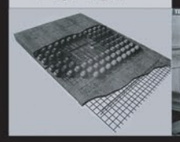
AS 189



1 Design for a concrete skyscraper

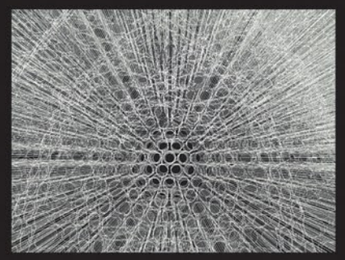
Beginning with an investigation of concretes possibility to provide possible opacity and transparency in a small scale and from that chancing scale into the absolutely biggest - a high riser.

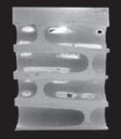
2 Inspiration > Starting the project with an outset in industrial use of empty space inside concrete casting. Seen above are bobble deck floors and tube cast floors.

3 The cut > As an alternative to normal casting using inflated objects a non parallel cut is being used, creating a lighter effect, and giving more openings to the block. Further more the inflated objects /here bicycle tubes are placed closer to make some areas of touch and thus providing contact between the resulting tube holes. It was also attempted to cast with more than one size object to gain a variation.

View through wall of parallel holes.

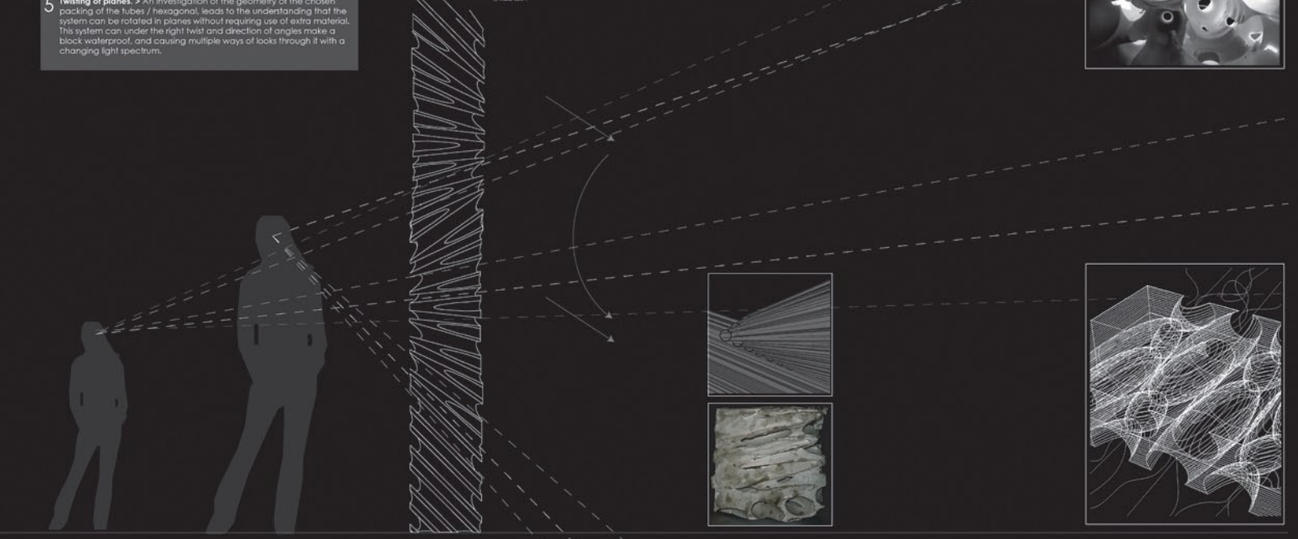
The Churchill museum London.

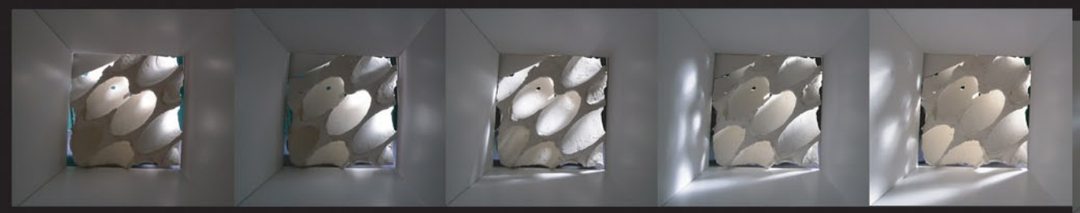




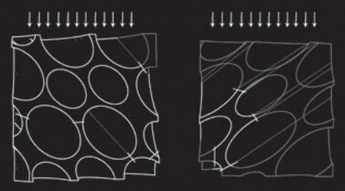
4 Use of block - considering rain, sun, and view through. >
Say the block should be rain proof as a wall then the view through would be very limited because of all the pipes facing down. Though light could with the help of in-between areas be able to come through a wall. See above.

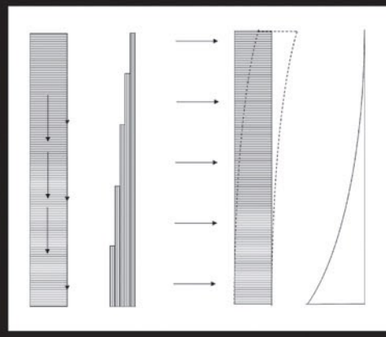
5 Twisting of planes. > An investigation of the geometry of the chosen packing of the tubes / hexagonal, leads to the understanding that the system can be rotated in planes without requiring use of extra material. This system can under the right twist and direction of angles make a block waterproof, and causing multiple ways of looks through it with a changing light spectrum.

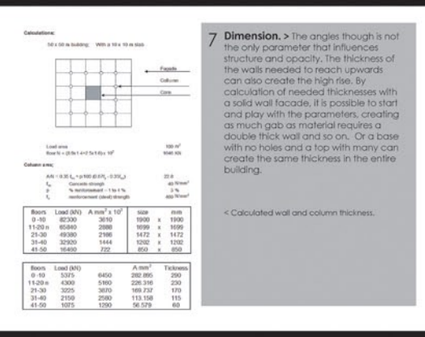




6 Structural angles > In order to go up in scale, the weight of concrete becomes a very important factor. On the left: The destruction of a concrete model. The gabs in the model had an angle of 45 degrees this was together with the weak corners the reason for breaking. Making it important to realise that the area between the tubes can work as columns or beams. The angle diagram seen beneath refers approx to the minimum needed angles through a tall building.
More info on the experiment.
//Experiment> Could the block hold a person of 80 kg standing on one of the sides? //No
// As seen in the drawings the critical area is where there is less material and the tubes have been close. But the corners where also a place that could not hold initiating the break of the whole block, causing a rotation of the force orthogonal onto the holes.

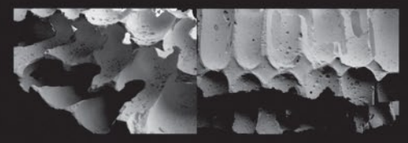


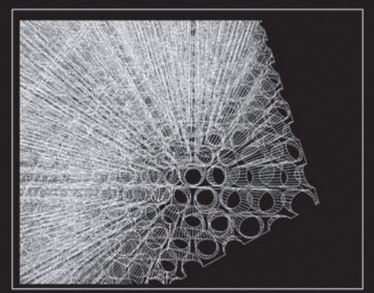


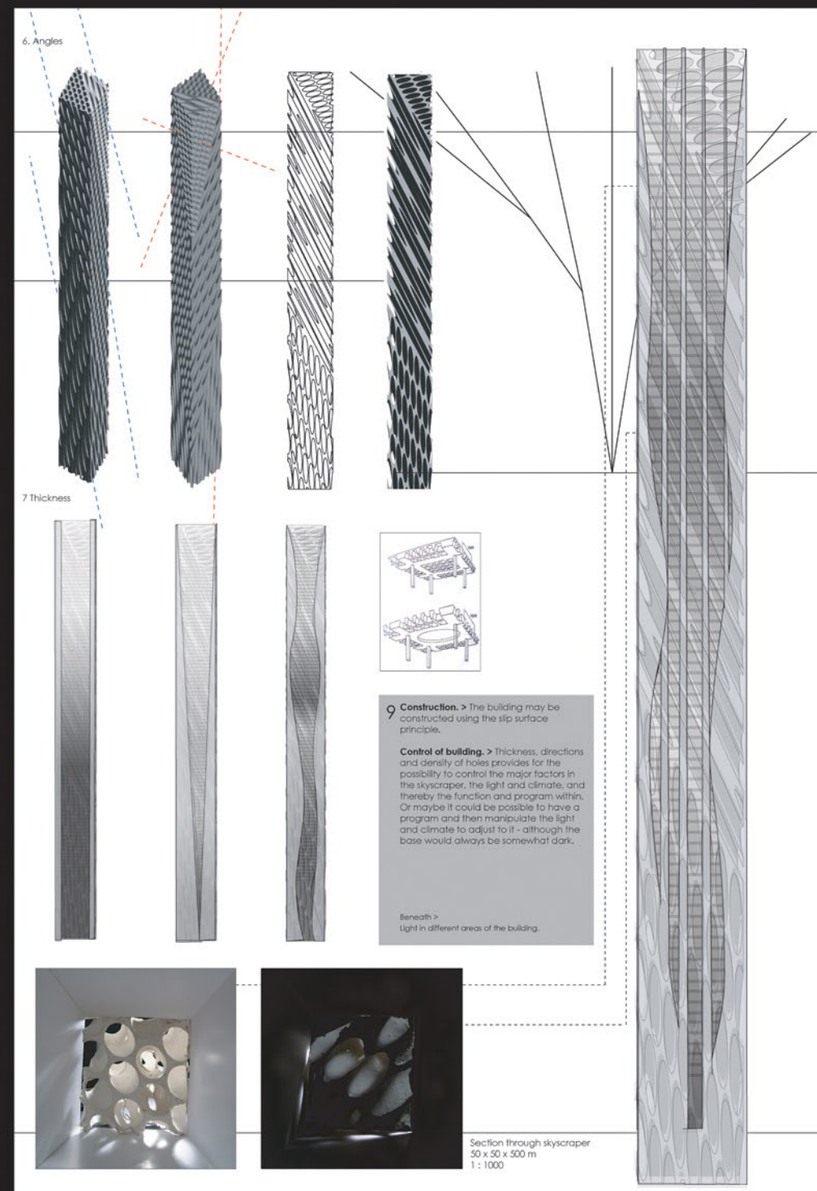


7 Dimension. > The angles though is not the only parameter that influences structure and opacity. The thickness of the walls needed to reach upwards can also create the high rise. By calculation of needed thicknesses with a solid wall facade, it is possible to start and play with the parameters, creating as much gab as material requires a double thick wall and so on. Or a base with no holes and a top with many can create the same thickness in the entire building.

< Calculated wall and column thickness.







9 Construction. > The building may be constructed using the slip surface principle.

Control of building. > Thickness, directions and density of holes provides for the possibility to control the major factors in the skyscraper, the light and climate, and thereby the function and program within. Or maybe it could be possible to have a program and then manipulate the light and climate to adjust to it - although the base would always be somewhat dark.

Beneath >
Light in different areas of the building.

Section through skyscraper
50 x 50 x 500 m
1 : 1000