PVB

“PORTABLE VEHICLE BARRIER”
Portable Vehicle Barriers (PVB)

- Low tech, basic physics, incredible stopping power
- Unique design allows for portability by folding down
- The horizontal energy of the oncoming vehicle is transferred into vertical energy so as the vehicle pushes forward, the bottom of the "L" shape is forced upward into the bottom of the vehicle. Thus, stopping it in its tracks.

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When Law Enforcement in Dallas wanted a product to protect one of the largest sporting events in the US, they chose SSI’s PVB.

The reason the PVB is used by agencies and militaries across the globe is that it uses low technology and basic physics to stop a threatening vehicle in its tracks. Two adults can deploy the barrier in minutes, and there is no need for electricity whatsoever.
PVBs have a unique design that allows them to be both foldable and portable as well as strong and reliant.
The PVB uses the Kinetic Energy of the oncoming threat vehicle to anchor the barrier.

The anchor on the back of the PVB keeps it in place as the oncoming vehicle forces the anchor into the ground.
How they work:

- The horizontal energy of the oncoming vehicle is transferred into vertical energy so as the vehicle pushes forward, the bottom of the "L" shape is forced upward into the bottom of the vehicle. Thus, stopping it in its tracks.
PVBs can be set-up for a 2 lane road by 2 people in a matter of minutes. There are no tools or electricity needed to assemble the barrier.

The recommended amount to cover a 2 lane road is 16 barriers.

Six simple steps to assemble
IMPORTANT:

- READ all the information provided by the manufactured

- Make sure all team members are completely familiar with equipment

- Recognize and use the equipment within its operational parameters, structural limitations, and safety rules
OPERATIONAL USE

- Thoroughly check equipment before arrival at deployment site
- Ensure the team has been training in the deployment of the barriers
- Use equipment within the parameters for which it was designed
STORING AND MAINTAINING

- Maintain the equipment properly
- Store the equipment in a safe location
- Prevent theft or unauthorized use
- Repair the equipment properly
Introduction

- The innovation in the PVB is the unique ability to be used as a temporary road blockage which would completely prevent a vehicle from forcing its way into a protected area.

- The principal action of the PVB is to use the Kinetic Energy of the ramming vehicle itself, which would in turn anchor the PVB. The anchoring of the PVB into the ground with the force of the ramming vehicle will cause the entire motion to come to a halt.

- The product is intended to be used by security forces and private individuals in all aspects of vehicle access control and the temporary blocking of roads and open areas, including yards and fields.
• The uniqueness of this product is the ease of use. The PVB is a user-friendly anti-ramming device which is lightweight, detachable, and portable. It can be stored in a car or in a small room, erected in seconds and yet still has a very high stopping capability.

• The PVB provides the solution to the lack and scarcity of rapid deployment portable and mobile barriers which are capable of completely stopping all vehicles, small and large, in every road condition or open terrain.

• The PVB has easy-to-use non-complex elements, is simple to transport and store and within minutes, two (2) adults can deploy a formidable anti-ramming security barrier without the use of tools.
• Wheels can be easily attached to the PVB, making it simple to open a closed road/terrain to allow authorized cars to enter.

• Anchoring cable can be easily added to increase the stopping capabilities and limit the stopping distance on hard ground (icy or concrete road).

• Safety fixtures can be added to meet safety standards, regulations and needs.

• The PVB is reusable and can last for many years and thousands of separate deployments without any need for maintenance or repair.

• The dismantling of the PVB is quick and simple and can be done by one (1) preferable (2) person

• Road experiments to test the PVB were very successful.
Description of the device

- The PVB consists of single elements that when connected to each other, raise the performance level, as you add more elements the stopping power increases.

- The main section of the non-collapsible PVB is the BODY which consists of a 90 degree welded steel profile.

- There is a tube which runs through the steel plate for a cable or rod for the option of further anchoring the PVB.

- The collapsible PVB is connected to the above mentioned steel plates via a steel movable arm allowing it to simply fold in order to pack away and store (A) in Figure 2 below.

Figure 2: Folding mechanism
The PVB has two folding bars (A and B) in Figure 3 on each side for a solid and secure connection between the elements, one to another. One arm is installed on the upper side of the barrier perpendicular to a second arm installed on the exterior (far angle) of the horizontal section of the body of the PVB (A) in Figure 3. The other arm is on the lower side of the barrier connecting the lower sections of the PVB together (B) in Figure 3.

Figure 3: Folding connection bars
The “biting heel” and center “sting” as per Figure 4 of the PVB performs the task of burying itself into the road/ground and is the main concept of the PVB. The center “sting” on the heel digs into the ground as the body of the PVB moves forward and is perpendicular to the ground. The 2 “stings” on either side of the main one also dig into the ground once the main sting has started the process. It remains in this position, biting harder into the ground as it moves further forward until it comes to a complete stop.

As an option, a steel cable can be threaded into the tube, connecting the entire PVB line to the ground or a tree.
Principle of Operation

- The vehicle bursts through the PVB and the forward motion cause the "sting" of the PVB to dig into the ground.

- The sting digs deeper into the ground as the PVB moves further forward, increasing its strength and resistance.

- The PVB rotates around its "sting" point, rotating its horizontal arm into the car's body and then becomes trapped between the vehicle chassis and the ground, stopping any further forward movement of the main body of the vehicle.

- The PVB while lifts the vehicle and stops it from moving further forward.

- There is no minimum speed required to activate the barrier.
Claims

- A unique geometric design made of steel produces a barrier which is able to stop a possible ramming Vehicle or VBIED (Vehicle Borne Explosive Device) from breeching a controlled area.

Direction of vehicle
Direction to fold arm
“Sting”

Figure 2: principal PVB
Figure 1: principal PVB
• And/or anti ramming car barrier capable of operating on every terrain – not only road, and stopping 4X4 cars as well as any other type of vehicle.

• And/or the connecting of individual elements of the PVB that will create a unified and strong barrier, the more elements that are connected, the stronger the barrier will be and wider opening (road) it will close.

• And/or options to anchor the units to the ground using existing anchors or pyrotechnic anchoring or cable anchoring for reducing penetration distance.

• And/or options to add anti skidding surface to increases the stopping capabilities on icy or concrete surface.

• Very fast and easy to erect by a single person but two or more people is reccomended
• And/or can be used to block entire lanes, yard or perimeter line utilized for the passage of vehicles of any size and weight including motorcycles.

• And/or all parts are exactly the same and can therefore be replaced, switched or added.

• And/or can be operated with no need for special vehicle, equipment, tools, electricity or any other type of power supply, using one or two people.

• And/or can add on devices such as signs and safety lighting

• And/or can add on other anchoring devices to further enhance vehicle stoppage

• And/or can be added to existing or new road blocks to improve its functioning.
**Assembly Instructions Create a Single Row:**

**Figure 6: Oncoming threat**

Place one fixed PVB on the ground, as shown in the drawing above. Place the required amount of PVBs in a row until the road / lane is blocked, each PVB unit is closing 21 inches of road, so 8 units connected to each other will close 1 lane (standard)

Raise the upper section of the folded PVB into a vertical position and secure the pin in that position.

**Figure 7: Assembly**

Take out the pin marked as B in figure 7.

Open the horizontal connecting section into the next barrier "housing" and secure the pin in that position.

Take out pin marked C in figure 7.
Open the horizontal connecting section into the next barrier "housing" unit and secure the pin in that position.

In this situation two units are completely assembled. Continue to assemble the barrier units.
Create an integrated Double Row

Assemble single row barrier as done in 5.

Place PVB units between and behind each – two assembled units in the single row.

Take out the central pin marked as A as per figure 7.

Raise the upper section into a vertical position and secure the pin in that position.

Insert the PVB unit between and behind each two assembled units in the single row.

Take out the pin marked as B as per figure 7.

Open the horizontal connecting section into the next barrier unit and secure the pin in that position.

Take out the pin marked as C as per figure 7.

Open the vertical connecting section into the next barrier unit and secure the pin in that position.

Continue to assemble the barrier units.
General Recommendations

5 Locating the proper location for the PVB barrier

- It is advised that the blocking areas are where vehicles are forced to slow down (road curves etc).

- Both sides of the barrier must be blocked to ensure that a vehicle cannot drive past it on the curb or open ground.

- Locate the barrier and the “stop” signs where the driver can view it clearly and stop in time.

6 Preparing the Barrier

- Prepare the PVB units – distribute the PVB (one unit per 60cm opening at least)

- Assemble the PVBs using all the required pins.

- Make sure PVB units are placed perpendicular to the road.

- Make sure the PVB units are placed with the diagonal edge facing the direction from which the vehicle will be coming.

- Lay warning signal suitable for both day and night at least 100m in advance.
PVB Maintenance & Inspections

Maintenance should be performed if units are damaged for any reason

Pre & Post Op Checklists should be used before and after equipment use by designated person
Safety Issues

- Use of back support belt is recommended
- Use of gloves is recommended
- Use of steel tip shoes or boots is recommended
- Use of 2 or more people to assemble and disassemble is recommended
Pre-Operation Inspection

• Inspect all units being deployed for any signs of wear, fatigue, or damage.

• Ensure that all pins are present and properly installed
Stowing Procedure

- Replace units after use to storage case
- Assure all pins are still attached to units for future deployment
Standard SOP's

• Agency policies must be adhered to

• Agency Safety policies must be adhered to
Questions?

• How many people does the manufacturer recommend is needed to set up the barriers?

• What protective safety gear is recommended?
• What can be done to increase the stopping ability of the barriers?
• What additional tools are needed to assemble the barriers?
• How many unts are needed to block one standard lane?