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VEHICLE IMPACT TEST OF CR-25  
MANUAL SECURITY GATE

Prepared for

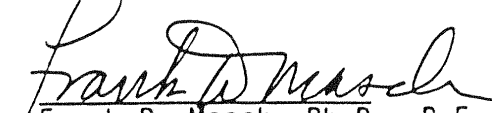
B & B Electromatic  
700 N. Main Street  
Norwood, LA 70761

by


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MANUAL SECURITY GATE

Objective:

The objective of this test was to evaluate the structural adequacy of the B & B Electromatic CR-25 Manual Security Gate.

Test Article:

The test article was a counterbalanced, manually-operated device which spans between two support housings to form a vehicle entrance/exit gate. As shown in Figure 1 the gate bar consisted of a 3-in. schedule 10 aluminum pipe encasing a 3/4- in. improved plow steel wire rope assembly of 51,000-lb. minimum breaking strength. This wire rope assembly was the major restraining component of the gate bar and had both ends terminated at the same location in one support housing but by extending it through the pipe and looping it around a special thimble at the other support housing it became effectively two wire ropes. The thimble engaged a bollard attached to a 3/4-in. steel plate which in turn was mounted to the top of the support housing. Both support housings were steel weldments and identical with the exception of the top plate mounting holes. They were both attached to 2-ft x 3-ft x 4-ft deep concrete footings the top of which were at grade level.

### Test Vehicle:

The test vehicle was a 1980 Ford F-350 truck which initially weighed 5850-lbs. Control instrumentation and ballast were attached to the vehicle to attain an inertial test weight of 10,070-lbs which was verified by certified public scales.

### Test Facility and Installation:

The test was conducted at the Brooks Air Force Base facility utilized by SwRI for barrier testing. Test setup, as shown in Figure 1, was adjacent to one of the runways to allow for a smooth vehicle approach to the barrier.

### Data Acquisition System:

Test data was recorded by five high-speed cameras and one real-time motion picture camera. In addition, still photographs were taken before and after the event for further documentation. The high-speed film from two of the cameras was analyzed using a Vanguard Motion Analyzer linked to a digital computer to provide vehicle displacement, velocity, and acceleration data.

### Results:

Impact conditions, as determined by film analysis, were as follows:

Table 1. Summary of Results - Test B & B-1

|                             |                                      |
|-----------------------------|--------------------------------------|
| Date.....                   | 12/04/87                             |
| Test Article.....           | B&B Electromatic CR-25 Security Gate |
| Vehicle                     |                                      |
| Type.....                   | 1980 Ford F-350 Truck                |
| Inertial Mass (lb).....     | 10,070                               |
| Impact Conditions           |                                      |
| Speed (mph).....            | 17.8                                 |
| Angle (deg).....            | 0.6                                  |
| Maximum Barrier Deflections |                                      |
| Permanent (ft).....         | 4.0                                  |