

TWA Terminal Iqualada Cemetery

TWA Terminal

Eero Saarinen



Eero Saarinen

- Born August 20, 1910 in Kirkkonumm, Finland
- At an early age studied under his father Eliel Saarinen, the President of Cranbrook Academy.
- While at Cranbrook became close friends with Charles and Ray Eames; during this time he became interested in furniture design.
- Studied Sculpture at Academie de la Grande Chaumiere in Paris (TWA Terminal has sculptural qualities).
- Received a degree in Architecture from Yale University.
- Later returned to Cranbrook to teach and work.
- Worked with father until his death.
- After his father's death Eero founds his own firm, Eero Saarinen and Associates, in 1950.
- Married Aline B. Louchheim.
- Died in April 1961 of brain tumor before the completion of the TWA Terminal

TWA is beginning to look marvelous, if anything happened and they had to stop work right now and just leave it in this state, I think it would make a beautiful ruin like the Baths of Caracalla

Eero Saarinen just before his death



Important Works



Organic Design in Home Furnishings –
chair competition, 1st place with Charles Eames(1940)
<http://www.eamesoffice.com/index2.php?mod=furniture>
Materials used include wood, foam, rubber, and plastic.



GM Technical Center
1949-1956
Warren, Michigan

www.carofthecentury.com/versai34.jpg

Important Works



IBM'S Rochester Plant
Rochester, Minnesota
1956



Thomas J. Watson Research Center
Yorktown Heights, NY
1961

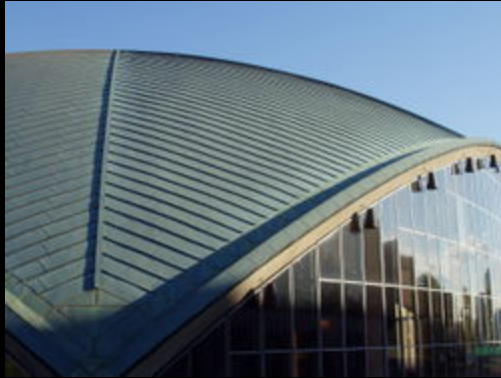
http://en.wikipedia.org/wiki/Thomas_J._Watson_Research_Center



John Deere World
Headquarters
Moline, Illinois
Opened 1964 (Roche finished)

www.deere.com/en_US/attractions/worldhq/index.html

Important Works



Kresge Auditorium
MIT
1953-55

http://en.wikipedia.org/wiki/Kresge_Auditorium



Ingall's Rink (The Whale)
Yale University
1953-58

http://en.wikipedia.org/wiki/Ingalls_Rink

Important Works

Jefferson National Expansion
Memorial

St. Louis, Missouri
1947 (competition)

1961-1966 (construction)

<http://artfiles.art.com/images/-/The-Gateway-Arch-Rises-High-Above-the-Grounds-of-the-Jefferson->

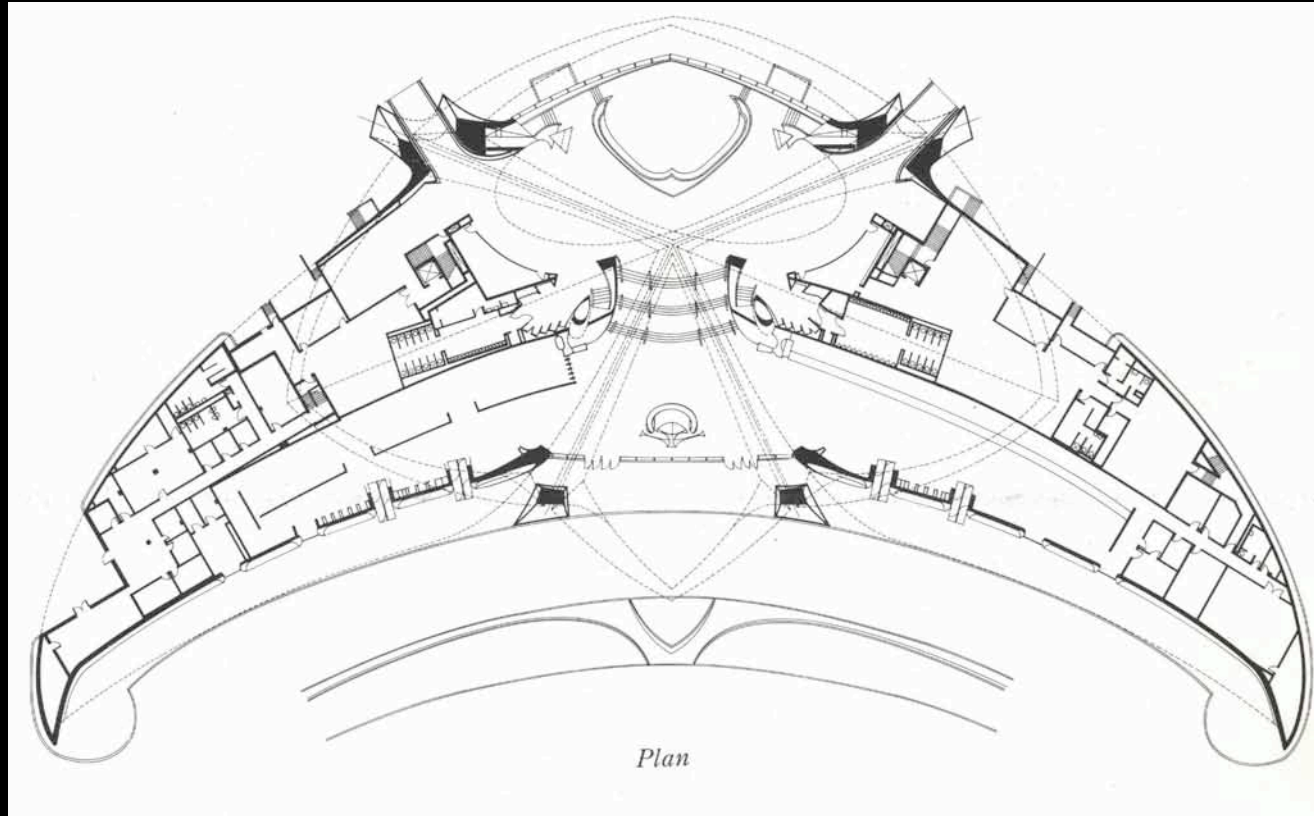
Dulles Airport
Chantilly, Virginia
1958-1962

http://www.metwashairports.com/_/Gallery%20Image/_/dulles_terminal_and_saarinen.jpg

TWA Terminal

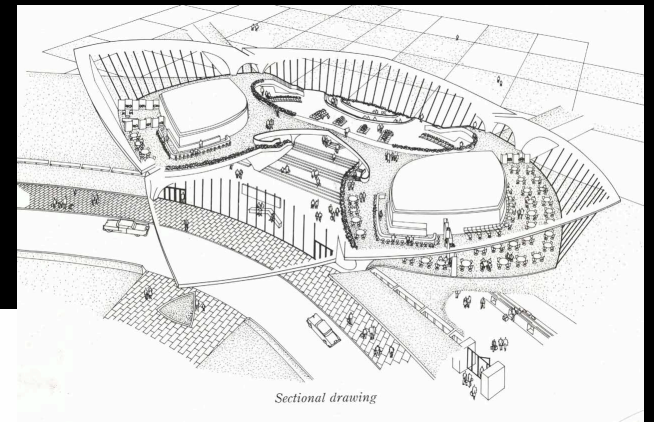
- **Location:** New York, New York (Kennedy Airport) (Queens)
- **Client:** Trans World Airlines
- **Architects:** Eero Saarinen, Kevin Roche, Ceasar Pelle, Edward Saad, Norman Pettula
- **Contractors:** Grove, Shepard, Wilson, & Kruge
- **Design Engineer:** Boyd G. Anderson
- **Structural Engineering:** Amman & Whitney
- **Project Design Date:** starting in 1956
- **Project Completion Date:** 1962 (Roche continues on project after Saarinen's death)

The Plan: How the TWA Terminal Functions (Main Plan Level)



- Plan is centered on the main access road of the airport, making it highly visible

Main Level

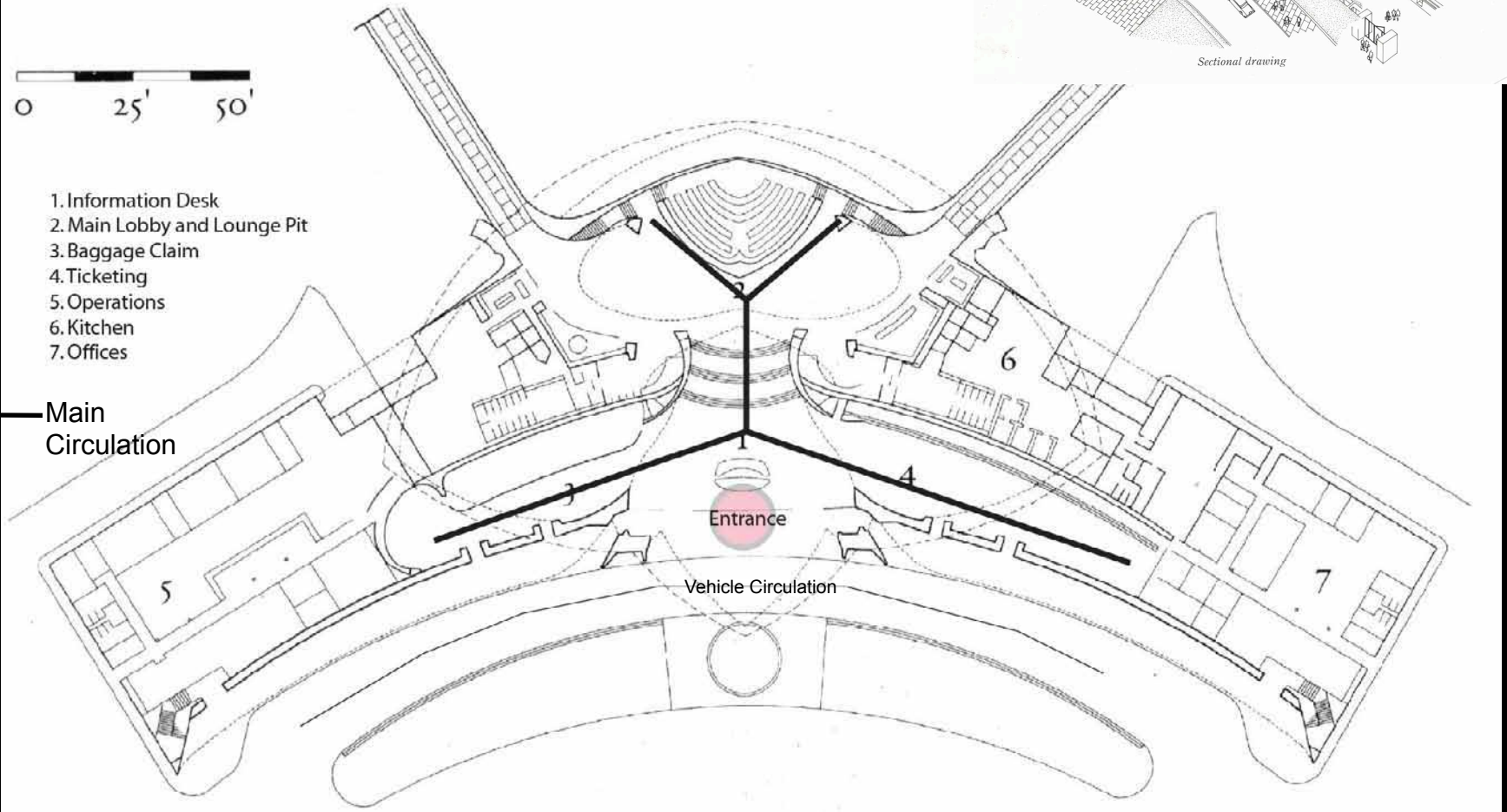


1. Information Desk
2. Main Lobby and Lounge Pit
3. Baggage Claim
4. Ticketing
5. Operations
6. Kitchen
7. Offices

Main
Circulation

Entrance

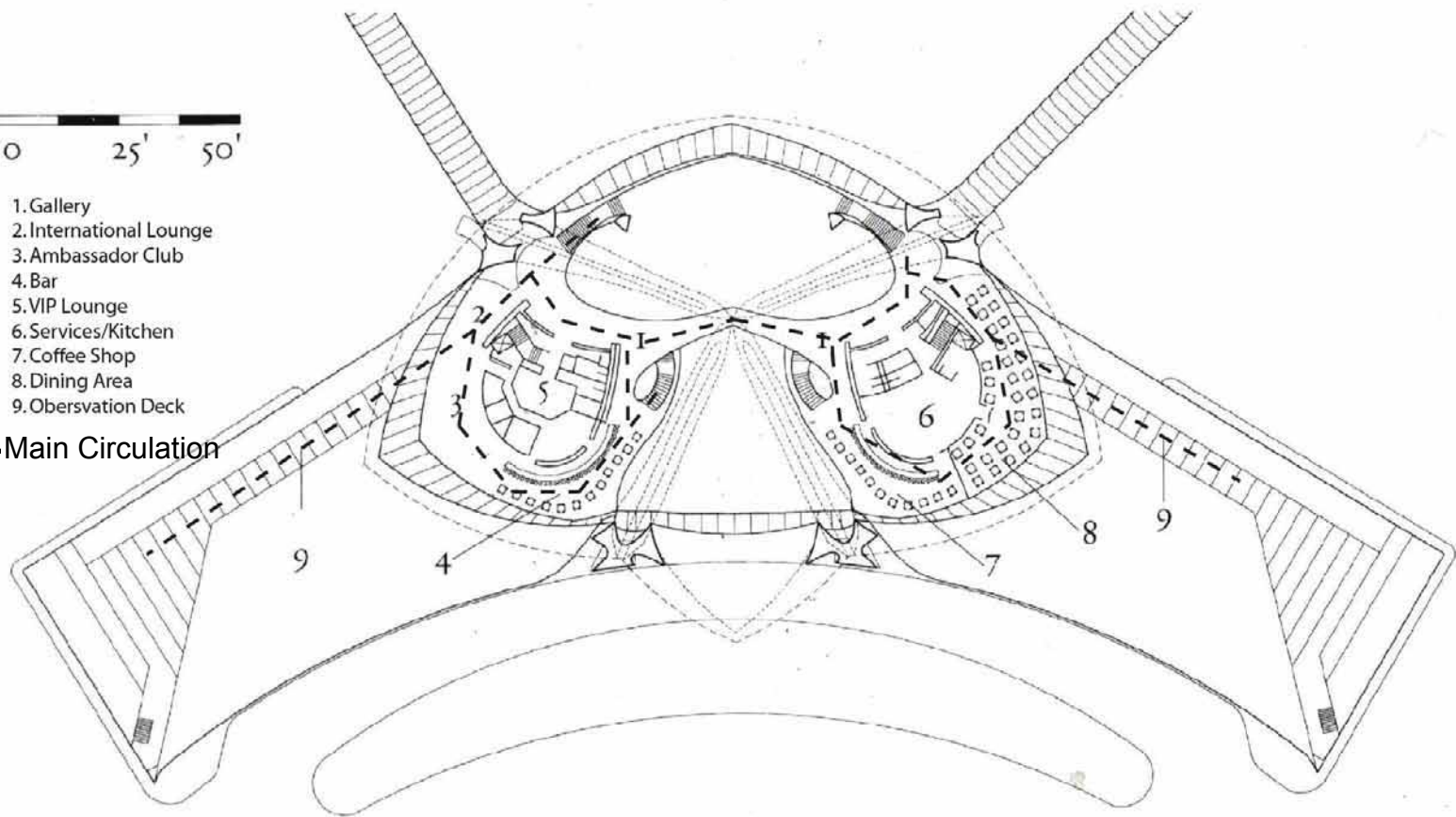
Vehicle Circulation





- 1. Gallery
- 2. International Lounge
- 3. Ambassador Club
- 4. Bar
- 5. VIP Lounge
- 6. Services/Kitchen
- 7. Coffee Shop
- 8. Dining Area
- 9. Observtion Deck

— Main Circulation



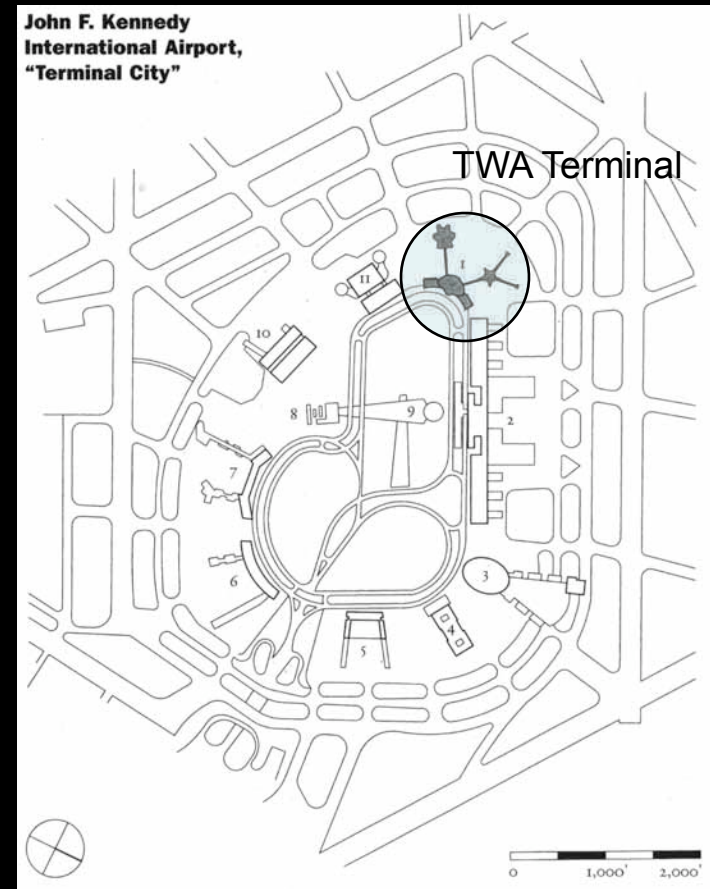
Historical Context

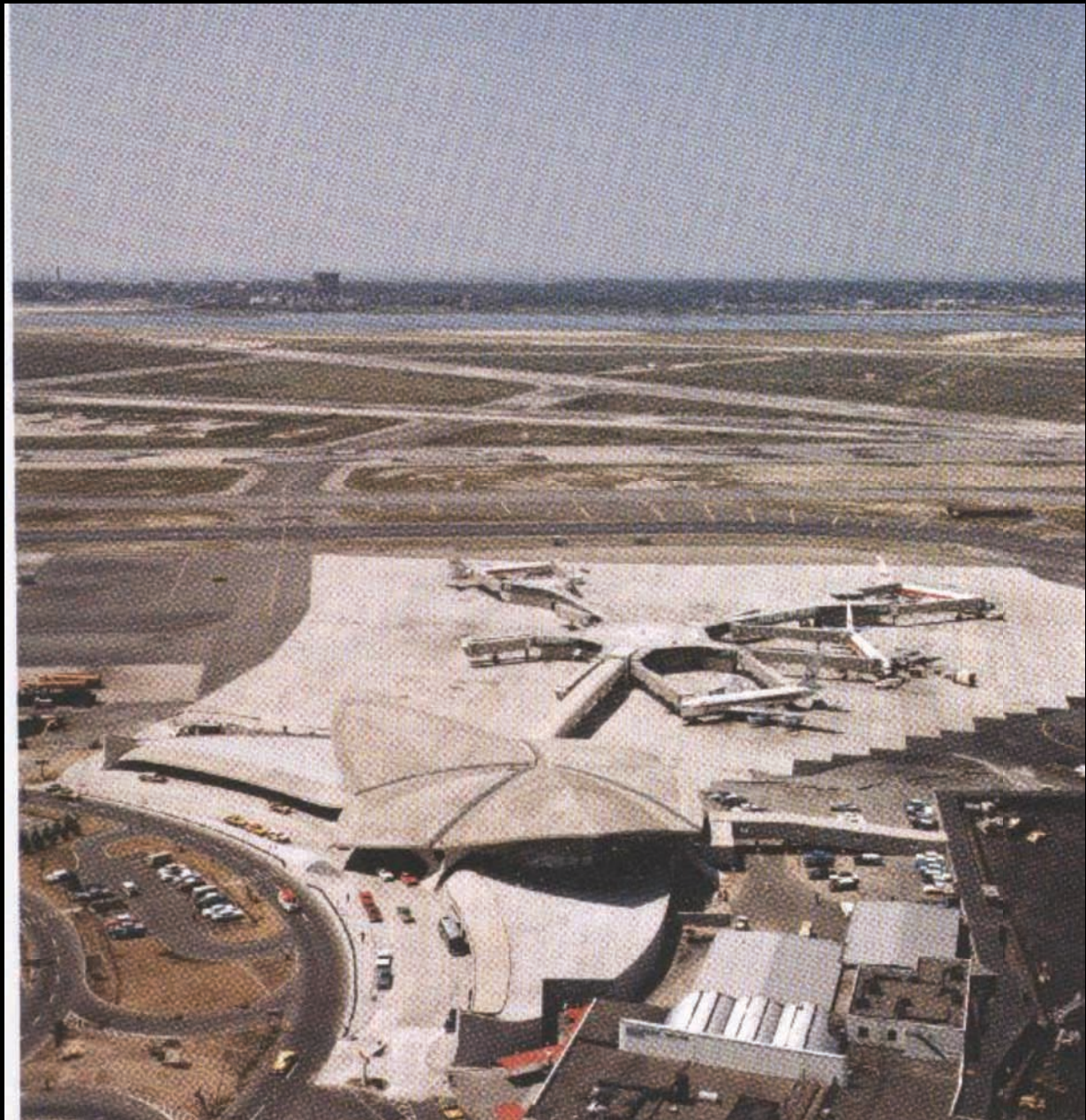
- **Architectural movements of the time**
- **Technology of the time**
- **New technology for airline terminals**
- **Social Context**
- **Safety**
- After thoughts:
 - the plan was made obsolete quickly by the advent of jet airlines despite meticulous circulation studies, baggage carousels, and satellite gates
 - - needs more noise insulation, wider turning

Site Context

- Formerly Idlewild Airport, now Kennedy
- Location: Queens, New York
- city: diverse population of different cultures
- major economic forces- tourism, industry, trade
- international, domestic, freight shipments(most value of any other airport)
- "tight wedge shaped site" (Merkel)

<http://en.wikipedia.org/wiki/Queens>







<http://www.library.fordham.edu/whatsnew/twa.jpg>

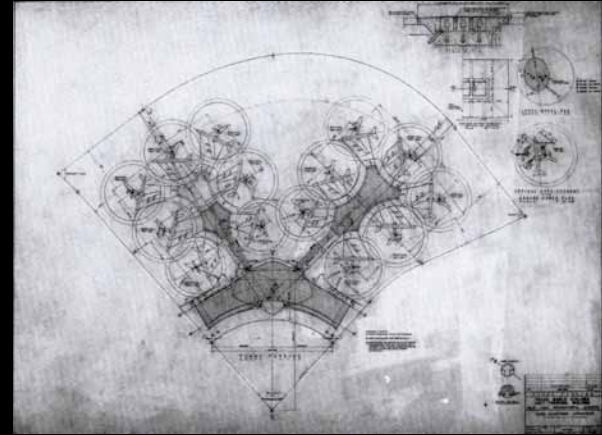
Program Study



- What can they study that relates to the users experience?
- Study plans, forms, learn about the airplanes, passengers, how planes taxi, passenger parking
- “touring existing terminals with notebooks and stopwatches in hand, arranging plane positions on a plan of tight wedge shaped site, and conferring with planners from TWA and people at the Port of New York Authority who would operate Idlewood”



Program

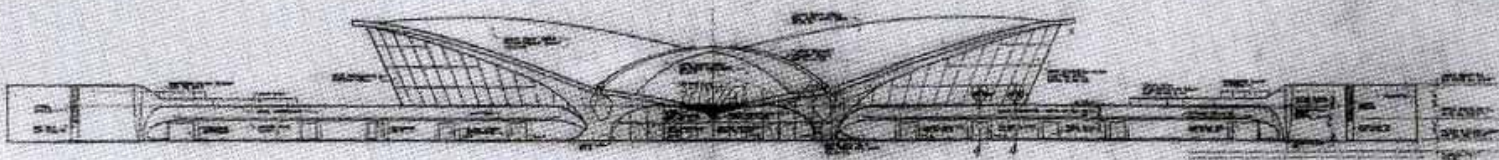


- Function: Airport terminal building
- Purpose of two terminal:
 - a) create a distinct and memorable structure for two
 - b) express drama and excitement of flight
- Users: kinetic elite, people vacationing, families, individuals, (air travel accessible to more people)
- What kind of events go on here?
 - (waiting place, separate and opposite elements merge at an airport for a short time mixture of agendas, chaos, confusion, indifference, transitional place)
- How does architecture respond to the experience of travel?
 - arches, tunnel walkway, glass elements
 - natural light uses structure to represent “transformation of travel” even though the airport may be occupied as a transitional space ->uses impressions and sculptural elements to give it an everlasting impact
 - convey movement,
 - Express feeling of travel with forms
 - soaring
 - concrete expresses the program of destinations, arriving, departing, etc.

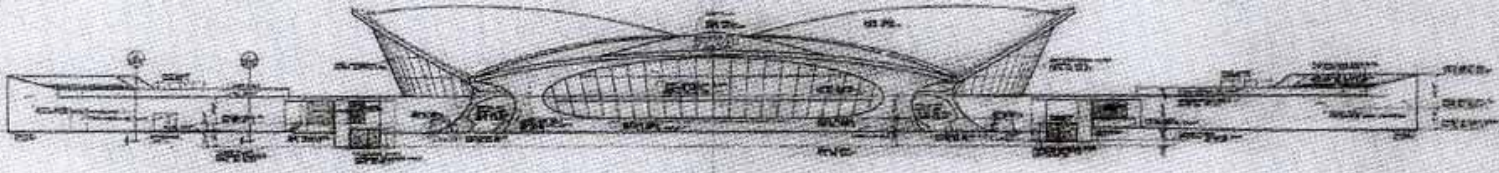
Structure

4 vaulted concrete domes (overlap each other)

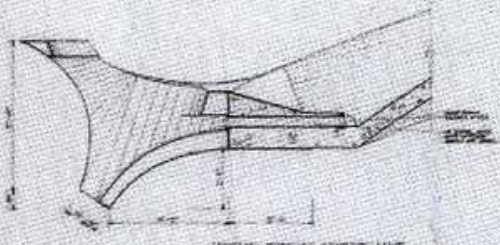
- thin shell structure
- bracing: reinforcing steel forms a web of reinforcing (similar to Dulles)
- vaulted domes are supported by concrete piers (Y shaped)
- skylights separate the vaulted domes
- domes lean in and meet at the center, which is marked by a circular pendent
- height of domes- 50 ft, length 315 feet
- soar upward, curves
- dimensions/sizes: “Dimensions width 67 m height 15 m
covered area > 5 000 m²



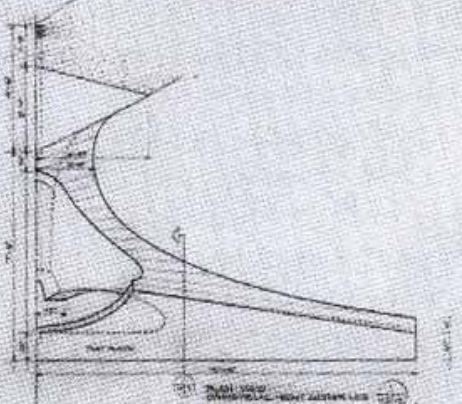
SECTION THROUGH CENTER LINE



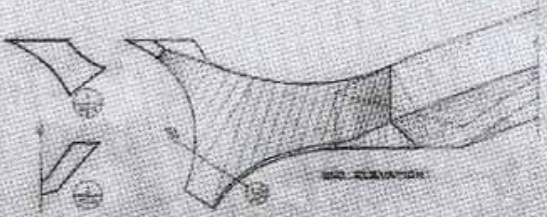
SECTION THROUGH WING



SECTION THROUGH CENTER LINE



SECTION THROUGH WING



SECTION THROUGH WING



SECTION THROUGH WING

SECTION THROUGH WING



DATE	1-15-50
BY	W. H. H. H.
CHECKED BY	W. H. H. H.
TRAVEL WORLD AIRLINES UNIT: TECHNICAL DRAWING NEW YORK INTERNATIONAL AIRPORT TROOP CASINEER ARCHITECT MANHATTAN, N.Y.	
NO.	1-2-50

Structure

building process

Steel pipe scaffolding

1800 supports

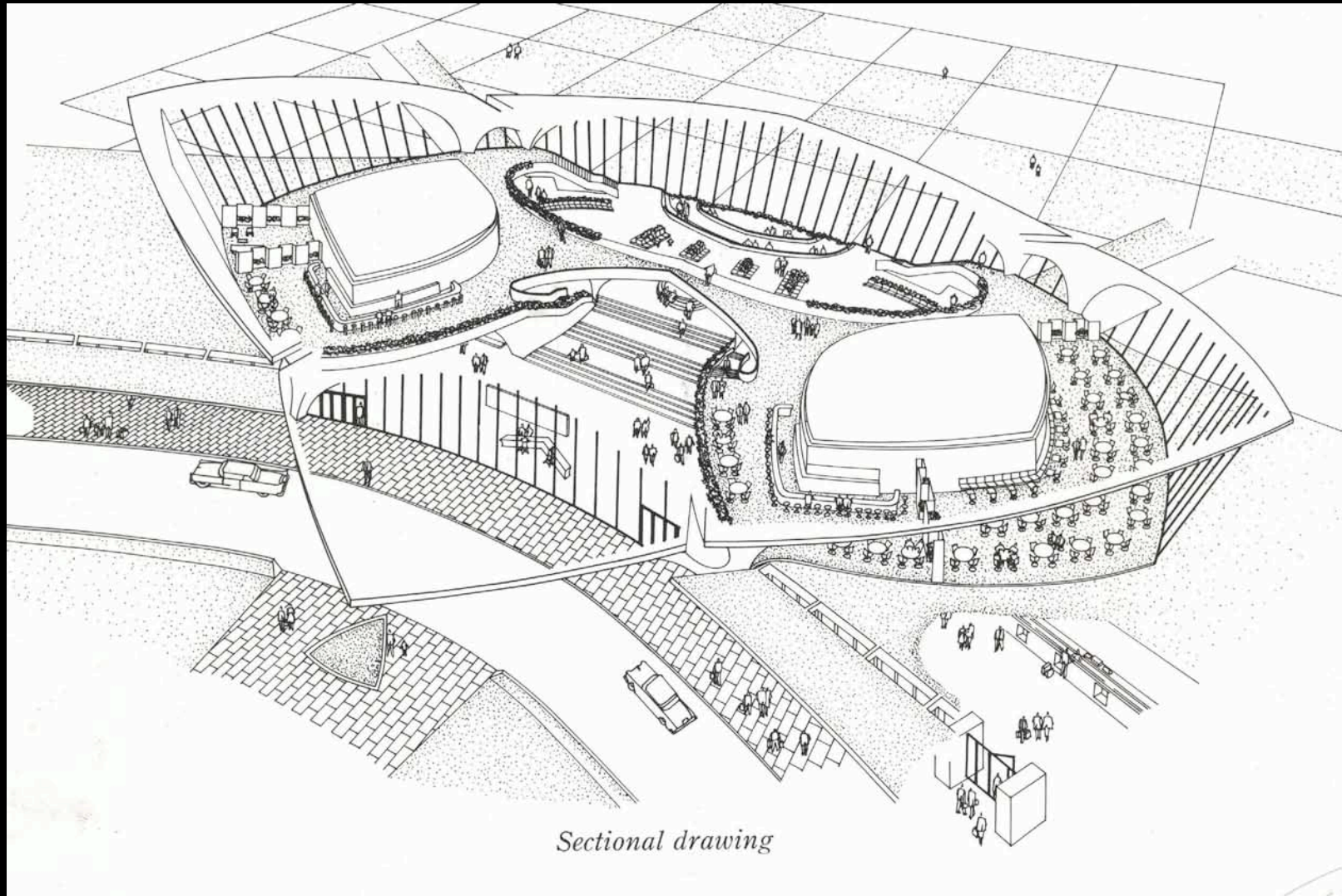
5000 tubular scaffold frames

Ribs in beams held with u clamps

Lay prefabricated wedges in 27 different web shapes

On ribs wood sheathing

Sheathing cut, sliced, or soaked in water to get the curved shapes



Structural Critique

Structural engineering relied on accepted methods rather than experimenting with a new creative specific solution

- This lead to the domes being oversized
- Domes use more material then needed, and must be heavily reinforced
- Visible butresing was needed

Jet plane was not though of during the design process

- Inapproprate sound insulation

Terminal not large enough to accommodate jets

Terminal was not large enough for amount of people that use it



Aesthetics



<http://www.mfa.fi/files/mfa/saarinen/17.JPG>



<http://www.jetsetmodern.com/images2/F00002.jpg>

- designed using two empty halves of a grapefruit
- light and airy quality due to ascending curves, vaults, skylights,
 - soaring quality of space, even though the material is concrete, a heavy material
- curves, vaults convey a sense of movement, transition, dynamics (relating to emotions of travel)(soar, upward quality) or the “romance of flight”



http://farm1.static.flickr.com/62/177590740_c8c5126c7a.jpg?v=1167986656

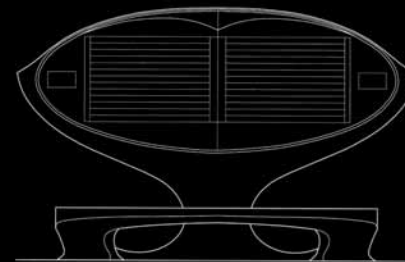
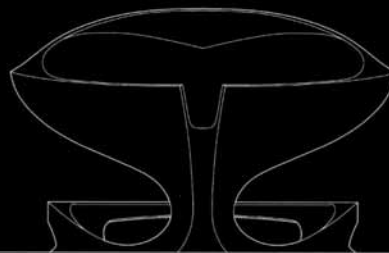
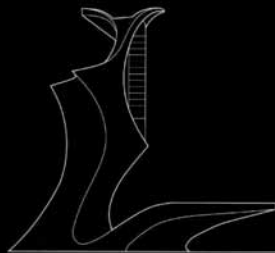
Aesthetics

- Interpreted by some people as forms that symbolize flying
- - described as a a bird about to take off or about to land, (wings, head of bird is at entrance) although not specifically intended by Saarinen to be a bird
- - Saarinen: “the fact that it looked like a bird to some people is really coincidental. That was the last thing we thought about. Now. That doesn’t mean that one doesn’t have the right to see it that way or explain it to laymen in those terms, especially because laymen are usually more literally than visually inclined.”



Aesthetics

- - details, such as curved chairs, lounges, signs, telephone booths, counters, railings, mimics the curves of the concrete shells
- -details are an example of working from a scale - small - large, medium- so that all scales of objects can relate and seem to be in harmony



0 4'

0 4'

Aesthetics: What the critics say

- Edward Kaufmann
- “ In order to understand the work, we first need to forget the bird, whatever suggestions of lifting wings and grasping claws may have been aroused by the concrete structure alone, it no longer registers now that the essential window walls have been added, making the whole a strongly central composition. “
- “the full artistry of the space modeling. And this composition is based on the simple conveyance of passengers: the architect succeeded in transforming the ordinary complex of travel facilities into a festival or orderly movement and exhilarating vistas.”



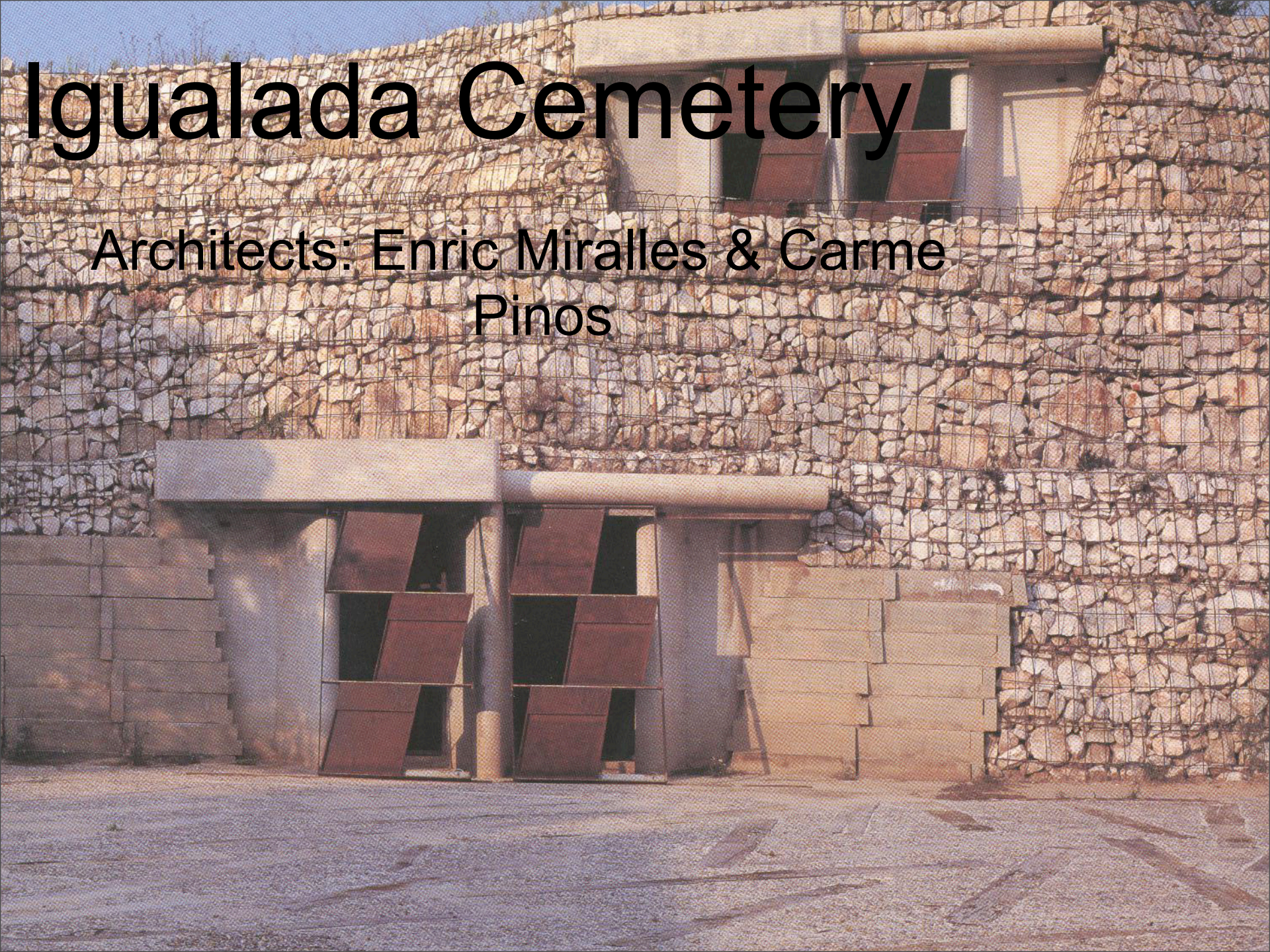
Economics

- Cost: 15 million dollars



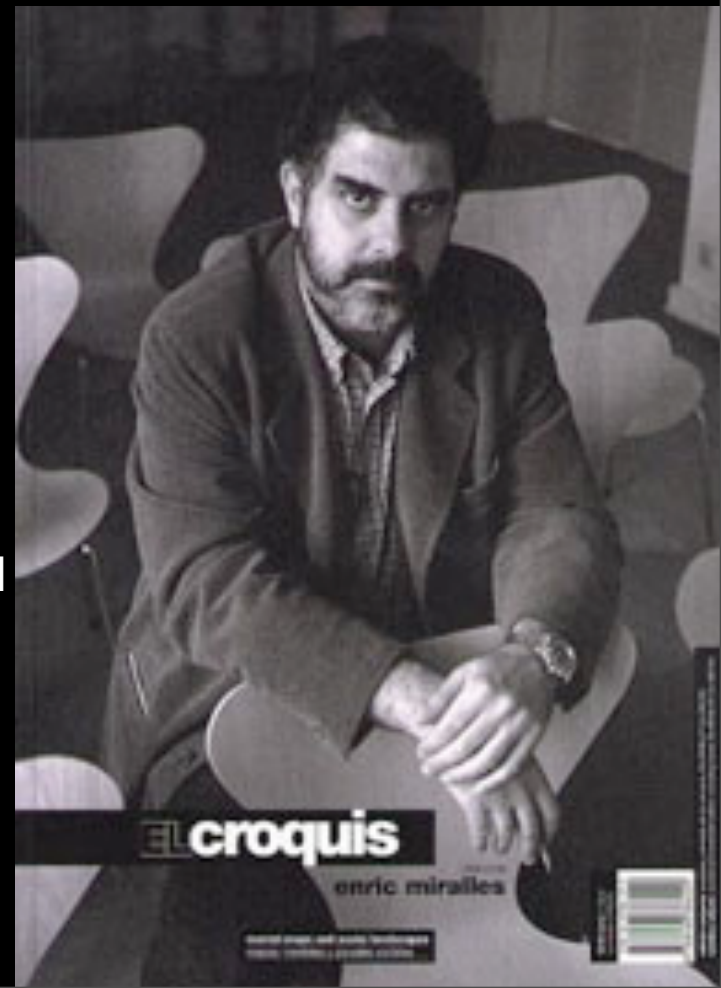
Igualada Cemetery

Architects: Enric Miralles & Carme Pinos



Enric Miralles

- Enric Miralles was born in 1955
- and died suddenly of a brain tumor in 2000 at the age of 45.
- Enric Miralles received his diploma to the Escuela Tecnica Superior de Arquitectura de Barcelona in 1978.
- Miralles established a reputation with a number of collaborations with his first wife Carme Pinos; however, the couple separated in 1991.
- Miralles later married a fellow architect Benedetta Tagliabue, and the couple practiced together at EMBT Architects.



Carme Pinos

- Carme Pinos was born in 1954.
- Pinos also graduated the Escuela Tecnica Superior de Arquitectura de Barcelona in 1979, and she later returned to the school in 1981 to study Urbanism.
- Pinos is a Catalan architect and has been a professor at the Barcelona School of Architecture since 1995.
- Pinos worked with Enric Miralles from 1982 until 1991.
- After divorcing Miralles, Carme Pinos formed her own studio.



Miralles & Pinos Partnership

- 1984 to 1986 *La Llauna* Factory School, [Badalona](#), [Barcelona \(province\)](#)
- 1985 Canopy for the *Plaza Mayor*, [Parets de Vallés](#)
- 1985 to 1994 [Igalada Cemetery](#), [Igalada](#), [Barcelona \(province\)](#)
- 1986 to 1992 Hostalets de Balenya Civic Centre, [Barcelona](#)
- 1986 to 1993 Boarding school in [Morella](#), [Castellón \(province\)](#)
- 1987 to 1993 *La Mina* Civic Centre, Sant Adrià de Besòs, [Barcelona](#)
- 1988 to 1992 House, Bellaterra, [Barcelona](#)
- 1989/91 Olympic archery range for the [1992 Summer Olympics](#), Valle de Hebrón, [Barcelona](#).
- 1988 to 1992 Sportcentre in [Huesca](#), [Huesca \(province\)](#)
- 1990/91 Centre for rhythmic gymnastics, [Alicante](#), [Alicante \(province\)](#),
- [Spain](#)
- 1990 to 1992 [pagoda](#) for the *Paseo Icaro*, Olympic village, [Barcelona](#)
- 1992 Corbetes Avda. Icaria, [Barcelona](#), [Spain](#)



Miralles/Pinos Works



Edificio Gas Natural, Barcelona, 2006



Tir Amb Arc, Barcelona, 1992



Ajuntament de Hostelets, Hostelets, 1992

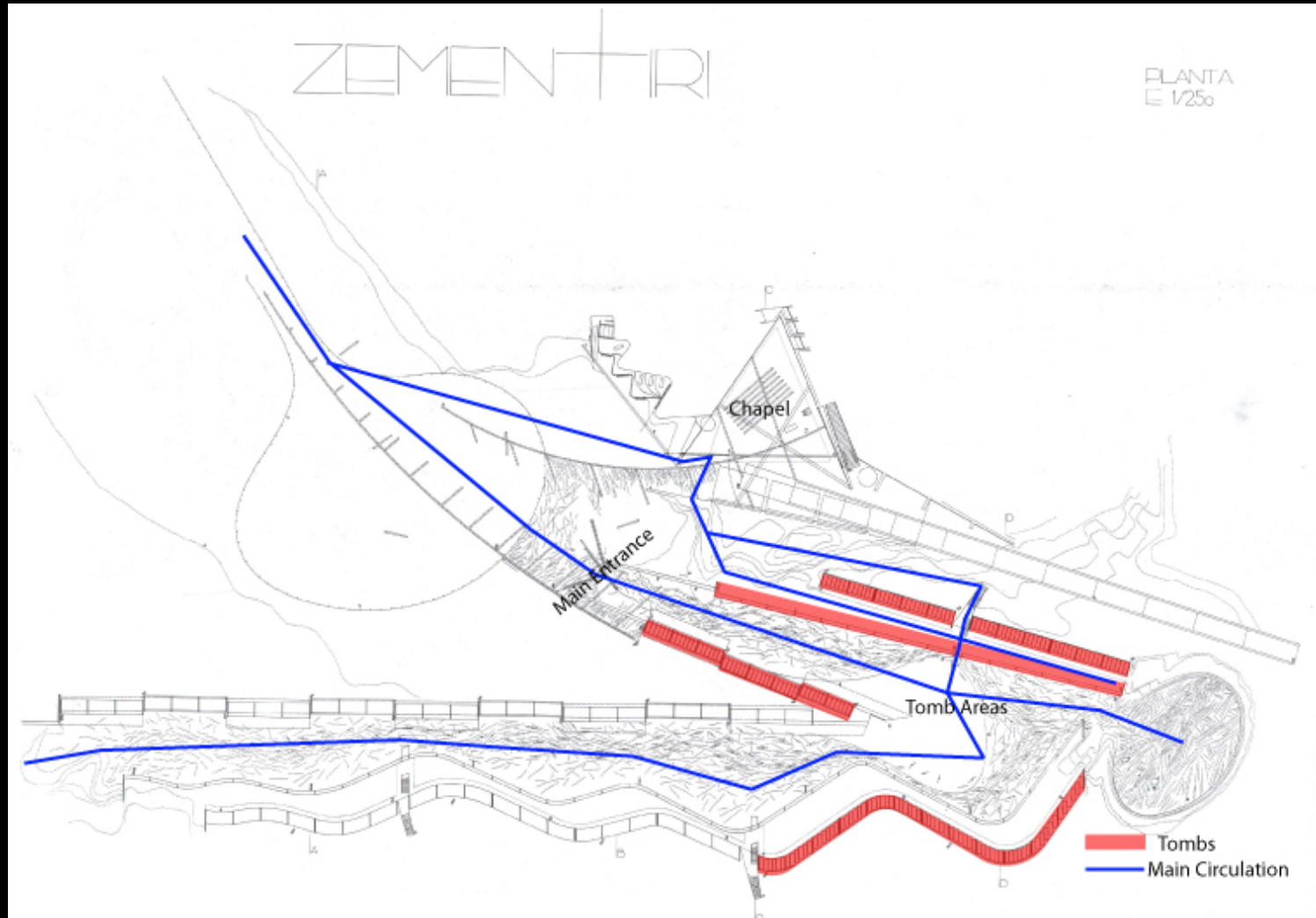


Parc dels Colors, Barcelona, 2001

Igualada Cemetery

- Design: 1985-1988
- Construction: 1988-1994
- Architects: Enric Miralles with Carme Pinos
- Construction Architect: Enric Miralles
- Collaborators: Joseph Mias, Joan Callis, Eva Prats, Albert Ferre, Se Duch
- Structure: Augustin Obiol, Robert Brufau
- General Contractor: Castells
- Quantity Surveyors: EDETCO

Circulation



Program

- Nature and Artifice
- Architecture that naturally adapts itself to the site.
- The dead themselves are integrated as an active part of the site. Allowing interaction with the living.
- Activates the passing of time.



Program contd.

- Imposes program and function onto the site.
- Integrates man made and nature.
- Layout naturally promotes movement through the grounds.
- Entrance designed for mourners to accompany the deceased into the funeral cortege.



Context

- Concerned with excavating shifting or marking the site in some manner.
- Opens a dialogue with the environment.
- Ex. Quarried Stones used to used to form layered curved retaining wall.
- Built into the earth enabling it to be interpreted as something more than a construction.
- Site perceived as oasis within an eroded valley.

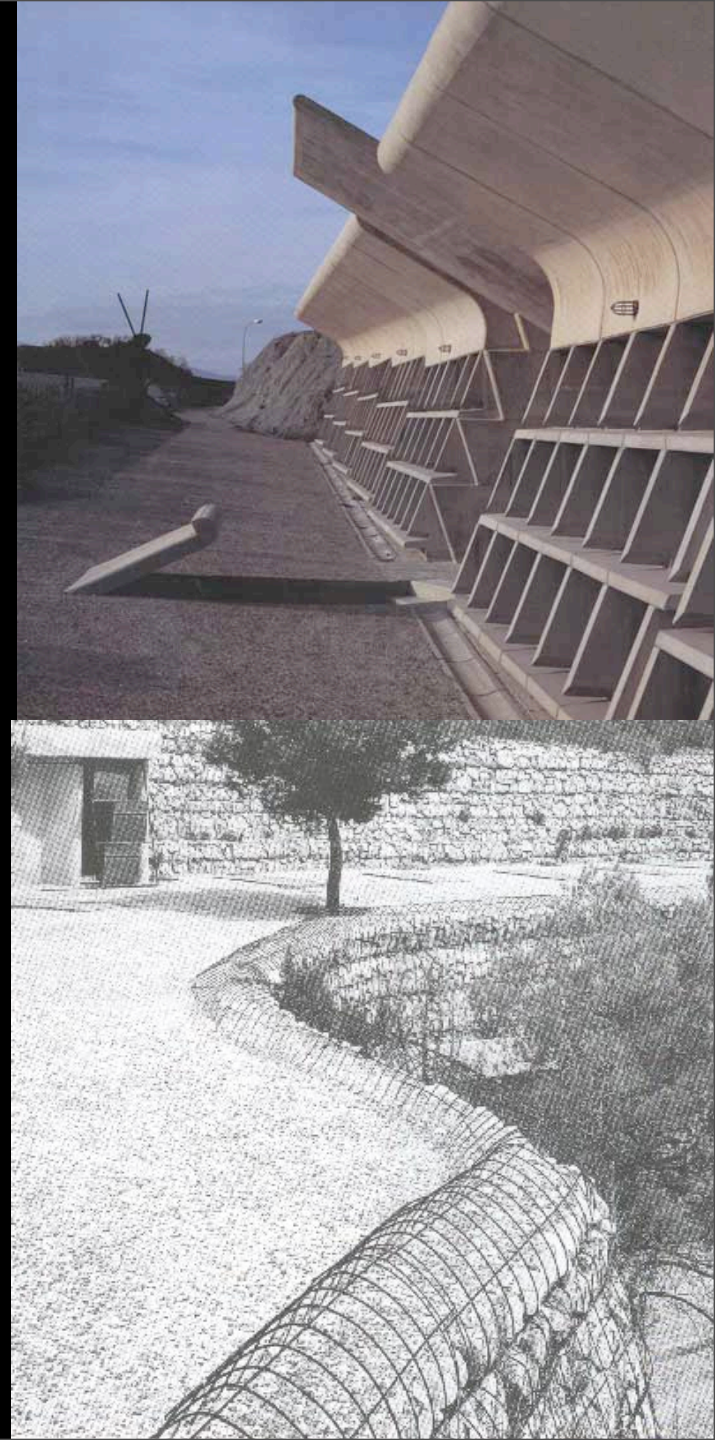


Architectural Perceptions

The idea of the passing of time and a return to origins were, furthermore, fundamental factors in the way Miralles envisaged his design for the cemetery. For Miralles learning can be divided into three stages, which he likens to the three 'ages' of man. The first is seeing and studying a particular building; the second is one's actual relationship to that building, and the way one absorbs its architecture in one's own design, leading to the third stage, the moment the architect can offer something in return. It is an idea directly related to the Igualada Cemetery and the regenerative process implicit in the work.

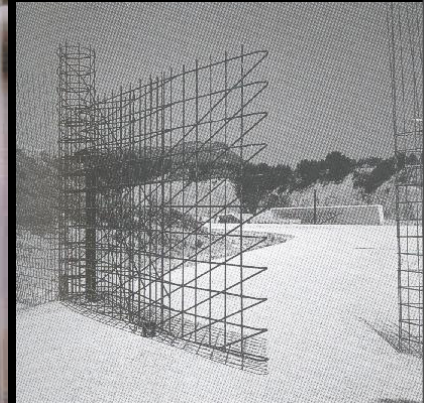
Aesthetics

- Combination of concrete quarried stone.
- Materials utilized help articulate the overall meaning of the work.
- Materials-Precast concrete slabs, quarried stones from region, rebar cages.
- Entombments topped by overhangs of precast concrete that turn upwards like wings suggesting physical lightness.



Aesthetics contd.

- Cage steel mesh that supports stones rusts over time which further enhances visual effect.
- Doors and commemorative plaques designed to rust gradually to bring in temporal characteristics.
- Splayed struts resembling the crosses on Calvary act as entry gate. Arms move over time to open and close the grounds of the cemetery.



Time/Movement/Space

Miralles incorporated a rather playful use of materials within the Igualada Cemetery. The steel mesh supporting the that make up the retaining walls on the site, for example, not only serves as a functional withholding piece, but performs another role in the altering nature and visual effect of the cemetery: by rusting with time, it changes in color.

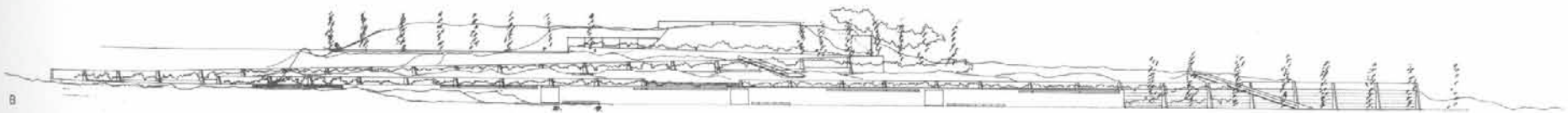
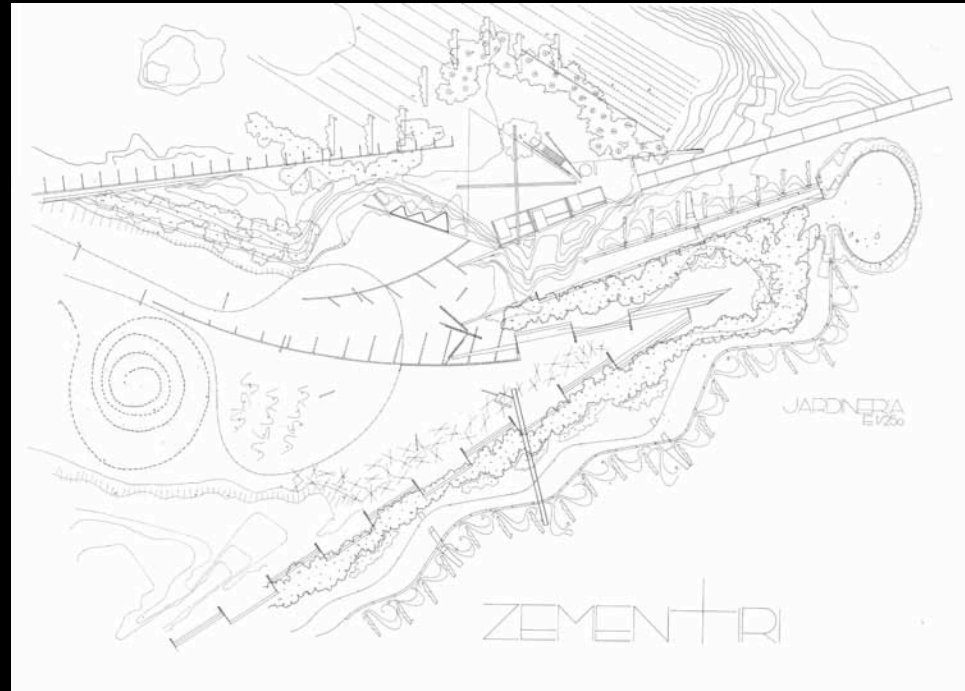
Similarly the lamps, commemorative plaques and mausoleum doors are all designed to rust gradually. The transformation of materials is at the very heart of the meaning imbued in the cemetery, implying that this place for the dead is in fact a living place, which is developing and changing, and which welcomes its usage as a place to which the living can come to visit, walk and contemplate.

The cemetery's design is therefore an attempt to replace culturally perceived divisions with the notion of continuity. In order to avoid association between finality and death, Miralles turned to nature and decided to build a living cemetery, an optimistic reminder of the continual transformation of nature and matter. This humanizing, and to some extent anti-idealist, quality in such a highly symbolic space was achieved by the architecture actively working with the environment, creating a setting in which movement is constantly evoked. Although the design is one of fluidity with shapes that direct the viewer through the architecture, the actual feeling of movement that pervades it can only be truly experienced as one moves within the space itself.



Site

- Near Barcelona, Spain
- Though situated near industrial part of city, beautifully isolated in the middle of an untouched setting.
- Location rather ambiguous.
- Site perceived as oasis within an eroded valley.
- Program and Function integrated into the natural landscape of the site.



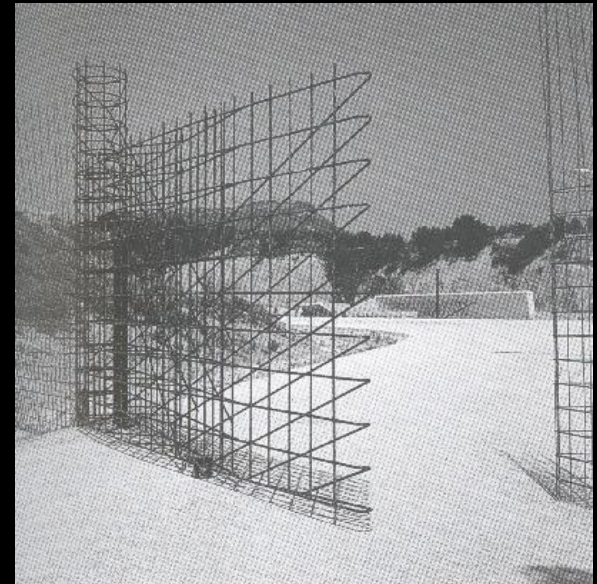
Historical

- Opened in 1990.
- Miralles buried here in 2000
- Miralles sought to relate to the land that was there prior the introduction of the cemetery.
- Borrows characteristics of previous tombs.
- Catalan style of Architecture exploited in cemetery architecture in 19th and 20th century.
- Primary example of Cemetery Architecture.



Structural

- Structure consists of the utilization of reinforced precast concrete.
- The incorporation and adaptation of natural load bearing capabilities provided by the terrain of the site.



Comparison: A Strange Coincidence...

- Both Saarinen and Enric Miralles died from complications with a brain tumor



Comparison: Materiality

- TWA Terminal the the Igualada Cemetery both use concrete to physically suggest light and airy qualities
- Irony: A heavy material is used to express a lightness



Comparison and Contrast

The Igualada Cemetery is built into the Earth. Although being built into the Earth, the Igualada Cemetery also is interpreted to have a flying symbolism.

Although the TWA Terminal is not built into the Earth, it is interpreted to have symbols and flight and flying.



Comparison and Contrast: Site

- TWA Terminal: Queens, NY. Site is an urban context. Busy. Movement. People. Cars. Trains. Airplanes.
- Igualada Cemetery: Ambiguous location. Outside of Barcelona. Architecture and site merge into one another. Secluded. Calmer.



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