

Table 2.7. Statistical summary of DC **body impedance** measurements (data listed in k $\Omega$ )

	Adults			Children		
	5%	50%	95%	5%	50%	95%
<b>A. Dry conditions</b>						
Hand/hand	6.96	11.45	15.69	4.04	14.35	51.10
Hand/two feet	2.62	4.00	6.51	2.62	5.70	18.72
Hand/two feet	—	—	—	2.00	4.25	12.68
<b>B. Wet conditions</b>						
Hand/hand	1.28	1.86	2.45	1.70	2.55	4.47
Hand/two feet	0.93	1.20	1.67	1.43	1.80	3.02
Two hands/two feet	0.63	0.84	1.16	0.90	1.30	2.04

Notes: (a) Hand electrodes: two No. 10 Awg twisted copper wires.  
(b) Voltage: 12 V DC; current ~ 1 mA (children), ~ 5 mA (adults).  
(c) Wet conditions apply to treatment with 20% NaCl solution.  
(d) Children's ages: 3–15 years; adults ages: 18–58 years.  
(e) Data from H. B. Whitaker (1939).

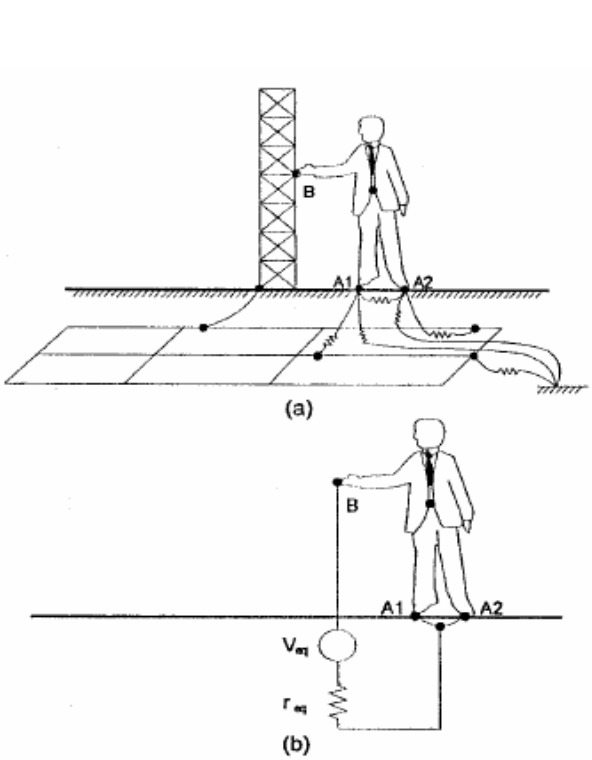


Fig. 1. Definition of the electric shock model parameters-touch voltage.

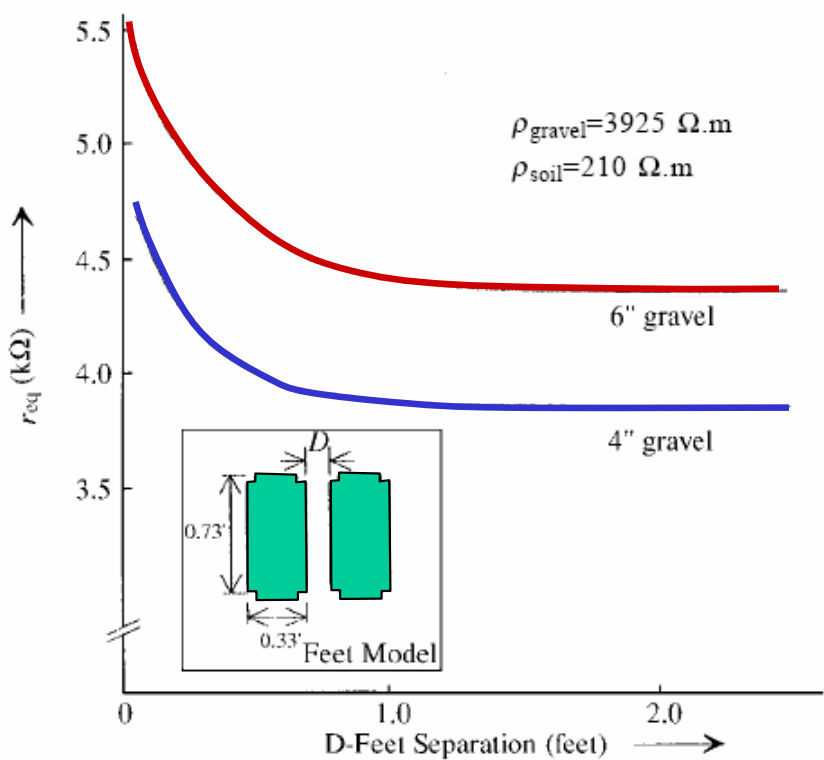
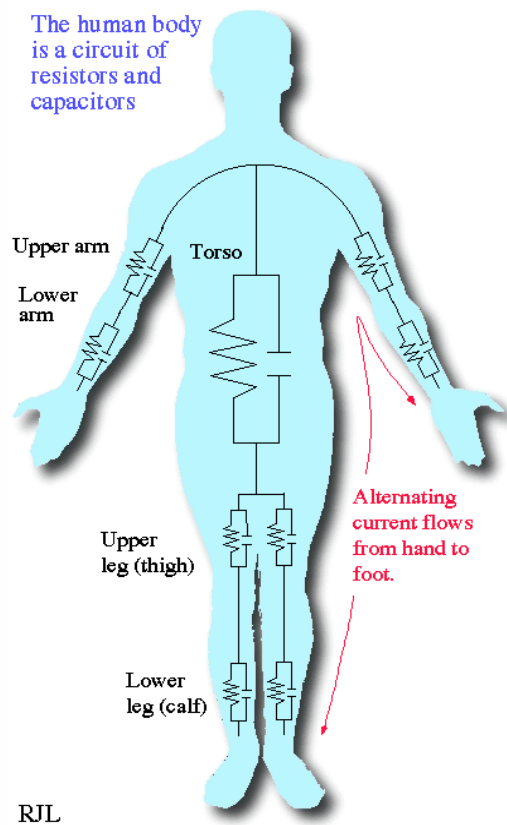


Fig. 2. Feet to soil resistances as a function of feet separation and gravel thickness.



For the purpose of circuit analysis, the human foot is usually represented as a conducting metallic disc and the contact resistance of shoes, socks, etc., is neglected. The ground resistance in ohms of a metallic disc of radius  $b$  (m) on the surface of a homogeneous earth of resistivity  $\rho$  ( $\Omega \cdot m$ ) is given by Laurent as:

$$R_f = \frac{\rho}{4b}$$

Body Resistance

Body Weight Factor

Body Resistance

$$E_{step50} = (1000 + 6C_s \cdot \rho_s) \frac{0.116}{\sqrt{t_s}}$$

$$E_{step50} = (1000 + 1.5C_s \cdot \rho_s) \frac{0.116}{\sqrt{t_s}}$$

Crushed rock , asphalt or native soil resistivity

Factor to count the crushed rock thickness

Crushed rock , asphalt or native soil resistivity

