

## **ANNEX A: Elastic Displacement Response Spectrum {43}**

A.1.1 For periods of long vibration period, the seismic action may be represented in the form of a displacement response spectrum,  $SD_e(T)$ , as shown in Figure A.1.

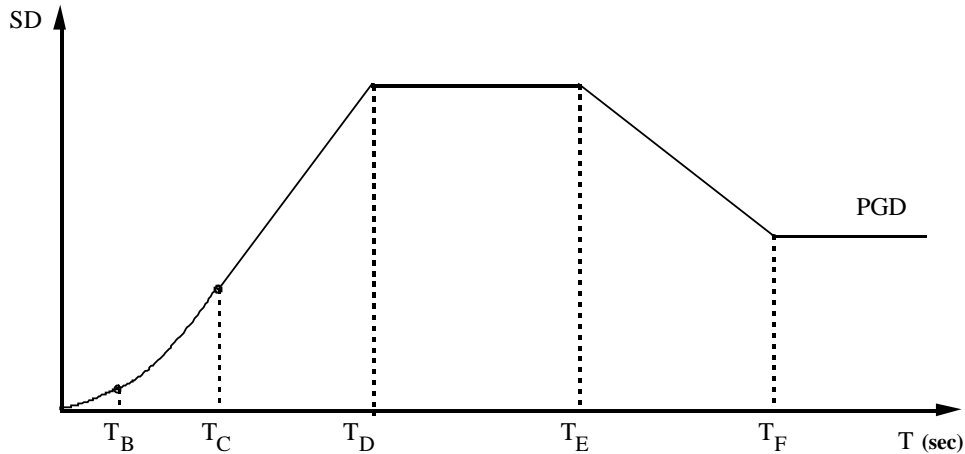


Figure A.1. Elastic displacement response spectrum.

A.1.2 Up to control period  $T_E$ , the spectral ordinates are obtained from Eqs.(4.1)-(4.4) covering  $S_e(T)$  to  $SD_e(T)$  through Eq.(4.6). For vibration periods beyond  $T_E$ , the ordinates of the elastic displacement response spectrum are obtained from Eqs.(A.1) and (A.2).

$$T_E \leq T \leq T_F$$

(A.1)

$$SD_e(T) = a_g \cdot S \cdot T_C \cdot T_D \left[ 0.4\eta + \left( \frac{T - T_E}{T_F - T_E} \right) (0.025 - 0.4\eta) \right]$$

$$T \geq T_F$$

(A.2)

$$SD_e(T) = d_g$$

where  $S$ ,  $T_C$ ,  $T_D$  are given in Table 4.1,  $\eta$  is given by Eq.(4.5) and  $d_g$  is given by Eq.(4.11). The control periods  $T_E$  and  $T_F$  are presented in Table A.1.

Table A.1. Additional control parameters for Type 1 displacement spectrum.

<u>Sub-soil Class</u>	<u>I<sub>E</sub></u>	<u>I<sub>F</sub></u>
<u>A</u>	<u>4.5</u>	<u>10.0</u>
<u>B</u>	<u>5.0</u>	<u>10.0</u>
<u>C</u>	<u>6.0</u>	<u>10.0</u>
<u>D</u>	<u>6.0</u>	<u>10.0</u>
<u>E</u>	<u>6.0</u>	<u>10.0</u>