



AIR/W completes the (u_a-u_w) matric suction phenomenon.

TEMP/W results in AIR/W

Temperatures can be used to change air density.

Convective Heat Flow TEMP/W can use





SEEP/W° 2007

Density-Dependent Flow

In density dependent fluid flow, the velocity of the water is dependent on the solute concentration. The water velocity in turn influences the movement of the solute SEEP/W and CTRAN/W therefore need information from each other. The iterative transfer of water velocity from SFFP/W to CTRAN/W and the transfer of concentration from CTRAN/W to SEEP/W makes it possible to do density dependent fluid flow

analyses.

SEEP/W results in CTRAN/W

CTRAN/W

2007

One of the major components in a contaminant transport analysis is the velocity of the water, which can be obtained from a SEEP/W analysis. Once this velocity is known, it can be used in CTRAN/W to study the transport of contaminants.

Water velocities computed by a be used in CTRAN/W to study the transport of contaminants. For example, you can then analyze contaminant flow from waste ponds that



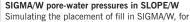
VADOSE/W° 2007

SIGMA/W coupled with SEEP/W

SIGMA/W essentially solves equations of equilibrium while SEEP/W solves equations of continuity. A consolidation analysis solves both sets of equations simultaneously and results in both deformation and pore-water pressure changes with time. Running SIGMA/W and SEEP/W at the same time makes it possible to do fully coupled consolidation analyses.

SIGMA/W pore-water pressures in SEEP/W

Excess pore-water pressures generated during any kind of loading (fill placement, for example) can be taken into SEEP/W to study how long it will take for the excess pore-water pressure to dissipate. This can help with specifying the rate of loading.



example, may create excess pore-water pressures in the foundation. These SIGMA/W excess porewater pressures can be used in SLOPE/W to analyze the stability during construction and at the end of construction. This could help with deciding the need for staged loading.

SIGMA/W stresses in SLOPE/W

There are many geotechnical cases where it is desirable to not only perform a deformation analysis, but also to look at stability. In other instances, a SLOPE/W limit equilibrium stability analysis alone is inadequate. For cases like this, the SIGMA/W computed stresses can be used in SLOPE/W to compute the safety factors.

QUAKE/W results in SLOPE/W

Earthquake shaking of ground structures creates inertial forces that may affect the stability of the structures. The shaking may also generate excess pore-water pressures. Both the dynamic stress conditions and the generated pore-water pressures can be taken into SLOPE/W to study how an earthquake affects the earth structure stability and deformation.



SIGMA/W° 2007

QUAKE/W results in SIGMA/W

Stress and liquefaction results from QUAKE/W can be used in a SIGMA/W stress redistribution analysis.

SIGMA/W stresses in QUAKE/W

Establishing insitu static stresses can be done simplistically in QUAKE/W. Alternatively, you can use the load sequencing and nonlinear constitutive soil models in SIGMA/W to improve the estimation of the static stress conditions, and then use them as the initial static stresses in a QUAKE/W dynamic analysis.

QUAKE/W results in SEEP/W-SIGMA/W Consolidation

The dissipation of excess pore-water pressures generated during earthquake shaking may lead to some consolidation after the earthquake. Using the QUAKE/W computed pore-water pressures in a SEEP/W-SIGMA/W coupled analysis makes it possible to look at the deformation that may occur as a result of the post-earthquake consolidation.

VADOSE/W results in CTRAN/W

VADOSE/W evaporative flux analysis can have soil covers.

on stability.

VADOSE/W results in SLOPE/W

pore-water pressures in SLOPE/W

makes it possible to model the effects

of climate-controlled, evaporative flux

Using VADOSE/W computed

TEMP/W°

2007

SEEP/W results in SLOPE/W

Using SEEP/W finite element

with highly irregular saturated/

computed pore-water pressures in

SLOPE/W makes it possible to deal

unsaturated conditions or transient

pore-water pressure conditions in a

stability analysis. From a transient

analysis, we know the pore-water

points in time. Using these time-

in SLOPE/W makes it possible to

look at the changes in stability

with time.

varying pore-water pressure results

pressure conditions at various

QUAKE/W results in SEEP/W

SLOPE/W

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The QUAKE/W computed excess pore-water pressures generated during an earthquake can be taken into SEEP/W to study how long it will take for the excess pore-water pressure to dissipate.



2007

GeoStudio 2007 Product Integration