Kansai International Airport

CEE 491
March 31, 2009
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Project Overview

- **Location:** Osaka Prefecture, Japan
- **Original Runway:** 11,483 ft (3,500m)
- **Terminal:** 1.7 km long
- **Concrete**
  - 48,000 tetrahedral concrete blocks (seawall)
- **Excavation**
  - Over 21 million cy
- **Second Runway:** 13,123 ft (4,000m)
Project Overview

- **Price:**
  - Original Cost: Over $14 billion
  - Total Cost: $20 billion
    - Land reclamation, 2 runways, terminal, facilities

- **Funding**
  - National Government & Kansai Community
  - FILP funds

- **Awards**
  - ASCE: A Monument of the Millennium
Timeline

Jan-87
Construction commenced on the airport seawall

Jun-87
Construction of the airport access bridge started

Jun-89
Airport island seawall was completed

May-91
Construction of Passenger Terminal Building began

Dec-91
Reclamation work on the airport island was completed

Dec-93
Construction of the main airport facilities was completed

Mar-94
Airport access bridge was completed

Mar-94
Airport passed official inspection for completion

Jun-94
Passenger Terminal Building was completed

4-Sep-94
KIX opened
Expansion
Project Uses, Benefits

- Increased trade to Kansai region
- Expanded airport capacity over old Osaka International Airport
  - 614 international passenger flights
  - 200 international freighter flights
  - 493 domestic flights (per week, Summer 2008)
Technical Issues

- Pre-construction
  - Settling
    - Seabed consisting of soft clay
    - Unknown properties of material below clay
  - Needed to handle frequent earthquakes and storms
  - Terminal weight and design

- Post-construction
  - Underestimation of settlement rate
    - 8m in 5 years, estimated 8m in 45 years
  - Only one landing runway
Settling Adjustable supports
Design Sea wall
Technical Solutions
Sea wall Light, wing shaped terminal
Sliding joints
Runway

nd

runway opened August 2007
Innovations

- First airport to be built completely on an artificial island
- Storm and earthquake resistant
- Lessons learned used in design and construction of future artificial island airports
Social Problems/Policy Challenges

- Kansai region looking for new airport, could not expand Osaka International Airport
- Local fishermen protested KIX but were heavily compensated
Social Problems/Policy Challenges

- Massive Debt
  - Loses $560 Million USD in interest each year
- Second highest landing fees in the world
  - Some airlines have stopped services
- Unexpectedly high operating costs
- Additional construction plans
Social Problems/Policy Challenges

- Second Runway
  - Expected to double the number of flights
  - Actual increase only 11%.
Conclusion

- KIX was a successful monumental project
- Massive debt and technical challenges are critical issues.
Thank you for listening!