



BEST PRACTICES COURSE – WEEK 15 – PART 3

Editing Element Geometry with the Pet Palette

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Hello, this is Eric Bobrow. And in this lesson we'll look at how you can edit the geometry of elements with the pet palette. ArchiCAD's pet palette is a very powerful and versatile tool that can work on pretty much all elements in one way or another, but we are going to focus in this lesson on the linear and polygon tools and poly line tools, where you see the geometry drawn explicitly, and you can grab endpoints, edges or node points and move them around. [0:00:30]

You can also use the pet palette for editing scriptable elements. These are objects, lamps, windows, doors and markers. And the pet palette gives you options for manipulating them. We'll look at in the next lesson after this one. So let's take a look now at these elements that I've pre-drawn. And see how we can work with them. Now you can select an element and then start editing it. So I use the Arrow tool, selected it, pressed down on a corner, and now I have the option to move the whole thing, rotate, mirror, elevate or multiply. These are the standard options whenever you have an editable element or set of elements selected. [0:01:17]

And then in this case, I'm at the end of the wall, so I have the option to reposition or stretch that end point perhaps to a new length or a new position. Now if I go to the edge of this individual wall, then I get a second row, and I am able to add a node point, for example, like this. That actually broke it up into more than one wall. Or if I go to the curve option, then it changes it from a straight wall to a curved wall. And there are other ways of doing the curve. I can use the option to control it by tangent, and that gives me some other controls that we'll look at a little bit more in a little bit. [0:01:57]

And then there are some special options just for the Wall tool that allows you to work with trapezoid walls. We'll defer that to a later lesson when we're looking at some of the complex wall options specifically. Now we can actually select multiple walls, like this, and do some editing that is much like a polygon. So as you should know, if I select a polygon like this slab, I can go here. That allows me to offset the edge. But did you know that you can actually select multiple walls here and do the same option. If I go to the edge, I can offset it. So it works much like a polygon. [0:02:44]

And in fact, what I've found is, you don't have to be very specific about your selection, you can just go to the Edit menu and select everything, all the walls or all elements, and then you can just go right on and select these things and move them around. Now one thing that ArchiCAD has added more recently is the ability to offset actually became more flexible. I can literally drag it past the other wall, and it will just

reverse that operation very nicely and easily. In fact, if we use the option here to add a node point, it's obvious that I can add a node point and break this wall. [0:03:22]

But did you know that I can actually just add a node point, whether it's at the midway point like this, or some arbitrary point that's in line with something, and then I can go and grab this edge and use the offset edge. And it will actually allow me to create a whole new bump out or bump in. so just by adding the one point and then stretching an edge, it will create this intermediate piece as needed if you do move that. So that can be a very quick shortcut for making the building have a bump in or out. So in fact, if I go and add a point in line with let's say this wall here, and another one, let's just make it arbitrary, then I can go to this edge and offset it, and you can see how it's added the bump out. So that could be a real time saver for you. [0:04:15]

Now when I'm doing an arc, let's say I'll just select all of these and I take this arc. In recent versions of ArchiCAD, I'm getting the feedback - and I'll just zoom in a little bit on this - I'm getting feedback based on the arc radius. And if you look closely at my screen, you'll see that there is a dotted line that's moving and indicating the center of that arc. So let's say that I wanted it to be a 12' radius here. I would type that in. Now notice when I hover over it that I actually can see that center point of the arc. Now that is the 12' radius that I asked for. [0:04:56]

In versions of ArchiCAD up to a certain point, ArchiCAD was giving a different type of feedback. It was just basically saying how far the point I was moving had moved from its original location, but it wasn't specifying the arc. The actual radius of the edge that I was manipulating. So if you're in one of those earlier versions, then what you will need to do is to draw an arc of the right shape. Let's say I'll take it from the center point, that's going to give you the easiest, quickest results. And let's say that I wanted it to be the 12' radius that I was talking about. [0:05:30]

So I've now created a 12' radius circle. I'll draw an extra line for drafting purposes from one end to the other of the wall using the Shift key or the guideline to find the intersection along here. And then I'll select this arc and drag from this point of intersection back down to the corner here. So now I've got a curve that has the desired curvature, the 12', and I can go in and just tell it to match that. And I can simple move it until my pencil snaps onto it. And that's going to give me the precise right curvature as you can see. [0:06:11]

Now sometimes what you want to do, instead of that is to actually have a half circle. So in other words, if I use the option here that is the third one, that says I'd like to adjust the segment by tangent, then you can see that the line I'm drawing is being used as a tangent. And if I bring that out straight, so straight as a continuation of the wall on that edge that it's connecting to, then it's going to make a nice smooth curve here. And ultimately, if these two corners are in line with each other, as they are in a rectangular situation, then we're going to have a half-circle. So that can be a really nice shortcut for drafting purposes. [0:06:56]

Now there are options when we go to a corner or an edge. So let me just select everything here. I will go to the Wall tool and select all walls. If I go to a corner, there are options to reposition that one corner, which in this case will move just the two pieces of the two individual walls that are at that corner. This is

very much the same thing as when I select a slab and say go to the corner and add the option that is in the top row on the left that says "Move the Node". And of course the two edges are moved around as I move that node. [0:07:38]

But let's say that we have this, and I go to the corner. I can also do a curve. Now if I select the option for fill or transfer which is the second one, then I can choose which one I want and type in a value. Let's give it a small radius like 3 feet. And when I say OK, you can see how that curved it. If I go to a different corner, it will remember all of the settings, so I don't even have to select it again. I just say OK and go through these perhaps one at a time. Now if I don't want this to happen, perhaps I want to do something different and a corner or perhaps another part of the model, I can cancel this. And then I get the option of working with any of the other pet palette controls here. [0:08:24]

Now let me just undo these steps. The other option that we have of course is when we are doing this, fill it or transfer. We can say apply to all corners, and then it will actually curve wherever it can. In this case, it didn't have enough space to do that curvature, so it decided not to. If you have enough space it will curve it in all those directions. So let's just add more space here. I'm going to move this back a little bit. And now, if I go to a corner and do the same thing, apply to all corners; we'll see how it curved all of them because now there was enough space to make that happen. [0:09:00]

So when we are working with the pet palette in this manner, if I select an edge, a slab for example, and I do have all of these options that are for standard for all geometries, in ArchiCAD later versions, we can now do the offset of all sides from an edge or a corner. So I can basically make this bigger or smaller, type in a distance say 2 feet, make that a certain size. In previous versions, this would only be available when we went to a corner. Let me just cancel the fill it. And then we would have this option here to make it bigger or smaller as I just did before. But that would be available in earlier versions of ArchiCAD, only if you went to a corner to do that. [0:09:50]

Now unique to the Slab tool is the option to have, in recent versions of ArchiCAD, an edge, a different material or even a different slant than the other edges. If I go to this edge, you will see there's an option at the end here that is showing a funny icon, but it's meant to indicate one edge being controlled and possibly have a different edge angle or color. So we can change the edge angle to another angle, type in a value, or we can change its material just for the clicked edge. Or we can go to all edges. Now if we were dealing with a hole in a polygon, we could then choose just that interior polygon to be affected. And so we'll take a look at that shortly. [0:10:40]

But let me just cancel this. This control here in terms of the edge or some other ones may only be available in some versions of ArchiCAD. If the tool in the toolbox is the one that owns that element. In more recent versions, it doesn't really matter which one we're in. I was in the wall tool, and getting the full controls for the slab. But there were, for many years, a significant difference if you wanted to edit certain things with an element. You needed to have that particular element as the active tool in the toolbox. [0:11:16]

Now one of the options that we are seeing here that I haven't explained is the polygon Boolean addition and subtraction. So Boolean addition allows me to, for example, let me just make this a rectangular

choice. I will just click a couple of points. I drew a box, and it basically added whatever was not in that shape. Let me do the same thing with the Boolean plus. And click outside it. And what will happen after I do that, you will hear a tiny beep. And that indicated that it could not add it, because it wasn't touching. It has to be touching. [0:11:52]

It of course can overlap, like I did here. Now if I do the same option - and by the way, I don't have to click the plus again, it just remembers the last thing I was doing with the pet palette. Then I can trace, for example, here is a second slab. And if I wanted to unify these, then what I'm going to do is essentially tell this slab to add the outline of the other one. And I can do that with the Magic Wand. So if I activate the Magic Wand by holding down the space bar and click, you can see how it has added the outline of the other slab to it. [0:12:24]

Now the other slab still exists, sometimes that may be useful for certain things. Maybe a ceiling or some other attributes that you want to do. But in this case, I might want to just delete it, and then I have one slab that has the entire shape. Now if you use the option for subtraction, so I go here, press down on an edge or corner and use the subtraction option here, then I can go and create a hole. So just to show you what that is, if I go to 3D, we'll see that there's a hole there. Now I can create as many holes as I want, and a shortcut is I don't even have to do the subtraction. I can simply just click inside this. [0:13:06]

But here actually, I do need to be in the Slab tool. So if I'm in the Slab tool, and I have the slab selected, then I can click and create a hole. So if I want to create multiple ones, this is a great shortcut. Now holes are sort of unique in terms of their options. You can actually literally select a hole and move it around, delete it, or duplicate it. And this is something that's not widely known. So how would I do that? Well, I'm going to zoom in a little bit, just so you can see better. And I will use the Arrow tool or the Shift key to select the hole by going to the edge of the hole. When I click on it that way, the edge, not the corner, then it selects just the one hole. [0:13:50]

And I can drag; I will just do Command+D. I can drag this into a new position. Or if I drag it, I will just drag it again; drag it into a new position. But I'll press and release the shortcut for making a copy. On the Mac, that's the Option key. On Windows it would be the CTRL key. And you see the little plus sign. And now I've actually dragged a copy of the hole. Let's just go to 3D and we'll see what that does. So now I'm going to go and select this hole again, and let's say that I wanted to get rid of it. So I can select it, I can drag it, I can drag a copy, or I can delete it. [0:14:27]

You'll notice when I deleted it, it actually went away, but then it selected a different hole. I think that's the ArchiCAD way of letting you know that you didn't delete something that was independent, you deleted something that was part of a larger element. Now, the hole, if I use the Arrow tool or the Shift key and I grab the corner, it will select the whole element. As would be the case when I select the outside edge or corner. So the only way to select a hole by itself is to select the edge of the hole when nothing else is active. [0:15:03]

Now if you want to do a circular hole, since it's not possible with the Polygon tool or the Rectangle tools to create a circle really efficiently, what you want to do is the Magic Wand. So I'm going to go and create an arc in here. And of course I can place this precisely wherever I want and size it as I wish. But

for training purposes, I'm just going to select this slab and with the arbitrary shape that I did, I'll use the Magic Wand and create a hole. Now actually it didn't do anything just now, I used the Magic Wand, but I was in the Arc tool. I need to either go and press down and say I'm going to subtract explicitly using the pet palette. Then I can do it. Or I believe I could do it if I was in the Slab tool, I could Magic Wand it without even doing that shortcut. Let's just take a look in 3D and we will see yes, there's a beautiful circular hole which we can work with. [0:16:00]

So there are other types of offsets. We looked a little bit at just offsetting a polygon by pressing down on a corner or an edge and choosing the offset here. But just to give you a little bit of context for the other method in this lesson, just to include it in this lesson, let me go ahead and draw let's take a poly line. And now the poly line, like the polygon elements, can have multiple pieces that can be straight or curved, but unlike these other elements, it can be open. In other words, it's not forced to be closed when I click on the last point again and finish it. It doesn't close it. [0:16:44]

But regardless, a very common thing for the poly line is to be used for property lines. And offsetting some property lines can be a very important drafting exercise to be able to see where setbacks and allowances are done. So in order to create that, let me just actually zoom out a little bit further, and I'll go to the option here that says Offset, and I'll just make it bigger. So I'll just do that visually, just to give myself a little more space. Now I can of course do the same type of manipulation of just an individual edge. Let's just take it in or out a certain distance like this. But if we wanted to offset multiple edges at the same time, which would certainly be common in terms of a property situation, what we might want to do is use the option where we're doing the entire thing. [0:17:38]

And then of course take it in or out. Now if I want to make copies, if I want to leave the original one there and have a new one, then instead of just offsetting this, what I would want to do is make a copy. I can either copy and paste or I can do drag a copy is my favorite thing, where I just click twice on the same location. Now I have two elements here, and when I offset one of them, the other one still remains. Now we can do that as many times as we wish, but sometimes you may want to do some more manual controls for that. And so another good option that I've demonstrated in another lesson, but I want to do a very quick review, is to go to the Window menu, Palettes, and the Control box. And that Control box gives me some constraints such as perpendicular or parallel. But here is the option for Offset. [0:18:30]

Now with the offset option, when I activate that, basically I can click on a series of points, for example, here is a series of three points out of this property line. Click on the last point again or right click and say OK. And then bring this in whatever direction. Now I'm doing those three lines. And I'm going to say let's say that I want to be 8 feet in, and that will give me this particular offset that I'm talking about right now. Now if I want to do multiple offsets, I can use the option here that are multiple offsets. And I can for example use the Magic Wand and tell it to trace this entire group of elements. And now it's going to offset once, twice, as many times as I want. I can type in the distances, and when I'm done, I can click on the last point again or I can hit the Esc key and it will create the last one of those. [0:19:23]

So whether I do a series of individual segments or use the Magic Wand, I can use the single offset or multiple offset options here to create either the entire outline or part of the outline offset from whatever the base reference is. Now before we conclude this lesson, I have one other demonstration that I'd like to give you, and that is a way that you can adapt some of these approaches to create footings for walls, for the building underneath the slab. So let me just create - and I'll zoom in on this - a set of lines. Let's just actually create a shape here. I'll go and again add a node point, and then pull this out here. And let's say that we wanted to create footing underneath this perimeter. I'll maybe make this a little bit bigger. [0:20:24]

So how might we do that? This is a slab, and I can create a duplicate of it, perhaps on the lower story. And then on that story, let me just again do the drag a copy right on top of itself. So now there are two of them. And I'll take this one here and I'll go and offset it in whatever distance it needs to be. So now we've got two slabs here. And I can take one of them and use the Magic Wand and cut out the other one as a hole. So now you can see that I've got this double outline here. There actually are two slabs. If I were to go to 3D right now, we're going to see that it looks like there's one slab, but there's actually two. There's one inside and one outside. [0:21:14]

Let me just delete the one that's inside. So you can see very clearly that this could be used as a way of creating a certain type of footing. The original walls, if I were to draw the walls even using the Magic Wand here and trace them, you can see the original walls might have a certain thickness. Before I do that, let me make the walls a little bit thinner just so we can see something more typical here. And I will Magic Wand it in here. So you can see that. And now let me go to the slab tool, select the slab by shift clicking the edge of it, and perhaps offset the outer edge here a certain amount. And of course I can type in whatever distance I want. [0:21:53]

But now if we go to 3D, we're going to see that I've got something that could be a very quick simple way of creating a footing underneath some walls. Basically taking that slab and creating another element inside, perhaps a copy of the original slab or the Fill tool sometimes can be used. That would be offset the appropriate distance from the inside face of the walls. And then using that with the Magic Wand to subtract out a hole from the outer slab. And then of course in this case extending that slab basically enlarging it around the original perimeter as much as needed. [0:22:38]

Now this is just one way to do it. You could use a complex wall profile to create a T shape and draw that that would be another way that you might find useful. But this is certainly a very quick simple way to take the original wall outline and slab and create the footing that would extend out outward and inward from the actual thickness of the walls. [0:23:03]

So this concludes our lesson on editing element geometry. Most of this was focused on the use of the pet palette. And then we also had a small section looking at the Offset commands in the control box. This has been Eric Bobrow, I look forward to getting your comments and questions, please add them to the page down below. Thanks for watching.

[END OF AUDIO 0:23:29]