

Bomb Technician Mobility Vehicle

Mike Lydon and Jeff Brocheuser

Chris Acosta-Angel, John Buss, Steven Hader, and Andrew Malone
Advisor: Dr. Hsu



PROJECT OVERVIEW

The purpose of this project was to design and fabricate a tracked vehicle capable of transporting a Bomb Technician to a bomb site. Doing this allows an E.O.D. technician to conserve energy and provides more time with the bomb.

The Objectives of the Project

Included:

- Transport a Bomb Technician to the bomb site
- Must be an electric vehicle
- Design must be able to drive a minimum of 0.5 mile on a single battery charge
- Maximum width of 28" and length of 40"
- Controlled by a robust joystick
- Must travel at least 5 mph
- Transport a minimum of a 500 pound payload
- Tow a minimum of 100 pounds



HOW IT WORKS

The BTMV device is controlled with a single joystick. The tracks on the vehicle are intended to be able to go over any surface that may be encountered. Having twelve idler wheels on the bottom of the device maximizes surface area for optimum traction. Adjustable tensioners in the device take up the slack in the tracks to prevent the track from slipping off of the sprockets while vehicle is in action.



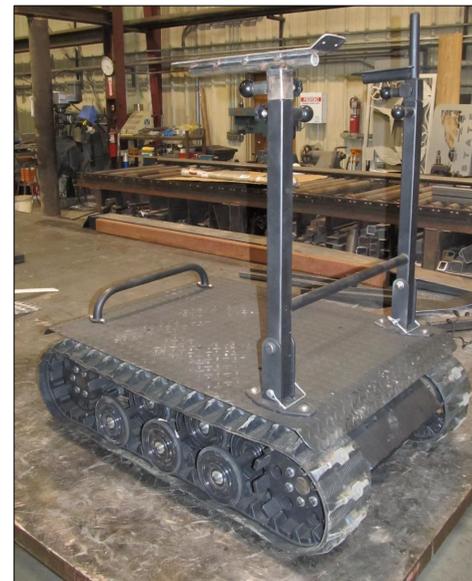
Tracks, Drive Sprocket, and Idlers

Benefits of the BTMV Device:

- Capable of moving over rough terrain; e.g. sand, rocks, grass, and mud.
- Easy to operate
- Compact design
- High load capacity
- Handle bars adjustable for kneeling or standing
- Outperforms Segways™
- Electric vehicle



Bomb Technician on a Segway



BTMV Device With Handle Bars Folded Down for Easy Transportation

CURRENTLY IN USE

The current Segways™ device is used to transport Bomb Technicians to bombs. The Segways™ is great for roads and ramps but is deficient when it comes across rough terrains including, snow, sand, rocks, and stairs. A new device had to be developed for rural areas.

PROJECT OUTLOOK

The Bomb Technician Mobility Vehicle will be successful in areas with rough terrain. Saving the technician crucial energy and time.

TRACK SET UP SELECTION

Several tracked vehicle designs were analyzed. The ideal track system will move the bomb technician quickly and safely to the bomb. The device will be easily driven and maneuvered through various obstacles with ease. Tank style tracks were selected because of the ability to easily move over a wide range of terrain and allowed the team to stay within budget and allotted time constraints. There are two custom made aluminum drive sprockets for each track, one of which is a tensioner. There are a total of eight idlers on each track, which provide maximum support.



Exploded View of Bomb Technician Mobility Vehicle