So, let's look at layers. Layers are controlled by the Layer Settings dialog, which is available under the Document menu, Layers, Layer Settings here. Or there's a shortcut which would be either Command+L on the Mac, or CTRL+L on windows. When I bring open the Layer Settings dialog, there are two halves. The layer combinations and the layers. Layers have to do with categories of elements. Categories that you want to show or hide. [:41]

Now every element that you place in an ArchiCAD model, or an ArchiCAD project in any view has a layer associated with it. The only real exceptions are doors and windows, because these are part of the wall. So in other words, if the wall is on an exterior wall layer, the door or window is part of that wall, and they will be seen if that layer is turned on. Now, there are some ways to control the visibility of doors and windows using Model View options, which I described briefly earlier, and will return to at a later lesson. But for the most part, all elements have layers associated with them. [1:25]

Now the naming of the layers can be anything you like. This is just simply text. So I can go ahead and edit this text if I want, within this project. It will only affect the current project. Although if we happen to be working in a template, it would affect projects that are created from that template later on. Now, the text can be rather lengthy. You can see some of these names getting fairly long. And so it can be explanatory, or a can follow certain conventions that are in your particular jurisdiction or your particular client. For example, in the U.S., we have the AIA and National CAD standards, where we have a first letter for the discipline, such as A for architecture or C for civil, and we have a dash or a hyphen, and a four letter category such as WALL or FLOR, short version of floor. Some abbreviation for certain things like that. And then possibly another dash and a subcategory such as ESTR for exterior, or INT for interior. [2:38]

So the layers can meet certain standards, or they can be as you wish. Just something that explains what is on here. For example, this layer that says "A Floor Fixtures Railings And Lower Cabinets". So it's fairly self explanatory. You know that if you have a railing, it goes on this, and if you have a cabinet and it's on the floor, it will be placed on this layer. You'll notice that some layers are turned off with the eyeball closed, some layers have the eyeball open, and those elements are going to be visible at this point. Some layers are unlocked, and those elements then can then be edited, and some layers are locked. The icon is red for the lock. And those elements on those layers cannot be moved around or edited while that lock is in place. [3:31]

If you look carefully, you'll notice that when a layer is turned off, I've also got it locked, and vice versa. By coordinating these carefully, I can streamline the Layer Palette, the layer popup menu. I created a video tutorial on this that you can refer to, to see how that's done. But basically, it generally can be a good idea to make sure that layers that are visible are unlocked, and layers that are hidden are locked in order to streamline your workflow. [4:05]

Now, the basic principle of layers is that since visibility is controlled by layers, we need to have a enough layers to control the elements in your project. Ideally, just enough layers that you have the control you need, but not too many. So the basic rule: if the elements need to be shown at different times, in other words, of two different elements, one is shown sometimes and the other is hidden and vice versa, or sometimes both of them are shown, and they need to be on different layers. For example, if you're putting in objects with the

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Object tool, the tool that has the chair here, you could be putting in furniture like chairs, and you could be putting in cabinets or trees. And many other variations of course. Well, we're going to be showing furniture only on certain drawings. Perhaps a presentation plan. And so we have a layer for furniture. And that's going to be turned on in the furniture plan. But when we're working on, for example, a floor plan like this, the furniture is going to be turned off. On the other hand, the fixtures ,such as the cabinets, will be shown. So we do need to have two different layers. One for fixtures and one for furniture. Because in this case, fixtures are going to be shown, but the furniture is not. [5:36]

On the other hand, sometimes people have multiple layers that they don't need. In other words, they have too many layers for what is required. Now there's no big issue with that, except as the layer list gets longer and longer, it gets more unwieldy and harder to decide what layer to put something on. It can get hard to manage. Here we have a layer for railings and lower cabinets, because in general we're going to show them both together, or we're going to hide them both. We'll show them on floor plans and we'll show them when we do an elevation or a section here, but we may actually, when we're doing something like a site plan, have them both turned off. Because we'll just have a simplified version of the building, with just the stairs, for example, and walls, and certain other identifiers. [6:34]

So the fixtures and lower cabinets and railings can be on one layer. So that's something to think about. If you need to turn certain things off and on a different times, they have to be on different layers. They have to be layers that exist separately for that option. Whereas if different types of elements are always shown together or always hidden together, they can be combined. Now, some layers, for example, as I scroll down here. Let me go to A Wall Exterior, well the exterior walls are so important to your project that they're shown on virtually every layer combination. So you can see the eyeball here is turned on for almost everything. There's a special purpose layer combination we have in this file that's for dimensions only. This is actually used for creating some dimensions that are shown on multiple stories that are common to multiple stories. [7:37]

If you place dimensions elements on that particular layer and that layer combination, that view, that layer combination, can be used for multiple stories and only needs to be updated once to affect multiple stories. But in general, the exterior walls are on pretty much every layer combination. There are some other specialized ones here for working with detailed drawings or layout sheets where it's turned off. But for the most part they are on. [8:09]

On the other hand, things like the roof are shown only on a few layers. They're shown on the layers that are relevant, and things like floor slabs are going to similarly be seen only on certain ones. Now, there are some layer combinations that relate to construction documents. So a layer combination has a function. In other words, when I click on Con Doc or construction document furniture, that creates a particular set of layers that are turned on or off. Or if I go to floor plan, we'll see different layers that are shown. [8:49]

Now, on the floor plan, we are going to see all of the dimensions, because on a construction document floor plan, we're going to see a lot of annotation information. Whereas on a furniture plan, you might have many of those turned off, because a furniture plan is more for presentation and communication with a client. So each one of these may be used for different types of drawing output. Now, if we go to something like the electrical

plan, it's going to show certain information that is common here. But we've got a layer down below in this system, that instead of having a discipline name like M for mechanical, P for plumbing, we have something here that has a U. [9:32]

Now the concept here is something that is not widely used, but I think it's a very powerful and pretty easy to understand concept. There are elements that you're only going to show on the electrical plan. And there are other elements that you might only show on the site plan. And you'll see that there's a layer we have for the site only. So, if you're going to be putting something on the electrical plan, what would you put on the electrical plan that you wouldn't put on other drawings? Well, there are going to be some electrical elements that are only shown on that drawing. There are going to be perhaps some notes, labels, maybe some dimensions showing where those electrical elements are placed. There could be some other text notes. So there are a number of different types of elements. [10:25]

So in other words, if we look at the tools on the left side here, we may be using text and dimensions, and maybe there's some line work, and maybe some splines or curved, to show where the wiring connections are. And we'll maybe have some objects such as the receptacles, or the lights, or the switches, things like that. So we've got in this particular file, which is based on MasterTemplate, one layer for all of those things. This is in contrast to some people's approach, which I think is usable, but can be cumbersome. And that is to have a layer for electrical objects, another layer for electrical text, another layer for electrical dimensions, and another layer for electrical labels. That's four, or five, or even six layers that are only going to be seen on the electrical plan perhaps. [11:24]

So if all of those elements basically are going to be seen at the same time, or hidden when you're not be working on the electrical plan, then you could put them all onto one layer. Now there is some justification sometimes if you want to turn off the notes for the electrical, but still show the electrical symbols. That's really up to you. You can have more than one layer for these things. But as a simplification and as an aim, I think this is a very important thing to realize, is that you can have, for example, one layer for all the elements that are only shown on the ceiling plan.[12:05]

Now, layer combinations are set up by name here. So if I go to let's say, the floor plan one, when I click on it, it shows different layers that are turned on and turned off. Now let's say that for some reason I decide that on the floor plan that I want to show partition walls. So for some reason, the partition walls are not showing. So that appears to be a mistake in this template. So I will click on this to tell it to turn on. Now if I said OK, what we'll see is that the layers have changed just a little bit. And in the Quick Options here, is says "Custom" as opposed to what I have which was floor plan. So the word "Custom" shows up in the Quick Options in that case. [13:02]

Now let me go open the Layer Dialog box again, Command+L, and we'll see I've reinstated the floor plan. And the floor plan still does not have the partition layer. Now I'll click on this to say that I'd like to turn this on. And then I'll click Update. And that then records that the floor plan layer combination has this correct, or turned on. And when I say OK, you can see I'm still in the floor plan here. And when I open up the Layer Dialog box, you'll see that the floor plan now has partition layer turn on. So if you activate a layer combination, and you decide to change something about the layer visibility, you will need to click the Update button to have that effect. [13:53]

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So to study whether a layer combination is accurate or it's showing what you need, you simply click on it, and you can scroll through the list and see if anything is amiss, if anything needs to be turned on our turned off that is not on at the moment, or is not set that way. Make a change, click Update. On the other hand, if I click on the right side, for example, let's look at the ceiling slab layer. I can say, "Well, when is that shown?" And by clicking on it, you'll see that it's shown in certain layer combinations. So in elevations, the ceiling slab layer is shown. Or foundation dimension here in this case. Or sections. [14:40]

No I'm not sure that this drawing is set precisely correct, in other words there may be some things that I need to change here. For example, the ceiling slab perhaps should be shown on the reflected ceiling layer combination. So what I'll do is I will click on this, and tell it to change, to make it unlocked. So you'll notice that the Update button is gray, and there's no corresponding update button here. So what this points out is that once you've clicked on a particular layer on the right side, you can study which drawings or layer combinations it's turned on or off in the current setup. And if you make a change, not by clicking on the name of the layer combination, but by clicking on the visibility icons here, then it will instantly take effect. [15:38]

Now instantly is relative. When I click OK, that will take effect. So I'll say OK. Now you'll notice when I clicked OK, it took me back out to the current viewpoint which was the first floor, but switched me to a different layer combination, which is "Con Doc Reflected Ceiling". Now this Quick Options palette allows me to switch at any time from one layer combination to another. Here's the furniture plan, which I was on. Now Quick Options palette, if you don't have that in your environment, let's just say, "Well, where is that?" Let me just show you. I can close it here, and I can get it back again by clicking this little icon down in the bottom left of virtually any drawing window. You'll see it has the little prompt, or popup, it says "Quick Options". When I click on it, it will come back in the same place. [16:34]

It is a separate little palette, so I can actually float it around, perhaps have it close to where I'm working to change my layer combination to something else when I want to. And I can hide and show it also by clicking on this button here. And it will always go back to wherever you last had it. I like having it docked underneath the navigator, because it fits in nicely. And now in ArchiCAD 14, we have six different things in the Quick Options. In earlier versions of ArchiCAD 13, 12, 11, 10, it was fewer. So it might only be four or even three Quick Options may be back in ArchiCAD 10. But the basic idea is that these give a quick way to change some of the settings that are in the view. And you can maintain this regardless of whether you're in the View Map or the Project Map. You'll see the Quick Options options still is available. [17:33]

Now, when I double click on a particular view, and let me go to for example, the floor plan. Double click on it. This sets all of the settings as the floor plan. In other words, whatever that particular view is set, it will activate that. Now if I go in and manually change it, so for example, I change it to the furniture plan, you'll see that the properties here have a little warning sign. It says, I've got highlighted this particular view, but the properties in that view do not match the current setting in the Quick Options. Or, if I 'vemanually change the layers, then this may say custom, and this warning will show up. So this little triangle warning is something you don't have to worry about, but just be aware that it indicates that even though our view is highlighted, it's not the one that's active. [18:37]

So in fact, if I double click, it will put it back to that, but if I highlight anything else and just click here, you'll see actually - that's interesting, it doesn't show a warning, it shows me the properties of this. When I double click it, it will activate those properties and make them take effect. So mainly, I guess if you have activated a particular

view, and you make an manual change to it, so for example, let me change this to the reflected ceiling plan, then it would give us a warning that we're in a different mode. [19:21 END OF AUDIO]