

KCRC West Rail Technical Studies & Detailed Design, Hong Kong

INTRODUCTION

Atkins undertook the technical study of three major sections of West Rail, extending from the southern tip of the Kowloon Peninsula to two crossing locations on the border with mainland China. The route comprises sections of multispan viaducts, long-span bridge, bored tunnel, cut and cover tunnel, reclamation, earth-mounded box structure, a number of stations and associated property developments, and interchanges with the existing urban rail network. Much of the alignment goes through densely developed urban areas and along tightly constrained transport corridors. Integrated multi-level rail and highway structures have been incorporated into the design. Land requirements were identified and programme implications for acquisition / resumption determined.

The Central Section lay on the project's critical path and comprised 8.25km of bored tunnel, 2.5km of cut and cover tunnel and two new stations. Much of the tunnel construction was under major roads. Mei Foo Station provide an interchange with the existing Mass Transit Railway system. The Southern Section included Nam Cheong Station which also interchanges with the existing MTR system.

OUR SOLUTION

As significant portions of the alignment had to be built through the existing urban area, creative solutions had to be developed to enable construction with the minimum of impact on adjacent buildings and infrastructure. Special measures were introduced to protect adjacent water supply tunnels and major elevated highway structures. Close liaison / coordination with MTR Corporation was required to engineer the most efficient interchanges possible at Mei Foo and Nam Cheong stations while minimizing impacts to the operation of the existing stations.

OUR APPROACH

Our Project and Design Managers were responsible for integrating a wide range of services including urban planning, transportation and traffic, civil and geotechnical engineering, architecture and station planning, railway operations, railway alignment, safety and reliability, property development interface, environmental planning and programme phasing evaluation studies. Route evaluation studies included reviews of tunneling below buildings in extreme geological conditions, tunneling works in reclamation and under roads, and station construction with associated property development.

OUTCOMES

The Technical Studies were successfully delivered.

Atkins were subsequently responsible for the detailed design and construction of the Tsuen Wan Section which includes the largest station on the project, and the detailed design for the Kwai Tsing Tunnels under a design and build contract.

In addition we also carried out a wide range of design assignments for KCRC including preparation of the West Rail Rule Book and Operating Procedures, system assurance studies and rolling stock inspection.



Plan Design Enable