

Program and Vector Data Overview

A Toolbox for Creating Earthwork Models

The *Day 1*, *Day 2* and *Day 3* seminars introduce and detail a wide range of AGTEK software functions available for creating and manipulating earthwork models for commercial, industrial, residential and other site projects. How and when these numerous functions are used depends on the earthwork model's intended purpose: Will the model be used for takeoff applications (bid analysis) or for construction applications (machine control, horizontal layout, setting and checking grade)? The answer to this "takeoff model vs. construction model" question can affect the AGTEK user in a number of ways . . .

- ◆ Takeoff models may be based on imperfect manual digitizing from raster PDF or paper plan sheets (*Day 1*) when vector data (CAD, LandXML, or vector PDF) files (*Day 2*) are not provided by the project's design team. But even when vector data files are provided for pre-bid analysis, takeoff models are often rushed and time-saving "short cuts" result in an imperfect takeoff model. However, the corresponding minor surface imperfections are typically (and perfectly) acceptable for quantity takeoff and bid analysis purposes.
- ◆ Although less time and detail might go into creating a takeoff model, additional time will be spent on manipulating takeoff models for calculating, documenting, and evaluating quantities (*Day 1*), evaluating the impact of grade adjustments on import/export quantities (*Day 3*), and for quantifying variable subsurface material volumes and staged grading scenarios (also in *Day 3*).
- ◆ While minor surface imperfections in takeoff models typically have no adverse impact on bidding work, the same imperfections would be unacceptable for machine control (or checking and setting grade) on the job site *if* the imperfections exceed allowable vertical and/or horizontal tolerances; therefore, more time must be spent on error checking and editing (*Day 1*) when creating construction models. Construction models typically require the horizontal accuracy of vector data files (*Day 2*) and they may require different applications of the Offset Line utility and/or Sectional Areas (*Day 1*) when compared to corresponding takeoff models (pad overbuilds, etc.). Finally, data for construction models will be exported from AGTEK for construction control applications (*Appendix D* of this *Day 2 Handbook*).
- ◆ The techniques covered in the *Day 1* and *Day 2* seminars represent the core "toolbox" of functions that all AGTEK users should master if they need to create and edit earthwork models for takeoff and/or construction applications. The *Day 3* seminar covers additional functions for extended analytic manipulations that may (or may not) be used less frequently than the core tools of *Day 1* and *Day 2*.
- ◆ Depending on the specific AGTEK modeling product being used, the data-entry, data-import, modeling, and analytic tools available to the user will differ (see next page).