Roy Casillas
Angela Mellow
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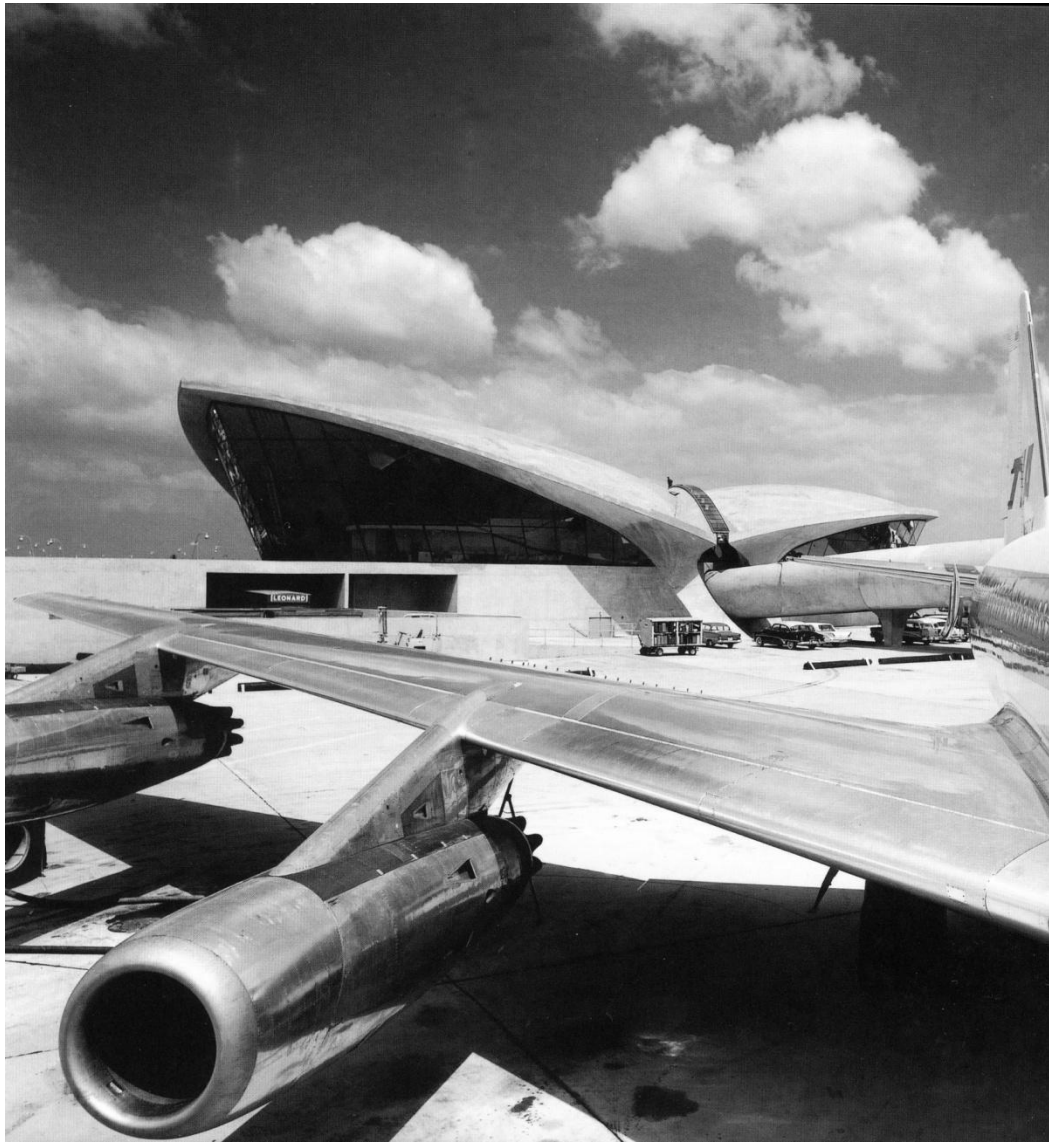
TWA TERMINAL | EERO SAARINEN



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Location: New York, New York

Architect: Eero Saarinen, along with Kevin Roche, Cesar Pelli, Edward Saad, & Norman Pettula

Completion: 28 May 1962

Client: Ralph Dawson, Trans World Airlines at Idlewild Airport (now JFK International Airport)

Structural Engineering Firm: Ammann & Whitney

Contractor: Grove Shepherd Wilson & Kruge

PROJECT INFORMATION

Saarinen and his firm won the competition in 1956 to design a terminal that captured "**the spirit of flight**"

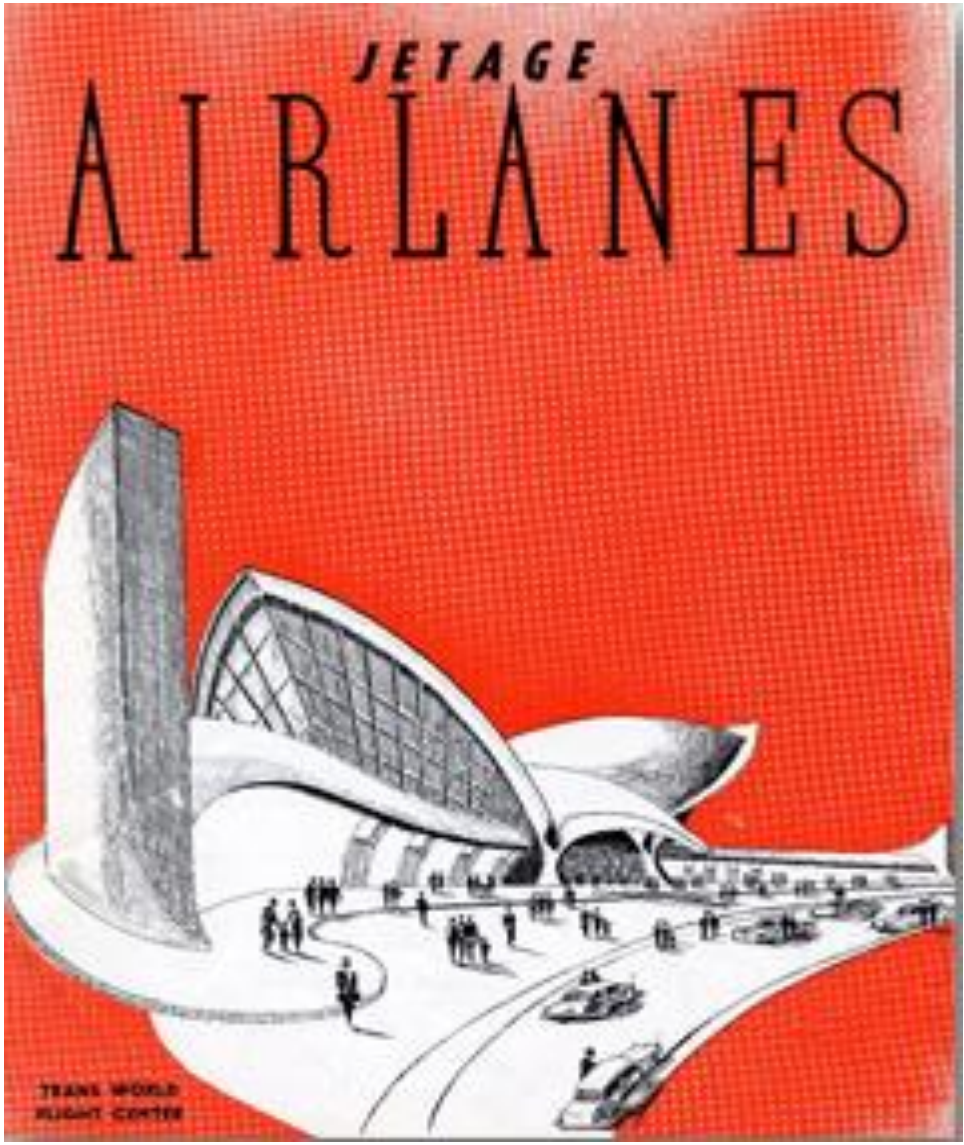
The form resembles a huge bird with wings spread, preparing for landing.

"The fact that to some people it looked like a bird in flight was really coincidental. That was the last thing we thought about"

-Saarinen

The terminal is a powerful expression of the activities it houses.

A place of "**movement and transition**" that shows the "**excitement of travel**"



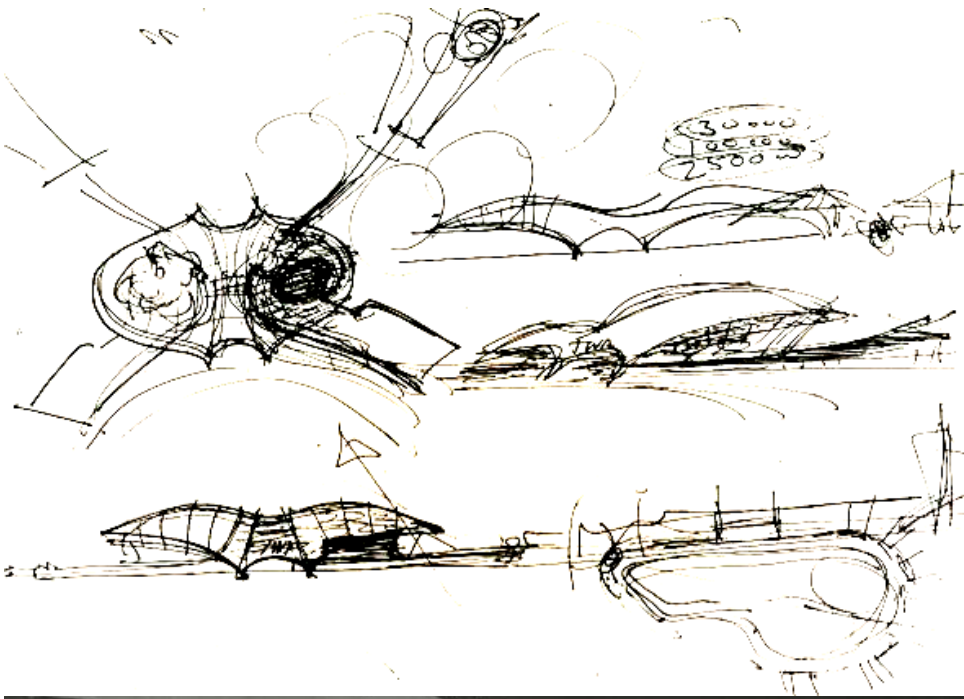
From the back of a restaurant menu to one of the most iconic airport buildings of the world

Original **futuristic** design

Features thin **shell** roof, **tube**-shaped departure/arrival corridors, expansive **windows** that highlight departing and arriving jets, strips of **skylights** separating the four “wings”

Invisible web of reinforcing steel, comparable to Saarinen’s 1962 Washington Dulles terminal building (invisible reinforced “hammock”)

Saarinen developed a special curve edged ceramic tile to conform to the shell



Born in Kirkkonummi, Finland in 1910 and immigrated to the United States in 1923

His father, Eliel, was also a noted architect

Studied at the School of Architecture at Yale University and taught at the Cranbrook Academy of Art

Liked to explore new technology, forms, production and processes in design

Wished to create a radically new architecture

Believed everything was architecture, even furniture, which influenced his experiments with materials, structural techniques and manufacturing

1956 – Eero Saarinen and firm commissioned to design TWA Flight Center

1962 – Terminal is dedicated on May 8. Saarinen died September 1, 1961.

1969 – Terminal received a new departure-arrival concourse and lounge designed by Roche-Dinkeloo

1994 – Designated New York City Landmark

2001 – Terminal ends operations after TWA is purchased by American Airlines

2005 – Construction began on new terminal for JetBlue Airways, which encircled part of Saarinen's original terminal

2008 – T5, the name for the terminal with the new structure designed by Gensler along with Saarinen's terminal, opens on October 22.

HISTORY

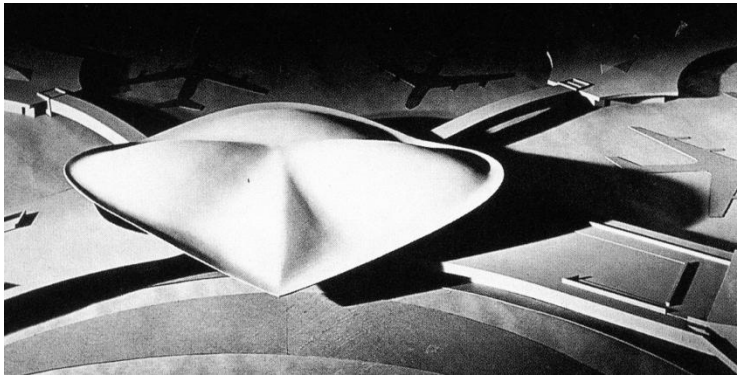
Biggest challenge for the design was allowing for smooth passage through the terminal

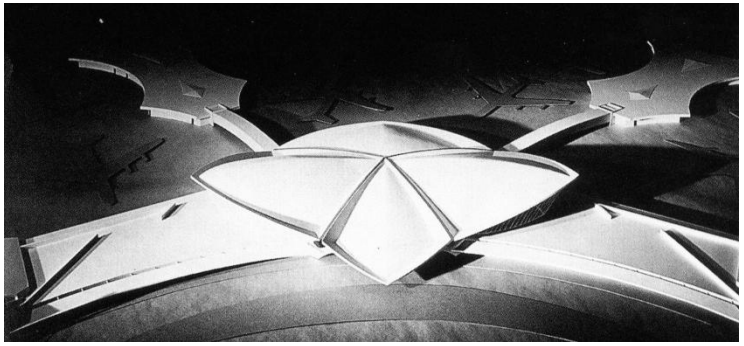
Countless study models made to determine the most suitable form

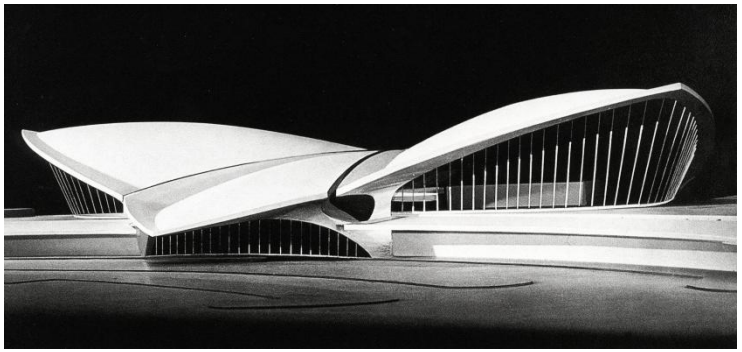
Concept for the form derived from the rind of a grapefruit

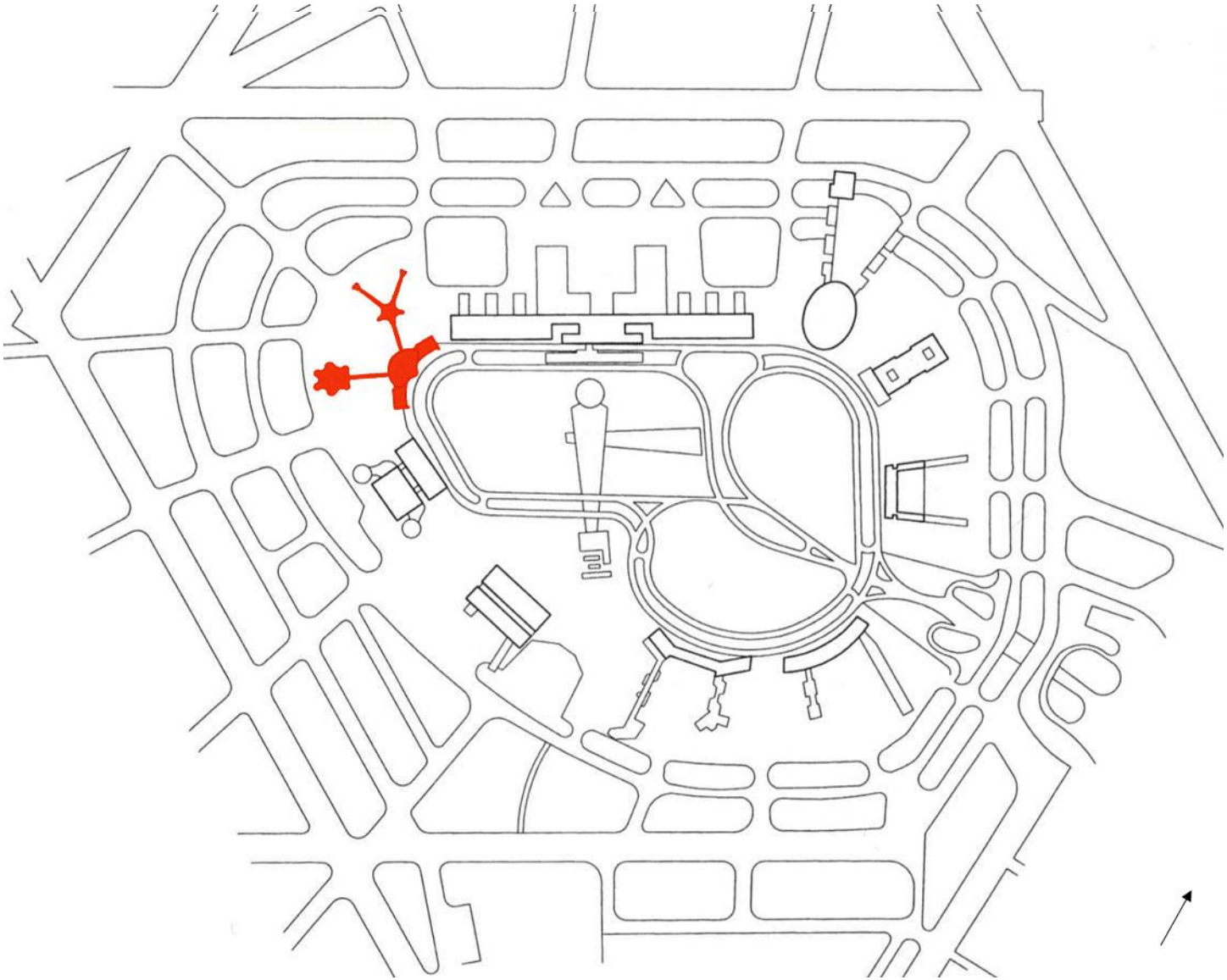
Final solution consisted of creating 4 adjacent shells counterbalancing each other

Final scheme used 3 different sized configurations of curved, diamond-shaped shells supported by 4 curvilinear shaped columns





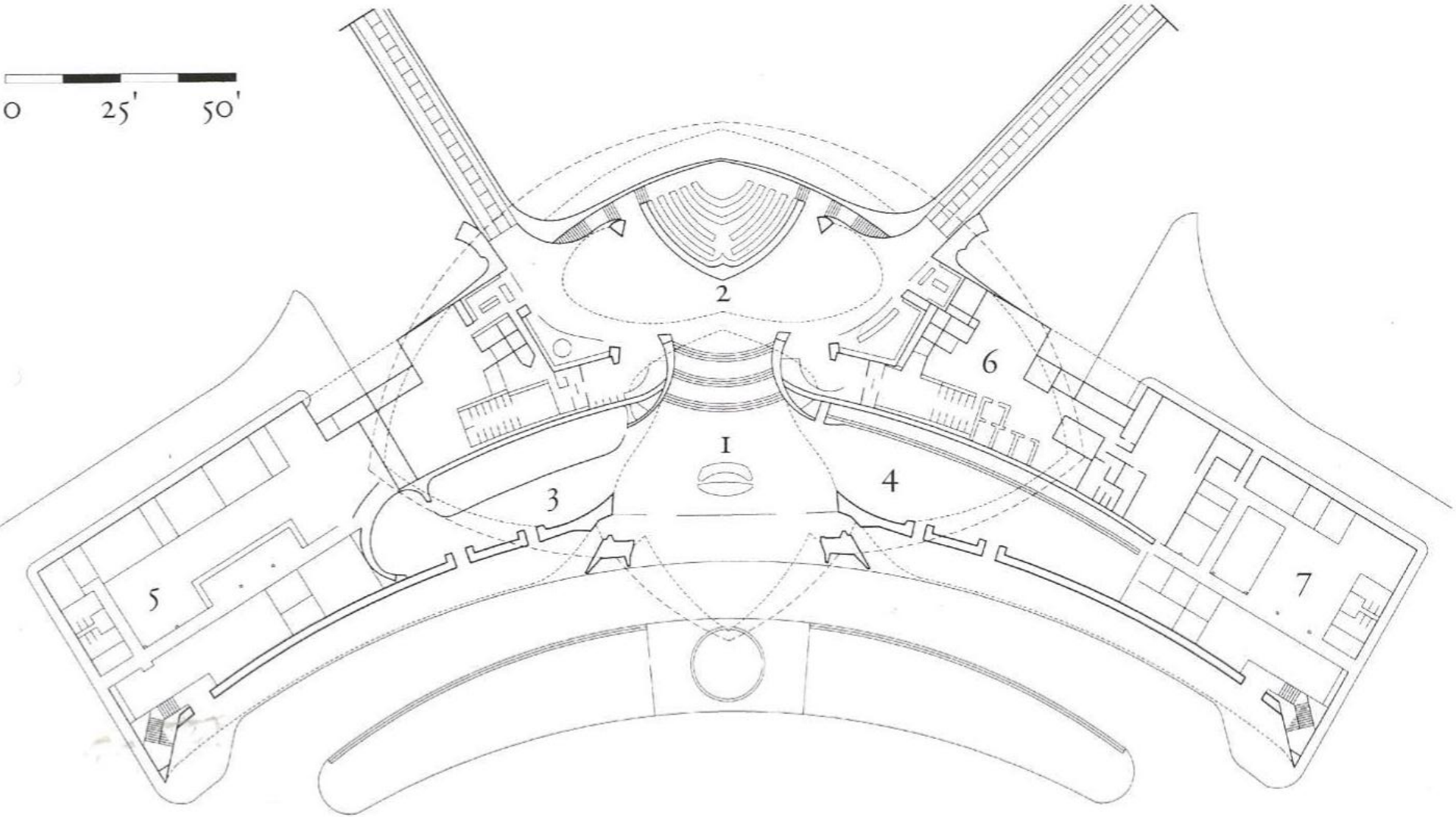




SITE PLAN

BUILDING LAYOUT

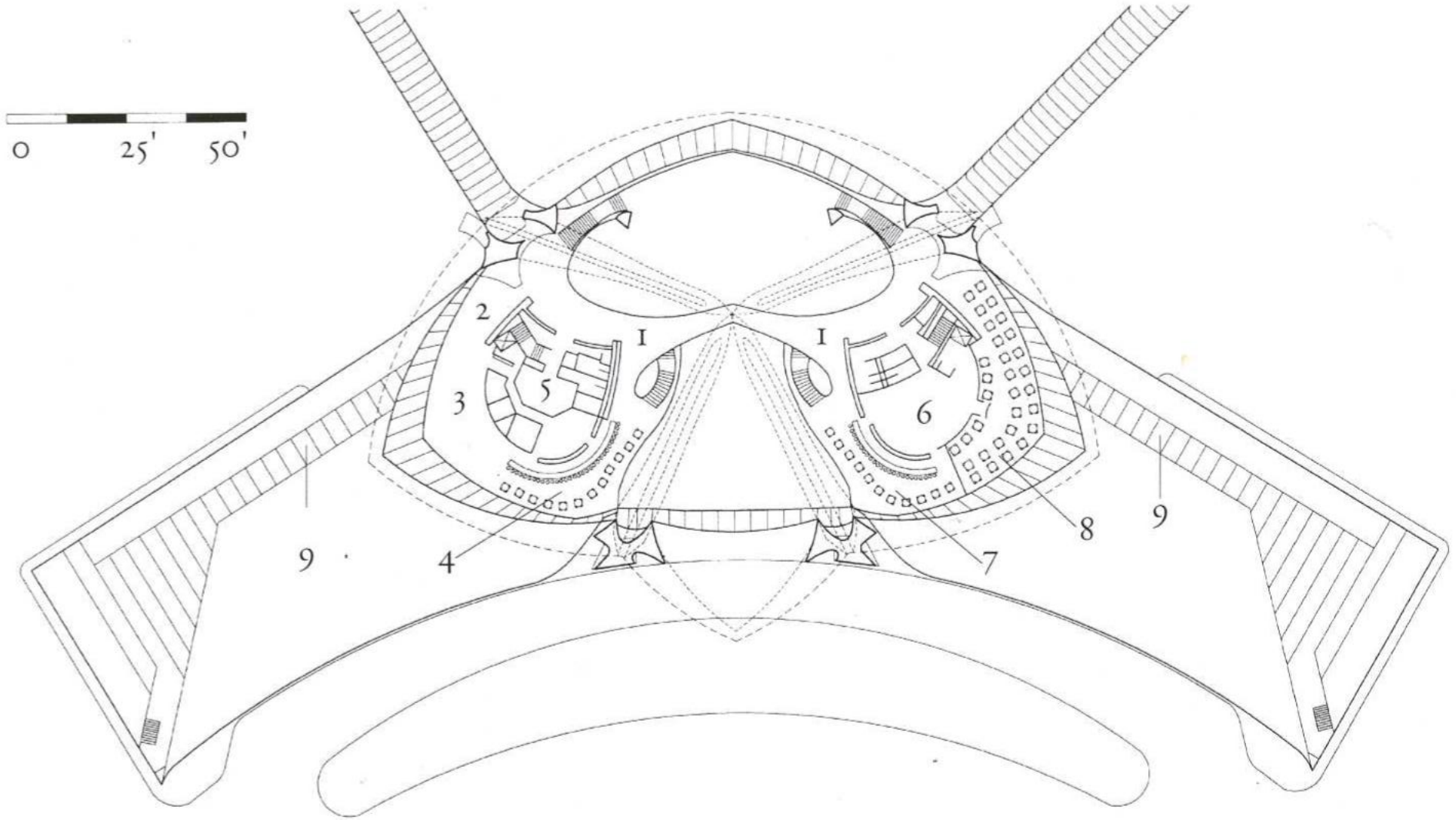
1. Information Desk 2. Main Lobby 3. Baggage Claim 4. Ticketing 5. Operations 6. Kitchen 7. Offices



TERMINAL LEVEL ONE

BUILDING LAYOUT

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



TERMINAL LEVEL TWO

BUILDING LAYOUT

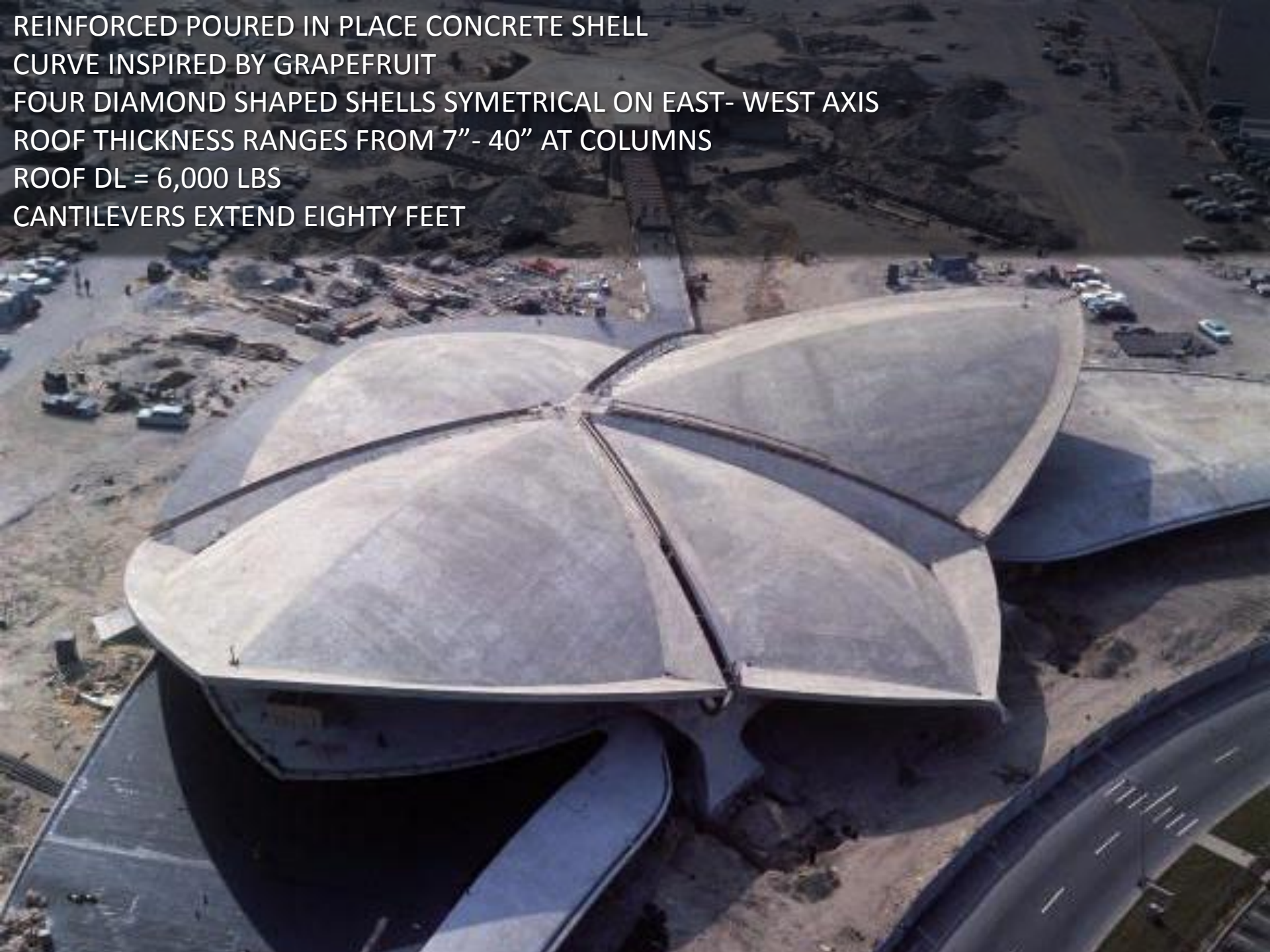
GROUND CONDITIONS

TYPE: CAISSON

FOUNDATIONS

SHELL ROOF

STRUCTURAL DESIGN


REINFORCED POURED IN PLACE CONCRETE SHELL
CURVE INSPIRED BY GRAPEFRUIT
FOUR DIAMOND SHAPED SHELLS SYMETRICAL ON EAST- WEST AXIS
ROOF THICKNESS RANGES FROM 7”- 40” AT COLUMNS
ROOF DL = 6,000 LBS
CANTILEVERS EXTEND EIGHTY FEET

BUTTRESS (COLUMN) SUPPORTS

STRUCTURAL DESIGN

FOUR CURVILINEAR Y-SHAPED COLUMNS OF POURED IN PLACE REINFORCED CONCRETE

HUNDREDS OF DRAWINGS REQUIRED TO DETERMINE FORM WORK *(CREATED BEFORE COMPUTER AIDED ARCHITECTURAL DRAWING EXISTED)*

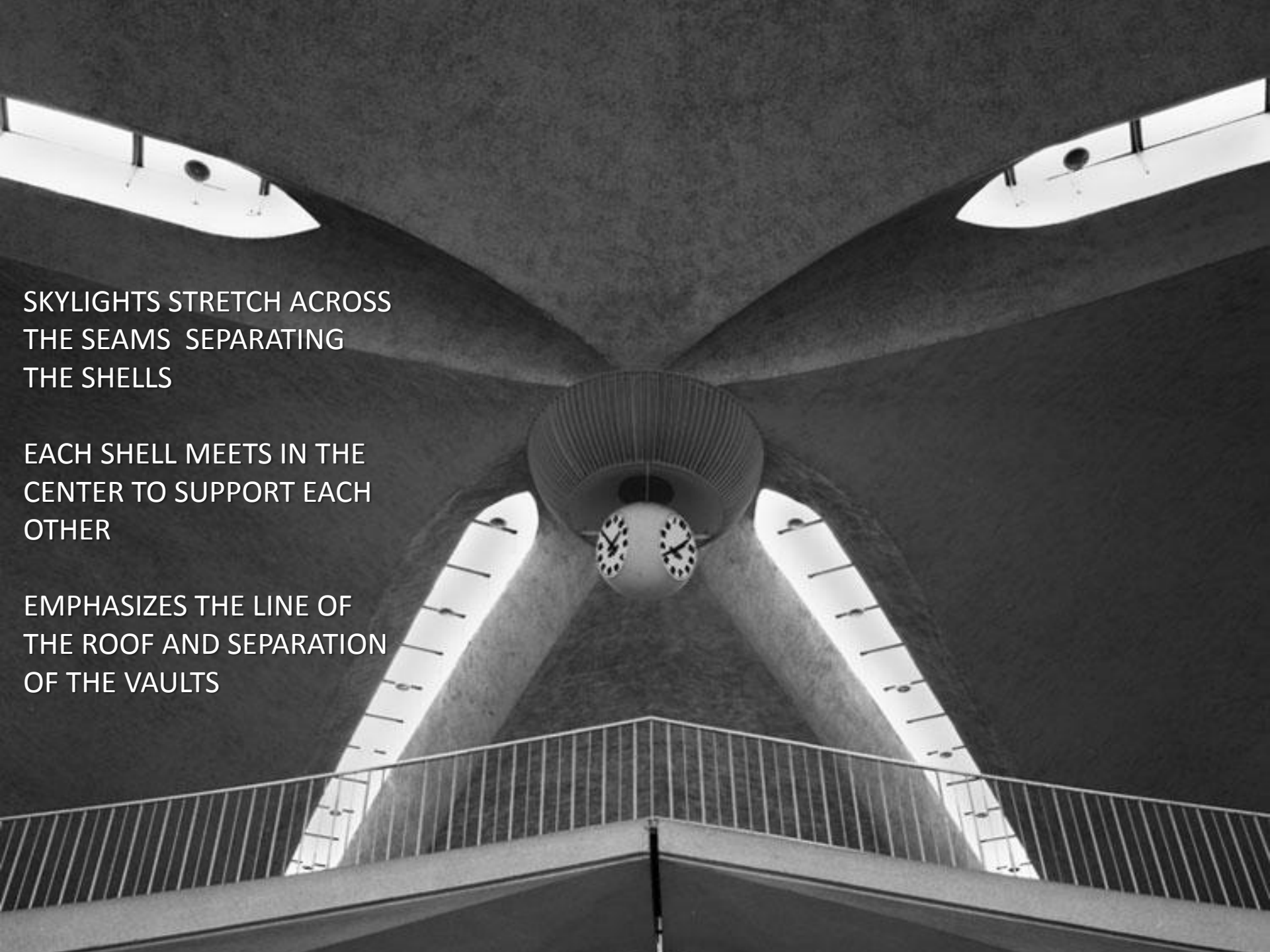
51’ TALL

315’ LONG

3’ THICK

GLASS SKYLIGHTS

STRUCTURAL DESIGN



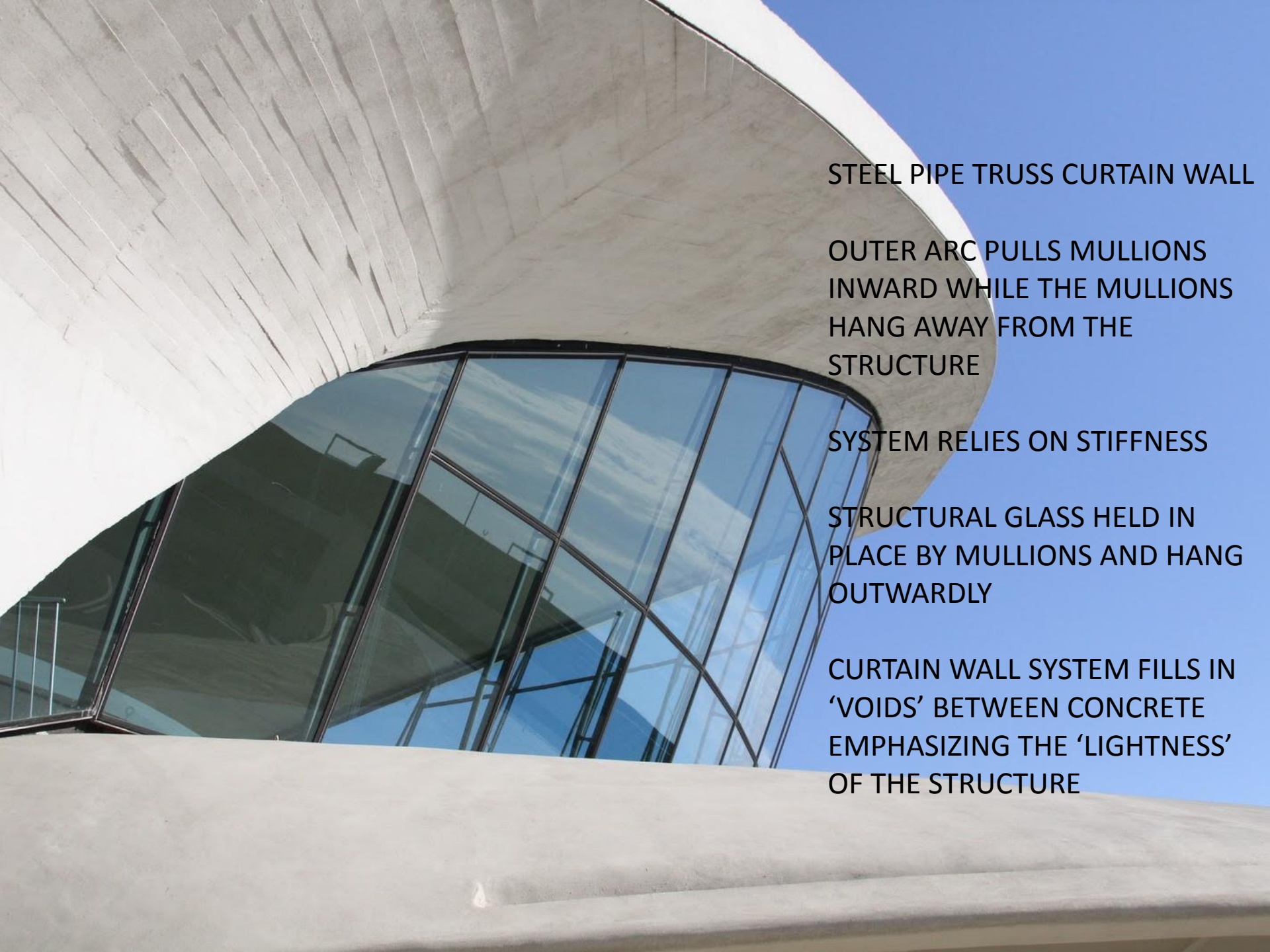
SKYLIGHTS STRETCH ACROSS THE SEAMS SEPARATING THE SHELLS

EACH SHELL MEETS IN THE CENTER TO SUPPORT EACH OTHER

EMPHASIZES THE LINE OF THE ROOF AND SEPARATION OF THE VAULTS

GLASS CURTAIN WALL

STRUCTURAL DESIGN



STEEL PIPE TRUSS CURTAIN WALL

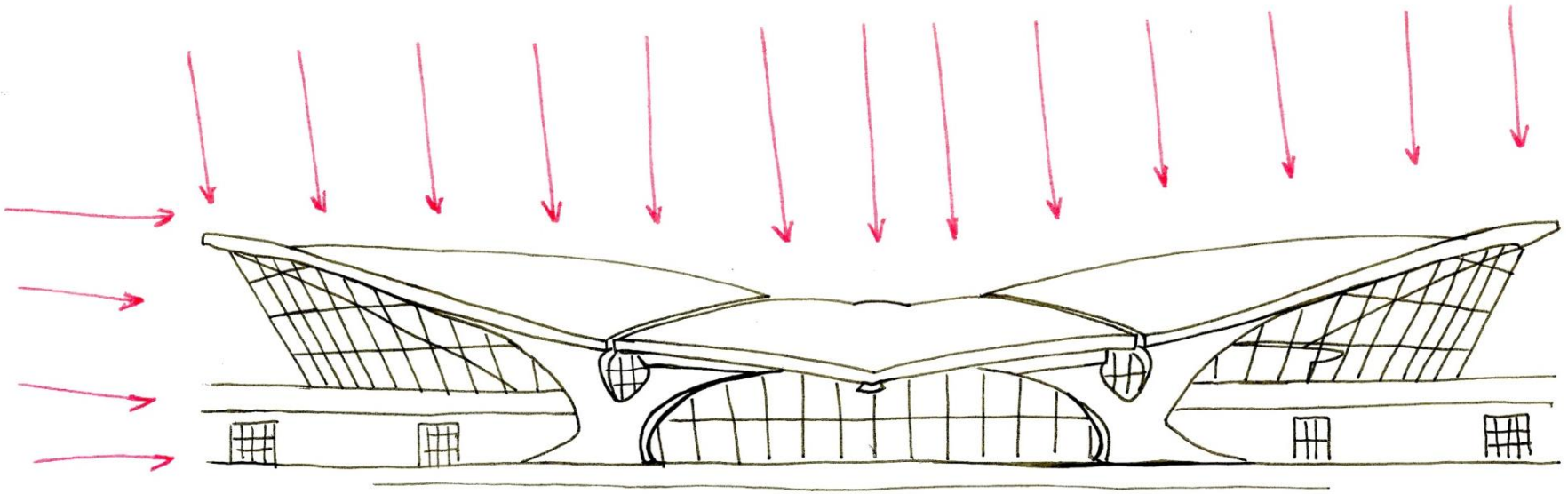
OUTER ARC PULLS MULLIONS INWARD WHILE THE MULLIONS HANG AWAY FROM THE STRUCTURE

SYSTEM RELIES ON STIFFNESS

STRUCTURAL GLASS HELD IN PLACE BY MULLIONS AND HANG OUTWARDLY

CURTAIN WALL SYSTEM FILLS IN ‘VOIDS’ BETWEEN CONCRETE EMPHASIZING THE ‘LIGHTNESS’ OF THE STRUCTURE

Dead Load = 6 K
Wind Load = 25 psf
Snow Load = 20 psf
Ice Load = 16.8 psf



LOADING CONDITIONS

Dead Load = 6 K
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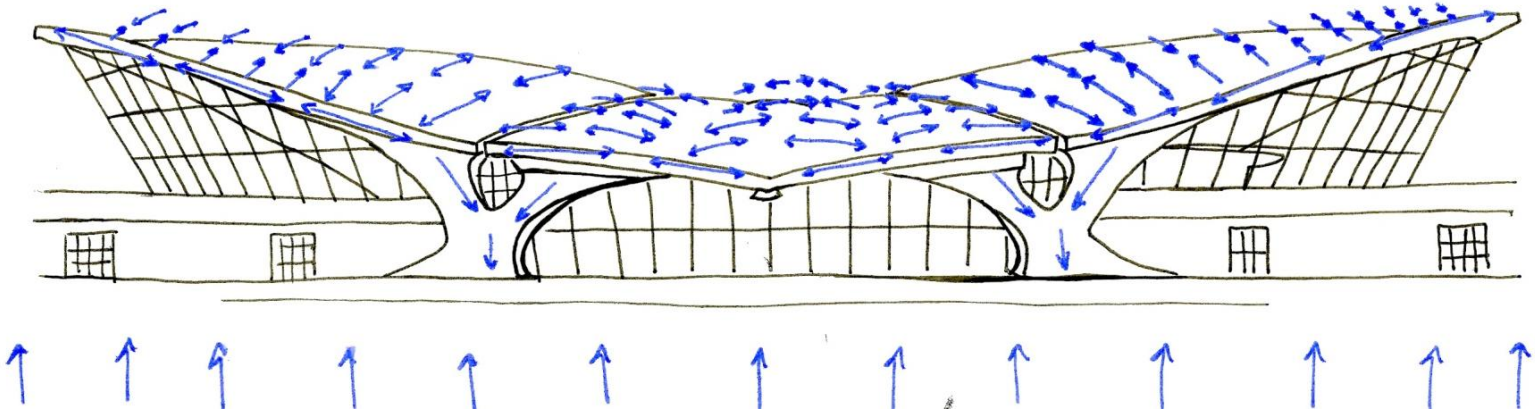

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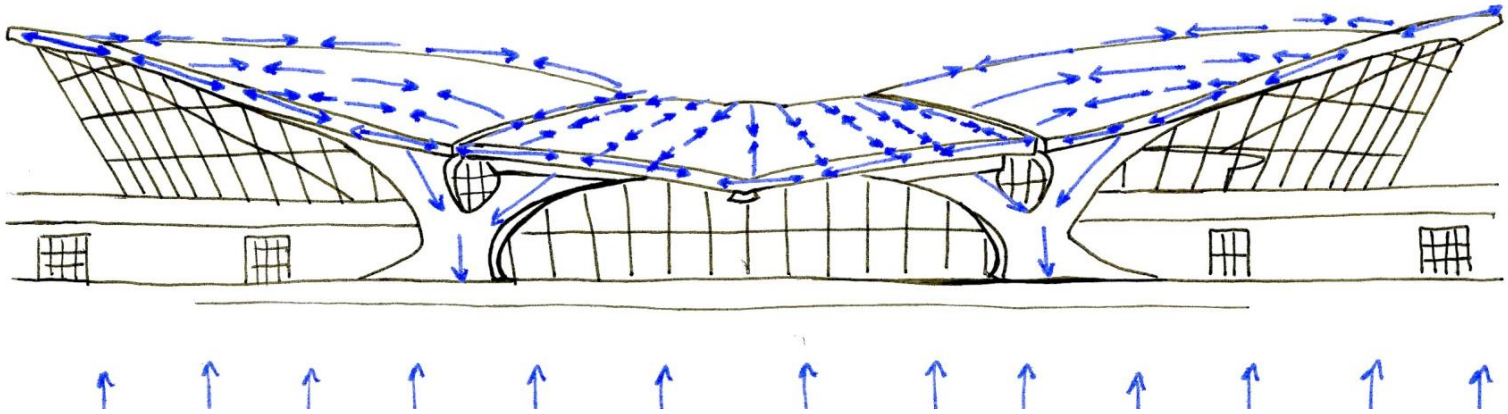
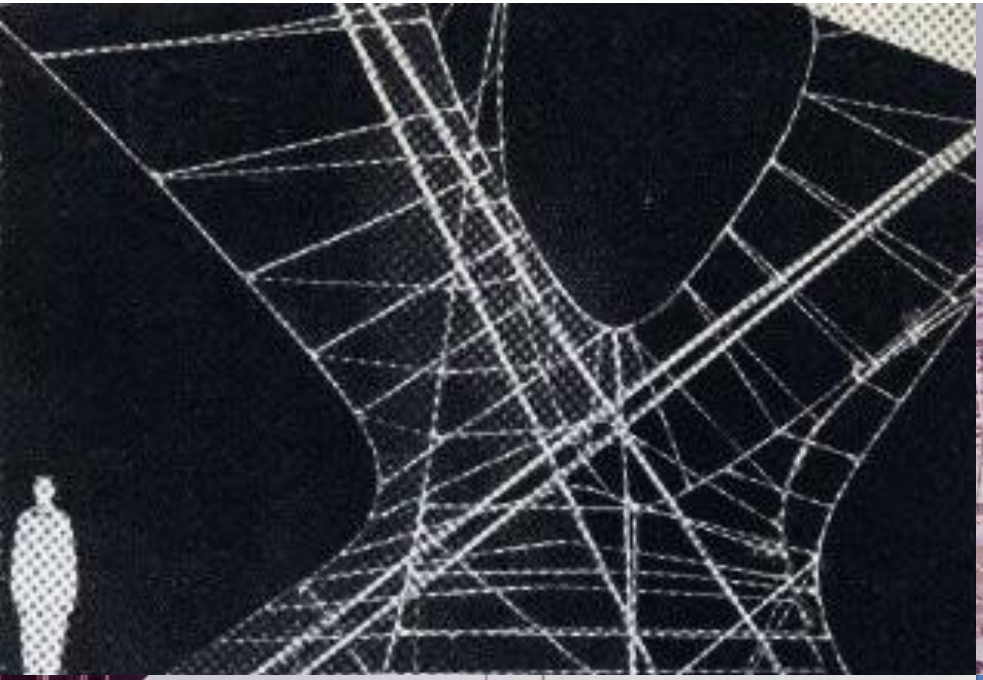


LOADING CONDITIONS

CONSTRUCTION



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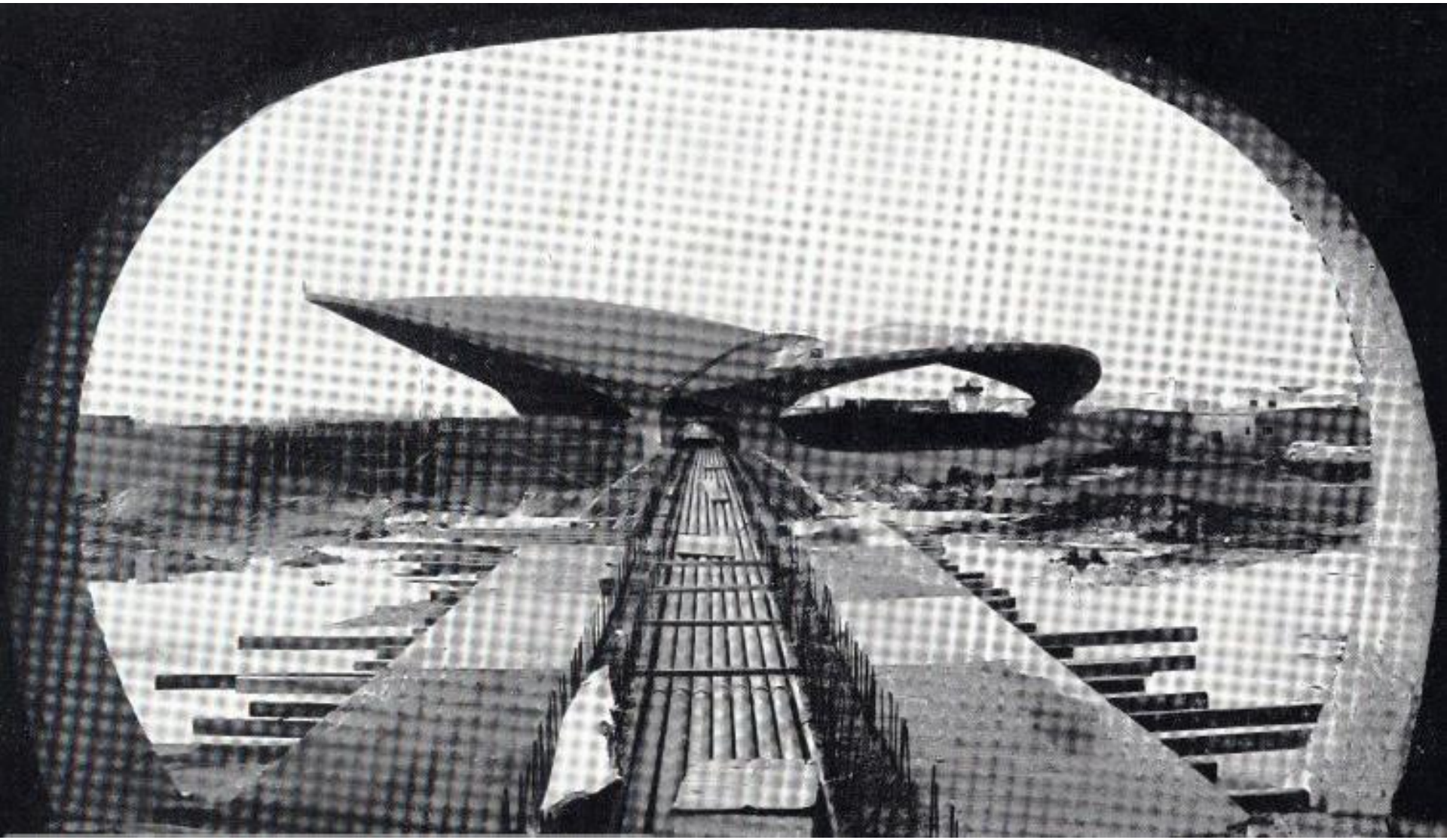

CONSTRUCTION