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Cavitation erosion of concrete irrigation structures

This study was carried over defective irrigation structures in system-H under Mahaweli Authority of Sri Lanka and the project is about studying and repairing methods of defects in irrigation structures. Mainly in here, cavitation erosion, abrasion erosion, chemical erosion, boundary layer effect on erosion was studied and suitable repairing methods are proposed. After that selected defective irrigation structures were studied and some defective structures were repaired using the methods proposed in this study.

Aeration method was used by constructing air-mixing structures against cavitation erosion and has been used as a repairing method on concrete lining irrigation canals and drop structures. Observations made after eleven months of constructing air mixing structures, this repairing method appears to be successful. Optimal aeration lengths for different cross sections and different bed slopes of concrete lined canals were evaluated by using theoretical equations with practical data. An aeration technique to prevent the cavitation damage of spillways was proposed.

Surface coating of polymer-resin mortar system which is a suitable but very expensive method to repair eroded concrete, random rubble or brickwork irrigation canals was studied. Jacket wall system which is a suitable repair method for eroded random rubble masonry retaining walls at the irrigation canals was studied and applied on selected irrigation structures and found to be a successful repairing method.