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PROBLEMATIKA PROJEKTIRANJA GEOTEHNIČKIH OBJEKATA U MEKIM STIJENAMA NA PRIMJERU LAPORA

Sažetak:

Osim relativno male čvrstoće, promatrano u rasponu stijena, specifičnost mekih stijena je i relativno brza degradacija te čvrstoće uslijed razvoja procesa rastrošbe (eng. weathering). Degradacija je odvija u inženjerskom rasponu vremena odnosno vremenu korištenja građevine. Iz tog razloga kosine iskopane u mekim stijenama postaju nestabilne iako proračuni pokazuju zadovoljavajuću stabilnost., u nasipima izrađenim od mekih stijena opažaju se neočekivana dodatna slijeganja koja se ostvaruju u razdoblju više godina nakon izgradnje, a proračuni nosivost takvih materijala se teško rješavaju zbog problema dobivanja neporemećenih/nerastrošenih uzoraka za ispitivanje svojstava potrebnih za analize. U radu se ukratko navode osnovni procesi koji zajedno čine proces rastrošbe u mekim stijenama te komentiraju osnovni problemi koji proizlaze kao posljedica tog procesa, kao i prijedlog načina rješavanja. Komentari su izrađeni na osnovi primjera lapora iz naslaga Eocenskog fliša na području Dalmacije (Hrvatska). Kosine iskopane u mekim stijenama potrebno je na površini zaštititi od razvoja rastrošbe i onemogućiti njenu penetraciju u unutrašnjost mase. Time se onemogućava formiranje kliznih poha po plohama/zonama u kojima je čvrstoća degradirana. Nasipe od lomljenog lapora potrebno je graditi s materijalom koji ima takav granulometrijski sastav da sadrži dovoljno sitnih zrna koje će popuniti "makropore" između krupnih zrna. Time će biti onemogućen transport dijelova većih zrna odvojenih raspucavanjem, a time i dodatno slijeganje nastalo uslijed urušavanja strukture čestica u nasipu.

Ključne riječi:

meka stijena, rastrošba, stabilnost kosine, nasip

GEOTECHNICAL ASPECTS OF STRUCTURES' DESIGN IN SOFT ROCKS WITH MARL AS EXAMPLE

Summary:

In addition to relatively low strength, observed in the range of rock strength, the specificity of soft rocks is also relatively rapid degradation of this strength due to the development of weathering. Degradation takes place in the engineering range of time or time of use of structures. For this reason, slopes excavated in soft rocks become unstable, although the calculations show satisfactory stability, in the embankments made from crushed soft rocks, unexpected additional settlements are observed over a period of several years after construction, and calculations of the bearing capacity of such materials are difficult to solve because of the problems of getting undisturbed/unweathered samples to test the properties required for analysis. This paper is a briefly state of the basic processes that together form the process of weathering in soft rocks and comment on the underlying problems that arise as a consequence of this process, as well as a proposal of the methods of solving them. The comments were made on the basis of the example of marls from the Eocen flysch deposits in Dalmatia (Croatia). For cuts excavated in soft rocks is necessary to protect the surface from the development of weathering on the surface and prevent its penetration into the interior of the mass. This prevents the formation of slides in the zones where the strength is degraded. Embankment made from crushed marl must be constructed with a material having a particle size distribution that contains enough small grains to fill the "macropores" between the large grains. This will prevent the transportation of grain segments separated by crushing, and thus the additional settlement caused by the collapse of the grain structure in the embankment.

Keywords:

soft rock, weathering, slope stability, embankment

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