BEST PRACTICES COURSE – WEEK 22 Managing and Optimizing Live Sections and Elevations – Part 2 - Adding Detail in 2D and 3D

Welcome everyone to the ArchiCAD Best Practices course training lesson. Today we'll be focusing in the course outline on what is set up as week 22; Managing and Optimizing Live Sections and Elevations. In the last lesson, we looked at clean modeling to create clean drawings and we went over some basic rules of the road. If you want things that are next to each other or on top of each other stacked to not have a line, they need to be exactly aligned in the same plane. So you can't have things out of alignment; a corner not quite on top of another corner. [0:00:43]

You need to have the top and bottoms matching if they are stacked or side to side precisely touching. And they also need to be the exact same surface or material; then you won't have a line. So that's sort of a common issue with newer users - and sometimes for experienced users in complex context - avoid having extra lines where you don't want to see it. And we also spent a little time looking at how you can set up line work on an elevation such as bricks or blocks and move the origin point around so that you get a clean drawing that has the right spacing of things. [0:01:31]

Now we are going to actually move on to adding detail in 3D and 2D. Certainly with clean drawings there are other things we would need to pay attention to on the floor plan when we have multiple walls intersecting each other and things like that, but primarily I think I've covered most of the basics on just getting something that's clean. Now as we go into adding detail in 3D in 2D, today we are going to be looking at the basics of that. And I'm sure many of you who are veterans will find this a useful review. [0:02:16]

On Thursday, I'm hoping we will have Tim Ball as a special guest who sent me a file with a lot of detail in it. Tim is one of those users who pushes the envelope. So we'll be able to enjoy and explore one of his projects where he's putting in a lot of detail into the model in a clever way where it doesn't take a whole lot of effort and gives him a lot of benefit. [0:02:41]

So we'll start out with the basics here of adding detail. I want to start super simple but go quickly to add more information. So when I say "super simple", I've talked about conceptual models. If we were to start out with let's say in ArchiCAD 17 we are going to switch to the simple wall type here as opposed to the composite. In ArchiCAD 16 and earlier, it would all be under the same drop down menu of choices. But here we have to pre-choose that we only want a single type of element. And I will leave it as the generic exterior material and draw a box. [0:03:22]

Then I will go to the Slab tool and again we'll switch it from a composite slab to a simple one. Let's just say that it's "Generic Exterior" as well. And I'll draw a box underneath it. And when we go to 3D of course there's no big surprise; we have a box. There is no line between the slab and the wall, because

they have the same surface appearance. You may notice there's a slight difference in the 3D here with the edge line because the slab has a setting for the outlines to be in "Pen 2", which in the U.S. version is a gray and slightly thinner line. Whereas the walls have a setting here for the outlines. [0:04:20]

The outlines here for uncut lines are "Pen 11", and that would affect what we would see in the 3D view. Now on the floor plan, we are going to have the cut lines in "Pen 1" which is the thick line. So on the floor plan or in a section we are going to have a thicker line there. That is a difference there, not too important. If we do go to an elevation here and we zoom in on it, we'll see there's a difference in color. And if we were to choose this to be in true line weight, there might be just a slight difference in the weight here. [0:05:06]

That is something that you could potentially pay attention to. Frankly nobody's ever brought it up to me so probably the difference is subtle enough. And when you do switch the pen set, if you are using a different pen set - let's say if we go to the elevation sheet here and I'll take the same elevation here - as I zoom in on it you can see there's a slight difference in the weight. But they are both black because this drawing is set up to use the "Arch Pens Black" pen set as opposed to a "View" pen set which is ArchiCAD 10 default. [0:05:51]

So this is one that is in the standard U.S. template. And there will be similar things in the international one where the view has a certain set of colors but the drawing is using a different set of pens obviously to make certain pens black. So that is a subtle thing. Obviously since I don't get questions about it, visually it's really not an issue. But it is something that as we get in more detail, we will want to realize that even from the very beginning there are some controls here that you may want to tweak or look at. [0:06:31]

So let's look at adding some detail. Actually let's look at the detail we have in a section, which is nothing or almost nothing right now. So if I cut a section here and we look at it, we'll see that it does not show the dividing line. Why? Because this slab was defined as having the same generic material as the walls. And since they flow together, ArchiCAD removes that line. Now if we want to start delineating this, we could say that it's made out of some other material. It isn't really interior, but we could just use that for now as a placeholder. And as soon as I change that, it now and has a line in between it. [0:07:17]

So there's a rule in sections that if two surfaces are touching each other and they have the same - surfaces is the actual, not the surface in terms of the surface appearance in 3D, but if two cut-through volumes that have an exposed surface in the cut are touching each other and they have the same building material or fill - "building material" in ArchiCAD 17 or "fill" in earlier versions - then they will combine together. And you can use this to a good effect when you want to stack multiple elements to make a stem wall and footing that are both made out of concrete. But you can also control it the other way and that is make sure you have distinct building materials or fills in order to get a line drawn in there. [0:08:14]

Now let's take a look at what happens when we start to add more detail. We have two categorically different types of details. One is adding more geometry outside of the basic shell of the building. For example, it's adding molding or other ornament. We also have obviously more detail in terms of just structure. Below this slab is there a stem wall and footing, or what is the structural information there? Now these are adding more geometry outside, visible. Sort of adding more bumps to the building let's say. And then we have something that would be the inside. For example, what you would only see in a section. [0:09:11]

And we can just divide them into subjects of study; obviously it's all connected. Let's take a look. So if I wanted to add some more detail on the outside of the building, I could use any variety of tools. For example, I can use the Beam tool and let's just say that I draw a beam across here. And we go to 3D and zoom out. I've now just added something to the building. It happens to be embedded in the wall, and it's a very simple rectangular form, but this could be a profiled form. So if I say that I'd like to switch this to a profile here and then switch it here to - do we have one that is a…here is something that is intended to be a parapet. [0:10:05]

So this is something that could be stacked. This is a whole complex set of information here in the standard ArchiCAD U.S. template. Now obviously this doesn't fit on top of this building here, but you can see that this is adding more geometry by having another element drawn. Now it could be - I don't know if we have…here is an eve. That's an interesting one I haven't experimented with. So here is something else that sticks out from the building. It could be a piece of crown molding or baseboard molding or things like that. And it could be done with the Beam tool or in many cases it will be done with the Object tool. And you can use the Morph tool and there are various things. [0:10:58]

So this is categorically adding some more detail to the building by just putting more stuff on it; more elements. On the other hand, we could change the definition of an element. If I select this wall, instead of it being just a simple wall, we can make a composite wall. If I make it a composite, in this case it now has two skins. And of course it could have multiple skins. Now it has a lot of different pieces in it. In ArchiCAD 17, we are actually seeing these skins at the edge line. So if we go to ArchiCAD 16 here and I just draw a basic box like this - and this would be 16 and earlier of course - I will just do a slab below here. [0:11:54]

And we go to 3D, and let's just switch to an axo view for simplicity. So if I were to select this wall here and switch it to something that is a composite, we will see that it got thicker but we're not seeing the edge of it because it basically has a certain material here that is on the edge. And it's just whatever material we want. If I paint it red, it will be red, but it will be just a uniform color. We don't often see the exposed edge of a wall. It's usually meeting up with a floor or roof or another wall. But if there are some things exposed or you're doing a cutaway in ArchiCAD 16 and earlier, you'll have a simple look. [0:12:51]

Whereas in ArchiCAD 17, you'll have potentially a more rich environment. However in both cases, if we cut a section through it, so I will cut a section now through the other way here, in both cases we are going to have these various skins. So the next level up in terms of detail for the interior is to use a different setting for some of the elements. Obviously, we have walls that can be composites and the same with slabs. And here is a slab that is concrete on gravel or concrete on top of steel deck. So these are all different composites that might have a use for you. [0:13:52]

Now in this case, we are stacking these elements on top of each other. So in other words, the wall is sitting in a certain elevation that starts at the reference height of the story. And the slab goes down from that reference site and they're just touching each other. And remember if they have the same exposed material or fill - building material or fill - they would blend together. But if they have different ones like the top of this - it's hard to tell at this scale. Interestingly, just with the pen weights, but if I turn off the true line weight, the top of this - I guess this is a wood floor and that must be some type of underlay underneath the wood floor. [0:14:40]

Now this is not really of course the way that the building would be built. As we start to define sections further and want to have more detail, we need to find ways to get that detail. Now if we go back to ArchiCAD 16 and take a similar section here, we'll see much of the same thing. I will make this slab also have a composite - no, that's the material, sorry. Here's the floor plan and section. We control it under "Cut Fill" and pick a composite. In ArchiCAD 16 and earlier, if we wanted to stop the finished floor at the wall, we could take this wall and drop it down. So I'm just going to drag it. [0:15:49]

I just hit Command+D and dragged it down. And you can see when I dragged it down; it changed its base height here. And I can make sure its top is the same or I can stretch the top. Let me undo that and instead I will go here and use the stretch option and take it down. Now at this point, these are overlapping each other, so it's not clear picture. The lines are passing through each other. But what we can do here is use the Design menu, Solid Element Operations. In Solid Element Operations we can say that this wall is the operator; it's going to control the action. This slab is the target, and we can do subtraction and execute. And now you can see that we have a different representation. [0:16:38]

Now this is certainly a step in the right direction, but it's possible that the actual finished floor might go underneath the drywall and go up to the core of the wall here. And of course this outside, if that is brick, might actually go all the way down. There's not an easy way to do that in ArchiCAD 16 and earlier, although there is a way I will show you that will work in terms of complex profiles. In ArchiCAD 17, and this should be all familiar territory - for those of you who are using 17, it has been out for a full year now - I take this and stretch this down here to one of these heights or even take it all the way down here. [0:17:32]

I might want to actually use a different command, and that is - I will just undo that - I can go to the Edit menu, Reshape, and there will be an option here saying "Adjust elements to slabs". And then I can select

one or more walls and say I want to adjust them to the slab. And let's say I don't care about the top right now, I'm only working on the slab below. I want to go to the bottom of it or one of those other variations. Now the reason why I might use this preference to stretch it is that doors and windows, if they are set up to be in relationship to the wall base, they will intelligently stay fixed in their position in space when you use this. Whereas if you stretch and just take the bottom down and the windows are set to be a certain height relative to the wall base, they will move down with that base. Whereas if we do it this way, they will not. [0:18:35]

Now of course if you have the windows or doors set in relationship to the story reference level, then both methods will work fine, because they will keep connected to a story reference like the window height being at 7' above the story or 2 m above the story. That would be just fine. Now you can see the difference between 17 and 16 is that some of the cores went down and some stayed up on top. And in this particular case the priority of this building material was less than the sheathing or the underlay here for this finished floor. So we have a different result. [0:19:19]

Now whether that's exactly what you would want in any particular context is up to you, but you do have the controls based on how the building material priorities are set. So you can choose which materials have priorities and how they're going to work. For example, we might we might want to have the structural part actually going out to support the other structure. I'm not going to actually go into all the details, because we've done that in some separate lessons in ArchiCAD 17. I just wanted to refresh the lesson coverage to say there are some differences here, but the principle is that we can start getting our sections looking more complete and detailed as we collide elements together and use either Solid Element Operations or Intersection Priorities to make things fit to each other. [0:20:22]

Let's take a look at an alternate way that can complement this for creating more detail using complex profiles. If I go to this other file that I have not started working with today, this is based on MasterTemplate. So MasterTemplate, as I'm sure all of you are aware, is a robust template that's built by my company and sold as an add-on for ArchiCAD. It has a lot more tools and things built into it including - if I go here to the Wall tool - including a whole lot of complex profiles. [0:21:10]

So complex profiles, while there are going to be a few in the standard ArchiCAD, we have a lot in here. Now some of them are very simple. You can see this profile of a footing are little bit more complex. So this is just a concrete shape with a specific profile. Here are some more things, the stem wall with no footing here. You can see that there's concrete and at the very top there's a rectangular piece that would be the wood framing there. So we have concrete and wood. These complex profiles can have multiple different components, and we do have moldings. They are a little hard to see because these moldings, where it says base and crown, the preview has a little tiny base and a little tiny crown, so you just see a couple of little dots in the preview. [0:22:05]

But here's the cornice, and clearly you could take a profiled shape like this and run it as an extra piece in relationship to some wall or surface. Now we do use complex profiles for other things. This is actually simulating a roadbed right of way. So it actually is sort of a slightly rounded shape providing drainage for the road out to the curbs. What I want to do though is jump to one of the ones that has a lot more detail. This is "Cement panel with divisions without parapet". Now I've selected that, and that means that as I draw this - and let's just make sure that the reference line is on the outer side here - so I draw this. Let me go to 3D. [0:23:10]

We are going to see that this is just a simple wall, but it has a lot of detail. It has a lot of detail on the surface in terms of when we look in an elevation. You can see lines and different color separations. And then if we look in a section and cut through this here, we'll see that this has a lot of information. Now this is where the floor belongs. There's actually not a floor there. If we go to 3D and rotate around a little bit, you can see that this is actually part of that wall that we're seeing here, because the wall is cut here around it. [0:24:05]

So let me just drag a copy. This is interesting; can we do this in the new ArchiCAD 17 options? If I if I say drag and hold down the Option key - I am dragging a copy, yes. So this is a little feature that was added into ArchiCAD 17 I believe that allows you to drag copies of 3D elements in a section or elevation. Before version 17, you could not do that. You could only do it with windows or doors or 2D elements, but you could not make more 3D stuff in a section or elevation. You had to draw it on the plan or in 3D and then you could look at it in the section or elevation. [0:24:49]

Now you can see here that this is a pretty complex shape. It's not using the building material priorities. It's not saying, "Hey, there's a slab stuck in here and it's stronger than the center part and stronger than the cladding here." It's not doing that. it's actually just in freestanding space as this detail. Now I have a whole couple lessons on complex profiles in the course. So as a quick reference here, if I go up in the course to week 17, you can see "Complex Modeling" and we have "Complex Profiles". So that would be your guide if you want to understand the basics and some of the more intricate parts of working with complex profiles. [0:25:45]

So this is a complex profile. Let's take a brief look at how it's defined. If I select it in ArchiCAD 17, we have an option to go directly to "Edit selected complex profile". If we were in ArchiCAD 16 or earlier, you would need open up the Profile Manager under the Design menu, Complex Profiles, Profile Manager. Then manually go and find whichever one in the list we wanted. In ArchiCAD 17, we just say, "Hey, I'd like to look at and possibly change the profile that I have currently selected." [0:26:21]

So when I zoom in here, a very brief explanation is that each one of these areas is a fill. The fill is made of something. In ArchiCAD 16 and earlier it would be just your choice. Is it concrete or air space or wood? And that would be a 2D description that would have a visual representation. In ArchiCAD 17 these are building materials. So again, a description like plywood or steel or concrete, but in this case

it's a building material that has a fill that you see on the plan as well as thermal properties. This is how well does it retain or block heat transfer. And also some native appearance. you saw how when I looked at this little piece in 3D even without a slab it had a different color because it's intended to represent plywood, and therefore we're just giving it a generic tan color. [0:27:29]

So each one of these fills exists here in the complex profile and together they make for a more complex geometry; a more accurate section. You just lay in the floor in here, and if it's coordinated properly, you don't have to do anything in version 16 or earlier to make it look like a clean section because it's working around the slab. Now in ArchiCAD 17, while it will do intersections of the building materials and make a clean drawing, you could still use this. There is nothing wrong with doing a complex profile and in fact obviously we have some extra detail that you would not have just using the new fancy building material priorities. [0:28:25]

Now you can see that this is a separate fill and is says it's steel. So this is what is giving the appearance at the bottom of some extra detail. And if we go up a little higher here, you'll see that there is an additional piece of steel. And actually each of these fills here, which are representing stucco in this lower section, are separate. That's why when I go to 3D we can see the level of detail that we've got, because it's not just a color change, this is actually showing the detailed construction of this and how the stucco goes above and below that detail there. [0:29:21]

So this is one of the ways that you're going to get extra detail is by modeling a complex profile. I have the whole lesson on complex profiles so I'm not going to go into more details of how you create them. I'll just mention one other little thing which is if I go back to the other ArchiCAD 17 file and we take this wall here or any wall, I can right click on it. Actually it's not in the context menu anymore. It used to be there. Instead I have to go to the Design menu, Complex Profiles and we should be able to capture profile of selection. This is gray here. So why is that? I'm not sure. Let's go back to the floor plan and select the wall, go to the Design menu, Capture Profile of Selection. [0:30:26]

Okay so that's available. If I right click will it come up? No, it's not in the context menu anymore. So if you want to do this capture profile, you go to the Design menu, Capture Profile of Selection. And in this case I did it from the floor plan. I thought we could do it from a section. But what that did was it created - this is just a simple composite - but it created a copy of it as a complex profile. And then we can go and edit this. So if we did want to do something similar, I could take each of these fills and extend them down. I'll just do this foot just to be arbitrary and go select all of these and take them down here. And one more. [0:31:20]

So if we wanted something generally similar then we would just do this and say "Store the profile", give it a name, "New wall extending down". I've just given it a name and now I could actually apply it to what is selected, because there happens to be multiple walls that are selected. Actually I can select multiple walls here. This is interesting, I now have four walls selected and I can apply this profile. So that's

another way instead of going up here. Actually, I selected the beam. I didn't want that. I wanted the wall. So now I have four walls selected. [0:32:10]

I could click "Apply" instead of going up here and finding it. So I have the profile manager open, click on apply, and they all became this way. Now if I go to 3D we are going to see that they all became that profile. Although this one - remember I had stretched it down or something like that. So of course with a complex profile you can usually stretch it up higher than what it originally was. So I can take that up if need be to there. Alright, so we've looked at adding detail by either modeling something extra here or by changing the geometry settings of an element like the walls or slabs. We've looked at how the section initially the simplest modeling that is taught for ArchiCAD users is to stack things on top of each other, but in the real world for construction parts of elements, stick into each other and parts pass by each other. And so if you want to have a more accurate section or more detail in that section then you need to start looking at colliding elements or passing them through each other in order to get the more correct and complete section drawing. [0:33:35]

There's a couple of comments or questions. Ken Brooks asked, "How can a color of a surface be changed, say standing seam roofing?" Good question.

Todd says, "What do the building material numbers signify? For example, 22 03 31?" Dave Norman asked, "Is it possible to add 2D detail to a model? For example, showing miscellaneous trim and flashing without actually modeling these to save time?" Good questions. [0:34:07]

So in terms of the color of a surface material, Ken asked about standing seam roofing. So let's just take a look quick look at this. Let's go back here. And of course even with this simple model, I'm messing it up. But we'll put in a roof and draw this here. Select it and change the top surface. Instead of using the building materials - actually, this is standing seam here. It was defined as the top thing that it was made of is standing seam as opposed to Spanish tile or asphalt shingle. So let's look at what this is in 3D. It doesn't look like standing seam to me. [0:34:54]

Let's just take this up higher, get it up above that. What does this look like? This says "Surfaces by building materials", it says "Standing seam". Let's just override it. So when I click to override it - actually, it wasn't standing seam. It said, "Don't override it." The gray indicated that if you clicked the button to override it, then it would change to something and this is the last thing that was used. But this was set to use whatever the composite building material is. Remember we can go in and in many cases in ArchiCAD 17 say "Edit selected composite" and this shows us that the top surface here is asphalt shingle. [0:35:44]

So that's why the original roof was here like this. We're just going to leave the roof defined with this composite. But we will change the top to look like its standing seam. So I can override that here and switch to standing seam. When I do that, it sort of looks possible. But we have some issues with the

seams aligning. I'm not sure if we have something covering the hip line, whether that would be an issue or not. But separate from that, what about the colors? [0:36:27]

This is a gray color. How could we control that? In terms of this option here, this is determined by the surfaces. In ArchiCAD 16 and earlier, this was called materials. Basically the dialog box here allows us to pick - in this case it came up with standing seam, how convenient - we can see that it has a certain look. This color looks like that, this must be what it's using. You can see it's a little bit of a darker line on the side, that it's giving it this line that looks like there's a bump, even though there isn't actually a bump here. Or it's just showing where the pieces of metal are connected. [0:37:10]

This says, "LinesVAlpha.png". This is a picture file that exists in the standard library. If I search here, we'll see that I can choose this and I can pick out different options. As I click on them, you can see all sorts of different things. So the material with this name could be given any particular one. So it's "LinesVAlpha" here. Let's look at this cedar siding. We could not tint this inside ArchiCAD. We can choose it - here is a different one that is more gray. Here is one that has more yellows and tans in there. But the ones that say "Alpha", that's a special reference to what is called the Alpha channel in a texture file. [0:38:13]

So the picture or graphic file, .png, is a format that allows you to have more data. And ArchiCAD can use that data in a variety of ways, but in this particular case, the Alpha channel, the extra information - and I don't want to get into technical stuff too much - but the extra informant there allows you to tint it. So if I say cancel and go back to the surface color and double click here and make this blue, you'll see that it's blue. Maybe that's a little too extreme. Let's make it more subtle there. So now it's got this slightly bluish tinge. [0:38:56]

You'll notice that the original picture didn't change, but the preview image changed. So I say OK, and we zoom in or out, it did not update. So this is set up to use standing seam. You can see the color chip here. Let's do a refresh rebuild. No, that didn't do it here. In general, we should be able to do that. Let's check again on the surfaces here. I will go back to the standing seam. Right now we're looking at the internal engine. Let's look at Open GL. Open GL is what we see in the 3D window. And I guess it is not able to pick up the surface coloring. [0:39:51]

So what that means is that while the internal engine would see it, and we rarely use the internal engine, but we can go to our 3D window settings and change it to the internal 3D engine. Or I can go directly here to 3D view options. And now you can see it doesn't look like standing seam, but it is looking like this blue color. So we've got either color or a texture in this case. And when we're rendering this, if we go to the surfaces and go to Lightworks, we'll see that this actually does not look blue, but we can match with the internal engine. And now it will have this blue tinge. [0:40:45]

So this will show up in the internal engine with this color or in Lightworks, but not Open GL. So let's just see what happens if we render this. Let's "Render", and we happen to have a little sketch rendering.

Let's go to "Rendering Settings" and switch this to Lightworks and then render this. And we'll see now I have a simplified one, but you can see that it's the standing seam with the blue. So the partial answer is that some of the textures do have the option to be tinted by just changing the surface choice here. [0:41:47]

Here is "Corrugated sheet". That's an interesting one. Where is standing seam? Someone give me a hint. Here it is up at the very top right. So here is this one. If we're looking at the internal engine, we can pick a different texture here that has different colors. So the controls would relate to what texture file you're using. And if you could pick another one that works for you from the library, great. Otherwise you can possibly download other ones from other sources and use them to create a better look. Or you can open something like this in Photoshop and actually create another copy of it that has been tinted. [0:42:44]

That's a little longer than I probably should have taken because we have already talked about surfaces in another lesson and we will be having some more discussion about rendering and presentations in a later lesson of the course. And in ArchiCAD 18, the equation changes because the entire definition of surfaces has been revamped to take advantage of the options in "Cinerender", which is the new rendering engine that has been introduced in ArchiCAD 18. I haven't worked with it, but I've seen some of the presentations and it looks quite awesome. [0:43:24]

Alright, so that's maybe a little more than I wanted, but definitely gives you some explanations relative to that question. Ken says "Thanks Eric, very good." OK and actually you said that 5 minutes ago, so there is that classic thing, you'd had me when you said "hello". So I went on and on. Okay.

Todd Hotchkiss, "What do the building materials signify?" Now this is a quicker answer because if I go to the - this is building material. We're looking at building materials. And you'll see these numbers here. They relate to the Construction Specification Institute, CSI numbers for building materials. So if you're in the U.S. and you use CSI then these numbers should be somewhat familiar. If you are in the U.S. and you don't use CSI, maybe they're just as mysterious to you as they would be to someone in another country. [0:44:29]

So what do they do for you? If you don't use CSI, if you don't specify things based on Construction Specification Index tables, well, groups 41 are a certain category. So these are things that go around the building; they are non-structural. Group 22 are cladding; gypsum board and roof tiles. Group 41 here is stones. Actually, 22 here we have framing. We have "Cladding 2207", and here we have "Framing 2205". Basically these are categories that relate to the function of the element. [0:45:22]

For example, 2207 is an insulated material. And here's another 2207, a few of them here that have different priorities in terms of the list, but they are all generally insulation. So this may help you once you study this to see where elements are. And if we sort it by name we're going to see now that all of

the insulation things are put together. I guess 2207 also goes to siding. So frankly I've never studied the CSI system, but that is what I understand this refers to. [0:46:15]

So Ken Brooks writes, "The second number is the CSI number." So the 46 or 61. Okay then, thank you Ken. So what are these 220 numbers? I don't know. I thought they all referred to the CSI system.

Dave Norman asks, "Is it possible to add 2D detail to a model? For example showing miscellaneous trim and flashing without actually modeling these to save time?" The answer is not quite the way you are referring to it. If I look at an elevation here - this is sort of a funny little elevation - of course we can draw 2D on top of it. So we can draw line work, we could have and object that is a more complex shape. That would be the profile of a piece of trim or flashing. So you can draw that either manually or by copying and pasting or by placing an object that has that detail there. But you wouldn't see it in 3D. [0:47:41]

So is that bad? Well, do need to see the flashing in 3D? I guess that just depends on how detailed and realistic you want the model to be. In most cases, it's not necessary, but some people would prefer to have all of that delineated in the 3D rendering as well as in an elevation as well as in a section. So we might say that the ideal is to model as much as possible. Or at least as much as is practical. So what is practical? You know that every bit of modeling and everything you draw takes a certain amount of effort. [0:48:24]

Just like when I created the walls with a complex profile that I demonstrated, I drew four walls just as simply as if they were four simple walls, I didn't put in any more work and yet that section looks much more detailed. Let's go back to that view. So the section is going to have all this information. Was it practical to have all this detail? Sure, if it's the right detail and you want it to show up in a section. Why not define a complex profile for the wall including all of the extra stuff here. On the other hand, if you're moving quickly, you may just say I will draw a few little lines on the elevations and be done with it. [0:49:17]

There is the expeditious way and then there's potentially the more thorough manner. In our session on Thursday, I'm expecting Tim Ball from the UK to show up. He models lots of stuff in 3D using things like what we are seeing here. Things that you might say, "Well, I always draw that in 2D". He puts it in 3D. And he'll talk about and demonstrate how straightforward it is once you get the system down. So it's a little bit of a mindset than just saying, "I want to do this." A little bit of an effort up front to create more detailed information. But if you think about it, this is going to show up in a section anyway, and you're going to have to draw this stuff in a section. You can almost directly take the section with the fills you create and just turn it into a complex profile. Essentially a complex profile is a section through a 3D thing, whether it's a wall, beam or column. [0:50:27]

Alright, Dave Norman writes, "I guess there is no way to add 2D line work onto a model." Not in the way that you're thinking. I can't go and draw a line on top of this wall and have it stick on there. If you turn

this wall into a morph, I wouldn't recommend this, but here is where you could do. I could go here and right click on this, say "Convert selection to morph". It will tell me that it no longer will be there, the original element will be deleted and there will be something in its place that is a morph and looks much the same. I say OK. It's now changed and looks pretty similar. Look at these two walls. But now when I select it, what is it? It's a morph. [0:51:17]

Because it's a morph I can now go and use the morph tool. If I press down here the morph has the option to draw a line. And I can draw a line let's say horizontally and vertically to here and then stop it. I guess it did stop. So I've just drawn a 2D line on there. Actually in a morph it's not just 2D. If I switch my arrow to picking pieces of the morph or use the keyboard shortcut which is Shift+Ctrl, you can see how the arrow changes. I can then select it and you can see that when I drew the line it actually broke up the surface into pieces. So is it 2D? Well, all I did was draw lines. Is it 3D? Well, these are two different surfaces and could I edit it as a 3D thing? Yes, I can go in here and curve this. I'm not quite sure, how would we do this? I could go and extrude it. [0:52:31]

It allows me to push it in, but I can't push it out. Why is that? Let's just push it in. So now you can see that it actually has a 3D recess in here. So the answer is that right now, you cannot draw on top of a 3D element and just put linework on there. If you have a morph you can draw on top of it, you're actually changing the geometry of the 3D element and have more controls, because I could actually let's say select this and make it a different material or surface. So let's say I'm going to override this and make this red. Now you can see what's happened there. [0:53:28]

Alright. Ken Brooks writes, "I'm just finishing a quick project that is a metal building in the form and section of Quonset-like form made up of a series of metal arches that are in the form of a channel and section. I would love to be able to model this, but it seems intimidating to accomplish."

Alright. That would be a perfect thing to send in for a coaching call session. If you want to send in what you've got, then we can discuss how you want to develop that further. There may be some things that are pretty easy to do as well as some things that are rather complex. [0:54:05]

Dave Norman says. "Thanks Eric. The morph method will be useful for early design studies." I agree.

Todd Hotchkiss writes, "Why can't you draw a line only morph?" You can. Good point Todd. I was selecting the wall and turning it into a morph, but let's just go to the Morph tool. Good point. I go to the Morph tool and say I want to draw a line only morph rather than a box or volume. So the line only morph means that it's a polygon. I can draw a one line or multiple lines open or possibly closed. [0:54:47]

I can go and snap to a surface here and draw along that surface. And where did it go? This line, I can select it, and you can see that it's selected here - well why is that not showing? It's not solid. Let's look at the settings of it. It's not considered edges here, outlines, it is solid here. So why is it not showing? Let

me see if it's buried. Because it may very well have snapped to a surface area. You can see as I zoom in on it that it's actually behind the surface here. So let me drag it. I will hit Command+D and go to the corner point and then drag it to the edge here. And now it's visible. [0:55:45]

So you have to be careful what you are snapping to. In that earlier case, I had snapped to a skin that was slightly indented. But good point. You can draw on the surface if you're careful with the Morph tool. And let's just get rid of this monstrosity here and take that elevation - I'm not sure which view this is. If we go to 3D here, this is the side that has the little extra beam so I think there would be the south elevation here. So let's go to the south elevation, and there's that line work. So what do you know? It's a morph. Todd, thank you. [0:56:35]

So the answer to Dave Norman's question is that you can add in 2D detail by drawing with the Morph tool. If you draw in the elevation, you can do that, but be aware. If I go and draw something, and let's do something silly here, you can see this line looks like it's in the elevation. It could be representing something. Maybe I'll actually draw something. I want to draw an extra little piece here. Alright, so I've just drawn something there. Now let's go to 3D. [0:57:30]

We don't see it on the surface here. Why? Because that thing that I just drew is hanging out over here. So I drew it looking at this wall, but it's hanging over here. Why? Because on the floor plan it is in line with the elevation. Remember here is the elevation marker, so it was put in there. Now I can easily go and clean it up by dragging this to the surface. I've just dragged this thing. And now when I go to 3D you can see that thing that is selected is right there. So you could draw on top of it, but if you're using an elevation that's being projected from a point out in space, the line work will be disconnected from the model. [0:58:25]

So the simple solution to that and in many cases would be to create a section or elevation marker that's literally along the face of the building. So let me do this on the side just for convenience. I'll draw this marker right along the face here. Let's put in a window and a door just to see how this works. So now if I go to this section here that I drew with the section tool you can see here's the window and the door. So it looks like an elevation, but I'm actually on the surface of this wall. [0:59:07]

There might be some things that stick out from the building but I wouldn't see, but other than that it will be generally a pretty good elevation drawing. And I could go to the Morph tool and literally just draw whatever I want here. And if I go to 3D, we are going to see that extra stuff is right on the surface. And of course it's going to show up in an elevation. So there you have it. Todd writes, "Yay!"

Dave Norman writes, "Thanks, the morph line tool will work great."

Mark Phillips comments, "Eric, for construction documents, I get them to this point then I change status to a drawing to clean it up. So what do you recommend about changing the status of sections and elevations to a drawing or leave it as a model and put notes on models?" [1:00:04]

Okay so this is maybe a subject for discussion. This sometimes may be controversial. As ArchiCAD has gotten more powerful in terms of modeling cleanly and with detail, and as computers have gotten more powerful so that elevations and sections in general can come up more quickly so you don't have to wait an extreme amount of time when you have a lot of detail, it becomes more and more effective to leave the elevations as actual live generated views so that then you never have to worry about it being out of date, because it is showing the model. You don't have to worry about inconsistency between that view and other ones. [1:01:04]

In general, by having that discipline you're going to gain a lot of benefit. Now the reason why some people will change something - let's say if I go to the elevation or the section, the one I've got here - the reason why some people will change the status of this. If I right click on and empty space and say "Section Settings", that's the same as selecting the section marker or the elevation marker on the plan. And one of the options is to switch the general status from "Auto rebuild" to either "Manual rebuild" or "Drawing". [1:01:49]

Now if you say "Manual rebuild", this means that your section or elevation will not update when you bring it to the front when you come to look at it. And you can put notes or linework on top of it without having to wait for it to rebuild. The only time I would ever do this is when the model is taking a long time every time to generate. And while, if you had a hospital, and you're working on elevation and putting notes on it, maybe that would be justified. There are other strategies we're going to be dealing with later in the course for speeding up dealing with large models. [1:02:28]

So you may find that it's not necessary. Why do that? Because after all, when you bring it up, it may not be up to date. And if it is a manual rebuild, you can't actually move windows or change the size of things because it will say, "This is not an updated model." So "Auto rebuild" will allow you to essentially remodel things in a live context. Now a long time ago, it was recommended that you unlink the sections or elevations to create drawings. Basically, breaking the link to the original model so that you could go and edit it. And you would delete unnecessary lines, add more detail to it, and you would create the drawings the way you wanted. [1:03:21]

 The other thing in addition to deleting or redrawing things is that you could change the line weights. And that's probably the only reason would see making it a drawing. If you're not going to change the line weights then either wait a few seconds for the model to rebuild and just put stuff on top of it. If you find that waiting is too long at least temporarily change it to "Manual rebuild" but draw on top of it. The only reason that I would see to make it a drawing is if you can't get the line weights to look the way you want. [1:03:57]

And if you turn it into a drawing - and we're going to do this right now - then after it converts into a drawing here, when I select this line I can make this line instead of Pen 11, I can make it a different pen. Right now it's a very thin red pen because I'm not showing the line weights. But if I turn on the line

weights you can control these line weights precisely. You can select one or more lines and change it. When it's in a drawing you're actually not dealing with windows or walls you are dealing with lines and fills. So the tradeoff is that if the model updates you don't get that information here. The only benefit that I really see is if you really can't get the linework to work. And for the most part, most things have controls to show you what they're going to look like in an elevation or a 3D view, so most things can be controlled pretty well. [1:05:15]

If you really need to change that, that would be the one option that I would use to turn it into a drawing. Now if you do this and you realize that the model has changed a lot and you need to start over - you unlinked it and did a little bit and then later the model changed and you said, "This is out of date." You would need to go and use either Virtual Trace, which allows you to see the model behind it and adjust the 2D drawing to match the model or you would just say "Rebuild from Model". And if I do a Refresh, Rebuild from Model, you'll notice that the red line changed back to gray and everything that comes from the model would go back to its original status. [1:06:02]

The same thing would happen if you switched the section or elevation settings from drawing back to one of the model ones. It would rebuild from the model and any customization to the line work would disappear. But if you had drawn anything on top of that, put any text or other annotation, it would still sit there. So okay, that hopefully answers Mark's question there. We are at an hour and ten minutes. I think this is probably a good place to finish up. In Thursday's session I am expecting Tim Ball to join us.

We will be looking at some more advanced options for creating detailed sections and elevations, ones that are generated from the model and have a lot of information that you can pull out. Not just drawings, but also quantities and schedules. Tim is a great guy and I'm sure we're going to have an interesting experience looking at that. I'm not sure if that's going to take up the whole lesson or not, I'll be looking at his file that he sent me between now and Thursday. But we'll focus the lesson for sure on intermediate and advanced strategies for adding more detail to the model. So please add your comments and questions to the page down below the recording of this video. This is been Eric Bobrow, thanks for watching.

[END OF AUDIO 1:07:40]