

CatCurve

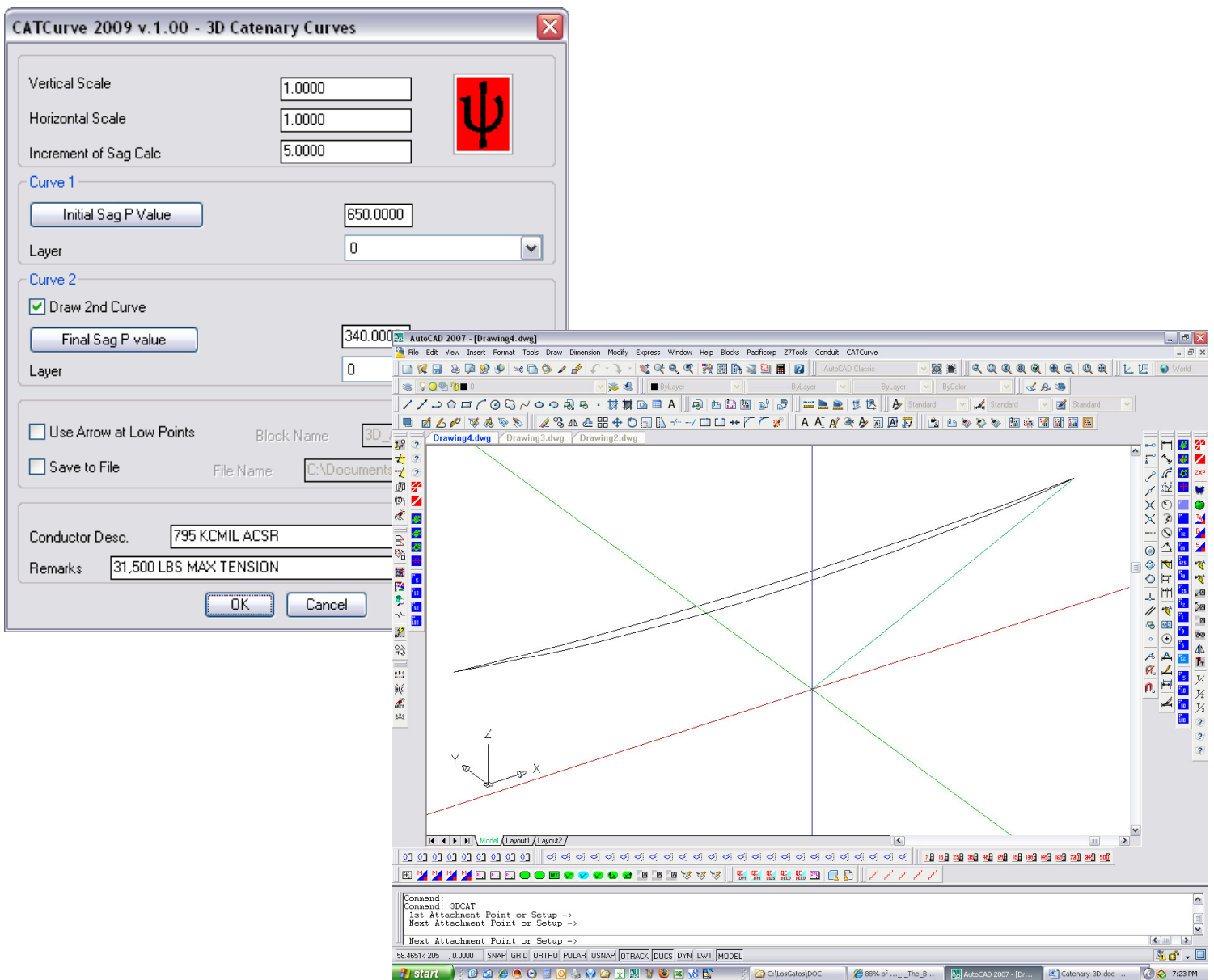
Tools for drawing catenary or hyperbolic curves.

3DCat



Catenary Sag Curves with 3DCAT

This is 3-Dimensional coordinate geometry in a Catenary Curve Generator. Two different scales, horizontal & vertical (X and Y in plan view) with depth (Z coordinate) allow for display of the curve in actual configuration or in exaggerated scale similar to 2D Plan and Profile sheets. Y3 Sag Values for individual vertices may be sent to ASCII text file for printing and evaluation. Input parameters and conductor length are calculated and attached as extended entity data to each polyline. All extended data can be viewed using an PSHOW utility for checking. Attachment points may be selected in any order. X,Y and Z coordinate data is retained and curves can be generated between different 3D points. All polylines are AutoCAD entities that may be modified without losing data. An arrowhead block called 3D_ARROW is used to indicate the low point of sag, and the conductor low point is included in the list of polyline vertices. Any OSNAP setting can be invoked during the point selection process. This routine is not intended as a replacement for CAT.lsp, but you the user may prefer seeing your conductor curves from multiple view points for more accurate line to ground calculations.



PlanPRO

Tools for developing Transmission Plan and Profile drawings.



PSHOW

Displays List of Extended Entity Data Values

The use of Extended Entity Data attached to an AutoCAD polyline was a result of the need to verify correct use of the Catenary Generators by the drafter. The drafter must satisfy the Engineer that all conditions have been met before he accepts the validity of the electronic data. Output to screen and to text file provides substantiating evidence of conformance to Engineering parameters.

1. (H/W) K Value
2. Vertical Scale
3. Horizontal Scale
4. Point P1a
5. Point P2a
6. Point P3
7. Wind Span Length
8. Conductor Length
9. Back Load Span X1
10. Ahead Load Span X2

Selected Catenary Curve Adjustable Values	
P (H/W) Value	95.0000
Vertical Scale	1.0000
Horizontal Scale	1.0000
Increment	1.0000
Conductor Desc.	795 MCM ACSR - DRAKE
Remarks	31,500 LBS MAX TENSION

Selected Catenary Curve Calculated Values	
Low Point P3SAG	50.1683
Span Length	195.7789
Conductor Length	246.9194
Back Load Span X1	64.3715
Ahead Load Span X2	131.4075

Warning about UNITS and Calculations when Loading

When loading 3DCAT.LSP a warning is displayed if the Units setting is other than Decimal [2] because the formulas used assume whole units as equal to 1 foot. Otherwise curves may not match your original template.

OUTPUT to screen

Display on screen of several Autolisp variable names and their set values after a program function run is available by typing (VALUES) at the Drawing Editors Command: prompt.

Calculations of CAT and 3DCAT saved to ASCII file

The purpose for writing Y3/Sag values to a file was to verify that the results I was getting from 3DCAT.LSP were the same as CAT.LSP. I also have been trying to document my work in the form of an instructional manual with command line prompts and arguments.