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(Supplementary File)

Long-term Deformation Mechanism of Masjed-e-Soleyman High Rockfill Dam

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This supplementary material provides additional figures and detailed data that complement the analysis and discussion presented in the main manuscript. The supplementary figures illustrate the pore pressure evolution, settlement patterns, and deformation behavior during various stages of construction and the initial impounding of the Masjed-e-Soleyman Dam. These figures help visualize the changes in pore pressure, settlement, and stress redistribution within the dam body, particularly in the core and upstream shell.

Additionally, this material includes supporting data from the three-dimensional numerical simulations used to model the dam's behavior. The results provide a more in-depth look at the long-term stability and deformation characteristics, highlighting the interactions between pore pressure, stress, and material properties under varying hydraulic conditions.

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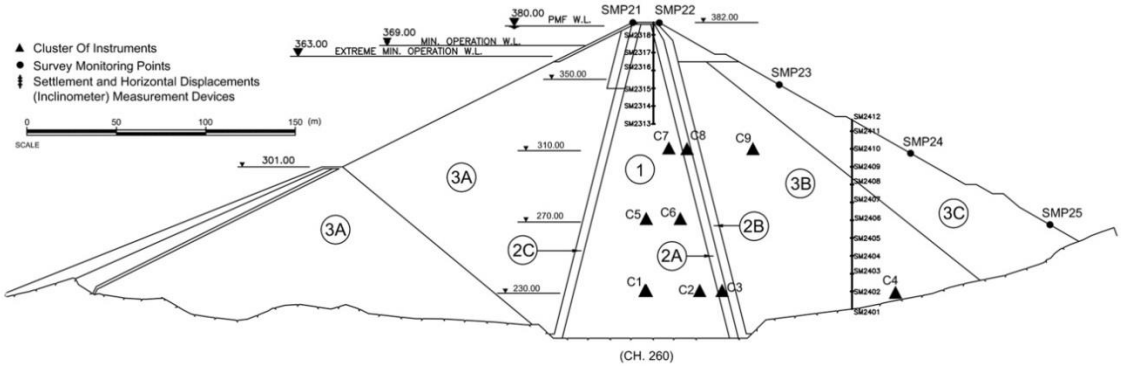

Fig. 1-Supplementary. Dam regions and undamaged instruments retirements (CH.260)

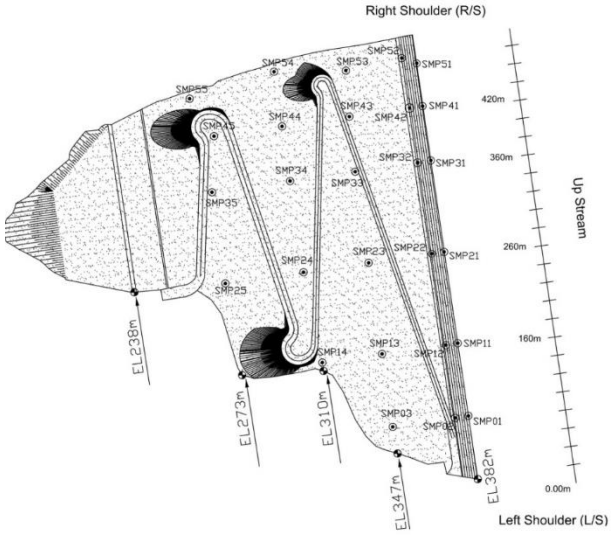

Fig. 2-Supplementary. Survey measurement points (SMP) arrangement

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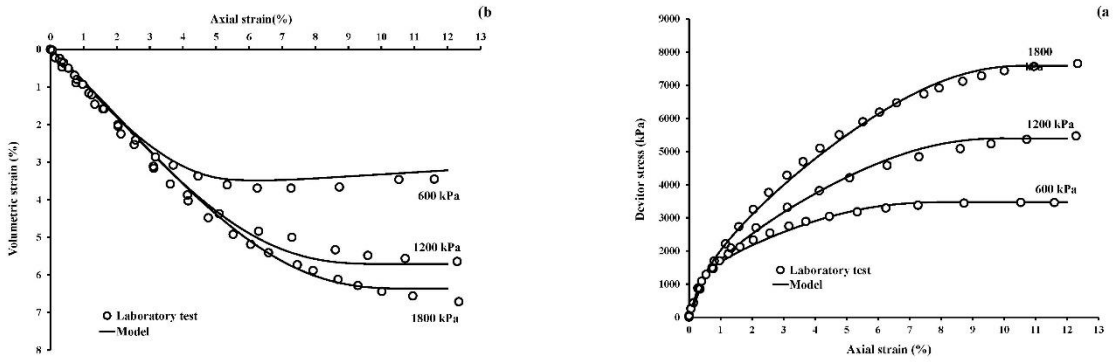
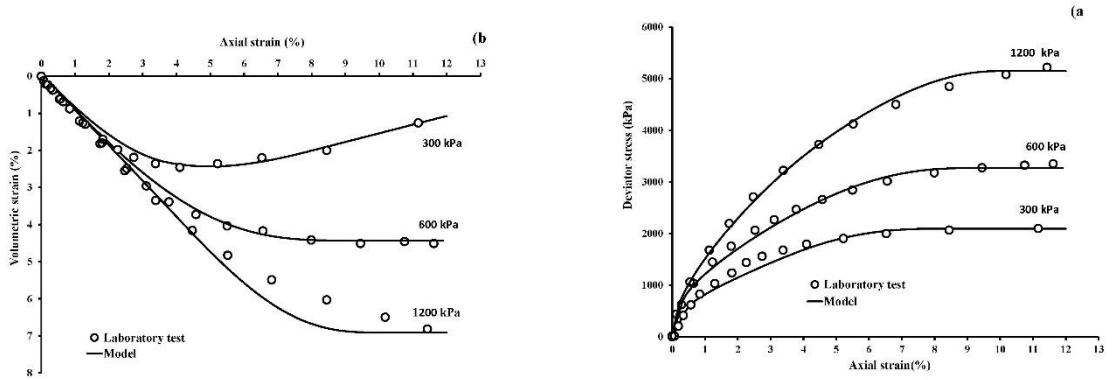


a) Dry condition



b) Saturated condition

Fig. 3- Supplementary. Comparison of modeled and results (from the triaxial test) for rock-fills in regions 3A and 3C

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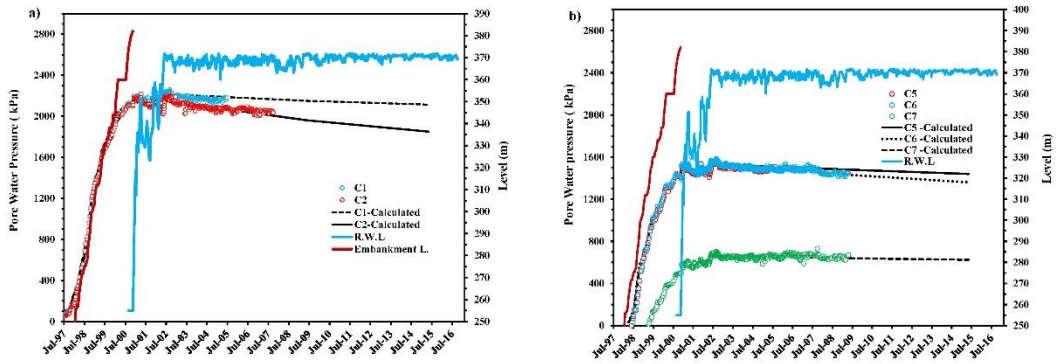

Fig. 4-Supplementary. Comparison of measured and calculated results (excess pore water pressure) within the core (CH.260)

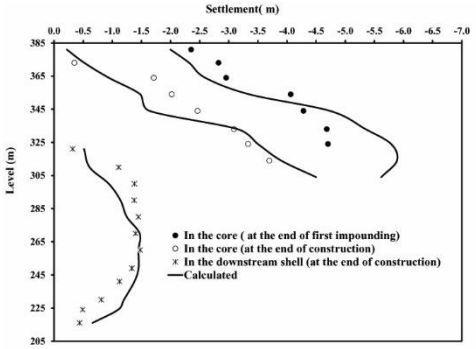

Fig. 5-Supplementary. Comparison of measured and calculated results (settlement) in the core centerline and downstream shell (CH.260)

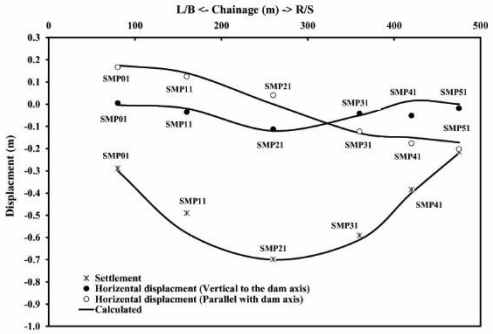

Fig. 6-Supplementary. Comparison of measured and calculated results (surface displacements) in upstream of the crest

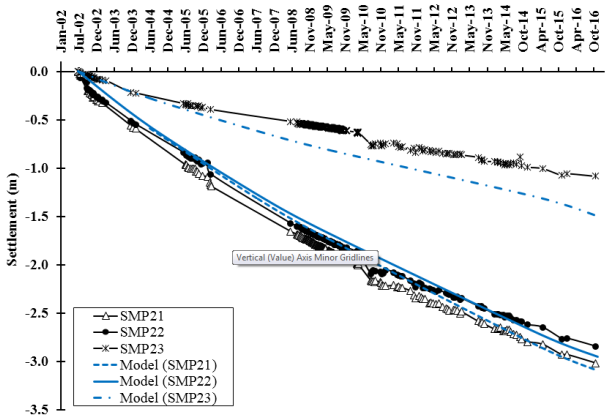

Fig. 7-Supplementary. surface settlement - time results (CH.260)

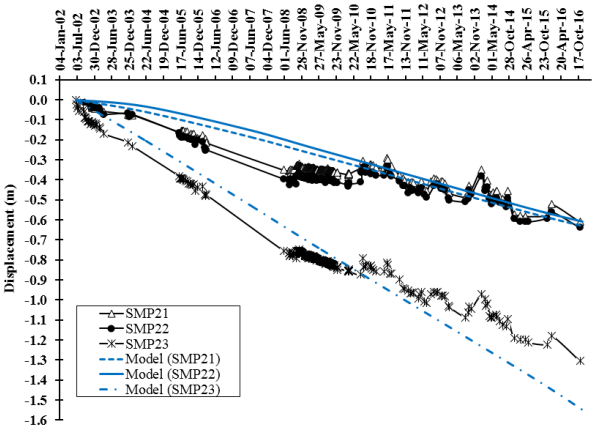

Fig. 8-Supplementary. Horizontal surface deformation - time results (CH.260)

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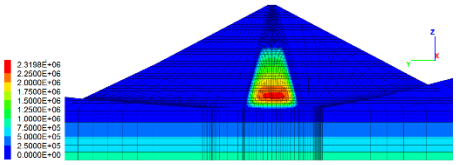

Fig. 9-Supplementary. Pore water pressure (end of construction)

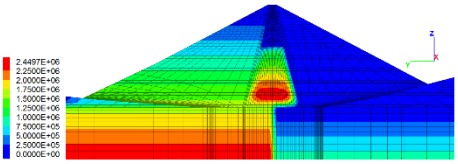

Fig. 10-Supplementary. Pore water pressure (end of first impounding)

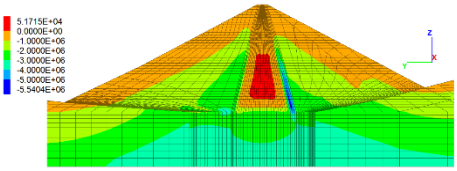

Fig. 11-Supplementary. Effective vertical stress (end of construction)

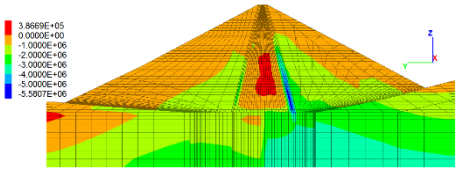

Fig. 12-Supplementary. Effective vertical stress (end of first impounding)

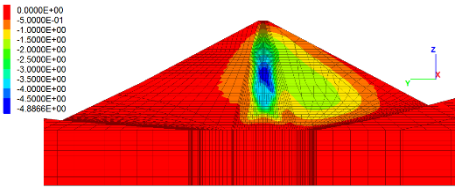

Fig. 13-Supplementary. Settlements (end of construction)

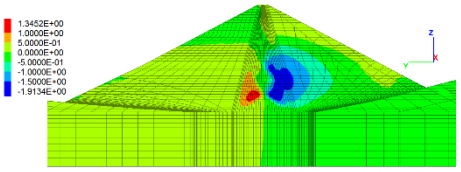

Fig. 14-Supplementary. Horizontal displacement (end of construction)

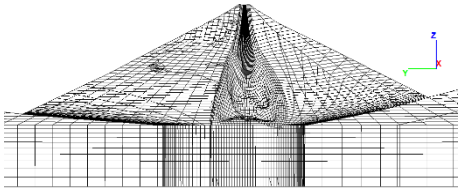

Fig. 15-Supplementary. Deformed mesh with scale 10:1 (end of construction)