NON WOVEN GEOTEXTILES USED IN TAILING DAM

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ABSTRACT- *In fifiltration and drainage of geotextiles have used the non woven geotextiles. In this paper we focus study on the use of materials in drainage and fifiltration systems of tailings dams. But in this parer having different collection of geotextiles and tailing on the bases distinct stress value and hydraulic gradient. In this paper presented results of GR test under at confifing stresses. The tailings particles dimensions is implicate, the getted result that in influence behavior the hydraulic gradient are used. The system According to get final results stress levels and hydraulic gradients concerned nature of system .The specimens test analyses that having physical and microscopic that getted result greater geotextiles penetration in field by talling particles*

.The gross performance are acceptable. The suspension in field discrimination that can subject transport iffier more complex and talling particles

Key Words: Geotextiles, Hydraulic gradient, Filter, gradient ratio, Geotextiles specimen.

1. INTRODUCTION

Geotextiles are porous fabrics which, when utilized in corporation with soil and have ability to separate, protect and filer reinforce. Non woven geotextiles are permeable geosynthetics 161 made of nonwoven materials such as rock and soil as an integral part of civil engineering project. There are most important components in grotextiles engineering pojectdarinage and filtration. Drainage systems may have AFFECTED on the stability conditions of such projects. In Drainage system used in drainage materials such as sand and garvels for a long time because Geotextiles are more recent materials that show increasing acceptance through geotechnical engineers. Geotextiles are easy to install and because of the increasing knowledge, such as cost-effectiveness and confidence on the behavior and performance of geotextile filters. The utilization of synthetic drainage and filter systems in mining .Projects of drainage and filtration systems can be constructed very quickly in many mining applications but some conditions developed complex flow in mining complex such as aggressive construction and tailing s diversity. To a better understanding in mining projects on the geosynthetic drainage system is needed more research in drainage systems The use of geotextiles is finish 30 years in miming projects. Bentel et al. (1982) Nonwoven needle-punched geotextiles is used gold mine tailings dams in South Africa, which give most advantage in reduce cost of construction reduce in time. In Montez (1987) Dam uses of tailing dam is successful at 48 m and 78 m high where different materials drainage components used in different drainage dams. Mansel dam is a example of success use of geotextiles which reduce water content. Eego tailing dam is drainage systems dam established in South Africa which interconnected to rain fall of the ferric hydroxide $Fe(OH)_3$ on but granular filters been used. , Mendonça (2000), Abromeit (2002) and Mendonca and Ehrlich (2008). Ochre mationfor and eventually complete clogging of granular fifilters in some Brazilian embankment dams are reported by Infanti Jr. and Kanji (1974), Ferreira (1978). Abadjiev and Kaltchev (1990) execute permeability tests on specimens collected from geotextiles. Reductions in geotextile permeability is 40 times with time which is depend on decomposition process and woven geotextiles is replacement by selected and protect from hydraulic fifiling stream. The high stress levels is frequently >1000 kPa which is depend height unit weight and tailings unit weight. The stress level can easily overcome 1000 kPa because compressible materials because achievement of geotextiles filters having under high stress level. The geotextile retention capacity is increase by seepage force of loose soils particles and distressed the geotextiles decoy obstruction performance under such high stresses because this reduce the geotextiles pore space .The design benchmark available (Gardoni and Palmeira, 2002) which is not take into account the effect of such on the obstrution potential and retention capacity of geotextile filters.

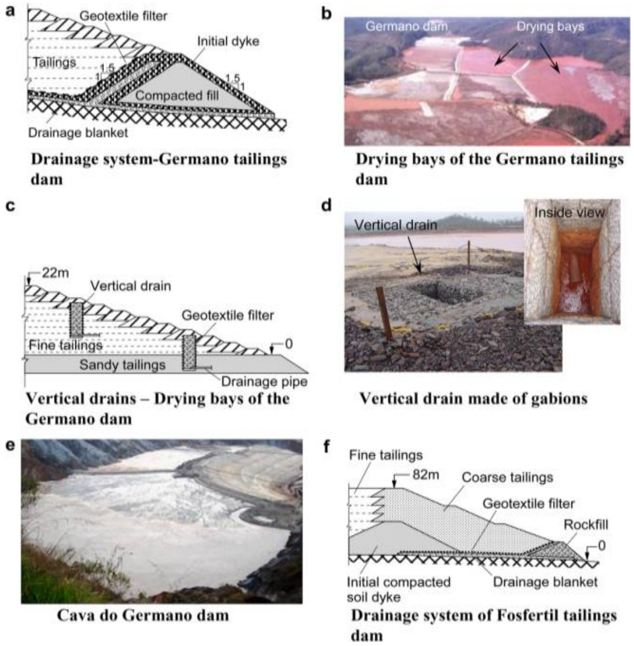

Fig.1: Tailing dams

The faces several problems at use time of geotextiles filters in tailing dam because due to installation problems and operational conditions, complex fluid nature and flow conditions, high stress levels, heterogeneity of tailings usually limited knowledge on the geotechnical properties and behavior of tailings. These filters are easier to set up due to properly specified. Substitute traditional granular materials, which insufficient in the region of the dam or its utilization forbidden by environmental law. Research is needed to performance of geotextile filters under such conditions and the gradient ratio test can be useful to investigate the compatibility between tailings and geotextile filters under different conditions of hydraulic gradients and confining stresses. In this paper, talk over the conclusion of gradient ratio test which execute on the system but this system consists from nonwoven geotextiles ,iron, phosphate .But in this paper the main focus on investigate the achievement of the geotextiles filters in common tailing but Brazil is typical tailing example of the such building.

3. Testing methodology and materials

3.1 Materials

Three types of tailings collected from the tailings dams

Table 1(average grain size)

Properties	FA	SA	SL
D_{15}(mm)	0.066	0.033	0.007
$D_{50(mm)}$	0.128	0.065	0.041
$D_{85(mm)}$	0.251	0.105	0.099
C_u	3.7	2.6	9.2
C_c	0.9	1.0	0.8
%<0.074mm	29	66	72
$R_{s(gm/cms)}$	3.46	2.97	3.12

Table 2(geotextiles properties)

Geotextiles code	tGT(mm)	MA(g/m^2)	FOS(mm)	Km (m/s)	J(s1)	Df(mm)
G1	2.32	0.93	0.13-0.23	.004	1.9	.027
G2	3.74	0.92	0.09-0.16	.004	1.1	.027
G3	34.5	627	0.90-0.06	.004	0.9	.027

In Table 1 which is represent the characteristics average grain size distribution curves of tailing particles .The Tailings SA is also a sandy material which is collected from the Cava do Germano dam, where tailings is a fifiner material which is also collected from the drying bays of the Germano dam. The fifine content of the tailings fifine content which less than 0.074 which is also discrete between 29% and 72%,rhese discrete depend on tailing examine .During filtration test ,the fifiner particles are proficient of transfer approaching geotextiles filter which is depend on the internal stability According to Kenney and Lau (1985) internal stability criteria, tailings FA and SL are classified potentially internally unstable materials (Beirigo, 2005).due for some systems that is crystal that perform geotextiles filter is adequate . The results show alkaline materials and pH and cation exchange capacity values that favour the reduction and solubility of minerals such as soluble iron, which appears in high concentrations in all materials tested. Under favourable conditions minerals can precipitate and increasing fifilter clogging potential. Three types of nonwoven, needle-punched, geotextiles made of continuous fifibres of polyester. The mass per unit area of the geotextiles tested which is differ among 200 g/m2 and 627 g/m2.

3.2 Tests under varying hydraulic gradient

Tests of fluctuate system hydraulic gradient transported in this tests the soil-geotextile system was in inflict to values of gradient of 1, 2.5, 5 and 10 under normal stress. After coming Large value of hydraulic gradient for change then system put to normal stress if soil sample having become different from 0 to 2000kpa.

3.3 Test apparatus

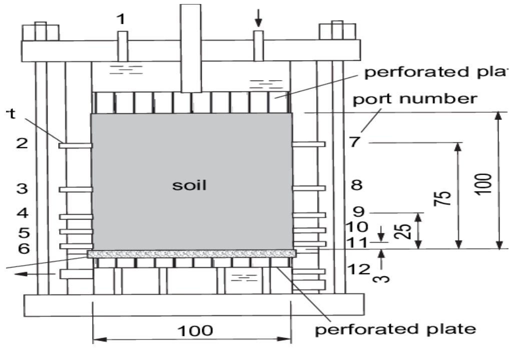

Fig.2: Gradient ratio equipment

Gradient Ratio Test Apparatus (AIM 251)

They defined it as **gradient ratio** which is the **ratio** of hydraulic **gradient** through the geotextile plus 25.4 mm of the soil to that of hydraulic **gradient** through the adjacent 50.8 mm of the soil. It is determined after 24 hours of flow. Rigid perforated plate, this plate is a way because through it the soil particles transition to lower chamber, but after this test the laser beam is a grain size instrument which consider the grain size. The readings of water head variations allow the determination of the gradient ratio (GR) by different definitions

Conclusions

In this investigation we study result by all investigation that on based compatibility between tailing non wovens geotextiles in gradient ratio test under restriction.

By investigate find conclusion that the maximum entrapped particles size depend on sizes level and flow condition but in tailing dam the behavior of geotextiles filter is very complex but the methodology test produce more accurate results.

The dimensions of tailing particles depend on the level of saturate of geotextiles and hydraulic gradient and stress level.

The change effect on gradient ratio by increasing the stress level in the non woven s geotextiles filter region which is depending on the flow and particles structure at tailing filter interface

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