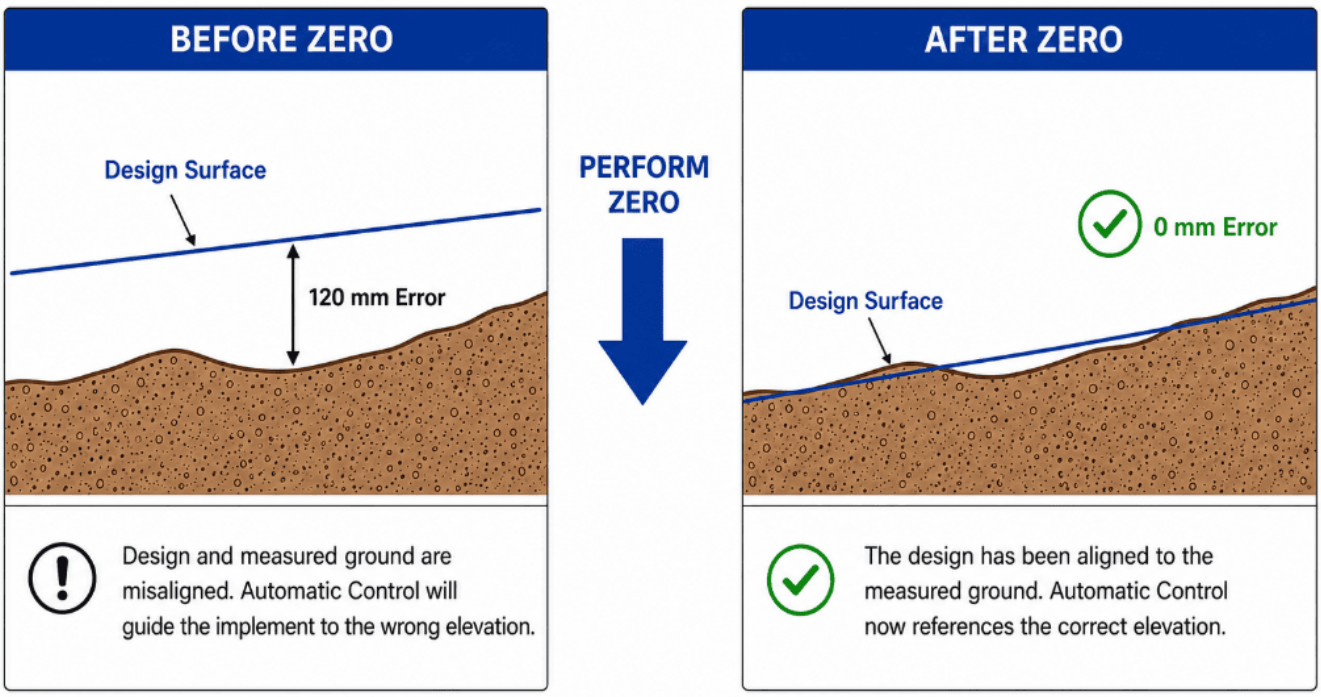
4.4 | Setting Zero

What is Zeroing?

Zeroing aligns the machine to the design surface so that **Level COMMAND** can guide the implement to the correct elevation.



A valid zero is required before Automatic Control can operate accurately. If the machine is not correctly zeroed, **Level COMMAND** may display incorrect cut and fill values and guide the implement to the wrong elevation.

A valid zero should be established whenever:

- Beginning a new project.
- Returning to a project after an extended period of time.
- Changing or relocating the GNSS base station.
- Performing major project alignment or terrain alignment changes.

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Different project types may require different zeroing methods. The most common workflows are described below.

Benchmark Markers

Level COMMAND separates markers into two categories:

- **Benchmark Markers** – Used for project alignment and zeroing.
- **General Markers** – Used for recording locations and points of interest within a project.

Only **Benchmark Markers** can be selected when performing a benchmark zero. This helps prevent accidental alignment to an incorrect marker.

Benchmark Markers may be:

- Imported as part of a design file.
- Created manually using the **Create Benchmark** option when creating a Marker.
- Generated automatically when creating Plane Origins.

Because **Plane Origins** are stored as **Benchmark Markers**, they can be used later when re-zeroing a Plane Project.

Zeroing a Plane Project

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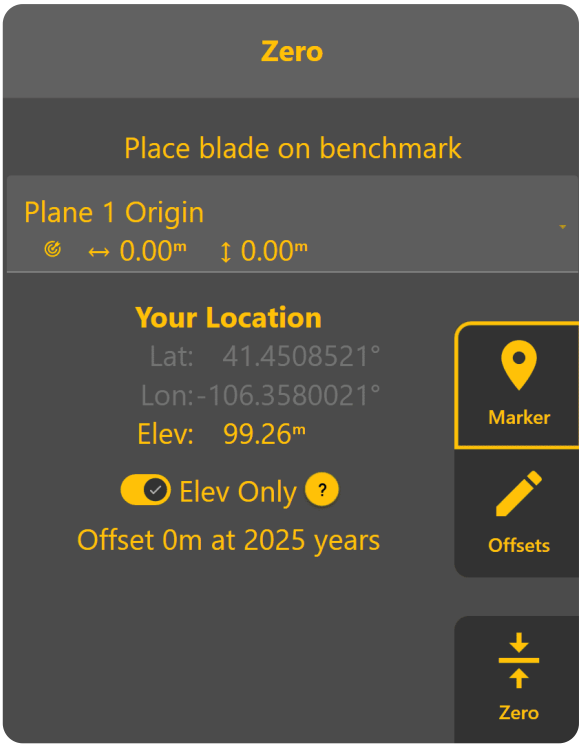

Plane Projects are normally zeroed during creation of the Plane itself.

When the Plane Origin is created using **Use GPS**, the Plane surface is aligned to the current implement position and elevation. If the Primary and Secondary Slopes are also defined using GPS positions, the Plane surface will automatically be aligned to those locations as well.

In most situations no further zeroing is required. However, if the project is reopened later or a different base station is being used, the Plane may need to be re-aligned.

To re-zero a Plane Project:

1. Position the implement at the Plane Origin.
2. Place the implement on the ground surface.
3. Press **More → Zero to Benchmark**.
4. Select the Plane Origin marker.
5. Press **Zero**.

The Plane Origin will be adjusted to match the current implement position and elevation.

By default, only elevation is adjusted. Latitude and Longitude can also be adjusted if required by disabling the **Elevation Only** option.

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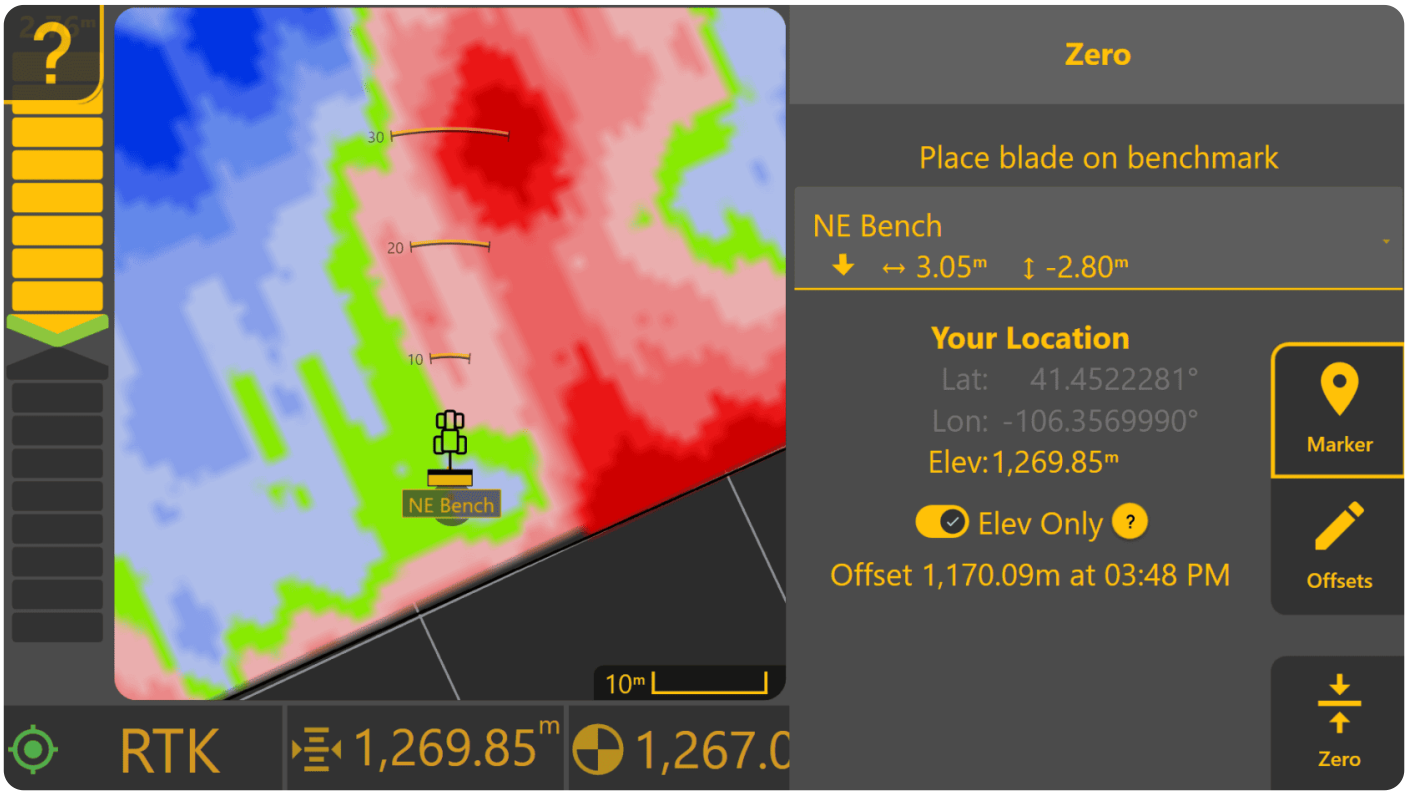
Zeroing a Design with a Benchmark

Many imported designs contain one or more surveyed benchmark locations. A benchmark is a known reference point that can be used to accurately align the machine with the design.

To zero using a benchmark:

1. Move the machine to the benchmark location.
2. Place the implement on the benchmark surface.
3. Press **More → Zero to Benchmark**.
4. Select the desired Benchmark Marker.
5. Press **Zero**.



Level COMMAND will record and average approximately 30 seconds of GNSS data before applying the alignment. Once complete, verify that cut and fill values appear reasonable before beginning work.

Zeroing a Design without a Benchmark

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If a design does not contain a benchmark, one should be created before beginning work.

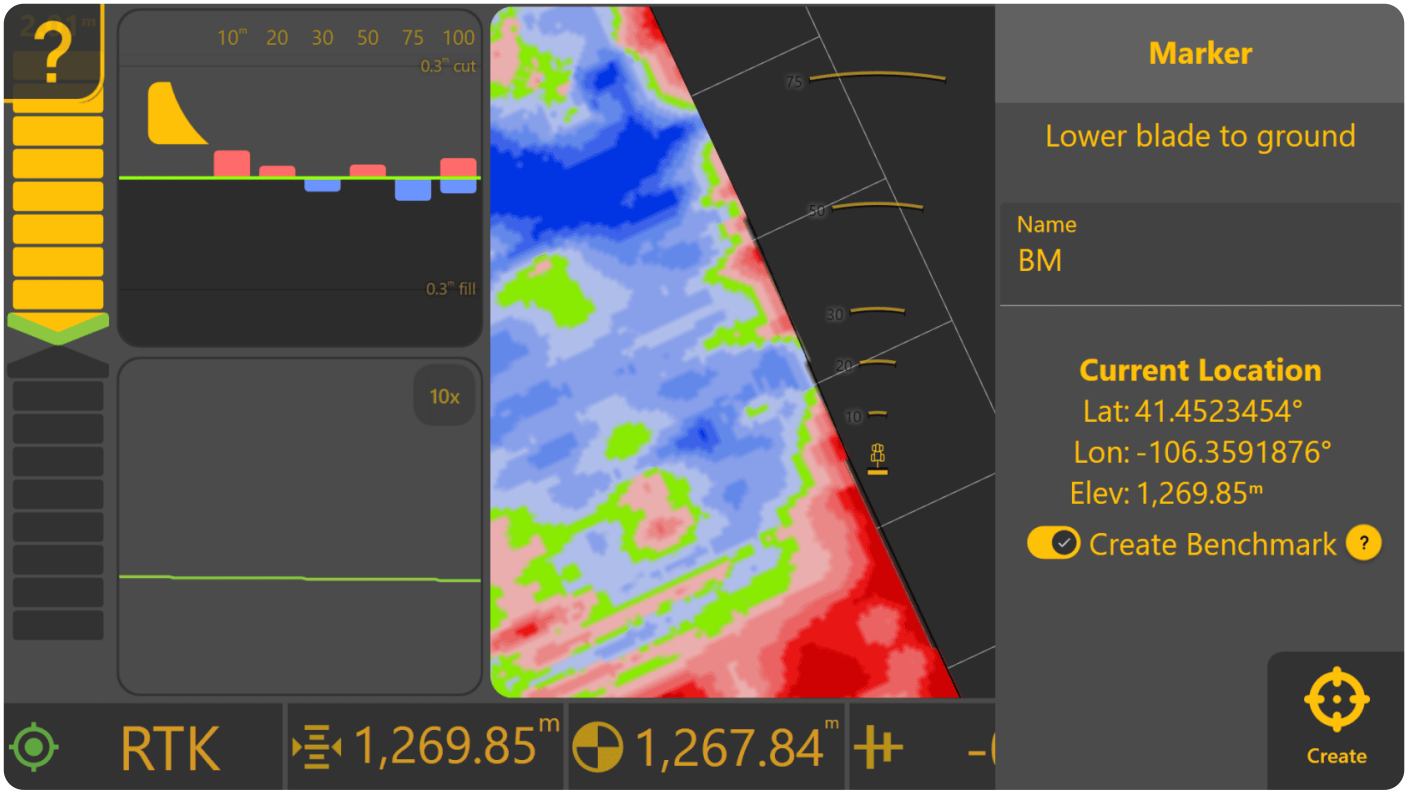
Choose a location that:

- Is easy to locate again later.
- Will remain undisturbed throughout the project.
- Represents a stable reference point.
- Is a wide area where the implement can be manoeuvred easily and positioned accurately on the marker.

To create a Benchmark Marker:

1. Press **Marker** from the Apply View.
2. Enter a name such as **Benchmark**, **Bench**, **BM** or **MB**.
3. Enable **Create Benchmark**.
4. Press **Create**.

Once the Benchmark Marker has been created, perform the standard benchmark zeroing procedure described above for zeroing a design with a benchmark.



Zeroing to an Existing Surface (Advanced)

In some situations it may be desirable to align a design to an existing surface rather than a surveyed benchmark.

This method is commonly used when:

- A benchmark is unavailable.
- A known area of finished surface already exists.
- Minor alignment adjustments are required.

Choose an area that:

- Has not been disturbed.
- Is known to be on grade.
- Can be located again later if required.
- Is a wide area where the implement can be manoeuvred easily and positioned accurately on the marker.

To align the design:

1. Position the implement on the chosen location.
2. Press **More → Zero to Benchmark**.
3. Press **Offsets**.
4. Press **Set Z to Current**.

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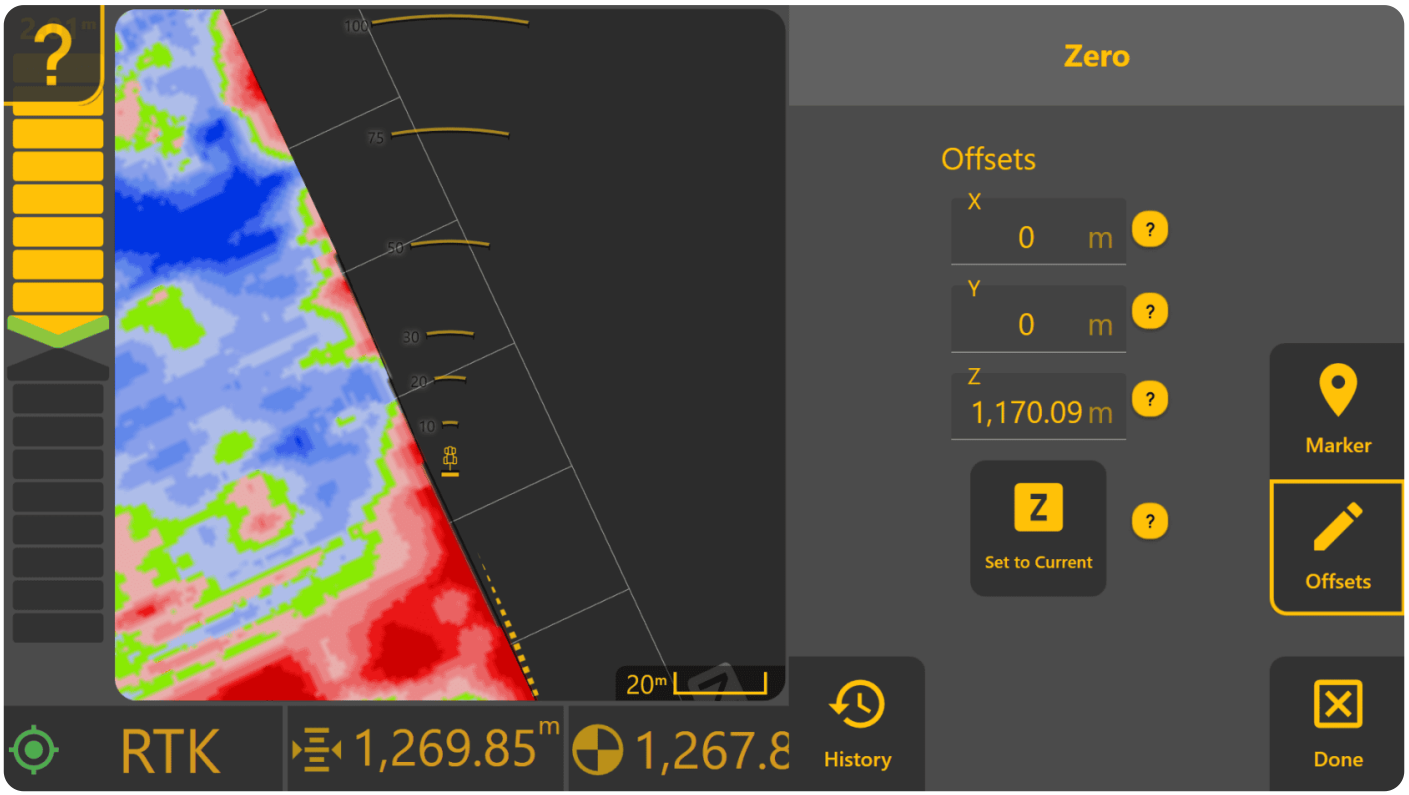

The design will be shifted vertically so that the current location becomes the new zero reference. Creating a marker at this location is highly recommended so it can be revisited later for verification, or re-zeroed using the Zeroing a Design with a Benchmark process described above.

Ready to Continue

Before engaging Automatic Control, verify that:

✓ A project is loaded.

✓ GNSS receivers have achieved RTK fix.

✓ COMMAND Status shows **Ready to Engage**.

✓ A valid zero has been established.

Continue to **4.5 | Engaging Automatic Control**.