BEST PRACTICES COURSE WEEK 18 – Complex Projects – PART 1 – Floor Plan Cut Plane and Clerestory Plans

Hello, this is Eric Bobrow. In this lesson, we'll take a look at the concept of the floor plan cutting plane, and see how it applies to controlling the plan view; separating out perhaps lower elements from upper elements in the case of a clear story plan. I will draw a single wall here and put in just a normal window. And I will select that window and I'll multiply it. [0:00:33]

In this case, I'm going to do eight copies and raise them up 1' for each one. So each time that their copied they will go up. So they will be like stair steps. I will say OK and I will just take these along this wall. Now the windows look normal, and when I go to 3D we'll see - if I switch this to an axonometric view for convenience - that the windows are stacked. In fact, they're going outside the wall. [0:01:08]

So in this case ArchiCAD was smart enough to create a floor plan representation that showed the windows normally, even though the windows were at varying heights. Just to make it a little bit more sensible I will take this wall and boost the height up to 15' so it's at least high enough to enclose the windows. ArchiCAD is happy to put these windows at any vertical relationship to the wall. It can be higher or lower than the wall or somewhere in the body of the wall. [0:01:39]

Now let's take a look at the situation where we have some lower windows and some upper windows. I'll draw another similar wall. Actually I'll make it 15', so that it's going to be tall enough for what I'm thinking of doing. And I'll put in again just a simple window here. Now this time, I'm going to repeat the window the same number of times but I'll leave them flat; they will all be at the same height and they those arrayed along there. [0:02:16]

Now what if I were to put in a window above this window as clerestory condition might be? Go into the window tool and change it from a double hung to a fixed window here, say a ribbon. And make this not very tall; say 2' or a little over ½ m in height here. And I'm going to make it go up higher. It's going to be higher in the wall. Let's take it up to 10' or about 3 m off the ground. And perhaps we'll make this a little bit wider, 10' wide, so it's going to be a long thin strip of windows. [0:02:58]

When I pop this into this wall, you can see that it's now over the top of the other windows and it's getting a little confused. The lower and upper windows are both conflicting with each other. Let's go to 3D and see that in this new wall there's no problem with that window. In fact, let me just take this window and multiply it, say a couple of copies here. And we'll take this across, something like this. And we now have some upper windows and some lower windows. [0:03:39]

Let's go back to the floor plan and you can see that the plan representation is a little bit hard to make out. Right now we're working on the floor plan, and I will take a look at the standard first floor or main floor construction document plan. And it is set up with certain layers and scale, etc. But something that

people don't pay close attention to most of the time, because you can leave it alone, is the floor plan cut plane settings. When I click on that it says, "Where are we cutting across this wall?" [0:04:13]

It is set up in the U.S. version for 4'. That would be probably 1 or 1.1 m in international versions. And it's going to be looking all the way up and down, all the way to the top of this story to the base of the story above and going down to the base of this story. Now let's say that we didn't want to show the upper windows. We could say show up to, on the current story; let's say 7'6", because the windows that I was putting up high started at 8'. [0:04:46]

So if I just change this, it now becomes recorded in this particular drawing. And when I say OK, we'll see that now the windows are being shown, just the lower ones. But if I go to 3D, you'll see that nothing has changed. So I've just made a view here that is showing the lower windows only. Now I can manually change the cut plane by going to the Document menu, Floor Plan Cut Plane command. And you can see that it's still got the setting that I was working on, cutting it 4', but only going up to the 7'6". [0:05:21]

Suppose we wanted to take a look at the higher section. Maybe I will cut through at 9'. And of course, it won't let me go up above the cutoff point here. But let's say that we were going to put it back to the original thing which was the base of the upper story and that we were going to look at the 9' cut plane here and actually start it at 8' or something like that. So that means that it's going to be looking at the wall only from high up above, and it's going to be cutting through the windows at this height. [0:06:00]

I will say OK, and you can see now we are seeing the upper windows. Now this is something that I manually changed in the floor plane cutting plane settings, but I can record it as part of the view by creating a new view. And these windows I am going to call my clerestory windows. And so they are representing the upper level of the wall. And I will create this. Everything else will be the same as the other one. [0:06:29]

Now I can go back and forth by double-clicking on this view, which I had set up to show the lower area of the wall, only up to 7'6", and this view where I am saying show the upper part going above. Now let's take a look at what happens – I will zoom out a little bit here. We can see that we've got a little more of a wall. And I will select this wall and drag a copy of it down to here. Now what if I were to raise this wall up a bit? [0:07:01]

Say I go to the Edit menu, Move, Elevate command, or the keyboard shortcut, and raise it up by 5'. I did that, and you can see that it says the wall is now going from 5' up to 20'. It still looks the same here, and yet these windows have been moved. It's a good question. Let's take a look in 3D. You can see that's rather odd. You can see that the windows did not move when the wall moved. Obviously this wall moved up in space here, but the windows did not. Why is that? [0:07:40]

Because the windows were set up with the height – this is the top of the window – anchored to the story. What that means is that when the wall moved up or down, the window stays at the same height that it was. This is generally a convenience, it means that when you are putting in windows and you want the top of them, the head, to be at the same height relative to other windows, even if the wall is offset

slightly one way or another, and then you can use this setting. It basically will maintain these windows in line with the other similar ones there. [0:08:22]

Now if I were to switch this right now to header to wall base, then what will happen is if I move the wall up, the window would move with it. Now you notice that by changing the setting here, it didn't actually move the window, it just readjusted it. It says, "Well, the top of this window is only 2' above the wall instead of the original 7' above the story." [0:08:45]

So changing it this way does not move it in space. Now there may have been some versions of ArchiCAD where this actually did affect the placement of the window. That's the way it works in version 16 and probably the last several versions. Now I am going to go and undo these last couple of changes by hitting Command+Z or Ctrl+Z and undo moving the wall down. So now this wall you can see is back at the zero. [0:09:13]

The reason I am going to do that is I am going to go to 3D and I'll select all of the windows. And I will change them all to refer to the wall base. So that basically means that when the wall possibly changes height, the windows will as well. So let's just take a look if I were to go to the elevation of this particular view. And if I select this wall and drag it up 5', we'll see the windows move with it as you would expect. [0:09:57]

And in fact if we go to 3D, we will see the same thing. So we've now readjusted the position of the walls and the windows have moved with it. But what happened to the floor plan? Oh, well look. Actually, we now have a little bit of confusion. For one thing, we just jumped back to the floor plan without activating a view, so the last view that we were in, which recorded a floor plan cutting plane, got it a little confused. It's not set up the way that we had last suggested it. [0:10:32]

So let me go back to first floor plan. This is the one that we adjusted to get a nice, clean representation of the lower windows without seeing the upper ones. Look here. This wall of course has all those windows in it, but it's now being shown in very thin lines because it's overhead. It's over the cutting plane. If we look at the wall settings here, then the information is that overhead lines, lines above the cutting plane, are put into this grey pen instead of the black pen that we were used to seeing. [0:11:08]

And of course, the windows now are above that cutting plane. In fact, the whole wall is, that's why we're not seeing that. Now what if we go to the clerestory plan? So the clerestory plan, remember, this one was showing the upper windows here. And this is now showing the lower ones, because they are within the cutting plane of the clerestory. Now depending upon how you move this wall – I'm just going to go ahead and undo the movement in space here. Let's go back to the floor plan. [0:11:49]

Then we'll go to the clerestory plan. You can see how in the clerestory plan, now this wall, having been moved down, matches the original one. If I change the wall height here, say I use the elevate command in this, and that moves it up, we are now seeing the upper part of these windows or rather the lower windows now because the wall has moved up. They are correctly shown. [0:12:18]

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So if you want to have a clerestory plan of this particular wall, we would have to create yet a different floor plan cutting plane. So we could go to floor plan cut plane here and say that we are going to take this up to let's say 14' or something like that. And take the height down 12 or something there and say OK. And we will see it still didn't quite work there. [0:12:51]

And part of it is that this wall is going up above the story. If we select this, it's going from 5' to 20'. And the story settings here – let's look at the story settings – are only going up to 10'. But let's say that we were to move the stories apart a bit, take it up to 20' and say OK. Now you can see we have a little bit of confusion here in this view because we are seeing both sets of windows. So it depends upon how it's cutting off the view based on the stories. [0:13:33]

So again, to get something clear here, we would want to go to the floor plan cut plane and say here's that 14'. Maybe we need to take this up to 13' or something like that. Let's try this. Now you can see it's cutting off the lower windows, because they are below the cutting plane. And we go then in the View Map save this one as "Upper Clerestory". So we now have separate ones: the upper one, the middle one – and actually this one. This one, because we have expanded the story range, this one is showing too much. [0:14:13]

Let's just fine tune that. Let's go to floor plan cut plane here and say that it's not going to go all the way up to the top. We want it to, for example on the current story, only go up to 10' or something like that. So it's going to be a thin little sliver. This is the range going up and down here. And it's going to cut through it in between. Say OK, and that now gives us a clean representation of what we are looking at. And I will go ahead and update this current one with the current windows settings. [0:14:51]

And so that now will have that information. So this could be a very confusing part of ArchiCAD. I will stop this video here and pick up in a separate video looking at what happens when walls are tilted. And also what happens when walls are multiple stories, because when walls span multiple stories, you may need to do some special controls for the way that the windows and walls are set up. So please add your comments and questions to the page down below. This has been Eric Bobrow. Thanks for watching.

[END OF AUDIO 0:15:34]