

TECHNOLOGY READINESS LEVEL: PRODUCTION

US PATENT # 8,210,767

(SD # 11111.0)

TECHNOLOGY SUMMARY

Sandia National Laboratories Active Response & Denial Department has developed a cost effective and robust vehicle barrier – designated the Modified Normandy Barrier (MNB) – that has been designed and tested to meet a very aggressive vehicle impact. The barrier has been designed and field-tested to meet various delay capabilities of interest to the variety of customers Sandia advises. The MNB evolved based on a need for a capable and cost effective barrier that can be deployed around a large footprint.

The Modified Normandy Barrier was designed to offer a lower-cost, high performance vehicle barrier that provides more than just vehicle protection. MNB includes key design features which address breaching attacks, as well. The robust nature of the barrier provides a measureable and tested degree of delay. It cannot be easily compromised like other barriers that are commonly used to span large distances.



Development of the MNB has involved several high fidelity physics-based modeling simulations (Figure 4), component-level field tests, and full-scale vehicle crash testing (Figure 5). After years of research and development with extensive modeling and testing, the Modified Normandy Barrier has been designed, refined, and verified to meet the ASTM F2656-07 M50/P1 rating.

There are several features of the MNB that make it cost effective and amenable to large sites. First, the barrier utilizes common civil engineering materials, like hot-rolled steel shapes and reinforced concrete. These materials can be procured from a wide-range of suppliers throughout the world. The arrangement of many of the steel members also facilitates a modular deployment of the system; much of the steel members can be fabricated in-shop using common welding processes, then transported to

the site for quick installation. Secondly, the two principal foundations for the system (end terminations) can be spaced between 160-ft and 800-ft apart, and secondary intermediate foundations are spaced every 40-ft. This wide spacing of foundations allows the MNB to be positioned to accommodate existing utilities, a common problem for vehicle barriers that employ continuous foundation systems. However, the MNB has been tested in several different configurations, and can be installed with the full complement of intermediate foundations for a full M50-rated design, or it can be simplified with fewer foundation posts to reduce installation cost and schedule where a reduced vehicle impact rating is appropriate.



POTENTIAL APPLICATIONS

- Provide protection against vehicle -borne threats
- Government and Military installations
- Commercial power plants
- Petro/chemical facilities

TECHNOLOGICAL BENEFITS

- Cost effective
- Robust
- Configurable
- Amenable to long perimeters
- Wide spacing of foundations allows the MNB to be positioned to accommodate existing utilities
- Designed to withstand breach attempts

TECHNOLOGY INQUIRY?

Contact us for more information or licensing opportunities at

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or

<https://ip.sandia.gov>