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LIST OF ABBREVIATIONS

ABBREVIATION	SIGNIFICANCE
P-wave	Primary wave
S-wave	Shear wave
R-wave	Rayleigh wave
2-D	Two-dimensional
3-D	Three-dimensional
BEM	Boundary element method
FEM	Finite element method

LIST OF SYMBOLS AND NOTATIONS

SYMBOL/ NOTATION		SIGNIFICANCE
λ	:	Lami's constant
G	:	Shear modulus
E	:	Elastic modulus of an elastic medium/half-space soil
ρ	:	Density of an elastic medium/ half-space soil
ν	:	Poisson's ratio
V_p	:	Primary wave velocity
V_s	:	Shear wave velocity
V_R	:	Rayleigh wave velocity
K	:	Dimensionless quantity signifying the ratio between R-wave and S-wave velocities
α	:	Dimensionless quantity indicating the ratio between S-wave and P-wave velocities
L_R	:	Rayleigh wavelength
r	:	Radial distance of a point from source of excitation
β	:	Absorption coefficient
f_1, f_2	:	Excitation frequencies corresponding to β_1 and β_2
A_1	:	Amplitude at distance r_1 from source
A_2	:	Amplitude at distance r_2 from source
n	:	Exponent whose value depends on the type of seismic wave
B	:	Width of the imaginary footing
b	:	One-half of the width of imaginary footing
G_{max}	:	Maximum shear modulus
α_R and β_R	:	Rayleigh mass and stiffness matrix coefficients
f	:	Frequency of excitation
ξ	:	Material damping (fractional value is termed as damping ratio)
ω	:	Angular frequency of excitation
$P(t)$	:	Harmonic load
ϕ	:	Phase angle in degrees
Pi	:	Default input value of harmonic load magnitude

M	:	Amplitude multiplier
P_0	:	Magnitude of harmonic load
A_R	:	Amplitude reduction factor
s	:	Extent of zone of investigation over which amplitude reduction factors are estimated
A_m	:	Average amplitude reduction factor
d and D	:	Absolute and normalized depths of an open/in-filled trench
w and W	:	Absolute and normalized widths of an open/in-filled trench
l and L	:	Absolute and normalized distances of an open/in-filled trench from source of excitation
σ_n and τ_s	:	Normal and shear stress components of dynamic stress
C_1 and C_2	:	Wave relaxation coefficients (associated with absorption of pressure waves and shear waves respectively) assigned to absorbent boundaries
$\dot{u}_x$ and $\dot{u}_y$	:	Particle velocities in normal and tangential directions of a model boundary
Δt	:	Time interval taken for dynamic analyses
m	:	Number of additional steps
n	:	Number of dynamic sub-steps
δt	:	Time-step of integration
L_m and H_m	:	Length and depth of finite element model chosen for analysis
x and X	:	Absolute and dimensionless distances of a point from source of vibration
U_y *and* U_x	:	Notations indicating vertical and horizontal vibration cases
A_{my} and A_{mx}	:	Average amplitude reduction factors of vertical and horizontal components of vibration
E_b	:	Elastic modulus of backfill material
ρ_b	:	Density of backfill material
ν_b	:	Poisson’s ratio of backfill material
ξ_b	:	Material damping of backfill material
V_b	:	Backfill shear wave velocity
V_b/V_s	:	Ratio between shear wave velocities of backfill and parent soil
D/W	:	Ratio between normalized depth and width of a trench
l_1 and l_2	:	Absolute distances of first and second trench from source in case of dual trench barriers
L_1 and L_2	:	Normalized distances of first and second trench from source in case of dual trench barriers

w_d and W_d	:	Absolute and normalized widths of each trench in case of dual trench barriers
d_d and D_d	:	Absolute and normalized depths of each trench in case of dual trench barriers