

Sequencing and Design Considerations for Demolition



The Problem / Challenge

The existing structure to be demolished was a reinforced concrete framed single storey building with an exposed concrete colonnade around the perimeter. The internal walls were of brick construction. A steel framed roof extended above the reinforced concrete podium in the form of a catenary shape with post-tensioned steel ties connecting back to the adjacent concrete roof.

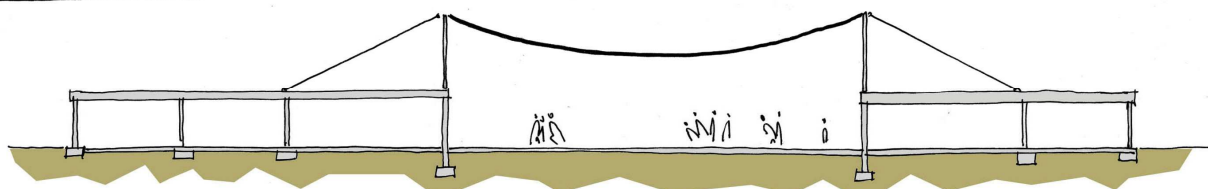
The Risks

Demolition of this roof required carefully planning, sequencing and management to avoid unintentional collapse and major project delays

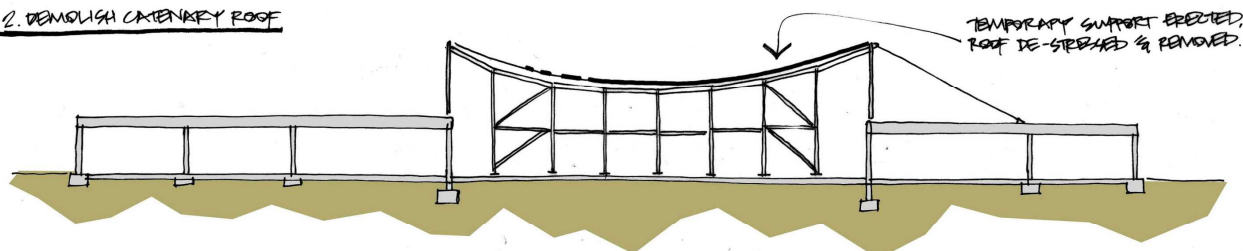
The Solution

Early consideration was given to methods of demolition. It was envisaged that the roof would be propped from underneath, the roof covering and rock wool panels removed. The roof ties could then be de-stressed and be cut and the roof beams removed. The main concrete roof and wall could then be demolished in the usual way. The proposed method was sketched and included in the Concept Stage report as shown below.

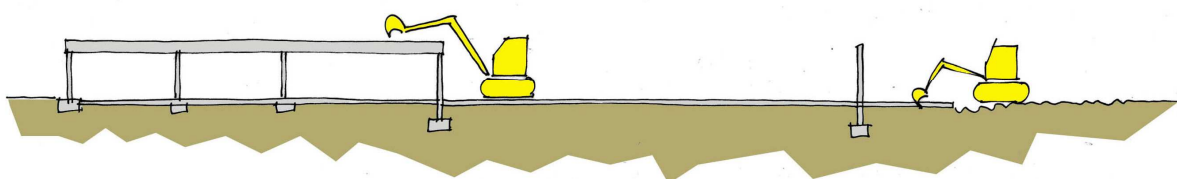
1. EXISTING CONDITION



2. DEMOLISH CATENARY ROOF



3. DEMOLISH ADJACENT STRUCTURE



The Benefits

- The unusual nature of the existing building was communicated.
- The likelihood of an unplanned collapse was reduced.
- A workable demolition method was established and communicated.
- Contractors tendering for the work were able to allow sufficient cost and time.

Key Points

- Demolition may be an important consideration for designers.
- Where there are unusual risks, these need to be communicated
- An early assessment of the structure is essential and enables pre-planning
- There is a need to obtain as-built and survey information for the existing structure (the existing CDM health and safety file should be obtained – if there is one).