Given a graph G now looking to write another function f on weighted graphs by summing over distances

Let d_{ij} = shortest distance between vertices i and j in weighted graph G
n is the number of vertices of graph G

D is the diameter of the weighted graph G

Similar to Diameter let $D_{\min}$ be the minimum all distances between all pairs of vertices

$$H = \begin{cases} \dfrac{1}{D - d_{ij}} & \text{if } 0 < d_{ij} < D \\ 0 & \text{otherwise} \end{cases}$$

$$B[1] = \frac{1}{2} \times \sum_{i=1}^{n} \sum_{j=1}^{n} d_{ij}$$

$$B[2] = \frac{n(n-1)D}{2} - B[1]$$

$$B[3] = \left(\frac{1}{2} \times (D + D_{\min}\ ) \times \big(n(n-1) \big) \right) - B[1]$$

$$B[4] = \sum_{(i,j) \in E(G)} H_{ij}$$