Part 02 - ARCHITECTURAL DESIGN
- Concept
- Program
- Integration M.P.
- Water system

Part 03 - TECHNICAL DESIGN
- Structure
- Facade
- Climate
- Water system

Part 04 - UNC REFLECTION
- Reflection
- Questions
- Discussion
“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

Introduction

Manhattan 1609

Manhattan 2009
Highrise development
Future Earth's vision of Manhattan in "Journey to the End of the World"
Sustainability

> Polluted rain water
> Demand for fresh water
> Insufficient capacity drainage systems
> Non-renewable energy systems
For more than 60 years Leaders around the world, meet in one place

<table>
<thead>
<tr>
<th>International Court of Justice</th>
<th>General Assembly</th>
<th>Security Council</th>
<th>Economic &amp; Social Council</th>
<th>Secretariat</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Hague - NL</td>
<td>United Nations Territories - Manhattan - New York - USA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
We have to take action!

UNEC GOALS: to Create Awareness and propagate Sustainable Development
History

First Avenue

- 42nd Street
- 47th Street
- North Lawn
- FDR Drive
- East River Side
- General Assembly
- Council
- Secretariat
- Library
History

- First Avenue
- 42nd Street
- 47th Street
- North Lawn
- FDR Drive
- East River Side
- General Assembly

**Council**

- Library

Le Corbusier
Modernist
Changes

Fence around complex

Security tent

Cut off highway
And 1st street
At the start of this millennium Kofi Annan, then United Nations Secretary-General, framed the challenge eloquently:

“Our biggest challenge this new century is to take an idea that seems abstract – sustainable development – and turn it into a reality for all the world’s people.”
- non-renewable energy use (93%),
- Vacancy of office space in Midtown (21%),
- Above average travel time (39 minutes average),
- Urban Heat Island Effect (+13 Celsius in 2050),
- Pollution (worst air pollution of US),
- Lack of public space,
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IT COULD BE APPROPRIATE FOR ABSOLUTELY TOP END RESIDENTIAL... BUT PUBLIC ACCESS IS OBVIOUSLY A PROBLEM, BECAUSE YOU HAVE TO RELY ON FERRIES

DONALD TRUMP
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- Lack of public space,
Water cleaning system in water basins

Waste water
20,000 m³/year.

UN uses:
5,000 m³/year.

4.00 x

Renewable energy
331,128,000 kWh/year

UN uses:
48,000,000 kWh/year.

6.89 x
47th street and entrance plot

Connection on plot between buildings
01 - Structure of Manhattan

02 - Structure of the boulevard

03 - Structure of the basement 01

04 - Structure of the basement 02

05 - Grid of the former UN gardens

06 - Grid of the masterplan esplanada

07 - The East River

East River
03 - Structure of the basement 01
Connections

**Manhattan**

- **01** - Structure of Manhattan

- **02** - Structure of the boulevard

- **03** - Structure of the basement 01

- **04** - Structure of the basement 02

- **05** - Grid of the former UN gardens

- **06** - Grid of the masterplan esplanada

**East River**

- **07** - The East River

*05 - grid of the former UN gardens*
01 - Structure of Manhattan
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03 - Structure of the basement 01
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05 - Grid of the former UN gardens
06 - Grid of the masterplan esplanada
07 - The East River
**Approach to Design**

- **Eye sight**
- **Safety around building**
- **Distance from the edge**
- **One clear entrance for safety**
- **View towards East River**
- **Grid connections to surrounding buildings**
Approach to design

Eye sight

Safety around building

Distance from the edge

One clear entrance for safety

View towards East River

Grid connections to surrounding buildings

In line with entrance General Assembly
Approach to Design

Eye sight

Safety around building

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Approach to Design

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Approach to design

- Grid connections to surrounding buildings
- Connection for delegates
- In line with entrance General Assembly

Eye sight

Safety around building

Distance from the edge

One clear entrance for safety

View towards East River

Safety around building

In line with entrance General Assembly
Connection for delegates
The diagram compares water management in city areas and green areas.

In the city area:
- 55% Drain
- 30% Evapotranspiration
- 10% Surface infiltration
- 5% Soil infiltration

In the green area:
- 10% Drain
- 40% Evapotranspiration
- 25% Surface infiltration
- 25% Soil infiltration
THE FLUID NETWORK

Water system around plot

Example as rest in city

- Vains will be cleaned towards the East river

“Everyone its own responsibility”
THE FLUID NETWORK
Total profit per year

<table>
<thead>
<tr>
<th>Year</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>$214,015</td>
</tr>
<tr>
<td>2030</td>
<td>$669,443</td>
</tr>
<tr>
<td>2050</td>
<td>$2,241,908</td>
</tr>
</tbody>
</table>

Total water 2013 use: 10,995,324 liters
Rainwater: 12,663,013 liters
Potable water: 28,656,387 liters

This means:
- Enough drinkwater for 26,170 persons per day (0.016%)
- 41% of space of Manhattan needed to provide all people potable water
WATER AROUND BUILDING
- delegates & staff
- press
- tourists
- invited visitors
Parking Deligates
Parking Employees
Storage
Expedition (inside)

Floorplan -3
Level = -10.520

9215 m²
Building Design

Floorplan 2
Level 10.400

Offices:
- 1119 m²

Canteen:
- 1601 m²

Facility Management:

ICT:

Building Design
Facade
Holcon system

- Floor heating
- Controls by thermostats
- Ceiling cooling
- Prestressed
Winter
21 December

Energy use of East River

Water temperature 2-25 °C
Spring and Fall
21 March/September

Summer
21 June

Day
Night
Summer day

Hot water storage

Cold water storage

Osmosis

Summer night

Hot water storage

Cold water storage

Osmosis

331,128,000 kWh/year
6.89 times the use of the U.N. plot.
Winter day

- Hot water storage
- Cold water storage
- Osmosis

Winter night

- Hot water storage
- Cold water storage
- Osmosis
Glass in structures principles:
Glass in structures principles:

1. Soft neoprene bar laid in a clipped joint.
2. Silicone applied on both sides.
3. The water proceeds through the joint.
4. Neoprene bar and profiled perfect fitting (viscoelastic).

Cross section of the glass hole in the floor of the rippled clubhouse.
Detail 1

GREEN ROOF SYSTEM:
- Vegetation layer
- Substrate layer
- Filter layer
- Drainage layer
- Protection layer
- EPDM roofing
- Insulation 150 mm

Planar natural cladding
- Sandwich panel isolation
- Side beams, part of Holcon flooring system

Opening the purpose of ventilation (night cooling)

Air flow through mechanical ventilation to the AHU

Holcon flooring system be opened for processing installations

DOUBLE SKIN FACADE
- Triple glazing
- Sunshading lamels
- Second glazing skin, wood studs
Opening the purpose of ventilation

ROOF SYSTEM:
Protection layer
EPDM roofing
Insulation 150 mm

DOUBLE SKIN FACADE
Triple glazing
Sunshading lamels
Second glazing skin, wood studs

Exposition space
END OF PRESENTATION

Thank you