XIAOLANGDI DAM
New Structure

CHINA
XIAOLANGDI DAM
General Presentation

LOCATION : CHINA - Henan Province

Project location map.
INTRODUCTION:

- Yellow River and Hydroelectric Power Development Corporation = Responsible

- Canadian International Project Managers = Consultant

- Financed by World Bank

- 3 lots:
  
  Lot 1: Main Dam and its foundations (Impregilo, Hochtief, Bureau 14)
  Lot 2: Intake, spillway and diversion structures (Züblin/Spie/Bureaux7,11)
  Lot 3: Power facilities (Dumez/Holtzman/Bureau6)
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PROJECT FUNCTIONS:

- Hydropower Generation
- Flood protection for Yellow River basin
- Reduction of loess deposit
- Supply of irrigation
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PROJECT FEATURES:

- 154 m high zoned earth and rockfill dam with a crest length of 1700m

- Tunnels for river diversion and flood control and erection of the intake and outlet structures (including a plunge pool and stilling basin)

- Construction of the underground power station with associated tunnels
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- Intake structure
- Power tunnels
- Power House
- Free flow orifice and sediment tunnels
- Free flow tailrace tunnels

DS Cofferdam
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INTAKE STRUCTURE:

L = 281m / Th = 60m / H = 108m

16 tunnels:

- 3 diversion tunnels
- 3 sediment tunnels
- 3 x 2 Power tunnels
- 3 Free flow tunnels
- 1 irrigation tunnel
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MAIN DAM:

Diagram showing the main dam with various sections and details.

Legend:

- MAIN DAM - TYPICAL SECTION (100+387.50)
- \[ \Delta H = 275 - 135 = 140 \text{ m} \]
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FOUNDATION WORKS:

- Curtain Grouting Right Bank
- Curtain Grouting Left Bank (scaffolding - slope of 50°)
- Diaphragm wall in the riverbed (70m deep)
- Consolidation grouting below the dam
- Curtain Jet - Grouting below the upstream cofferdam (10 500 m²)
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Grouting:
120,000 lm of grouting holes

Downstage Method

Fault Zone

Stable Mix ($W/c = 0.67$)

Drilling for Instrumentation:

Critical path

Inclinometers, piezometers, standpipes
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Fig. 8

Fig. 9
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### Table 3: Parameters of conventional and plastic concrete for the slurry trench cutoff wall

<table>
<thead>
<tr>
<th></th>
<th>Conventional concrete</th>
<th>Plastic concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement (kg/m³)</td>
<td>400</td>
<td>150</td>
</tr>
<tr>
<td>Water (l/m³)</td>
<td>180</td>
<td>305</td>
</tr>
<tr>
<td>Bentonite (kg/m³)</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Aggregates (kg/m³)</td>
<td>1810</td>
<td>1567</td>
</tr>
<tr>
<td>Min. 28 day compressive</td>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>strength (MPa)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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China-Xiao Lang Di Dam—Concrete wall, Jet-grouting, Grouting, Instrumentation
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Contact with the rock
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Joints

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SOLETANCHEBACHY  Page 23  DAMS
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« Chinese » Joints

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Jet - Grouting:
- difficult ground conditions
- Specs of 0.5% of deviation

- Upstream Cofferdam
- Left Bank sand pocket
- Tiger Mouth

Repairing of the panel N°1
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![Image of construction site at Xiaolangdi Dam]