

$b(E) \times 10^6$  [cm<sup>2</sup>g<sup>-1</sup>] for  
shielding concrete  
 $\langle Z/A \rangle = 0.50274$

| E [GeV] | $b_{\text{brems}}$ | $b_{\text{pair}}$ | $b_{\text{nucl}}$ | $b_{\text{tot}}$ |
|---------|--------------------|-------------------|-------------------|------------------|
| 2.      | 0.4146             | 0.1898            | 0.4495            | 1.0538           |
| 5.      | 0.5627             | 0.4650            | 0.4772            | 1.5049           |
| 10.     | 0.6837             | 0.6902            | 0.4643            | 1.8382           |
| 20.     | 0.8096             | 0.9316            | 0.4441            | 2.1852           |
| 50.     | 0.9782             | 1.2737            | 0.4218            | 2.6738           |
| 100.    | 1.1017             | 1.5128            | 0.4110            | 3.0255           |
| 200.    | 1.2187             | 1.7276            | 0.4056            | 3.3519           |
| 500.    | 1.3546             | 1.9507            | 0.4049            | 3.7103           |
| 1000.   | 1.4406             | 2.0769            | 0.4115            | 3.9290           |
| 2000.   | 1.5109             | 2.1677            | 0.4223            | 4.1009           |
| 5000.   | 1.5796             | 2.2461            | 0.4424            | 4.2682           |
| 10000.  | 1.6155             | 2.2831            | 0.4627            | 4.3613           |
| 20000.  | 1.6408             | 2.3065            | 0.4865            | 4.4338           |
| 50000.  | 1.6613             | 2.3252            | 0.5236            | 4.5102           |
| 100000. | 1.6713             | 2.3329            | 0.5554            | 4.5596           |