

ArchiCAD Computer Tips & Techniques: LIBRARY PARTS

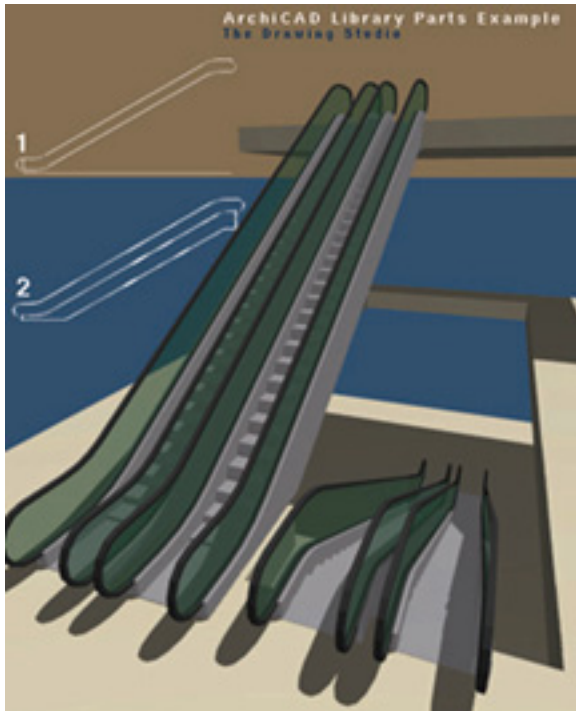
by The Drawing Studio

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The following pages are part of The Drawing Studio's Computer Tip files and are here to help beginners in the computer world.

THE DRAWING STUDIO
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This file is titled: The Drawing Studio(TDS)-4aLibraryParts.text and is grouped with the picture file titled: TDS-4bLibraryParts.JPG.

The following is The Drawing Studio's much used easy-to-create library parts and was tested and compiled with the help of Doug Allgood of Philip Johnson, Ritchie & Fiore Architects. It is outlined in a step-by-step process so that even a beginner can manage these techniques.

Library parts are great because you can shorten or stretch them to fit any parameters you may be faced with. With this in mind, we felt an escalator would be an appropriate example to illustrate the flexibility of creating your own ArchiCAD library parts.

SIMPLE ESCALATOR:

To create an escalator and save it as a library part, first you need to establish the side elevation geometry; go to section 14 of the Sweet's Catalog File and look around 14200/OTI section for an escalator you would like to copy; For this library part, we will be drawing everything in elevation, not in plan as you would do normally; also, we will be doing this example in 2 phases. The first phase creates the ArchiCAD model and the second phase transforms this model into an ArchiCAD library part;

PHASE I:

Building the Pieces:

1 First, in elevation (actually you are in the 'plan' window) with the Line tool and the Circle/Arc tool, draw the inside outline of the rubber handrail:

GEOMETRY: For instance (note: you can draw something close to represent the handrail to get the jest of this procedure or, use the following instructions): draw a horizontal line 42' long; at the left end, draw

a vertical line 2'-4"; using the center point of this short vertical line as the radius point, draw a half circle at 1'-2"R; select the arc and Command-K(mirror a copy) using the center of the long line as the pivot point; select and drag the right arc 20'-0" towards the top of your document[Command-D(drag)]; at the top mode of the first arc you drew, draw a horizontal line towards the center 3'-3"s long, do the same for the opposite arc but make it 4'-0", then connect these two lines; now, smooth these two meeting points with a 4'-6" arc at the bottom and a 6'-9" arc at the top(you'll have to figure out the geometry for yourself); make sure all the nodes you draw meet; Next move the 42' long horizontal line at the bottom of your drawing down 0'-9" (thus establishing a ground plane) and then fill in the remaining lines between the other two nodes of the arcs to complete the side elevation of the escalator (this can be accomplished by selecting the line you want to copy/drag and then pressing Command-I and then dragging the line to a new location); remove the short vertical line; at this point, you should have a diagram similar to TDS-4bLibraryParts.JPG(1);

2 GLASS SIDE: Go to "Menu: Edit: Curved Edge Segements..." and set to Deviation from Arc = 1/2", click OK; Select all lines; double click on the Slab tool and set it to elev 0'-0 1/2", Glass, 1" thick and click OK; Hold the space bar down and click on your selected lines to transfer the slab properties to your lines(the cursor should be in a up-side-down Y before clicking), then, before you unselect the lines by clicking again, Command-D(drag) the lines to a new location on the plan;

3 HANDRAIL: Select the slab and then double click on the Wall tool; set to Asphalt material, 3" high, -1 1/2"(negative 1 1/2") from elevation 0'-0" and 2" thick, then click OK; Hold the space bar down and click on your selected slab to transfer the wall properties to your slab(the cursor should be in a up-side-down Y before clicking), and make sure the slab has transfered to the outside of the slab(go to the control box to change the orientation of your wall if necessary);

4 HANDRAIL BASE/MECHANICAL: in elevation with the Line tool and the lower portions of the existing geometry, draw the outline of the lower sides of the escalator:

GEOMETRY: For instance (note: you can draw something close to represent the base to get the jest of this procedure or use the following instructions): return to the line drawing; select the bottom diagonal and Command-I(drag a copy) it 3'-1" perpendicular to itself and down; then, stretch(actually contract) this new lines' lower node to the ground plane line; shorten the ground plane line by 3" at the left and then stretch(actually you will be contracting the line) the right node to the bottom node of the diagonal; make the existing short horizontal line (at the bottom of the handrail) align with the end of the ground plane line and connect these with a new vertical line; moving to the top node of the diagonal draw a horizontal line 3'-4" out then, align the upper short horizontal line with this line and connect the two; you should now have a completed polygon representing the lower sides of the escalator; see TDS-4bLibraryParts.JPG(2);

5 Select the lines which complete the lower sides and double click on the Slab tool; set to 2" thick, 3 1/2" from 0'-0", Stainless Steel and click OK; Drag it into its correct location on your 3D model and while it is still selected, press Command-F(Multiply); set to Elevate, 1, -5", Increment and click OK;

6 Select all 3D elements and Command-F(Multiply) and set to Elevate, 1, -3'-0", Increment and click OK; you've just completed the 2 vertical handrails of your model, all that is left are the steps;

7 STEPS: draw the outline of the escalator steps merged with the lower portion of the lower escalator sides;

GEOMETRY: For instance: establish the ground plane of the upper floor 9" below the upper arc by dragging the short horizontal line that exists in that location down 9"; drag the middle diagonal 9" perpendicular to itself and down; add the connecting radius between the ground planes and the diagonal; using the middle diagonal as a guide, add treads and risers and merge with the ground plane at either end; drag a copy of the lower ground plane up 1/4"; connect all nodes to form a polygon, deleting any extra lines including the diagonal and arcs;

Note: make sure all 3D element are above your ground plane line so that it is easy to set the elevation when you open a library part.

8 Select all the lines that comprise your escalator steps and escalator bottom and double click on the Slab tool; set parameters to thickness=3'-6 1/2", 3 1/4 from 0'-0", Stainless Steel and Plank Floor fill; drag to within 1/4" of the ground plane in your 3D model(this will give the back face some articulation); Go to "Menu: Options: Materials...: Stainless Steel: Expert: 3D Hatching" and select Plank Floor, click OK, OK;

PHASE II:

CREATING A LIBRARY PART from an ARCHICAD MODEL:

1 Select your 3D model and go to "Menu: Image: 3D Projection Settings...: (Parallel Projections...): Side Elevation" and set x=180, y=0, z=90 (or rotate the camera to the top) and click OK; you should see a plan view of your escalator; To save this view as library part, see number 2 below:

2 Go to "Menu: File: Save as..." and set to File Format: Library Part and click OK (set a name as Escalator20Ft and make a folder called "14 Mechanical Systems" and located it in the ArchiCAD library); You'll see the dialogue box titled "Save as Library Part", then, click on "Object", put an X in "Remove redundant lines from symbol", click the radio button called "Editable GDL Script" and click SAVE; this will save your library part with the materials intact and will also allow you to change the size of your escalator to fit different contexts'.

3 Go to the Object tool box and click twice to see (or search for if necessary) your escalator, set at elevation 0'-0" and click OK; then click once on the plan and again to set down another escalator next to the first one; Add a floor at 20'-0" and cut an opening for the escalators; add another floor at 0'-0"; go to perspective to review your results. See TDS-4bLibraryParts.JPG for the final result. END.