



BEST PRACTICES COURSE – WEEK 13 – PART 4

Uses of Virtual Trace for Model Views, Layouts and 2D Drawing

© Copyright 2012 by Eric Bobrow, all rights reserved

For more information about the Best Practices Course, visit <http://www.acbestpractices.com>

Hello, this is Eric Bobrow, and in this lesson we will continue on with our study of Virtual Trace and look at various applications of Trace and Reference for coordinating model elements from one view to another, working with layouts and the relationship of drawings and layouts and drawings to each other, as well as 2D drawings such as details, worksheets, and enlarged plans. And then we'll finish up with some tips and tricks for avoiding some of the problems that can come up with Virtual Trace and some more advanced understanding of some of the options. And finally look at Interactive Legends that are used in MasterTemplate but you can adapt this Virtual Trace usage for your own purposes as well.

[0:00:52]

For model views, it's very clear that we can inspect the alignment of elements. So I can check, for example, that these walls are right on top of each other. Let me switch the reference so I'm looking at the upper story, and then I can perhaps look here and see whether these walls are precisely aligned. Now in this case, I've got a view which has some roof information, so it's a little bit hard to see. So let me just switch it to where I'm looking at the first floor or ground floor, and I'll switch to say the Above the Current Story. And now it's going to be showing just the same layers that I have there. [0:01:43]

And if I turn the fills off, you can see how I can easily check, and perhaps use the slider to verify the relationship between these walls and make sure they are precisely working. I can also - let me go up to the upper floor - I can use this to adjust. So I'll do something here where I want to make this part of the building extend a little further. So I could use the Marquee and just pull this down any arbitrary amount, and you can see how that adjusts. And if I click on it and bring it down and snap on top of the other elements, you can see that I can easily line up one story to the other using this Virtual Trace.

[0:02:27]

Now when I'm switching back and forth, it's quite convenient using this option here. So I can switch from one story to the other in terms of what's active. But there are some other options here. I can say Previous Story. So with Previous Story, it allows me to, for example, go up to the second floor. And now it will show the first floor information as a trace. You can see the steps here. And when I go up to the third floor or the roof plan, you can see how it remembers it to show the story below that in reference. And as I jump around, it will show whichever was the previous story that I had as the reference.

[0:03:15]

So you can see how it just remembers whatever was the last story that I was on. So Previous Story is quite powerful, particularly when you have a building with many stories. And setting it to Above or Below can be very useful for other options here. Now when we are looking at elevations, we can take advantage of Virtual Trace in another way. So now that I've brought up this elevation, I'm going to place another elevation beside it as a Trace Reference. So right clicking on it, it will come up. [0:03:54]

Now ArchiCAD automatically puts it at some location with the same elevation relationship, so we know that it's precisely in line. However, I want to move it closer where I can study it. So I will use the Offset option and just make sure that I use the Shift key or the guideline to make sure that I keep it straight. And I move it to wherever is a convenient location and study the relationship between these two views. So one of the things we might want to check is that the head height or certain points on what elevation match another point. [0:04:29]

So I will go use the Measure tool and I will go and zoom in enough so that I can make sure I'm measuring the point that I care about. So I will go from this intersection here, which is the top corner of the window, and I will zoom in on this other window and make sure that when I'm measuring this that the value that it gets for the Y coordinate is zero. See if I move it down a little bit, the Y coordinate shows it's an offset, but as I move it along here, the Y coordinate is showing zero. So this is precisely in line. [0:05:08]

Now another option that I can do here is that I can use the eyedropper. So I can eyedrop this window here, and then I can use the syringe to inject it into another window. And you'll see within a few seconds that Window updates and we'll have the divider here. So it's going to be a similar style, more compound window. So I can select and modify any element in this view of course, but if I try to select an element in the other view, it says, "This element is inactive in this view." So obviously, we can only affect things that are in the current active views. [0:05:49]

Now let's take a look at how we can use this in a layout, So for example, I'll go to the floor plan layout sheet, which has a couple of stories placed on it. And if we look in this particular area, we will see that this particular drawing is rather tightly placed next to the edge of the sheet or the printable area of the sheet. Now in this case it's already set very well, but you know that sometimes it's hard to make things fit onto a sheet. So how can you see the sheet boundaries when you're working? You can right click on a drawing to select it and say Open Source View with Layout as Reference. [0:06:32]

Now when I do that, we are going to see that particular view come up. And let's just zoom out a little bit, we'll see that we are looking at the sheet. Let me make it a blue color where it's a little bit more obvious that it is a trace. And then we can zoom in on this and perhaps realign things and make sure that they fit onto the sheet properly. So for example, sometimes you may have dimensions that are outside the printable area. And so you might need to just adjust that and move it into position. So you can drag that dimension into a new location so that it fits cleanly. [0:07:17]

Now another option you may find is that you want to coordinate things between one drawing and another. So for example, this dimension here, I might want to line it up with the dimensions on this drawing. They may be closer together and more obvious, but let's just say that I grab this and I drag it

down so it's clearly not in line. How can I line it up? Well, I'm going to drag it. And you know with dimensions, you can move them anywhere you like, but they will still stay lined up with the reference points. So I can actually snap it to this point, and now you can see it would be lined up. It was almost in the right position earlier, but now it's precisely lined up. [0:08:00]

So you can definitely line things up between two drawings on the sheet to make sure that they work properly. Sometimes when drawings overlap each other, you really have to work with the annotation to make sure that they don't get in each other's way. Now another thing you can do is to in a larger set you may want to have some of the plans stacked on top of each other on the sheet. In other words, properly aligned that if you were to put the two sheets together, and put them on a light table, you would be able to see their relationship on the paper printout. So here I've got the second level plan and I'm going to right click and say First Level Plan, Show as Trace Reference. [0:08:42]

And when I do that, what will come up is a view of the one sheet over the top of other. So I'm seeing the active drawing here, which I will just move out of the way. And I'm seeing it in relationship to where the building is from the other sheet. So if we were to put these two sheets on top of each other, they would not line up. So how can we line them up? Well we can use this as a reference and I can drag this into position. So I can try to line up, for example, this corner of the building maybe is on top of that corner there. Sometimes it may be hard, because of course the upper story is not quite the same as the lower story. [0:09:25]

And in this case what I might want to do is drag the drawing from the section marker and make sure the section marker, which is showing on both sheets, is precisely aligned. And now we know everything is going to be beautifully lined up. So this will make sure that the two sheets - and in fact, as many sheets as you like - are lined up and in proper relationship to each other by using the other sheet as a reference. [0:09:53]

Now let's look at some 2D drawings here. I'm going to go to a section, and we'll create a new detail marker. So when we create a detail, and I'll just go and activate the Detail tool, and we say that we'd like to create a new detail viewpoint, I can go and just for example call that detail out and select it, right click on it, and say open the detail drawing. And in that detail drawing we can see the information and we can work on it. And this, as you should know, is purely 2D information. So I can go in and clean up some of the line work, and all of this stuff is purely line work that I'm selecting. [0:10:44]

Now in order to be able to see the context, we can use the Trace and Reference. We can turn on Trace and Reference and then one of the options will be the source, in this case, the section view that it came from. That will be built in as one of the standard options. And so you can see now, if I zoom out a little bit, that I can see this detail in its context. So we can pick up information, measure things, and use that as a reference. Now sometimes the model changes and you've already done quite a bit of work on a detail drawing, and you need to make some adjustments to it to make it consistent with the model. [0:11:22]

Well, think about this, if the model changes behind this, then you'll be able to see and coordinate that information very easily and make sure that what you're doing in the detail drawing properly matches.

You're not working in isolation, you're able to see the reference there. Now in the same way, we can do something with the wall section. So for example, I can go to the Worksheet tool, which I might use for wall sections, and say that I'd like to create a new worksheet here. And I'll just click in this area. Let me just choose a layer for it temporarily, and just draw the wall section that I would like to call out. And I'll select this and open a worksheet. And when that comes up, you can see that I can of course work on this as a wall section. [0:12:21]

If I want to be able to coordinate it with the model, I can turn on the source, which automatically becomes available. And now I can see it in the context of the model. And if the model changes then I can make sure that my wall section is consistent with the changes in the model, even though it's been enhanced and cleaned up and other information has been added. In the same way, if I go to a floor plan - let's go back to a standard floor plan here - I might want to do an enlarged plan of something in the project. So let me turn off the Trace and Reference now, and let's say that we wanted to do an enlarged kitchen plan. [0:13:03]

So I will go to the Worksheet tool and I will draw a box around this worksheet here, the kitchen, and do a call out. And then I'll select this and open this up, this worksheet. And this worksheet now, this is just 2D line work that I can select. If I select this, this is just a line, for example, as opposed to a cabinet. Now I don't have a good example here, but let's say that this refrigerator, as an object, we wanted to have a rounded corner because that's part of the design aesthetic, and the object just didn't do that. So how would I do that? Let me just go to the Line tool here and select, for example, this line. [0:13:57]

So if I activate a tool and Shift+click, then it will prefer finding lines in this case rather than fills or other things. And I can go to the corner here and say that I want to fill it, let's say 3 inches. That looks good. And you can see it's pulled it back, the actual curved line was behind the fill, so it was hidden. So now we've got that curved edge, so I've modified the line work here. But, as might happen in a typical case, perhaps the design changes. Let's go back to the floor plan. And in this floor plan, perhaps this refrigerator has moved. So I'll just move this up a little bit to touch that other cabinet. [0:14:45]

And now let me go back to the worksheet here. And we don't know that that's changed. It's not showing properly in that view. In other words, it's out of date. We've got this nice, little curve, but we don't have it in the right location. Well, I will turn on the Trace and Reference, and show the source view. And you can see now, it's relatively easy to go and select this stuff here. So let me go select that entire refrigerator and drag it into its proper position. And so now, is overlaid beautifully. So, using it as a reference for the source of an enlarged plan, a wall section or a detail is very powerful use of Trace and Reference. [0:15:40]

Now I created these worksheets and details as call outs from the project. But I can also, as you know, create a new independent worksheet by right clicking on the worksheet folder in the Project Map and giving it a name. And let's just say that I'm going to be bringing in a survey. So I now have a blank worksheet to use, and I can go to the File menu, External Content, and Place External Drawing like a survey or DWG or possibly a PDF file. And once I've got it into this worksheet, then I can use as a reference underneath the plan, the actual floor plan or site plan, and build my terrain model and site

information in relationship to it using Trace and Reference. I've show that in previous lessons in the Best Practices course. [0:16:37]

Now another option similar to this would be to create a new worksheet for the structural plan or any other consultant drawings. So you are then going to bring in DWG files into a worksheet that are from the consultant, and then you can overlay that to the current active floor plan and coordinate your model with the consultant's drawing using these same tools. Another way that you can use a worksheet or series of worksheets for this purpose is to bring in as-built drawings or design drawings that are created in DWG and place them into a worksheet. And then you can actually snap to build the building based on the original drawn lines from the DWG. [0:17:27]

It makes it much quicker to reconstruct a building, because you don't have to type in any distances, you can simply snap on top of the original drawing. In fact, you can even bring in elevations and sections into other worksheets and place them as a reference behind the corresponding elevations or sections in the model, and then adjust your model to make sure it matches the design drawings that came in from the other source. So those are some examples of using the worksheet as a reference for outside drawings as opposed to inside ones, ones from within the project. [0:18:07]

Now I'd like to share with you some tips for using Virtual Trace more effectively and avoiding some of the problem areas that can come up. So you remember early on I said that we could use a view in the View Map, different stories, and I demonstrated how we could show, for example, I'm on the first floor plan and I might overlay as a Trace and Reference something else, like the system plan for mechanical. So I will say Show this as a Trace Reference, and we'll then see some information overlaid with the electrical and perhaps plumbing, mechanical systems in there. So we can not only do different stories, we can do different views of the same story. [0:19:00]

But you have to be a little bit careful of this, because it can slow down ArchiCAD quite a bit when the Trace and Reference is a view that has different settings - and let me show you the settings that can cause problems - ArchiCAD has to do more work. So for example, having different layer combination, it takes some more work for ArchiCAD to calculate that, but one of the things that cause problems in at least ArchiCAD 11 and 12 was that if you had different dimension settings for the site plan, for example, or just two different drawings, then it would take quite a bit of time, it would perhaps slow down ArchiCAD dramatically when you had Virtual Trace turned on with the Trace Reference having different dimension settings or different model view options than the original one. [0:19:52]

So you don't have to worry about this if everything is working smoothly, but if things start to slow down when you have Trace and Reference turned on, then you may want to coordinate the view that you are working with that have the same settings. Or just use the option, instead of just using a view, use the option for Above or Below a Current Story, or the option to go in the Project Map to select a particular story in the Project Map where it will be a viewpoint with the consistent information of whatever you're looking at. So in fact, if I say Show as Trace Reference, this upper floor, you'll see that. [0:20:30]

And one of the advantages of doing that, in addition to speed, is that if I switch to, for example, the lighting plan, and I go to the First Floor Lighting plan, now I'm looking at the First Floor Lighting plan and

the Upper or Second Floor Lighting plan is now my Trace Reference. If I go to the First Floor Systems plan then I'm looking at First Floor Systems and the Second Floor Systems as my Trace Reference, because my reference is the story, and it just will use the same settings as its showing there. So that's a really powerful tip to be able to jump around, quickly checking different types of drawings and their relationship on different stories. [0:21:11]

Now another place where you can get into some issues, so I'm looking at the sheet for the first level plan. And let's say that I decided that I wanted to show this at a different scale. So I open up the settings for it, and I could use a different view, but let's just say for a shortcut I'll change its scale here to ½ inch. And then I'll go and drag this into position. Now you'll notice that the Reference that was shown before of the drawing is too small. Even if I click on the update here, it won't update or change. So in order to get this to work properly, if I have changed the scale of a drawing -and sometimes even if I have just changed its position - I may need to go and Open Source View with Layout as Reference. [0:22:04]

And then that will bring up this particular view with it properly related. I'll just zoom out a little bit, and then I can of course flip back using the Switch Reference Inactive. And you can see after a split second ArchiCAD updated to show that. So sometimes if you do change your scale of things for drawings and even placement, you may need to use that. Right click and say Open Source View with Layout as Reference in order to have it update the reference. [0:22:35]

Now the history of the reference is remembered for a viewpoint. And here you can see that I've looked at another sheet, and I've also looked at the floor plan itself. But when I go back - let's say I switch to the floor plan here, and so now that the active one, its list is very long. There are five primary preferences that ArchiCAD will keep up with, and it will then remember those. And as you create new ones, some of them will fall off the end. And then there's some additional ones related to the layout sheets that it keeps track of. And it just seems to go on and on. There's no way that I know of to remove references from this list, unfortunately. [0:23:20]

Now, sometimes it can get difficult to select something when a reference is showing, so let me just demonstrate that. So I will go and show the second floor here as a trace reference. And if I zoom in on this and I want to select, for example, this wall, I might, when I go and I'm meaning to select the wall, it's actually selecting the window. You can see the preselection highlight indicating that it's a window from the reference, in this case, the story above. So it says "This element is inactive in this view", which makes it hard to select. So sometimes I've actually had to go and turn off the reference just to make it easier to go and select, for example, the wall that I want as opposed to the elements below. [0:24:16]

Sometimes Trace and Reference can get in the way of measurement and snapping in a way that you might not expect. So for example, if I'm set up to snap halfway between intersection points, this allows me to very easily find the point halfway along a wall where I might want to put in a door or window. And you can see here is the halfway in this particular piece of wall. But let's say I have the Trace and Reference turned on, and you can see that there is a wall going across here. Now when I position my cursor over it, you can see the snap point is way over here, where there would be another one over

here, because it's using the Trace and Reference as a divider in this case between intersections.

[0:25:00]

This is very obvious here, but sometimes it can be very subtle because there's just a line that is passing through, not even a wall. And it may be just a little bit off from some other elements. So be aware of that, that you may need to turn off the Trace and Reference in order to get a proper snap to the halfway length of this particular wall. [0:25:23]

A final place where Trace and Reference can cause problems is when you've got the fills transparent. So for example, right now I've got fills transparent. And if I make it opaque, you can see how this covers it up. But you might have transparent fills on just as a routine while you're working. Now let's say that I wanted to put in a fill for some reason. Let's go and pick a very, very simple fill, say one with no line work but with a color. And let's say that I wanted to place it. So I'm just going to go and put a fill on here. And you can see I'm drawing a box, and when I click again, nothing happens. Where did that fill disappear to? Well, it turns out that fill is there that I drew, but it's being hidden because of this option to hide fills or makes fills transparent. [0:26:18]

When I turn that option off, you can see that fill shows up. So that has caused me and many users confusion, if you have Trace and Reference on with the transparent fills then you won't see the background color of fills or zones. So just be aware of that, if you have some strange results where you just can't get fills to show properly. Now let's take a look at the way that we use Virtual Trace in MasterTemplate for the Interactive Legends. This is a very powerful method for using Virtual Trace. [0:25:55]

This particular sample project file is setup in MasterTemplate. And so if I go to, for example, a section here, in addition to having the option of referencing let's say the floor plan, and you remember that I was showing the floor plan earlier as a Trace and Reference, we have set up a Trace and Reference for the legend. So the legend is the Kit of Parts. And you can see that Kit of Parts sits in a convenient location or can be moved wherever it's convenient, and I can eyedrop the elements. [0:27:33]

So for example, I can eyedrop this group of people, this object, and click to place that group of people in there. Or I might eyedrop a piece of framing and then go and perhaps zoom in and place a framing element into position. So this is an option using the Trace and Reference as simply a source for eyedropping elements. Now where does this live in this particular case? In other words, if I zoom out, we'll see that there's a bunch of elements here and they're floating in space. They're our reference. Let's just switch the reference for the active. [0:28:16]

And when I do that, were going to be, all the sudden, instead of being in a section were going to be in a worksheet. And you can see here is the active elements. And the original section that I was working on is now a reference. Now in the MasterTemplate, we've got this set up in a view here, Legend 2D Sections, in a folder specifically for these sorts of things, but this lives in the Project Map. It is a worksheet. You can see how this is just one of the worksheets there. So there's a worksheet for sections, there's also a worksheet for elevations. Here's another one which we use or outside views. So you can see a tree and a car that you could have in an elevation. [0:29:02]

Now we have another one for the main legends. And I'll explain why we need it to do this in a different fashion. All of these elements here are 2D; because worksheets only allow you to have 2D information. Now you can put in an object, perhaps a cabinet; and it will show up in the worksheet. It will not be considered a 3D element, even though if you placed it on the plan it would be 3D. But you can't draw walls, doors or windows. You'll notice that they're gray here on the left side of the screen. So we can't actually have them show up in a worksheet. Yet, I have in MasterTemplate set up an Interactive Legend worksheet. [0:29:50]

And when I double click on it, you'll see that it brings up this worksheet here in a few seconds that allows me to eyedrop and pick up information about a lot of different types of elements. So let's just take a look. We've got different types of windows and we've got different types of walls here. So how do these exist in a worksheet, since I'm actually in a worksheet here? You can see in the Project Map. Well, actually, although I'm in the worksheet, the worksheet doesn't have the doors, windows or walls. They are a Trace Reference. [0:30:29]

I will turn off the Trace Reference, and you can see there's nothing in the worksheet. But when I turn it back on, they appear to be there. Now, they look natural because I'm using the option for the reference to be in its original color rather than perhaps what you're more familiar with where it has a single color. So by using in the original color, it's easier to recognize and work with for this type of purpose. Now, where does this information live? Well, this is a particular view from the View Map, and I will show you where that is. If I actually switch or swap it, we'll see that I'm now on the first floor. [0:31:12]

So I'm in the floor plan. And if I zoom out, we'll see that this entire set of parts is in the corner, and the actual building area and the site is in this other area. So it's living on the floor plan, and it's shown as a Trace and Reference from the worksheet. And the reason that is done is because - I wanted to be able to - let me just go back to the view that we were working with on the floor plan, the normal view here. You see when I go to the normal view it disappears, and I can go back to the regular plan. But I wanted to be able to have this worksheet with information in a separate window. [0:32:04]

So actually, you can see that it's a separate window from the plan. It's showing a view of the plan with the legend components, but we're accessing them from the worksheet. So I can get to that legend worksheet in a variety of ways, in the View Map of course, but I can also right click and say Go To... Last Worksheet. And then I can do the same thing from within this view and go to the floor plan. But of course floor plan has a keyboard shortcut, F2, that will bring it back. And I can set up a keyboard shortcut as you've noticed in this one for the last worksheet that is CTRL+W. And so I can, just with the keyboard, hit F2 to go back to the floor plan, and CTRL+W to go to the worksheet. [0:32:55]

And so we can go back and forth very quickly. So that is the way that we've set up the legends in MasterTemplate. It's a great time saver for accessing frequently used components. And by using a combination of Virtual Trace and the hotlinked module, which controls the visibility of the legend components, we're able to keep it easily accessible while making sure it's not in the way while you're designing or looking in 3D or elevations or sections. So this concludes our training lesson on Virtual

Trace. I appreciate the time you spent watching it, and I look forward to reading your comments and questions on the page below. This has been Eric Bobrow, thanks for watching.

[END OF AUDIO, 0:33:48]

1