

# Hong Kong Airport and Infrastructure Development Program



Suspended sculptures are on permanent display in the public atrium

**A** fully integrated public-private team of the Hong Kong government's New Airport Projects Coordination Office (NAPCO) and Bechtel was responsible for overall multiproject development of 10 major infrastructure projects in a \$20 billion program.

One of the biggest civil engineering projects in recent history – passing through some of the world's most densely populated urban areas – the Hong Kong Airport Core Program (ACP) consisted of 10 major interdependent infrastructure development projects, including bridges, roadways, highways, an immersed-tube tunnel, and a rail system, as well as the new Hong Kong International Airport.

Originally projected at \$21 billion, the ACP finished approximately \$1.1 billion under the original budget. Bechtel's work on scheduling, progress monitoring, cost control, technical support, claims settlement, and environmental coordination was credited by the client with helping the Hong Kong government keep the effort on schedule and accomplish this reduction in costs.

The 10 interdependent projects included:

- A new airport on a 3,100-acre (1,250-hectare) site, with 24-hour operations and ultimate capacity of 87 million passengers and 9 million tons (8 million metric tons) of cargo by 2040
- A new 21-mile (34-kilometer) express rail system to downtown
- The world's longest suspension bridge with car and rail capacity
- Three new highway projects totaling 16 miles (25 kilometers)
- A new 6-lane, 1.25-mile (2-kilometer) tunnel under the harbor
- A new town for 260,000 residents (next to the airport)
- Two massive land reclamations, almost 3,300 acres (1,337 hectares) for port/industrial development

## Location:

Hong Kong

## Client:

Government of Hong Kong

## Scope of Services:

Program Management

## Project Duration:

1990–1998

## Total Installed Cost:

\$20 billion



## Significant Features/ Accomplishments:

- 10 major interdependent projects
- Completed the program \$1.1 billion under original budget
- Managed 200 major contracts with 1,000 contractual interfaces
- Formed Bechtel-government team that expedited decision-making and facilitated technology transfer
- Developed owner-controlled insurance program that saved nearly \$4 million

## BECHTEL'S ROLE

Bechtel, in a fully integrated team with the client, was responsible for overall multiproject development. Bechtel was retained to provide the expertise and systems necessary to effectively integrate and orchestrate this multiproject program and create a strong matrix management organization with the client. Bechtel personnel and Hong Kong government staff were co-located in Hong Kong to oversee planning, design, and construction activities.

Bechtel's role included:

- Master plan implementation
- Program controls (estimating, budgeting, baseline and annual forecasting, scheduling)
- Implementation of the management information system
- Overall program technical and financial review and recommendations
- Environmental impact mitigation program
- Coordination of wrap-up insurance program
- Contract administration/coordination and claims management
- Transfer of program management skills and techniques to government counterparts

## ADDED VALUE

Bechtel's global perspective and resources, coupled with the client's local knowledge and capabilities, translated into a highly effective cost and schedule controls program that met the challenges of integrating the 10 major projects (7 of which were managed by Hong Kong government agencies, 2 by statutory corporations, and 1 by an independent franchisee). Bechtel helped NAPCO oversee the work of 170 contractors from 18 different nations. The work involved about 200 major contracts, more than 150 of which were active simultaneously, with 1,000 contractual interfaces. Because of its effectiveness, the controls program was adopted by the Hong Kong government as a basis for an overall public works management program.

Benefits of the integrated program management system included:

- A common approach to cost and budget control across all projects led to significant efficiencies and flexibility for the management team enabling it to quickly shift emphasis from one project to another as work-flow demands changed
- Tight control/coordination of all elements allowed for early resolution of potential bottlenecks (such as community issues)



*The airport site was created by flattening the island of Chet Lap Kok and adding reclamation to its western side.*



Bechtel helped strengthen ACP's claims management/control by adopting a policy of lump-sum contract conditions with strict time limits applying to claims modification, time-barring provisions to control submittal of claims details, and a structured three-tier scheme for resolution of disputes, beginning with mandatory mediation. This improved process allowed a recovery of 5 months to the schedule on Tai Ho Utility Reserve, and avoided domino effects to the airport completion.

Bechtel also recommended and led the development of an owner-controlled insurance program resulting in the reduction of brokerage commission costs from \$6.3 million to 2.7 million and improved services from brokers.