



## BEST PRACTICES COURSE – WEEK 17 – Complex Modeling PART 5- Curtain Walls Advanced

Welcome everyone to the ArchiCAD Best Practices training on curtain walls. We'll be going into some more advanced topics than we did the first time, and I'll be fixing some of the problems that I was not able to resolve in the first lesson. Let's take a look in 3D at this particular model that I started to work on, and fix two problems. One is the butt glazing here. I had said, "What if we wanted to have these pieces of glass meet without a frame?" I did some changes here. I selected this frame and I made it invisible, but it still didn't meet up. [0:00:44]

So it's a very simple solution. I'm going to select a curtain wall system and say edit and then go and select that frame. So this frame, which could be set to be generic of some size and thickness like this so it would show up, it turns out that what I need to do is make the width zero and "D" is the distance that the panels - in this case glass - are from the boundary. So if I change it to zero here, then you'll see these pieces of glass meet up. If we wanted to get this framing here done differently, I can go and say take this frame and possibly delete it, or I can make it invisible. [0:01:39]

Now you can see what that did here, it made this join. And perhaps I might take that same frame and make it have a zero gap there. So that makes these pieces join. I'm not quite sure about the actual join; there may be some little piece we need to put in there. There is the option of something that would be a corner frame here. And that could be set to have a lower priority so it would fit underneath here. So it could now go in here. I could make it have the same material or surface appearance of these. Now this one is setup in terms of the appearance, it's set for nickel satin. And if I select this one, perhaps I need to override this here. [0:02:28]

That's interesting, that saying building material. Let's go into the settings of it, and set it to 3D representation. The material, curtain wall, cutting plane...so there are various things for a corner you can actually have different angles. If I say use frame building material, surface, what is the building material? The frame building material surface. That's interesting. So that is actually setup in the curtain wall system. So if I say OK, that's crazy. Let's go in and say that the frame for the entire boundary - I have nickel satin here. Always making problems for myself here. [0:03:30]

I am still puzzled why this particular piece does not allow us when I do this to change this to the nickel satin. That is interesting. The corner frame, if I open up the settings, its surface - okay here's the setting. The surface there's was set for iron. I wanted it set to nickel satin. That will do it. So sometimes you have to dig a little bit more, perhaps you can widen this up so you can read what's going on in there. Say OK, and now that's going to match. So that gives us the controls that we need there. The other thing I had not done in the previous lesson was set this door frame at the bottom. [0:04:21]



So you can see right now it is standing up above the frame. If you had a threshold, perhaps that would be alright. But if we didn't want it to be down at the same level as the frame, how would we achieve that? It turns out there is a post on ArchiCAD talk that I had researched a while back. I will put a link to this underneath this video. If we go in here, it talks about the same issue of the gap. And it gives some solutions. So I actually tested this out to make sure that it worked, and then an e-mail tech support question that came in last year from Luis Barrios, remember I summarized it, which is nice because I wrote out some answers to some questions here in reference to that particular topic and had a quick summary. [0:05:25]

I'm going to be putting this underneath the page, because this is something that you might forget. And this is a very quick thing. So here are the steps I'm going to go through. And I will refer to it as I do it. So the first thing is I'm going to confirm the changes that I had done in the corner. Then select this curtain wall and before I click on edit, I'm going to go to the main settings for the curtain wall and go to the boundary. So I have selected the curtain wall as a whole, and I'm going to the curtain wall system main settings and say that I would like to place the boundary frames inside the boundary. [0:06:08]

So the line that is the theoretical boundary of the curtain wall itself is an abstract polygon, and I'm placing the frames within it. Since the frames will come up within it, the door can then go down to that boundary. The door cannot go beyond the boundary. When the frames are centered on the boundary, they go beyond, and if they are outside of course they also stick out. So I will change it to inside the boundary, and they still move up. We still have some issues with cleaning up, so I'm going to go and edit this. [0:06:37]

What we need to do is make sure that the verticals here, and I will select both of these, are set at a higher priority. I can force them to the highest priority here. That fixed this side, but this side I had done some extra things. I made this one the same high priority. Let me take this one down, and you can see that this bottom frame now gives way. So this comes straight down and the other one stops dead, rather than a mitered corner. So this is probably more the way it would be constructed. So now I have fixed that issue. If I go underneath the door you can see there's this line that refers to the frame. That frame right now is set to be invisible. [0:07:17]

If I say make it generic, you can see how it starts to do some funny things here. In the normal case, we would have some thickness like 2 inches here. And you can see how it's continuing the frame across there. But if I select this frame and make the A zero and also the D, which is the distance from the boundary line that the door would stay at, I also make that zero, then the door actually comes down neatly to the bottom. So I can leave it as generic, I don't have to make it invisible. It can work either way, because now the door is told to go zero distance from the boundary polygon line. It makes the boundary frame have zero thickness and zero depth. [0:08:12]



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So now we have that all cleaned up. So remember you can select multiple elements here and change their priorities. There are some defaults, in terms of the main boundary frame, the vertical ones and horizontal ones, these are defaults. But you can change any individual pieces to get the results that you prefer. So now we have a clean result there. I will say OK, and we can move on with some other questions here. [0:08:41]

Now when I select the curtain wall as a whole, in order to edit the components, I can click on the edit button. But if I want to stretch this, for example, I can go to the end of the blue line. So it's a little hard to see, but there's a blue line across here. That is the reference line. And right now, the curtain wall is said to be inside the boundary and the offset to the reference surface is a certain distance here. I guess it's all touching that distance. So there are all sorts of controls here for how the mullions are set, the defaults for their size or transoms. If we go to the boundary settings here there are distances and sizes for all of these elements. [0:09:39]

And there are a number of different choices for the framing types. We'll be looking at them in a different context later on, where we might change the framing type. We've already looked at how corner frames can be used selectively for certain things. Now that gives me some options here, but if I just wanted to stretch this, I can grab this end point and use the pet palette and stretch it. And if I use the Shift key or follow a guideline, I can stretch it along the same dimension. So curtain walls, when they were first introduced in ArchiCAD 12 could not do that. So if you happen to still be in ArchiCAD 12, you would have to actually adjust the boundary of the curtain wall. [0:10:26]

Now we looked at the boundary changes that we could do in the last lesson. I'll just point out that if we want to make the taller, it's the same thing. I go to the top here and use the standard options for walls to say I'd like to extend it. Whoops, I didn't want to make it short like that, I just wanted to rotate it around to get a better angle. And I can go in and use the stretching option and take it up to some height. So we can do it that way. We can also change the height here. In ArchiCAD 12, we couldn't stretch it. We could change it numerically here, and we could change the boundary. I will just demonstrate again how you change the boundary, because sometimes you do need to do that, even in ArchiCAD 13 through 17. [0:11:20]

So if I click on edit and I then say let me look at the scheme, you can see the scheme here is the theoretical extent. And if I turn off the frames, you'll see just the panels. Turn off the panels, and now I'm seeing the scheme here with the boundary. The boundary is the blue line. So in ArchiCAD 12 you would have to do some editing of the boundary. For example, stretch this boundary longer or shorter. In ArchiCAD 13 or later, you can just stretch the baseline. In any of these versions you can go and reposition this point and perhaps take it up higher. You could snap it to some other element that you want to have the same height, and you'll notice now it has this slanted piece. [0:12:12]



If I turn back on the frames, we are going to see that it has extended the transoms and mullions up to meet that new boundary. If we want to curve this, we actually can go in and curve this after the fact. this is a boundary line here, and I can use the pet palette to edit it and make it curved. Now what it actually is doing is making a series of straight segments that follow that curve. So occasionally what you may need to do is put in some more grid lines to get a smoother curvature. So let me demonstrate that. If I take this curve sharper, you can see how this is segmented, which is fine. But sometimes you may want to have some more fine tuning in there. [0:13:10]

If I added a grid line how would I do that? I press down on this grid line and say I want to move it. So you can use the pet palette to actually move this. No, I am trying to remember how we do this. Let me confirm this and show you where I have used this successfully I'm going to rotate around and let's start editing this one. And you can see that the segmentation here, we are seeing straight segments. So let me go ahead and edit this. We're in the editing mode here, let me turn on the scheme and maybe keep the frames here. Now with this scheme selected, I know that I can go and select this, and I can move this position. [0:14:22]

So if I move this position along in space, this is the separator, you'll see how it will readjust this frame here. Let me undo that and see if I can move this and copy it. So if I select this and move it and hold down and release the Option key, no, it's not giving me a copy. If I right click on this: Move, Drag a Copy, that allows me to select. If I select this and right click, when I right click, it's getting the whole thing. So I'm trying to remember where it was that we could create additional segments. I know that we can draw - let's turn off the frame here. I know that we can activate the scheme and draw. Here we are selecting this. I just added another segment in there. [0:15:26]

So you can see as I click I'm adding more segments. And now let me go back to show the frame. You can see there are more segments. So this is what I remembered is if we turn off the frame we can add potentially more segments to get this straighter. Now we're starting to see a more closer approximation of a curve here. We can select this frame, and then there's the pet palette. If I select this and say I want to select all of the ones here, I can delete them. This allows me to have it follow that segment closer instead of being a straight line across. It's going to approximate that curve better. [0:16:30]

So I haven't worked with this thoroughly, but you can see how much more of a curve appears than over on this side where it's straight. So that may be something you want to do is create some extra grid lines and then delete the frame in order to get this appearing more smoothly curved. Ultimately, what it is going to do is create straight segments along this whole area. Now if you did want to do a vaulted roof - I'm going to say OK here. Let's say I wanted to do a vault on top of a building. So I'm going to take the south elevation here. So we have this building shape here. [0:17:15]

I'm going to go to the curtain wall tool. Now, we've been creating the curtain wall from this option here, which is where you draw a single line or a chain of lines, a poly line, and then ArchiCAD will extrude the



curtain wall and run it upward or away from that line on the plan. We also have the option to do various curved things here. And in fact on the plan, you can use the option to create a vault. But another interesting option is to just use this poly line one here in the elevation or section. So by clicking now, I get the standard pet palette here, and I can draw a series of segments. In this case, I just want to do a three-point placement. I will draw this across here, and then the fourth point as you probably know, is how far it's going to extend. And I will just leave it at this point. [0:18:25]

Now it's waiting to see if I'm going to do another segment, because I could go straight across. Now think about this, this is going to go over the building. So I'm looking in the elevation and drawing the shape that I want, and I'm defining what would be what we been seeing on the floor plan but on an elevation. It's going to go away from us to create a vaulted roof. If I don't want another segment, I can just click your one more time here to finish it. You'll notice the sun icon is potentially waiting to see if I click inside or outside. And I believe if I click inside the frame, it will be put inside. If I click outside, it will go outside of that curve. So let me try this one. [0:19:05]

It says how deep do you want to make it? In other words, how far back? I can always stretch it later, but let me make it 30 feet deep here and say OK. And you can see how it has created something. I'm not quite sure what it is. Let's take a look in 3D you can see how it has created this vaulted element. Now the vaulted element was drawn where? It was drawn on the plan in line with this elevation, because remember, I was in the elevation view. And we're not seeing it here on the first floor. If I go up to the second floor, we will see the beginnings of it, because it's up high. So it actually would be on the roof story or the third floor story. So if I wanted to place this directly on the building, I could do that by creating a section. [0:19:56]

In fact, we do have this section right here. So let me just undo creating that piece, go back to the floor plan, and we will take this section here and open it up. Now we have a similar thing. I will just do a quick sketch here, make sure that I've got the three point one, click the fourth time to say this is the end of it, click a fifth time to say I'm not going to do another segment, and then click inside to say I'd like to draw it here inside. So now, if we look in 3D, we are going to see something that at least is a beginning of the whole process. If I select this, I can say in terms of the scheme that it's only going to have one thing. So let's say that I'd take this out and make this 4 feet or something like that. [0:20:56]

We'll make these 6x4 panels, make it a little bit taller. And I can determine what these are. Are they opaque or transparent? So let's say that these are all the transparent ones. I will say OK, and you can see how it has created a simple vault. This vault or element does have a depth of 30 feet. If I change it to 20, it pulls it back here. So I could actually measure it and take it as far as it needs to be. If I select and edit it in 3D and say I want to see the scheme, and then turn off the panels here, you can see how I actually have control of this boundary. And I can go and say that I want to move this boundary in and snap it to that building. [0:21:57]



And when I show the frame and the panels, we'll see what's going on with that. So it has now created a vaulted shape pretty easily. If I wanted to make this - say OK here and confirm it. And if I select this one I can go and edit it and say that I would like to show the scheme and hide the frames and panels. And then I will take this and select the boundary here and then go and curve that. I will snap it up into position. When I show the frames and panels, we're going to see the results. Say OK. So we're now getting something that is starting to look like an integrated system. Obviously, we would want to adjust it. [0:22:56]

Let's see if I can get these things to adjust to each other. I will say select this and edit it and hide the frames and panels just to get the scheme, and take this grid line and move this grid line into position. Now I'm not sure whether we can snap it directly. It doesn't look like there's a snap point here. So let me go and do it by eye. We can certainly get it to be pretty close. let's see if we can get this moving. That's interesting; it's not letting me adjust this grid line here. So we might have to actually do some calculations. So for example, if I go back and say OK and select this and go to the scheme, instead of being 4 feet, let's say that it starts from 6 feet and then 3 feet. I'm going to see what happens with that. [0:24:05]

You can see how it started to adjust these. I imagine that we can control this to snap it, but if you can't do it precisely that way then you can type in different distances and make sure that these coordinate. So it might be more tedious, but you can definitely make them coordinate in the design. So those are some quick demonstrations and some options that you may want to consider. Another thing that is really quite special about the curtain wall is that we can tilt it even after we've drawn it. So let me just draw a simple curtain wall here. [0:24:46]

I will draw this on the floor plan. I have this piece of curtain wall, and I can press down on the corner and this option allows me to stretch the height. We were already doing that. But this option here is rotate. And when I rotate, we can actually flip this around. So I can rotate this in 3D space. So I'll take the compass perpendicular and then tilt it. So in ArchiCAD 15 or 16, the compass was introduced for visual feedback, but the basic idea has actually been around since the curtain wall first was created. That is that you can create something if you want, standing up from the floor plan, and then tilt it into position. [0:25:50]

So sometimes it may be easier to draw - let me just go back to our ground floor here - to draw a shape, perhaps complex shape like this and control it, and then flip it up. So imagine creating that vault as a series of segments on the floor plan and then flipping it up to be horizontal. So we can manipulate it that way. An interesting application of the curtain wall is to use it as a suspended ceiling. So we'll look at that. I see there are some questions that have been typed in. I will get back to address those questions. So feel free to type those in. I just want to keep going with some things that I think we'll want to make sure we cover. [0:26:43]



So I am going to draw something off to the side. I don't want to complicate things with curtain walls meeting curtain walls and things like that. I just want a simple situation to work on. So I'm going to draw a box of walls. We'll flip this around like that, and maybe do a ceiling within this space. We could have more complex geometry, but let's start with that. So how would we do that? I'm talking about using a curtain wall in a totally different way, not for glazing, but for creating a different type of system. In this case a system of panels that would be acoustical tile or suspended ceiling elements. [0:27:43]

Then the dividers, instead of being structural frames like we would have for glazing, would be like a t-bar shape. So let's see how we might do that. When I'm drawing this, we had been creating the curtain wall on the floor plan using this option, which is either straight or a series of segments. There is the option of the boundary. Remember in the elevation one, if I go back to 3D, in this one here, we actually in an elevation view drew the boundary and it created a curtain wall filling that boundary. Now we're going to do the same thing on the floor plan. I will draw the boundary of this. And in this case, I will draw the inside shape. [0:28:31]

It now says which way do you want this to go? I don't do this often enough to remember, but I believe if you click inside the boundary, then the elements in the frame will come up towards you and if you click outside it will go away from you. This is in relationship to whatever was your reference plane. So I will just take this up going towards me. Now we have a shape here. And let's take a look in 3D. I'm going to do a little marquee to see what we've got here. So what you can see is it created a curtain wall down at the floor level. So the basic setting of the curtain wall was at a certain level. And if I take this up to 10 feet, ceiling level, now it's up there. [0:29:26]

If we look at the scheme, instead of it being something with alternating panels, let's make it one and let's say that it's going to be 2x4. And let's just remove these. So it's basically going to be a 2x4 in one direction or another. I say OK and let's look here. Now you can see that it's now starting to look a little bit more like a suspended ceiling in that it's just a simple grid with all of the same types of panels. Now if we go into that setting for the boundary, the mullion, and the transom, we have some options for the sizes. Mullions I believe are the vertical elements, if you were doing a normal curtain wall going up and down. And transoms would be horizontal. [0:30:23]

In this case we might just create something very simple. And you can see it says generic, butt glaze, corner frame, modular. Let's look at some of these options here. If I select frame or modular frame, you can see that there are some options that are obviously very appropriate for certain types of curtain walls. Let's try generic here. So generic just has some dimensions there. We can also load other curtain wall frames. So this allows me to open a frame file and it says it's looking for file with that particular type. This allows me to load something that's already been created. Let's see if we can create a shape that is a t-bar shape here. [0:31:14]



I haven't done this, but I'm always willing to try something out and within a couple minutes we should have something that is usable, if I'm right. Let's take a look at that. So I'm going to go back to the floor plan here and go to the Design menu, Complex Profiles, Profile Manager. If we go to profile manager, when we create a custom profile, it can be used for walls, beams, or columns. But that's not where we're going to create this profile. Instead, let me use a little slab, and I'm going to do something out of a simple component. So instead of a composite, it will be simple. [0:32:09]

Let me make this out of some stainless steel or something like that. I will do a rectangular shape and then notch it, so let me go in here. I'm not exactly sure how big this should be, but it certainly will be pretty small. So I'm going to make it let's say 3 inches across by 1 inch high, and maybe a little wider than it needs to be. Let's just do it so we can actually see it better I will then use the subtraction, and I'm going to create this general shape, subtract here. I might want to fine tune this a little bit and make sure that these are exactly in line and perhaps make this a little thinner. [0:33:11]

I can make this element very precisely drafted. But for my purposes, let's see if this actually would work. If I were to look at this element in isolation, you can see it's a little piece and it's fairly tall. So let me just see if I were to make this 6 inches, a little shorter. So minus 6 inches here. I've made it a little piece of it. And let me go back to the floor plan having done that, and we'll go to the File menu, Libraries and Objects, Save Selection As, and we can save it as a curtain wall frame. So let's see if this actually works. [0:34:04]

So when you have one or more things selected, you can save it as an object that you could put in with the object tool. Or you can save something that you've drawn as a door or window. If it's 2D information you can save it as a drawing title. Then there are these various options that would be components of larger systems, like a handle or a leaf for a door, things like that. In earlier versions of ArchiCAD, this may look a little different. You might just be saying save an object and then it would say what type of object to you want it to be. In recent versions it asks you very specifically right at the beginning which you want it to be. [0:34:42]

So it may look a little different, depending upon your version, but in general you should be able to make it something different than an object. In this case, a curtain wall frame. So I will just call this "t-bar frame" here. And it will be available in the setting dialog boxes of relevant objects which recognize it. So the curtain wall tool should be able to recognize this the next time I go in. Now let's see if this works. I'm going to go in here and select that curtain wall is up on the second floor. Why are we not seeing it up there? Let me just make sure that layers would be there. We are seeing the other curtain walls. Let's just go to 3D and see what we've got. [0:35:45]

We'll see why this curtain wall isn't showing on the floor plan. So it's showing on all relevant stories here. We can stay 'home story only' if we want. We can say 'symbolic, symbolic with overhead'. That's fine. Symbolic to floor plan range, say 'entire element', that's part of it. And also we can go and right



click anywhere in the element and say 'Relink home story' and say we want it to be on the first floor. If I go back to the first floor here now we're seeing it. One of those changes that I did made it fix the issue. So let's go here and edit in 3D. Let me go to system settings and here's the mullion. We're not seeing that t-bar frame here. Load other curtain wall frames, go to library, OK so we're not seeing that. [0:37:05]

We saved that, so let me see what is going on here. I know you should be able to do this. So what we'll do is go in and change the size of this to something that would work. So the horizontal one, two inches, we'll take this down to zero and the height will take this up to ½ inch, something like that. The overall height here, half inch, and it will have a certain thickness. So I'm not sure what exactly we're going to get. So this is now saying mullions. Let's see, when I do that, this is what it comes out like. So you can see that these pieces, which are the ones that I adjusted, are starting to look thinner. We also want the panels to be much thinner, because they're not structural. So I'll just do one more quick change here. [0:38:27]

We'll make the panels to be zero here, and these panels - go to general settings, panel. Let's see what we get if we reduce these down here to quarter inch thickness. Let's make this a quarter inch. Let me see what happens if I do that. So now these panels are much thinner, they are more like acoustic tiles. And I would just need to make the mullion one half and zero, so that is similar to what I had here. So now we should see something more similar. What happened to the panels, the scheme? So now we have these all in here and it looks like somehow I got messed up with the dividers on one side. So let's just give it one last try and I'll say I've gotten it as close as I can get it for today. [0:40:13]

So we're doing frames here, transoms. This got to be somehow off. Do one, okay. There we go. So now if the material of these panels - so the scheme, this white cells refer to the main class, so we go to the main panels and we are going to say that the materials are not going to be glass, they are going to be something like a plaster. So where would that be? Stucco, plaster, where is plaster? Ceiling tile, this is actually a texture that would have some line work in it, we don't really want that. Let's just do a stucco white, so it'll have a white textured material. [0:41:23]

So now obviously it still needs a little refinement, but the basic idea is there. And you can then select individual panels, say edit it, and we can select this one and make this some other type of panel. We wouldn't be able to directly put lights into the curtain wall unless we created a special panel type. So to create a custom panel type for a curtain wall I think should be a little easier. There are no built in ones for this purpose, to create fluorescent light or other things. So here's one option you could do. If you want to put in a light or a vent, you could take this panel and go in here and just delete the thing. That puts a gap in. [0:42:35]

Then you could put in an object - if we save the changes. I'm not quite sure which one I did it in, but let's go to the object tool, or maybe this would be under objects, lamps. So these are skylights, that's not



what we want. I'll go to the More tool and the Lamp tool and take a fluorescent light here. And I think that's probably what we want. I'll take this four by two. We don't really want this to be suspended; we want it to be a ceiling light here. I'm going to round it off rather than account for the t bar. I'll just do a four by two here. And we have various styles that we can do, so I'll do this one, like that. I'll put this in, show the layer, let's go to 3D. You can see that I could snap this element into position. So it looks like I have it in the right vicinity. So if I select this, drag it into position, and go to 3D and change the height of the base height of it up to 10 feet to make it a little bit closer. So it's quick and dirty, but definitely you can get this to fit in. Probably put it above the supporting things rather than below. [0:44:27]

So let me see what questions there are. I have some remaining things about scheduling curtain wall doors and panels that I wanted to make sure we looked at. Dave N. asks, "Curtain wall as a t-bar ceiling?" Okay, we've been looking at that. So Dave, let me know if this is enough to go on. Luis B., hey Luis. I showed an email that I sent to you earlier, I'm not sure if you were on the call at that time. "Is there a way to center the grid within the perimeter or boundary?" Yes, I will show you that. "Panel revision into a light or vent would be good." I think I've just done that. Now we could create a custom panel that would actually look like a light or a vent. Right now, I was just deleting it and replacing it. So I will see if I can get a custom panel to convert something into that. [0:45:25]

Let's look at centering the grid. There's a question from Roderick from earlier, "Eric, I've been working on a curtain wall in a project where I have a situation with a floor to roof curtain wall and a double height room. The problem is when I edit the boundary polygon in 3D I have problems identifying the underside of the roof plane so it can snap to the underside." I might need to look at that question in a coaching call, because without seeing the example I wouldn't know what you are having a problem with snapping to. So sometimes when you have problems snapping to certain things, you may need to put in a temporary element for being able to snap. So essentially use a construction line but there might be a physical element that you drop into the model, and then you can snap to that and take that element out, it helps you to get it into position. [0:46:25]

So let's look at centering the grid within the perimeter boundary, and let's look at creating perhaps a custom panel that would turn into a light or vent there. In terms of centering this, if I go back to the floor plan and select this, you'll see that in the scheme settings, there's an option for whether it starts at one end or it's centered in the middle of the reference line segment, or it starts - what does this say. This is one: position the origin at the middle of the reference line segment or position in the middle of the grid pattern. So it depends on whether you want the line at the center or the grid pattern. Let's make the line at the center here and start that. So now this line is the center. [0:47:22]

So if I were to stretch this and edit in 3D - this is a little odd. I can't edit the boundary here. You'll notice I don't have the pet palette to edit the boundary, but I can edit this in 3D. For example, show the scheme, select the boundary, and let's just say if I select that scheme now I can edit the shape. So I'm going to take this in to show what would happen. It will move the boundary here and when I say OK,



and we go back to the floor plan, let's see. If we select this and go out and start from center, it was originally there starting from the center, but it's clearly not starting from the center here. so that's not the case. I know that we can move the points around, but that's interesting. [0:48:33]

When I undo this back to where we were, because I hadn't modified the boundary it was centering this. So if you were to do it on the floor plan, let's select this one and we say that we want it to start in the center here. If I were to stretch this, can we? Because it's been tilted we can only stretch it by moving the boundary. If I put in a standard curtain wall, a simple one going vertically, you can see that if I select this and I make this start with the center, this will center that. And I believe if I stretch this, we have to go to the end of the reference line. I stretched it, but it's not centering there. Let's say 'start with segment' and then go back to 'start from center'. [0:49:52]

So this shows that the controls for starting from center work when you first create it, but not after you've stretched it in any way. But here is something that you can do that can be very useful to know about. Let me set this up so that it's more obvious here. Let me take the marquee tool, we'll stretch this whole building in a little bit. You can see how stretch the walls a bit, but it didn't change the curtain wall. So let me get the curtain wall set in there and get it centered. I'll show you how you can adjust the entire grid system as a whole; I think that is an important thing to realize. [0:50:51]

So I will go to 3D and select this and say I want to edit it in 3D. So now I can turn on the scheme and select this. I can select the boundary here, and we should be able to see the environment. Why are we not seeing the environment? Let me cancel this. Let me try editing again, and now we are seeing it. I turn on the scheme. That's interesting, we lose the references. That's unfortunate. I can grab this and move it, but we're not seeing that wall when we first work on it. When I select this, at least I can snap this to the inside corner. So now this will stop here, we'll make the frame, and we want to reposition this so that it centered, but how do we do that? [0:51:57]

If I select this line and a press down to say I want to move it, there's an option of moving one line or the entire system. So now, this is moving the entire system, that's what I wanted. So the visual feedback was a little misleading so was a bit confusing. I basically select this line and say I want to move the entire system or just a single line. This was moving, this was rotating, and this one was rotating the entire system. So if I say move the entire system over, I can reposition this to get it centered. So if we had an element that we were snapping it to, I believe we could snap it to that get it centered there. [0:53:01]

Now that being said, some other fancy things that you can do are say you want to rotate the entire system. You can see this is now a skewed grid. So whether it's for traditional curtain wall or maybe a ceiling, there are times you want to rotate this around 90° or some odd angle. And there's also the option of saying that we want to rotate the entire thing. This is a skewed grid, and you'll notice how it remained parallel on one side but only these lines moved. But I can also take it so that I'm moving the



entire thing, and now the entire grid is rotating around. So whether you want to rotate in 90° or some odd angle, whether you want to get only the ones in one direction rotated, leaving the other ones where they are or moving the entire orthogonal grid system around, those are some of the options that you can do with this. So basically you need to have the scheme showing, because if you don't have it showing you can't do that. And in the scheme you can move the individual grid lines or the entire system or rotate the entire system or just one set of those. [0:54:22]

Let me just cancel this and discard the changes here. So Dave Norman asked, "Can the grid or scheme be adjusted in 2D so the t-bar starts at a wall or corner?" Unfortunately, in the curtain wall tool, the control of individual components such as individual frames, panels or the scheme can only be done in 3D. I believe you can do it in a section or elevation as well, so we were looking at say a south elevation here and we can select this. It says 'Edit in 3D'. So this is a rather limiting requirement and that is that when I'm working with this, it is only allowing me to work on it in 3D. So I can't actually move those grid elements around on the plan or in an elevation or section. [0:55:30]

I have found that frustrating. In this case, I was getting it in only that element, maybe it's because this marquee tool was active. If I get rid of the marquee tool and say 'show all in 3D', then perhaps when I'm editing this, if I wanted to snap it to something I can snap it. you can see there are still snap points. So ultimately what I've found is the workaround for some of these limitations is to put in some placeholder elements like a column or beam or something else that you want to snap to, to be able to line something up that otherwise might be harder to do in the 3D view. So that's a limitation that I found. [0:56:25]

Let's see, I have thanks from Luis and David, and I know Roderick I tried to answer there. So there are two things that I haven't covered here. One is creating a custom panel for a curtain wall door or for any purpose and the other is doing a schedule of doors and things in curtain walls. So let's see if I can create a custom panel. I didn't succeed with this t-bar in terms of it showing up. I'm not sure what I did wrong there. I'll have to research and maybe post a short supplemental video or comments on the page. So one of the ways that you can create a panel for any type of door is to draw with the slab tool and create it starting at zero and going up to 2 inches, just a nominal thickness. [0:57:41]

And I'll just draw this 3x7, just a simple shape. And I'm going to create a cutout in it, so a rather odd-shaped cutout. So imagine this is some elaborate glazing pattern, perhaps filled in with stained glass or something creative. How would we turn this into a panel? Let's fill it with something that, instead of being like that, we'll just fill it with something that is glass in here. Select that and make this 1/2 inch thick. That's the top and bottom, so let's make it 1¼ and ¾ there. So now if I look at this in 3D, we can see that I've got a panel, and the glazing for that is separate. So how would I turn that into a curtain wall panel? [0:58:55]



I select this, go to the File menu, Libraries and Objects, Save Selection As, and say I want to save it as a curtain wall panel. Let's see if this works. So we'll just leave it as 'curtain wall panel 1', move it to the embedded library and say save. It will be available for the dialog box as a relevant object which recognizes it. So how would we do this? If I were to go into any curtain wall - let's go to 3D and say show all in 3D. Let's just say that I wanted to put that door in here. I'm going to go in, select this curtain wall, say I want to edit it. Go and select the frame and delete it, so now this is a single panel here. Take it and change it from generic to a door, and that allows me to put in a door. [0:59:56]

Then what we want to do is go in and once we've chosen it as a door we want to choose the curtain wall door settings to set for the door leaf. The door leaf right now is this one, and here are the controls where we can say we want to use a custom panel. We also have other ones with grids, and there are different options that you can do. But let's look at the custom panel and choose a custom panel name and door leaf settings. This is where I would expect that this would show up. I don't know what's going on with this. I'm striking out here, because this is what I recall is that you need to say it's a door, use a standard door type here, and then you choose the custom panel. [1:00:51]

I have saved that as a custom panel. So something has gone awry there because I'm not able to get that in there. So I will have to double check and see why in both cases this didn't work. Am I doing something wrong or is there perhaps something not working in ArchiCAD at the moment that should be. So that's basically what we should be able to do but I wasn't able to do it. With that being said, we have a door here. How would I schedule it? So if I go to the door schedule you going to see that there are no doors in this project. Why? Because I haven't put any doors in walls. If I pop in a couple of normal doors and go back to that door schedule, we will see those two doors now up here. [1:01:43]

Now how would I get the schedule for curtain wall doors? The answer is that we need to go to the scheme settings and look at the schemes here. Perhaps we can choose a different one or set up a different one. The criteria for a schedule determines what elements are being listed. In this case it's going to show elements that are doors. Now you might think that the curtain wall doors would be considered doors, but there are actually some options here for curtain walls that are more specific. So what I'm going to do is create a new one, and we'll call it 'curtain wall door schedule'. The element type is not going to be wall, the element type is a curtain wall, and then we're going to add this element type. [1:02:57]

Let's go to 'More' here. Where is that element type? Curtain Wall Panel. So here is the panel. Let me remove this one and let's say that in the main one, we are going to go to 'More', and it's going to be a panel. So we're going to list the curtain wall panels. So first of all if I choose that and say OK, right now we haven't chosen to show anything so we need to list them or also show certain fields. We haven't chosen the fields. So curtain wall panels, we can set the height and width here. Let's say OK what do we have here? Now we have a whole bunch of descriptions of curtain wall panels. And I can make this a little wider here if we want. [1:04:04]



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Now this is for all curtain wall panels and it can, now that I have the panel here, I can add a criteria and say 'panel function' or 'panel type'. I think it's panel type, which is curtain wall doors. So it's a little bit confusing, but you can choose to make a schedule, picking out what you want. Now if I did this, you can see there are only two doors that I popped into the curtain wall at this point. And we just have some basic information, but we could add some more in the scheme settings, some additional fields. And I am certain that we could choose how this is going to be shown in terms of feet and inches here. [1:04:54]

We could potentially do the 3D front view here, and this would make this a picture here. Let's change our record by columns, so now then we can go and say that view should have more space. So now we can get the two different style doors that I had put in there. So I'm not an expert on this area, but I know you can get some reasonable schedules for curtain walls. You will not be able to combine door schedules from curtain walls with regular door schedules in the same list. You can put them on the same sheet, you can put them next to each other or possibly try to make them look like they were in the same one, but they will be different lists because of the way ArchiCAD works with them. [1:05:55]

The only rationale I've heard in terms of why that makes sense from an architectural point of view is that you might be ordering the curtain wall doors from a different source than interior or exterior standard doors. So maybe that makes sense. A workaround, if you want to have doors in a curtain wall that are scheduled together, and you want to use all the standard ArchiCAD doors as options, is that you could create an empty space in the curtain wall, put in a tiny piece of wall there, and pop in a door into that wall. So essentially, you are creating a hole and putting in a wall with a door into it. Then that door will show up just like a standard door. So that's a rather clumsy work around, but it may suit you in terms of providing an option to have those curtain wall doors scheduled the same way as regular doors. [1:06:54]

Let's look at some other questions before we finish up. Luis asked about loading another custom panel. I'm going to go back and try that here, but I don't think that works. If we go back to 3D and I select this and edit it and select the door and go in here. In terms of custom panel, it's not showing up here, there's no option to load another custom panel. Now if I go here and load other curtain wall panel, I didn't save it out as a separate file. So it's not in here. It should show up as one of these panel types. Actually here's one, "Curtain wall custom panel 17". This may allow us to - hey, there it is great. So instead of choosing it to be a door, I'm going to choose its use a custom panel that allows me to choose. [1:08:14]

If I just make this wider so we can see this a little easier, it allows me to choose one of the ones that I've saved as a custom panel. So this one now is a rather odd shape here. So I'm just going to tell it to use this and there we go. So it doesn't think of itself as a door, it thinks of itself as a custom panel. So that at least is one part of the solution there. Let's see if maybe I have the option for this. Let's say OK here, I'm going to select this. And what if I went to the mullions and instead of saying generic - there's no custom frame here. So that didn't solve that one. So I will have to research that. [1:09:09]



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Thank you Luis for prodding me to look a little further at how we could get a custom panel like we had created here into the curtain wall. Okay, so that gets some applause from Luis. I'm glad at least to succeed on that level. I think this is probably a good point stop, unless there are some remaining questions that you have. I think I've gone through all of the questions that you've typed in. Of course in the ArchiCAD coaching program that is part of the Best Practices course, if you have specific questions that you want me to look at in terms of a curtain wall in your building, and you want me to try to help you to resolve a design challenge, that will be my pleasure to do that. Let's see if there are any final comments or questions. I see another thank you. So please add your comments and questions and feedback to the page down below this video. This is been Eric Bobrow, thanks for watching.

[END OF AUDIO 1:10:26]