This question arose during a conversation with a MicroStation VBA experimenter: “How do I calculate the intersection of two lines? I want to calculate either an actual intersection or a projected intersection.”

He also wants to mark the intersection point, by drawing a temporary circle at the point of actual or projected intersection. The diagrams below indicate what he anticipates:

The MicroStation VBA module Intersect.mvba (in ZIP archive Intersect.zip) implements his requirement. The apparently simple specification led me down some interesting by-ways in VBA, at one juncture colliding with MDL. Here is a brief explanation of the code ...

1. Implements ILocateCommandEvents to locate more than one element
2. Preserves the result of the first locate by saving the Element’s ID
3. Shows different prompts, depending on the current locate state
4. Computes the actual intersection of two lines, and tells you when they don’t intersect
5. Computes the projected intersection of two lines. That is, the actual lines don’t intersect, but their projections may intersect beyond the extent of either of the lines
6. Uses MDL functions to help compute 5 and 6
7. Calculates the LocateTolerance radius for a given view to draw a temporary circle at the line’s intersection point. Uses MDL functions to find the LocateTolerance in Master Units for a given View

If you want to try out this code, unzip the archive and copy Intersect.mvba to a folder where MicroStation can find it, for example C:\Program Files\Bentley\Workspace\Standards\VBA. Start MicroStation and start the VBA Project Manager (from the Utilities|Macros menu). Click the Load Project button and browse to find Intersect.mvba. With the project loaded, open MicroStation’s key in window and enter VBA RUN Intersect1.Main.

The VBA code prompts you to locate and accept two LineElement lines (no other element type is acceptable: LineString elements, for example, are rejected). It computes their intersection, displays an appropriate message in the status bar, and draws a temporary circle at the intersection point as shown above.