

June 18, 2018

Mr. Paul Matthews
CEO, B&B Roadway and Security Solutions
5900 S. Lake Forest Ste 230
McKinney, TX 75070

RE: B&B Armr Crash Test BBR13 Results

Dear Mr. Matthews:

You requested the Texas A&M Transportation Institute (TTI) provide results on the ASTM F2656-15 M30 crash test conducted for B&B Armr. Test 690900-BBR13 was conducted on the 26th of January, 2018 at TTI Proving Grounds. Figure 1 shows the security barrier, and test setup. The test installation was comprised of a proprietary vehicle barrier system, the B&B Roadway Model 773 Series Drop Arm Barrier, with each end anchored to separate nominal 5.0 ft (1.5 m) square \times 4.0 ft (1.2 m) deep (actual 5.4 ft (1.6 m) square \times 4.3 ft (1.3 m) deep), steel reinforced concrete foundations. The barrier arm consisted of an outer aluminum tube, with proprietary arresting rope sections inside the tube. The roadway clearance was 24 ft (7.3 m), measured to the inside face of each of two stanchions at either end of the installation.



Figure 1. Test 690900-BBR13 test setup.

The 2005 International 4200 flatbed single-unit truck impacted the security barrier at a speed of 30.6 mi/h and an angle of 90.7°. Assessment of the M30 crash test shows the leading edge of the cargo bed penetrated 18.8 inches (477 mm) beyond the protected side of the B&B Roadway Model 773 Series Drop Arm Barrier. Figure 2 shows the final resting position of the vehicle. Data and other pertinent information from the test are summarized in Figure 3.



Figure 2. Vehicle at final resting position after impact.

According to ASTM F2656-15, the B&B Roadway Model 773 Series Drop Arm Barrier meets Condition Designation/Penetration Rating M30/P1, which allows penetration of ≤ 3.3 ft (1.0 m) when impacted by the medium duty truck with at diesel engine at a nominal speed of 30 mi/h (50 km/h).

If there are additional questions or comments, please contact me at 979-845-4368 or n-schulz@tti.tamu.edu.

Sincerely,

Nathan Schulz, E.I.T.
Associate Transportation Researcher



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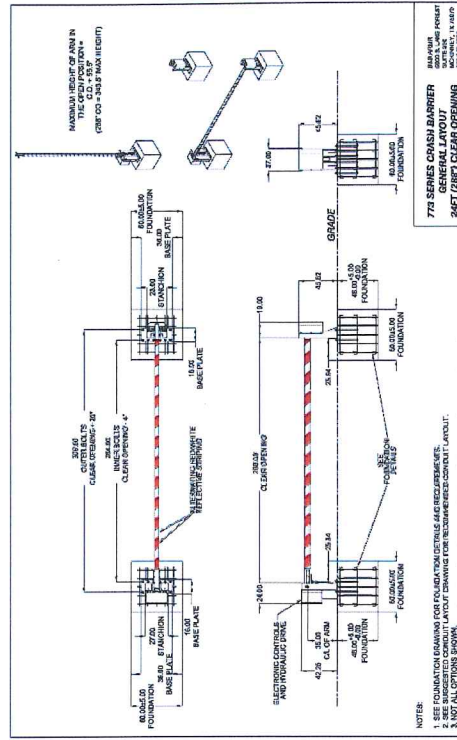
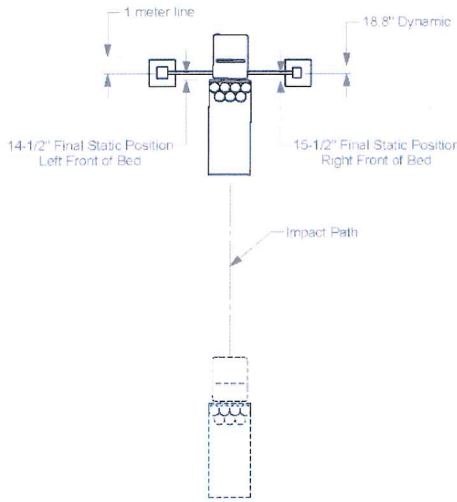
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General Information

Test Agency Texas A&M Transportation Institute (TTI)
 Test Standard Test No. ASTM F2656-15 M30
 Test No. 690900-BBR13
 Date 2018-01-26

Test Article

Type Security Gate
 Name B&B Roadway Model 773 Series Drop Arm Barrier

Installation Length 27.6 ft (8.4 m) to outside of stanchions
 Material or Key Elements .. Drop Arm system with two stanchion structures and barrier arm of an outer tube with proprietary rope sections inside

Soil/Foundation Type 5.4 ft square x 4.3 ft deep concrete foundation in AASHTO M147-65 Soil (crushed limestone)

Test Vehicle

Type Medium Duty Truck
 Designation M30
 Model 2005 International 4200
 Engine 365 CID Diesel
 Mass
 Curb 12,020 lb (5452 kg)
 Test Inertial 15,010 lb (6808 kg)

Impact Conditions

Speed 30.6 mi/h (49.2 km/h)
 Angle 90.7°

Exit Conditions

Speed Stopped
 Angle NA

Occupant Risk Values

Longitudinal OIV 24.3 ft/s (7.4 m/s)
 Lateral OIV 2.0 ft/s (0.6 m/s)
 Longitudinal Ridedown 6.1 g
 Lateral Ridedown 6.3 g
 Longitudinal 0.050-s Average -7.0 g
 Lateral 0.050-s Average 2.3 g
 Vertical 0.050-s Average -3.3 g

Debris Field 14 ft (4.3 m)

Dynamic Vehicle Penetration 18.8 inches (477 mm)

Vehicle Disabled? Yes

Penetration Rating M30/P1

Figure 3. Summary of Results for ASTM F2656-15 Test M30 on B&B Roadway Model 773 Series Drop Arm Barrier.