



General Information

Test Agency..... Texas Transportation Institute (TTI)
 Test Standard Test No. MASH Test 3-10
 TTI Test No. 420020-5
 Date 2010-08-26

Test Article

Type..... Guardrail
 Name 31-inch W-Beam Guardrail with
 standard offset blocks
 Installation Length 181.25 ft
 Material or Key Elements 12-ga. W-beam rail, 8-inch deep
 routed wood blockouts

Soil Type and Condition..... Crushed Limestone, Dry

Test Vehicle

Type/Designation..... 1100C
 Make and Model 2003 Kia Rio
 Curb 2387 lb
 Test Inertial 2435 lb
 Dummy 174 lb
 Gross Static 2609 lb

Impact Conditions

Speed60.4 mi/h
 Angle.....25.6 degrees
 Location/Orientation38 inches upstrm

Exit Conditions

Post 13
 Speed29.2 mi/h
 Angle.....15.0 degrees

Occupant Risk Values

Impact Velocity
 Longitudinal21.0 ft/s
 Lateral17.4 ft/s
 Ridedown Accelerations
 Longitudinal 8.8 G
 Lateral 6.8 G
 THIV29.2 km/h
 PHD10.1 G
 ASI0.82
 Max. 0.050-s Average
 Longitudinal-6.8 G
 Lateral 5.6 G
 Vertical-1.8 G

Post-Impact Trajectory

Stopping Distance 185 ft dwnstrm
 47 ft twd traffic

Vehicle Stability

Maximum Yaw Angle..... 49 degrees
 Maximum Pitch Angle.....-11 degrees
 Maximum Roll Angle.....-16 degrees
 Vehicle Snagging..... No
 Vehicle Pocketing..... No

Test Article Deflections

Dynamic.....2.38 ft
 Permanent1.58 ft
 Working Width2.38 ft

Vehicle Damage

VDS 11LFQ4
 CDC 11LDEW3
 Max. Exterior Deformation.....12.5 inches
 OCDI..... LF0000000
 Max. Occupant Compartment
 Deformation.....0

Impact Severity 1778 kip-ft (-0.4%)

Figure 5.7. Summary of Results for MASH Test 3-10 on the TxDOT 31-inch W-Beam Guardrail.