

EMERGENCY RESPONSE PLAN FOR THE OPERATIONS ON MORGAN STATE UNIVERSITY CAMPUS



Local Jurisdiction: Baltimore City

State: Maryland

Applicant: Kiwi Campus Inc.

KIWIBOT PDD GENERAL SPECIFICATIONS:



METRIC

- Dimensions: 403*532*566.5mm (without flag)
- Weight: 18.2kg [including battery assembly 3.3 kg]
- Cargo space dimensions: 295(L)x 295(W)x220(H) mm [19.2 liters]



IMPERIAL

- Dimensions: 16 *21*22.3 in (without flag)
- Weight: 40 lb [including battery assembly 6.6 lbs]
- Cargo space dimensions: 11.6(L)x 11.6(W)x8.7(H) in [19.2 liters]

Sensors System

2D Lidar, 3 Distance Sensors, 2 Cliff Sensors, and a Stereo Camera

Cameras

2 Front, 2 Sides, 1 Back

Location

GPS

Movement

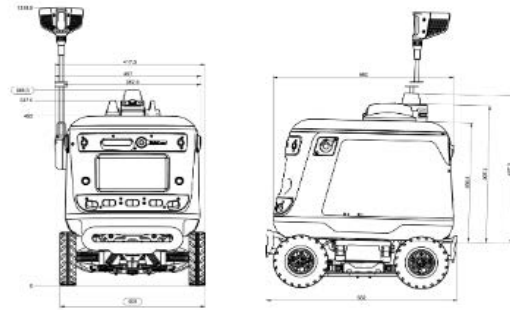
4 Wheel Differential Drive

Interaction

Interactively Animate Eyes and Sound,
Rear and Flag Alert Lights

Dimensions

Height without flag	22.3 in
Height with flag	32.5 in
Length	20.9 in
Width	15.8 in
Weight with Battery	45.1 lb
Weight without Battery	37.9 lb
Battery	14.8 V 39.8ah 589WH
Battery Life	7 Hours (Aprox)



General

Speed	1.9 m/h
Cargo Space Dimensions	11.6 (L)in, 11.6 (W)in x 8.6 (H)in, [19.2 liters]
Cargo System	Plastic Inner Container and Cooling System
Ability to Operate in Rain	Yes
Ability to Operate in Darkness	Yes
Autonomy Level	L2

KIWIBOT PDD Lights locations:



Emergency Response Plan

In case of an emergency, Kiwibot has qualified personnel. They will be located in different strategic locations on the University campus. In any situation requiring immediate assistance during the operation, the field operation will be in the zone in less than 3 minutes to assist. This assistance could be but is not limited to:

- Solving any problem with the robot.
- Stopping the robot.
- Picking up the robot for repair.
- Customer service.

It is worth mentioning that the robots have teleoperated assistance and observation throughout their operation. It is capable of notifying the "Kiwi Angels" of any incident that may arise. In the same way, the teleoperator supervisors can control the vehicle in case of emergencies so that in case there may be a mishap in the operation of this, and it is possible to stop the PDD or even move it to remove it from the situation where it may be an obstacle. Also, the university will provide Kiwibot with fire extinguishers for any fire incident. The "Kiwi Angels" will use them when a risk situation appears.

Kiwibot has five cameras, two in the front being able to zoom, two on the sides, and one in the back. With these five cameras, Kiwibot can understand everything around his environment. Is always able to identify any traffic light following the signals shown in the area. Also, in any situation, a particular vehicle or emergency vehicle can move not to block or stop and let the car cross. Also, in any work/construction zone, Kiwibot can recognize if it can cross the area or will need help from field ops crossing or changing routes. Kiwibot's PDD is capable of prioritizing the right of way for pedestrians. This maneuver could be, but is not limited to: stopping the trajectory of the vehicle, slowing the speed of the vehicle, or moving the vehicle into a safe space for the pedestrian. Also, it can identify if the obstacle is temporary or not for future decisions to optimize operations.

Kiwibot focuses on being the least hindered on the sidewalk by being the smallest sidewalk robot in the market, where its small size makes any pedestrian or wheelchair the priority by moving to the side, going to the bushes, or moving back to let them pass.

The procedure to disable the PDD is straightforward. You must press the bottom underneath the bot on the left side. A menu on the screen will appear

to give you the option to turn it off. Also, if you stand up in front of the bot, it will stop because of the sensors.

All of our batteries are DC battery powered. We have battery protector 3000; this means that A safety system was designed for parallel connection of batteries, guaranteeing that the batteries do not allow reverse current and reverse voltage, which could cause an overload of cells.

All of our robots will have a visible number that helps us identify them and the number of customer service is +1 831-292-5135; email customer.service@kiwibot.com to give support in any situation.

On the map, you can see the routes the robots would ideally take according to the pickup points and drop-off points to make a safe and efficient operation. We will follow the next steps if the city determines that we are operating in a public space on the map. (Image 1)

In case of a modification of the operation routes, Kiwibot will notify the authorities. Suppose the modification of the operation routes means the use of the public sidewalks or crosswalks. In that case, our field ops will personally navigate the area with a robot supervisor who will accompany the PDD. After completing 50 deliveries on that accompanied route, Kiwibot will share its experiences, comments, and recommendations with the authorities. This is to prove that the robot can operate by itself and is safe for the community.

Operations Map (Image 1)

*This map represents the area where Kiwibot will operate during the contract.

