Highlights

- Under high density conditions, the basic Social Force Model (SFM) does not completely handle the fundamental diagram reported in empirical measurements.

- With an appropriate modification of the friction coefficient (but sustaining the SFM) it is possible to attain a fundamental diagram in agreement with the empirical data.

- We show that the speed profile, normalized by width and maximum velocity yields a universal behavior regardless the corridor dimensions.

- We show how the friction modification affects the pedestrian clustering structures throughout the transition from the free-flow regime to the congested regime.