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**Design and dimensioning of precast elements made of non-prestressed and prestressed high performance concrete and ultra-high performance concrete for the application in bridge construction**

Ultra high performance concrete (UHPC) is an innovative and challenging material. Based on this material in combination with prestress, very slender and lightweight concrete structures can be built. However, in practice there are very few applications. It is the aim of this thesis to design and dimension prestressed UHPC-girders according to current regulations and the current state of the art. These girders should be designed for use as semi-precast components in railway and street traffic bridges. Pre-tensioned straight tendon profiles should be favoured as the typically applied precast technology. The concrete qualities which should be examined are normal concrete, high performance concrete and ultra-high performance concrete.

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