

USING ANTENNA PROFILES IN GRAFNAV/GRAFNET

The antenna profiles shown in GrafNav/GrafNet have been created using information obtained from National Geodetic Survey (NGS). It is important to note that NGS measures with respect to the base of the antenna, as opposed to its actual measurement mark. For users making measurements to points other than the antenna base, the antenna profiles provided with the software will need to be modified, which will require additional information from the antenna manufacturer. This document is aimed at users who wish to create an antenna profile that will be consistent with their antenna height measurement.

When adding the GPB file to the project in GrafNav/GrafNet, select the option “Use advanced method (requires antenna profile)” in the **Antenna Height** box. Click the **Define** button to bring up a window listing all the antenna profiles available. Once you have located your antenna model, highlight it and click **Add From**. Please see Figure 1.

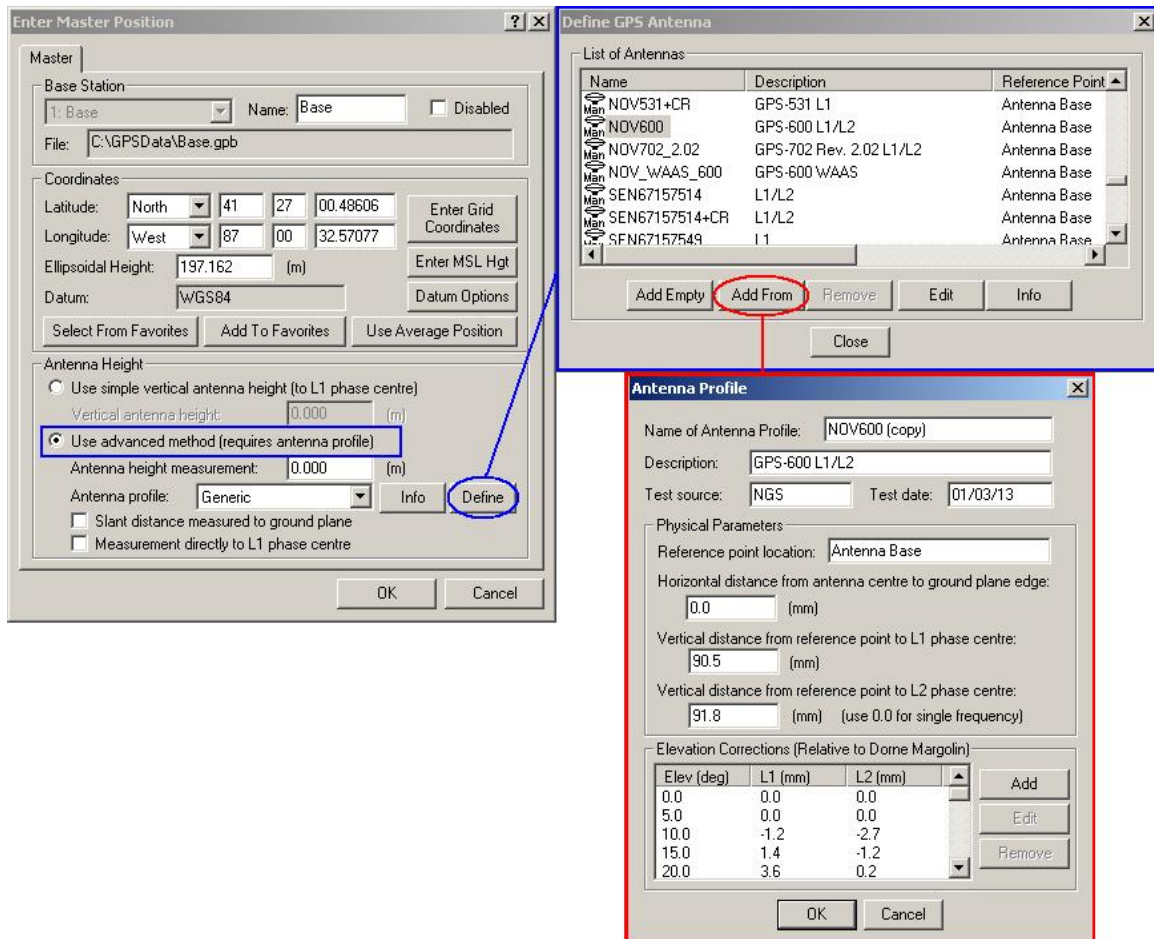


Figure 1: Modifying an Antenna Model

In the window that opens, give your antenna profile a name, and modify the “Description”, “Test source”, “Test date” and “Reference point location” fields as needed.

Before changing any of the measurement values, you will need to know the vertical distance between the measurement mark and L1 phase centre. In addition, you should record the vertical separation between L1 and L2 since this distance is the same regardless of what reference point is used. After adjusting the “Vertical distance from reference point to L1 phase centre” value, simply add the recorded vertical offset to this value in order to derive the new “Vertical distance from reference point to L2 phase centre”. In mathematical terms:

$$\mathbf{L_{offset} = L2_{old} - L1_{old}}$$

$$\mathbf{L2_{new} = L1_{new} + L_{offset}}$$

Depending on whether or not the antenna height measurements are being made to the ground plane, you may need to enter a value for the “Horizontal distance from antenna centre to ground plane edge” field. The “Elevation Corrections” values do not need to be changed as they are independent of the distance values. Click **OK** when you are finished, and then click **Close** to return to the main window.

Figure 2 contains diagrams representing the different methods of measuring the antenna height. Note that Method 1 in the figure represents the procedure used by NGS. Using Method 3 requires knowledge of the ground plane radius. Also, be sure to check off the “Slant distance measured to ground plane” option in the main window. If you are using Method 4, then you must check off the “Measurement directly to the L1 phase centre” box in the main window.

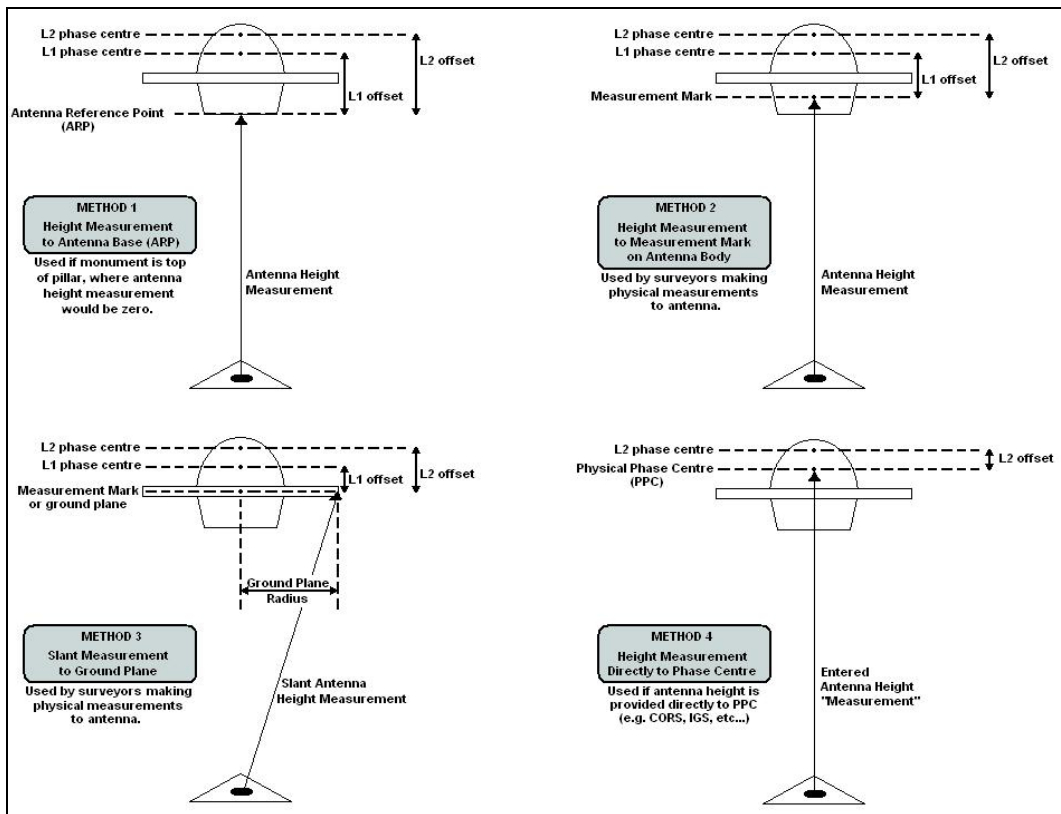


Figure 2: Antenna Height Measurement Methods