

This poster explains the concept of the building design "Voorburg Twist", an Architecture Institute near Den Haag (Netherlands). The building can be divided in a main form with two subforms. The lower part is the socle of the upper part (the tower). The lower part contains the public functions like the exhibition hall, congress hall and restaurant but also the workshop for making models. The upper part contains the offices and design/research studios. The overall function of this building is a architecture institute but it can be changed into almost any (hybrid) office building. On the other posters the different aspects will be more explained which are now presented in a summary on this poster.



Main Form

- Urban level: Vliet VS existing buildings
- Building points to itself
- Statue on a socle



Subform: Lower Part

- Niche (hollow) Cave
- Socle of the upper part
- Square VS Circle
- Connection to the upper part (Atrium)
- Public functions

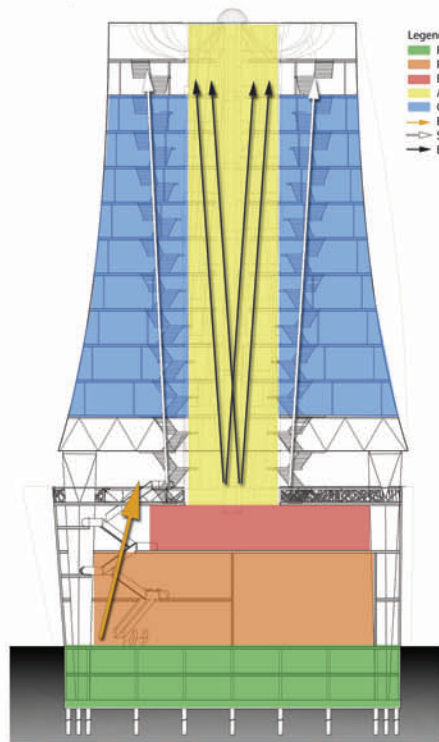


Subform: Upper Part

- 45 degrees twist
- Square VS Circle
- Atrium is the backbone of the tower
- Vertical tunnel full of movement



Arrangement of the building (section)



- Legend:
- Parking
 - Public functions
 - Exhibition Hall
 - Atrium
 - Offices
 - Escalator
 - Staircase
 - Elevator

Different Disciplines: Analyses of the Building

STRUCTURAL

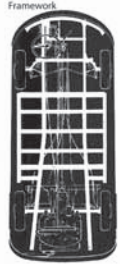
Human Bone structure



City Streets structure



Car Framework



Building Support structure (frame)



AIR SUPPLIES

Human Bronchial Tubes



City Underground pipes



Car Liquid system



Building Air Circulation



TRANSPORT

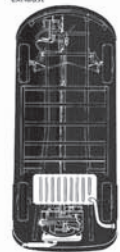
Human Digestion system



City Sewers



Car Exhaust



Building Elevator and stairways



ENERGY

Human Nervous system



City Energy supply



Car Electrosystem



Building Heliostats and light tubes



Voorburg Twist

Architecture Institute

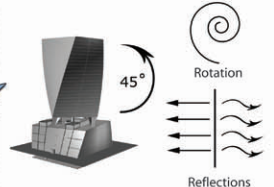
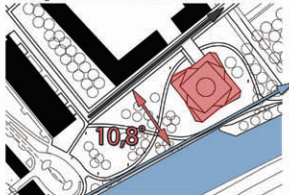
Location Plan

The Architecture Institute is located in Voorburg, on the riverbanks of "De Vliet". The main theme of this building is the twist/rotated shape. The Twist gives a direction, depending on the way you "read" it (from left to right). In this case it points out to the top, itself. The tower rotates 45 degrees, a short and powerful turn. Because of the form of the facades the reflections of the surrounding area in the facade becomes very different and deflected. The Twist theme can be found back in the building itself, in the construction and the atrium.

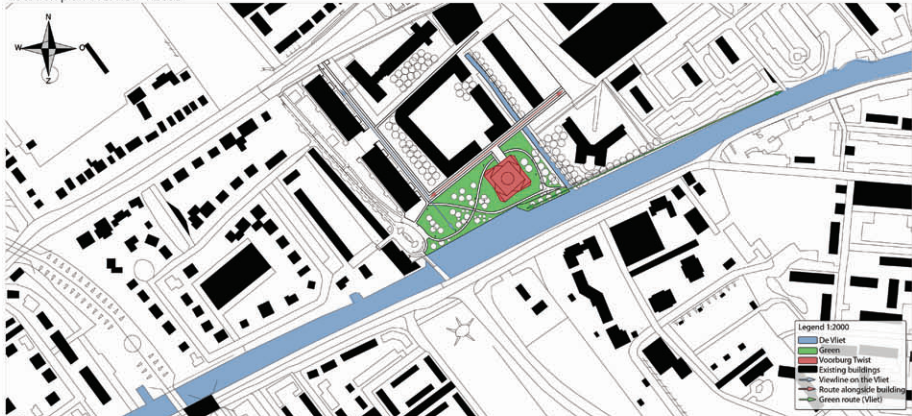
Birds-eye view from across "De Vliet"



The angle of the twist, derived from the location.

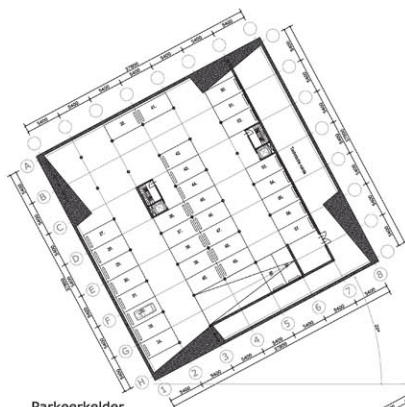


Location plan overview 1:2000

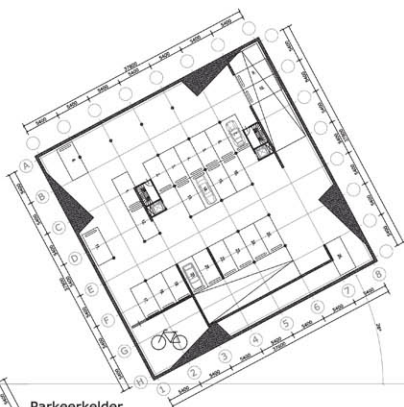


Ground level view towards the building.





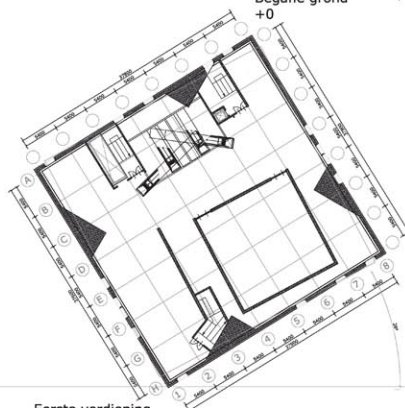
Parkeerkelder
-6000



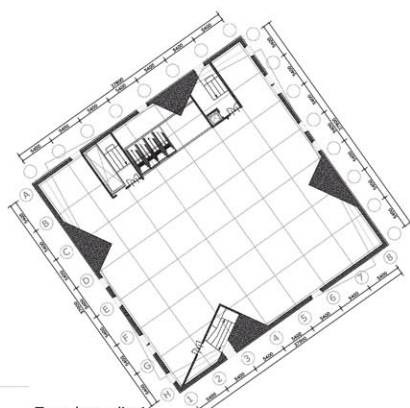
Parkeerkelder
-3000



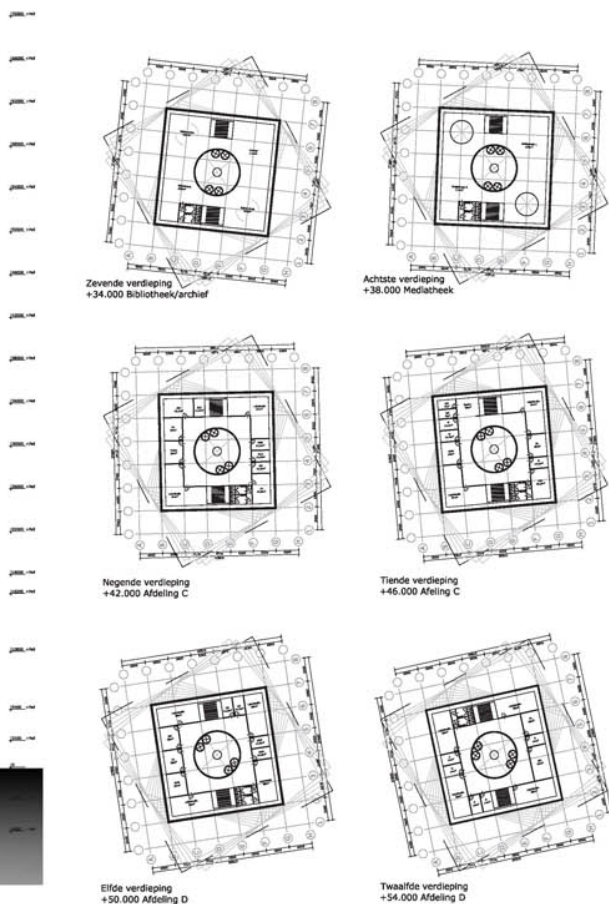
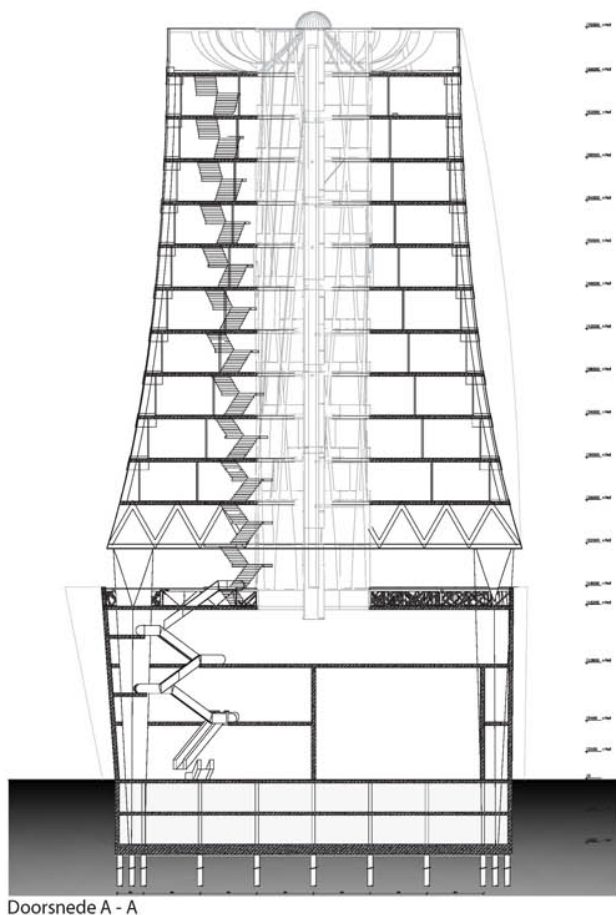
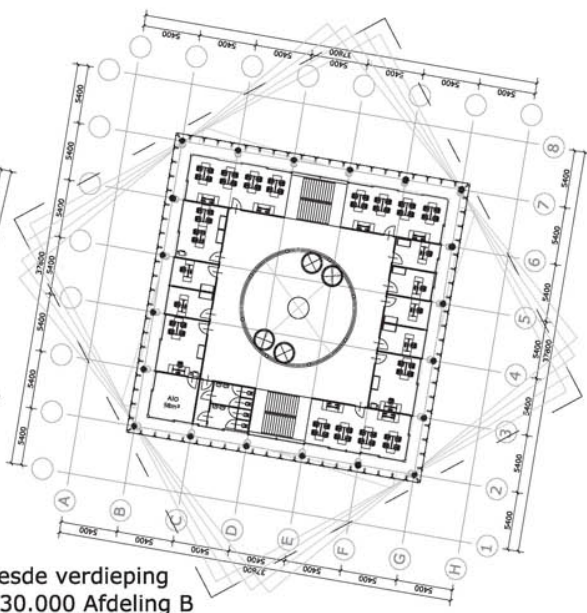
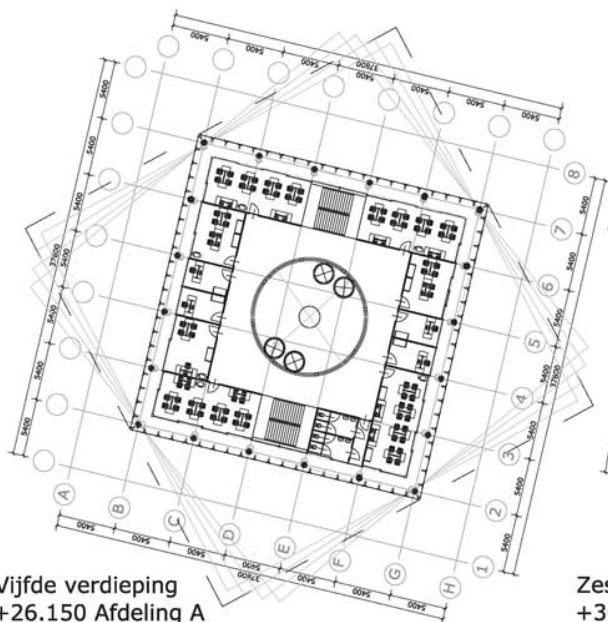
Begane grond
+0

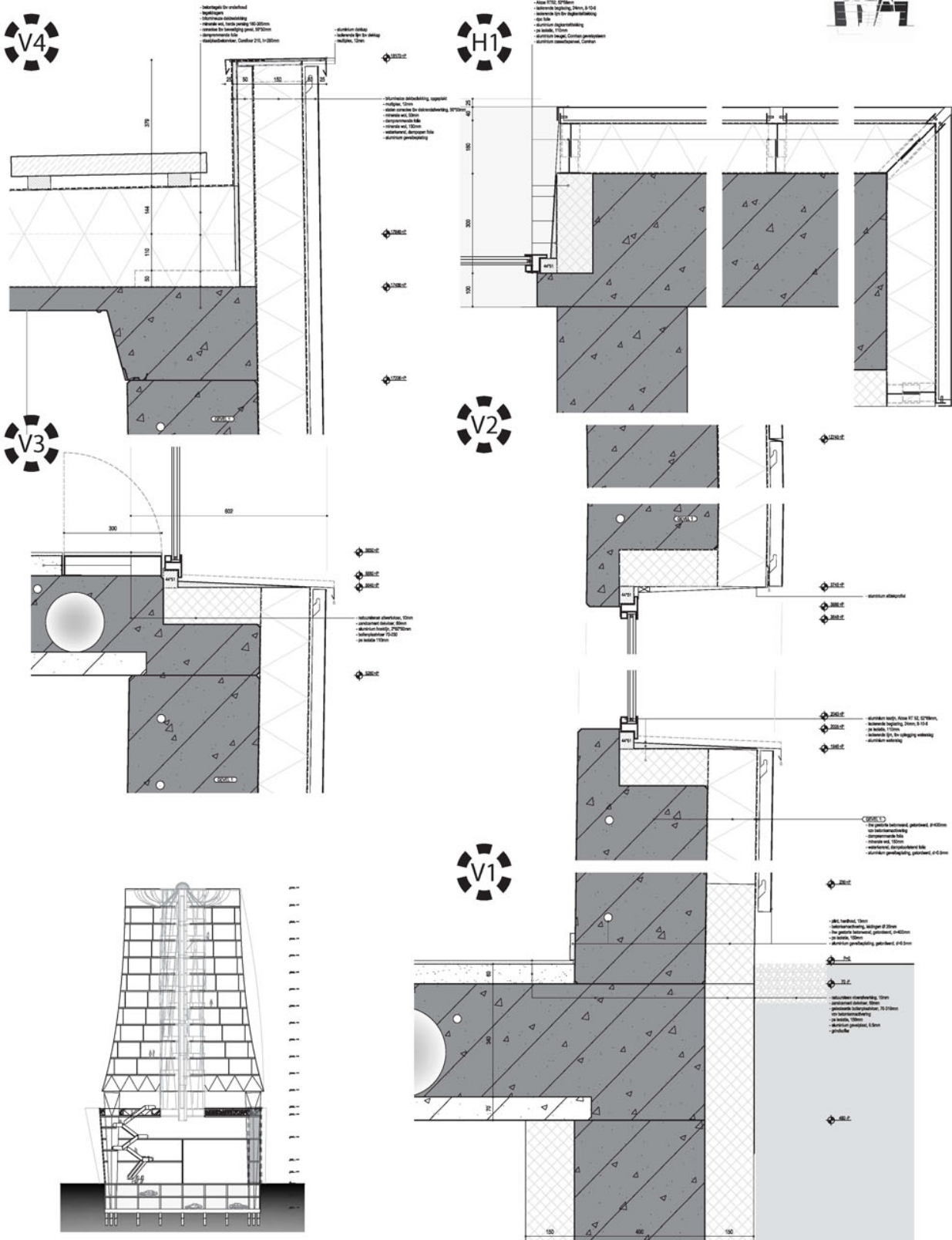


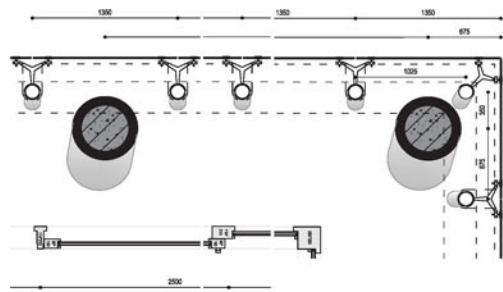
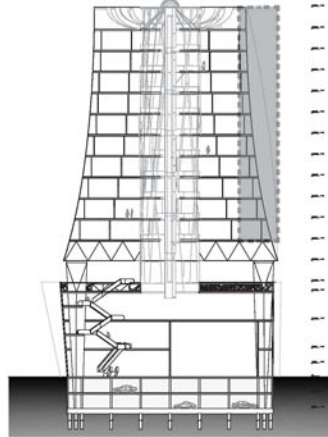
Eerste verdieping
+5.400



Tweede verdieping
+10.800







Voorburg Twist

Architecture Institute Construction 01: strength, stiffness & stability [MIDAS]

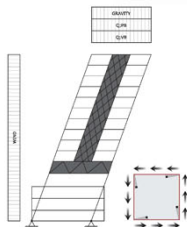
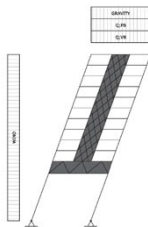
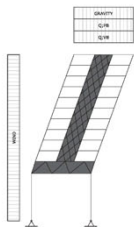
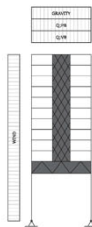


Straight

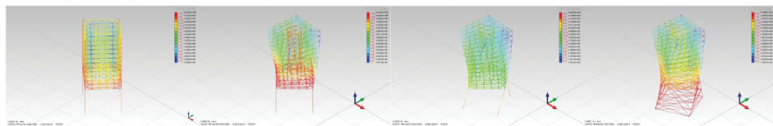
Straight / twist

Twist

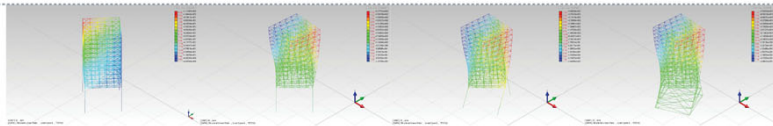
Clamped twist



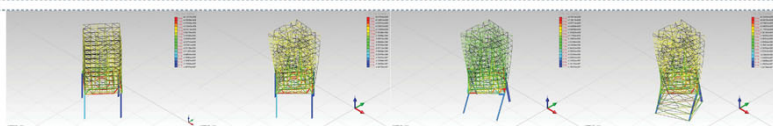
DEFLECTION[Z]



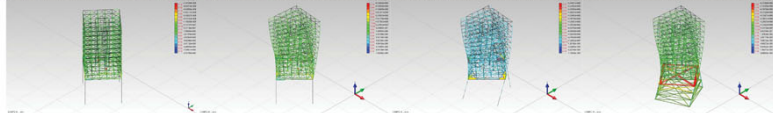
DEFLECTION[Y]



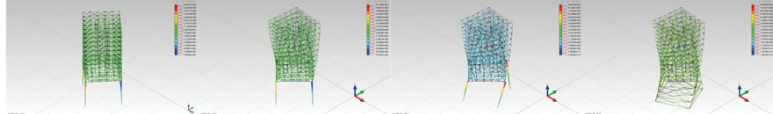
NORMAL FORCE

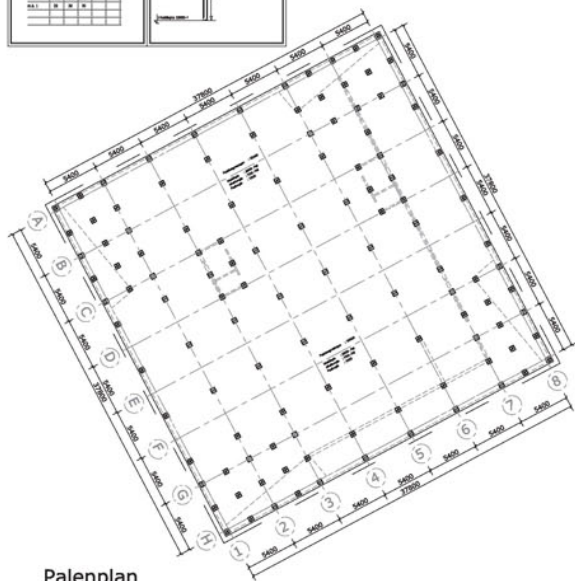
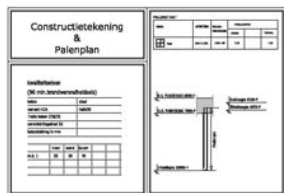


MOMENTS[X]

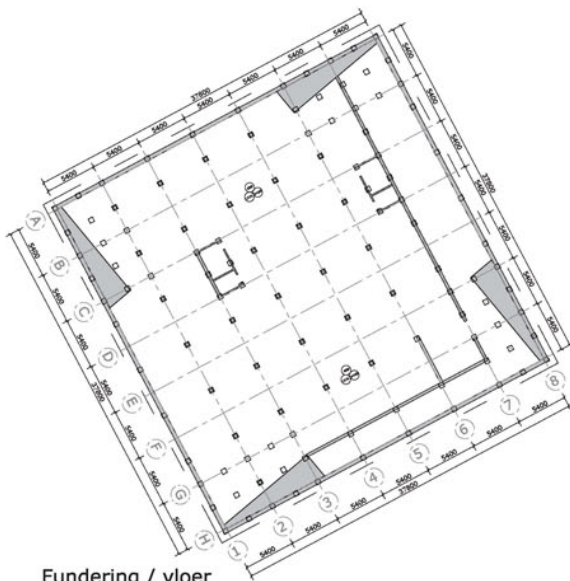


MOMENTS[Y]

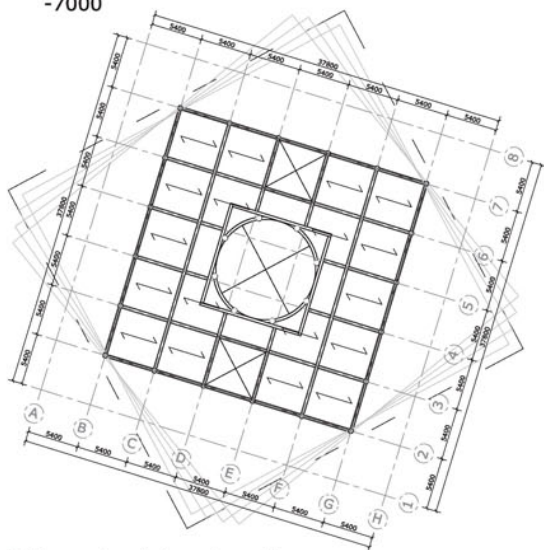




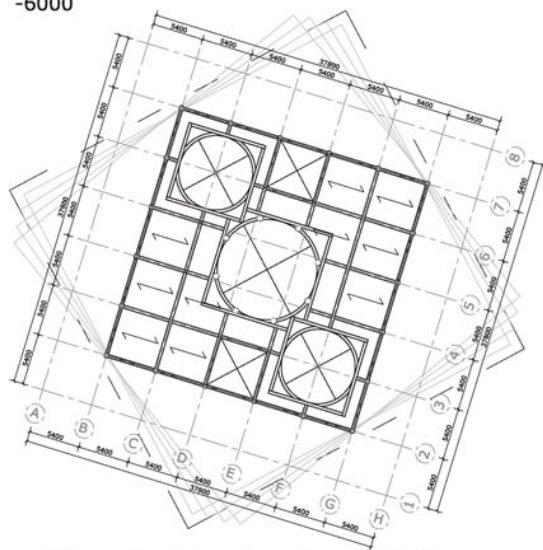
Palenplan
-7000



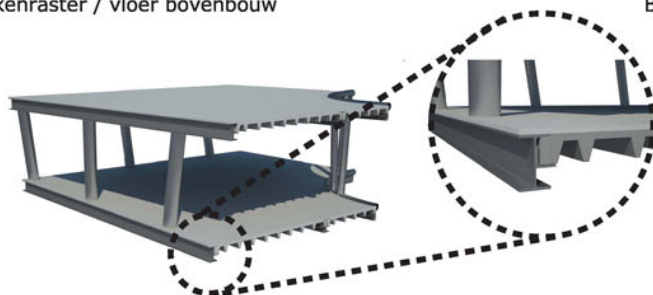
Fundering / vloer
-6000

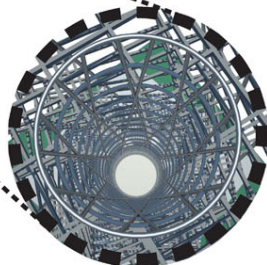
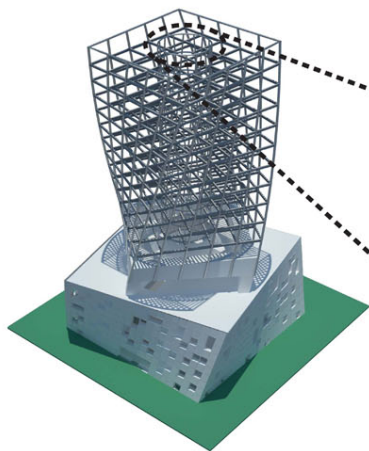


Balkenraster / vloer bovenbouw

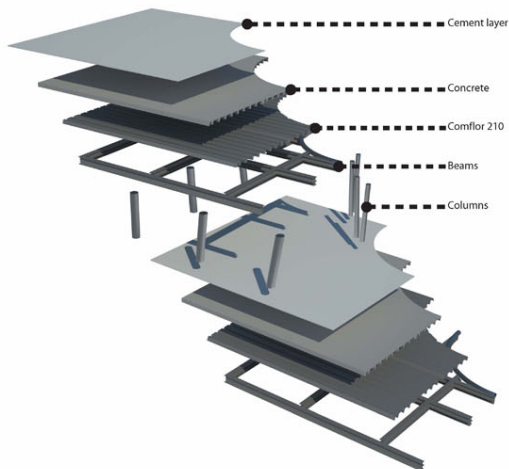
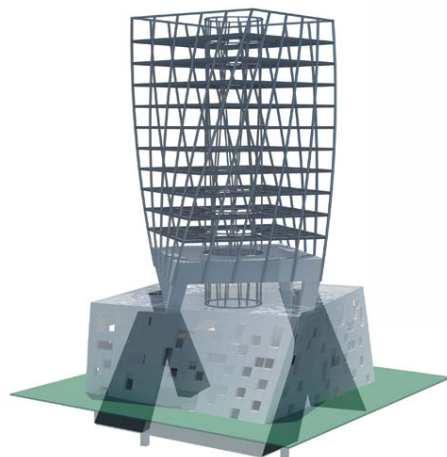


Balkenraster / vloer bovenbouw [vides]





Primary construction:
Main tower columns concealed in the
facade

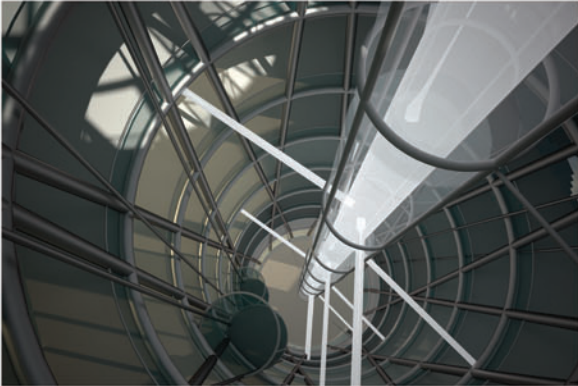


Primary construction:
The lower part is a closed box of
concrete and the upper part is made
out of a steel column and beam
construction

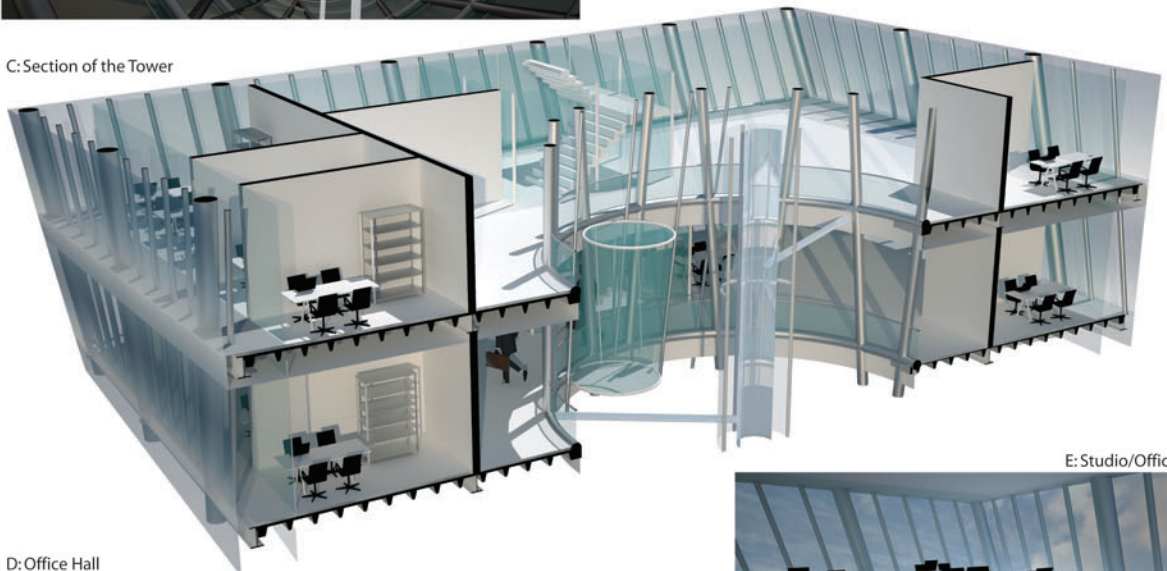
A: The Exhibition Hall and the start of the Atrium



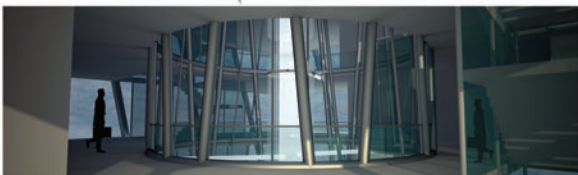
B: The Atrium with Light Tubes



C: Section of the Tower



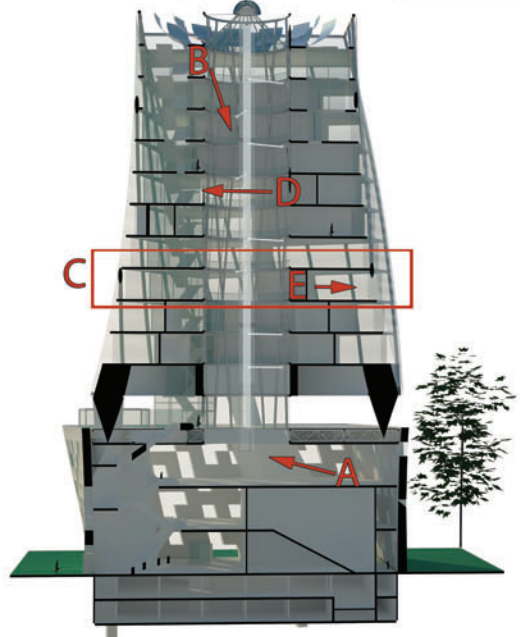
D: Office Hall

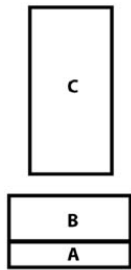


E: Studio/Office

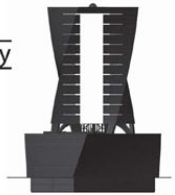
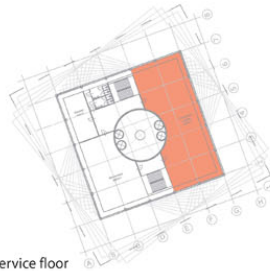


Section of the building with the perspective views

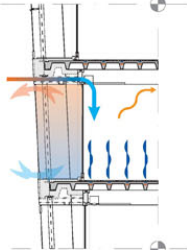
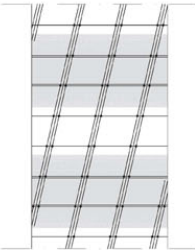




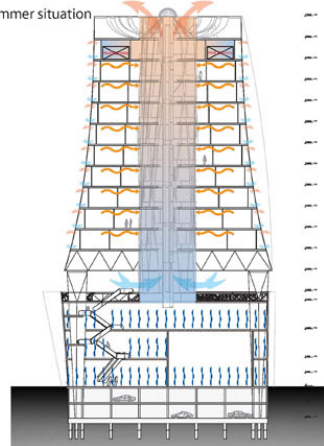
Technical service floor



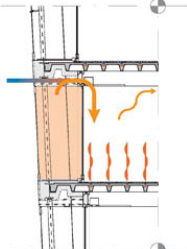
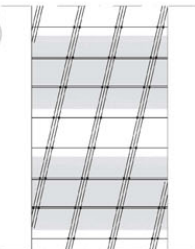
Summer situation



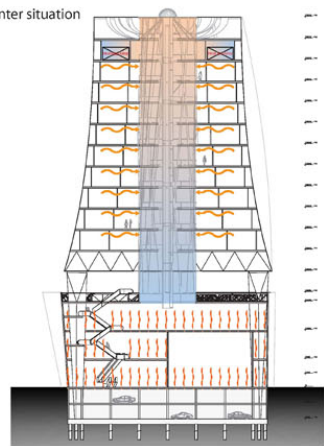
Summer situation



Winter situation

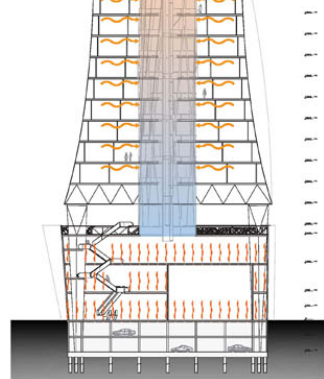
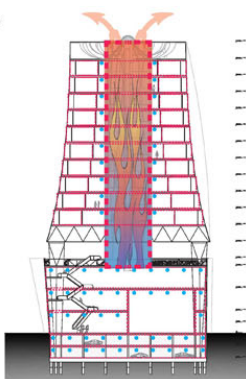
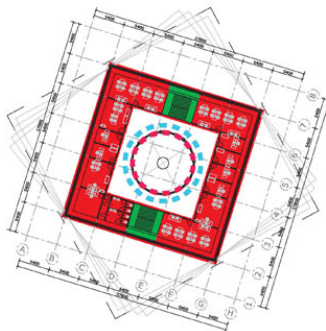


Winter situation



Fire safety

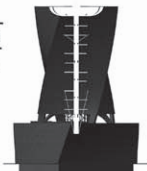
■ Sprinkler
 ■ Compartment
 ■ Escape route



Architecture Institute

Light 02: Heliostats and light transportation

The scenes below explain briefly the principles of this light system.



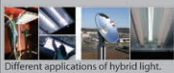
Reference:



M. Lewis Office - Washington DC

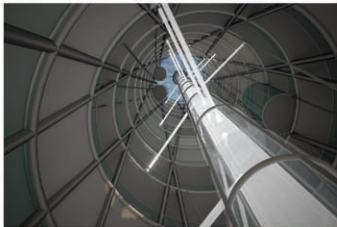


HelioStat field - Solar One Project



Different applications of hybrid light.

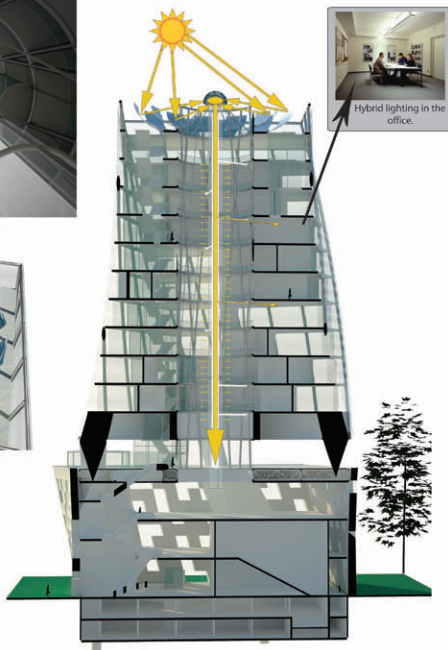
Application in the building:



Render of the atrium with the light tube inside the building.

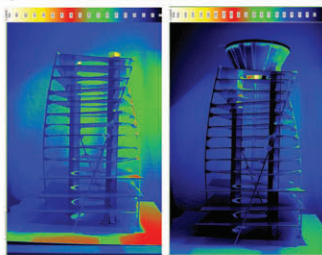


Render of the heliostats on top of the building



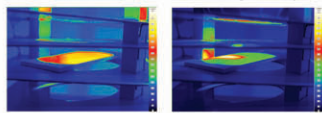
Hybrid lighting in the office.

Light test with a scale model and luminance camera:

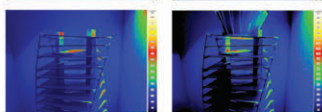


Without mirrors (lower intensity)

With mirrors (higher intensity)



1. *Journal of the American Medical Association*, 2000; 283: 2686-2692.



Without mirrors (spread light beams)

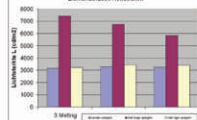
With mirrors (bundled light beams)

[illegible]

Hybrid Light - principle:



Lickhendergoek Hellekster



Different methods of transporting light:



Fibre Optics



Armature (fibre optics)



Armature (fibre optics)

First prototype of a an armature that has been applied in offices in the U.S. These can deliver up to 500 lux of light energy.



Liquid Light: (de)light project, Yankodesign