



General Information

Test Agency Texas A&M Transportation Institute (TTI)
 Test Standard Test No. ASTM F3016-14 S30
 Test No. 690900-BLD1
 Date 2018-08-09

Test Article

Type Low-Speed Bollard
 Name CT 8-inch Bollard
 Material or Key Elements . 8-inch schedule 80 pipe protruding
 36 inches above ground level in a sleeve
 embedded in a reinforced concrete
 foundation 36 inches deep, 24 inches wide,
 and 96 inches long

Soil/Foundation Type

..... 3-inch thick reinforced concrete area slab
 cast on a 6-inch layer of compacted road
 base, on top of a 39-inch thick layer of
 washed sand

Test Vehicle

Type Low-Speed Bogie
 Designation Surrogate (S)
 Model ASTM F3016-14 Bogie
 Test Inertial Mass 5020 lb

Impact Conditions

Speed 30.0 mi/h
 Angle 91.2°

Occupant Risk Values

Longitudinal OIV 34.4 ft/s
 Lateral OIV 0.3 ft/s
 Longitudinal Ridedown 7.1 g
 Lateral Ridedown 2.3 g

Max. 0.050-s Average

Longitudinal -13.8 g
 Lateral 0.5 g
 Vertical 4.3 g

Debris Field No debris

Final Rest of Bogie On top of bollard

Dynamic Bogie Nose Crush 26.6 inches

**Rotation/Translation of Bollard
 (static after impact)** 20°

**Horizontal Movement of
 Foundation** 0.5 inch

Uplift of Foundation None

Dynamic Penetration of Bollard... 19.6 inches

Dynamic Penetration of Bogie... 19.6 inches

Maximum Dynamic Penetration... 19.6 inches

Penetration Rating S30/P2

Figure 3.8. Summary of Results for ASTM F3016-14 test S30 on CT 8-inch Bollard.