



# Unique bridge requires unique solutions

The Botlekbrug is a vertical-lift bridge for road and rail traffic crossing the Oude Maas in the area of the Port of Rotterdam. The new Botlekbrug was opened for road traffic in 2015. The final construction of the rail and cycling connection was started after the demolition of the old Botlekbrug in late 2017.

The Botlekbrug is unique for multiple reasons:

- the dimensions and weight of the two spans (100 x 50 metres and 5,000 tonnes per span)
- the opening frequency (on average 20x per 24 hours, over 6,000 times per year)
- the opening speed (opens and closes in less than two minutes)
- the combination of freight trains and road traffic on the spans

The enormous size of the two steel spans also complicates the transition from the spans to the fixed part of the bridge. This especially goes for the rail connection. As a result of temperature fluctuations, the span will 'shrink' and expand. The permitted tolerances (deviations) for the rail connection are very small. This means the rail connection requires millimetre precision, while the road connection is a little more forgiving. This calls for unique and complex solutions during the realisation of the project. There is no prior experience with similar bridges.

## Working on a bridge that is in use

What makes things even more complicated is the fact that the construction work for the rails and the railway systems is to be performed on a bridge that is in use. All traffic flows should remain uninterrupted as much as possible during this project. Working on a bridge that is in use by traffic and operated for shipping is an incredibly complicated operation. We constantly look for the best solution for all parties involved. This makes planning the activities a challenging task.

## Completion in Q1 2021 due to unforeseen work

After the bridge was opened for road traffic in 2015, it turned out that adjustments were necessary before the rail construction could begin.

Preparations were made for these adjustments in 2018, and they were implemented in 2019. To ensure the safety of the employees on and users of the bridge, these activities could not be combined with the final construction of the rails. Because of this, the railway could not be opened in 2019. If everything goes according to plan, the railway will be opened in the first quarter of 2021.

## Activities from demolition of the old bridge up to 2019

The Botlekbrug was opened for road traffic in 2015. After the old Botlekbrug was demolished in 2017, work was started on the final construction of the rail and cycling connection.

From that moment on, both spans were usable and both shipping lanes were available for shipping. This means work can alternately be performed on the western or eastern span.

Date	Activities
Q3 2017	Railway across the old Botlekbrug out of service
Q4 2017 – Q1 2018	End of operation old Botlekbrug and demolition of old bridge above the water
Q2 – Q4 2018	adjustment/modification of the lift installation (replacement of 64 cable wheels)
Q4 2017 – Q2 2019	Demolition of piers and foundations old Botlekbrug
Q4 2018	Start rail construction work on rail to land transitions
Q2 2018 – Q4 2019	Adjustments/modifications to bridge decks
Q2 – Q4 2019	Construction of connection for cyclists and pedestrians
Q4 2019	Installation of rail wiring (Flexible Cable Chain)



### Prognosis activities and disruptions up to Q1 2021

The following should still be done before freight trains can use the railway connection:

- installing frames for the overhead lines on the movable spans
- bridge transition installation
- placing various types of wiring
- installing energy facilities
- embedding the rails
- realisation and testing of the (safety) systems
- pilot operation: test scenarios of trains crossing the Botlekbrug

This means either the eastern or western shipping lane will be (partly) obstructed for shipping. When possible, passage time slots will be arranged.

### Activities after Q1 2021

The work will not be done in Q1 2021. Bridge maintenance will always be necessary. The piers of the bridge will still be equipped with collision protection. In addition, measures should be taken to reduce the evacuation time for slow traffic (cyclists and pedestrians). We are constantly looking into ways to make maintenance of the movable parts of the bridge more efficient. In this context, the locking system of the bridge is expected to be replaced in mid 2021. Part of these activities will require a (partial) obstruction of the fairways.

### Consequences for shipping

For the consequences (obstructions) of the activities for shipping, also like to refer to the Notices for Shipping (BAS) of the Rotterdam Port Authority; [pin.portofrotterdam.com](http://pin.portofrotterdam.com). For the planning of the activities and an overview of the consequences for shipping, we would like to refer to the Rijkswaterstaat [website](#). This website also explains the measures taken to reduce the disruptions to a minimum.

The starting point of any (maintenance) work is that one fairway will at all times remain available for shipping. In case of an obstruction of the eastern fairway, ships can make use of the western fairway. In case of an obstruction of the western fairway, ships with a height over 14m Amsterdam Ordnance Datum (NAP) or a draught of 7 metres or less can use the eastern fairway. Ships with a draught over 7 metres can make use of the eastern fairway in consultation with the Harbour Coordination Centre (HCC). The HCC decides whether a ship can pass the Botlekbrug.

If possible, passage time slots will be made available in case of obstructions so ships with deeper draughts (draught over 8.20 metres) can pass as well, on the condition that these ships report 24 hours in advance in order to use one of the published tide windows. This is because the span should be cleared of all materials and equipment in order to be used during the passage time slots.

### More information or questions?

If you need more information or have questions about the activities, obstructions and passage options, please send an email to [Botlekbrug@rws.nl](mailto:Botlekbrug@rws.nl). We will contact you as soon as possible.

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