



## **Concept and first results of greening of shotcrete walls along traffic infrastructure of the Brenner Base Tunnel**

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The greening of shotcrete walls represents a major challenge due to the extreme environmental conditions for plants and its technical implementation aiming to establish a vegetation layer, taking into account not only the construction phase but also the sustainable development of plants. Therefore a concept research study was designed and experimental plots have been established to carry out the research work under real environmental conditions. The study site is located in Steinach am Brenner/Tirol.

The objective of the study is first the assessment of the particularly soil material as potential plant substrate and second the investigation of the plant development. The soil material was partly gained in the course of the tunnel construction of the Brenner Base tunnel.

The basement is a steel grid construction fastened directly to the wall, filled with three different soil types: Quarzphyllit (phyllite) and Bündler Schiefer (schist) representing excavation material of the tunnel construction and externally purchased Granit (granite). Finally the whole structure was greened with a specific seed mixture by means of hydroseeding.

Vegetation surveys of the growing season 2015 were analyzed regarding the species composition and vegetation coverage of the test fields.

The paper presents the working steps of the construction procedure, difficulties and challenges during the construction phase. First results of the growing season 2015 show, that the aim of a total vegetation coverage is most likely to be achieved using Bündner Schiefer (75% coverage) as filling material, beside Quarzphyllit (30% coverage) and Granit (67% coverage).

Furthermore an outlook to the ongoing research work on the following years will be provided.