

## CS-239

### Employer's Representative for the Design and Construction Mandalay International Airport in Myanmar

Airport Department, Pacific Consultants International  
Hideki Murata

#### 1. Background

As part of its "Open door policy", the Government of the Union of Myanmar (GUM) is promoting the development of the country's tourism industry. To help achieve this objective, the GUM decided in 1993 to build two world-class international airports with 14,000ft x 200 ft (4,267m x 61m) long runways at Mandalay and Hathawaddy. Mandalay, is the ancient capital of Myanmar. It is the second largest city and located in the center of the upper region of the country. The runway at the existing Mandalay Airport is only 1981m x 31m and the surrounding urban development limits its expansion. The Department of Civil Aviation (DCA), the executing agency for the project, therefore selected a new airport site 10.135 ha in area at Thada-Oo, about 35km south of Mandalay city.

In May 1996, the Government of Myanmar made a US\$ 149 million Loan Agreement with the Export-Import Bank of Thailand. With proceeds from this loan, the DCA entered into a Turnkey Design and Construction contract with the Italian-Thai Development Public Company Limited (ITD) for part of the work packages required for the construction of the new Mandalay International Airport (MIA). In August 1996, Pacific Consultants International (PCI) made a Consultancy Agreement with the DCA to act as the Employer's Representative. In this role, PCI was to assist the DCA in ensuring that the design and construction work was conducted in full compliance with the conditions set out in the contract between the DCA and ITD.

#### 2. Contract between DCA and ITD

Under the "Design and Build, Lump Sum" contract, the ITD is responsible for the planning, design, supply, construction and commissioning of the following facilities:

- 1) Passenger terminal building with a total area of 34,000 sq. m, including special equipment such as baggage handling systems, security systems, six passenger loading bridges, an integrated airport information system, etc.
- 2) Elevated departure road to the terminal building
- 3) Air field lighting systems, including a Category-II Precision Approach Lighting System
- 4) Radio navigation aids and ATS communication systems, including Category-II Instrument Landing System (ILS), and Airport and Secondary Surveillance Systems (ASR/SSR)
- 5) Aviation fuel storage and distribution system with hydrant pits located below the apron
- 6) Water supply system from deep wells near the Ayeyarwady River
- 7) Sewage treatment system

#### 3. PCI's scope of services

The scope of PCI's services comprises: assistance in project administration; and technical advice. These can be further subdivided as follows:

- 1) Assistance in project administration
  - a) Advise the DCA on the formation of a project team to conduct such activities as : reviewing and approving the Contractor's submissions, placing work variations, and processing monthly statements, invoices and payment instructions.
  - b) Assist the DCA in establishing procedures for administering the contract with ITD.

- c) Advise the DCA during the course of any disputes with the Contractor.
- d) Assist the DCA in coordination between the Contractor and other parties concerned with contract activities.
- e) Assist the DCA in issuing the certificates for payment, and for the provisional and final acceptances of works.

2) Technical Advisory Services

- a) Review the criteria, codes, standards, etc. proposed by the Contractor for design and construction of the facilities.
- b) Review the Master Plan, Basic Designs and Detailed Designs submitted by the Contractor and advise the DCA of the results.
- c) Monitor the conduct of construction works and advise the DCA of the results.
- d) Review the operation and maintenance manuals to be submitted by the Contractor and advise the DCA of the results.

4. Design Works

ITD hired Marshall Macklin Monaghan (3Ms), a Canadian design firm, for the Master Planning , Basic Design and Detailed Design of the Terminal and the facilities. 3Ms did not question the design parameters set by GUM, which were 3 million international passengers per annum, and 1,000 inbound or outbound peak hour passengers . Given the very low traffic volumes at the existing airport, PCI advised the DCA that these throughput levels were too high and, if used for design, would result in excessive capacity. PCI also advised the DCA to use the new airport for domestic traffic instead of operating two airports once the new one was completed. Nevertheless, the DCA chose not to act on either recommendation since it would have meant overturning decisions already made by higher authorities. Therefore, the detailed design of the passenger terminal building, completed in December 1997, was for a total area of 38,000 sq.m. This included an additional 400 sq.m to widen the airside corridor.

5. Construction Works

The earth works and airside pavement works were assigned to Public Works, Ministry of Construction. These were respectively 90 to 95 % completed as of the end of February 1999. However, the construction of the airport access roads which was also assigned to Public Works, is well behind schedule due mainly to a lack of funding from the GUM.

Despite Thailand's own severe economic problems, the Government of Thailand has continued to provide funding under the Loan Agreement The ITD's work packages, which started March 1997, are on schedule and were nearly 90 % completed as of the end of February 1999. These are expected to be completed in July 1999, as originally scheduled.

Due to very short period of Master Planning available to 3Ms, there were plenty of shortcomings in the original design concept such as unbalanced floor area allocations, underestimation of fuel facility requirements, the omission of runway centerline lights, etc. Nevertheless, ITD, due to the lump-sum terms of the contract, will be required to bear all additional costs for items which were specified by in the contract, but which they failed to include in the design concept and initial cost estimates. Up to the end of March 1999 and despite of all kinds of difficulties, ITD has generally performed satisfactorily. This may be due in part to the desire of Thailand to assist a neighboring friendly country. PCI also takes pride in the appreciated expressed by the DCA for work on this project.