



BEST PRACTICES COURSE – WEEK 16 – Roof Modeling & Documentation PART 7 - Connecting Roofs in ArchiCAD 15 and Later

Hello, this is Eric Bobrow. In this lesson, we'll take a look at how you can connect different roof systems together in ArchiCAD 15 and later. You will see that this is the model that I had in ArchiCAD 14. When I go to 3D, it still looks the same. I will point out that each of these roof planes is individual. It's not a roof system. That is one of the key differences as we move into ArchiCAD 15. This entire main roof can be a single multi-plane roof system. [0:00:29]

I will select these elements here and drag them off to the side so that we can still have them available for comparison later, and I will draw a new set of walls. Then I will switch to the Roof tool and instead of using single-plane roofs we will use the multi-plane option here and choose that we'd like to create a hip configuration. It's already set up to the correct plate height and slope, so I can simply click on the two corners and end up with a nice hip. [0:01:04]

It's a dotted line, and I prefer for visual clarity during the training to make this a dashed line instead, so I will change that there. And then eyedrop it so that the next one that I do will also be similar. When I go to 3D with this, you'll see that it's a single element that is a multi-plane roof system. I will go and create a box of walls, the same size as we had before and get rid of the extra little pieces that I need. And then go to the Roof tool and we will start to draw, instead of a hip, a gable. [0:01:52]

Now when I do this the first time it's not going to work properly, because ArchiCAD looks at the shape that I'm drawing and says the long dimension is where it will put automatically the ridge line. If I look in 3D we will see that it's not creating a gable extension, it's actually put it parallel. So what I need to do is start this operation, but when I get to this corner, instead of clicking there, I will press down and hold the mouse button down and gesture down lower. That creates a guideline. So now I can make it, instead of making it wider than it is tall, I can make it taller. And it now puts the ridge line in the right location. [0:02:33]

When I select this, you can see the pivot line has been created from this corner to that corner. However, I can change the pivot line. I can go in and using the pet palette here and edit it like any other polygon line. So now that I've established where the ridge line is, I can adjust the pivot line as needed. And I will take this pivot line back here further so that when I go to 3D this extends far enough to meet. [0:02:59]

Now in order to clean this up, I need to select the two roofs and use the new option in ArchiCAD 15 and later, Connect, Trim Elements to Roof or Shell, and use the default saying, 'Use the roofs from the current selection'. And now it cleans that up. And looks like we have just a little gap here, because I didn't go quite far enough there. So what we may need to do - you can see how this is truncated - is to



select this and either move the pivot line back, which then extends that, or move the actual contour line which you can see is sort of a virtual line in space. [0:03:40]

But I have to take it back far enough of course that it meets that roof. Now let's make copies of this. I will go and we'll make two copies as we move into the other variations. So I've got the three walls. Actually, let's go into 3D, and I just want to make sure that these three walls are actually connected to the roofs that are being trimmed properly. So with them selected I will use the pet palette option to raise their height up, and then with them still selected, select the gable extension roofs and use the Connect, Trim operation very quickly. [0:04:23]

So now that we've done that, I can go ahead and select, for example, these three walls and this roof system and multiply them. Make two copies, and just pan over. So we will multiply these two copies here and we will take this over, oh let's say 20 feet would probably be a good value in this case. So now I've got three of them. I'm going to go and trim off these pieces of wall. Didn't actually like it with me having the Roof tool active so I'll go back to the Arrow tool and then I will use that Trim, Command or Ctrl click to get rid of those extra pieces. [0:05:12]

And when I go to 3D, we're going to see that this looks good to begin with; although these roofs are not actually connected to the main roof. You can see the difference with that line. I'll go ahead and change the plate height of this one and make it higher, change the plate height of the other one, make it lower. And then we will look at connecting. So I will select these two roofs and use the Connect, Trim command. They now clean up to each other. But I do have to extend this back further. I will select these two roofs here and again use the same Connect, Trim operation. And that actually is starting to work. [0:05:57]

We'll explain some of the things, why the line is not showing here in a minute. Let's go back to the floor plan and we'll see that the problem with this roof is that it's not extending back far enough. So what I'll do is take the pivot line and move it back. As long as it then extends the contour line far enough, we are going to have a nice, clean result. In this case, I don't think we need to do that. Let's take a look in 3D and see how that's worked. You need to take this wall and raise it up. Sometimes the pet palette, you need to click on different options until you get it active on the one you want, because in that case it wasn't working properly. [0:06:41]

But we've got now a clean result here with one small exception. As we had in the previous one, there is a little gap because this wall - in fact both of these walls here - we need to extend something up underneath this roof to fill it in. So what I'll do is use the adjust and just draw a line in space across. That extends both of these at the same time. I will split them by the edge of this wall and leave this selected. So now we've got actually - and I need to do the same for this one, and split it by this wall. [0:07:31]



And you can see now we've got these two pieces. I will then raise them up so that so that they are above the ceiling line. And when we go to 3D, we will see that it's now filled in the gap. So this is a separate piece of wall compared to the main one, but they nicely clean up to each other. And they are still trimming to the roof properly. So that's how quick and simple it is to, in ArchiCAD 15 or later, to create a gable extension and connect it to the main roof whether it's going above or below. [0:08:12]

We will do one more quick change here and point out that this gable extension doesn't even have to a separate piece, because it's got the same plate height as the main one. So let me just delete it and we'll look at how we can take the main roof and adjust its pivot line. So here's the pivot line that's following the main boundaries of the original wall outline. I'm going to go and press down and say that I would like to add more detail, more corners. Click here to place it where it's going to turn the corner. I can then go directly in some cases, as long as I am in the Roof tool, I can go directly to this corner and then use that. [0:09:00]

I don't even have to move it, it will just remember that I'm creating new points and pull this around. Now I can go through all four of them, but I just wanted to point out: What is going on here? You can see this funny shape that's going on. If I look in 3D, we will see that ArchiCAD is trying to create this shape with a roof. Now of course that's a rather odd shape, but I can literally go here in 3D and snap this into position and you can see how it's created a nice, clean result. [0:09:33]

Now another way that we can do this - I will just undo back here - is I can select this and press down on the pivot line and instead of adding points, I can say I want to add a shape with this plus sign. Then say "click to define an extra shape". So what it did was added the necessary points to the boundary. So the pivot line is a polygon, and I just added to it. Of course here I've got a hip extension. I'm going to change it into a gable in a minute but we also need to make sure that these walls are trimmed. They were trimmed to the original gable extension, and now I need to select the main roof as well to make it simple. [0:10:20]

I just need to connect them to the main roof and they are now beautifully cleaned up. The main roof, I don't want it to have a hip; I want it to have a gable. So I will press down on the edge of the pivot line and go to the option here where you see it is the Custom Plane Settings and change it from a pitch to a gable. And instantly we've got a nice clean result. So it's very easy. I don't even have to create different pieces of roof; I can literally just select this one and change its boundary to add a gable extension. [0:10:56]

Now this even makes it very simple to adjust this boundary, because I can go to the edge of the pivot line and use other standard editing operations to move it in or out. and you can see the shape that it's going to create based on turning the corner in different places. If I bring that corner all the way to the edge, it's smart enough to extend it and actually unify these elements. This is actually now just one plane, actually its multi-plane, but this corner is all connected. [0:11:31]



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Now to finish it off, I may just want to get rid of these two pieces of short wall and select the main ones and use the intersect. And you can see how that very quickly gets the result that we want. So here we've got everything that we did in ArchiCAD 14 done much more quickly and easily in ArchiCAD 15 and later. [0:11:55]

Now let's take a look at one of the complications that can make it tricky when you're in ArchiCAD 15 and later. You'll notice that we don't have a line in space along here. Now this line, we would never notice if we were looking at say an elevation, because in the elevation, and we are seeing just the main line across there. But on the floor plan, we are seeing this funny gap. One workaround would be to go to the Line tool and switch it to a dashed line and draw this there. And that could work pretty well. [0:12:32]

However, I will point out that there is no sensitivity along here. There's no Mercedes or snap point there, so it would be an approximation, but probably good enough in most cases. However, in fact, we may want to have this line go across instead of going down, because we may want this roof to go across the main face of the wall. And this is actually defining the edge based on where it meets the other roof, and we don't have full control over that. [0:13:10]

We're not even seeing the line where it returns underneath. If we look, you can see that this roof is returning to the main face of the wall there. So let's look at some variations that you may find useful or necessary from time to time. First of all, the reason why the line here is not shown is because this main roof is only trimming out to the pivot line. That is a setting that we can adjust by changing the trimming body to contours down instead of pivot line down. [0:13:48]

Now you can see that this is now trimming out to the edge, which at first glance we say, "Oh, perfect, resolved it." But when I go to 3D you can see it also trimmed the 3D to this edge which is not what we want. So I'm going to undo that and let's look at some other options, because if we have it trim out only to the pivot line side, then we have the return properly. So sometimes you may need to go and select these roofs and convert them into single plane roofs to get more control. [0:14:22]

And when we do that, you can see that it's now showing the original extent. It's not showing them as they trim. The reason is twofold; one is that these are not connected to the main roof. Let's just look in a marquee environment just at what is just in the marquee, and we will see that - actually that's interesting. Even though this is a separate roof piece, it is still connected. It remembered that. But we are seeing the line work is obviously not giving us a very satisfactory result. So we could go in and pull this down and adjust it as needed. [0:15:10]

Let's pull these points down. But we don't have any way of actually snapping this into position. Let's just go in and add this point along here. We don't really know where this line in space should be. With a normal single plane roof or when we are working with single-plane roofs by themselves or in ArchiCAD



14 or earlier, I can select this main roof here and hold down the Command or Ctrl key and click on it, but in ArchiCAD 15 or later it won't do any adjustment because this is a multi-plane roof. So what we need to do is actually create, temporarily perhaps, a situation where we are working with only single plane roofs. So I will show you how that can be done. [0:16:03]

So what I'll do is select this main roof here and temporarily change it into single plane roofs. When I say temporarily, there's no way to actually go and select for example this plane and this plane and unify them together after the fact. However, I can undo the change that I made. What I'll do is having made it temporarily a single plane roof, I can Command or Ctrl click to reposition these edges where the need to be. And then I can go and select these guys here and cut them. [0:16:41]

Now why would I want to cut them? Because that puts them on the clipboard where I can paste them in after I undo back. So I'm going to undo one step, multiple steps back, and undo until this is now a multi-plane roof again and get rid of the pieces that were not quite working properly and paste in the new ones. So now I've got these that I had carefully worked out when this main roof was temporarily set up to be single-planes and they are now in the right place. When I go to 3D, we have to do a little bit of reconnection of these walls to the roofs, the same Connect command here. [0:17:26]

And we may want to go and take this roof, which you can see now extends across, and tell it to connect to this roof system. When I click using the option where I didn't have both of them preselected, it makes this one red and says, "Do you want the part below it, or do you want the part above it?" You click to determine that. It says, "Click to select which part to keep." I will say keep the upper part, and now you can see we've got a clean cut here. This is still returning, and we have the line across that would be expected because of the way the roof was designed. So this may be the perfect option for you in certain cases. [0:18:11]

The other wrinkle, in terms of documentation, is of course these lines here are solid whereas the main roof and the other roofs here are dashed. And this is controlled by the fact that under the Options, Project Preferences, the construction elements is set for single plane roofs here being done as symbolic. Now if I make it a true 3D projection, then we get a result that is a little bit different, but it's cleaner and has a continuous line here. We could just draw a dashed line up here and use the Line tool. And this does have a snap point now. [0:18:52]

You can see the little snapping option. So this might be your best option here. It looks good in 2D, and looks good in 3D. So we're actually going to have the best of all worlds in a sense. Now that would probably be my preferred way to do it in certain cases, but in other cases you may decide that it's too complicated and we really would prefer having it be clean in 3D and just draw a little extra line as needed from this point because no one's going to actually look too closely at this line, they're going to just recognize that this defines the connection edge in space. [0:19:38]



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So those are some of the compromises and one of the workarounds that you may need to do from time to time with the new ArchiCAD 15 and later multi-plane roofs when you are connecting. For the most part what we end up with, if we look at this in 3D again, is we end up with something that looks the same as ArchiCAD 14 and earlier but the basic operations were done much more quickly. We can simply create these gable extensions in a single step and connect them to the main roof in single steps very easily. And in fact, when it's the same plate height, we can literally just go and adjust the pivot line outline and it will do whatever we want or need in terms of the roof arrangement. So I look forward to getting your comments and questions on the page down below. This concludes our lesson on ArchiCAD 15 and later, connecting roof systems. This has been Eric Bobrow, thanks for watching.

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