Keeping adults and children safe and protected while they go about their daily life is an important part of society today. Crossing guards have been appointed to take up this responsibility and they are doing an excellent job of it. However, it is not always possible for them to be at their designated location every single day, due to various reasons. In addition, crossing guards are not always available for every intersection in a city. Under such circumstances, citizens are left to fend for themselves and must take a gamble with their safety in crossing busy roads on their own.

The Automatic Crossing Guard has been designed to fill this void. It has a large 35" by 25" drive-base that is powered by six high-strength 393 motors. This allows for a perfect combination of speed and torque that is required to move the large robot. Tank tread mobility enables the robot to overcome rough terrain, such as curbs, cracking roads and pebbles, all of which are common territory for a crossing guard. Each arm is powered by three 269 motors and a 1:9 torque ratio. This allows the robot to raise and lower its arms quickly but still have enough torque to keep the arm up. Attached to the end of each arm is a bright red STOP sign, which alerts oncoming drivers to halt for pedestrians, when arms are raised. All 12 motors are mounted low to the ground and in the center of the robot to ensure a low center of mass so that the robot does not tip over when its arms are raised.

The robot has two bumper switches that a pedestrian can press when they need assistance in crossing the road. It also features two ultrasonic sensors and three colour cameras which aid the robot in mapping out its environment (e.g. detecting cars and pedestrians). In addition, two flashlights enable the robot to function during the night and act as a visual beacon for oncoming cars. Together, these sensors allow the robot to autonomously operate while still allowing for human-machine interaction.

The Autodesk Inventor software made it very easy to visualize and design this robot. Creating sub-assemblies for each section of the robot aided in the design tremendously. It made it simple to make changes at any time because a change made to the sub-assembly would carry over to the full robot assembly. The 'Pattern' feature naturally came of use in a similar way. When parts need to be replicated and positioned repeatedly, this tool came in handy. It was very helpful in creating the tank tread drive. Due to the sheer size of the chassis, mating each tank tread link individually would have taken far too much time; so a sketch was created and the links were patterned around that sketch to get the shape of the tread. This saved so much time and allowed the design to progress much quicker. Overall, Autodesk Inventor helped to shape this design into something that could be presentable to any audience.