SADD - UN Environmental Council - Communicate!
P5 Kuno Jacobs 7 November
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What/why/where
What
Why

COLLECT

communication

EXCHANGE

United Nations - Masterplan - UNEC Design
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Masterplan

East Manhattan and UN site
While the conventional wisdom condemns it as an environmental nightmare, Manhattan is by far the greenest place in America according to Owen (Sheetrock and Shellac).

- Horrifically congested traffic encourage a carfree lifestyle centered on walking and public transit.
- Its massive apartment buildings use the heat escaping from one dwelling to warm the ones adjoining it.
Biggest quest: how to stay resilient?
Masterplan East Manhattan

Research defined the following problems:

- Travel time is growing; because of sprawl and overcharging transit systems
- Safety concerns are discouraging people to take the bike
- Green and public spaces are lacking. Green is not accessible within 500 meters.
- Water and air pollution, because of old heating-water systems and traffic jams
- Empty offices, because of oversupply
- Urban Heat Island is growing, causing more health problems and energy demand
Learning from the masterplan:
1) Urban (sustainable) design has a direct link with flows (people, waste, energy, water)
2) Buildings should accommodate the possibility of housing the infrastructural needs to become sustainable (Energy/water/waste/food/people); therefore
3) Integrating the architectural and urban design is an necessity
Masterplan UN Site
Proposal
Masterplan UN Site
Proposal

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UNEC Design

Ambitions
Concept
Situation
Program
Structure
Route Architecturale
Facade design
Climate design
Sustainability
Ambitions
UNEC Design
Ambitions

Communicate a strong and harmonic signal

Conclusion: search for a building that is iconic and sensitive to its environment
UNEC Design

Ambitions

Communicate function and adapt to the local climate

Conclusion: Choose one volume that responds on its environment and function.
UNEC Design
Ambitions

Bring back relation with the East-River

Conclusion: Place volume near the waterfront and connect it to the new boulevard

Original sketch, UN design team 1945
Restore ambition of UN Freedom Square

Conclusion: place the volume at the border of the platform to create a square and make the platform public accessible.

Original sketch of Oscar Niemeyer
Concept
**UNEC Design**

*Form*

Be Iconic: be different  
Be UN: be diplomatic

Be UNEC: adapt!  
Be UN: be sensitive, be public
Situation

- Placement volume
- Security
- Platform
- Entrances
Create space for General Assembly and choose side of change! (water and the new developments). Visible from different angles.
UNEC Design

Situation-placement volume
UNEC Design
Situation - security

Existing entrance  UN worthy?
UNC Design
Situation - security

Create clear entrance and exit for the platform with security checks. Water and esplanade protect against carbombing and suicide bombers.
UNEC Design
Situation - security

- Plant containers with trees
- Stairs
- Water
- Security check
UNEC Design
Situation - platform

Freedom square
Program
UNEC Design

Program

Main functions:

- Offices
- Auditoriums
- Meeting spaces
- Council chamber

United Nations – Masterplan – UNEC Design
UNEC Design
Program concept

Communicate!

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UNECE Design
Program -1, offices and knowledge center
UNEC Design
Program -2, Delegate Lounge, restaurant and

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UNEC Design
Program -2, Delegate Lounge, restaurant and
UNECE Design
Program +1, Library+ public stage

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UNEC Design
Program +2, Auditoriums + Lobbies
UNEC Design
Program +3, Auditoriums + Lobbies
Structure
Pylons create space
24 pylons, stabilized with steel cables

Structure follows form
Route Architecturale
UNEC Design
Route Architectural

1) City
2) UN plot
3) UN Platform
4) Sloping down
5) Following the light
UNEC Design

Route Architectural

Natural light scheme
UN Environmental Council hall
Facade design
**UNEC Design**

Facade concept main volume, architectural and climate concept

Avoiding overheating

Focus of the building

Largest spaces have largest windows
**UNEC Design**

*Facade image - main volume*

Reference etched glass. Peter Zumthor’s Kunsthau in Bregenz

Reference plastic composite facade. Benthem Crouwel’s Stedelijk museum in A’dam

North facade
**UNEC Design**

**Facade detail - main volume**

- **Round steel beams as fence (black)**
- **Steel T profile**
- **Steel beams square form 150 mm**
  - FRP laminate
  - Twaron aramid fiber and carbon fiber Tenax:
    - Doesn't expand or shrink with temperature differences
  - Pir foam (between 50 and 100 mm)
  - FRP laminate
  - Top coating (broken white, mat)
- **Steel profile 150 x 150**
  - Aluminium hook
  - Aluminium extrusion
  - Pom block (polyacetal)
  - Steel omega profile
- **Aluminium profile with triple etched (gezaard glas) glazing**
  - (50 mm, black)
- **Concrete floor shell (70mm)**
- **Concrete (in Situ) (380mm)**
- **Plastic hose (for cooling) (sound) Insulation 30 mm**
- **Subfloor 50 mm**
- **Hardstone tiles (white, mat)**
- **Space for technical installations**
- **Aluminium sheets**

**Details 1:5 vertical**

*United Nations - Masterplan - UNEC Design*

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UNEC Design
Facade detail - main volume

Oval vs. round
Glass facade is not right-angled to its structure
Facade materials:
- Concrete with Norwegian marble
- Windowframes are made of oak
- Insulated glass
- Roof: Op-deck floor with Norwegian marble (RC-value of 2,5 and 15dB soundinsulation. Poored in one time, in Situ)
Climate design
UNEC Design
Ventilation schemes

United Nations – Masterplan – UNEC Design
Ventilation schemes
UNEC Design

Heating and cooling schemes - summer
UNEC Design
Heating and cooling schemes - winter
UNEC Design
Heating and cooling schemes - office - winter

Specification office room:
4 meter heigh, 5,4 meter long, 2,7 meter wide
Max 10 degrees difference with outside
UNEC Design
Heating and cooling schemes - office - winter

'Coanda-effect'

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Sustainability
UNEC Design
Concept main building

-15% heat
-80% stay cool
UNEC Design
Heat and cooling system
Non-integrated PV cells because it can grow with PV innovations

Roof specifications:

Energy roof: 6000 m²
PV cells: 2500 m²
2417 MWh (hot)
482 MWh (cold)
450 MWh
Non mentioned sustainable measures:

**Social sustainability**

- New public domain
- More space to gather and demonstrate
- Free accesible
- Besides attraction it delivers knowledge
- (knowledge center, history museum, library, lecture space, expo)
- People can attend Council meetings (free)
- A humain way of dealing with safety concerns
- More green space and better connection with water

**Water (pollution)**

- Rain water collected for flushing toilets
- Grey water re-used by aquifers
- Seperation of pee and poo. Pee is used for fertilizing crops at urban farm
- Poo is processed in a bio gas tank
- Snow water is collected for cooling the building
- Outfall of sewage in East-Rver is solved

**Materials**

- Building exists of materials that are longlasting. Because the UNEC has to survive many decades. Therefore the use of concrete can be explained. Concrete is used as minimal as possible.

- Urban Heat island effect is countered by the use of sun collectors and materials with a low albedo level;
- Therefore the UNEC helps to counter the heat problem and therefore indirect smog and health problems
- Green and water are helping to lower down the urban temperatures
Questions?