



# Nyamihanga Bridge

Belgian development agency

[enabel.be](https://enabel.be)



# Nyamihanga Bridge







# Geographical Location







# EXISTING CROSSING



SAFETY



CONFORTABILITY



ACCESSIBILITY





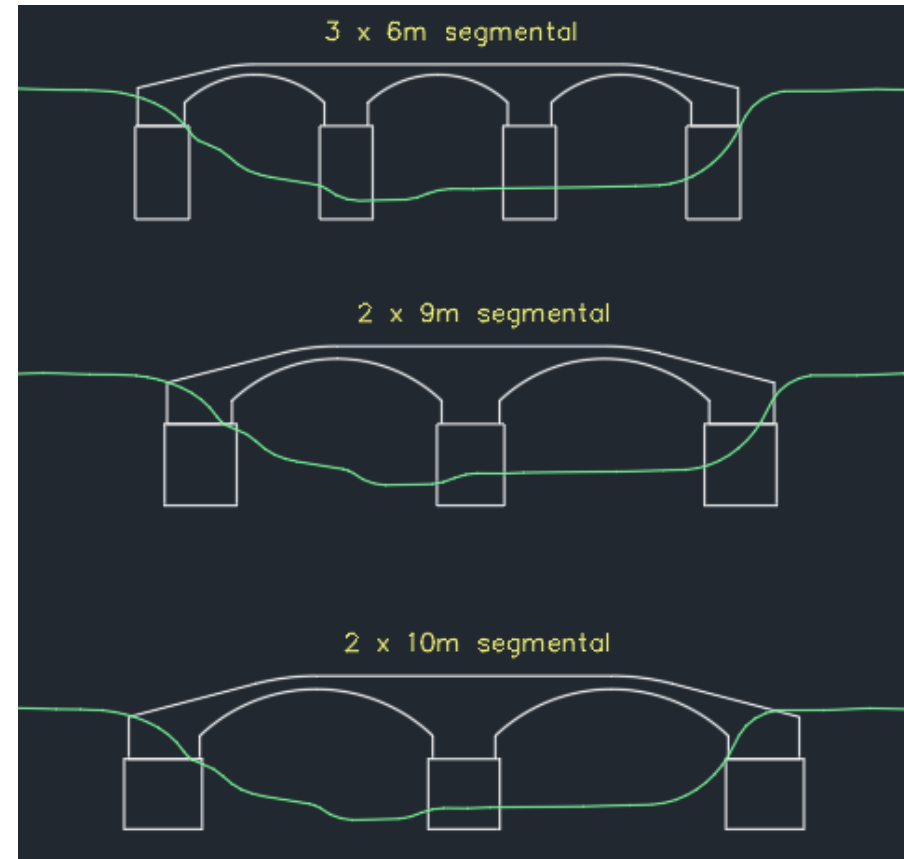
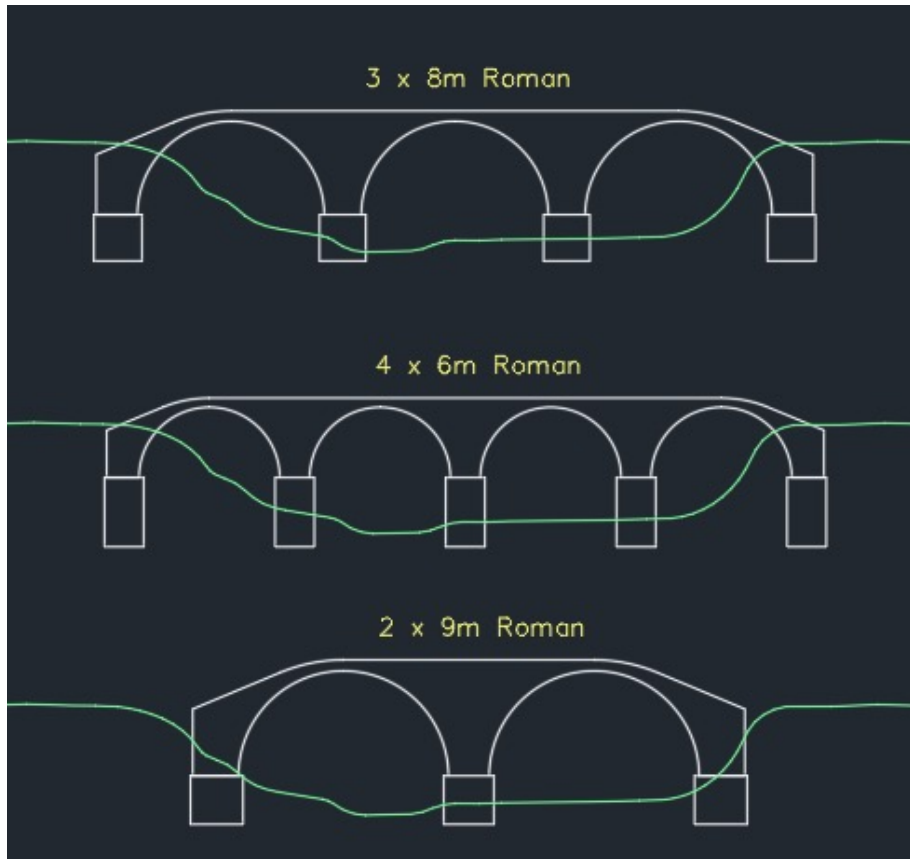
# About the Project

## Nyamihanga Stone Arch Bridges

Aspect	Detail
Designed	Indoor (Enabel), Review and Approval by TARURA
Funds	Co Funded , Enabel, Tarura and Buhigwe DC
Span	32m
Cells	Three cells, 8m Roman Arches
Supervision	Enabel and Tarura
Project Time	4 months
Type of Contract	Force Account
COST	135,565,980 TZS (with no profit margin)



# Design consideration and Typology



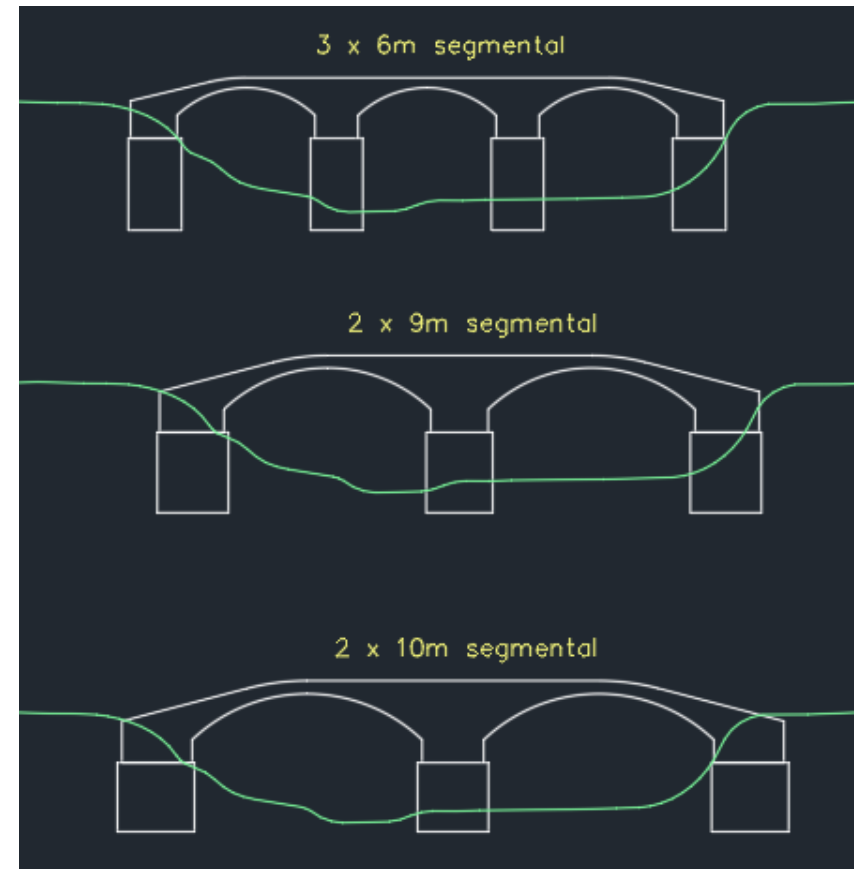
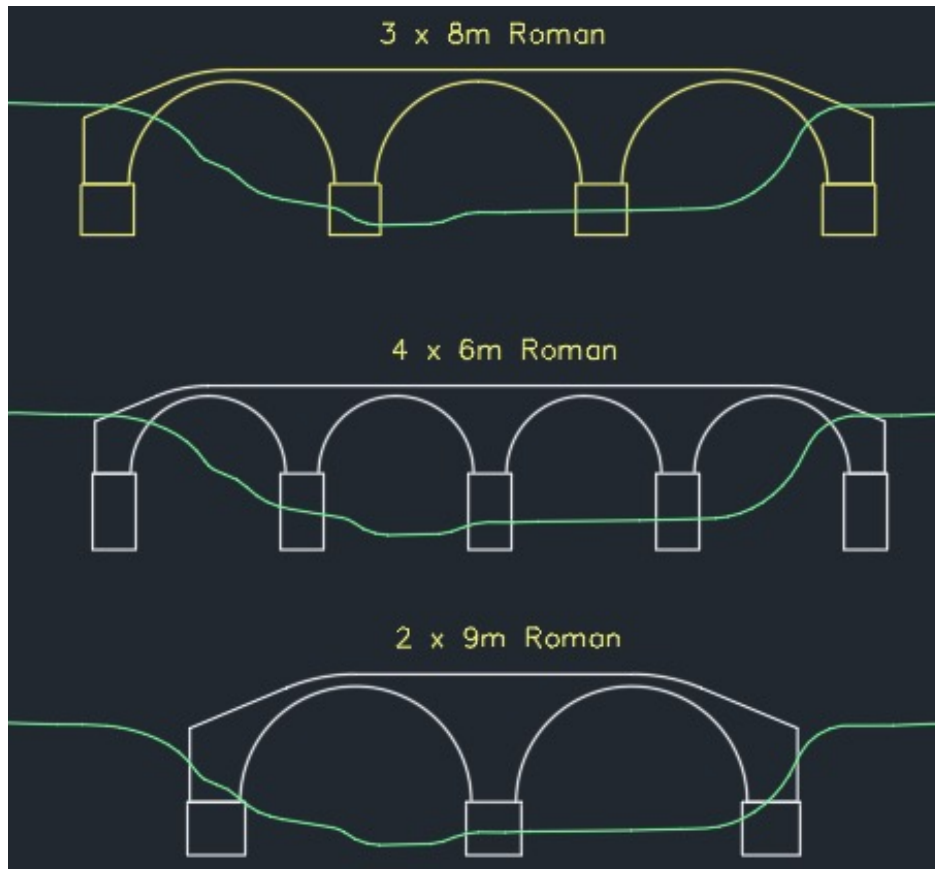


# Design consideration and Typology

Bridge Type	width	Masonry volume	Area for discharge
3 x 8m Roman	5.6	393	107%
4 x 6m Roman	5.6	389	75%
2 x 9m Roman	5.6	327	78%
3 x 6m segmental	5.6	379	68%
2 x 9m segmental	5.6	386	68%
2 x 10m segmental	5.6	407	77%



# Design consideration and Typology







# Quantity of Main Material

s/No	Material	unit	Quantity	Contribution	Status
01	Cement	Bags	1384	Enabel	Supplied
02	Stones	Trips	239	Village Contribution	Bottleneck
03	Sand	Trips	41	Village contribution	Bottleneck
04	Backfill	Trips	56	Village contribution	Bottleneck



# Effective collaboration with different stake holders to overcome bottlenecks



## Expedited Work

TARURA Input in the Supply of the Stones

Buhigwe DC in Excavation Works



*Initial Excavation via Labour based technology by the Villagers*



*Buhigwe DC hired machinery to expedite excavation process*



*Piles of stones delivered by Tarura at the site*

Nyamihanga	32m	5 months
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# Construction Phases.

## 1. Excavation and Construction of Foundation







# Construction Phases.

## 2. Formworks Erection





# Construction Phases.

## 3. Arch Construction and Keystone

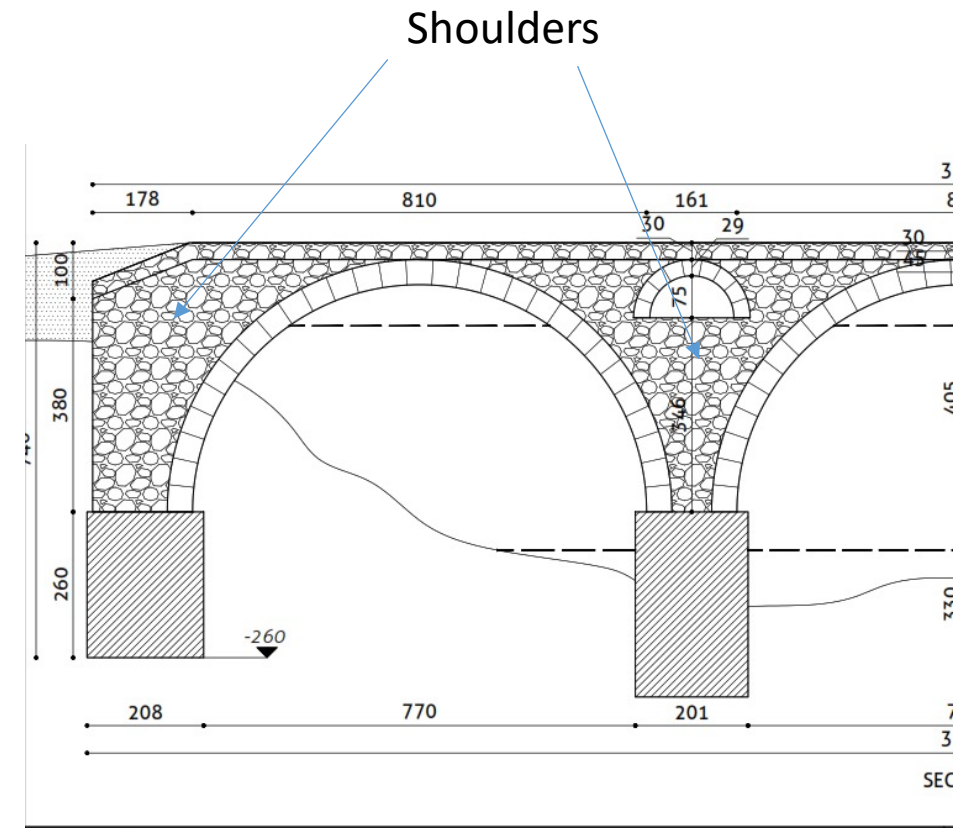






# Construction Phases.

## 4. Shoulders

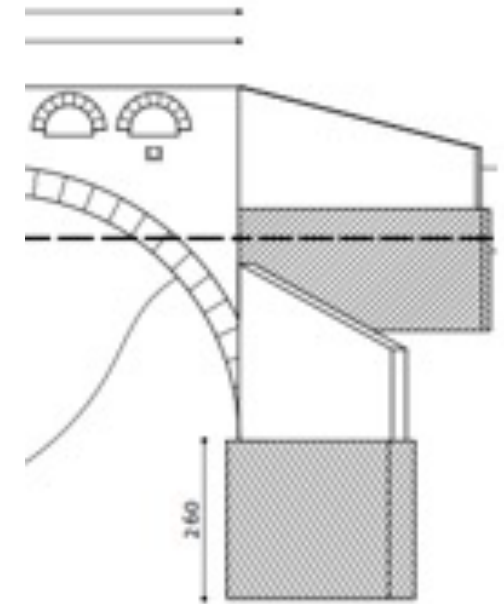






# Construction Phases.

## 5.Wing walls and Headwalls





# Construction Phases.

## 6.Stoneling







# Construction Phases.

## 6.Stonelining







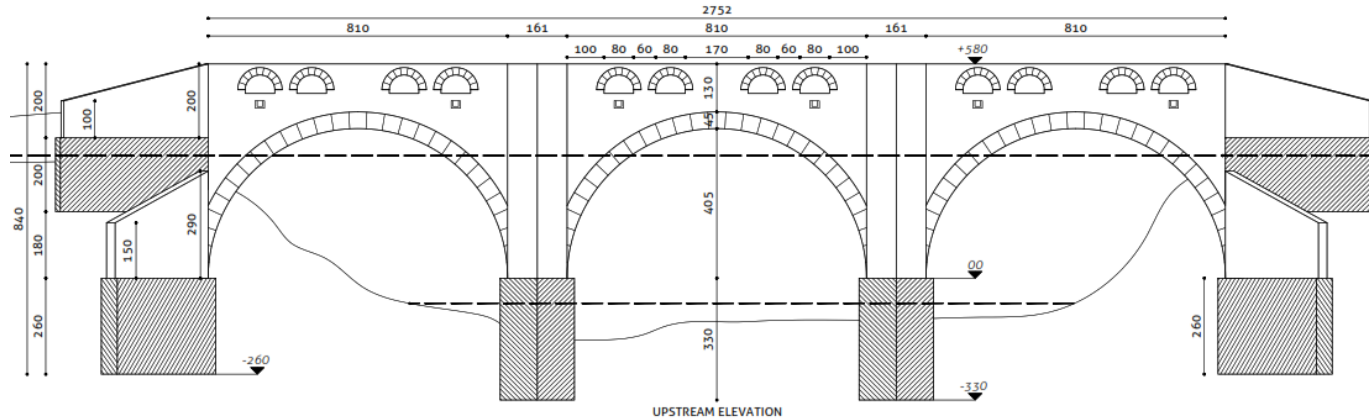
# Construction Phases.

## 7. Finishing works





# Architectural Design



## UNIQUE FEATURES

- Stone lining as A deck to replace concrete slab on top.
- Small Arches in the shoulders.
- V shaped piers to the Top of the Headwalls.
- Double Wingwall system
- Concrete Gutters





# Stone Lining as the Deck



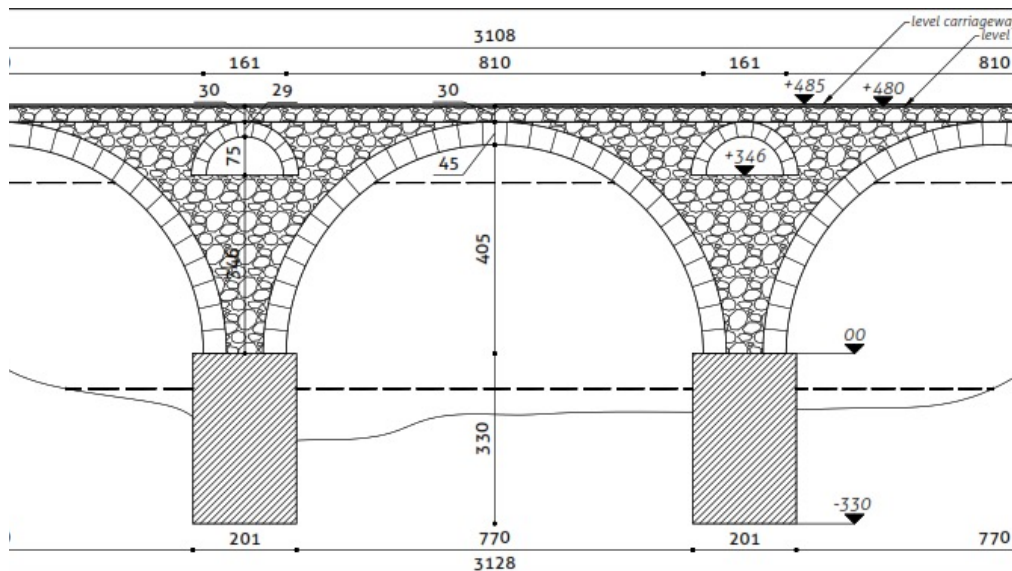
## ADVANTAGES

- Structural stability
- Less Cost
- Utilization of locally available resources





# Small Arches in the shoulders.



DESCRIPTION	UNIT	QUANTITY	AMOUNT(TZS)
Stones	m <sup>3</sup>	18	1,200,000
Cement	Bags	31	728,500
Labour	TZS		720,000

TOTAL COST SAVED BY THIS OPENING 2,648,500







Bridging present and the future, One  
stone at a Time

Q/A

thank you