

Weathering susceptibility of rock slope in Korea expressway

Sung-wook Park¹, Gi-seong Jeon², and Eun-soo Hong¹, Sang-jun Im³, Je-man Lee³

¹HBC Inc., Korea, ²Korea Expressway Corporation Research , Institute, Korea, ³Seoul National University, Korea

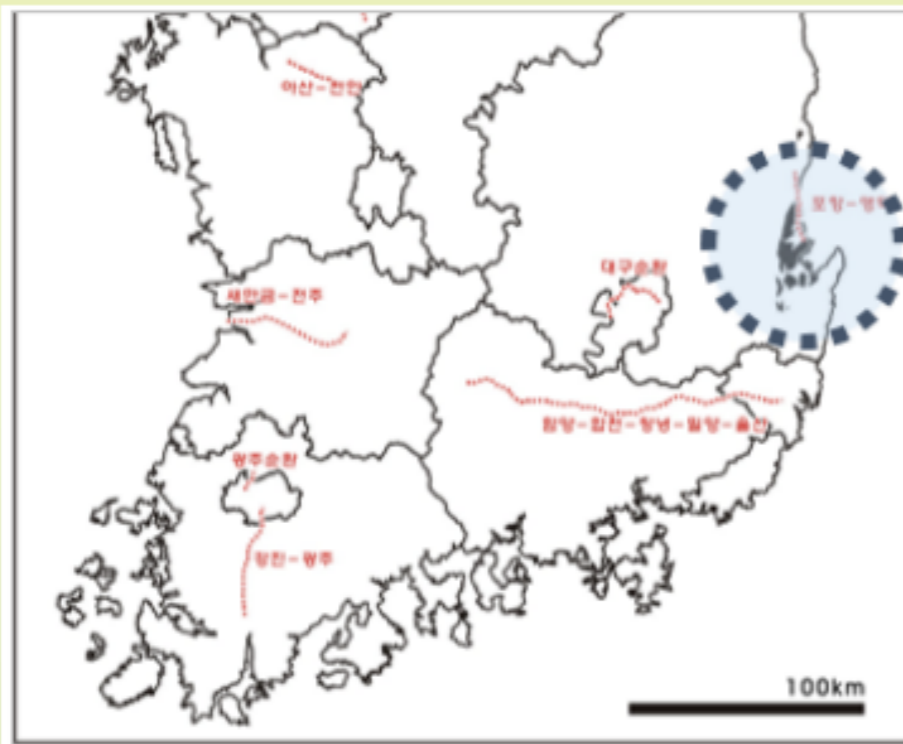
1. Abstract

Cut slopes have been inevitably formed along hillslopes as a results of public road construction. Soil-media hydroseeding measures is the most widely employed techniques among different 20 revegetation methods of exposed slopes published in the expressway design manual of Korea. we performed the weathering susceptibility test of mud stone in cut slope along Daegu-Pohang expressway in Kyungnam province. The slake durability test, swelling strain test and freeze-melting test show that soil-media hydroseeding measures prevent wethering process rather than non measured rock slope.

2. Study area

Mud stone of cut slope along Daegu-Pohang expressway in Kyungnam province

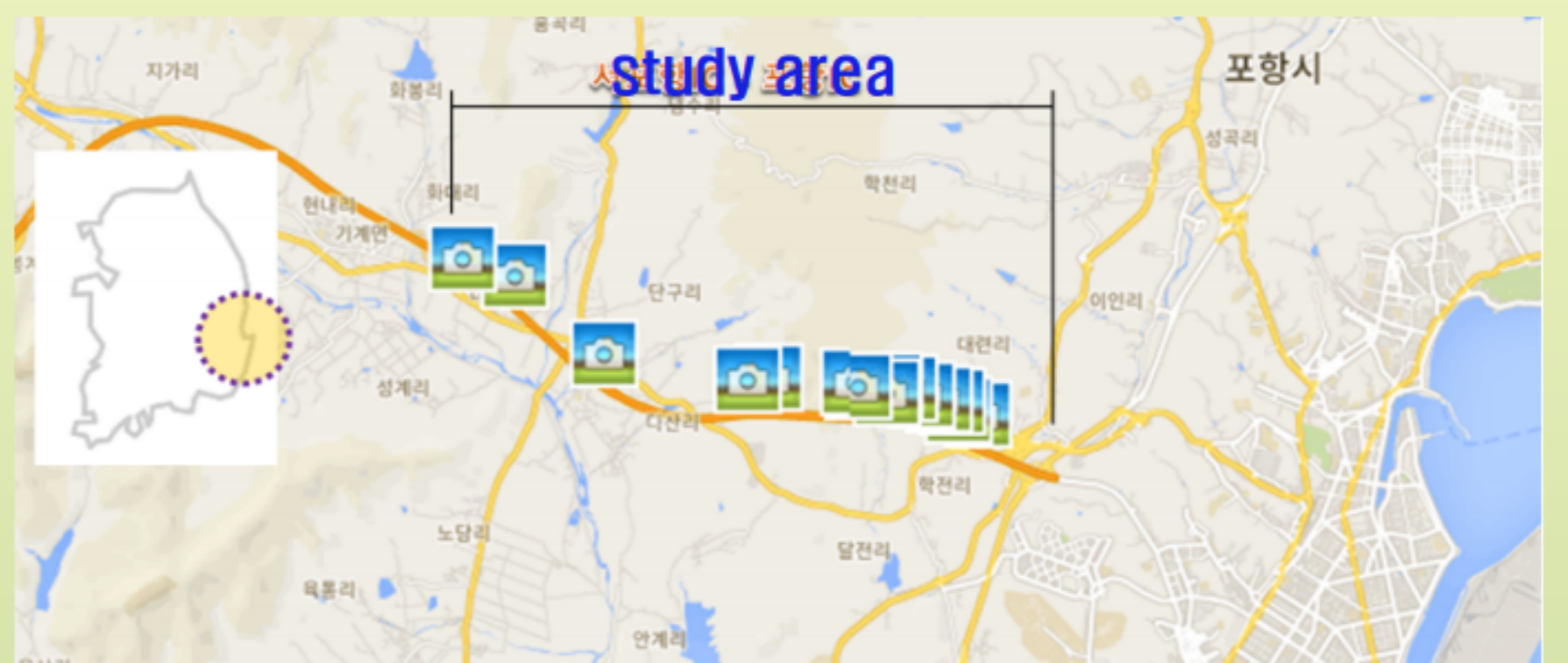
key-map



geological map



study area along Daegu-Pohang expressway



3. Slake Durability Test

Slake durability test were conducted respect to soil-media hydroseeding measured samples and none-measured one. The test result shows that soil-media hydroseeding measured slope tend to retard weathering process compare to none applied slope.

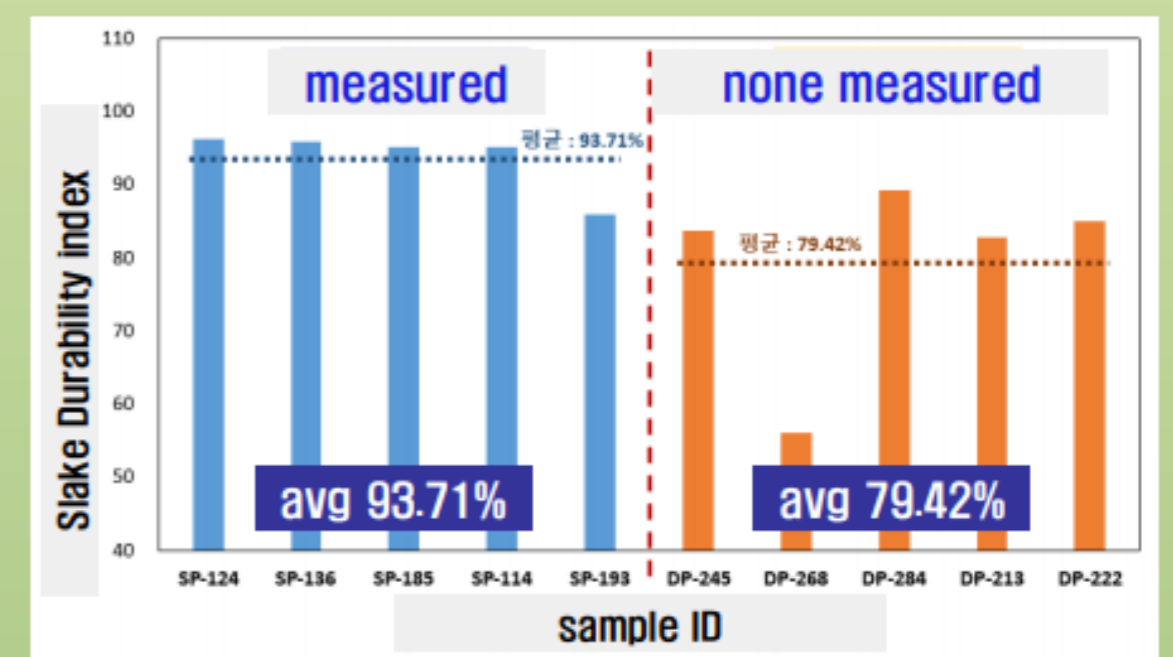
test apparatus



result table

sample	slake durability		classification (Gamble, 1971)	
	(%)	(%)		
Soil-media hydroseeding	SP-124	98.25	96.30	High Durability
	SP-136	98.39	95.93	High Durability
	SP-185	96.60	95.07	High Durability
	SP-114	97.14	95.22	High Durability
	SP-193	92.98	86.01	Medium High Durability
none measured	DP-245	92.07	83.78	Medium Durability
	DP-268	76.37	56.08	Low Durability
	DP-284	94.16	89.29	Medium High Durability
	DP-213	90.53	82.85	Medium Durability
	DP-222	91.48	85.07	Medium High Durability

result graph

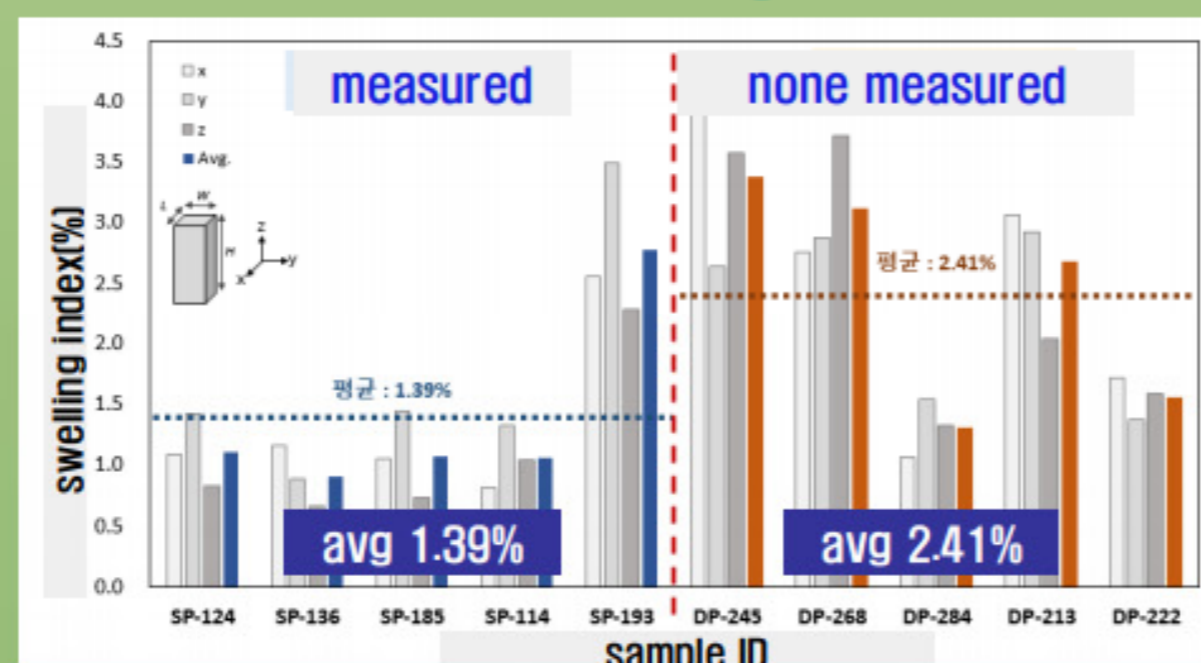
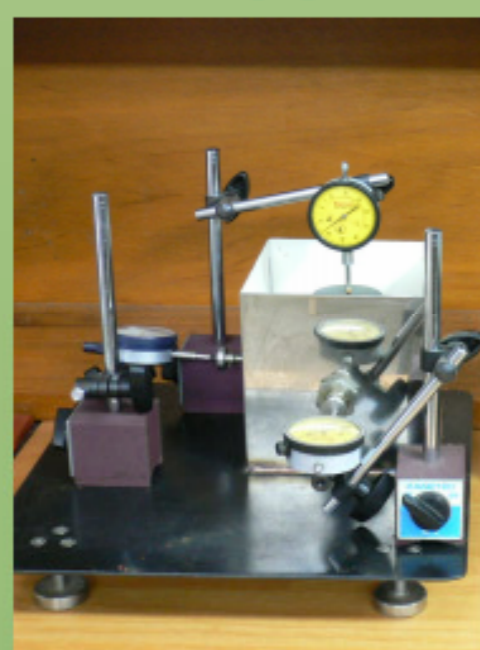


result graph

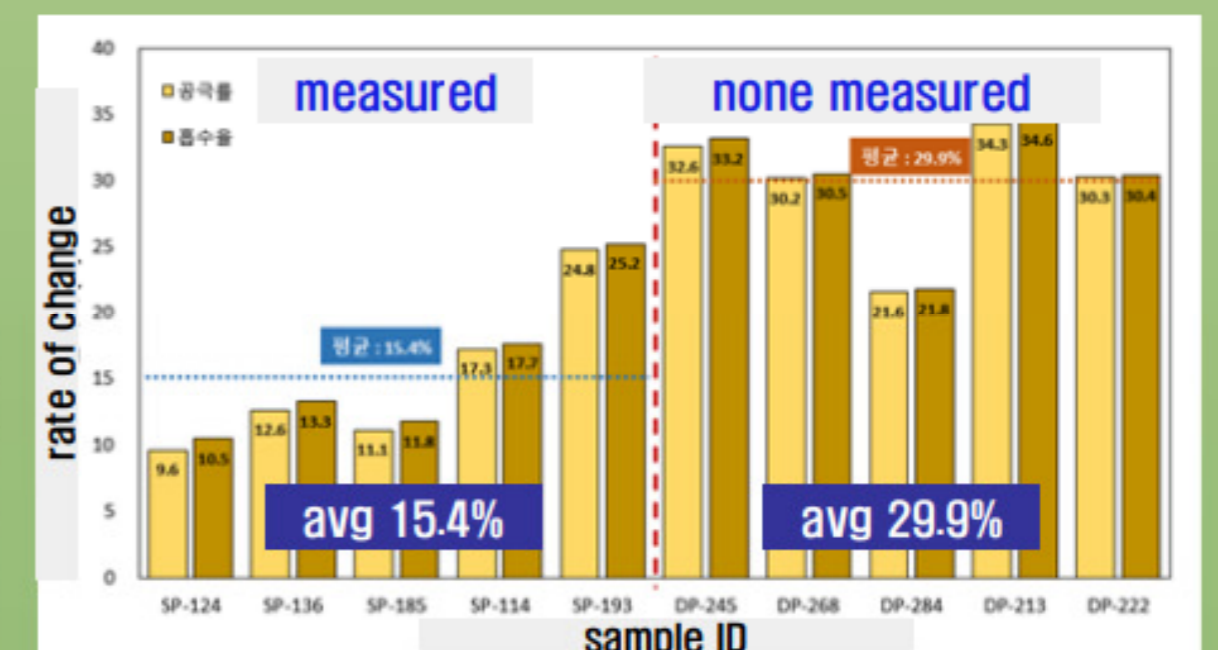
4. Swelling Strain and freeze-melting Test

Swelling Strain and freeze-melting Test were conducted and shows similar result as that of previous one. The change rate of respect to soil-media hydroseeding measured samples and none-measured one shows that soil-media hydroseeding measured slope tend to delay weathering process compare to none applied slope.

test apparatus and result(swelling)



test apparatus and result(freeze-melting)



5. Conclusion

- 1) In the test for weathering susceptibility analysis, a slake durability test, an expandability test, and a freeze-melting test were performed on 5 soil-media hydroseeding measured slope samples, none applied 5 slope samples and a total of 10 samples.
- 2) All of test shows that the rock tends to be higher in durability on the slope of soil-media hydroseeding measures sample rather than none applied, so it is judged that the application of the measures delays the weathering progress of the rock.