

CIE4061 - Multidisciplinary Project, Civil Engineering Consultancy Project (MDP)

Project description



Fast railway connections Randstad – Noord & Oost Nederland

Lelylijn +

How to connect the Randstad by a fast railway track to the north and east of the Netherlands with options for an international connection to Germany?

Will the initial trajectory of the [Lelylijn](#)¹ be the ultimate connection –in the future as part of the international TEN-T network- or could an alternative trajectory² both connect to the north as well to the east of the Netherlands? Realizing entire new tracks with new building methods and techniques or making use of existing tracks combined with additional tracks where needed? Both for the initial as well for the alternative trajectory? Could an international connection to Germany also be a serious contender for short distance flights? All kind of questions which are actual due to the political agenda for a new connection to the north of the Netherlands.

Fast travelling is not only saving time but should also add user value in experiencing the landscape. A lift up track will give a completely different travel experience like a Shinkansen in Japan gliding through the landscape. It also reduces the barrier for crossing by other transport modalities. However, is a standardised and modular building method possible with innovative techniques and components? How to deal with the different soil conditions of the sub-surface? What about the vertical and horizontal alignments in order to keep sufficient speed?

For who we are looking for?

The TU Delft Deltas, Infrastructures & Mobility Initiative (DIMI) is as client looking for a multi-disciplinary student team from Civil Engineering and Geosciences who will **start and end in Q3-2023**. The team has to cover the fields of transport, railway engineering, structural engineering, construction management and geosciences. The team should attune periodically with a number of graduate students from Landscape Architecture who are doing their research on alternative

¹ Amsterdam – Almere – Lelystad – Emmeloord – Heerenveen – Drachten – Groningen.

² Indicative trajectory Amsterdam – Amersfoort - Zwolle – Groningen + Amsterdam – Amersfoort - Hengelo/Enschede.

trajectories of the initial Lelylijn and who are preparing a design proposal from a landscape perspective. There will be some funds in order to co-fund a study trip abroad related to the structural and landscape aspects. Further details will be discussed with the client as part of the project planning by the team.

What should be addressed by research and design?

The central question for this research and design project is: How to realise a fast railway connection between Randstad and Groningen and the east of the Netherlands in an innovative and cost efficient way whereby the traveller experience the landscape as a scenic journey crossing morphological barriers?

Sub-questions are: In how far could the trajectories make use of existing tracks? Which parts of the trajectories need new tracks? How to fit services in the schedule? How to design and to construct a lift up structure which won't be a barrier by itself while maintaining sufficient speed due to vertical and horizontal alignments? Which parts of the connections will benefit mostly from a lift up structure? How to design a standardised and modular structure which consists of pre-fabricated building blocks with fixed measures for the pillars and segments? How to integrate other utilities and maintenance facilities in the structure? How to deal with the different soil conditions of the sub-surface and the needed foundation for the structure? How to build the structure in an innovative way of making use of the modular and pre-fabricated building blocks? How to organize the logistics for the pre-fabrication and the build? How to deal with different power- and safety systems related to the international connections?

Not all sub-questions could be answered in full detail but we are curious for a coherent vision and integrated design with clear principles and strategies which are plausible in order to give new thoughts about the connections, structures and its building method and techniques.

The deliverables and assessment will be according to the course description CIE4061.



Gliding through the landscape



Incremental Launching Method

For information please contact

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