

Figure 2 PATH COMPARISONS IN 40 MPH LANE CHANGE

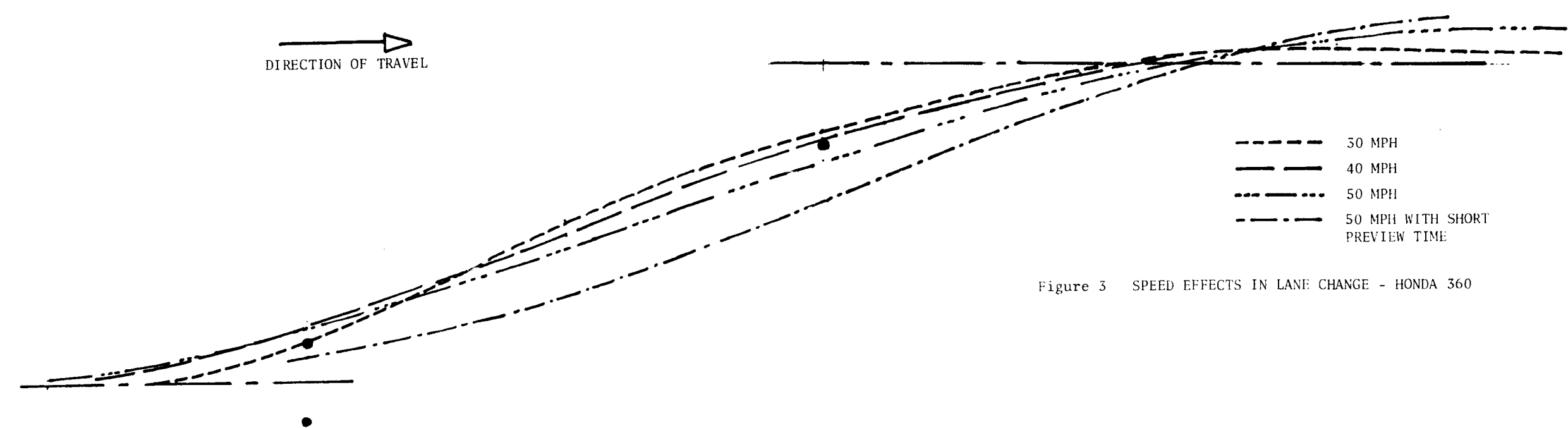


Figure 3 SPEED EFFECTS IN LANE CHANGE - HONDA 360

for all machines.

- (2) The path displayed in the figure is for the system origin, which is a point on the steering axis of the machine (approximately 3 feet) above the ground. Thus, the actual ground track at the tire contact patches lies to the right of this track in left turns and to its left in right hand turns. This lateral displacement of the apparent track may be as much as 9 inches in certain parts of the path. If this effect were taken into account, apparent performance (in terms of longitudinal distance required to remain within the entrance and exit gates) would be improved.
- (3) The rider model control coefficients (without active lean control) utilized in this part of the comparison study produce a system response which is only slightly less aggressive than was the rider in earlier full-scale tests. As a first order comparison, the simulated rider would require about 65 ft. of gap distance for a successful maneuver at 40 MPH -- about 5 ft. more than the actual rider.
- (4) As would be expected, the principal differences indicated by the simulation in the operation of the various motorcycles are related to steering torque inputs. In following nearly the same path, the H-D FLH-1200 required peak torque values which are about two times those required by the Honda 125. Small variations in path (with associated differences in side accelerations, roll angle, and steer angle) can be observed in Figure 2.
- (5) The simulated rider-machine system utilized a full five seconds of maneuvering time and even then, in most cases has not completely stabilized on the final exit track (Refer to Figure 1). In effect, maneuvering starts well before the entrance lane gate (because of the one second look-ahead time used in the model)