

## **Introduction**

This report provides documentation for a computer program named “SetCalc 1.0”, which was developed by the Center for Geotechnical Practice and Research (CGPR) in the Department of Civil and Environmental Engineering at Virginia Tech. SetCalc 1.0 can be used to compute primary consolidation settlement or rebound caused by foundation and fill loads, reduction in stress due to excavation, and increase or decrease in effective stress due to changes in water table elevation. Foundation loads, fill loads, and excavation loads can be represented as point loads or uniform pressures distributed over rectangular areas. Stress changes are calculated using both the Boussinesq and the Westergaare theories.

The following sections of the report describe the features of the program, suggest how it can be used efficiently, and describe the methods of analysis and assumptions it employs.

## **Features**

Setcalc 1.0 has the following features:

1. SetCalc computes settlement and/or rebound caused by changes in load at or near the ground surface, and by changes in water table elevation.
2. SetCalc uses both the Boussinesq and the Westergaard equations to compute changes in stress due to point loads and rectangular loads, and these changes in stress are used to compute strains in the soil and settlements or rebounds.
3. SetCalc can be used to compute settlements for normally consolidated, over-consolidated, and under-consolidated soils.
4. SetCalc checks data as it is entered to determine if it is valid. Before computing stresses and settlements, the program checks all the data for logical errors.
5. There is no limitation for the number of point loads, rectangular loads, soil layers, and settlement points that can be included in a SetCalc analysis.
6. SetCalc can open data files from the computer program ZStress 2.0.

## **Program Operation**

### Installation

- 1) Run setup.exe, from the SetCalc 1.0 CD.
- 2) Click OK.
- 3) Change directory if desired and click the installation button.
- 4) Click Continue.
- 5) Answer the prompts if any appear.
- 6) Click OK.