

**Development of a Virtual Reality Excavator Simulator:
a Mathematical Model of Excavator Digging and a Calculation Methodology**

Borinara Park

Dissertation submitted to the faculty of the Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
in
Environmental Design and Planning

Dr. Ron Wakefield, Chair

Dr. Yvan Beliveau

Prof. Dennis Jones

Dr. John Perumpral

Dr. Walid Thabet

October 31, 2002

Blacksburg, Virginia

Keywords:

Virtual Reality Simulator, Excavator Digging, Soil Resistance Model, Simulation Methodology

Copyright 2002, Borinara Park