Video: Victoria Park Swimming Pool Complex

Construction Process

[Teacher notes]
Contents

Preamble

Teaching plan

Lesson 1: Construction Process

1.1 Background of the Victoria Park Swimming Pool Complex
1.2 Construction Management Planning
1.3 Construction Process
1.4 Construction Concerns

Summary, Key words and Further reading

Appendix: Construction Schedule

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**Major teaching areas**

**Design and Applied Technology**

Strand 2 Technology Principles

- Nature of Technology
- Production process
- Systems and control

**Related teaching areas**

**Design and Applied Technology**

Strand 3 Value and Impact

- Values in technology and design

**Learning objectives**

- To learn about a typical demolition and construction process
- To understand construction management planning
- To be able to formulate effective construction strategies for a specific site

**Teaching plan**

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson 1</td>
<td>1.1 Understanding of the Victoria Park Swimming Pool Complex construction project</td>
</tr>
<tr>
<td></td>
<td>1.2 Aspects of construction management planning</td>
</tr>
<tr>
<td></td>
<td>1.3 Work flow of a construction process</td>
</tr>
<tr>
<td></td>
<td>1.4 Concerns during the construction process</td>
</tr>
</tbody>
</table>
Lesson 1
Construction Process
Lesson 1
Construction Process

1.1 Background of Victoria Park Swimming Pool Complex

The redevelopment of the Victoria Park Swimming Pool Complex includes a new pool complex constructed to meet the Federation Internationale de Natation (FINA) standard (FINA is the international governing body of swimming, diving, water pool, synchronized swimming and open water swimming). The new complex will include a 50 x 25 m indoor heated main pool, and a 33 x 25 m indoor heated multi-purpose pool that can accommodate more than 2,500 spectators. Provision will also be made for shower and toilet facilities in the park management office and the changing rooms.

The area where the existing swimming pools are located will be converted into a handball court, two skating rinks and a landscaped area. In addition, the construction project includes refurbishment and re-surfacing for the four tennis courts located in the park, and upgrading the lighting system to meet world-class standards.

The area of the site occupies approximately 24,000 m², with the total construction floor area consisting of 18,500 m². Construction work commenced in late November 2009. This redevelopment project is expected to take approximately 55 months to complete.

Client : Architectural Services Department, HKSAR Government
Building Contractor : Gammon Construction
Contract Value : HK$930 million (US$120 million)
Construction Period : November 2009 - May 2014

(Source: Gammon Construction http://www.gammonconstruction.com)

▼ The new Victoria Park Swimming Pool Complex is under construction.
1.2 Construction Management Planning

- **Existing Infrastructure**
  - Existing stormwater drainage running east-west through the site needs to be diverted for foundation work.

- **Existing Landscape and Facilities**
  - Transplantation and protection of existing trees, termination and temporary supply of utilities on site.

- **Construction Management Planning**
  - Current Operation of the Site
    - Sports and cultural events may cause temporary suspension of construction work.
  - Health and Safety on the Construction Site
    - Erection of hoardings, protective awnings and gantries for worker protection.
  - Internal and External Access to the Site
    - Entrances and exits for heavy construction equipment must not disturb the daily circulation of pedestrians and traffic.

- **Future Land Use of the Site**
  - Future reserved extension of MTR.

Some of the aspects of site inspection and planning required before the commencement of construction at the new Victoria Park Swimming Pool Complex.

Existing stormwater drainage (left) and the future MTR reserved extensions (right) are two major constraints of the construction site for Victoria Park Swimming Pool Complex. © Gammon Construction Ltd.
1.3 Construction Process

Construction process of the new Victoria Park Swimming Pool complex

1. Site access identified and site clearing
2. Erection of hoardings
3. Termination of utilities
4. Demolition of existing sports facilities
5. Tree transplantation and protection
6. Drainage upgrade works
7. Site inspection and advance piling works
8. Excavation
9. Sheet piling and temporary shoring
10. Pile-cap construction
11. Ground beam and tie beam works
12. Column and slab superstructure construction
13. Installation of steel roof decks and trusses
14. Closure of equipment entry/exit gaps
15. Finishes and pool facilities installation
16. Building services installation
17. Site improvements
18. Landscaping

Schedule of the construction of the Victoria Park Swimming Pool Complex

[Media Corner]
Video ‘Understanding the Building Process and Teamwork’
(「建築工程的幕後團隊」短片)

http://www2.archsd.gov.hk/teachingkits/TK2/
1.4 Construction Concerns

The existing swimming pool is still in use during the construction of the new swimming pool complex. © Gammon Construction Ltd.

[Discussion]

1 What advantages can be gained from pre-construction planning?

Suggested Answers

- **Efficiency**
  1. Avoiding delays that would require the extension of labour contracts and potential investment loss
  2. Using materials and construction equipment efficiently
  3. Minimizing chances of future reconstruction and repair due to ignorance of current and future site development: pipework, future infrastructure planning

- **Health and safety of the site environment** for construction workers and passersby
  1. Preventing potential accidents during construction and after commencement of operations
  2. Avoiding potential health hazards to the workers and to the public

- **Sustainability**
  1. Maintaining reasonable operations of the existing facilities and amenities around the site area
  2. Reducing environmental impacts from construction
1.4.1 Efficiency

Measures to facilitate the construction process:

- Phasing of the construction process
- Planning for heavy machinery, vehicles and large building components
  1. Assign loading and unloading areas for materials, equipment and waste
  2. Minimize tower cranes to cover the whole site
  3. Reserve openings for equipment entry and exit

1.4.2 Health and Safety

Health and safety precautions taken during the demolition and construction of the new swimming pool complex:

- Temporary traffic and utility arrangements
- Storm water drainage diverted
- Hoardings and physical barriers at the perimeter of the site
- Temporary shoring and sheet piling before excavation

Other concerns: skip for waste disposal, gantry for heavy machinery, noise control...

1.4.3 Sustainability

The dismantled materials were crushed into smaller pieces to backfill the excavated site to formation level.

Other concerns: use of intelligent building materials, natural energy collection, recyclable grey water, green roof, natural ventilation, reduce solar heat gain...
Summary

1. Construction Management Planning can enhance
   • Efficiency
   • Health and safety
   • Sustainability
   throughout the construction process.

2. In order to formulate the most suitable construction strategies for a specific site, the construction manager should understand the work flow of the construction process and do site inspections.

Key words
Construction process    Excavation
Health and safety      Landscaping
Sustainability         Foundation

Further reading
1. Gammon Construction, ‘Sustainable Construction’

2. Hong Kong Construction Industry Council

3. City of Melbourne, ‘Construction Management Plan guidelines’
In real life, the construction schedule is much more complicated, in terms of plan and time distribution, as you can see below from a professional construction consultant company.