Project Title	*Agmt./Task No.*	*Item No.*	*Agency Bgt. No.*
SPR-3(072) Strength and Deformation of Mechanically Stabilized Earth (MSE) Walls at Working Loads and Failure	**SPR-3(072)**		
Research Agency	*Start Date*	*Estimated Completion*	*Revised Completion*
Royal Military College of Canada	**12/1/99**	**04/30/04**	**12/31/08**
Principal Investigator(s)	*Technical Contact*		
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Funding Source	*Schedule Status*		
WA, NY, ID, CA, WY, ND, MN, OR, AZ, AK	☐ On schedule ☐ Ahead of schedule ☒ On revised schedule ☐ Behind schedule		
Research Area			
Geotechnical			

Original Estimated Cost	*Revised Cost*	*% Funds Expended*	*% Work Completed*
$360,104	**$690,000**	**65%**	**75%**

Objective

Develop a design procedure for the internal stability of MSE walls, especially those reinforced with fabrics.

Project Progress:

1. Wall 12 - the first full-scale reinforced soil wall of Phase 5 testing at RMC has been constructed. This wall was constructed with a silty-sand backfill corresponding to a non-select backfill. More than 300 instruments are being used to monitor its performance. The structure is now under surcharge loading to record its performance under serviceability conditions and under surcharge load levels taken to collapse.

2. Current AASHTO (USA) and BS8006 (UK) methods for the design of geosynthetic and steel reinforced soil walls were reviewed and four journal papers submitted for review. These papers clearly identify under what circumstances current design methods for these systems are conservative or non-conservative.

3. A paper describing the new modified K-stiffness Method for cohesive-frictional soils was accepted for publication in the Canadian Geotechnical Journal. A second paper that finalizes the new methodology using a large number of battered wall case studies from the Japanese literature has been completed and will be submitted for publication in the next month.

4. Numerical codes calibrated against RMC full-scale walls were completed and are now being used to extend the results of the physical data base to a wider range of wall types, reinforcement layers and types, different soils etc. Three papers have been accepted for conferences in the next 10 months and will be extended to journal papers during the summer of 2007.

New Period Proposed Activity:

Wall 12 will be completed this summer and the second wall in Phase 2 will be constructed. Numerical modeling and modified K-Stiffness method resulting from the addition of the Japanese case histories will be added to the database (primarily the addition of a soil cohesion factor) within the next two quarters. A report will be available to the TAC by the end of that period.

The next test wall will be built starting in late summer, and the other will be built next year. The effect of wall height on the K-Stiffness prediction is also being evaluated – there are several very tall walls from which that information will be gleaned -

hopefully, that too will be assessed by the end of this year. Also, data gathering on the reinforcement strains/loads at the connection to the wall face is being performed (this is a critical design issue for stiff faced walls such as modular block faced walls).