# Appendix G
## Horizontal Translations Exercise

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 different sources may not be based on the same horizontal coordinates and may not share the same definition of "North". When that's the case, a horizontally deviant data source can be translated using AGTEK's **Translate North/East** and/or **Align Matching Edges** utilities, depending on the data that's 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 probably best to use the designer's CAD coordinates for the job file (avoids the need for another translation every time revised CAD data is received from the designer); for staking and grade control modeling applications, using the surveyor's coordinates (if different from the designer's CAD coordinates) could be a better choice for that job file.

Before we get to the translation example in this appendix, here's an overview of some additional translation examples (most of which are documented elsewhere in this *Day 2 Seminar 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 55 (*job file arbitrary coordinates to CAD coordinates*) and pages 126-127 (*job file CAD coordinates to State Plane coordinates*). For a variation on this one-common-point translation theme, see pages 66 and 331-332 (two *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 59-61, 70 and 90-91 (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*).

♦ For an example of a *combined horizontal and vertical translation* with one common point in two sets of PNEZ text survey data, see the *Borrow Pit Modeling and Volumes II* exercise on pages 203-204.

♦ Finally, AGTEK's **Check Job Scale** utility (see page 139) and **Stretch Site** utility (see page 140) offer two methods for correcting a job file's horizontal scaling error.

All the above-referenced translations are made *after* all 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 but less dramatic situation applies to the example on the following pages of this appendix (*job file arbitrary coordinates translated to CAD coordinates before* importing revised existing topo data in a CAD file). Let's turn the page and get into the details of this exercise example …