

Florence, Italy
30th September – 2nd October 2019

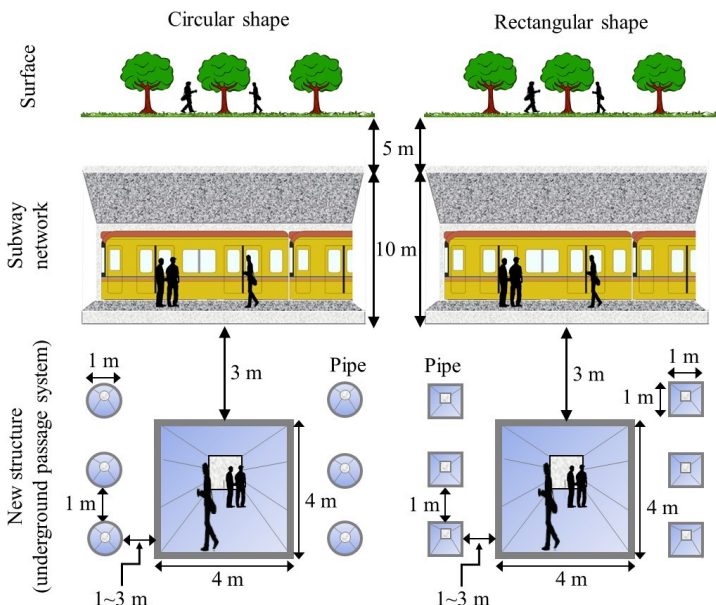
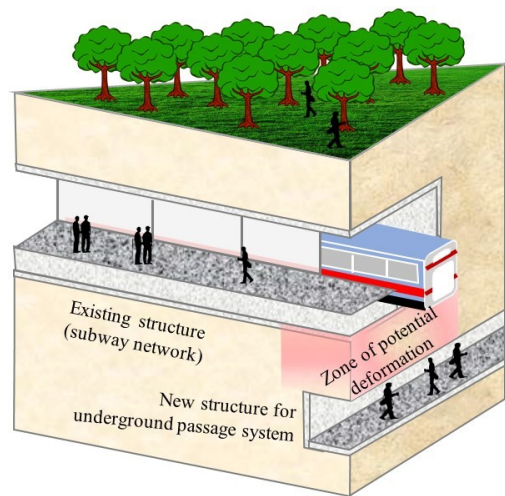
(2287)
Microtunneling/
Pipe
Jacking/Auger
Boring

STABILITY OF
SURROUNDING
SOIL BY USING
UNDER
PINNING PIPE
JACKING
METHOD

ABSTRACT

In recent years, the underground space has over-crowd with the overcrowding of urban areas. Therefore, the adjacent construction of underground structures is increasing. One of the examples of adjoining construction a case of constructing an underground passage below the existing subway. In such a construction, an influence of the construction of a new structure on the existing structure is important. In order to reduce the influence on such existing structures, application of the under-pinning method is expected. The under-pinning method is a construction method that attempts to reduce the influence on the existing structures by placing pipes around the new structure in advance. In order to ensure the effect of the under-pinning method, 3D finite element analysis was carried out. In this study, **the influence of pipe presence, different shape of pipes (rectangular and circular), distance between pipe and new structure, and distance between pipe and existing structure** was investigated.

It is found that **the under-pinning method reduces the influence of construction of new structure on the existing structure**. Furthermore, the differences of pipe shape and distance between the pipe and the new structure or existing structure are also important parameter to mitigate the deformation of surrounding ground. Therefore, **the effect of pipe shape and distance between the**



pipe shape and distance between the pipe and new structure or existing structure on the surrounding ground must not be negligible in the construction of the under-pinning method using the pipe jacking method.