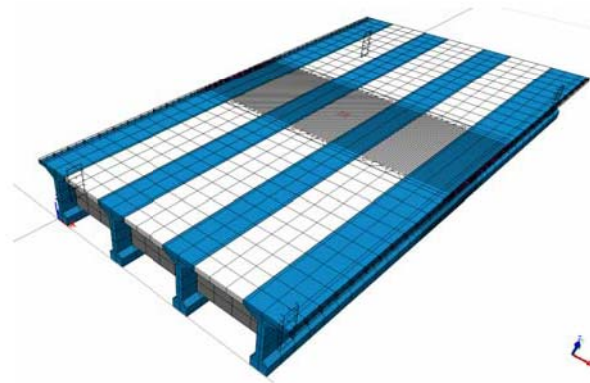
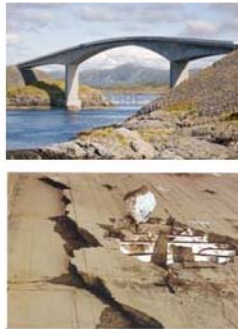


Bearing Capacity of Prestressed Concrete Decks – A numerical investigation



Sana Amir

PhD Student
Concrete Section
CITG, TU Delft

*Prof. Dr. ir. J. C. Walraven
Dr. ir. C. van der Veen
Concrete Section, CITG, TU Delft*

*Dr. ir. Ane de Boer
Rijkswaterstaat*

Contents

1: Introduction

[Project Description](#)

2: Experimental Results

3: Finite Element Analysis

4: Comparison of experimental and numerical results

5: Parametric study

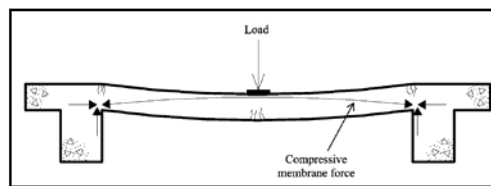
6: Conclusions

Introduction

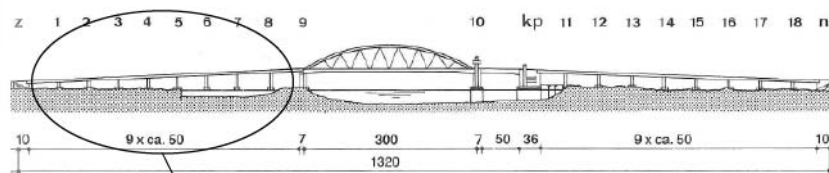
- Bridges built more than 50 years ago
- Increased traffic flow and modern code requirements
- **Safety is a question???**
- Designed for flexure, **failing in punching shear???** But at higher capacities???
- Exploring possibility of **Compressive Membrane Action???**

CMA is a phenomenon that occurs in slabs whose edges are restrained against lateral movement by stiff boundary elements. This restraint induces compressive membrane forces in the plane of the slab

(Park and Gamble, 1980).

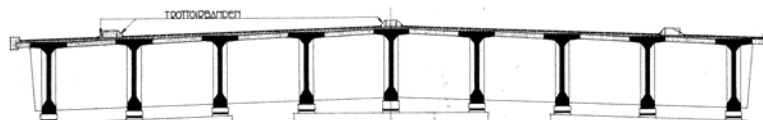


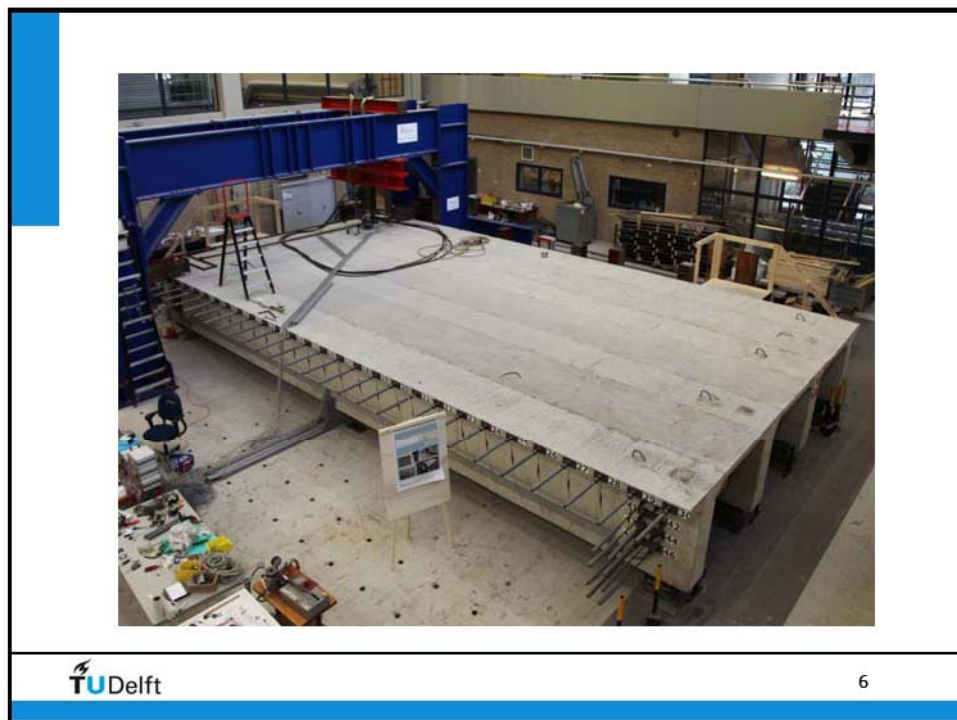
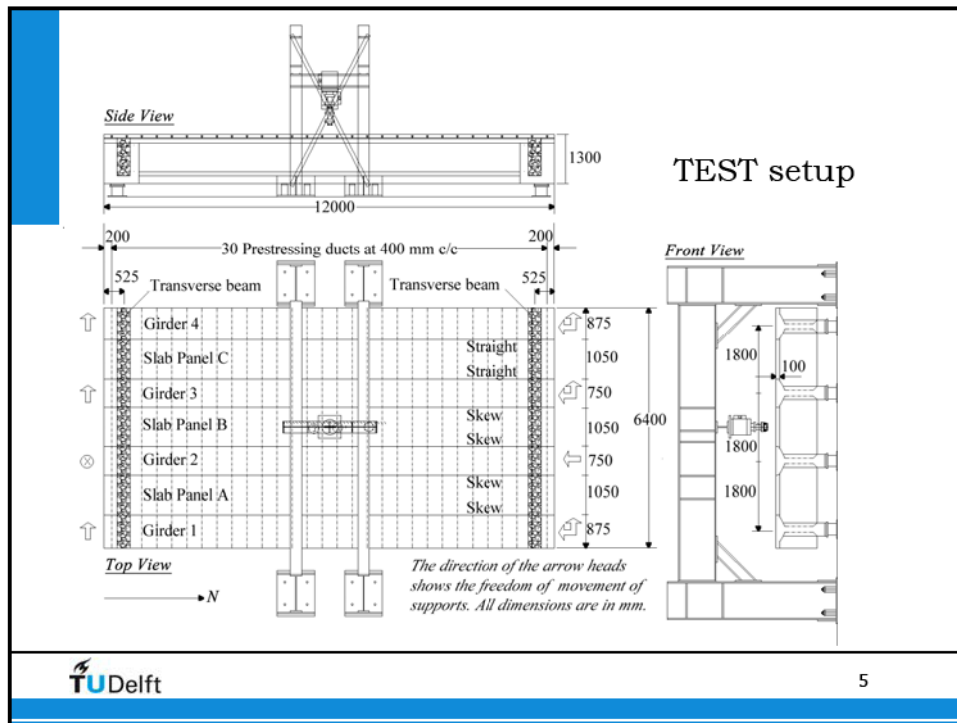
Project Description



A typical "Approach Bridge"

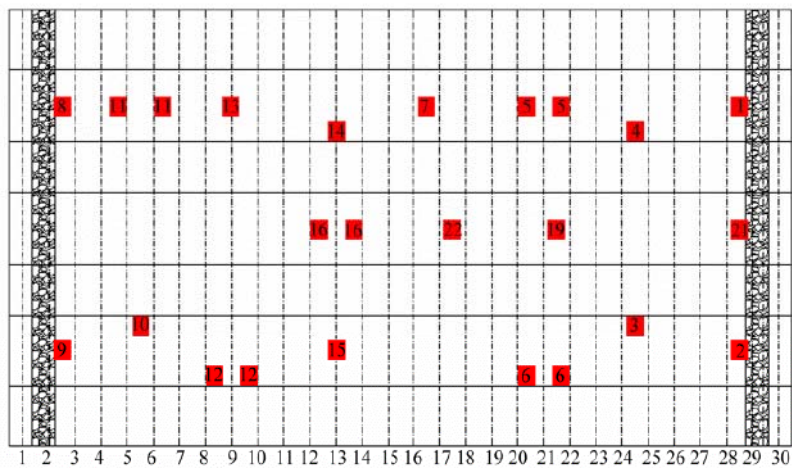
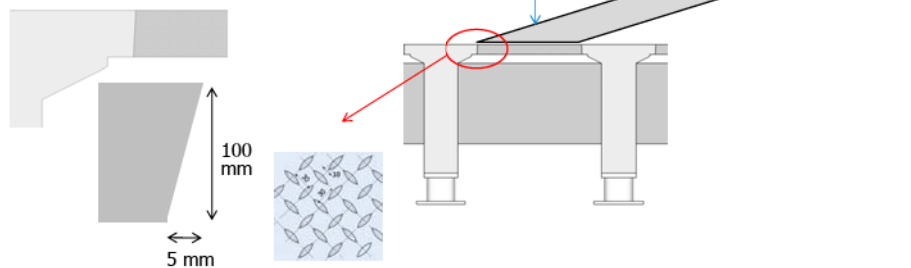
1:2 Scale Model





Parameters to be investigated

- Transverse Prestress Level : 1.25 MPa and 2.5 MPa
- Position of the load: Midspan and Close to the support
- Single and Double load (600 mm c/c)
- Skewness of Joint/Interface Properties



- The next sheets are confidential
- They are becoming available after 4th June 2014