VTR Construction Method

Isometry of construction components
Composite girder grid - VTR – Mures Viaduct Simeria
A1 bypass Deva: structure 2

structure 2: 40/36/36/40/32/20=240
A1 bypass Deva: structure 3

structure 3: 28/32/3x36/40/40/32=240
“VTR” offers efficient possibilities to build composite bridges with the highest degree of prefabrication

- Use of shear studs to transfer longitudinal shear forces
- Use of normal-strength concrete as structural concrete
- Reinforcement is added as prefabricated (modular) units (fast construction progress)
- Connection between individual prefabricated components by grouting
- Very high demands on an accurate fit and size, and tolerances
1 Steel construction

- Main steel girders (box or I-girders) are prefabricated at the plant
- Use of shear studs to transfer shear forces
- Gap for cross girders
- Shear studs are adapted to the gaps’ grid
- Main steel girders (box or I-girders) are prefabricated at the plant
2 Arrangement of formwork elements

- Sealing strips and formwork are arranged laterally
- Execution at the plant
- Formwork is left out in the area of the cross girders
2 Installation of cross girders

- Prefabricated cross girders are inserted into the gaps
- Reinforcement in the gaps adapted to shear stud grid
- Connecting reinforcement for top concrete applied on site
- Prefabricated cross girders are inserted into the gaps
- Connecting reinforcement in longitudinal direction
4 Assembly of reinforcement

- Fast and efficient assembly of prefabricated reinforcement modules
- Prefabricated reinforcement modules in longitudinal direction of the bridge
- Very accurate fit of the reinforcement is required for shear studs
5 Concreting – first composite/grouting of connecting areas

- Grouting of gaps with special low-shrinkage mortar
- Grouting of standard areas with conventional concrete C 30/37
- Composite effect is already achieved for the construction stage after concreting of the grouting areas
6 Placing of prefabricated deck slab elements (fully prefabricated)

- Transverse reinforcement partially as prefabricated elements
- Inner prefabricated (concrete) deck elements
- Outer prefabricated (concrete) deck elements
- Connecting reinforcement for bridge cap construction
7 Installation of still missing reinforcement

- Additional reinforcement is arranged in transverse and longitudinal direction
- High degree of prefabrication of individual reinforcement modules (significant time saving)
8 Concreting of grouting areas

- Bridge deck is completed by concreting the remaining grouting areas
- Composite effect of the entire structure (final state)
9 Final works

- Installation of usable surface (asphalt)
- Assembly of railings
- Concreting of lateral bridge caps
10 Final bridge cross section

- Prefabricated cross girder
- Hollow box steel girder
- Prefabricated deck element
- First concreting section
- Second concreting section
- Bridge cap
Concept of construction and assembly stages