



Typologies

Stone Arch Bridges

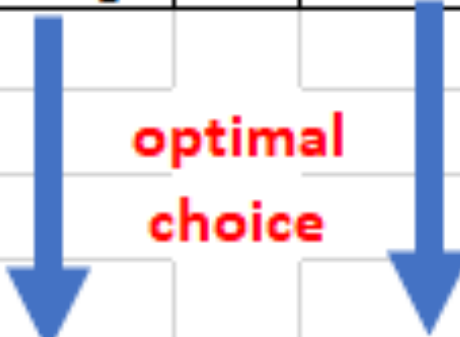


Contents

- When to choose stone arch bridge
- Site survey
- Hydrological study
- Chose of typology
- Particular design element



Factors			proposed site
spans	>50		<50
cost labour	high		low
cost industrial materials	low		high
cost transport	low		high
supply lines concrete	strong		weak

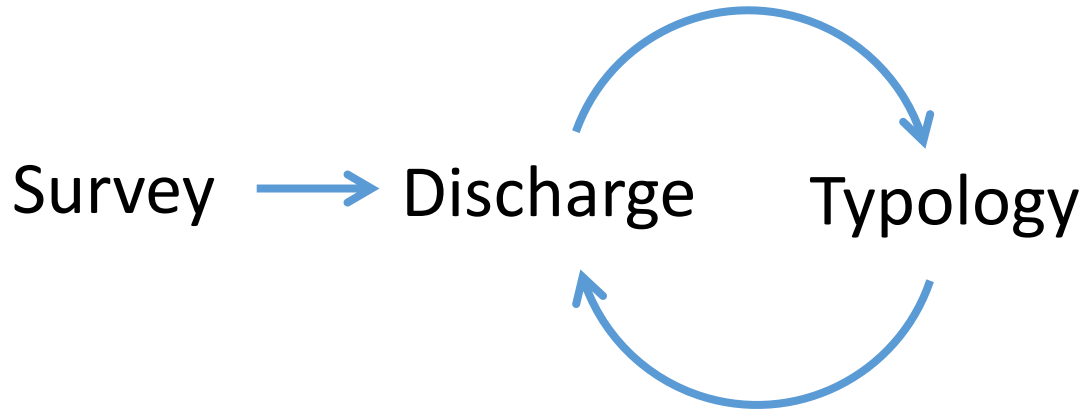


optimal choice

reinforced concrete	stone arch bridges
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Chose of typology



Survey - Feasibility study

- Demand analysis
- Measure river profile
- Costs of labor and materials
- Environment impact
- Level of skills & means of local contractors and craftsmen



Riverbed

Survey

Typology

Discharge

Elements





Riverbed

Survey

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Discharge

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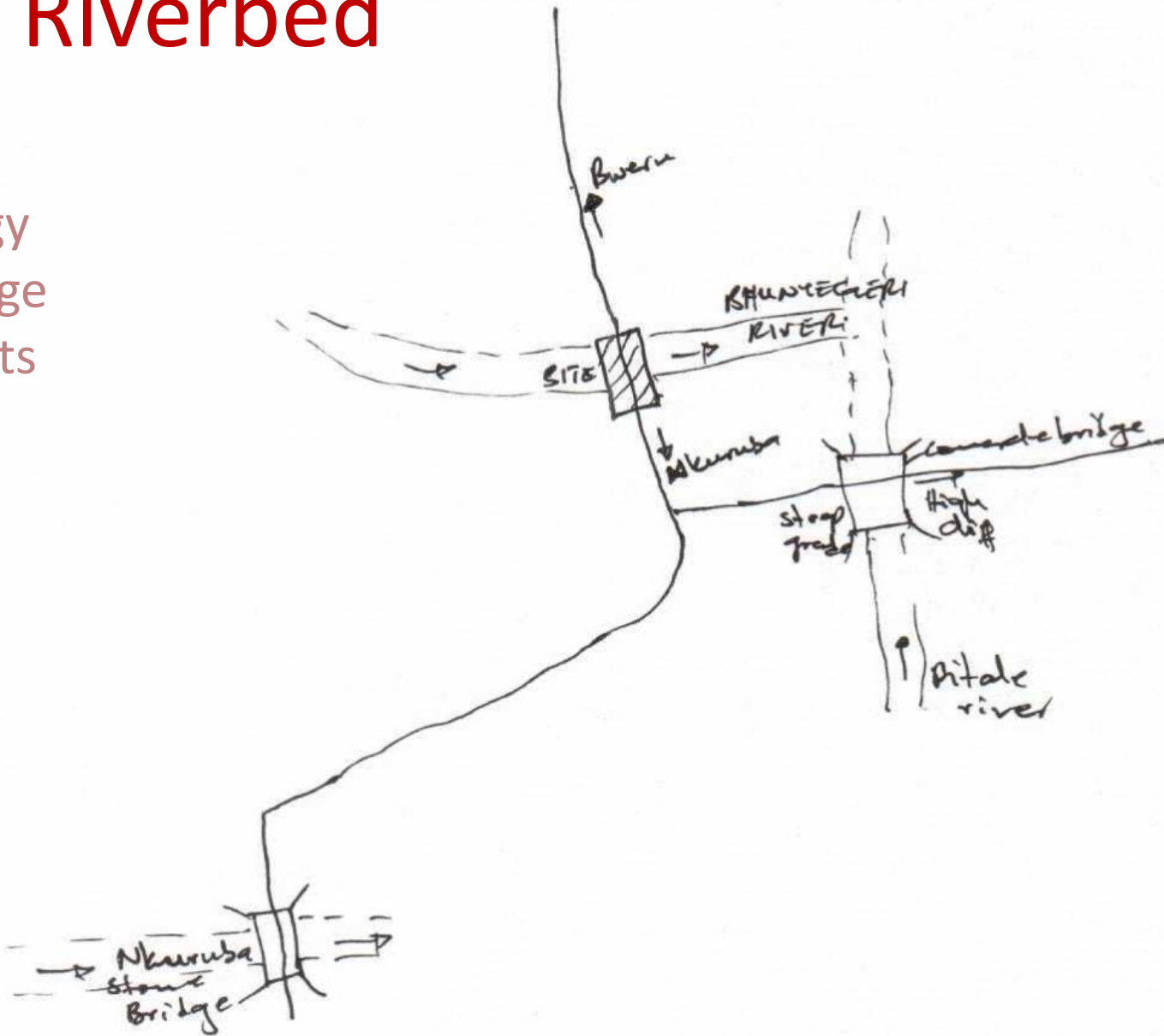
Riverbed

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Testing subsoil

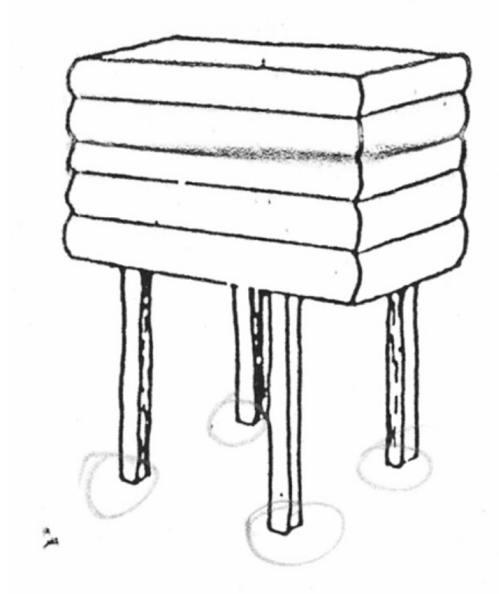
Survey

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Dequeueker

Elements





River bed and location

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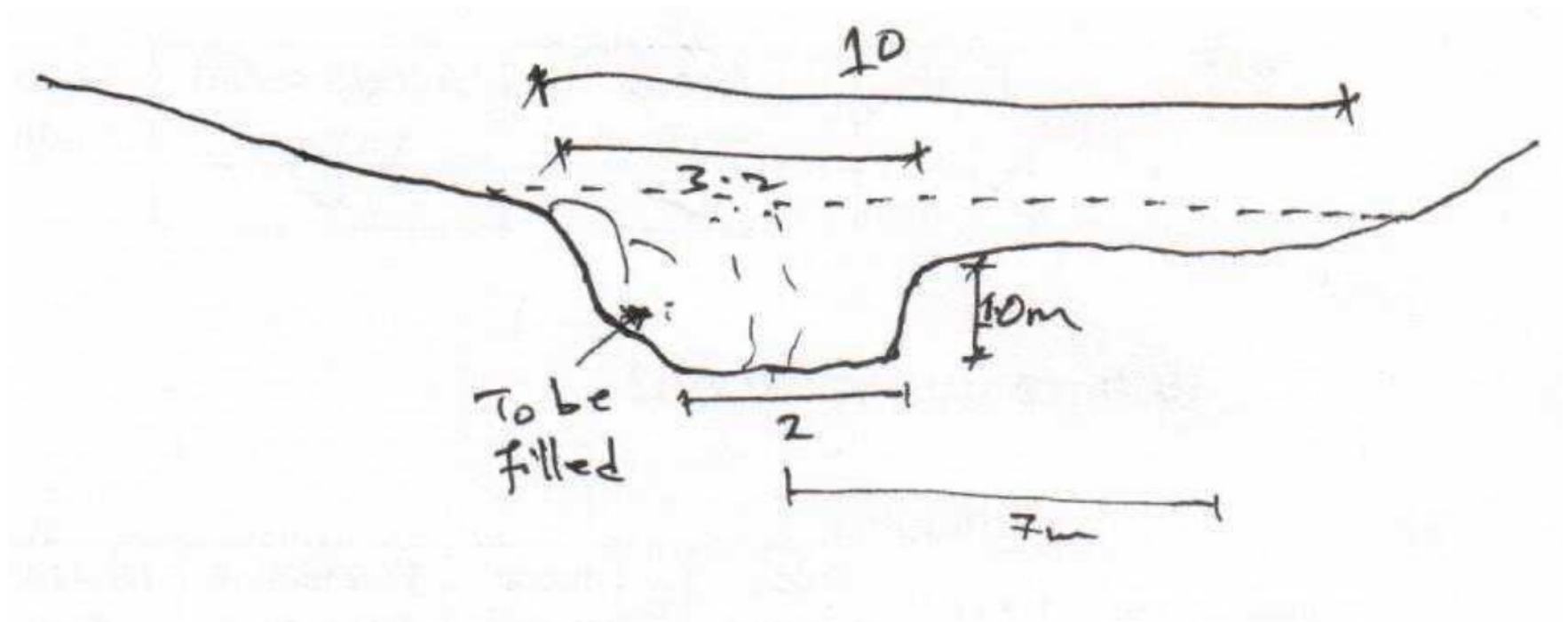
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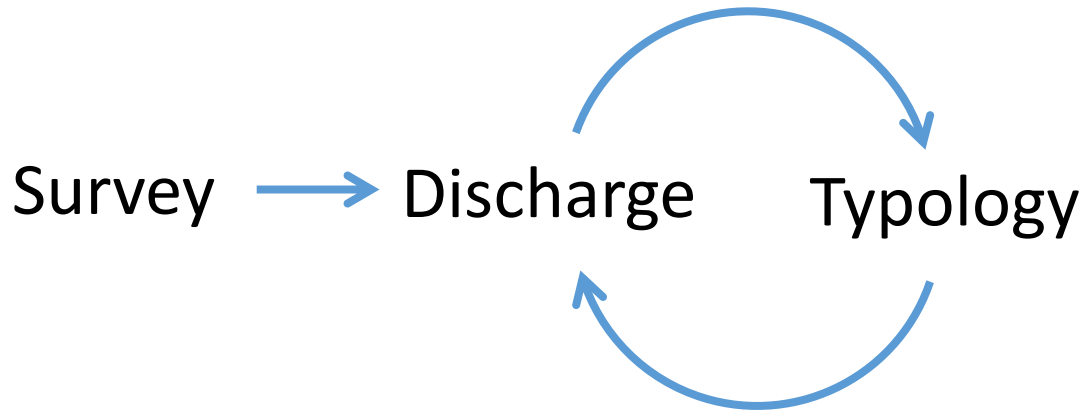
Discharge

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Chose of typology

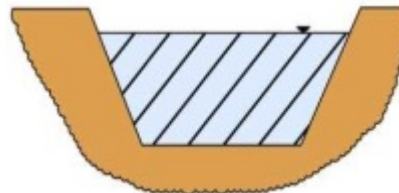


Discharge – Hydrological study

- Calculate peak discharge
- catchment area
- maximum rainfall data

Method/model

- Rational method
- TRRL East African Flood Model (EAFM)
- Software
- In-situ Trapezoidal method



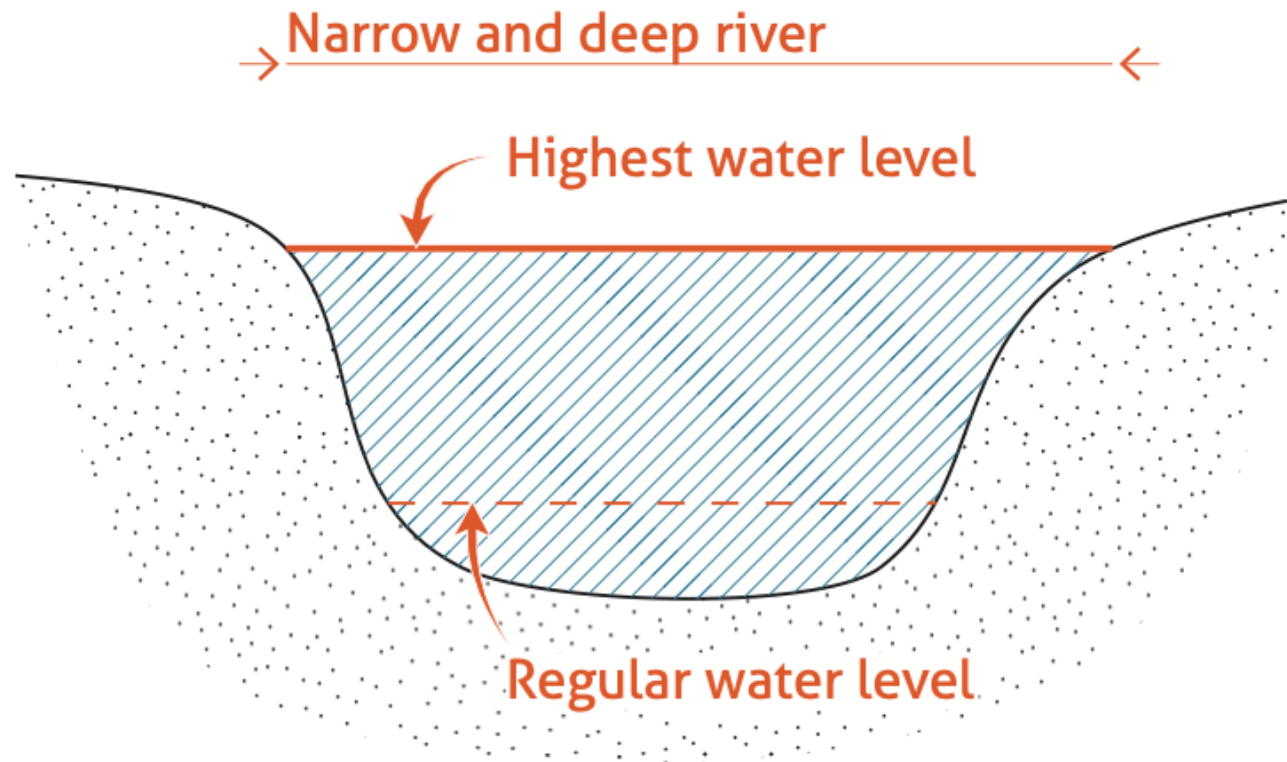


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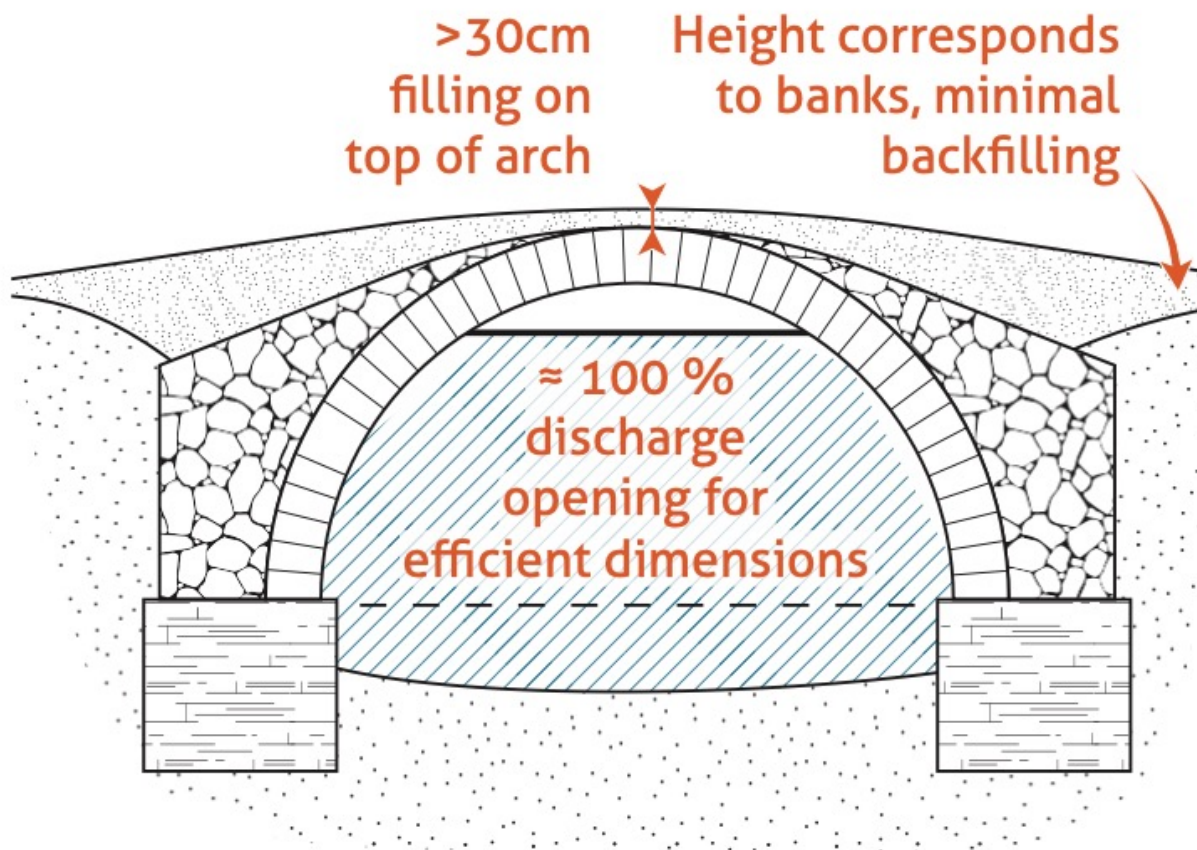
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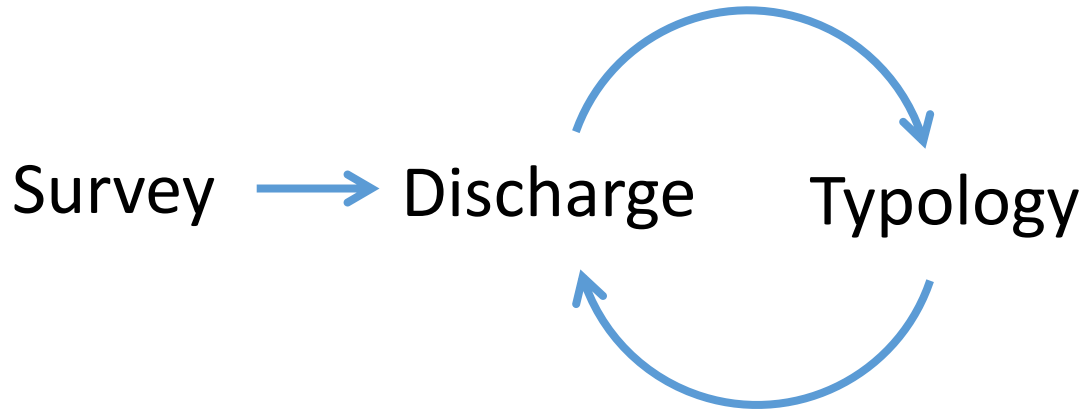


Survey
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Chose of Typology



Typology – Types of stone arch bridge

Choose of the bridge type per the demand, terrain, discharge and traffic.

Types

- Roman arch bridge
- Segmental arch bridge



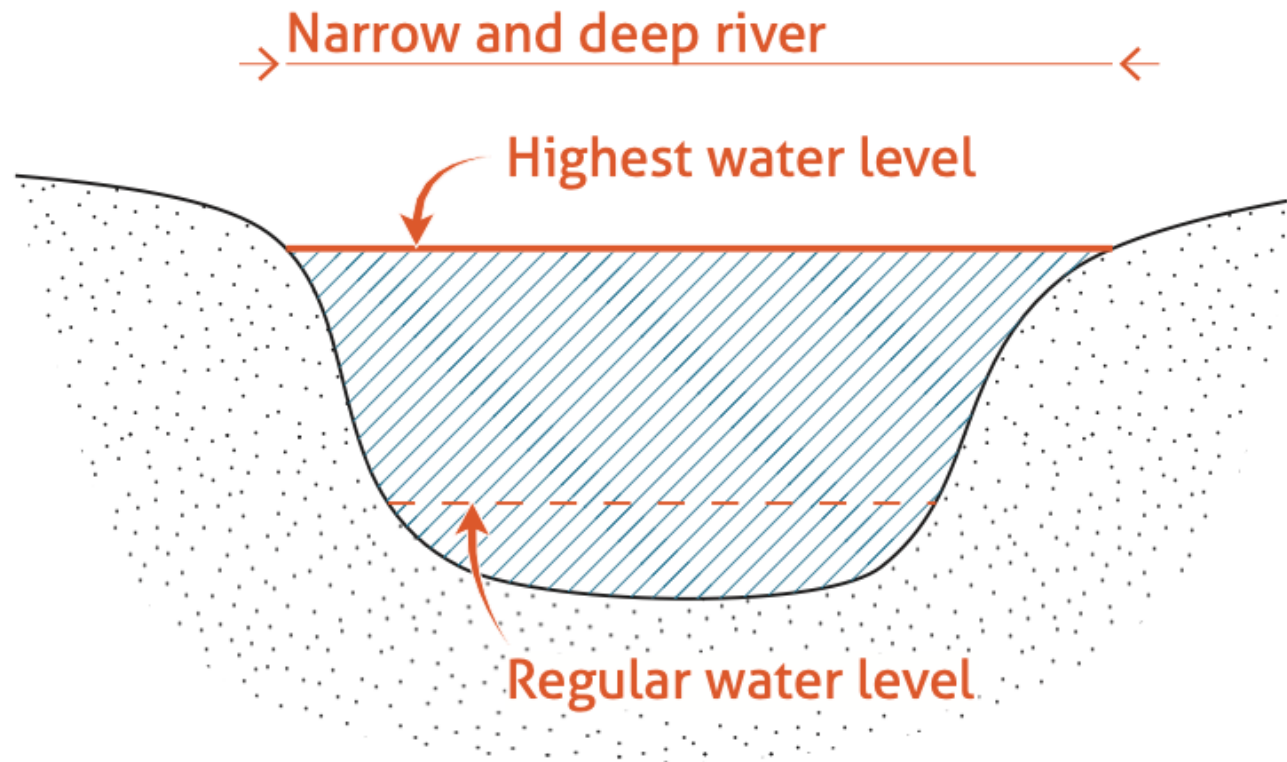
Narrow and deep river

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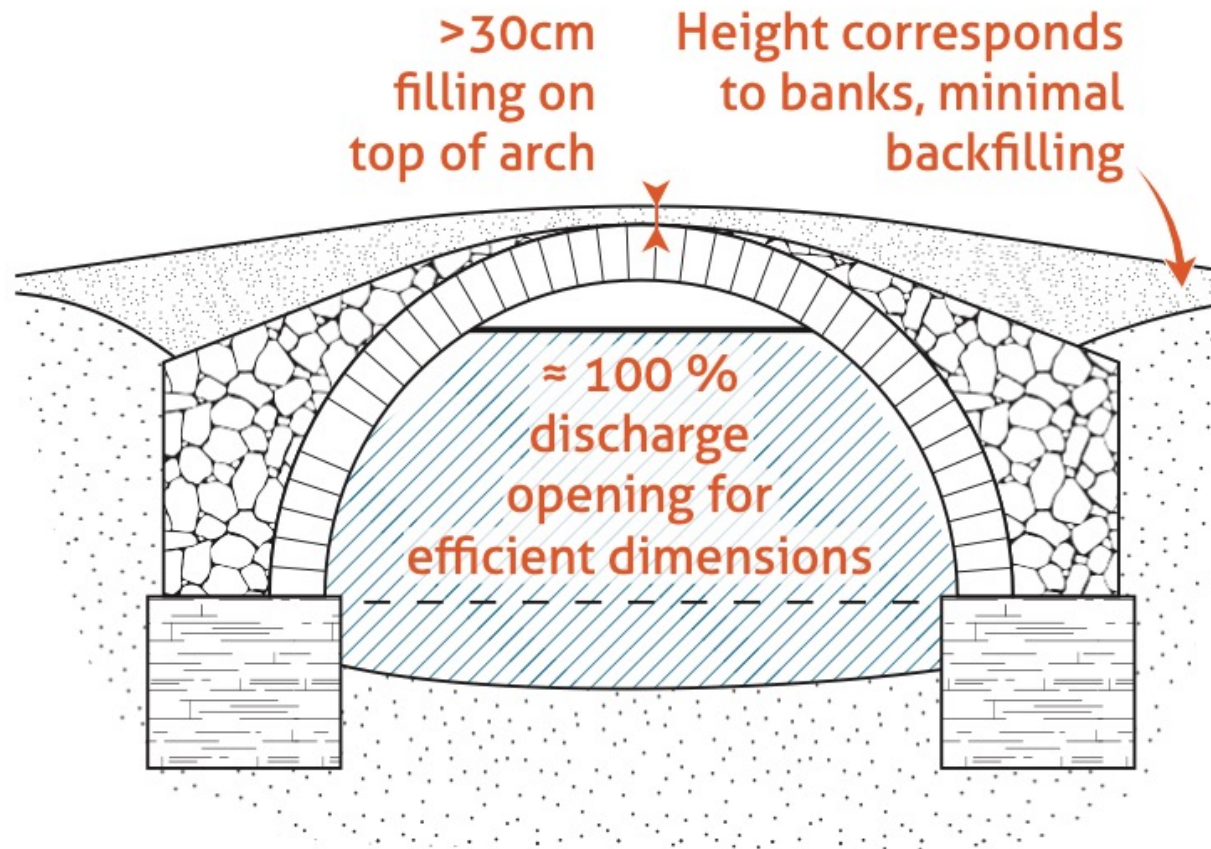
Narrow and deep river

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Narrow and deep river

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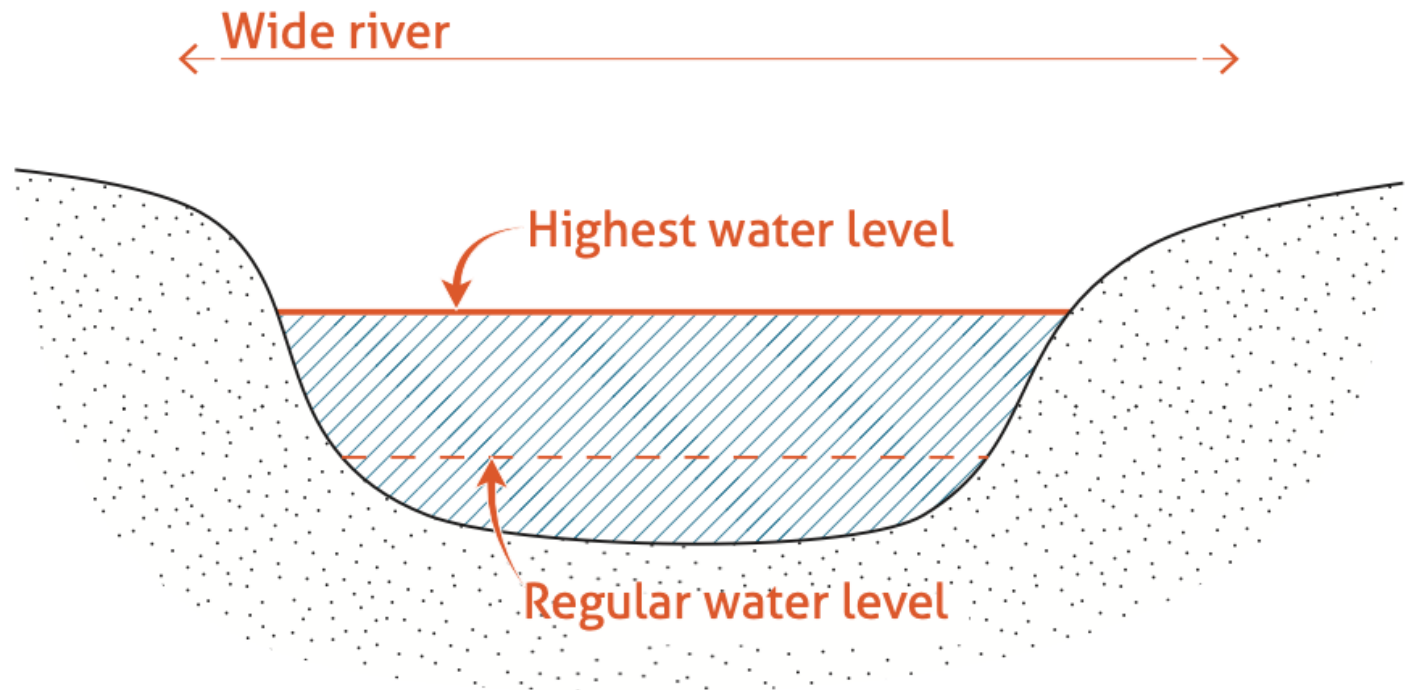
Wide and deep river

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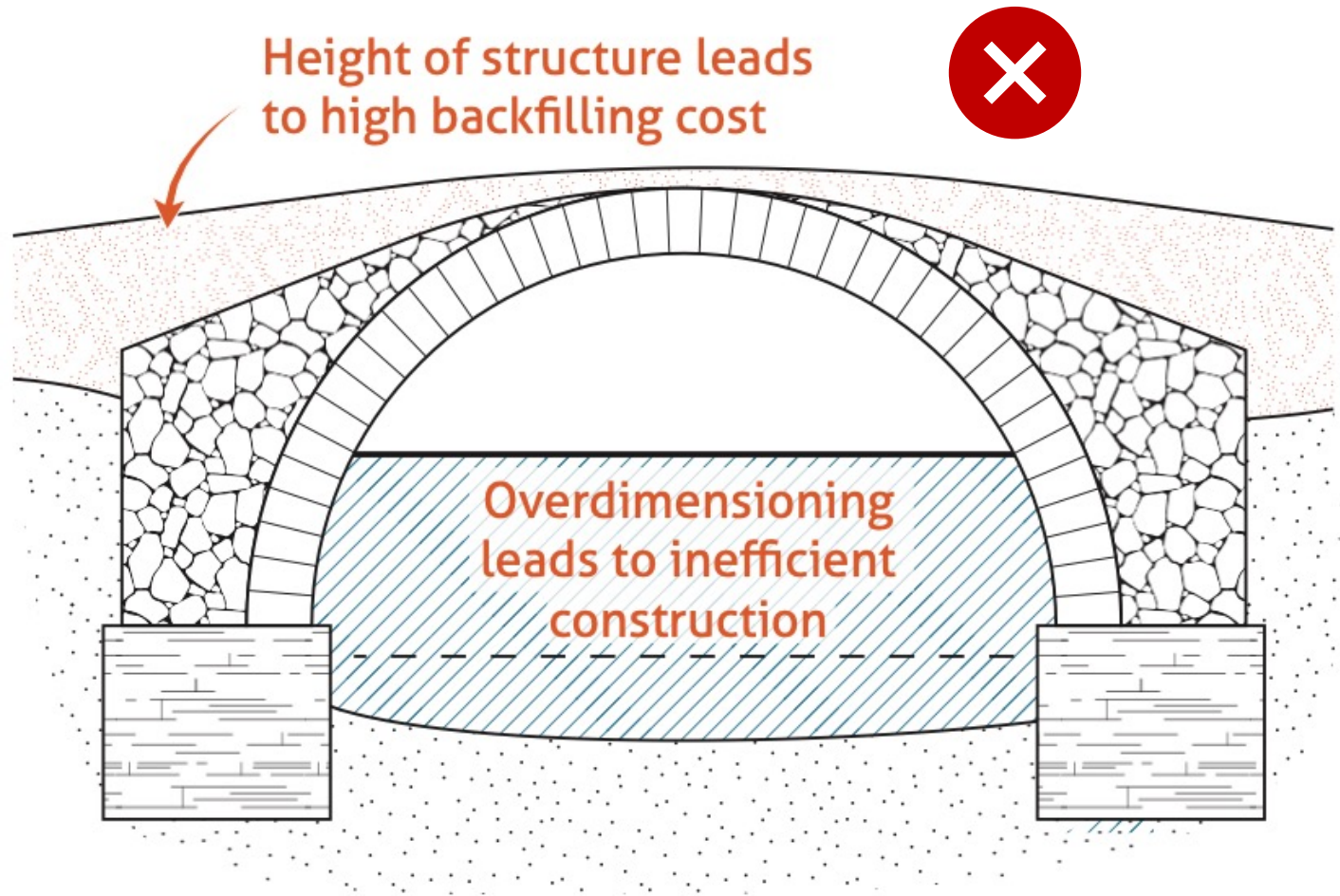
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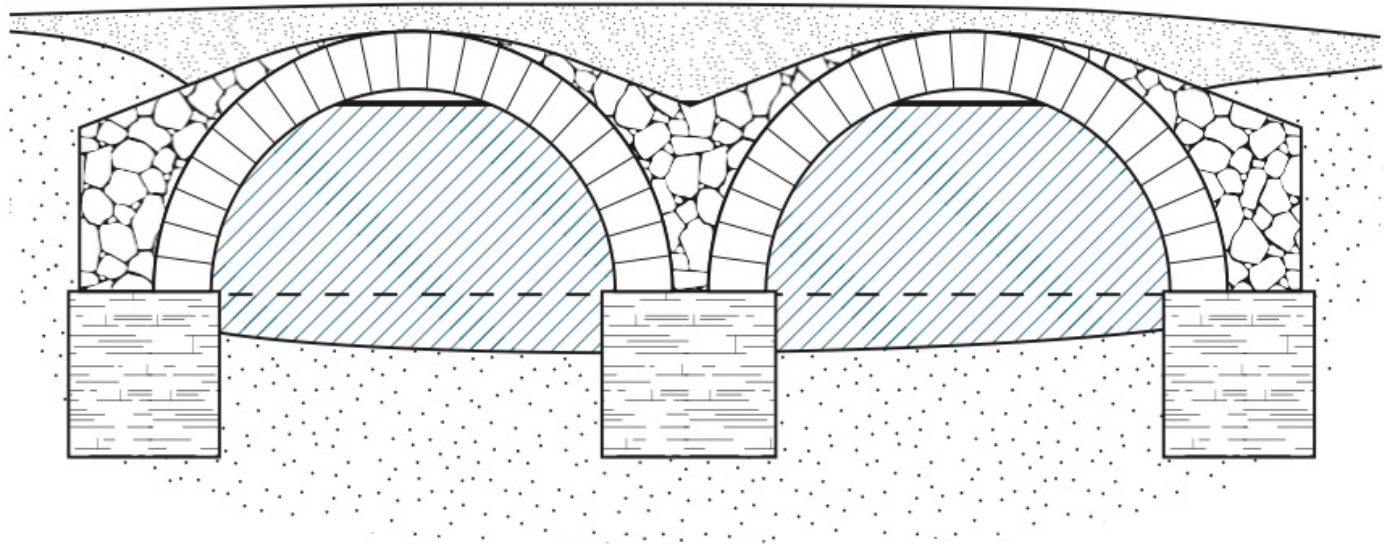
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Wide and deep river

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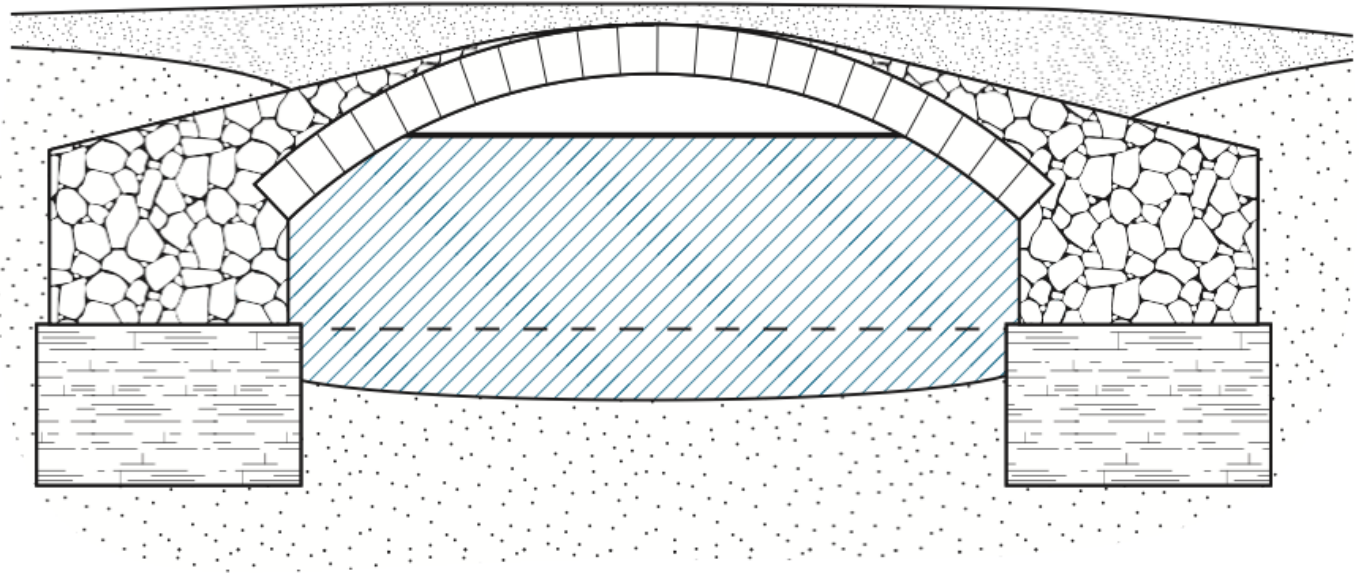
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Wide and deep river

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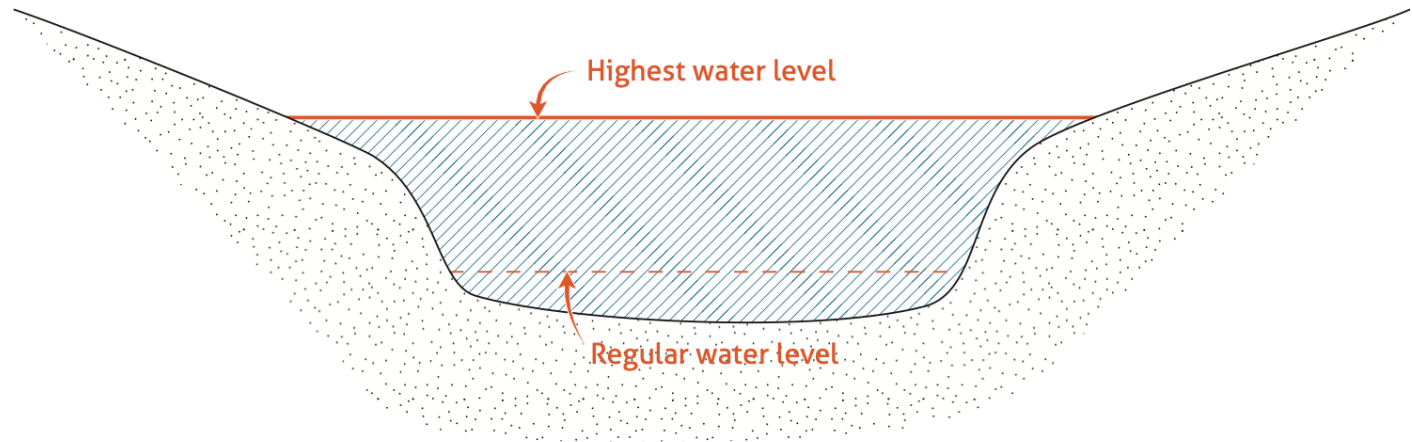
High floodline

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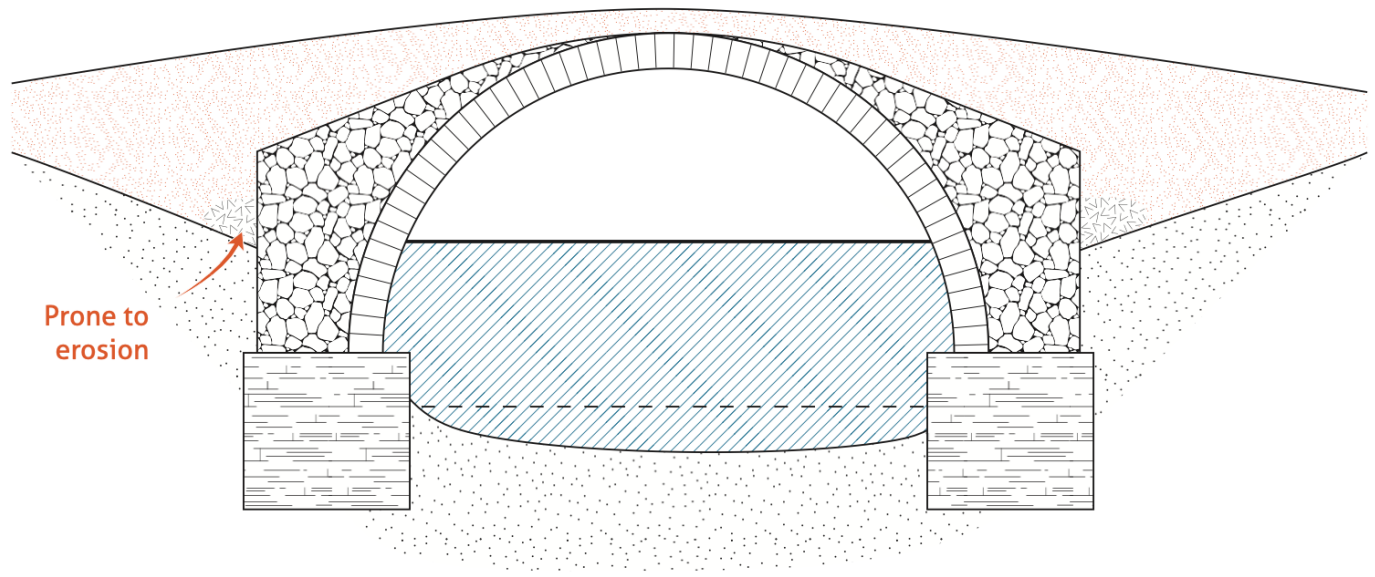
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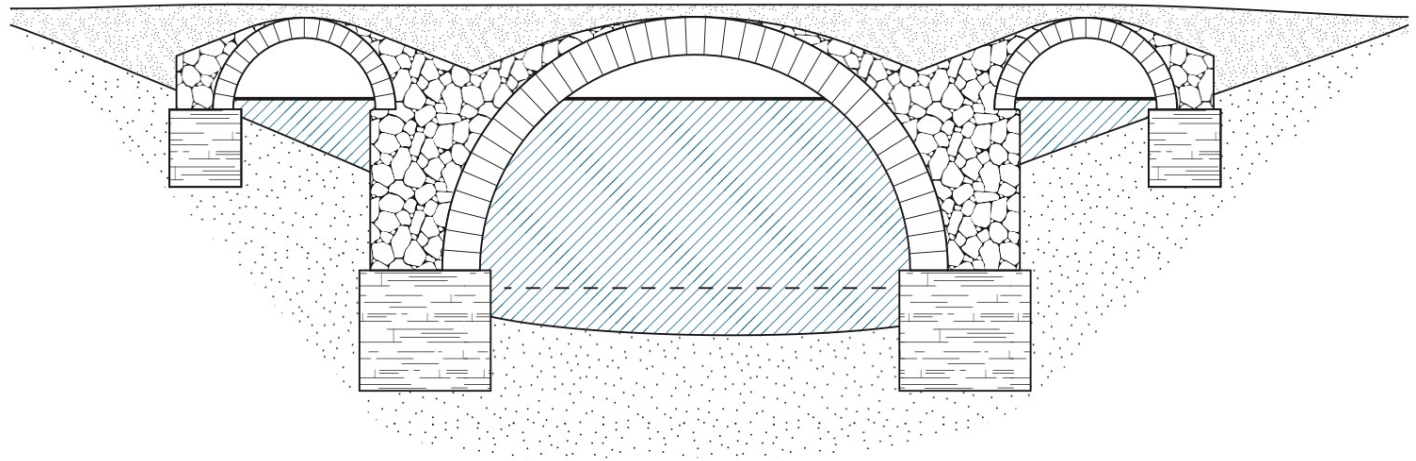
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High floodline

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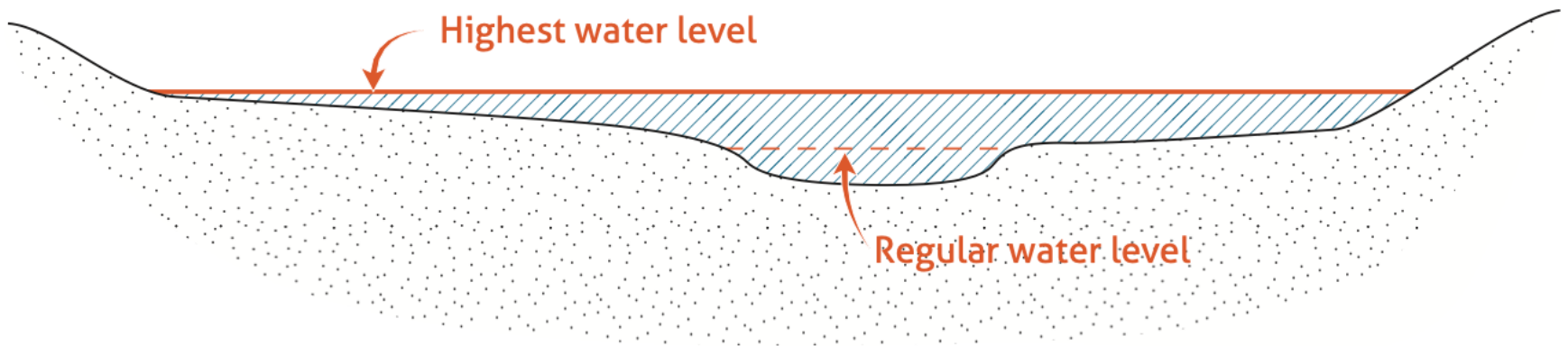
Broad floodplane

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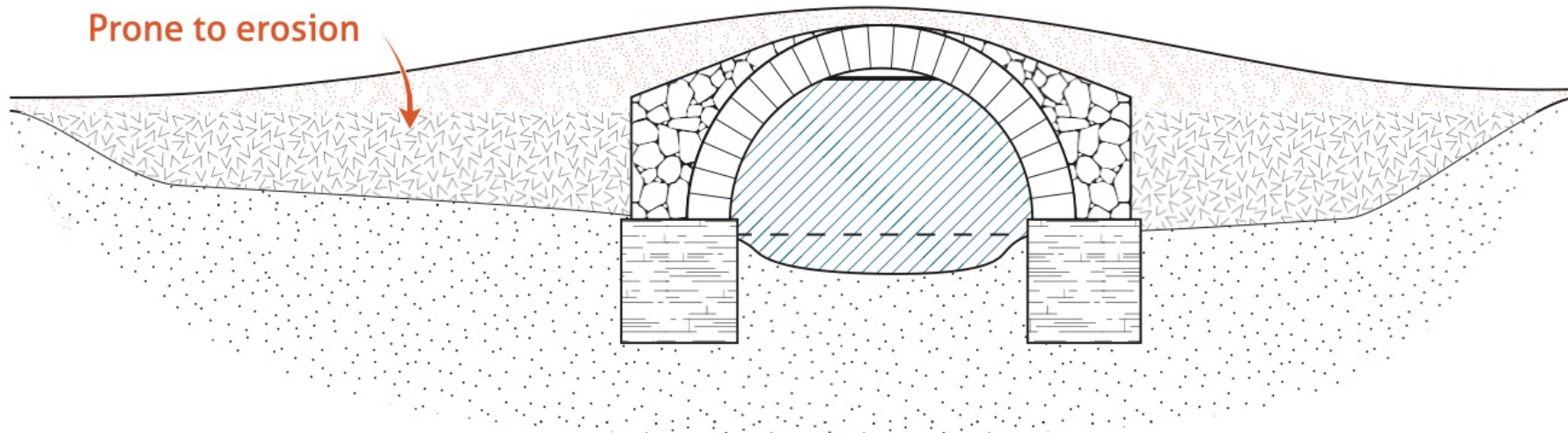
Broad floodplane

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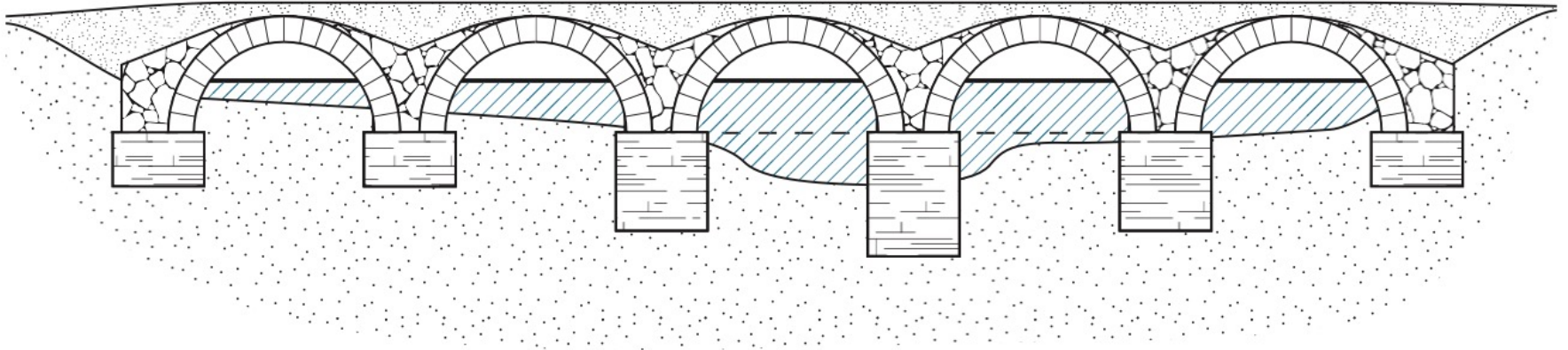
Broad floodplane

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Broad floodplane

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Particular elements

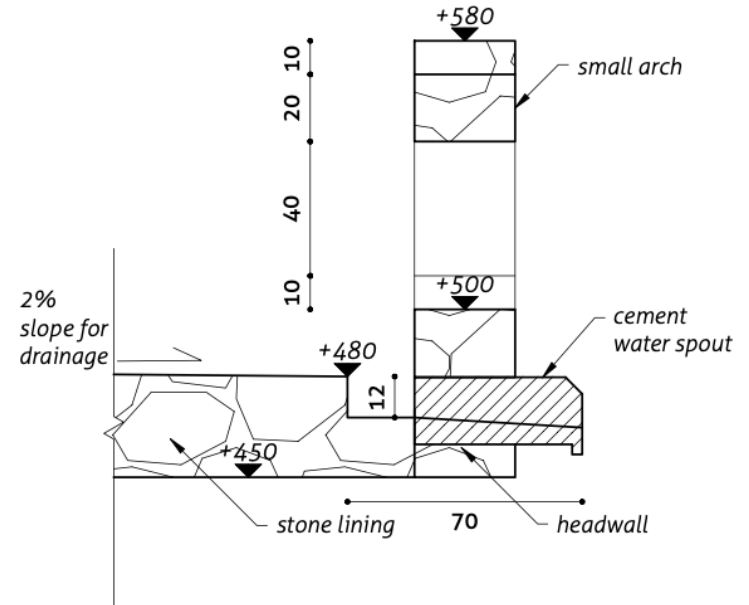
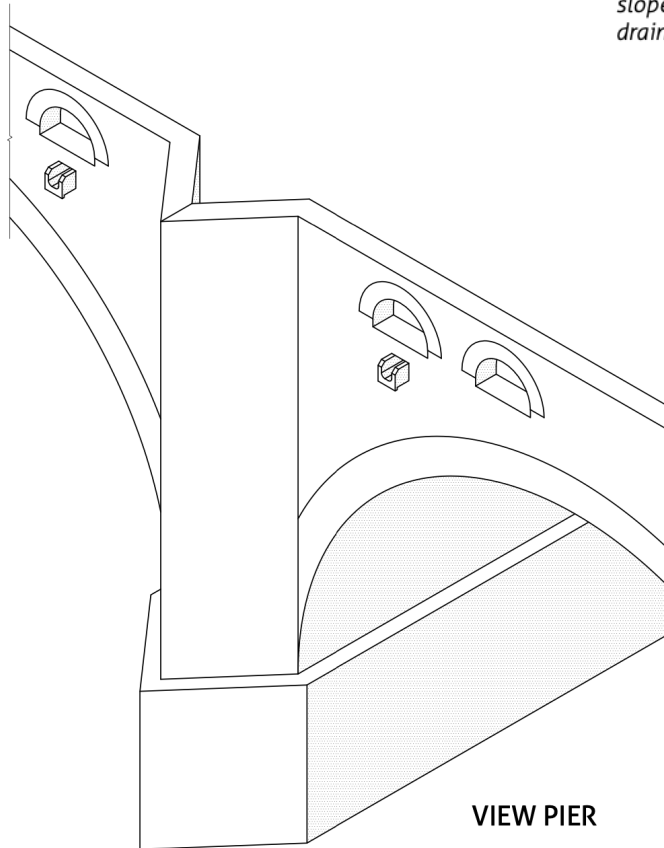
Bridge particular elements

- Headwalls
- Wingwalls
- Deck and drainage



Headwalls

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Headwalls

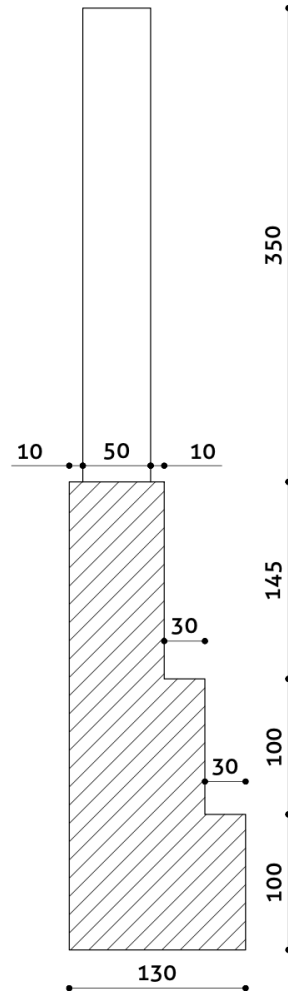
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Wingwalls

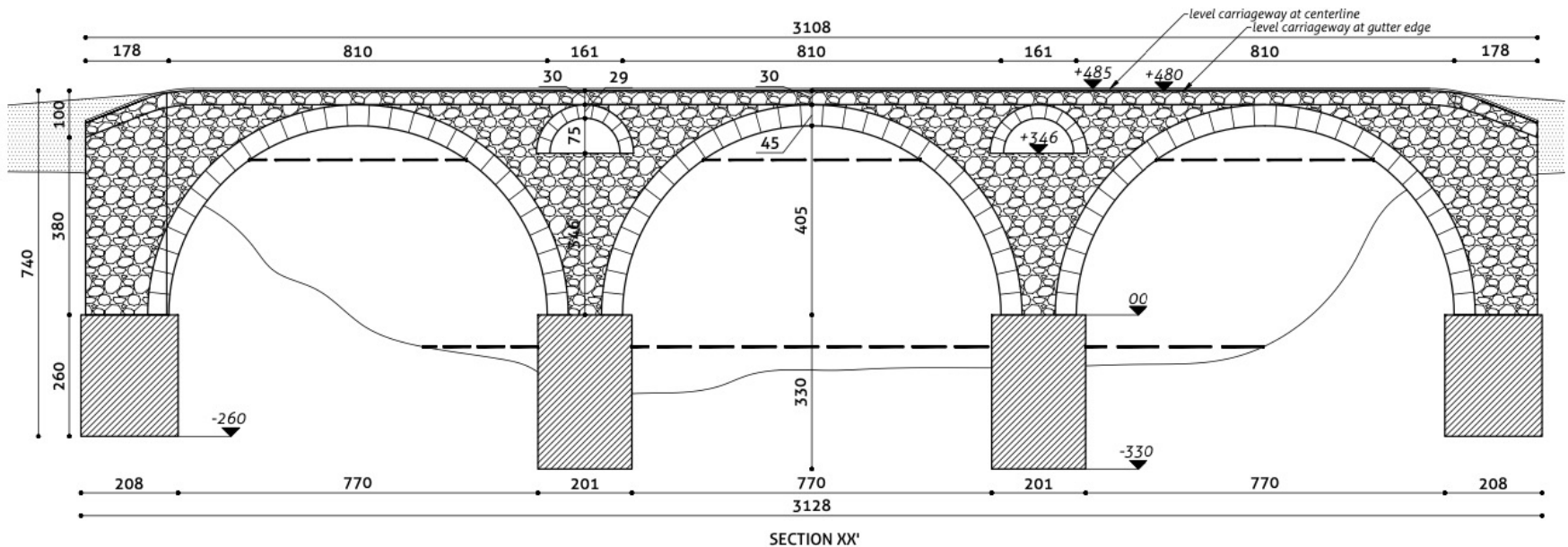
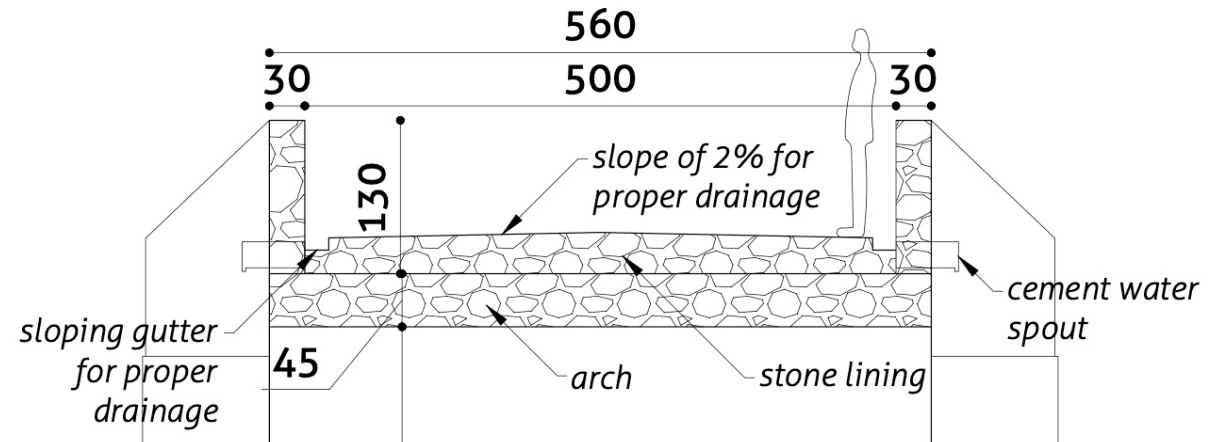
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Deck and drainage

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Deck and drainage

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