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Edited by C.A. Brebbia and S.A. Orszag

4

W. S. Venturini

Boundary Element Method
in Geomechanics



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Author

W.S. Venturini
Departamento de Estruturas
Escola de Engenharia de São Carlos
Universidade de São Paulo
Av. Dr. Carlos Botelho, 1465
13560 – São Carlos – SP
Brazil

Formerly Southampton University, England

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NOTATION

\underline{A}	matrix of the final system of equations
b_i	body forces
\underline{B}	body force vector
c	cohesion of the material
c_{ij}	coefficients of the free term
D_{ijk}	} components of tensors corresponding to derivatives of the fundamental solution.
S_{ijk}	
ϵ_{lmk}^*	
σ_{lmk}^*	
E_{ijmk}	
F_{ijmk}	} modulus of elasticity
E	
\underline{F}	independent vector of the final system of equations
G	shear modulus
$ G $	Jacobian (for boundary elements)
H'	slope of the uniaxial stress strain curve
\underline{H}	} matrices for the boundary equation
\underline{G}	
\underline{D}	
\underline{E}	
\underline{H}'	} matrices for stress determination
\underline{B}'	
\underline{D}'	
\underline{E}'	
\underline{I}	unit matrix
$ J $	Jacobian (for internal cells)
k	hardening parameter
\underline{M}	elastic boundary solution; vectorial form
\underline{N}	elastic stress solution; vectorial form

VII

p_i	fraction components
\underline{p}	traction vector
\underline{P}	nodal traction vector
p_{ij}^*	traction fundamental solution
\underline{p}^*	matrix of fundamental tractions
q	field point inside the domain
Q	field point on the boundary
r	distance between the field and load points
s	load point inside the domain
S	load point on the boundary
t	time
t_m	overlay thickness
u_i	displacement components
\underline{u}	displacement vector
\underline{U}	nodal displacement vector
u_{ij}^*	displacement fundamental solution
\underline{u}^*	matrix of fundamental displacements
x_i	coordinates of the global system
\bar{x}_i	coordinates of the local system
$\bar{\gamma}$	unit weight
γ	viscosity parameter
Γ	boundary of the body
δ_{ij}	Kronecker delta
$\delta(s,q)$	Dirac delta function
ϵ_{ij}	strain components
ϵ_{ij}^e	elastic strain components
ϵ_{ij}^o	initial strain components
$\dot{\epsilon}_{ij}$	strain rate components
$\dot{\epsilon}_{ij}^{vp}$	viscoplastic strain rate components
η_i	direction cosines

ν	Poisson's ratio
ξ	homogeneous coordinate over a boundary element
ξ_i	homogeneous triangular coordinates
σ_{ij}	stress components
σ_{ij}^o	initial stress components
σ_{ij}^e	elastic stress components
ϕ	angle of internal friction
ψ	interpolation functions
$\tilde{\phi}$	