POD PROTECTION

SwRI developed a Portal Obstruction Device to deny specific access via tunnels, passageways or any confined entry point. POD is a field-deployable system designed to encumber the passage of individuals or vehicles through large openings, requiring significant effort to remove or defeat the obstruction.

POD consists of two separate components: an inflatable structure to block large openings or tunnels and "dragon teeth," pyramid-shaped obstacles up to 18 inches tall attached to roadways to delay vehicle passage. While a sufficient number of individuals could eventually defeat a reinforced inflatable barrier, it was designed to delay passage by a minimum of 30 minutes. The pyramid obstacles, bonded to the road surface, are designed to defeat or deny passage of a vehicle by puncturing tires or damaging the vehicle undercarriage. To prevent removal, each obstacle contains subcomponents, activated by a timer or when a physical force is applied to the external structure. The devices can be deployed with a mix of lethal and/or nonlethal payloads such as smoke, malodorants, pyrotechnics or explosives to deter loitering and hamper POD device removal.

SwRI fabricated and evaluated the inflatable barrier by driving a large forklift, with a simulated vehicle bumper attached to the forks, into the bladder. For this field demonstration, the bladder was enclosed in a tear-resistant outer membrane adhered to the surrounding surfaces. A Kevlar membrane would provide additional penetration protection from small arms munition or piercing objects.

To demonstrate the roadway blockade, 25 dragon teeth were randomly adhered around an 8-by-12-foot area constrained by concrete walls. We designed a self-contained, pneumatically operated adhesive dispenser to apply the pyramids to surfaces. During the demo, a commercial van made multiple attempts at negotiating the field, compounding damage until the alternator drive belts failed, the radiator was punctured and the engine stopped. Testers attempted blockade removal with a sledge-hammer. All loosened pyramids showed the concrete failed rather than the adhesive, indicating that the strength of the bond exceeded the tensile strength of the concrete substrate.

The POD field demonstration showed the effectiveness of an inflatable obstacle, positioned inside a portal, to deny egress/ingress of individuals for a limited time. Vehicle obstacles, such as the pyramids topped with razor-sharp edges and penetrating spikes, attached to the substrate would further delay a wheeled vehicle access through the portal. Similar distribution of the self-adhering dragon teeth obstacles on any road surface or runway would deny or delay access for a finite period of time.

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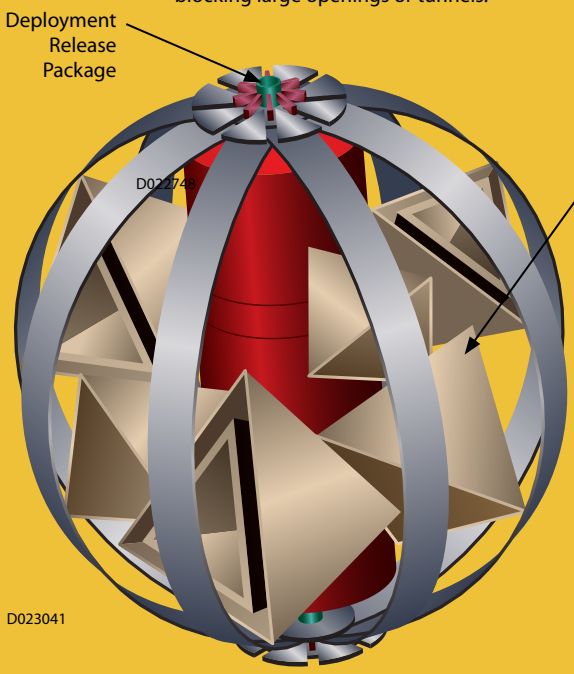
The POD field-deployable system includes this inflatable structure designed to thwart the passage of individuals or vehicles by blocking large openings or tunnels.



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POD deploys "dragon teeth," pyramid-shaped obstacles up to 18 inches tall that attach to roadways to delay vehicle passage.

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