



The Mobile Robot Company

Knowledge Center — Creating the First Map · 2026-08-04

<https://info.mobilerobot.com/documentation/getting-started/creating-the-first-map>

Creating the First Map

The J1600 learns your facility by being driven through it. There is no separate surveying step, no fixed infrastructure, and no map-editing software to master: you drive, the robot maps.

How mapping works

The J1600 navigates with **3D LiDAR SLAM** (<https://info.mobilerobot.com/products/j1600/navigation-and-obstacle-avoidance/>) (simultaneous localization and mapping) processed on an industrial NVIDIA Jetson AI computer. While an operator drives manually with the tiller, the robot builds a three-dimensional map of its surroundings and keeps updating it continuously during later manual driving. It scans environmental structures at heights reaching up to 70 m above the vehicle.

3D mapping is designed for greater precision and reliability than traditional 2D navigation in complex or changing environments, which makes it suited to [brownfield sites](https://info.mobilerobot.com/applications/use-cases/brownfield-automation/) (<https://info.mobilerobot.com/applications/use-cases/brownfield-automation/>) where layouts shift and obstacles move.

Mapping the facility

1. Power on the robot and complete the on-screen tutorial if you have not already.
2. Drive the J1600 manually through the areas where it will work. It handles like a conventional electric pallet jack.
3. Drive to each intended autonomous drop point and save it — see [Saving the First Location](https://info.mobilerobot.com/documentation/getting-started/saving-the-first-location/) (<https://info.mobilerobot.com/documentation/getting-started/saving-the-first-location/>).

The robot then localizes itself in the map and plans its own routes to saved destinations. You do not teach routes point-to-point: once locations exist, the robot navigates to any saved point without demonstrating every possible origin–destination combination.

No infrastructure changes

Mapping requires no tracks, wires, reflectors, markers, or building modifications, and [no Wi-Fi](https://info.mobilerobot.com/documentation/installation/network-and-wi-fi-requirements/). This keeps deployment to hours or a day and allows the robot to move between facilities or areas by [remapping](https://info.mobilerobot.com/support/troubleshooting/mapping-problems/), rather than re-engineering.

Mapping versus safety sensing

The 3D LiDAR and RGB AI camera belong to the navigation stack. [Personnel protection is handled separately](https://info.mobilerobot.com/safety-compliance/safety-overview/navigation-sensors-vs-safety-sensors/) by two 2D safety LiDARs, certified components, and an independent safety controller — see [How J1600 safety works](https://info.mobilerobot.com/safety-compliance/safety-overview/how-j1600-safety-works/).

When the environment changes

The map is not frozen at setup. The robot continuously updates its environment model during manual driving, detects and avoids obstacles during autonomous travel, and lets operators add new locations at any time. Preferred travel zones can be defined for safer routing through production areas.

Next step

[Saving the First Location](https://info.mobilerobot.com/documentation/getting-started/saving-the-first-location/).