

tiny mile 

A New Standard for Delivery: Safety, Reliability and Serving the Community

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Introduction

At Tiny Mile, we believe that innovation facilitates proaction, and as the rise of e-commerce continues to make on-demand delivery an indispensable part of daily living, each robot carries with it the potential for a technological milestone in the transportation industry by creating more sustainable, ecological and affordable methods of distribution.

Whether it is helping keep small businesses in business, reducing the risk of road accidents by shifting small parcel delivery to sidewalks, or simply shaving off 1-2 hours a week on shopping trips; Tiny Mile is on a mission to improve the quality of human lives with the work we do.

That's why our team has worked diligently to engage with regulators, manufacturing and safety experts, as well as continuing to actively collaborate with officials on both a local and provincial level. The values presented here are reflective of efforts made to continue safely and positively impacting our community, and our unyielding commitment to providing a service that enhances lives and prioritizes the welfare of others.

This document provides a brief overview of parameters we have put in place to ensure the secure and reliable introduction of our robots to the city space, including hardware and software specifications, standards of operation, and successful integration with the very communities we service.

Security

Named for one of the “Godfathers of A.I.,” Geoffrey Hinton, our delivery robots have undergone numerous revisions in both design and function.

This process has largely been one of adaptation—keenly observing human-machine interactions and adjusting the features of each iteration so that our robots complement the public space, rather than intrude upon it. Each of the current models is equipped with collision avoidance systems that help detect potential obstacles, adjust speed in real-time, and maintain visibility in crowded city centers.

Design



In choosing to shift parcel delivery from roads to sidewalks, a key factor of our design philosophy was prioritizing the well-being of pedestrians first and foremost by avoiding potential hazards or accessibility barriers. For this, a careful balance needs to be achieved between visibility and efficacy, a device that is distinct without becoming an intrusive presence.

The result is a robot that, while durable, takes up less floor space than alternative four-wheeled transportation devices traditionally encountered on public sidewalks, such as shopping carts, wheelchairs, or baby carriages.

In addition to a manageable size, Tiny Mile's robots travel at no faster than 6km/h, achieved through software and pilot training, to ensure a timely drop-off without compromising safety. By limiting the amount of speed that a device may travel, there is a marked improvement in a driver's ability to control its movements; as stopping distance is directly influenced by speed, human reaction time is simultaneously assisted.

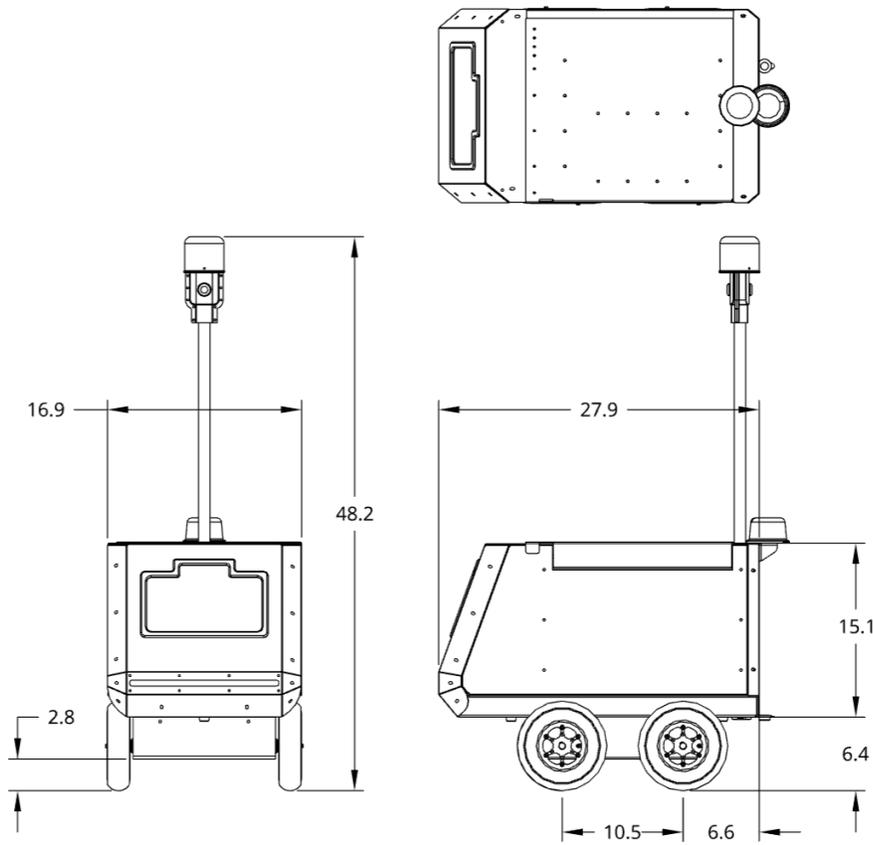
With a significantly slower driving speed and reasonable dimensions, we avoid the creation of unexpected obstacles for passersby and therefore facilitate the natural inclusion of one of our devices within an urban environment.

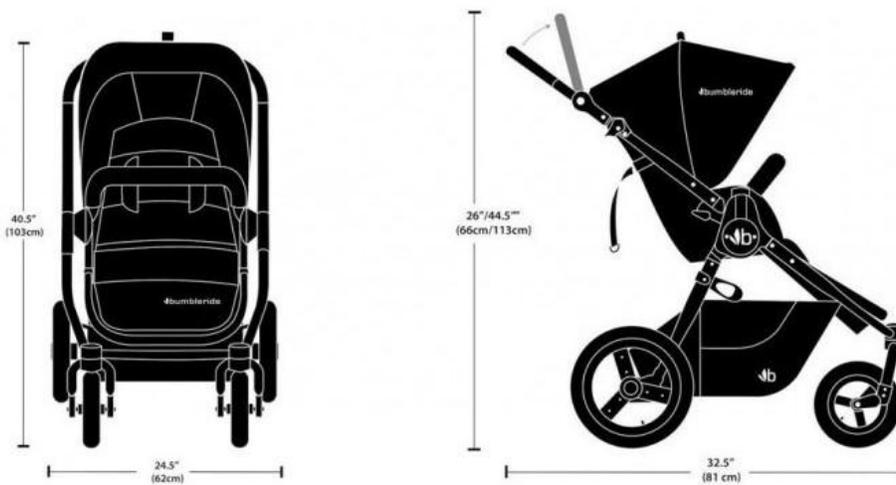
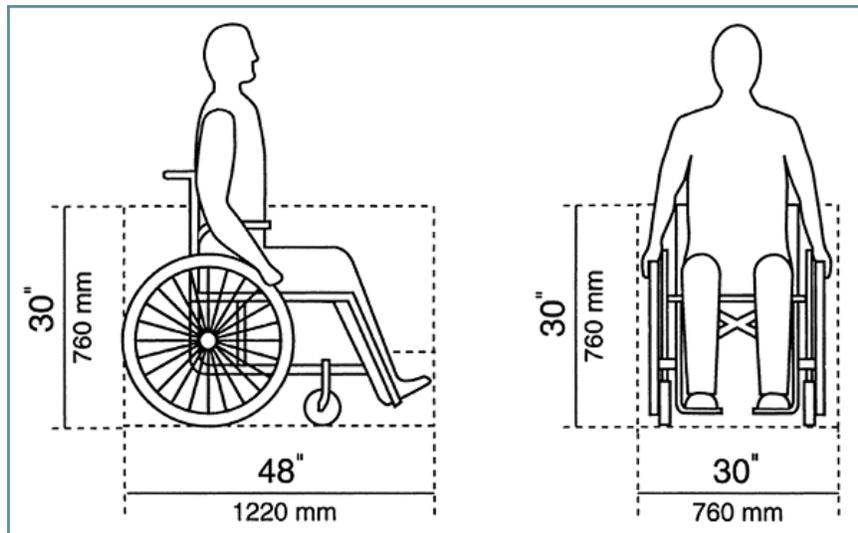
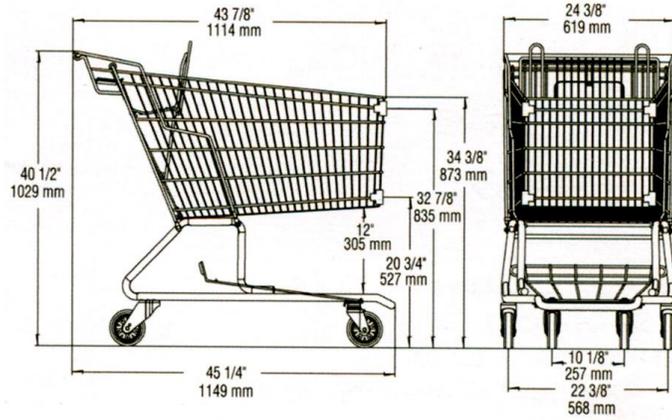
Specifications of Aluminum Body with Skid Steer Chassis

Weight: 77.5 lb (35.2 kg)

Top speed: 6 km/h (software limited)

Undercarriage clearance: 2.8"





In addition to mitigating the amount of space required for one of our devices, and likewise reducing interference with sidewalk traffic, certain features have been carefully implemented in order to maximize visibility. The bright pink color, for example, which is characteristic of the Tiny Mile Brand, allows for our robots to be easily identified on crowded sidewalks.

The use of light fixtures is another key component, one that has been strategically arranged according to regulatory considerations and our own standards of operation. This includes an illuminated camera tower positioned at the rear of the robot, the height of which rises to approximately chest-level, as well as a set of omnidirectional lights that are visible from a distance of 500ft (150m); white lights indicate the front of the robot, with a contrasting set of red lights indicating the back.

Not only do these features notify pedestrians of our device from a distance, the distinction in color provides an intuitive method for determining the direction of travel and the robot's position relative to the viewer.

Finally, to ensure that our delivery robots are both visible and audible, Tiny Mile utilizes audio technology to ensure yet another layer of security. Each model is equipped with a powerful 50W loudspeaker that is capable of emitting a warning sound audible from a reasonable distance. The hardware and software are flexible enough to program a variety of sounds, and at any interval, based on regional requirements or suggestions. This means that pedestrians are alerted of the robot's presence, regardless of whether or not it is currently in motion.

Cameras

Similar to the outer design, the use of cameras, from array and lens type to the number of lenses used, has undergone a series of revisions intended to increase situational awareness.

The current Geoffrey models utilize a curvilinear fisheye lens to create a 360-degree panoramic view of the robot and its surroundings. By avoiding the loss of peripheral vision typically created by other camera systems, Tiny Mile pilots are given an immersive driving experience, where the environment is rendered with immediacy and clarity. Furthermore, in doing so, their awareness of the robot's actions is not consequently limited. On the contrary,

a pilot's perspective when driving is oriented above the robot, effectively allowing them to visualize the vehicle as they simultaneously control its movements.

This system, its intuitive nature and acute perception of space, is at the core of Tiny Mile's navigation. As a result of prioritizing the environment's perceptibility, drivers can be aware of the robot's actions at all times and initiate active feedback in response to its motion or unexpected obstacles.

Lidar

Rather than focusing on artificial intelligence and autonomous methods of vehicular control, Tiny Mile emphasizes the flexibility and better-understood complexity of human-machine interactions. But while a human pilot is in complete control of the robot's movements, we have also included a set of lidars that function as a form of driving assistance.

These sensors detect potential obstacles and adjust the robot's speed accordingly, reacting to objects and/or individuals that may appear unexpectedly in its path, thus facilitating a system of collision avoidance that is not wholly reliable on a driver's reflexes. This additional security compliments our pilots' skills and expertise by simultaneously helping them to interpret the environment, without sacrificing the complexity and superior decision-making allotted by human drivers.

Control

Developing a method through which human-machine interactions could occur naturally and positively in an urban setting remains a critical element for Tiny Mile's standards of operations. That is why our robots are remotely-controlled by pilots who are carefully assessed and trained by experienced staff, so that only the most qualified are permitted to drive.

This factor of human-based control also allows for pilots to exercise a greater amount of dexterity, as opposed to a small autonomous vehicle that is designed to simply execute

commands. The city space is a dynamic environment, which is why we only utilize devices and individuals that can react with comparable nuance and complexity.

Pedestrians with disabilities are a key example of this. If a robot encounters someone with a form of disability (a wheelchair, visually impaired, etc.), Tiny Mile's standard procedure requires adhering to the similar protocols as those used when dealing with emergency vehicles—give them priority, do not obstruct their path, and allow the individual to pass. To make certain that one of our robots will never interfere with the pedestrians they encounter, we have taken steps to improve their maneuverability; these strategies include parking to one side of the street to allow other pedestrians to proceed without interruption, or finding alternative routes when a sidewalk is too narrow or the traffic is too dense to avoid creating a potential barrier.

Even our robots' hardware and software specifications have been designed and implemented with the intention of safely and reliably interacting with others. Their reduced speed, for example, means that both the driver and anyone they encounter has sufficient time to adjust.

Importantly, our pilots are explicitly trained to make the right decisions, training that is continually updated and reinforced in order to assure correct conduct on the city streets. Making sure that drivers are equipped to handle such situations in a responsible and professional manner takes precedence in our operations, and remains a key facet of our company's mission in making delivery robots a part of day-to-day living.

Accountability

Tiny Mile is making delivery available to everyone by developing contactless transportation that is affordable and reliable, without sacrificing safety.

That is why we actively work with experts and officials to ensure successful integration with the public space by promising accessibility, obeying regulations, and respecting others in the community.

Pilots & Procedure

The quality of our drivers is crucial to providing a dependable service. Pilots under-go extensive training to safely share sidewalks with pedestrians and prioritize their well-being. The right candidates are those who help us to safely introduce these delivery devices with the city streets, combining their own expertise and experience with our robots' operation standards to ensure each interaction is a positive one.

Accountability forms the foundation of our operations; pilots must drive attentively and prioritize the welfare of others, which means avoiding risk or injury to pedestrians by maintaining Tiny Mile's product safety standards.

Their training includes strict adherence to regional laws and regulations, the prioritizing of others' well being over that of the robot, and respect for those we share the community with. Our drivers are instructed to always yield to pedestrians and remain keenly aware of potentially vulnerable individuals, such as those with disabilities, children, and elders. We also believe that standards of safety should be an ongoing priority, which is why it does not end with simply ensuring that the right individuals are hired. Once training is completed, a pilot's driving is constantly monitored and audited to ensure there is no decline in performance.

These strategies directly influence the ways in which one of our robots behaves and, as a result, shape our effect on the city.

Procedure and protocol

To complement the measures we have taken in collision avoidance, Tiny Mile has processes in place to ensure an immediate and effective response to a potential issue or accident.

The fleet is observed and maintained daily by our dispatching center, which includes real-time monitoring in order to vett problematic behavior, assist with potential hazards, report mechanical mishaps, and address errors as they occur.

Tiny Mile also promises responsible action by working with our community directly. Each robot is given an ID tag that includes the company name, email, and a contact number so that individuals with concerns can reach out to us and any incidents brought to our attention can be investigated thoroughly. This includes collaborating with officials, regulatory bodies, and law enforcement to respond to such an event, as well as adjust our operations in accordance with their expertise and feedback.

In the event of physical or property damage as a result, our robots are insured (up to \$100K).

Afterward

The only thing that eclipses our enthusiasm for robotics is our drive to make it a safe, accessible, and natural element of modern living. That is why Tiny Mile is working tirelessly to create a foundation of respect for the cities and communities that we are eager to become a part of. Thank you very much for your consideration and support—our team looks forward to reinventing delivery standards, reinforcing the values needed to make them reliable, and creating a positive and safe experience for everyone.