of the building fitting in with its surroundings with the use of structural trees in support of the building. The idea of the trees was mainly because they didn't want to use lots of columns to support the roof. The idea of identical structural system with cantilevered supports and the simply supported central spans by the structural trees on each section was adopted. The trees were designed with the buildings functions in mind, major bracing support in the trees was simplified into smaller more basic straight bracing so the use of the revolution service cabins could be used in between the legs of the trees which would provide the main building level with all its required services condensed into small square boxes. The use of these helped to keep to the original idea of fluid and airy building as there would be no messy services suspended from the roof structure.

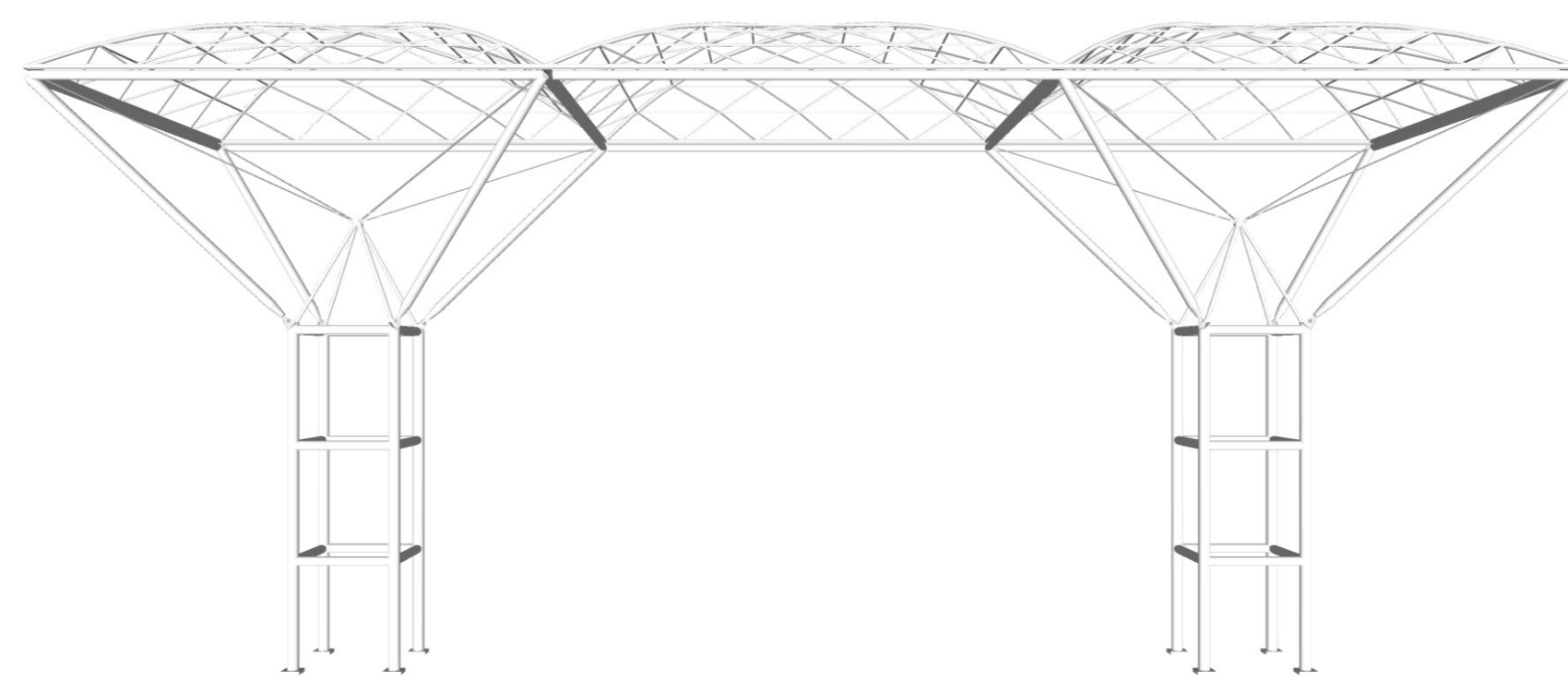
This system shows how the Stansted structural design exhibits respect for structural efficiency, economy and ease of construction.

The basic roof structure springs from four corners of the tree column below, this is formed by a series of 18 metre square lattice domes by grids of steel. The four branches from each corner form a pyramid shape these four branches are supported by a secondary structure which is made up of tensioned rods and tubes these help to diagonally brace the roof structure which are there to iron out any uneven loads which may occur on the roof due to weather etc.

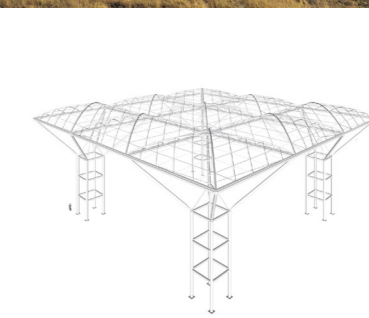
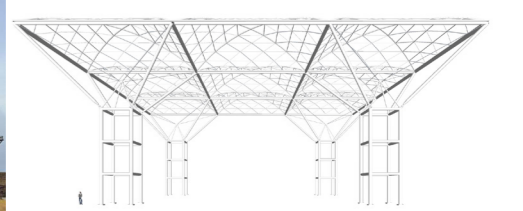
The lattice domes the curve from corner to corner is commonly called barrel vaults these intersect each other in the centre where they are pinned together. This structure was mainly designed by the great Irish engineer Peter Rice who is famously known for his involvement in world renowned buildings like the Sydney Opera House in Sydney Australia and Centre Georges Pompidou in Paris France. Rice is known all over the world for his engineering skills and the simplistic designs in the structural make up in buildings.



MAIN STRUCTURAL PLAN



STRUCTURAL 3D



STRUCTURAL 3D IMAGES



CONNECTION & COLLABORATION: LESSONS FROM PETER RICE

3rd & 4th YEAR ARCHITECTURAL TECHNOLOGY 2013

Students: Milo Bashford, Gerard Bennett, Ross Boyce, Patrick Brady, Robert ABurns, Robert GBurns, Sean Casey, Andrew Cleary, Carl Corcoran, Anna Cullen, Chris Daly, Adam Darby, Bernard Deay, Mark Denny, Vincent Doherty, Mark Doyle, Dean Farrell, Ciaran Ford, Shane Hall, Ross Harrell, Ben Harrison, Colin Hemon, Adam Henderson, Fatma Hinawy, Darren Hoey, David Holland, Brian Kennedy, Akvile Klapatskaite, Davitt Lamont, Brian Lee, Peter Lemasney, Ciaran Lennon, Brendan Linnane, Sarah MacLoughlin, James Maguire, Peter Mahon, Brian Malone, Michael Malone, Jason McElroy, Kevin McFeely, Karl McGarry, Pauric McGill, Marcus McGuire, Joe McNally, Kevin McNulty, Bryan Menton, Darragh Moore, Stephen Morris, Niall Murphy, Owen O'Flaherty, Ruairi O'Neill, John O'Sullivan, Daryl Phelan, Martin Philip, Ian Plunkett, Robert Quinn, Stephen Ralph, David Reilly, Jonathan Rogers, Anita Salako, Andrei Triffo, Aiga Veltensone, David Veltom, John Wolfe-Flanagan, Dominika Zubiak. Staff: Cormac Allen, Eric Bates, Noel Brady, Máirtín D'Alton, Pierce Fahy, Rory Greenan, Orna Hanly, John Lauder, Tim O'Leary, Jim Roche, Sima Rouholamin, David Wright. Collaborators: Gerard Crowley, Peter Flynn, Declan McGonagle, Sean O'Loire.

