# Article information:

Failure analysis and countermeasures of a tunnel constructed in loose granular stratum by shallow tunnelling method - ScienceDirect  
<https://www.sciencedirect.com/science/article/abs/pii/S1350630722006380>

# Article summary:

1. Detailed failure phenomena encountered in the tunnel constructed in the loose granular stratum were introduced and analyzed.

2. The evolution of different failure modes was analyzed through DEM calculation and corresponding construction countermeasures were proposed.

3. Field deformation data of surrounding rock after treatment showed that the proposed countermeasures had a remarkable effect.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article is generally reliable and trustworthy, as it provides detailed information on the failure phenomena encountered in tunnels constructed in loose granular stratum, as well as analysis of the failure evolution and prevention mechanism through DEM calculation. It also presents corresponding construction countermeasures from pre-support, excavation, bolt driving, and collapse prevention perspectives. Furthermore, field deformation data of surrounding rock after treatment is provided to demonstrate the effectiveness of the proposed countermeasures.

The article does not appear to be biased or one-sided, as it presents both sides equally by providing an overview of the failure phenomena encountered in tunnels constructed in loose granular stratum as well as proposing countermeasures for mitigating these failures. Additionally, all claims are supported with evidence such as field deformation data which further adds to its trustworthiness and reliability.

There are no missing points of consideration or unexplored counterarguments present in this article; however, there is some promotional content present which could be seen as a potential bias. Additionally, possible risks associated with implementing these countermeasures are not noted which should be taken into account when considering their implementation.

# Topics for further research:

* Tunnel failure prevention strategies
* Risk assessment for tunnel construction
* Granular stratum excavation techniques
* Deformation monitoring in tunnel construction
* Bolting techniques for tunnel support
* Collapse prevention in tunnel construction

# Report location:

<https://www.fullpicture.app/item/975e38942739497a6271d1106c8079b0>