SUPPLEMENTAL MATERIAL

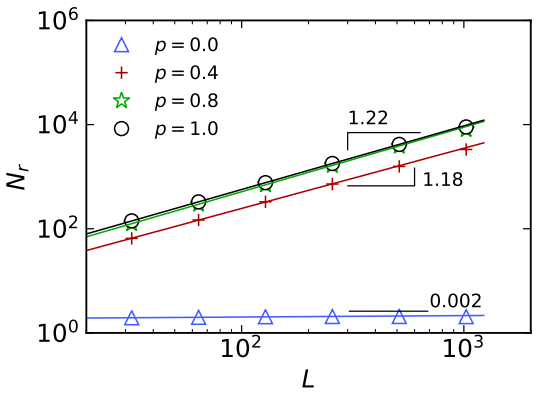

FIG. S1. Logarithmic dependence of the total number of removed links N_r on the linear size of the lattice L, for different values of the fraction p of unidirectional links. The symbols correspond to averages over 100 thousand network realizations with sizes $L = 16$, 32, 64, 512, and 1024 and strong disorder in their traveling times ($\beta = 400$). The results for $p = 0.4$ and 0.8 are consistent with the scaling, $N_r \sim L_f^D$, with $D_f = 1.22 \pm 0.01$ obtained for $p = 0$, namely, fully bidirectional lattices [16]. For a completely unidirectional lattice, $p = 1$, we find that $N_r \sim L^{D_f}$, with $D_f = 0.002 \pm 0.004$. The error bars are smaller than the symbols.

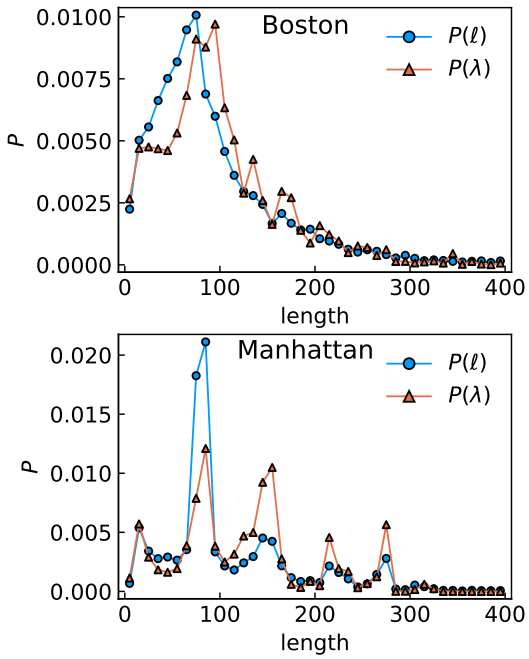

FIG. S2. Comparison between distributions of the lengths ℓ of all road segments, and the lengths λ of those among all road segments that have been removed during the OPC process applied to Boston (top) and Manhattan (bottom).

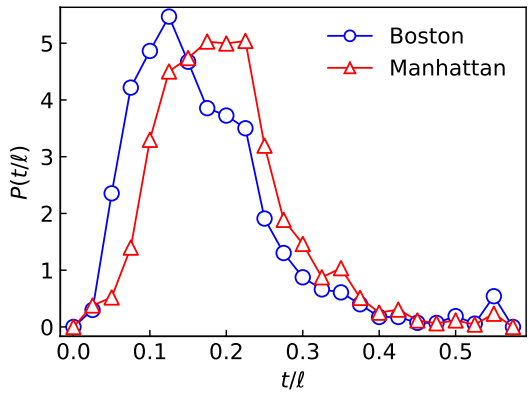

FIG. S3. Distributions of ratios t/ℓ for all road segments of Boston (circles) and Manhattan (triangles).

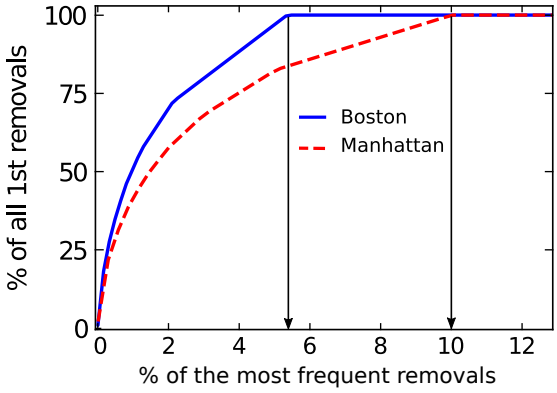

FIG. S4. Cumulative dependence of the percentage of all first removals during the OPC process on the fraction of the most frequent ones. The vertical solid lines indicate that the first removals correspond to 5.4% of all road segments in the case of Boston, while 10.0% is the percentage required for Manhattan.