Anomalously Slow Dynamics in the Manhattan Model\textsuperscript{1} PRASANTA PAL, Department of Applied Physics, Yale University, COREY O’HERN, Department of Mechanical Engineering, Yale University — We study the Brownian dynamics of hard rods in a Manhattan-like traffic grid, in which a series of narrow horizontal and vertical channels intersect at right angles and particles are forbidden from turning at the intersections. We measure the mean-square displacement (msd) as a function of packing fraction $\phi$ and determine the $\phi_g$ at which dynamical arrest occurs as a function of system size, number of intersections, and topology of the grid. We observe that structural relaxation occurs via a complex out-of-equilibrium process in which particles occupy locally dense regions of the grid and then undergo a first passage process. We compare our results for the msd and $\phi_g$ to that found in model glass-forming liquids in two and three dimensions.

\textsuperscript{1}Funding from grant number NSF-CBET0625149 is acknowledged.