



Concrete Phoenix
Up-Cycling Saarinen's Flightless Bird

Carnegie Mellon University
School of Architecture

Sustainable Design, 48-400/500 Fall13
Hal Hayes, Studio Professor

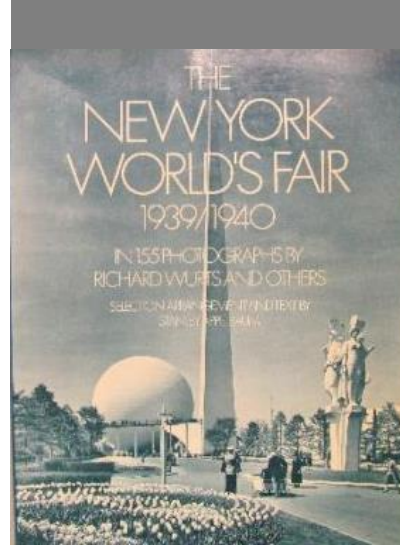


JOHN F. KENNEDY INTERNATIONAL AIRPORT, c.1965
Terminal City concept rendering; a ring of iconic corporate terminals on a circumferential boulevard surrounding a landscaped core.

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THE
NEW YORK
WORLD'S FAIR
1939/1940

IN 155 PHOTOGRAPHS BY
RICHARD WURTS AND OTHERS

SELECTION AND REVEALMENT BY
JONATHAN BIRNBAUM



NEW YORK "IDLEWILD" INTERNATIONAL AIRPORT, c.1957

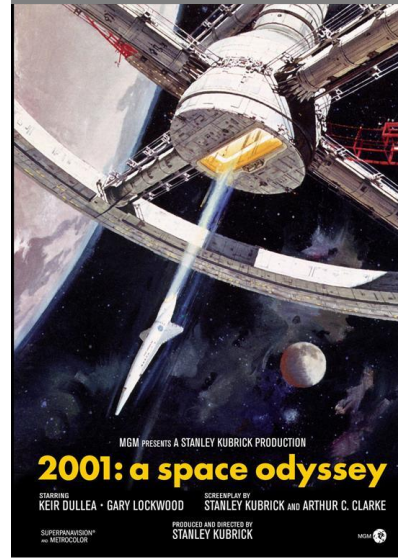
Massive growth in passenger volume accompanied by increased aircraft size led to the development of more elaborate and accommodating terminals. The Terminal City concept is developed, and SOM's International Arrivals Building is the first new terminal.

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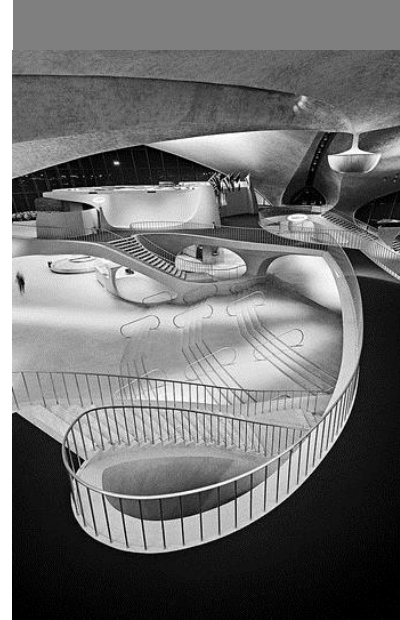
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PAN AM WORLDPORT (TERMINAL 3), 1961

Pan Am’s amazingly dramatic cantilevered roof was not the only dramatic thing about the airline. It was the unofficial flag carrier of the country, the most venerable, reliable, deluxe and glamorous of all. Helicopter shuttle service from the rooftop of its 70-story Manhattan headquarters; its logo appeared on the “space clipper” in the movie 2001: A Space Odyssey. But Pan Am’s empire did not endure beyond the 1980s.

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JOHN F. KENNEDY INTERNATIONAL AIRPORT, c.1965

Air travel in the 1960s and 70s was glamorous and elegant. Pilots were usually former Air Force officers and retained their military bearing and sense of command. Stewardesses were required to be young, beautiful and slim. Chic uniforms by major fashion designers were in high style.

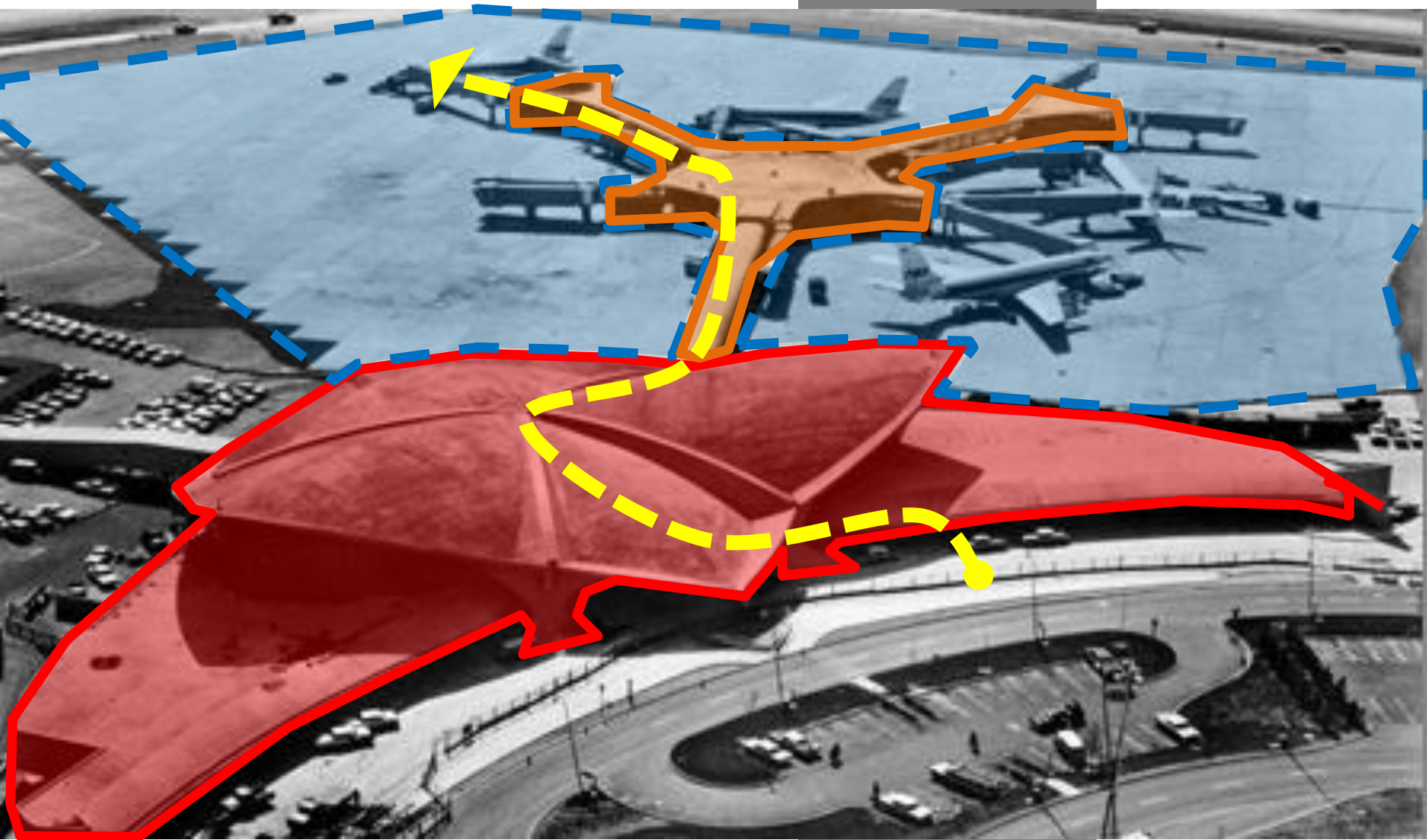
John F & Jacqueline Kennedy, the young first couple embodied the hopes and aspirations of the generation. The widely emulated first lady was the epitome of fashion, style & sophistication. The airport was renamed to honor the president after his 1963 assassination.

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3RD GENERATION; PASSENGER-BASED SYSTEM

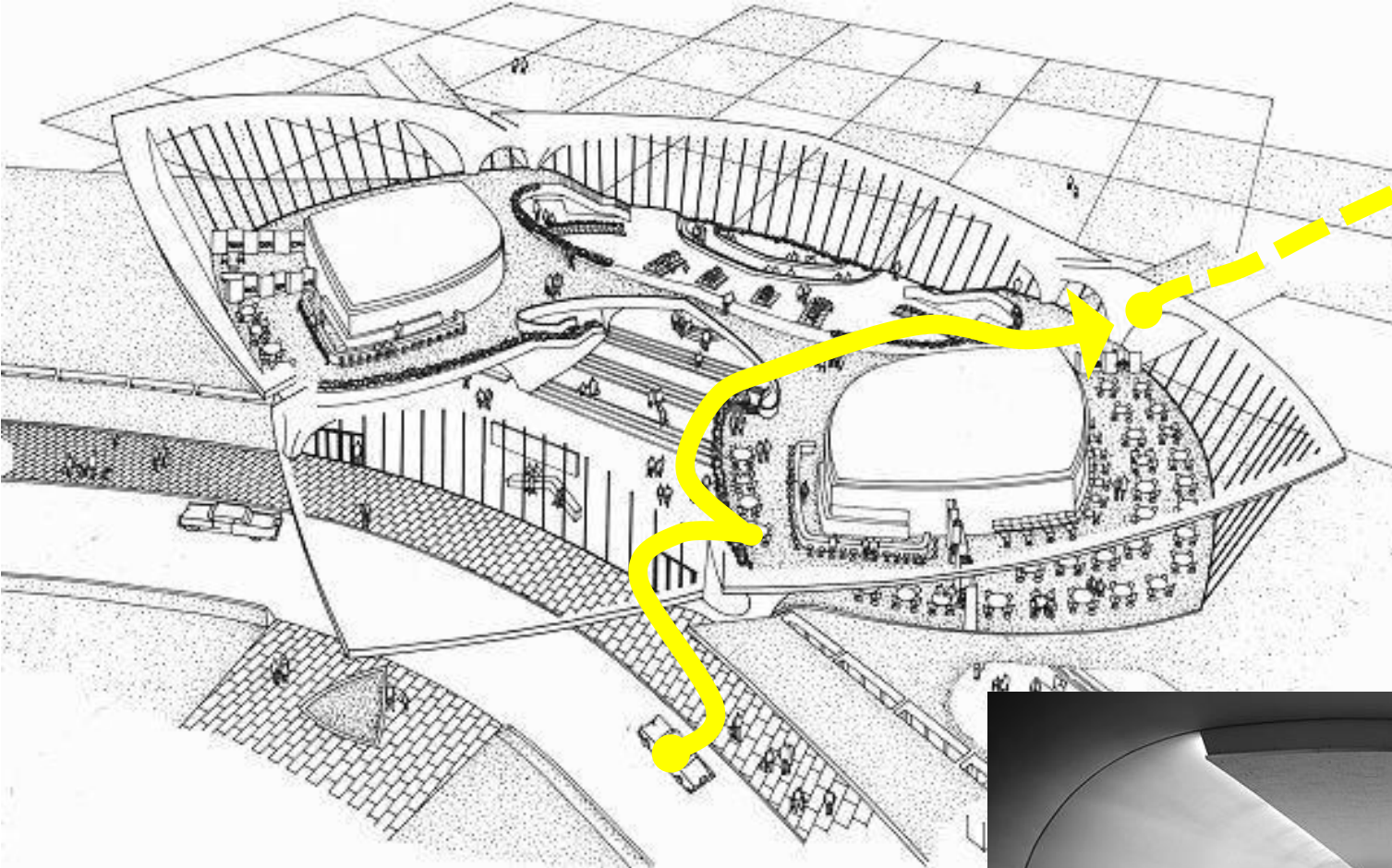
Bring the Plane to the People; Saarinen's TWA Paradigm
Optimize Passenger Sequence & Transport the Aircraft

The first true concourse; a paradigm that will survive the decades, unlick other aspects of the terminal

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Umbilicus from Headhouse to Concourse

3RD GENERATION; PASSENGER-BASED SYSTEM

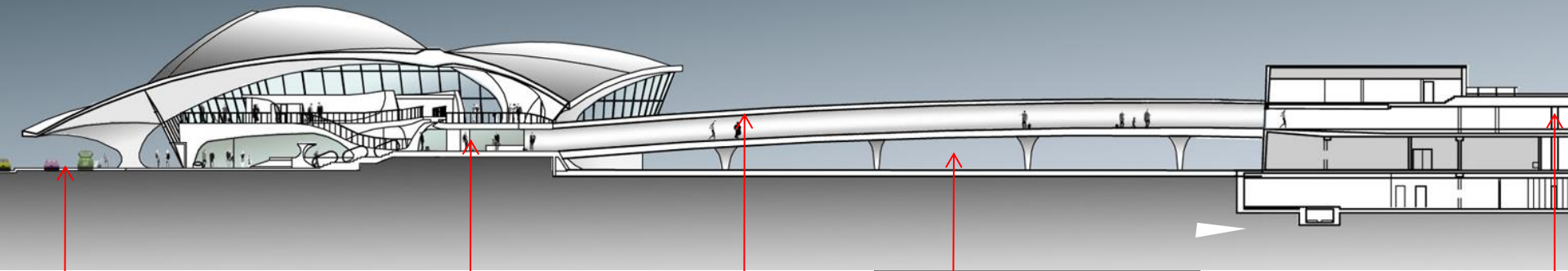
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Departing & Arriving Passengers Segregated Horizontally

Main Departure Lounge in Headhouse

Passengers Walk to Concourse

Apron Freed for Service Vehicles & Baggage

First Major Use of Concourse/Jetway System

TWA Terminal Cross Section



Passengers Walk Directly into Plane



Dual Jetways Board Aircraft Front & Back



Close Proximity of Aircraft & Terminal

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- **Customized**
- **Strong Brand Identity**
- **High Quality**
- **Contemporary**



TWA Terminal
Airline Terminal as Corporate Icon

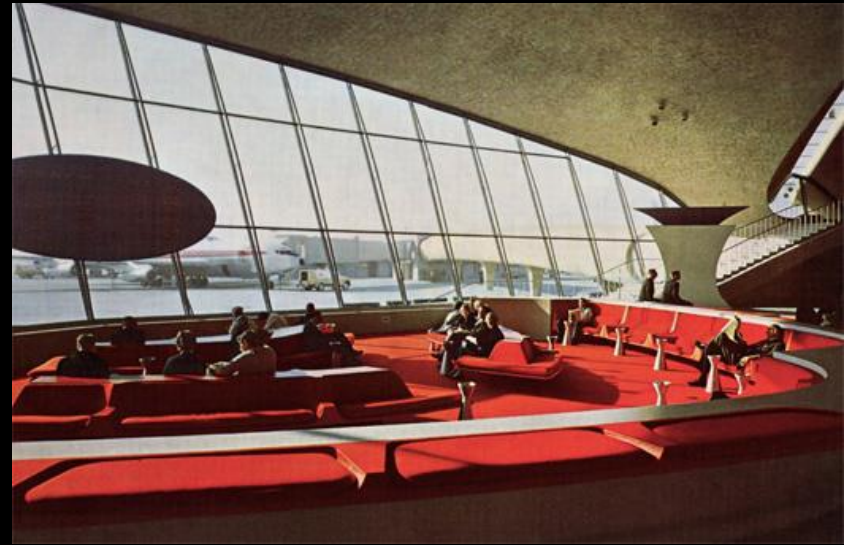
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Airline Terminal as Corporate Icon

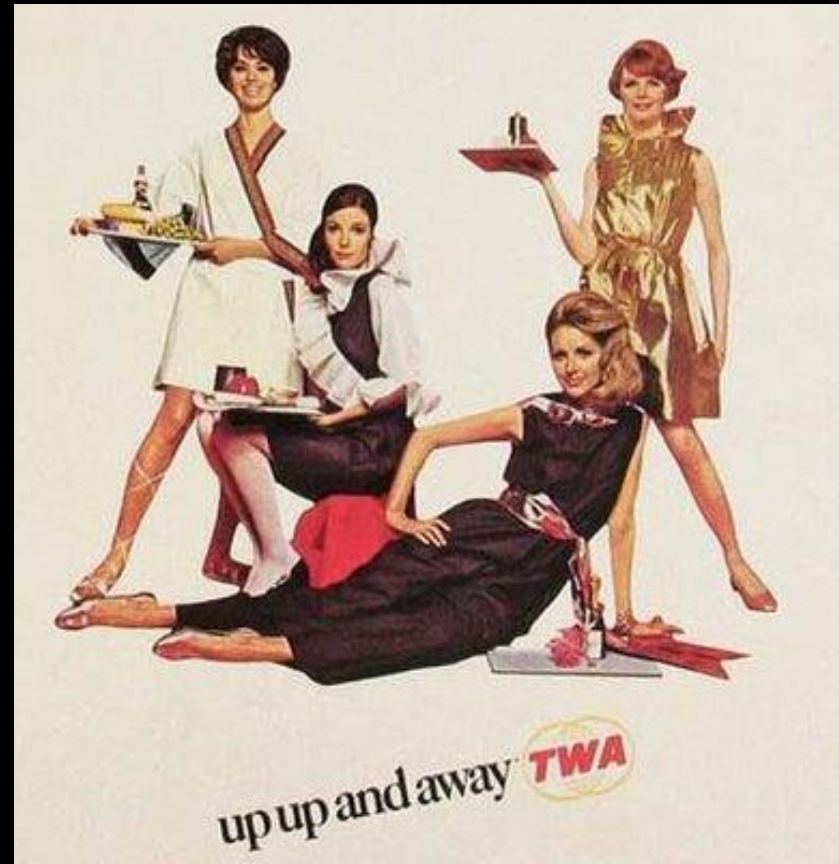
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TWA Terminal
Deterioration over the years.

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The Municipal Art Society of New York

MAS NYC

Voice for the future of our city.

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OUR MISSION

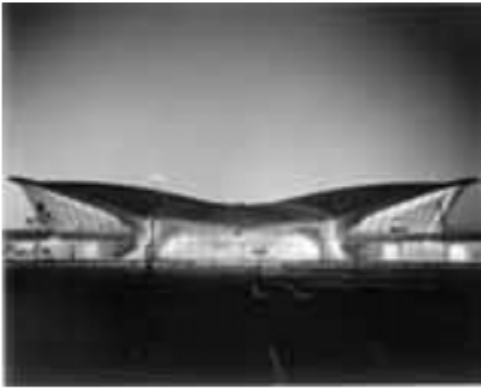
MAS FIGHTS FOR A MORE LIVABLE NEW YORK, AND ADVOCATES FOR INTELLIGENT URBAN PLANNING, DESIGN AND PRESERVATION.

[Learn more about our history >>](#)

MAS WATCH LIST VIEW THE II FOR 2011

The TWA Terminal Saga Continues!

December 16th, 2002, 9:58 am



Background: For over a year, The Municipal Art Society has been pressing for a better plan for Eero Saarinen's TWA Flight Center (1956-62), now Terminal A, a New York City landmark and icon of modern design. As part of the expansion of JFK Airport, the Port Authority wants to demolish portions of the landmark and construct a huge new U-shaped terminal around its "airside," blocking the view of the tarmac that was Saarinen's greatest inspiration and achievement. Hundreds of architects, design professionals,

and enthusiasts of modern design have joined civic organizations in protesting these plans. During the summer of 2001 the Society hosted a press conference featuring notable architects Philip Johnson, Robert A.M. Stern, and Peter Samton, all of whom emphatically and enthusiastically support the full preservation of this very unique and significant Modernist

SEARCH MAS

SIGN UP TO RECEIVE OUR BI-WEEKLY NEWSLETTER

MAS EVENTS

March 8: Wireless City: Can All New Yorkers Get Connected? Open to the public. [program details >>](#)

March 29: Annual Meeting followed by Times Square: A 20-Year Retrospective. Members only. [program details >>](#)

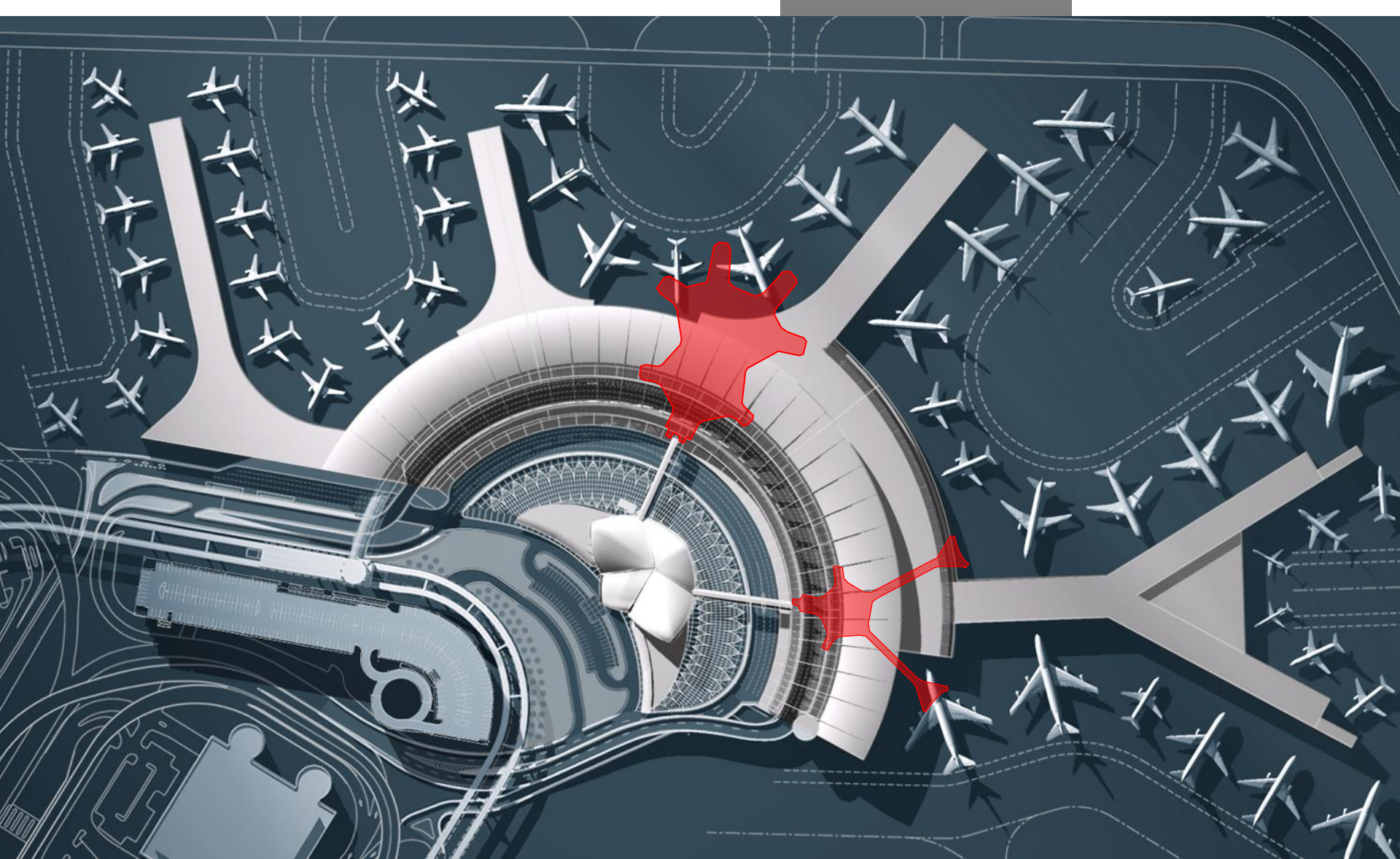
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Port Authority Expansion Master Plan

One large terminal on T5 & T6 sites.

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Port Authority/RAC Compromise

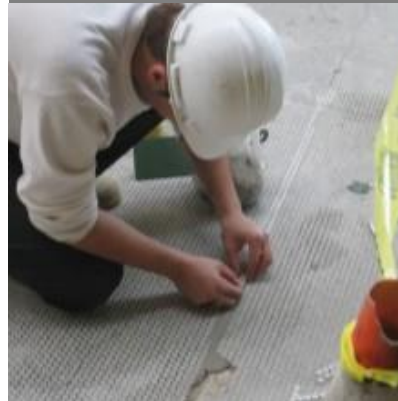
Relocate the “Trumpet”, as recorded by the History Channel’s “Modern Marvels”. All for naught.

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TWA Terminal

Resolution; Bait & Switch. The Trumpet was sacrificed, perhaps needlessly, so that the headhouse's main public spaces could be pristinely restored.

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JFK TERMINAL 5 – JET BLUE 2008

To utilize the deep apron area of the TWA Terminal site, the flight wings of the landmark terminal were demolished, a new two-level roadway was built behind it, and the new Jet Blue terminal was constructed. It's expansion for international arrivals is currently under construction.

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TWA Terminal

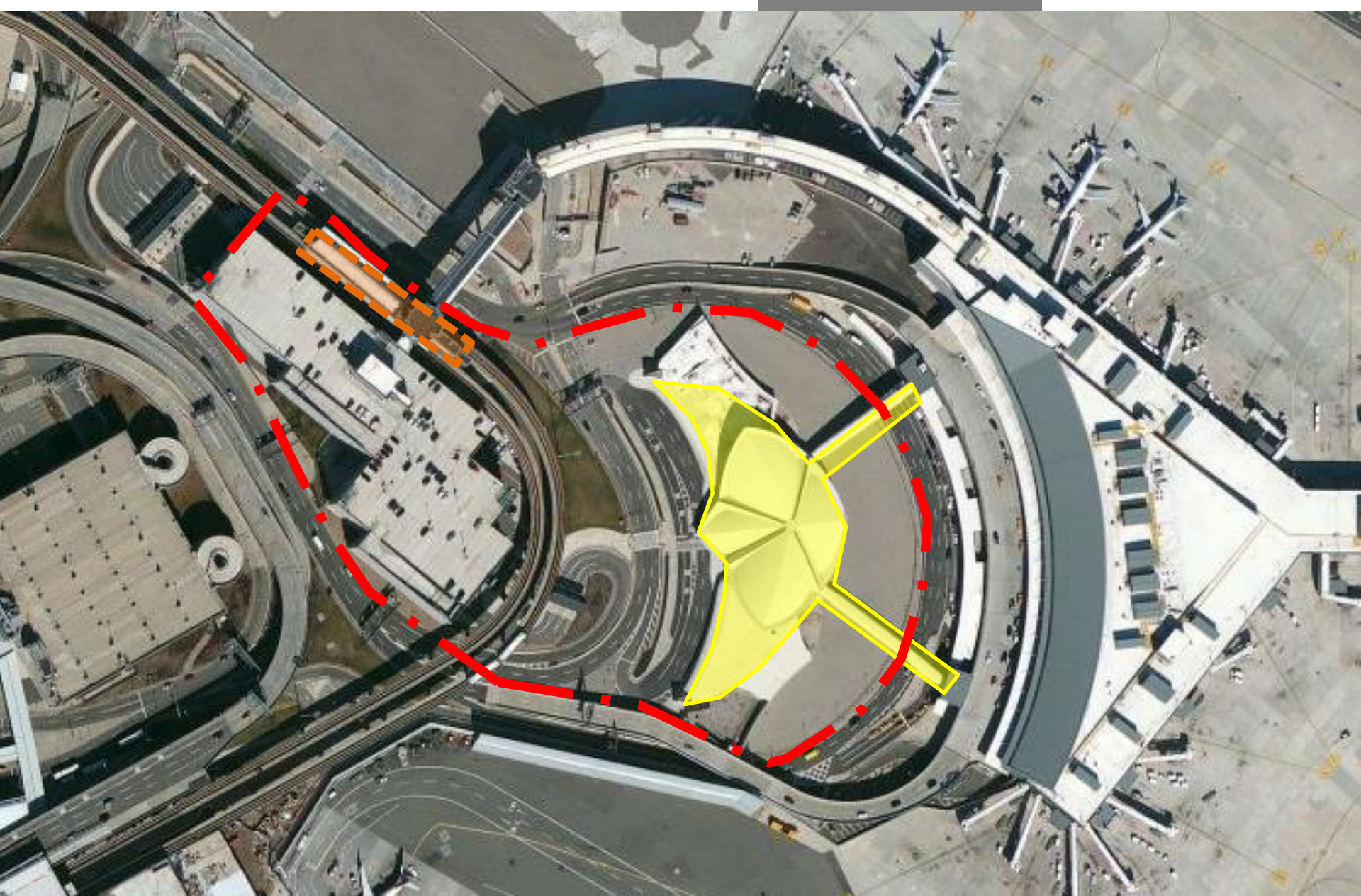
Vacant, Isolated and Lost Amid Recent Construction. Or; a diamond in the rough? It is up to you.

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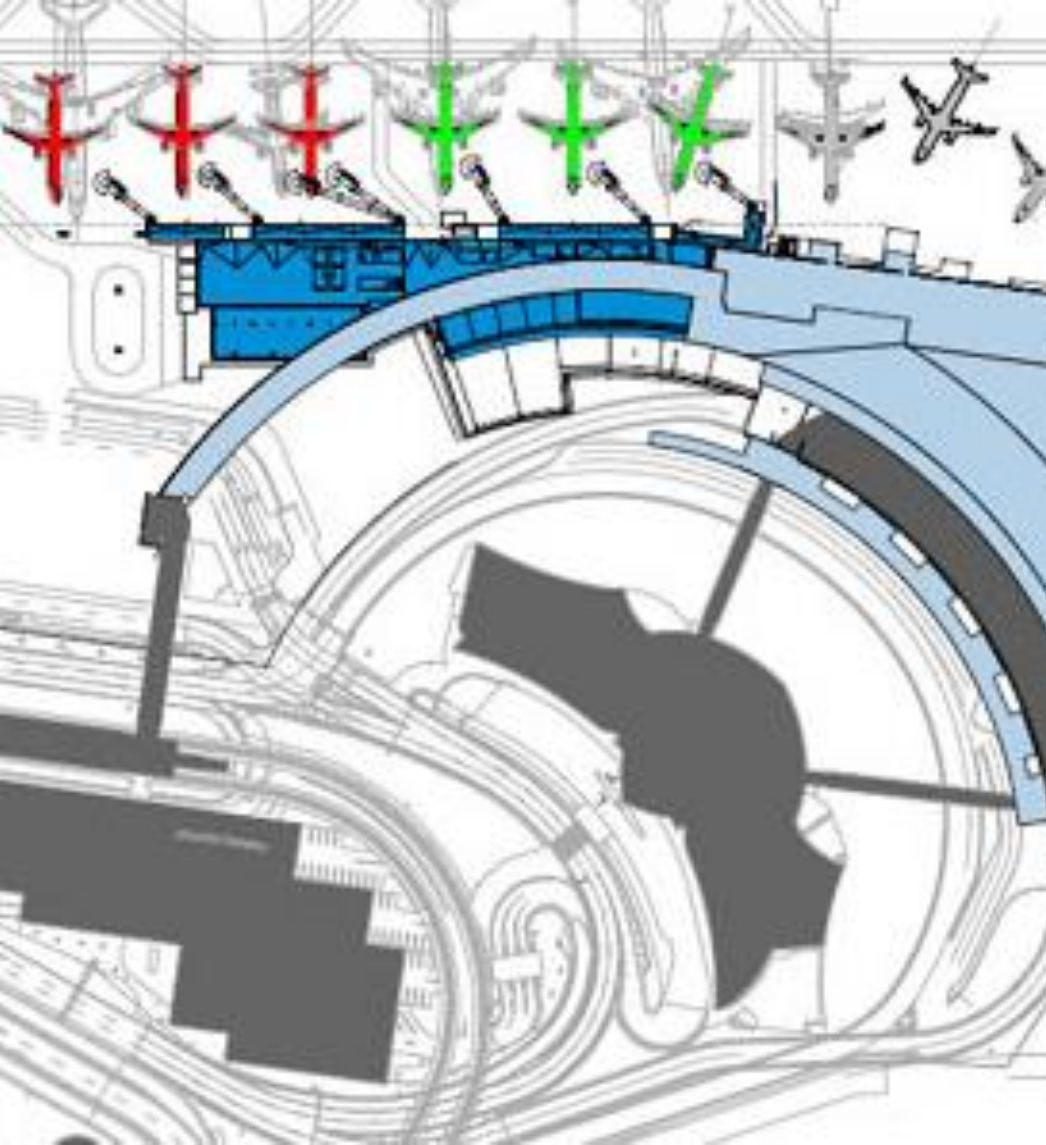


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TERMINAL 5 EXPANSION

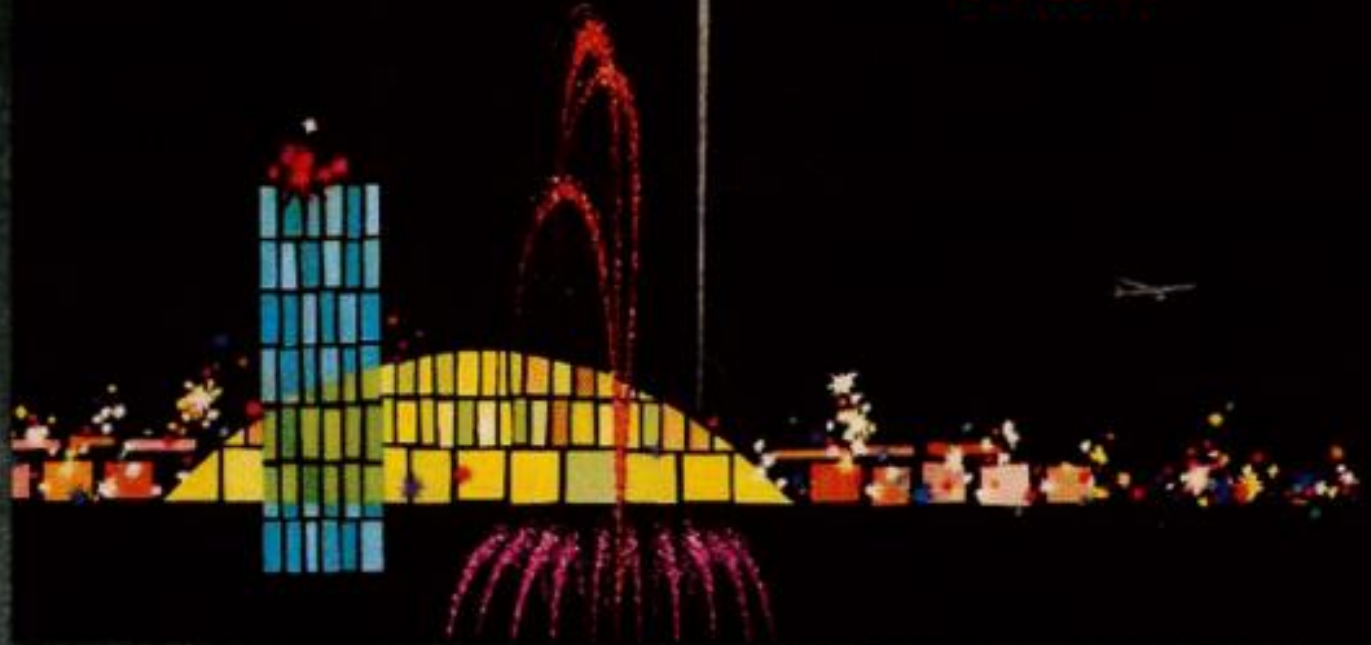
International Expansion of six gates to the JetBlue terminal onto the Terminal 6 site.

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**JET
AGE
AIR
TERMINALS
TWA**



DECEMBER 06, 2012 DRAFT

TWA Flight Center Adaptive Re-use Proposal
Redevelopment Advisory Committee

ADAPTIVE RE-USE PROPOSAL

Redevelopment as a hotel.

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FENTRESS
GLOBAL
CHALLENGE

- > REGISTER
- > AWARDS
- > GUIDELINES
- > VIEW 2012 GLOBAL CHALLENGE
- > VIEW 2011 GLOBAL CHALLENGE

<< IDEA COMPETITION FOR STUDENTS
FENTRESS
GLOBAL CHALLENGE
2013: UPCYCLED ARCHITECTURE

Fentress Global Challenge is an international competition created to stimulate students worldwide in the exploration of future design possibilities in public architecture. In its third annual competition, students are invited to envision Fentress Architects' concept of **Upcycled Architecture**.

Upcycled Architecture is defined as the art of redesigning an existing structure for purposes other than those for which it was originally intended. **Upcycled Architecture** additionally advances an existing building's sustainable, dynamic, and programmatic uses.

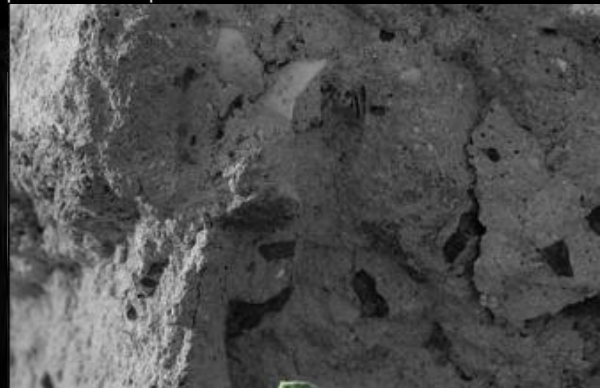
Social and economic changes are creating phenomenal possibilities to upcycle our old structures. Buildings typically outlive their original purposes and today's architects face the challenge of creatively bringing new life and function to them. **Upcycled Architecture** offers the chance to embrace our past designs while looking to the future for more adaptive uses.

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Seeking proposals that include the following:

- Must be an existing site already occupied by a built structure
- Must be in urban context; reducing sprawl and focusing development and efficiencies in the urban environment
- Must be a public building that adds urban vitality, and brings relevance and meaning to the community and people
- No restrictions on the type of site or size. Examples include, but are by no means limited to, disused factories, power plant, schools, apartment blocks, etc.
- Must show physical location/address and image(s) of current structure
- Building must be 10 years or older
- Take into consideration the advances in technology, the exploration of sustainable systems, and the alignment between proposed new use and characteristics of the existing building
- Demonstrates original architecture and design concepts
- Includes an innovative vision for the site



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Introduction

This studio project will parallel the Port Authority's RFP for redevelopment of the TWA Terminal at JFK as a boutique hotel, a project I've been working on for over 10 years. It will also optionally be tailored as a submission to Fentress Architects Global Challenge competition, the first prize of which is an internship for up to three students (the maximum number on a team). Alternatives here could be any feasible use other than a hotel, which works well with the competition, and the Port would be interested in too. Program will also include multi-modal transport-related functions within the historic landmark emphasizing innovative, high-quality passenger processing serving all of JFK's terminals.

Studio Structure & Sequence

Although all students have studied aspects of sustainable design in previous studios and required courses, this is the first Sustainable Design (SD) track studio. All students will therefore technically be at an introductory level; however fifth-year students that have already completed a systems integration studio may be up to more advanced study. Given that starting point, here are a few key parameters;

- This course will be both a stand-alone and an introduction to a multi-semester SD sequence.
- It will support the mixing of three distinct student cohorts;
 1. Fourth year students, who may elect only this one SD studio or may take two, three or four additional in the spring 2014 semester or 2014/15 academic year.
 2. Fifth year students doing a ninth studio who may elect only this one SD studio or may take one more in the spring 2014 semester.
 3. Fifth year students doing the first half of a one-year thesis.

Curricular Transition

The Sustainable Design studio focus is an evolution and expansion of the former Systems Integration studio (48:405); it will also incorporate design and analysis components of Advanced Building Systems (48:415). SD studios will also expand foundation learning and facilitate specialization and advanced design and research in the following "legacy" curricular areas;

- Systems Integration
- Advanced Building Systems
- Site Design
- Holistic Design

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Studio Requirements & Pedagogy

Basic requirements in terms of content and pedagogy of both this first studio and the four-semester sequence include the following;

- All students have completed a required comprehensive studio; therefore all SD studios will be considered advanced comprehensive studios.
- All SD studios will require basic competency in the following NAAB-required and traditional Carnegie Mellon SoArch learning areas by the end of the first semester;
 - Pre-Design (programming and planning)
 - Tectonics
 - Simulation and Visualization
 - Conceptual Design
 - Design Development
 - Site Design fundamentals
 - LEED

Sequential studios in the SD track will provide the opportunity for faculty and students to develop and pursue year-long projects, particularly in the upper two semesters as a self-focused capstone studio and/or thesis.

Project Typology

This studio will address the core typologies of Airport Hotel, Green Hotel & Multi-Modal Terminal. Additional typologies that are related include Food & Beverage Service, Conference and Spa/Resort. Your individual project may prioritize different combinations of these key areas.

Future SD studios in sequential semesters will be coordinated and offer students increasing depth in the focus area and both repetition and variety. At current student preference polling rates, there will likely be one or more SD studios per semester, so there is an opportunity to structure the sequence with overlapping, redundant and sequential projects. Particular types and uses should include;

- High-density, constrained urban sites (contextual relationships, scalable district interventions, district-based systems, object/formal design, mitigating new development impacts, Ecotect/VE analysis)
- Medium-density greenfield developments (object/formal design, mitigating new development impacts)
- Brownfield redevelopment at all densities (site remediation, transitional uses, district impacts)
- Small net-zero building (design detailing, materials quantification, cradle-to-cradle and/or Ecotect analysis)
- Large buildings with complex/multiple use types (biophilia, bio-mimicry, evidenced based design, resilient design)

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Students**Progression**

Basic
Intermediate
Advanced (Thesis Prep)
Expert (Thesis)

Projects**Scale**

Small
Medium
Large
District/Neighborhood
Eco-Cities
Megastructure

Proportion

Articulated
Compact
Horizontal
Vertical

Complexity

Contextual
Programmatic
Sociological
Systemic

Sites**Development**

Brownfield
Infill
Adaptive Reuse
Greenfield

Density

Urban
Suburban
Ex-Urban
Rural

Climate

Temperate
Mediterranean
Sub-Tropical
Tropical
Arid - Mild
Arid - Hot

Geography

Wetland
Coastal
Plain
Foothill
Mountain

Design Skills**Fundamentals**

Pre-Design
Tectonics
Conceptual Design
Design Development
Design Detailing
Representation

Tasks

Quantification
Analysis & Simulation
Cradle-to-Cradle Analysis
Systems Integration
Integrated Practice

Tools

Revit
Ecotect
IES Virtual Environment
BIM

Methodologies

Biophilia
Bio-Mimicry
Evidence Based Design
Integrated Practice
Interdisciplinary Team
Resilient Design

Systems**Systems**

Acoustics
Enclosure/Building Integrity
Energy Generation/Resources
Interiors
Lighting
Plumbing
Spatial
Structure
Site
Thermal
Ventilation

Standards & Regulations

Net-Zero
LEED
Off-the-Grid
Living Building Challenge
Carbon-neutral design
Energy-neutral design
Passivhaus

CURRICULUM & PEDAGOGY

Key studio issues including students, project aspects, site conditions, design skills and sustainable systems.

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Hybrid Studio Opportunities

Many core SD issues are well suited to study in combination with other studio focus areas. Particularly, fifth year thesis students may consider multi-focus projects emphasizing hybrid relations with other studio tracks and disciplines to support their individual theses. These options include, but are not limited to

- **SD/Urban Design** (eco-districts, large-scale systems and infrastructure planning, megastructures)
- **SD/Critical Practice** (design development, detailing, construction documentation, systems research and specification)
- **SD/Speculative** (future systems, marginal/hostile environments, utopian/ecotopian visions)
- **SD/Computational Design** (form & massing/performative optimization, robotic fabrication/construction of complex systems)

Grading

Studio grading is based on several factors;

1. Performance & Products

Your performance in the studio and the products that you submit and present are the most important factor in my evaluation of your work. There are 10 assignments during the semester that I will grade individually; each contribute to the quantitative component of your semester grade as follows;

- | | | | |
|-------------------------------|-----|---------------------------|-----|
| • A-1; Sketch Problem | 5% | • A-5; Parti | 10% |
| • A-2; Precedents | 10% | • A-5; Concept Design | 25% |
| • A-3; Site Analysis | 10% | • A-6; Design Development | 20% |
| • A-4; Programming & Planning | 10% | • A-7; Final Presentation | 10% |

2. Leadership & Collaboration

During this studio and your entire future career, you will be working in teams in which your ability to collaborate, share information and maintain a collegial and cooperative manner will be essential to the success of all. Also you will each individually be assigned as the project manager or facilitator of an important part of the studio, and your ability to lead and effectively marshal the human and physical resources at hand is equally critical to the success of the project.

3. Learning

What you learn in the studio is usually but not always readily apparent in your work. Different students and student cohorts (e.g. 4th year, 5th year, thesis) also have varying experience. How much you learn and improve in this studio given your individual abilities will also be a factor in your semester grade.

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Semester Schedule

The semester work effort will be divided into four sections, as follows.

1. Project Definition

The first three weeks will be spent defining the parameters of the design.

- Sketch Problem, Assignment 1
- Precedents, Assignment 2
- Site Analysis, Assignment 3

2. Pre-Design

The next three weeks will be spent exploring the options of the site and building.

- Programming & Planning, Assignment 4
- Parti – Tectonics & Systems, Assignment 5

3. Concept Design

The next four weeks will be spent refining your individual or team design. Mid-semester review will occur partway through this phase of work.

- Concept Design, Assignment 6

4. Design Development

The last five weeks will be spent developing, detailing and presenting your design.

- Design Development, Assignment 7
- Final Presentation

Participation

Participation in lectures, discussions and reviews is essential to your learning and performance. Our studio has a somewhat more flexible schedule than others you've had, and this should facilitate your participation.

Late Submissions/Missed Presentations

Late submissions without prior consultation and agreement will result in a reduction of one grade level per day late. Missing a presentation is a more serious issue that will be reviewed with SoArch administration for further actions including academic warning.

University Policy on Attendance

This course adheres stringently to Carnegie Mellon's University policy on attendance. Attendance in all studio review, lecture and presentations is required. Three unexcused absences will result in a failing grade.

University Policy on Cheating and Plagiarism

This course adheres stringently to Carnegie Mellon's University policy on cheating & plagiarism. During your academic and professional life it is critical that you acknowledge the contributions of others and that you properly credit all sources that contribute to your work.

Imagining a Future/Honoring the Past

Assignment 1 – Sketch Problem

Learning Goals

This introductory assignment is intended to test and expand each student's imagination, natural abilities and learned skills in several areas and ways that will be key to your efforts and our dialog throughout this Sustainable Design studio;

- **Explore conceptually** the complex site and historic building with minimal constraints and maximum intuition.
- **Evaluate strategically** the basic tectonic, systemic and programmatic possibilities and opportunities of redevelopment and expansion.
- **Extrapolate holistically** a simple but compelling concept from a minimum amount of information.

Program

The program for this assignment is completely at your discretion, however it must answer the following question;

What use(s) do the physical form of the historic landmark building, constraints and opportunities of the site, and needs and desires of potential occupants lend themselves to?

Site

The site includes the TWA Terminal and the entire Yellow Quadrant landside area.

Statement

Clearly and succinctly state your concept and defend your decision in a one- to two-page text statement. Include a project name that encapsulates its seminal identity.

Media

The presentation type for this assignment is completely at your discretion, and should be best suited to convey your concept in a compelling and convincing way. Consider using a combination of concept sketches, diagrams, models, perspectives, animations, plans, sections, materials, etc.

Schedule

8/28 Wed Assignment Issued
8/30 Fri Submit & Review



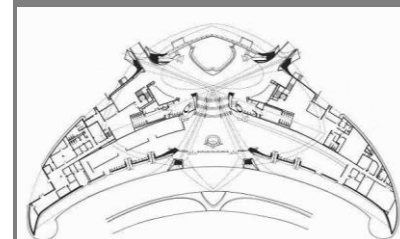
TWA Flight Center, Landside Exterior
Esto, 1961



TWA Flight Center, Landside Interior
Esto, 1961



JFK Terminal 5/Yellow Quadrant Site
Bing, 2013



TWA Flight Center, 1961
GreatBuildings.com

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