The BEBO® System

Overfilled Reinforced Concrete Arches

Confidentiality

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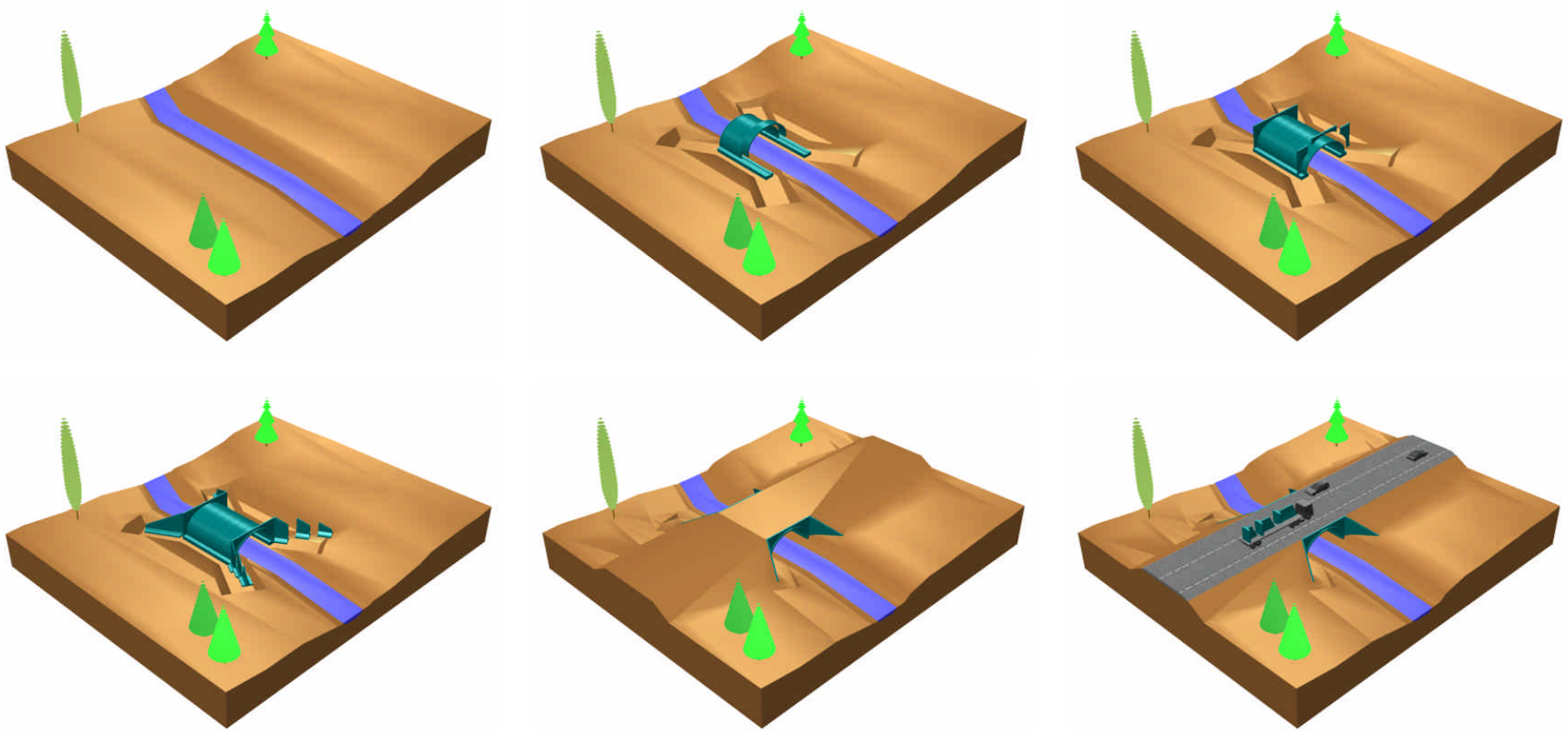
Precast Reinforced Concrete Arch System

Earth Overfilled Bridges, Culverts and Tunnels

Introduction

Who / What is BEBO



Worldwide Network of Eligible Companies

Promotion, Sale, Production and Installation of BEBO Arch Structures

BEBO Arch International AG - Technical Support Center

- Located in Zurich, Switzerland
- Owner of the BEBO Technology
- Team of 6 Engineers and 1 CAD Technician

Gian Nick
M. Eng. ETH (Civil)

Roman Arn
M. Eng. ETH (Civil)

Wessam Rinawi
Dott. Ing.

Mission Statement

- Efficient Solutions
  Development of efficient solutions together with our distributors
  Study various options and apply BEBO technology

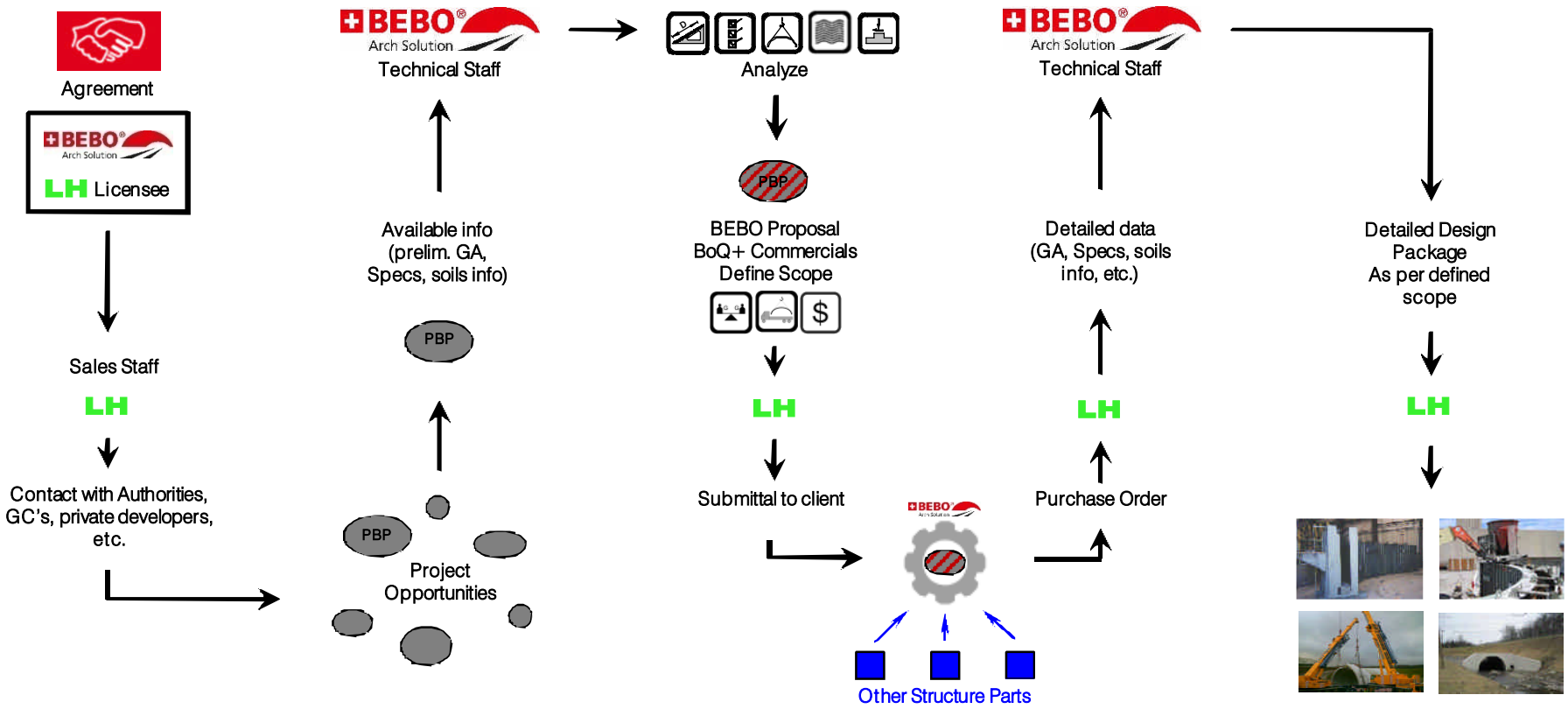
- Integrity and Determination
  Professional and reliable partner with focus on our customer‘s needs
  Our solutions are to the benefit of all

- Swiss Quality & Engineering / Knowhow and Experience
  We are a specialized technical service provider on the basis of highest Swiss Quality Standards
  Staff‘s knowhow and experience is constantly used to the benefit of our customer‘s projects

Introduction

Who / What is BEBO

How do we Work Together..?



Purpose, Intentions, Goals…

- Add Value

  Optimize as many projects as possible to the benefit of our distributors as well as their clients

- Be a partner…

  Work together with our distributors as well as the client and its consultants and engineers

- … not the enemy

  As designer of a product supplier, we don‘t want to take away business of other involved parties (designers, consultants, etc.)

Introduction

BEBO History

- **BEBO** - a registered trademark

  German words “**BE**ton **BO**gen” meaning concrete arch

- Developed by Swiss ETH Engineer W. Heierli

  Postgraduate studies at MIT (US) in 1961 - 62

- First Installs in 1966/67 in Switzerland

  Structures still in very good condition today

- Various Full scale load tests performed

  Switzerland, Germany, Australia and USA

Zurich, Switzerland; 1965/66

Recklinghausen, Germany; 1973

Massachusetts, USA; 1996

BEBO Arch Elements - Fabrication

- Dedicated Steel Moulds

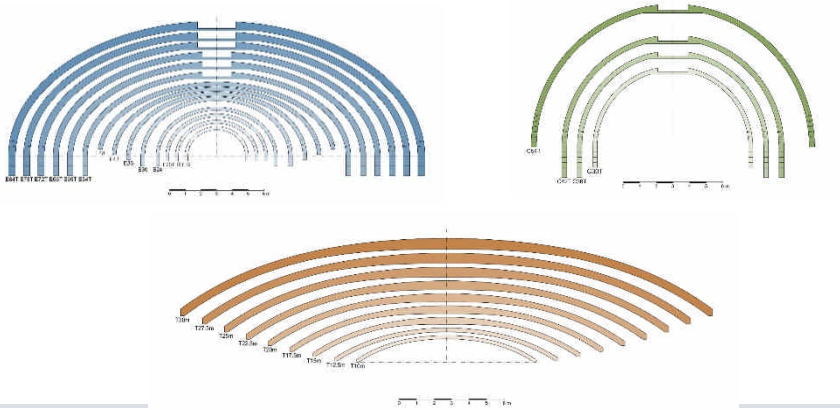
  Casting of 1 BEBO Type (1 span)

- Flexible Steel Moulds

  Flexible Steel Modules – Casting of all BEBO Types

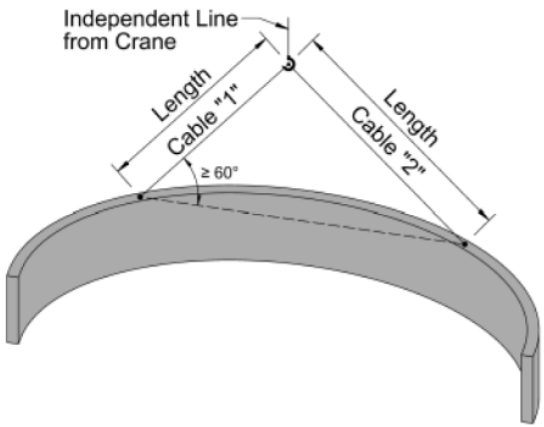
- Timber

  Special Arch Shapes



BEBO Arch Elements - Transportation

- Specs for Handling and Shipping
  Tabulated weights and CG
- No Oversize Transports
  Weight- and geometrical limitations fulfilled
- 1 – 2 Arch Elements on Truck



BEBO Arch Elements - Installation

- Specs for Installation

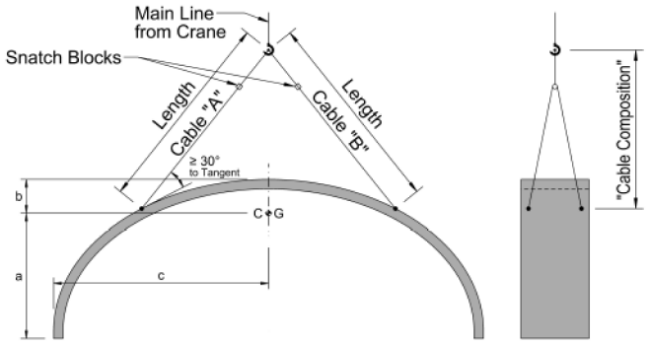
  Clearly defined procedures with Tabulated craning- and cable loads

- 1 – 2 Cranes required

  Double drum cranes

- Quick Installation

  Reduce overall construction time to a minimum



BEBO Arch Elements - Backfilling

- Moderate Requirements for Material

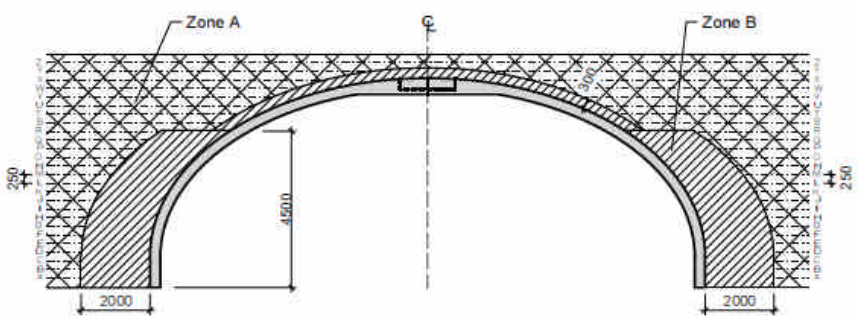
  Zone A: Existing soil, constructed roadway

  Zone B: “Engineered” Fill (compaction to 95% of max. dry density)

- Standard Machinery can be Used

  Vibrating roller compactors acceptable

- Standard Compaction Testing



Economy

- Concrete savings of up to 50% possible
- Savings in reinforcement steel of up to 50%
- Cost effective construction procedure

Overall project cost savings of 10 to 30 % and more are regularly achieved with the use of BEBO



Speed

- Quick turn-around times for complete structural design
- Substructure design based on tabulated foundation loads
- Installation of arch elements according to BEBO guidelines within days
- Backfilling and compaction according to BEBO guidelines with standard earthworks machinery
- No restriction for construction machinery to cross the structure once minimum overfill height is reached




Quality

- Safety through compliance with BEBO specifications and guidelines
- Longevity through earth overfill (Protection of Concrete Structure)
- Virtually no Maintenance (no joints or bearings that need replacement over time)



Introduction

Impressions

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Thank you for your interest and attention