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**Education:** B. Eng, Civil Engineering, University of Sydney,  
Australia (1958)

**Professional Associations:** Life Fellow American Society of Civil Engineers  
Professional Member Dispute Board Federation  
Member Dispute Resolution Board Foundation

**Languages:** English and Spanish (fluent spoken and written).

### **Principal Qualifications**

I have been concerned with the management and implementation of large scale energy and infrastructure projects in the international field for the last 40 years. This has involved responsibilities in the technical, commercial and financial aspects of projects for water resource and hydroelectric development and transportation infrastructure.

Some of the areas in which I have specialized include:

Coordination of interface between design and construction to ensure constructability; ensuring compatibility between design criteria and Design Basis Memorandum; monitoring and control of impact of design changes on cost and schedule;

Establishing implementation strategies to achieve the optimum contractual and financial arrangements for projects, management of finance agreements with international funding agencies, including ADB, IBRD, IDB

Advising Owners on amicable settlement of disputes, preparing and rendering Engineer's Decisions on international contracts, coordinating and presenting Owner's case to Dispute Boards

My unique combination of wide international construction management experience with an emphasis on engineering, constructability, contracts management and dispute avoidance offers the prospective client the ideal set of skills for management of international contracts.

## **Representative Projects**

### **2007-2009, Santa Rita Hydroelectric Project- Peru**

**General Manager**, based in Lima, Peru, for this private power development, responsible to project developers to bring project on line from pre-feasibility through to construction contract awards. Managed engineering consultancy contract, geotechnical field explorations, coordinated preparation of contract design documentation. Implemented decision favoring drill and blast against TBM alternative for headrace tunnel excavation, because of uncertainties in geotechnical information. Ordered provision of steel lining for pressure shaft, after boreholes indicated shattered rock in shaft area. Determined optimum location of power facilities for energy production and least cost construction, eliminating under-river crossing for tailrace tunnel as too risk-oriented. Contracts were prepared initially based on an EPC Silver Book, which was converted to Red and Yellow Book formats after initial negotiations with prospective contractors indicated difficulty in establishing suitable risk-sharing arrangements.

### **2005-2006, Middle Marsyangdi Hydroelectric Project – Nepal**

**Chief Resident Engineer**, for Fichtner Joint Venture, consulting engineers to Nepal Electricity Authority for construction management of 72 MW hydroelectric project on the Marsyangdi River in west-central Nepal. Complete responsibility for all site engineering, including survey, geotechnical, concrete quality control, review of detailed construction drawings prepared by contractor, home office design liaison. The project comprises diversion dam/spillway plus rockfill cut-off embankment, underground desanders, headrace tunnel and surface powerhouse. The Headworks are located on an old river valley which presented severe foundation problems requiring an extensive program of *tubo a manchette* grouting, and downstream pressure relief wells. Penstock was executed using soft ground excavation techniques in old slide material.

### **1997-2003, Kali Gandaki “A” Hydroelectric Project - Nepal**

**Project Manager 99-03, Contracts Manager 97-99)** for Washington Group International, consulting engineers to the Nepal Electricity Authority for the construction management of this environmentally friendly run-of-river hydro project, at US \$400 million the largest infrastructure investment executed to date in Nepal.

**The project** is located on the Kali Gandaki river in Western Nepal and comprises Headworks including concrete gravity Diversion Dam, Desanding Basin with a complex of 45 hydraulic gates for sediment removal, 6 Km Headrace Tunnel and surface Powerhouse with 144 MW installed generation capacity.

Responsible for: project management and liaison with client, managing a staff of 15 expatriate technical experts; preparation of contract documents, tendering, negotiation and administration of 5 major international contracts for civil and mechanical and electrical works; administration of over 200 Variation Orders for all contracts; preparation of Engineer's Decisions on disputed claims; advice to client on amicable settlement of disputes; coordination of technical and environmental expert panels appointed by the funding agencies.

Some features of my contribution to the project were:

Backslope above the Desander – the original geometry of the backslope proved unstable. Experts were hired to provide alternative solutions, resulting in a severe layback of the slope, for which time and cost impact were controlled adequately.

Tunnel lining design – this was executed using the Phase2 program, which optimizes the integrated effect of insitu rock, support and lining to provide the most economical solution at each chainage of the tunnel. The method adopted involved carrying out a back analysis of each typical section, using the convergence measurements from the field, to establish the rock modulus. A criterion was agreed with the expert panel for provision of reinforcing to the concrete lining where rock modulus was 1 GPa or less.

### **91-97, Lesotho Highlands Water Project - Lesotho**

**Chief Engineer Contracts**, based in Maseru responsible for the management of all procurement activities for engineering and construction of this US \$5 billion water resource project in Southern Africa, as a member of the Owner's project management team.

**The project** consists of a complex of storage dams and trans-mountain tunnels. The first phase (1A), which entered into service by early 1998, includes two double-curvature arch dams of 180 and 55 metres height, 65 Km of machine bored tunnels and a 72 MW underground powerhouse. The second phase (1B) involved another 32 Km of tunnel and a concrete faced rockfill dam 140 m high in which I led the owner's organization in the tendering and award of the construction and consultancy contracts.

Supervision and administration of the consultancy contracts, all comprised of international consortia, required review of all designs developed by consultants, coordination with panel of experts. For Phase 1B, the dam design was optimized between two alternatives, a RCC dam and a CFRD alternative. The CFRD was chosen on the basis of precedent.

I coordinated the formation and operation of Disputes Review Boards for the major civil contracts; acted as lead presenter for the Owner at DRB hearings.

### **89-91 Karun III Development - Iran**

**Manager of Operations**, based in Tehran responsible for the implementation of a design-build contracting approach to construct a 2000 MW hydropower project on the Karun river in southern Iran, with financing provided as part of the turnkey package.

Tender Design was carried out by a joint venture between the Canadian company and a local Iranian consultant. This required close supervision of designs produced by Iranian consultant. Project includes a 200 meter high double curvature arch dam, and underground powerhouse.

### **88-89 Adam Beck III Development - Ontario, Canada**

**Project Services Manager**; direction of the production of feasibility estimates for the proposed extension of generating facilities on the Niagara River for Ontario Hydro, including the then precedent diameter for bored tunnels in soft rock. The project involved study of different powerhouse locations to optimize pump storage capability.

### **84-86 Chamera I Hydropower Project - India**

**Engineering Manager** at the site of this project in Himachal Pradesh in the north of India, responsible for quality management and site engineering. The project was carried out using NATM for excavation of the underground

works in difficult Himalayan geological terrain. Responsible for all site engineering including coordination of geotechnical design with design office based in Delhi, and determination of final location of structures in power facility, plus the establishment of primary survey control network.

#### **79-82 River Terminals, Amazon - Peru**

**Construction Manager** for three floating river terminals on tributaries of the Amazon River. The terminals are located at Pucallpa, Iquitos and Yurimaguas. Problems overcome included the development of concrete and asphalt mixes with sand only aggregate in Iquitos (no rock or gravel available for several hundred kilometres) for terminal and access road construction, pontoon bridge design to accommodate annual shifting of talweg of the river at Pucallpa.

#### **77-79 Malawi Railway Development Project - Central Africa**

**Cost Engineer**, based in Lilongwe for this Canadian aid financed project for design and construction of 72 Km of railway linking the capital, Lilongwe, with the southern rail network. This project was unique in that it was constructed entirely without contractors using a direct hire labor force and designed entirely on site with direct procurement of all equipment and materials.

#### **75-77 Selva Alegre Cement Plant - Ecuador**

**Resident Engineer** for the construction of a new cement plant in Otavalo, with emphasis on the management of the interfaces between mechanical erection and civil construction contracts.

#### **71-74 Alto Anchicaya Project - Colombia**

**Resident Engineer** responsible for the engineering, quality assurance and supervision of construction of this 340 MW hydropower project, including underground powerhouse and 140 metre high concrete-faced rockfill dam, the precedent dam of its type when constructed. Site engineering was coordinated with the design office which was located in the city of Cali. Responsibilities included coordination of the panel of experts during their biannual visits.

#### **69-71 Nam Ngum Multipurpose Project - Laos**

**Resident Engineer** for the owner of this multipurpose project, a part of the Mekong Development scheme, which included a concrete gravity dam and close-coupled surface powerhouse. Responsibilities included oversight of the engineering consultant, ensuring compliance with the design criteria established for the project.