

# 水庫淤泥資材化應用於地工砂袋填料之探討

吳淵洵, 林義堅

土木與工程資訊學系

工學院

jasonwu@chu.edu.tw

## 摘要

Most of the reservoirs in Taiwan have experienced serious sediment accumulation problems. Therefore, the clean-up of reservoir sediments (RS) and its resource recovery becomes critical issues for national security and economical development. Controlled low strength material (CLSM) or AKA flowable fill is an excellent alternative for backfill construction. It is an ideal solution for poor backfill workmanship and shortage of aggregate materials in Taiwan. However, RS has never been used in backfill construction or CLSM because of its high water content and plasticity. This research studied the possibility of using RS in flowable fill together with geobags for backfill applications. The study was base on laboratory experiments to observe the engineering properties of the proposed CLSM and the effect of confinement supported by geotextile. Tests included specimen preparation, physical properties, flowability, set time, bleedings, and unconfined compression tests. The test results showed that RS contains plastic fines with high water content. However, it can be used for producing of acceptable flowable fill through proper mix design procedures. Considering the requirements of backfill applications, this study recommends a W/S ratio of 0.7 and a C/W ratio of 0.4 can be used for the design. Geotextile presents strong confining effect on the strength increase for the hardened flowable fill. The highest increment observed was 86%. However, the stronger of the sample, the lower increment it will have. For samples with strength over 1,000 kPa, the geotextile no longer presents noticeable confinement. The results tend to reuse reservoir sediment, save natural resource of granular fill, and ensure the quality of backfill constructions in most cases.

關鍵字：reservoir sediment, backfill, flowable fill, CLSM