

Renovation of the viaduct of Vilvoorde

Autoroute R1, Vilvoorde & Machelen (BE)

Complete study with recalculation of the structures and dimensioning of the reinforcements



Owner
De Werkvennootschap

Cost of the works
€ 222,25 M excl. vat of wic
€ 130 M for the renovation and
strengthening, and € 90 M for de
removing of asbestos

Studies
2021 - 2026

Execution
2022 - 2027

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The «viaduct of Vilvoorde» is in reality 2 x 4 viaducts (A-B-C-D). Viaducts A and C are composite steel-concrete viaducts with two main steel girders and cross-girders, and a concrete deck; they have respectively 5 and 7 spans of 57.6m. Viaduct B has an orthotropic deck upon a central box-girder 8m wide and 5.5m high, with 8 spans of variable length between 93m and 162m. Viaducts D have each three box-girders of prestressed concrete and a reinforced concrete slab, with 4 spans from 18 to 46m.

When it was built in the 1970s, the bureau greisch carried out the studies for part B.

Opened in 1978, used with three traffic lanes, the viaduct has since then fatigue problems in the steel and degradation of the concrete.

Besides its renovation, the mission consists in the full recalculation of the viaducts according to the actual structural Eurocodes, to ensure a design life till 2078, to carry 4 traffic lanes with 2 slow and heavy traffic. Viaducts B are verified with a consequence class CC3.

De strengthening measures are various: additional steel plates on the under- and upper flanges, addition of vertical or longitudinal stiffeners, addition of transversal and longitudinal diagonals, concrete overlay on the concrete slab, high strength (fiber and rebar) reinforced concrete overlay on the orthotropic deck...