BEST PRACTICES COURSE – WEEK 22 Managing and Optimizing Live Sections and Elevations – Part 3 - Advanced 3D Model Detailing with Special Guest Timothy Ball, RIBA

Welcome everyone to the AC Best Practices training lesson. Today we have a special guest who will share some of his work. We are focusing in week 22 on how you can develop models with more information and more detail; essentially making the 3D model have as much as possible that you can derive in data and drawings in a very efficient way. I think that none of us want to be following the theory at the expense of practice. We don't want to do what you potentially could do in wasting a lot of time on things that are hardly ever seen. Tim has found an interesting balance here. So let me introduce Tim Ball, my old friend it seems, I guess we've known each other for a few years. How are you doing Tim? [0:00:59]

TIM: I'm doing fine. Like I said earlier, I'm slightly BIMmed out, because I have been at the Article 18 launch in London, which was very exciting. Yesterday, I was at a conference that had to do with BIM compliance issues, mainly 5C and stuff like that. So it's been the end of a long two days, but glad to be here and hopefully, everybody will find things interesting and useful to apply to their own way of working. [0:01:40]

[*Resolving audio issues - resumes at 02:15*]

ERIC: Alright, so before we actually get into the meat of it, Tim how long have you been using ArchiCAD and when did you make the conscious decision that you were going to push the limits. Was it right at the beginning or after you had been using it for a while?

TIM: I've been using ArchiCAD since version 5, and I don't know what year that was actually without looking it up. I was reminded of that today actually, because they had all the versions showing as part of the presentation. So 5 was when I started. I guess I didn't really start taking it seriously until version 10. Since then, I've been looking to improve my skills and knowledge. [0:03:04]

I kind of started out modeling, and learning all about modeling tools. And afterwards, I can pretty much model anything I like, given time. And what I've really concentrated on in the past two or three years is the quality of the integration of all the drawings for a project, including the classification. That was driven by the fact that I wanted to be able to reduce the amount of site queries I get, which often leave [03:45 - extras]. Certainly nobody likes [extras] - it's certainly a whole lot of money to deal with them. [0:03:52]

So that's really what has been driving it. And in fact, looking at the BIM aspect of it, it has kind of almost flowed from that, almost as a kind of side effect really. I didn't get into this to do BIM. I actually started working like this to do better sets of construction drawings.

Eric: Right.

Tim: So that's really what drove it from the start.

Eric: Right. So it really wasn't so much an intellectual curiosity or passion - how far can I push it - it was more like how much benefit can I get by putting in some extra effort up front. Can I leverage this to make the whole construction process smoother where there are fewer issues or even questions about things?

Tim: Yes.

Eric: So from what understand when we've talked, you've essentially been able to convert almost all - I don't know what percentage - of your drawings to live representations of the model. Obviously, detail drawings have a lot more information in them at a larger scale. To what extent are detail drawings 2D versus 3D at this point? I know that a detail drawing is unlinked, but how much of it do you have to clean up or change? [0:05:17]

Tim: On the [print] I've sent you the file for, everything is 3D. There is not any 2D drawing at all, which does mean you'll see odds and sorts that need tidying up. But I probably won't tidy them up in 2D; I will actually tidy them up in 3D. This job is probably about 75% complete and ready to go to the contractor. [0:05:45]

Eric: So you sent this as a file that I can bring up onscreen, but it is a real project, right?

Tim: Yes, we're going to start building it in about a month.

Eric: This is a note to all of you who are listening or watching the video: Tim and I decided we would run the presentation video visually because I have a better internet connection, but of course it's Tim's project and we will have him describe it. So he is going to be guiding me where to go. So Tim, let's take a look at this project. Give us an overview as an architect. If we can spend three minutes or five minutes just seeing what this project is about before we get too focused on this detail or that detail. So tell us about the project and where should I go? [0:06:33]

Tim: If you go to the Navigator view first and you should have - I sent you…

Eric: You should see it on your screen. I'm in the View Map, Key Drawings, Detail Drawings, etc.

Tim: Yes. Okay, it's not quite what I expected to see, but it doesn't matter. We can get there.

Eric: Where should I be looking?

Tim: I thought I'd sent you something which was all set for you, ready to go.

Eric: The file that I opened up was "What is BIM - Working Drawing Example.pla" saved on June 10th. [0:07:23]

Tim: Don't worry; we'll work with that one. All I did was create a folder which would have helped you navigate, but we can deal with it in another way. It doesn't matter. So what is going to help me is if I actually navigate in my own version of the same file so I know where to go. To give people an overview, what we need to do is actually start with a 3D view of the whole project. If you go down into the folder called "B Detail Drawings", you'll see at the bottom there, there's something called "BIMx start point". [0:08:10]

Eric: Double click on that?

Tim: Yes. Double click on that and it will give us the 3D of the…

Eric: So for those of you who might be a little vague on this, I'm in the View Map. These are saved views and this is the live project. This is a saved view of a 3D view point, and as with all views, it records what layers are turned on and other settings including in this case what the viewing position is. So by double clicking it, I'm just going to a 3D view that is known and certainly shows a quick glimpse of the project. [0:08:44]

Tim: So the project is some work to a house which is about one hundred years old. The main part of the existing building is on the left of the screen. We are extending it by adding a wing that is on the right and we're putting a new porch area and staircase up, which is that extended [inaudible] roof. We are rearranging the whole of the interior. This job isn't brilliant in terms of the renovation layers because it's been through about three different design processes and it's gotten a bit messy along the way. So it's probably best to just leave it as it's showing now. [0:09:35]

This is probably worth about $450,000, and it's the sort of ordinary job that we do quite regularly. It's not the greatest design in the world, mainly because we've been highly restricted in the way we can design by the playing rules in the UK. So we've had to really follow along with someone else's design to get approval to do this. So nevertheless, it's a real job and it's a good example from a construction documentation point of view. [0:10:18]

So you can see that I've drawn the thing as you would expect normally in ArchiCAD. Nothing totally remarkable. And I don't think I've used much in the way of special objects or anything like that. Most of it is stuff that you'll find in the standard library. I think I changed the front door and used a custom door panel, but apart from that it's all pretty much out of the box. Except of course I used a lot of complex profiles, which allows me to do interesting things and perhaps things that you can't do normally. [0:11:03]

Eric: So this is, for example, a custom profile for the eaves. So I'll just zoom in on this.

Tim: So if you open that up…

Eric: You can see the shape here below the actual roof plane. You don't have a cap - if I deselect it - you don't have an end covering that up. So that would be one of those little bits that needs to be cleaned up if you were doing a fancy rendering.

Tim: Yes exactly. And this job I'm not doing fancy rendering. I'm working with a contractor that I know. The important thing is that I get the eaves detail right, and then we can see what that eaves detail looks like. [0:11:47]

Eric: Right now, these are all fills that have a certain material. And you can see how they show up in the 3D. They look just like the rest of the roof in terms of the shingle. And so all of these are the solid elements we're seeing here, and we actually even have - this is a whole fill. And this is another layer that is…

Tim: The membrane.

Eric: So this is somewhat akin to a detail drawing in terms of all the stuff that we're seeing here. It's really literally just being stretched along in 3D to create the appearance that we're seeing here.

Tim: That is the point in a way Eric with these 3D complex profiles is that rather than drawing it in 2D I draw it in 3D. So really I'm drawing it in 2D in the complex profile editor window. Then I am using that as the 3D element. So I construct it and make it accurate. It means then that all of the sections and elevations and everything all coordinate with the detailing. [0:13:04]

Eric: Right. So one other point I will make for people who might be curious; if you wanted to cover this up - if Tim says he's not going to be doing detail renderings so it doesn't matter, then one would create another profile that would just be applied to the end. And that profile would essentially close off the end. It would not have all the little gaps, and in fact it might be all one material. It could be a simple one material that closes this off.

Tim: You would do it with just the solid, same material as the external trim. [0:13:40]

Eric: Right. So anyway, what else should we look at next?

Tim: I think in terms of describing the project, that's all we need to do. I don't want to waste time because it's not particularly a wonderful design. I would guess now we would actually start to look at the drawings that flow from that. So if you click the "Ground Floor Proposed"…

Eric: "GF Proposed"?

Tim: Yes, GF Proposed. That gives you a conventional 1 to 50 general arrangement. All the various elements that are standard slabs, walls, all that kind of thing, they're actually carefully done so that the

coloring helps me in terms of drafting. And if you flick that into - change the pen set to printing… [0:14:56]

Eric: Right now we are in the pen set you use for your modeling, drafting and working. So when you place this view onto a sheet that view is set to use the printing one. We can temporarily switch to bring up this different pen set, and now we can see it's mostly black and white.

Tim: Yes, exactly. So what I do is keep section lines in color just to help bring them out. But then if you go into - it doesn't really matter which corner, but if you go to one of the external wall corners and zoom in, you will see that I'm actually using color for the insulation layers. [0:15:50]

You can see that I've got a few - it's one of the issues actually about the renovation layers, because if you look at the solid gray, that's the existing wall. I did not hatch that with anything other than solid gray because that is there and we're not touching or doing anything to it. What we're doing is putting insulation on the inside. One of the problems that we have at the moment, which Graphisoft says they are going to solve in release 19, is that we can't mix the renovation layer in the same composite. So what you have to have is the existing wall in gray and then a separate composite wall which is the one with two different hatches in pink. [0:16:54]

Eric: I can see that this is a wall separate from that one. The window that exists is here. This wall actually stops. No, it actually extends further. So you cut out an empty hole?

Tim: Essentially, what I've done is used an empty window opening. But even with an empty window frame, you can add a window board and [17:20 inaudible] to it. [0:17:22]

Eric: So this is basically an empty window with some framing or some additional components and that is sitting next to the existing one. So let's just take a quick look at that in 3D just at this whole little corner of the building. I will use it with a single story marquee, so a thin marquee, and that way we are able to focus totally in on here. So we can see here is the separate wall that is the insulation layer that has been added in. Here is one window. And you have two separate windows ganged together. And here is the empty window that basically does a cutout. [0:18:09]

So in a sense, in this case, it's very appropriate. You are putting in a new wall and you are cutting out a hole in the new wall with some additional trim. So although it would be nice if you could just select the wall and change it from one status to another and say, "This is the new status, that's the old one," this is not actually too bad from what I see.

Tim: The pain is that you've got to basically put two window openings in instead of putting one window opening in. [0:18:46]

Eric: Yeah. But once you have the settings for the interior one dialed in, you can just pop them in and stretch them thin. Just to demonstrate this is a technique, if I select this here, we can stretch this. What

just happened here? It looks like it complained and got some type of error message. I am in a copy of your file where I don't necessarily have all of the objects. It says there is an LED light strip that is missing. [0:19:23]

Tim: There is only one missing, which I fixed in the version that is still waiting.

Eric: Oh, okay.

Tim: There's only one missing.

Eric: I'm not sure why this is complaining when I went to stretch it. But basically for some reason it doesn't want to stretch in 3D. So let me go and demonstrate this, because I think this is an important thing you're talking about and I want to make it clear to people. It would be easier if we have the settings of this window. Let me just actually mess around with this. I'm going to select this interior window, eyedrop it, delete it. [0:20:05]

Now let's say I popped it in generally. Now it's not in the right place, but obviously when you're putting it in like for other windows, it would not be the right size. You have to stretch it to fit. There we go. I can stretch this. And I'm not quite sure what I'm snapping to but we can snap this to make it fit properly. So the pain isn't too bad. Once you have a favorite for this, you can just drop it in and stretch until it snaps. Let me just undo that and put that back to where it was. [0:20:46]

Tim: Often Eric, the way I actually work with things like that is I just work in section because it's very easy to draw in a section to look at the window and then you can get the width and the height and the sill and all the rest of it right. I sometimes find working in sections easier than working in 3D. It depends on what you're doing. Sometimes it's great to work in 3D, but it things like this - one of the annoying things is that the lining in the empty window opening, it doesn't actually allow you to - actually you seem to have aligned it. [0:21:29]

Eric: I undid, so this is exactly your file.

Tim: Alright. But if you pick the opening what you'll find is that the hotspot is actually on the opening width not the…

Eric: So this hot spot here, which we would want to snap there…

Tim: You can't drag that one, you have to go back and drag the actual opening itself.

Eric: Right. So it would be stretchable from there, yes. [0:22:01]

Tim: But the principle is right and you all of that done.

Eric: I have a question for you, but go ahead and finish your thought.

Tim: I think if you look at that wall - I can't remember if that is a composite or a complex profile - if you pick it, will it tell you that it is? I've got a feeling that it's a complex profile.

Eric: This wall says "Existing wall" and it's just a simple…

Tim: No, the lining on the inside. The one with the insulation in.

Eric: The one on the inside is a complex profile, so it's not actually a composite, it's complex. So you can see that it changes composition. Why at this particular height? Any particular reason that…

Tim: Well, I will explain it. If you open it, it's an interesting little thing that you have to do. [0:23:00]

That wall actually needs to be treated for damp-proofing for dampness coming in. so what you can see there is I've actually got a purple element, or light blue or something. And that's actually to indicate that it's a waterproof rendering that has to be done there. And then inside that you will see that you have various other maintenance to do to actually make the floor junction work better as well. [0:23:33]

Eric: So you have these different pieces that will work for the floor. So if we cut a section through this, I assume that will be pretty interesting. Do you have a section that we should just go to?

Tim: Yes, if you go to Y1.

Eric: Y1. Okay.

Tim: That should show that.

Eric: And the left side of the lower area, is that...

Tim: That's it.

Eric: Alright. So okay, we are looking at - here is the complex profile we just saw. And with the damp proofing underneath the window there. So the actual slab here passes through with similar components. The complex profile you have similar ones here and it's extending down but it's giving way, because this is - no actually, you have - it looks like we have lines passing through each other. So is there a reason why? [0:24:38]

Tim: No, it's just me not quite getting around to tidying it up. [Laughs] So it needs to be tidied up.

Eric: But in general, it should show up nicely down here.

Tim: Yes. You can see as well there's even a little bit of an upstand for the damp-proof membrane that actually starts to show as part of the complex profile.

Eric: When you say an upstand for that, where are you referring to?

Tim: Next to the light blue element, there is a thin bit of hatching. [0:25:20]

Eric: I see. Let's go and edit this here. So it is this little piece here?

Tim: Yes.

Eric: So I am selecting it…

Tim: You have selected the insulation at the moment. You need to select the membrane. You see, that's a special fill pattern that I have created for membranes. [0:25:59]

Eric: So you are talking about this?

Tim: That one there.

Eric: The waterproofing. So that is what gives it something to adhere onto?

Tim: Yes. It's explicitly like the damp-proof membrane that you use in a floor. You actually run it up the wall to make sure you've got a good [0:26:19 inaudible]

Eric: Okay. I think everyone who deals with this type of condition will recognize the type of construction that you are indicating in this. It's fascinating that you find it just as easy to put it into a complex profile. It's essentially a 2D drafting exercise here. Then it becomes 3D. Then when you cut through it, you have all that information. [0:26:49]

Tim: The nice thing about complex profiles is that you can re-use them anywhere in the project, but you can also import them for another project using the attributes manager.

Eric: So by the way, if I just align this visually so we can compare it, essentially what we are seeing here was drafted in 2D and is cut in section as a 3D element. So what else should we look at Tim?

Tim: So I am trying to work through - if you go to section X1, which is just above, there you go. What I have done there is use conventional detail drawings. And if you go to the one at the head of the porch, to the right inside and above the stair there, that one. If you zoom in on that area for now, the first thing you will notice is that there are two reference numbers. Have you done the Detail tool yet in the course, Eric? [0:28:07]

Eric: I have not actually - I have covered the Detail tool in one of the coaching sessions last year. We had a long session about detail stuff but I haven't done a formal lesson in the curriculum on it. It is sort of covered, but not fully.

Tim: In my view, the usefulness of the Detail tool is actually questionable. I think I am moving towards using 3D documents more than the Detail tool. The only reason for that is that the Detail tool doesn't

automatically update. You have to remember to update it. And I find that a bit of a pain, because everything else updates automatically except the Detail tool. [0:28:52]

On this particular job, I thought, "Well, I'm going to use it. It's fast and it's easy." And what I do is I know how big my detail box needs to be so that I can get six details on a [0:29:10 inaudible] sheet. So I have just worked it out that it's X number of elements by X number of details. So I draw the detail box at the correct size, I then know that I have the elements that I want to show the detail. It's right, and I can move the detail box around if I want to maybe center it or whatever. [0:29:35]

What I then do is give that detail two references. One is the top one, which is X-1-5 which is the section X1 and detail 5. The one below, the 4-30, is automated. What is does is links to the drawing or layout that I've actually placed that detail on. That is really important for two reasons. Firstly because you can visually see that it's linking to 4-30 and you can go to that drawing. [0:30:11]

When you look at that section as a PDF, either on any kind of computer or laptop or on the iPad which is where drawing issues are going to end up for the next few years, it actually is a hyperlink. So in fact, you click on that in the PDF and it automatically takes you to that drawing number.

Eric: Right. So I will do this within ArchiCAD. So you are saying that it will go to the drawing on the sheet, or it would go - here this is to edit the drawing, and this is to look at the drawing on the sheet. So if we go to the drawing here, it's highlighting that. So you are saying that in the PDF, this is what it would link to. [0:31:05]

Tim: That's right.

Eric: And if we go to back to this view here - it's interesting. You have, at least in this particular file, when I double-click on it it goes to a saved zoom. Just as a teacher, I want to say that's one option. When I went here it was nice to see the whole thing; but one might prefer to come back here and just be wherever the zoom was. If you did want to change that, you can go to "Settings" and say "Ignore zoom and rotation when opening this view." Then it would have left me in the same position. [0:31:43]

But with this unchecked, it has a zoom; in this case, "Fit in Window" and it's jumping out to show the whole view. So those are two legitimate choices, it's up to you. And you might even change it from time to time. You might say for now you would just ignore it so you can go back to where you were. Later, when you hand the file off, you want it to fit in window. [0:32:07]

Tim: I am just trying to catch your error, that's all. If you go back and zoom in on that…

Eric: By the way, if you do this, instead of saying manually, "Where was I?" you can go to the previous zoom here. it's a little trick that remembers where you were.

Tim: So again, what we've got there is a wall which just elected a roof element. Those are standard composite profiles. All that I have done to make those go together is to use the tool that is Design/Merge.

Eric: You selected the two - I don't want the door, I want the - so we have the wall and the roof selected, right click on either of them, and there is 'Connect' and there is 'Merge Elements'. So you have already done that. And when you do that, ArchiCAD will then be able to analyze this and see that the drywall should stop when it hits the insulation. Whereas this exterior stuff and this insulation has a stronger priority so it goes up. So it's doing this trim automatically. [0:33:34]

And of course, conversely the roof is sort of notching itself out by that.

Tim: And there's going to be a beam in there, which I haven't got the size for yet. But I will add that in later. That is one way of tidying up.

Eric: So this is another element that you did a Solid Element Operation with?

Tim: Yes.

Eric: But you said you basically had it cut off the bottom of the roof with this element here, and this one here is also Solid Element Operation. It subtracted out itself from this point down. So the roof stops at this edge, and this interrupts what would be the interior part of the roof. So it's not just covering it up, it's actually cutting it out. [0:34:25]

Tim: Yes. And of course, if I was being really thorough, I would actually make that a complex profile the way that I've done with the main roof beams.

Eric: So you would have this piece and that as one complex profile?

Tim: Well and the tiles as well if you remember what we looked at on the main roof.

Eric: Right, okay.

Tim: But if you then go to that detail…

Eric: One other side note: some of you may wonder, "Well, there's this square box and this rounded rectangle. And that sort of looks funny. That is because, at least right now onscreen, we are showing the marker range. So we are showing the rectangular range of the marker, essentially what that detail is referring to, as well as the graphic which is the rounded rectangle. If I turn off marker range, then you can see here is the nice, clean marker that is what you would see on a construction document. [0:35:29]

So now I am going to go and open this. Instead of going to the drawing on the sheet, I am going to open the detail drawing in the detail folder of the project map. So if I go to the project map, now you will see we are in a detail. And potentially there would be a view of that detail. So here we are.

Tim: If you go onto "B4 Detail" you will see the saved view for that, which is X15 [0:36:00 inaudible]. So if you double click that, you get the site list.

Eric: Okay, so when we double click that - a minute ago it was not zoomed in as tight and did it have different layers?

Tim: Yes. All I've done is - if you go back, so that we can show the workflow, just go back to the detail and open the detail from the section. [0:36:30]

Eric: So right now, we are in a section. The section has certain settings for the layer combination. I'm sorry, "B2-02 Section". So you actually have a different layer combination for different sections?

Tim: No, all sections have the same layer combination.

Eric: So B2-02 is not a particular section, it's just a category for the layer combination for your sections.

Tim: Yes. It's just a way of ordering the layer combinations. [0:37:00]

Eric: So these layer combinations are in an order based on your grouping of A, B, C, D, etc. that relate to your construction document set?

Tim: That's right, yes.

Eric: Okay. So there is a coordination there. So all sections have this layer combination. If I go to open the detail drawing directly, at this point it will have the same layers. So when we go here, we are not seeing all the right layers turned on. You have a view for this.

Tim: Hold on, Eric. Because that is actually what you are going to see. The point of that is that completely [0:37:47 unlimited] detail. That is straight from the 3D. The way I would look at that is if I want to change anything, I wouldn't change it in the 2D drawing there. I would actually change it in the 3D, and maybe dealing with it in terms of adding an extra element or by adding more detail to the complex profiles. [0:38:11]

Eric: So right now, let me interrupt for a moment to again fill in some gaps for people who are less advanced in the program. In the detail drawing, all of these are 2D elements. So this is not a roof, these are fills that we can recognize as a roof. And what Tim is saying is if he wants to clean this up, in general, he would much prefer to change the 3D view, the section view, so that this looks good rather than just go in and clean up the 2D stuff. Why? Because if you clean up the 2D stuff and then later the design changes, you have to reconcile it yourself. [0:38:51]

Whereas if he goes back to the section and changes something about the roof or other attributes, then this is going to look good. So now Tim has done the work in 3D to make this look pretty clean. Then when we double click on this view or manually change to the layer combination for section detail, it turns on obviously the annotation and potentially - do you ever do cover up here? Do you ever put in something to cover up...

Tim: No, I don't. [0:39:24]

Eric: So in theory, you could.

Tim: I am completely anal about that. [Laughing] It's the same -

Eric: In theory, you could -

Tim: Sorry, there is a bit of a delay, isn't there?

Eric: Yes.

Tim: So yes, you could. But again, if you do a cover up then it means that your main section drawing probably doesn't look as good as it should. So what I am trying to do it get the section drawing spot on. Then you know that your 1:10 detail will also look good. [0:40:05]

So all I have done is turned on an extra layer, which is an annotation layer, so that I can show the notes that I want to show.

Eric: So this is the layer for section details. Here is a layer for sections. And you can just see a couple little changes. So sections have the roof ribs, and on and down proofing off, section detail have the reverse. That doesn't sound like something that was intentional. [0:40:38]

Tim: No, it's mainly down at the bottom, you'll see if you go down to the bottom…

Eric: Here is "Marker Detail". So this is where you put in information that only shows on the detail drawing itself?

Tim: There are a few more layers for that. If you scroll down, you will see there are actually two different text layers. There are a whole lot of text layers there, and you've got "Text Detail" and "Text General". So "Text General" is what is turned on for the 1:50 sections, and "Text Detail" is what is turned on for the 1:10 sections. [0:41:12]

Eric: Ah, very interesting. Thank you for explaining that. I wouldn't have noticed or understood it. So in a section, you have a layer for putting in text that will show up in the section. But when we go to a detail of a part of the section, you turn that off, and instead you have a different layer that you use for detail

information. So you can easily compare and coordinate them. Very clever thing. And this is true for plans. If we were in a plan, ground floor and what's the "FF"? [0:41:36]

Tim: First Floor.

Eric: Okay.

Tim: We call our floors differently here.

Eric: Right. So we have a plan layer combination, and then when you do a detail of something on the plan, you have again "Text Detail" turned on and "Text General" turned off. Would you use that similarly for an enlarged plan? [0:42:17]

Tim: Yes, I would. If you look further down, you've also got things like "Roof"; you've got "Bathroom Plan". Anywhere where I think I want to present something at a different scale, I find that it's better to put the annotation on a different layer, because the size of the text notes say at 1:50 is very different than 1:10. You don't want all of the detail text that you are going to want to put in a detail drawing to start showing up 1:50. [0:42:58]

Eric: Right.

Tim: So I create extra layers for it. And with the layer combination tools, it's very easy to sort those out.

Eric: Right. Very clever. Alright, so I am sure there are more questions I could ask you about details of this, but let's keep going with larger picture. Essentially, if we just sort of back up for a second - what Tim's doing is he's modeling in great detail using complex profiles and solid element operations or connection to make sure that things really show up the way that they are going to be built. When he cuts a section, it looks really clean. When he creates a detail of a section, or of any other part of the model, it's clean right away because the model is clean. [0:43:46]

And he is then adjusting annotation with a separate layer that becomes visible in that detail, and turns off some of the annotation that was in the general smaller scale of 1:50. For those of you in the U.S., 1:50 is 1/4", which is technically 1:48.

Tim: So if you then go further down in the details, I think we have a 3D detail. You see there you have 3D sliding, folding doors. Don't click on that one, click on the one above which is just the [0:44:27 inaudible]

Eric: So this is a view of the model. Again, as a teacher, I want to let you know that you can create this view any time you like. In this case, you simply do a marquee cutaway. So you draw a marquee and say "Show only this marquee in 3D". Take a convenient angle on it, and then go and say "Save Current View", give it a name, and it will then remember the marquee as well as other things. [0:44:57]

So this is a saved view. But you cannot annotate a 3D view. We can go and navigate around and edit things in this because they are fully editable. I will double click here and it will take us back to the same view. But then you can right click and say, "New 3D Document from 3D" or in earlier versions of ArchiCAD it might be called, "Capture Window for 3D Document" or something like that. [0:45:26]

It may have a slightly different name, but it has the word "3D Document" in it if you right-click in empty space. Now if I double click here, we have the same view, but now this is an editable view or let's say you can notate it. You can see all the 2D tools are available. Let's now go on Tim with how you are approaching this.

Tim: So this is where I think I am going to be going with my construction documentation for a number of reasons. If you zoom in on either the roof or the sill - actually, let's start with the roof, there's some interesting stuff in there. [0:46:08]

So just get in there so it's bigger onscreen. What I am trying to do here is actually explain to the contractor what it is that we want to try and construct. As you can see, there's quite a lot of detail in that and a lot of that is actually complex profiles. You can see there Eric just picked an element which is a complex profile. And that is actually covered in zinc, it's got timber framing, and there's all sorts of stuff going on. [0:46:47]

There's really no limit as to what you can do in terms of complex profiling. I am not doing the kind of jobs that slow my computer down. I don't have any speed issues at all. It seems to work just fine, but it allows you to be really very detailed. So basically you'll -

Eric: Tim, before you go on here, this particular piece says it's a slab. And I know that you can have a slab with as a composite. So we have insulation and we have two other skins. Now this skin appears to have some framing inside. And the framing is carefully aligned to this.

Tim: That's just a fill that I've created. [0:47:46]

Eric: Alright, let's go to - we are going to edit the composite to see what it's made of. By the way, that command in version 17, I can highlight it and say "Edit Selected Composite". In version 16 and earlier, you could notate which composite it is, looking in the Info box, then go to the Options menu, and the Element Attributes, Composites, and manually find that. Or the other shortcut is you can eyedrop it and then when you go and open up the composites dialog it would have this one selected. [0:48:16]

But in 17, right click on it and say "Edit Selected Composite" and it immediately brings it up. So you have the battens in here, so that's this fill. This is a little preview, but the fill actually has these shapes. So this is a custom fill. Let's take a look at the fill types. We have the ceiling battens. Is that the one you are using or was it another one?

Tim: [inaudible] All I did was draw just using lines, whatever it is that you want to show. You have to put them in at the right centers otherwise you will get the white gap between. And you just then cut that from whatever window you are working in, it could be plan or section. And then paste it into the symbol pattern. [0:49:16]

Eric: So you have basically just an X with a box around it. And then you adjust the stroke, which is the distance between them. So if I were to change this to half as much, then those battens would be half the distance apart?

Tim: Yes. It's about 400 mm, which is about 16 inches, which is a pretty standard spacing. [0:49:40]

Eric: So now we know that we can get this in here and it automatically knows, in terms of the skin, that it starts at the bottom of the scheme and goes up to the top or at least it starts at the bottom and goes up as far as the skin is. And if the thickness of the skin matches the thickness of the batten then it aligns. How did you get it to align right at this corner here? [0:50:04]

Tim: Actually, if I'm honest Eric, that was luck. [Laughs]. You could get it to align by - how could you get it to align. I am not sure offhand.

Eric: Are there other sections where the battens are sort of slightly off?

Tim: Yes, there probably would be. And it's an indication - I did it as a bit of an experiment. Ideally, I should be putting the battens in. and I think that on another job where I was going to spend a bit more time on it I would do that. I just put the battens in as a separate element.

Eric: This is a fill as opposed to a complex profile.

Tim: Yes, that's just composite using a custom fill.

Eric: Yes. Just like this insulation is a fill. Okay, thank you for clarifying that. Now we have also this beam. This is a complex profile beam representing I guess the sliding -

Tim: It's a roller-blind.

Eric: Ah, okay.

Tim: Again, that's just a complex profile, and that is using SEO to cut into the composite which is the main -

Eric: Now here we have a roof that looks like it's just this one piece, and this is another roof. So you actually have each one of these ribs as a separate roof piece?

Tim: Yes. I just create a roof piece and using the Multiply command I just array them across. It's just fast. I have tried the CADImage version where you can actually put roof coverings on the rest of it, but frankly this is faster and easier.

Eric: So you just create one and do you have favorites for these sorts of things?

Tim: Yes, sometimes. Sometimes it's just as fast to draw it. I'm so quick at drawing it, I don't really think about it too much. I tend to create something and float it in 3D and think, "That's where it goes." And it's really fast. And that's just practice and experience. Everybody gets there. [0:52:28]

It's the old 10,000 hour rule.

Eric: And here again is another example of sometimes that if you do a detail drawing at this level of detail, there's no reason you can't convert it to a complex profile, because all of these things are fills. You can see that it's a fill. In ArchiCAD 17 it has a building material associated with it. In 16 or earlier it would just be a fill. Then what does it appear like in 3D? What is the surface or material on the outside? [0:53:08]

It looks like we have a bunch of dots here, so this is something that could be cleaned up essentially. I will move it and you can see that these are node points. And clearly, if I wanted to I can go and edit Tim's profile and clean it up, because these are unnecessary.

Tim: They are unnecessary, Eric. But it's an interesting thing because ArchiCAD puts those in. I just did a standard flood fill in there using the space bar or the magic wand. And those nodes actually get added in. and I can understand nodes being added at corners or junctions with other elements, but why it puts nodes in that location I have no idea. And it's a bit of a pain. But even if you undo them the way you were just doing, and save it, it puts them back again. [0:54:08]

Eric: Really? I want to see that. So assuming these are all in one line, like this, I have this all simplified and I say "Store Profile" and now I select it again and they are still there. That is really odd.

Tim: It's annoying.

Eric: Well it doesn't show, the node points or things that you can select, it doesn't show. So that is a mystery.

Tim: And interestingly of course you can take drawings that you perhaps get in 2D from a manufacturer. You will see there is actually a ventilator just to the right of where you're - sorry, just the left arrows. That there. That is actually a little vent profile, and that comes from a manufacturer's 2D drawing. [0:55:17]

You just create a fill that is exactly to the scale that is required. So you know it's accurate, because it's from the manufacturer. Give it a building material, and you know that's the element that they are going to have to put in onsite, the plastic that actually ventilates the roof.

Eric: Right. Awesome. So tell us what else we haven't seen yet. By the way, this is just from a standard label. So all of these are standard annotation element.

Tim: They're not actually. Those are a thing called "Keynotes".

Eric: Ah.

Tim: Keynotes is an add-on produced by CadImage in New Zealand. It's the way I actually do my specifications. I can show you how that works if you are interested.

Eric: So I've just opened up the CadImage settings. So for those of you who may be a little mystified, there are various things you can buy to make ArchiCAD smarter or do certain things faster. CadImage makes a variety of tools. They are based in New Zealand. One of them is called "Keynote". And Keynote will allow you to not only put notes in like this in a convenient way that are coordinated with building elements, but it will tabulate reports. So you can have a list of all the keynotes in a drawing or on a sheet or all of the keynotes for a project. [0:56:52]

It will format it pretty nicely. Now one of the things it will do is allow you to put in keynotes ahead of time in elements. So if you have a favorite that you use, or you are going to be putting something in multiple places, you can essentially put in the note that if you were to show it, would be available. So what you do is define it once, model with it and put it wherever you want, and wherever you want to notate it, you can select the element and say, "Put a label in based on the stored information." [0:57:23]

So of course that saves time and makes it all consistent. You don’t have to look up what number it is or what is in the description. It just has that information and all you have to do then is make it all line up to look like a nice drawing. Did I explain it pretty clearly?

Tim: Yes, that's fine. And if you actually go out of that now and we go and see what Keynotes actually looks like, because what I do is I use Keynotes to produce specifications. So if you go to the Layout Book, you will see -

Eric: Which layout?

Tim: The number 4-Specifications. If you open that, just click on any of those pages. You don't have Keynotes loaded. There you go. So my specification here is in ArchiCAD. That's an A4 sheet and all of the notes that you see there are from Keynotes. [0:58:29]

The point of this is that I have one location here inside my main drawing file that holds all the specification information for the project. And when you place a keynote, you will see - if you pick something like the one on the top, you have "M4 Tiling". Then underneath, you have "M4004 Tiling". Keynotes actually gives you the opportunity to say "I want to have a main heading" which has to do with tiling. [0:59:07]

Then I want to have sub-items to that main heading, but in this case, I have one for floor tiling and one for wall tiling. They have different alphanumeric codes. So it tells the contractor what they need. You can of course update this anytime, and it updates throughout the whole project without you having to remember to go to somewhere and change it. [0:59:38]

Eric: Can we go and find where the floor tiling would be in either a section or a detail and just see the callout of the M-4000?

Tim: Yes, if you - well, what I would generally do is actually look at that in the zone schedule. If you go back into the Navigator view - I can't remember where it is - somewhere I have the zones. We are looking for a schedule, Eric. So it will be one of those - try further up. I can't remember where I put it.

Eric: It doesn't have to be the M-4000. I want to see one - for example, if we go back to the…

Tim: Okay. If you go back to the detail we were looking at, the X-1.5 Detail, the porch eaves drawing, that's it.

Eric: Now if I go to the View here - actually, this is a 3D one. Let's do the 3D.

Tim: Yes, that's fine.

Eric: Alright, so here we have the "H-7000 Roof" and we can see the structure just by naming, and Tim is obviously very systematic. He named the composite "H-7000 Sink Roof with Plydeck". So this is a description that is not printed, but obviously makes it very quick to select the right element out of all the composites in a project. Or if you have a saved library of composites. [1:01:18]

Here is then a note that is a short version, because obviously on a drawing you don't put all the spec, you just put a reference. Then if we go back to the sheet, one of these ones, guess which one that would be?

Tim: Maybe try page six.

Eric: Here is K, page six, D-7-H. So it's one of these zinc-sheet flat roof coverings or something like that? Yes. So basically just to finish out with CadImage, they allow you to create a code, a short description, and a long description. And maybe there is another one with a reference to where you could have a web reference I think. So basically, if you associate that with an element, then you can easily notate it

anywhere with this information. Then when you do pull it up in a specification document, it will have all the information you put in. [1:02:27]

If you do update it, change the name of it or something, anywhere where it's called out, those names will update.

Tim: Yes. Now the only thing I would say Eric is that I'm thinking, before everybody goes out and buys that, because I've used Keynotes for probably five years, and it's been good. It's not quite as good as I want it to be. There is a big change in 18, which allows you to access every single bit of data attached to an element or an object in the model. [1:03:06]

And I am going to do an experiment over the next week or two before 18 comes out to see whether actually I can embed the specification directly into the elements. Because at the moment, you have to actually decide that's a roof - it's a roof of a particular type, H-7000. And you then pick from a menu in the Keynotes palette that actually says, "H-7000". So it isn't automatic. [1:03:37]

Eric: But I think if you do save it as a favorite, once you've made that choice, then when you activate that favorite, it will already have the H-7000 in it.

Tim: No, because don't forget the Keynote is actually just a text annotation. It's not an ID. So it's not actually embedded in the element.

Eric: Okay, I haven't worked with Keynotes recently, but when I first was working with it, I saw that they had a database that you could not only add to but you could import from project to project and that text database would include the list of keys, so H-7000 would be a key.

Tim: All of that is correct. That's the way it works. But, it's not intelligent in that the Keynotes doesn't know that that roof is called "H-7000". [1:04:37]

Eric: But if you tell the roof that it is H-7000, that it's using that, and you save that as a favorite, when you activate that favorite, it should say, "Okay, I am going to be this type of roof in geometry, and I also remember other parameters, such as which Keynote is relevant."

Tim: I have not been able to make it work like that.

Eric: So maybe I am wrong, but that is what I thought was you could have a favorite that would have not only the geometry and the layer all of the usual stuff but also a Keynote reference. [1:05:15]

So let's move onto some other things. I see some great comments. Steve Nichols says, "This is really interesting." Oh no, I guess this is about - "Why can't you edit the previous 3D cut?" "I'm not sure, that is add the annotations."

Okay Steve, I am not quite sure. Maybe you can clarify. That was from a few minutes ago. And earlier, Ken Brooks asked, "With this technique of modeling the details, do the details update as the model updates?"

So the answer is, 3D details like this will update. They are set up - in fact, if I right-click, if I have nothing selected and I right-click and say, "3D Document Settings" - this would be like section settings or elevation settings - there is an option for does it automatically rebuild all the time, whenever you open it up, will it have the latest picture of your model. [1:06:07]

And in this case, Tim has it saying "Yes", so whenever he goes in here, it takes a second or a few seconds to update there. Now detail drawings on the other hand, if we go to a standard detail - so if we go to this Porch Eave here, and we go to the - actually there's nothing that says "Detail Settings" here. So the detail is a window that shows 2D stuff. We have a view with settings saying what layers should be turned on. [1:06:38]

But the detail basically doesn't update unless you go to the View menu, Refresh, and you choose "Rebuild from Source View". Now in the standard ArchiCAD workflow, Rebuild from Source View for a detail is something you use selectively because basically any 2D work that you did - in other words, if you deleted certain lines, if you edited the weights of certain lines or moved things around, things like that, those would all disappear if you rebuilt from the source view. [1:07:12]

So if you rely on 2D editing to make it look clean, then "Rebuild from Source View" will kill it and you would have to start over. So the only time in the standard workflow that would be recommended is if you go through and note where you are going to do details. You put them around the model at the foundation and eave and various places. And maybe you haven't worked on that detail. Maybe you haven't worked on any of them, but you've done a cartoon set with these all called out. And then the model changes, and since you haven't worked on the detail, you might as well rebuild all of those views so that they have the current stuff. So that would be the standard thing. [1:07:53]

Either selecting one at a time or you can I believe select multiple details and Rebuild from Source View. If I were to select just a few of these - it's not here. I'm not sure, that might only affect the current window. It might not be what is in the navigator. There might be in the drawing manager something - I'm not sure. Let's look at the details. These are under…

Tim: You can rebuild them from there. [1:08:29]

Eric: So here are some "X-Details". And if I right-click here, there is "Update". No, these are sections. Do we have any details here in this?

Tim: Yes, you have a detail there.

Eric: Here's a detail.

Tim: You've just gone past them I think.

Eric: Oh. Where are they?

Tim: Go further down. Sorry, no you have one there. There's "X1-2".

Eric: Alright, so this one I can update. Would "Update" - actually that would update the drawing on the sheet, which is different than updating the detail drawing with the source view. So maybe you would have to go to those detail drawings one by one. [1:09:33]

Tim: When you are in the detail window Eric, all you need to do is right-click in the window and it will update.

Eric: Rebuild from Source View here.

Tim: Yes.

Eric: So you would have to go through each detail manually. There may not be a bulk thing. I think there actually may be something under Refresh - let's say if I am back on the floor plan here and go to View, Refresh. No, I am not seeing it. I thought there was something about "Rebuild All Details from Source View" or something, but right now I am not seeing that.

Tim: By the way, in passing, I know this…

Eric: Alright, here it is. "Rebuild All Details from Source View". Or you could select individual ones and Rebuild from Source View. So the workflow would be, if you have called out details but you haven't done any work on them, and the model has changed since you just put in your detail callouts, you could say just give me the latest version, because I am going to start working on details. I want them all to show the current state of the model. [1:10:40]

So that would allow you to do callouts earlier, continue to work on the model, and then later say "Now I am ready to work on my details". But now Tim of course has the approach that whenever he goes into the detail he wants it to be current. He wants the model to be as clean as it needs to be, then he just annotates on top.

Tim: Yes. And that's why I am moving to 3D details because it allows me to make sure it's always current. [1:11:13]

Eric: Can you have a 3D detail that is straight on, so it essentially is an orthographic view like a traditional detail?

Tim: Yes, sure. It's really just like setting up an elevation view. If actually you go back to that 3D section of the sliding folding doors - click on that one.

Eric: Yes, and then I go to…

Tim: Go to the view…

Eric: Look to perpendicular of clicked surface.

Tim: You can do that, but if you go into the actual - go to the 3D View Options I think it is.

Eric: 3D Projection Settings, and then I could say I want it to be a parallel view instead?

Tim: Yes. And you can pick. If you click the "Custom Axonometric", from there you can pick an elevation, move the camera around; you can click a…

Eric: I am not sure which direction it should be, but I am just going to pick one, 90. That's probably not the best one for this particular one. Let's go and pick a different one here.

Tim: So that's actually a conventional section. If you created a 3D document from that now…

Eric: So I am going to create a new 3D Document from the 3D as opposed to an option there to redefine the 3D Document, then we could choose which one we wanted to redefine. But we will create this, and now we have a straight-on view that could be changed from 1:50 to 1:10 or something like that. And now we are in a… [1:13:10]

Tim: And that's live.

Eric: And that's live, so…

Tim: This is a new change.

Eric: So this is a slab. It's not just fills. This is a door, it's not just…

Tim: Yes.

Eric: So this would be a way to have essentially - what you are doing with your detail drawing is this, right?

Tim: Yes. In a way, I am saying, "Well, what do I need the Detail tool for?"

Eric: Yes, just use 3D Drawings with a view that has been cropped. One of the nice things in was it 16 or was it 17 they introduced the 3D cutting planes. So this would be an interesting thing. If I go back to - let's take that original 3D view here. This restored me to the original marquee. If I wanted to, for the detail purposes, to have this with a different cutting plane than I did with the marquee - maybe I used the marquee to do some work but then I wanted to fine tune exactly what it's going to show, I can go to the View menu, Elements in 3D View, Filter and Cut Elements in 3D. [1:14:24]

Actually, I'm sorry, it's '3D Cutaway' here then brings up these controls. I can't remember when this was introduced, but I can say that I want to drag this in and cut it back. Maybe I want to have it more on that point. So I have just adjusted where I want to see it, finalized it, and now…

Tim: Or if you drag from the top as well now you can actually show the section through the door sill and through the jamb on the same 3D detail in context. [1:15:07]

Eric: Right.

Tim: Now that I think really helps contractors understand what it is you're trying to do.

Eric: By the way we are seeing the edge around here as the solid black which does make it clear what is cut, as if we had any question whether this is a cut through as opposed to the natural end of the slab. But this would be controlled by the View menu, Elements in 3D Views, Filter and Cut Elements in 3D. And there's an option here that says, "Do you want to have the surfaces that are cut a custom material" or "Do you want to use the element attributes" which means it's going to then show all of the stuff that we are seeing here. [1:15:53]

Now when you do a 3D, whether you choose a straight on view or not, when you do say "Save this as a 3D document", you will see it will put this in regardless, even if it was solid black. But I imagine some people were confused as to why it looks black and ugly compared to what we had. We had this 3D section, here is your annotated one, and so that's part of the difference between the live 3D view is you have the option of showing the cutaway with a particular override like red or black, or in 17 you can have the actual component show. [1:16:35]

But the 3D document will always show the fills. Alright. So you are going to experiment with doing straight on 3D documents for your details.

Tim: And plans and everything. We've been going a while, and I recognize everyone else is thinking about it. Just to kind of - if you go back to the View map and collapse the folders, it's just a little thing that people might find useful. If you look at the way I have my folders set up, I have ordered them. It's pretty self-evident: Key Drawings, Details, things like Alterations would actually be existing and Demolition Plans, Ground Works is what goes on below ground. So you can see I have tried to split it up into the kind of information sections that a contractor needs. [1:17:40]

So if you now open for instance "L1 Windows and External Doors" Eric, you will see in there is a schedule. If you open that up you will see that's the door schedule.

Eric: So when I zoom out, we can see all of them. If I zoom to 50% now we are seeing that.

Tim: And there's nothing fancy about that, it's a standard ArchiCAD schedule. I just picked the things and formatted it the way I want it to look. So that's all pretty straightforward. If you then go down further

you will see "M-5 Fitting Out", you will see the "Finishes" schedule. Now that is nearly all taken from the Zone tool. [1:18:48]

Eric: So there are some issues that maybe my library isn't quite matching yours or something so it brought up a little error message but it is showing a lot of data like you would expect.

Tim: So all of that can be done. And again you will see I have put various cross references there, and that's a specification which helps the contractor know what to do. And then finally the one that I think actually has helped a lot, if you collapse that one…

Eric: Before we go on, so each one of these items is a zone. So you are putting in a zone in each room or area. You also have a qualification saying it's new, so you might possibly have zones that are not designated as new that you are not going to list here. So these are ones that you have decided to focus with the new. And then you are picking from the zones the zone number and name. It's automatically calculating area, perimeter and things like that. [1:19:55]

Now this where it says "Wall Finishes and Fittings", these are text fields, right?

Tim: Yes.

Eric: It's interesting that it has a little arrow here as opposed to something like a "T". So this means that if I click on this, this is editable. And this is what we actually put in the schedule. So if I actually said I wanted to select the zone on the floor plan and zoom to it using this button, we can see here is the zone. So here is the hallway. This is a zone. When I open it up, we'll see that in the zone settings here there is the zone name. [1:20:40]

That is the zone stamp here.

Tim: that's it. You have to go right to the bottom to the parameters for listing and you will find it somewhere in there. It's all the way down I think.

Eric: No, it's not in that. But…

Tim: Maybe I just added that in as a separate text file, which I haven't used the flooring thing. And again, I am moving towards not using any of that at all. I am moving towards - if you go further down Eric, the really exiting bit is the IFC Parameters.

Eric: So further down is…where?

Tim: Not in that window, in a tab right at the bottom. Open it up again. Just hit Ctrl+T.

Eric: Tags and Categories?

Tim: Tags and Categories. That is the exciting bit.

Eric: Tell us why you are excited, because I think 99.5% of ArchiCAD users don't have any idea why IFC is something that they should be paying attention to. So just set a context. IFC is an acronym for Industry Foundation Classes. [1:22:04]

It is a schema or system for sharing information from one BIM system and another BIM system or any type of system that deals with buildings. So in the building industry that's what the "I" stands for. This is information about this particular zone that, in this case, is picking from some popups here. But here is the "Manage IFC Properties", is this where I should go? [1:22:37]

Tim: I wouldn't go there.

Eric: No. Okay.

Tim: Let's do it in detail at another time. In particular when 18 comes along. I would be glad to actually go through it because I think this is where we should all be concentrating. And there are two reasons why I think it's so important. One is that it's completely unlimited. So you are not having to work with what somebody has decided to program in GDL and the Zone tool. You can put any number of parameters that you like. You can call them anything that you like. [1:23:10]

And the text field is completely unlimited.

Eric: So you will be able to put in as much data about the elements that you are creating in your model as you wish, and pull it out in schedules, and it will also be available when going to other applications like the structural engineer or… [1:23:36]

Tim: That's the key. So when somebody else gets an IFC file that you have exported from your model, then normally they would not see any of the data that is very helpfully in the GDL coding for the zone stamp. They won't see any of that. All they will see is the ID.

Eric: Right.

Tim: If however, you put it into the IFC Properties, they get all of that.

Eric: So anything that would be useful downstream would be good to use this. And there are new things in 18 that allow it to be used more flexibly? [1:24:14]

Tim: Yes.

Eric: So we will look at that later, after 18 is out. [crosstalk] I'm sorry; I just want to focus on this. How have you used it so far that has been pretty useful?

Tim: Well, the really exciting thing is the one I did the little video of where I actually created an IFC property which was a hyperlink. The hyperlink takes you to a Dropbox file which gives you a PDF of something to do with that particular element. So for instance, if you have a chair that you have chosen for a job, as well as actually having the manufacturer's reference number or whatever, you can actually hyperlink to a PDF that is under you control in your Dropbox file for this job. [1:25:16]

It can hyperlink to anywhere you want, any cloud-based system. And it then allows somebody looking at the IFC file, say someone like a quantity surveyor, to be able to not only see the reference number but also the brochure. They have all the details: the name, the address, the phone numbers, everything you need. And you can also apply that to things like health and safety data or data to do with method statements as to how you install things. [1:25:50]

The thing I like about IFC is that you've got control and you can put anything you like in there.

Eric: That's really an eye opener. And we will want to return to this maybe of course with 18 out shortly. After you have used it and can set up some examples, we can see what you mean. So the really quick picture is we can now, as the tools have progressed, any data that you think is useful. Any data that you want to have referenced to yourself, inside your office with other team members or downstream to consultants, you can link to the elements. [1:26:34]

So essentially the information in your building information model is now potentially unlimited. It can be as much as it is useful. And ArchiCAD has the framework to do that for you and with you and will allow you to do it. So we are going to be returning to that at a later date with Tim. I think that's really exciting and it will be more exciting when we can see some examples of what you might put in there. [1:27:08]

Tim, it's been about an hour and a half. I know you have had two long days of conferences. Normally we go 60 to 90 minutes with these things. So is there anything else that is important?

Tim: There's only one more that I think is very useful. If you collapse that fitting out one and go down to the electrics. I found that this really helps. Then click on "Light Fittings". This is just an illustration of what you can do with scheduling. So what that schedule is doing is picking up each light fitting that I have placed in the drawing. I've given them an ID code, or a fitting code. The picture actually is the preview picture that is against the object. [1:28:02]

It knows how many of that particular fitting that you have so the contractor can price those. For the moment, most of the information to the right of that is actually manually put in. but what we've just said about the IFC parameters means that you could put all of that data in against that item automatically.

Eric: Right. Now the location I assume there might be a way that you can have it pull from the zone?

Tim: You could. I haven't really worked that out yet. You could certainly have a height above floor level. That's pretty easy. It's more about when you are pulling things from the model automatically, it's more about it will tell you how high it is above the floor. It won't necessarily say it's attached to the ceiling. Because I don't think it's smart enough to know that yet. [1:29:01]

Eric: But in terms of just a zone, it's in the living room versus the second library or something. Location could potentially be pulled from the zone. Objects can know and report what zone they are inside of. Now if you do have a schedule here- now obviously if you print this out, or you put it on a sheet, it has nice graphics. People can say "That's cool and now I know I need to order 24 of these." Or, "I can give you a bid for how much the electrical will cost." But we can also say, if you are in ArchiCAD you can select on the floor plan and say, "here it is." It's zoomed in a little too tight to tell. [1:29:40]

But here it is in the coat closet. Now if you did do this one with 24 here, and we zoomed in, it's going to highlight all of them. And you can see - in fact there are 24 of them, we have 3, 6, 9, 12. We have 12. Why would there be 24 of them? It is because it only can show you one floor and it's on another story? [1:30:05]

Tim: I think that's right, yes.

Eric: In any event, it is quite amazing how you can get a report and see where it is. Then if we go to your electrical plan here, this is a standard plan drawing with certain layers and settings.

Tim: And it's not complete yet. That's actually - I just started to place some light fittings that I know I was going to use in the project. But I haven't positioned them or decided how many yet or anything like that. I am just thinking what kind of fittings I want, I choose them and then position them and decide how many and precise…

Eric: So you went to the store. You bought 12 of them here and put them down and now you are going to go and install them somewhere in your model. [1:30:56]

Tim: Exactly.

Eric: So is there something else that we missed that can be briefly covered or anything else that we should come back to in another session?

Tim: Not for now. I think that is fine. I mean, I use schedules a lot, so that is obviously something that is - oh, if you go to the staircase, that's another very useful thing you can do. The staircase side view. Again, it's just a cutaway section, but it's the kind of thing that really helps not just the client but the contractor. I think since I've sent you that file I've actually created a 3D document of that. [1:31:47]

Eric: Now I notice a couple of odd things, not that they - they could be incomplete or something I don't understand. This looks like a little gap here in the flooring there?

Tim: That's an error that I have since fixed.

Eric: And this looks like a channel outside the door. Is that something that…

Tim: That's the same kind of thing. It's just about merging slab edges together and getting all of that.

Eric: So you have actually in this case you have the slab - no, this is a beam coming up and the door is cutting out part of the hole. So this is a gap here and you are going to have it filled in with something.

Tim: It's really hard to get the detailing underneath doors to look absolutely right. I think the quality - generally on windows and doors, the section details that you can do in ArchiCAD are quite limited and I struggle with getting them the way I want them to look. I often end up having to go in and make a complex profile for the door sill because what's available in ArchiCAD just isn't good enough. [1:32:59]

Eric: Right.

Tim: And I've looked at the CadImage products and they are not much better to be honest.

Eric: Very impressive, just the level of detail that you are doing. And what I think it's important to emphasize just as we close here is you are not doing this detail because you are a fanatic. You are not doing it because you love it so much that you just want to put in all the detail you possibly could. While you may enjoy the process and be disciplined and fanatical about that discipline, you are doing it because it's making better quality drawings. It's making the construction process go more smoothly with fewer inquires and less time wasted. [1:33:46]

Because after all, all they have to do is look at the drawings and it's very clear. And coordination issues just go away because essentially every view is viewing the model and therefore it's virtually impossible for anything to be inconsistent.

Tim: Yes. Overall, I think if you draw it in 3D, then you can have the confidence when you are talking to the contractor that he can build it because you have built it in your model. And the problem that I have with the old thing that we all used to do years ago where we used patches and all sorts of other things that were really, they were fake, and you basically got onsite and thought, "Had I drawn that in 3D, I know I would have seen that it doesn't work." Or, "It doesn't meet correctly," or whatever. And buildings are very complex; to get them right is very difficult. [1:34:54]

One way of doing that is literally building the building in 3D. And it does mean that you have to commit to doing that. And what I find is that you then can spend less time answering site queries.

Eric: Amazing.

Tim: And I think that it's just - overall, it means that you make more profit. And that's really what it comes down to, isn't it? It's good business.

Eric: Good business.

Tim: Otherwise you don't bother.

Eric: Right. It's incredible. I want to look and see if there are any final comments or questions. Dave Norman writes, "Thanks Tim. Very impressive understanding and use of ArchiCAD."

And by the way, for those of you who are on the call right now, if you would like to type in any thank you's or other comments I'm sure Tim would appreciate it.

Buzz Ryan, "Nice job. Well executed Tim."

Steve Nichols, "Good one as usual. When you and Tim Ball get together, it's like going to ArchiCAD graduate school." [1:36:00]

"I really like his idea of doing 3D working drawings with notes and dimensions; these are great for people in the field."

A whole bunch of thanks to Tim. Thanks so much Tim, I appreciate your insight. Thanks. There was a question early on at the half hour mark that I was going to ask you and we moved on. And we can answer it relatively quickly. "Tim, did you use the renovation filters for this project? If so, can you elaborate?"

Tim: This project is very poor in the renovation filter, and that is because it has actually been through a lot of problems in its life. Firstly, I think it was actually drawn in 15. It got delayed and had to be updated to 16, and then I decided to update it to 17. Along the way, to be frank, the "as existing" elements of the project are not as tidy as they should be. [1:37:08]

They have just about okay to create as existing drawings, but I wouldn't say I am particularly proud of that. I do other projects; I could show you in other projects where the renovation filter works perfectly. And I generally do use that. But I do find that it's a real problem when you have a project that may span several years. We all know that's what some projects do. I always want to do it with the latest version, but in doing that, you find that there are a lot of issues that you have to resolve, and particularly the change to building materials has been a big learning curve for me. [1:38:00]

And I am sure it has for other people. It's highlighted problems with models that I have done previously.

Eric: Okay. So as the tools got better, now you can see with your microscope some of the issues that previously you couldn't see or it was just impractical to even address. Now they become practical so you are addressing them as you move forward. That's incredible. [1:38:30]

Tim: At the end of the day with this one, what is really important is to show the contractor what I want him to build; what's new. What is existing - in fact, what we've already done onsite the strip pad. So

we've taken all the plaster off the walls and the ceilings down and the whole structure of the building is already exposed. So they know what's there already. So all they are interested in is what is new. [1:38:59]

So I have short-circuited a lot of that. I could have shown you another project where the renovation filter option has been used very successfully and it's all there. It's all correct. And that is where I would normally get to. I just picked this job because it was just at the right time that I was working on it trying to get the drawings finished, and in a sense, I wanted to show people that it's not always perfect. [1:39:28]

Some of it isn't textbook and there are issues to resolve. And that's normal, everybody is like that.

Eric: Yes. I think that was very kind of you and thoughtful and astute in the sense that you don't have to pretend that your drawings are always perfect. Drawings are a process of delineating further and cleaning up things as you go as well as deciding things and working out problems in the model as well as problems in the design. [1:40:01]

Well, if we do this, that's going to be an issue. How can we redesign this area? And of course, if you can model it, you can build it. If you can't model it, then you may have some problems building it.

Tim: I think that's a very good mantra. I think by the way for future things there is a whole world of BIM out there, but it's almost like that's a separate course. It also needs to be country specific because the standards are different. So although I would be happy to talk about using IFC parameters for instance maybe sometime in August or something when we've got bedded down with 18, the way the IFC is used in the U.S. is slightly different than the way it's used in the U.K or Japan. [1:41:04]

In Japan, they are probably one of the most advanced users at the moment because of the sheer number of people using it.

Eric: Right. Well this has been incredibly enjoyable for me, and educational and inspirational for sure for everyone who has had the chance to join us today. I see Lou Bishop, one of my old clients who has been around with ArchiCAD since '95, so I have known Lou for close to 20 years - and by the way, Tim, you said you started in ArchiCAD 5? That came out in 1995 I think. [1:41:44]

Tim: There you go.

Eric: Or maybe it was '96, because '97 was when Teamwork came out, which was also known as 5.1. In any event, Lou Bishop says, "Likely one of the most important classes I have attended." And he's been sitting in on a lot of the Best Practices course. And he also writes, "Tim, you are doing what I have wanted to do for years and not accomplished."

So you have obviously inspired people as well as demonstrated that yes, if you use the tools, you can take it very far. And it really isn't about being crazy about it; it's about being as smart as you can.

Don Schlining writes, "Eric, my first version was 4.55." And then he writes, "Tim's work is phenomenal." [1:42:37]

So Tim, I want to thank you for this. We'll be in touch about a lot of things. I have been helping Tim and his wife Susan with the website for JHD Architects. If you do want to check that out, JHDArchitects.co.uk. So they are in the U.K, so it's not .com. JHDArchitects.co.uk. Or you can just Google "JHD Architects" and you can see the website. [1:43:06]

They have actually done very well. Separate from ArchiCAD in the last couple of years as we worked on the website, took the great work that Tim and his colleagues have done architecturally and made it easy for people to see the projects and understand about them. They have been able to have as much work as they want. Tim you are - I know you say that basically there is no problem getting work. It's now a question of which ones you want to work on, right? [1:43:41]

Tim: Yes. And that's the fun bit. The other thing, which I am quite active on, is LinkedIn. So if anyone wants to go to the ArchiCAD group for LinkedIn, have a look there and send me a connection and I will be glad to hook up.

Eric: And it's Timothy Ball.

Tim: Yes.

Eric: Alright, well thank you Tim, thank you everyone. I am praying that the recording came out. It almost always does. As long as the recording came out, we will have a great thing for you all to review and for me to share with everyone else in the course.

Tim: That's great. Thank you Eric, it's been a pleasure.

Eric: Alright, take care everybody. This has been Eric Bobrow; please add your comments and questions to the page down below this recorded video and thanks for watching.

[END OF AUDIO 1:44:42]