



Particular Design Elements

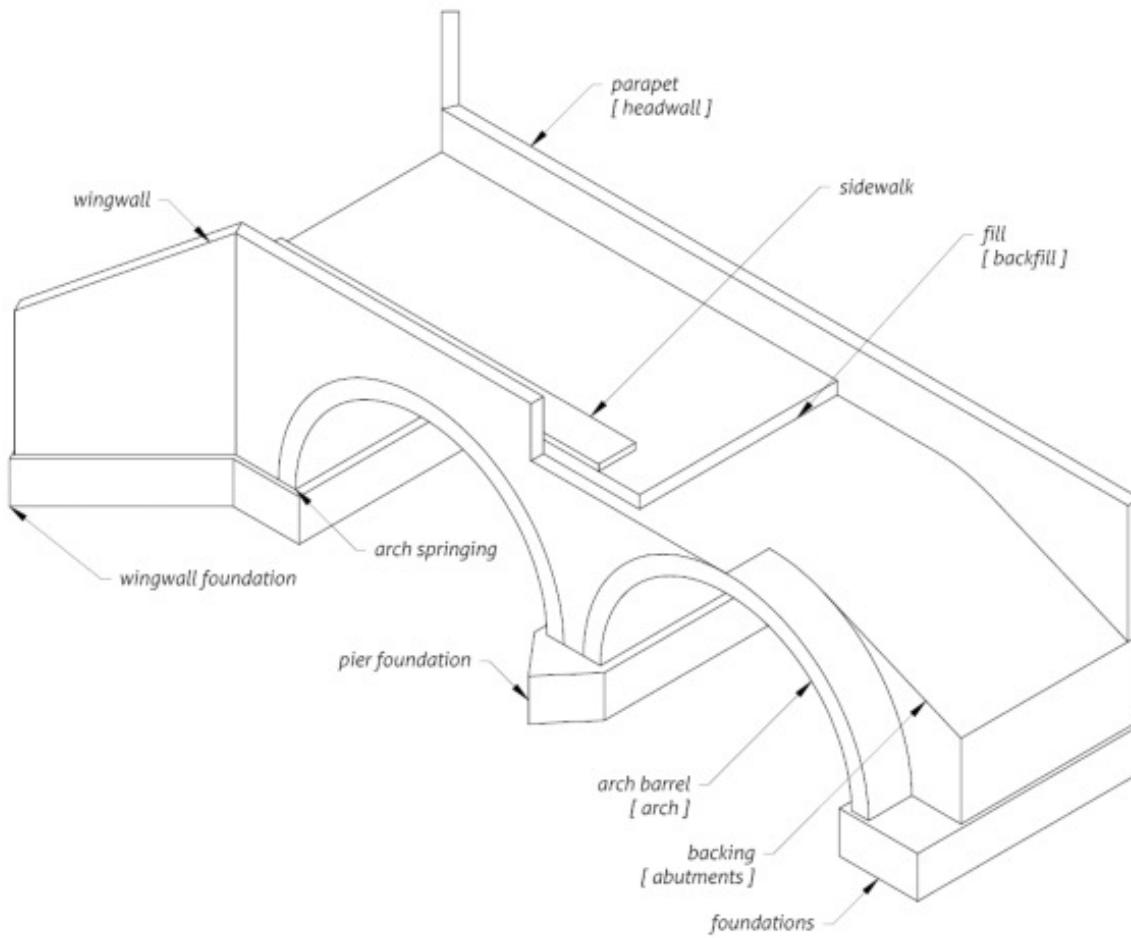
Stone Arch Bridges

Belgian development agency

enabel.be



General Stone Arch Bridge Elements

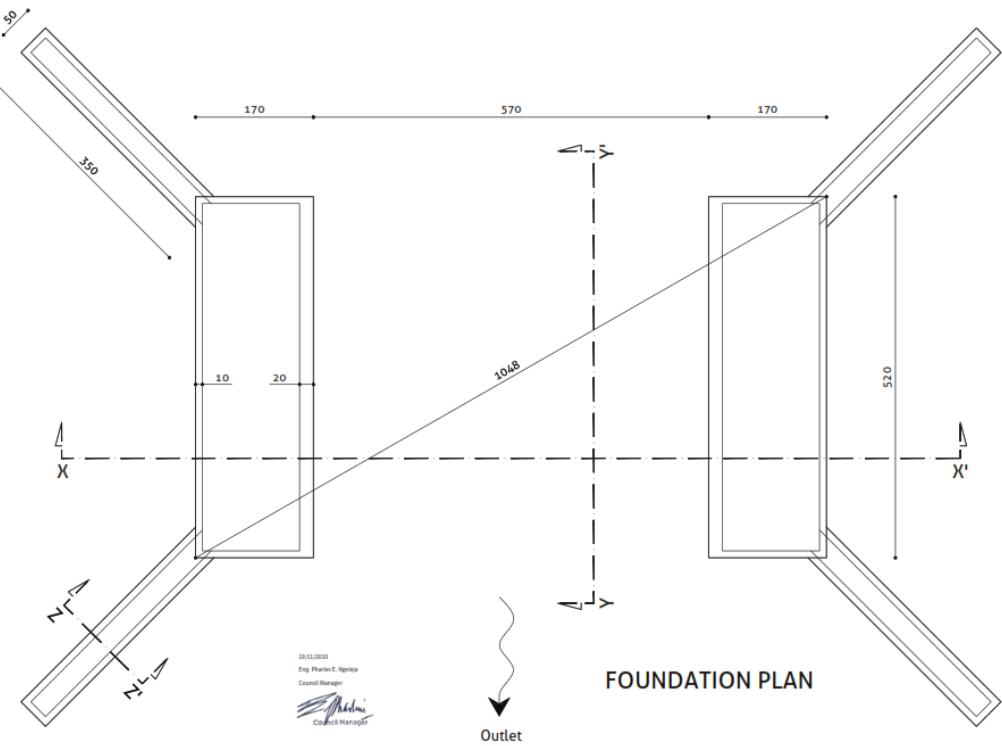




Structural Elements



Kilema Bridge Mkongoro-Kigoma



Foundations and Piers

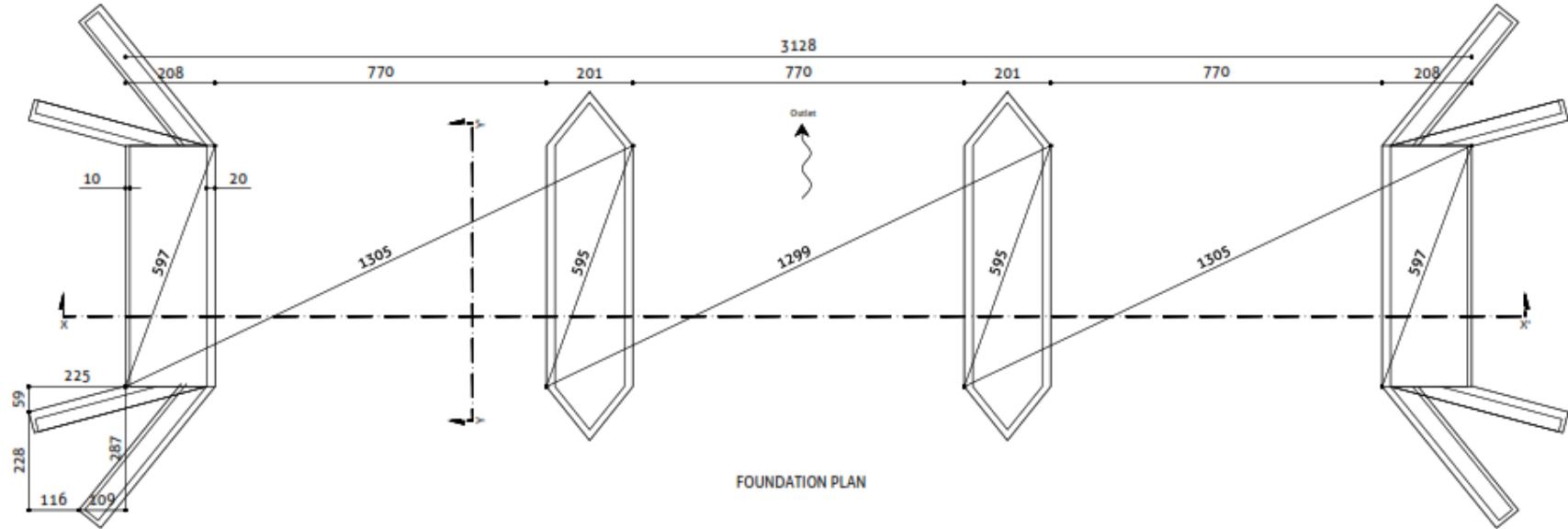
Arches

Shoulders/Backings

Deck



Structural Elements



Foundations and Piers

Arches

Shoulders/Backings

Deck



Nyamihanga Bridge Buhigwe-Kigoma



Structural Elements

Excavation and Dewatering



Foundations and Piers

Arches

Shoulders/Backings

Deck

Titye Bridge foundations Kasulu-Kigoma



Structural Elements

Excavation and Dewatering



Foundations and Piers

Arches

Shoulders/Backings

Deck

Titye Bridge foundations Kasulu-Kigoma



Structural Elements

Completed Structure



Foundations and Piers

Arches

Shoulders/Backings

Deck

Titye Bridge foundations Kasulu-Kigoma

enabel.be



Structural Elements



Nyabigufa Bridge - Kigoma



Nyamihanga Bridge Buhigwe-Kigoma

Foundations and Piers

Arches

Shoulders/Backings

Deck



Structural Elements



Nyamihanga Bridge Buhigwe-Kigoma

Foundations and Piers

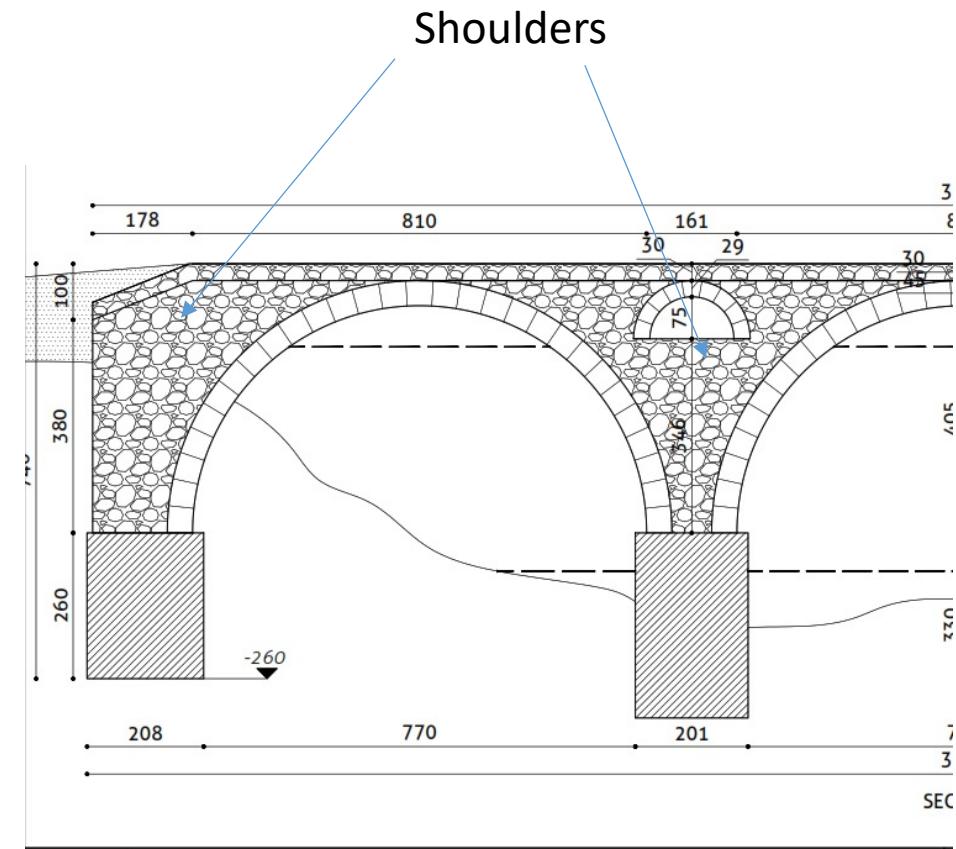
Arches

Shoulders/Backings

Deck



Structural Elements



Nyamihanga Bridge Buhigwe-Kigoma

Foundations and Piers

Arches

Shoulders/Backings

Deck



Structural Elements



Nyabigufa Bridge Mkongoro - Kigoma

Foundations and Piers

Arches

Shoulders/Backings

Deck



Structural Elements



Stone lining Deck Nyamihanga Bridge Buhigwe - Kigoma

Foundations and Piers

Arches

Shoulders/Backings

Deck



Structural Elements



Stone lining Deck Muhunga Bridge Buhigwe - Kigoma

Foundations and Piers

Arches

Shoulders/Backings

Deck



Structural Elements



Backfill Deck Kacheli Bridge Uvinza - Kigoma



Backfill Deck Kilema Bridge Mkongoro - Kigoma

Foundations and Piers

Arches

Shoulders/Backings

Deck



Safety , retaining and Drainage Elements

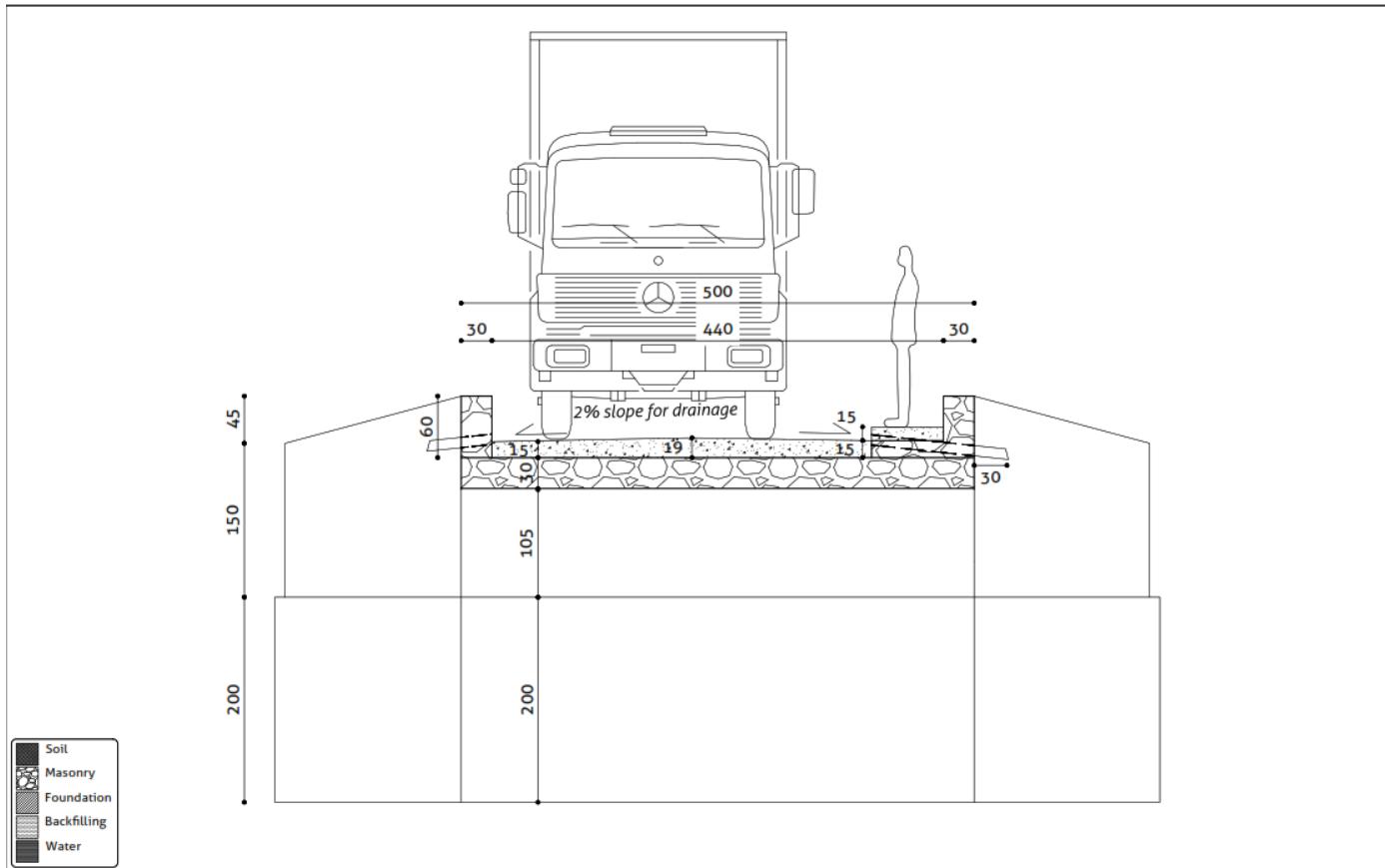
Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system



30cm Headwalls



Safety Elements, retaining Elements and Drainage Elements

Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system



Headwalls Mlela Bridge Uvinza - Kigoma



Safety Elements, retaining Elements and Drainage Elements

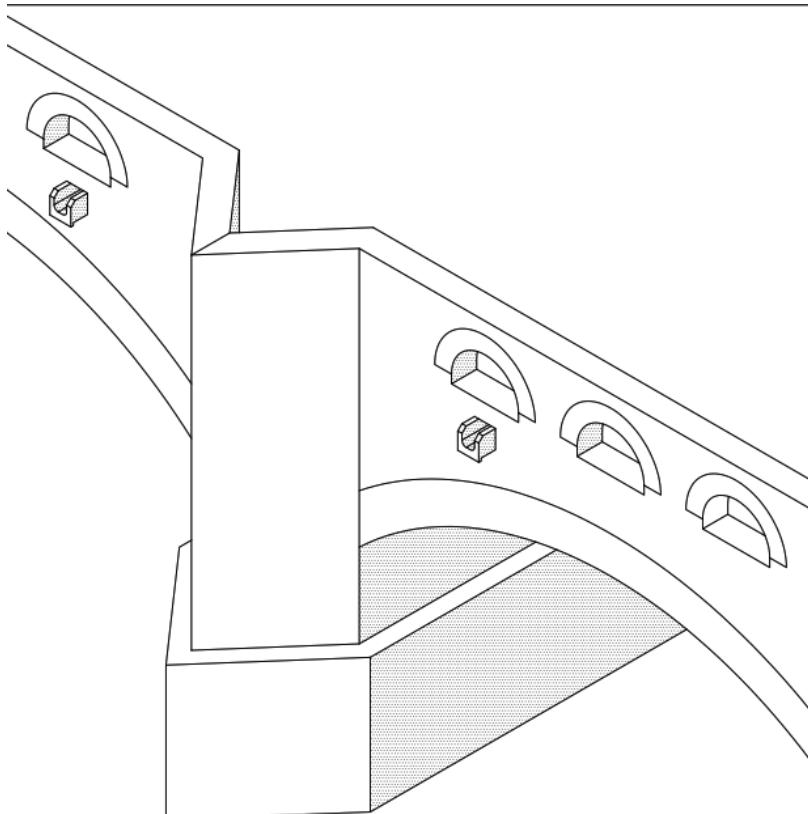
Headwalls

V Shaped Piers

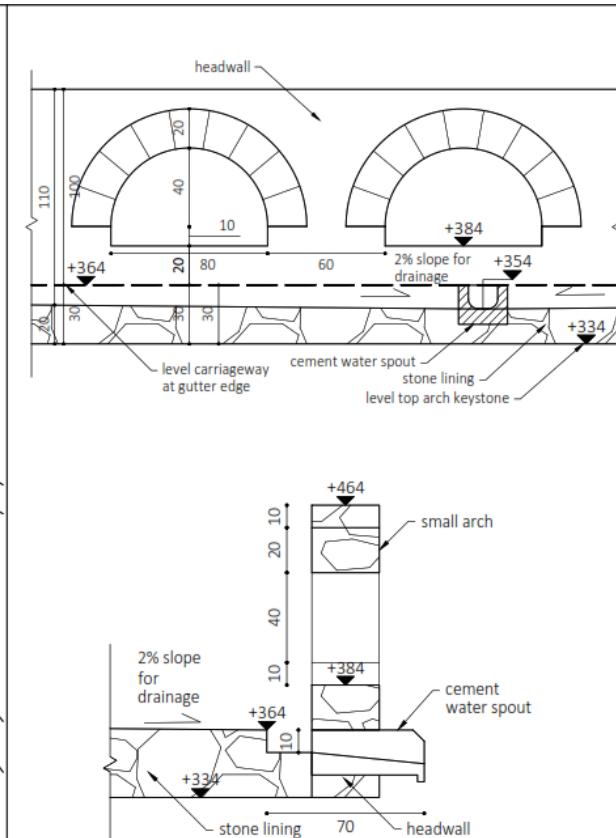
Cut off walls

Wingwalls

Drainage system



DETAIL TRIANGULAR SHAPE



DETAIL HEADWALL ARCHES

1 m Headwalls Muhunga Bridge



Safety Elements, retaining Elements and Drainage Elements

Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system



Early Headwalls Design Chankabwimba Bridge



Safety Elements, retaining Elements and Drainage Elements

Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system



Headwalls in Muhunga bridge in Buhigwe Kigoma



Safety Elements, retaining Elements and Drainage Elements

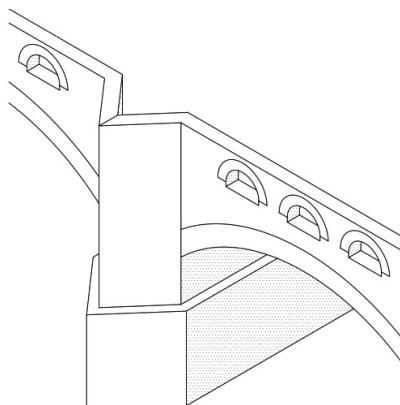
Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system



VIFW PIFR





Safety Elements, retaining Elements and Drainage Elements

Headwalls and V shaped Piers Muhunga Bridge Buhigwe Kigoma





Safety Elements, retaining Elements and Drainage Elements

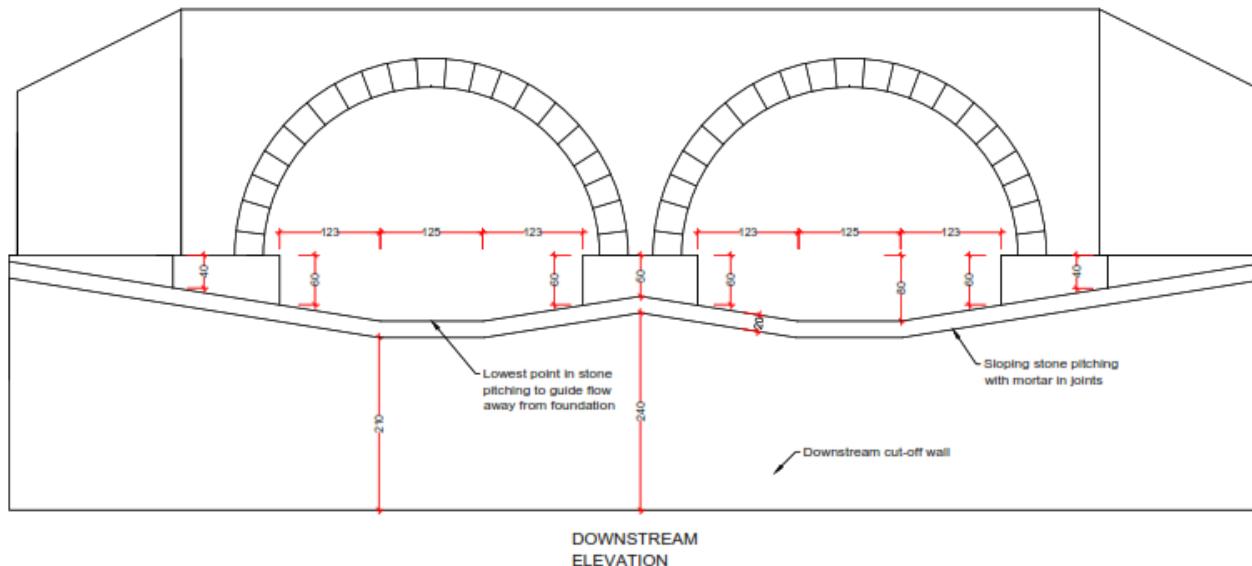
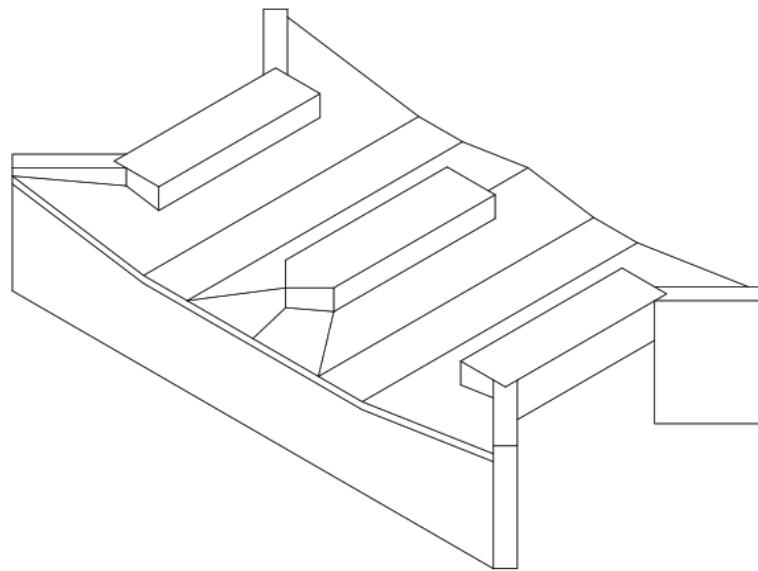
Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system





Safety Elements, retaining Elements and Drainage Elements

Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system





Safety Elements, retaining Elements and Drainage Elements

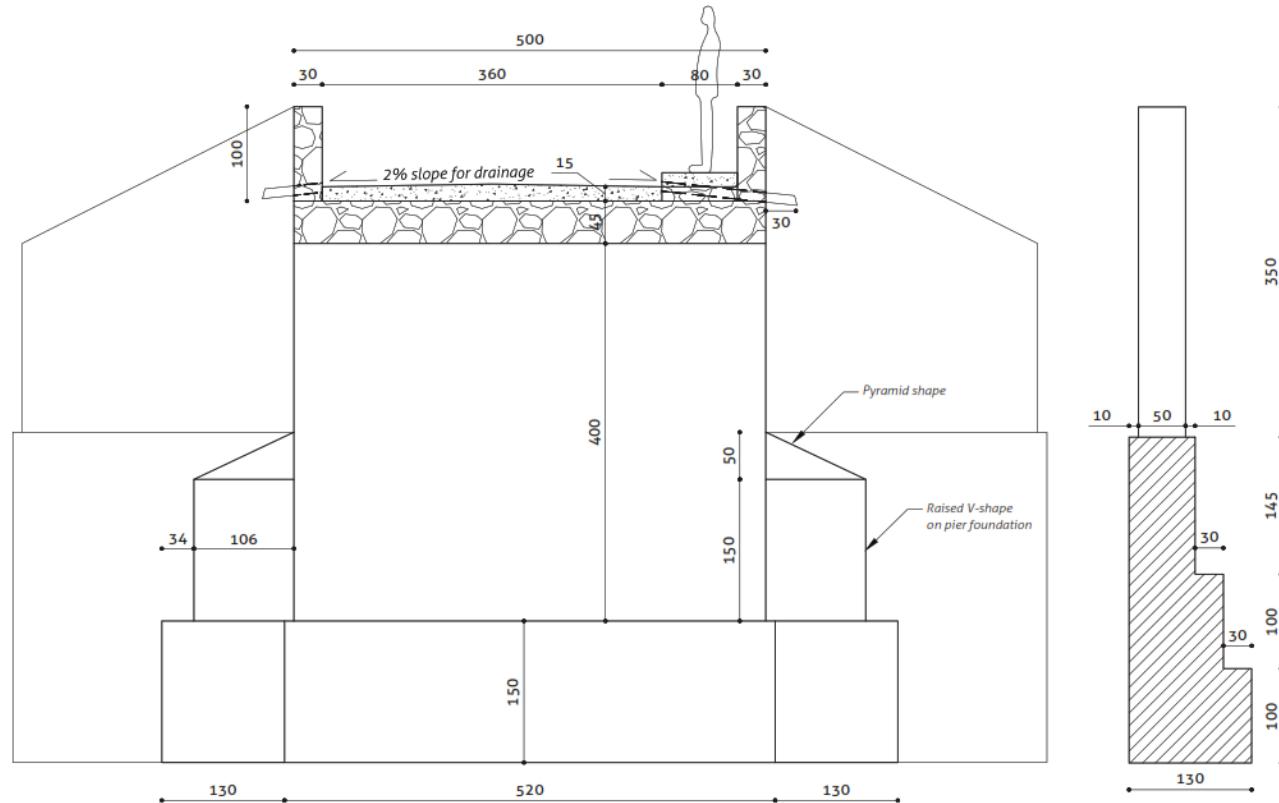
Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system

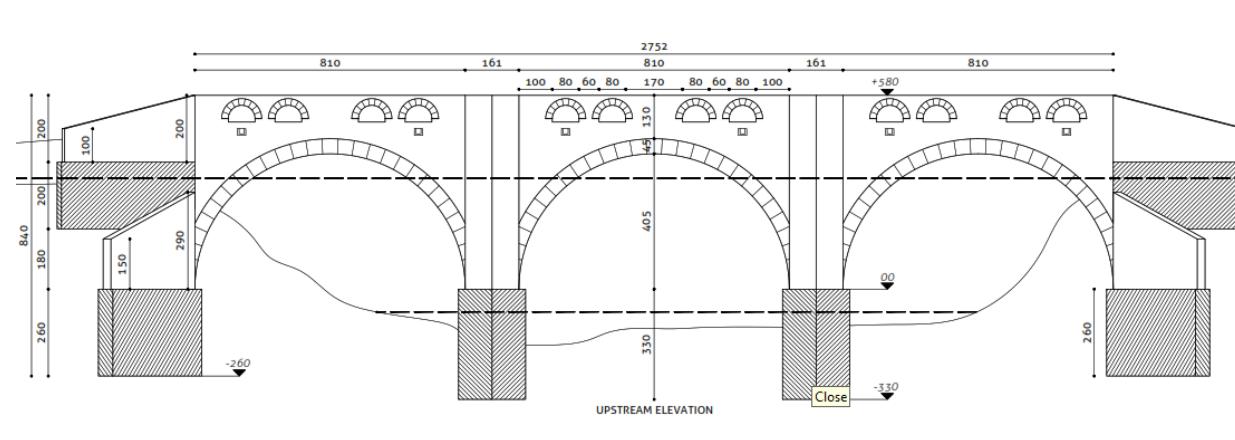
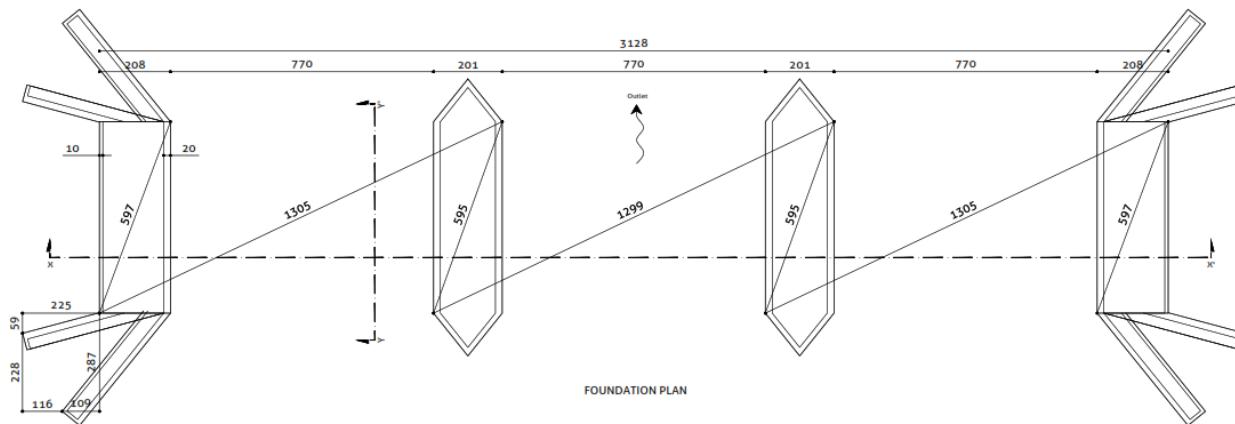


Chankabwimba Bridge wingwalls – stepped retaining wall
Best Practise for huge bridges



Safety Elements, retaining Elements and Drainage Elements

Headwalls
V Shaped Piers
Cut off walls
Wingwalls
Drainage system



Double wingwall system – initial design Nyamihanga Bridge



Safety Elements, retaining Elements and Drainage Elements

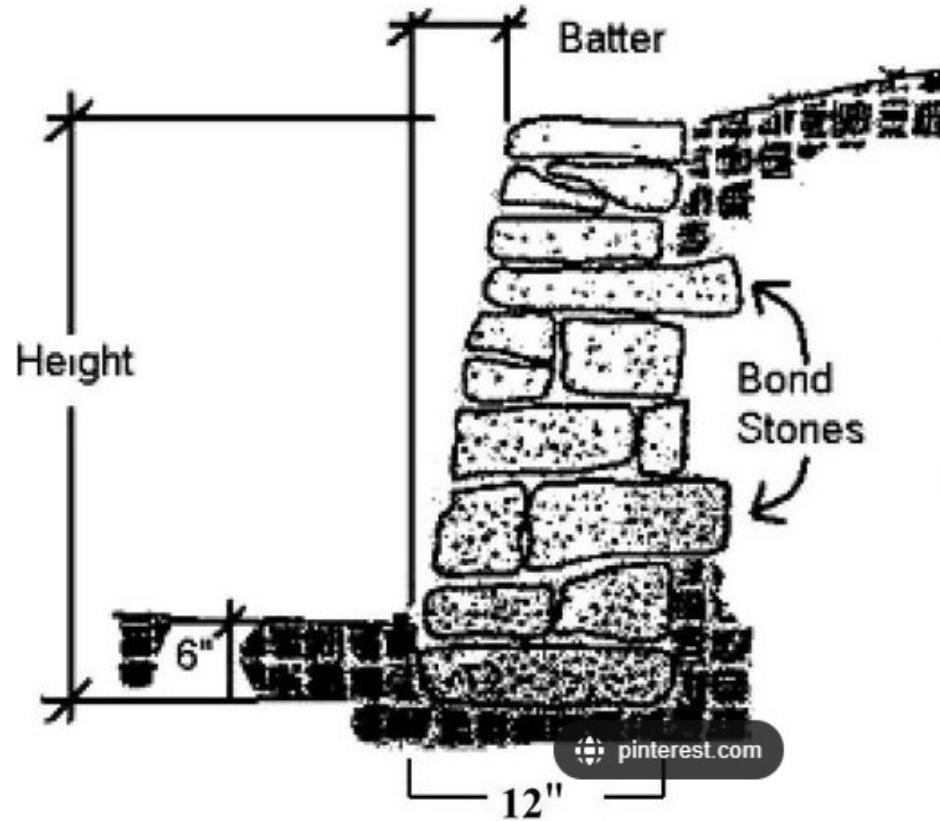
Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system



Dry stack wall



Safety Elements, retaining Elements and Drainage Elements

Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage system



Mlela Bridge Dry stacked Stones



Safety Elements, retaining Elements and Drainage Elements

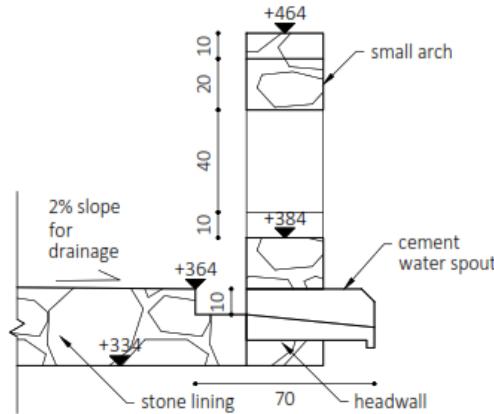
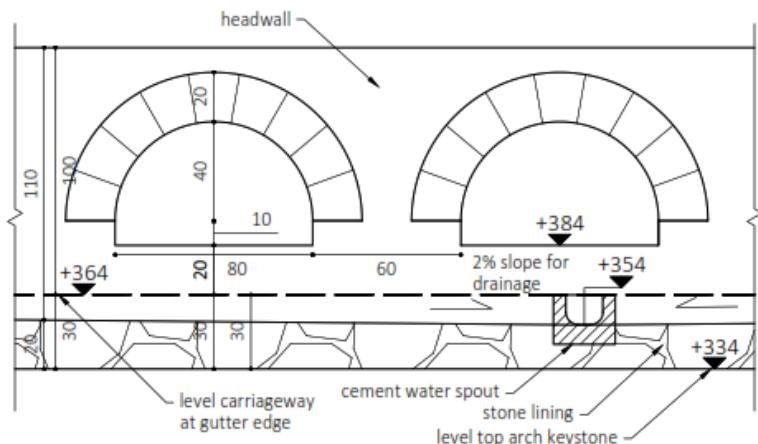
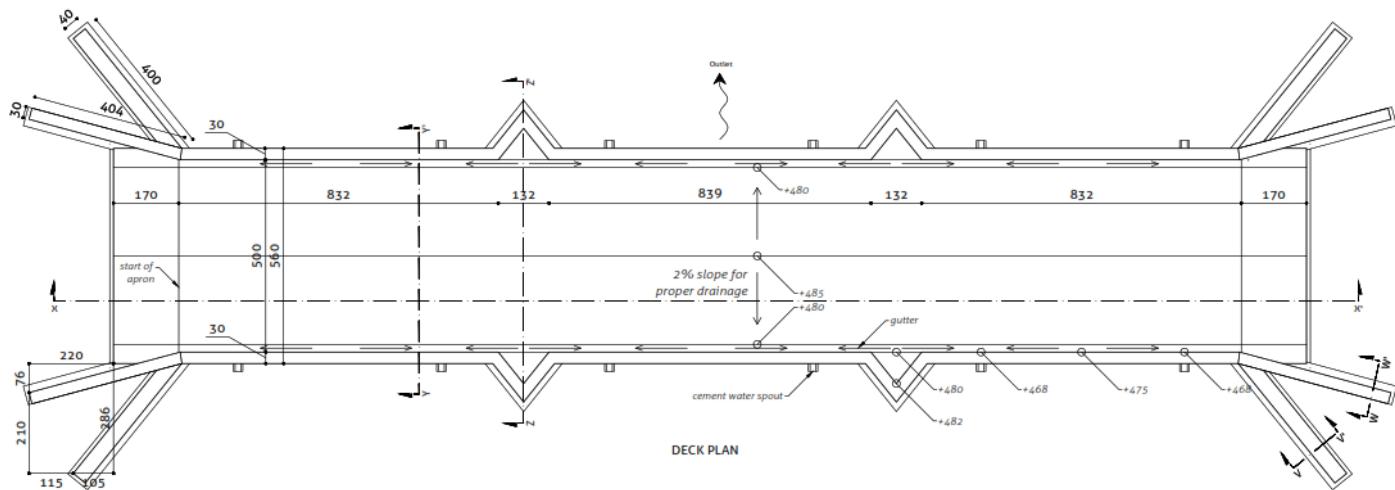
Headwalls

V Shaped Piers

Cut off walls

Wingwalls

Drainage System





Safety Elements, retaining Elements and Drainage Elements

Headwalls
V Shaped Piers
Cut off walls
Wingwalls
Drainage System





Bridging present and the future,
One stone at a Time

Q/A

thank you