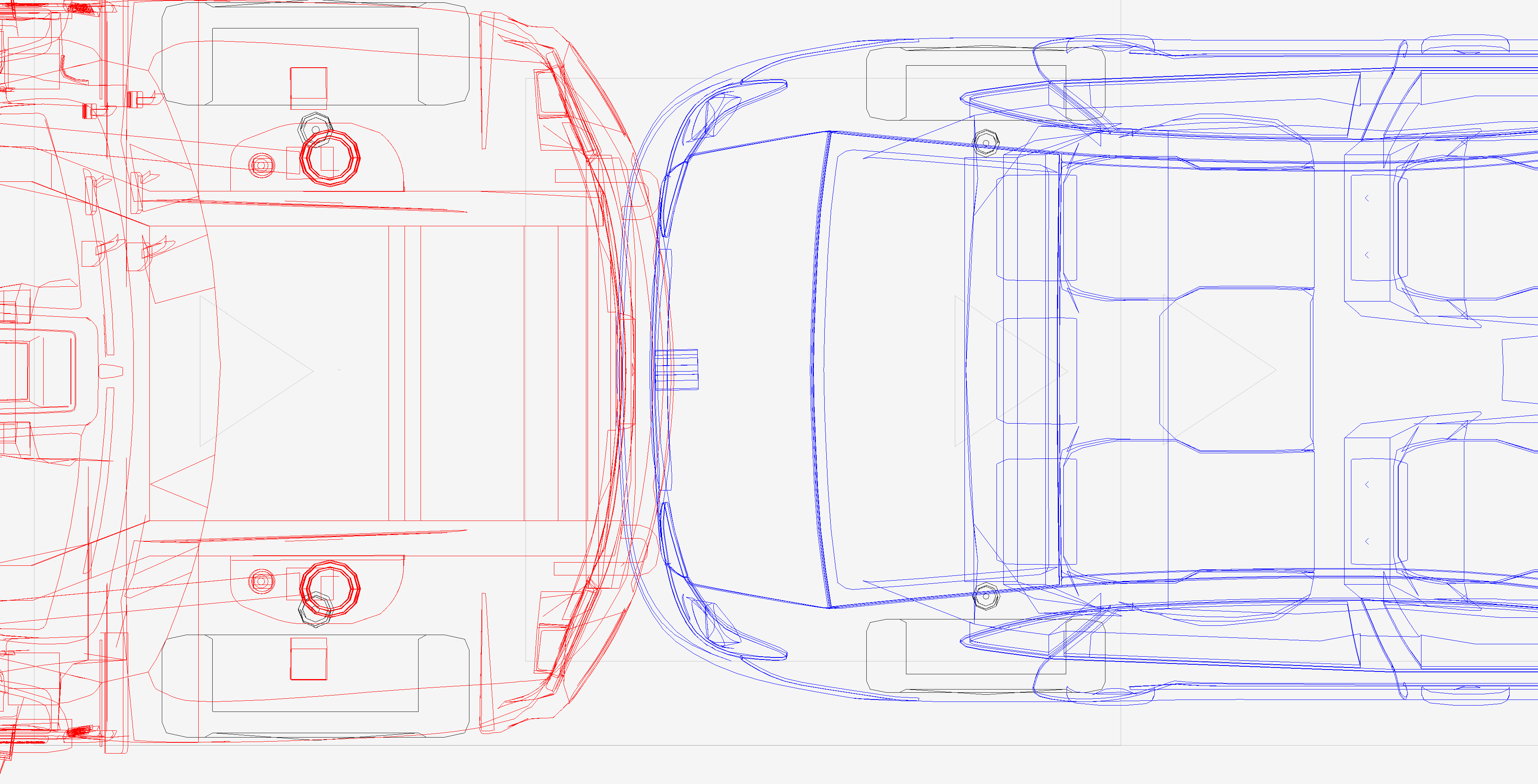
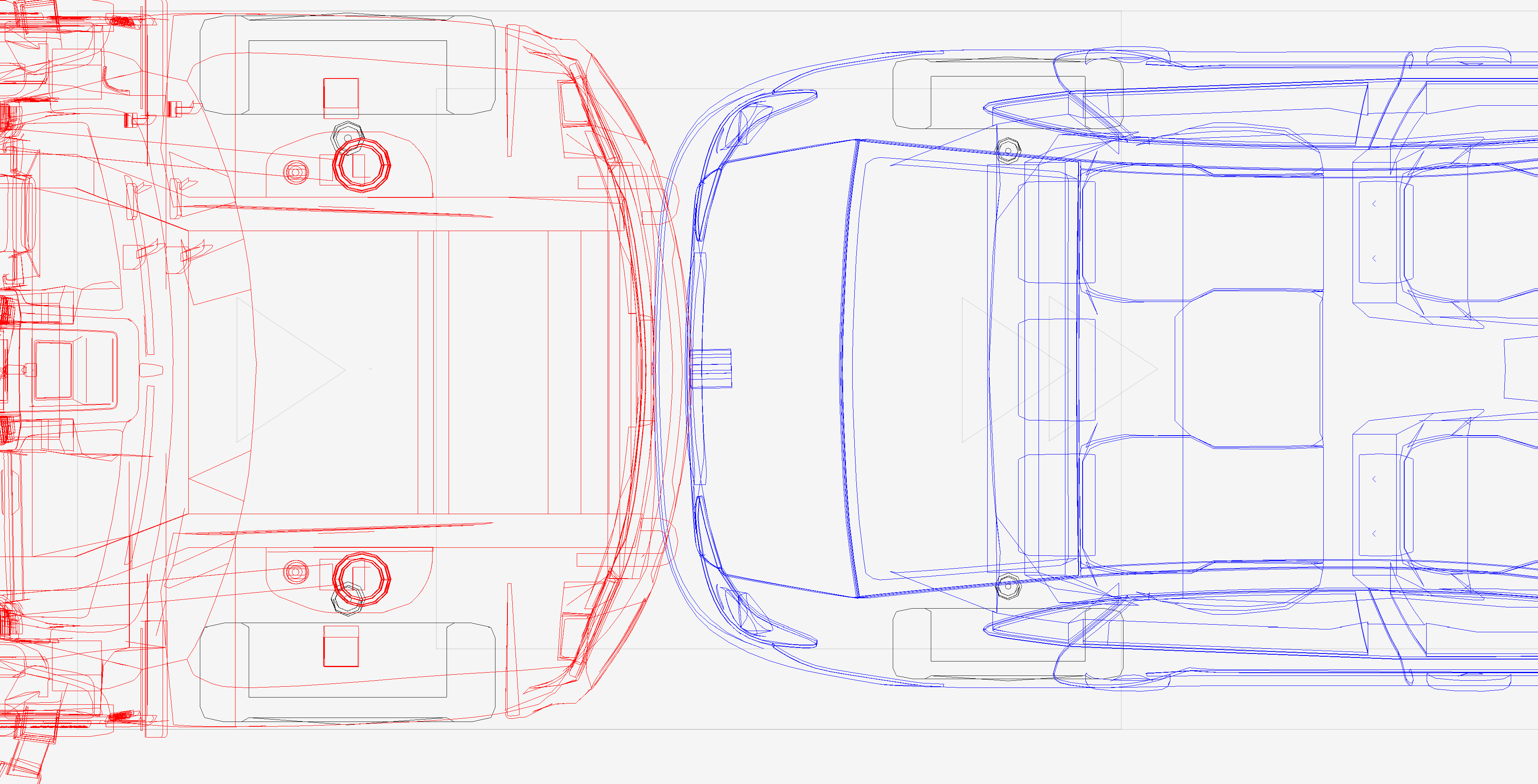
The damage to the Ford is described as minor however the damage to the Hyundai is fairly significant and extends beyond the rear bumper plan into the rear body panel. If the damage to the Hyundai were only rear bumper parts it is unlikely that it would have been totaled. Estimated deformation to the Hyundai is 4+ inches and likely 1+ inches in the Ford. The Ford bumper level is slightly higher than the Hyundai’s. If the Ford is configured to manufacturers specifications, it does not appear there was any significant pre-impact braking by the Ford based on the contact damage observed in the photos.

A widely used crash simulation program[[1]](#footnote-1) is capable of modeling deformation and depth of penetration or maximum engagement during a collision. By overlapping the damage between scale models of the Ford and the Hyundai as observed in the photos, I can model the subject crash to determine a closing speed estimate, which will in turn, estimate an approximate speed change or delta V imparted to the Hyundai in the crash by using a momentum, energy and restitution (MER) analysis, and then matching these results to the physical and other evidence.

A closing speed of 10-15 mph from the Ford would have resulted in a delta V in the Hyundai of approximately 8.7-12.3 mph, with a peak vehicle acceleration for the impact of approximately 6.3-8.9 g. Deformation (overlap or depth of penetration) between the Ford and the Hyundai is shown below and is fairly consistent with what is observed in the photos.



**Simulated 10 mph (left) and 15 mph (right) depth of penetration (overlap or maximum engagement) fairly consistent with photos. The Gonzalez Hyundai is the vehicle on the right in blue in each image.**

1. Virtual Crash 5, vCrash America Inc. [↑](#footnote-ref-1)