Appendix G
Horizontal Translations

Multiple-source data sets may need to be combined in a single AGTEK job file to model a site's earthwork quantities. This may involve working with some combination of **(1)** manually digitized line work based on raster PDF (or paper) plan sheets; **(2)** imported line work from vector PDF plan sheets; **(3)** imported line work from CAD and/or LandXML files; and **(4)** imported survey data from PNEZ text or point cloud/ortho image files. Data from these sources likely won't be based on the same horizontal coordinate system (arbitray/local vs. state plane) and definition of "north" (arbitrary vs. "true"). When that's the case, a horizontally deviant data source can be translated using AGTEK's **Translate North/East** utility and/or **Align Matching Edges** utility, depending on the specific data involved.

An important question with coordinate translations is *which data should be translated?* (in other words, which coordinates are desired for the final combined-data AGTEK job file?). *For takeoff modeling* applications, it's best to use the designer's CAD coordinates for the job file, which avoids repeat translations for subsequent CAD revisions made by the designer (and, if designer's CAD data is in state plane coordinates, an added bonus is easy job file geo-referencing in *AGTEK 4D* per pages 136-138); *for staking and grade control modeling* applications, using the surveyor's coordinates (if different from the designer's CAD coordinates) would likely be a better choice for that job file.

Before getting into the two translation exercises in this appendix, let's review common translation scenarios (examples for many of these scenarios are documented elsewhere in this *Day 2 Handbook*) . . .

♦ If a job file's current starting coordinates must be translated to different destination coordinates with no change in the north bearing, the translation can be completed using one common point (identifiable in both the starting and destination coordinates) using only the **Translate North/East** utility. See the examples on page 63 (*job file arbitrary coordinates to CAD coordinates*) and pages 134-135 (*job file CAD coordinates to State Plane coordinates*). For a variation on this one-common-point translation theme, see pages 74 and 343-344 (*selected-data to job file coordinates* examples).

♦ If the data to be combined have different north bearings (and/or different scales), the translation requires two common points (identifiable in both data sources) and the **Align Matching Edges** utility. See pages 67-69, 78 and 98-99 (three *PDF to job file coordinates* examples); and AGTEK's video at *www.agtek.com/ video.html?id=285* (*drone point cloud/ortho image adjusted to match the job file's GPS ground control point coordinates*). *[Exercise I and Exercise II in this appendix also represent examples of this translation scenario.]*

♦ For an example of a *combined horizontal and vertical translation* using one common point for two sets of PNEZ text survey data, see the borrow pit example on pages 209-210.

♦ Finally, AGTEK's **Check Job Scale** utility (see page 147) and **Stretch Site** utility (see page 148) offer two methods for correcting a job file's horizontal scaling error.

Most all of the above-referenced translations are made *after* all required data is in the same AGTEK job file; however, in cases where the job file data to be translated resides on multiple surfaces and layers (and/or data sources are in widely-separated coordinates), users may find it easier to translate the job file *before* importing data in the desired destination coordinates. AGTEK's video at *www.agtek.com/video.html?id=325* provides a good example of such a situation (*job file CAD coordinates translated to drone point cloud/ortho image State Plane coordinates before* importing the drone survey data). A similar situation applies to the *Exercise I* and *Exercise II* translation examples on the following pages of this appendix (*job file arbitrary coordinates translated to CAD coordinates before* importing revised existing topo data provided in a CAD file). Let's turn the page and get into the details of our first example …