

**MIKE MASSEY:** Let's get going. A little bit about me. I do have a degree in architecture from Texas A&M University. I practiced 25 years in the AEC industry. 15 of that's working as an architect. The last 10 years in the reseller business teaching and implementing new technology, specifically Autodesk software.

I'm a repeat speaker here. I think this is my 10th-- maybe my ninth year, because I didn't come last year. So this is my ninth year to speak. Let's see.

I actually wrote some training manual for Autodesk in 2012. I wrote the Revit MEP training manual for them. And I've got all the certifications that they make me have to do all this stuff. But that's a little bit about me. Let me find out about you.

Who is in the audience? How many BIM managers do we have in the audience? Very good. How about architects? Wow. MEP? Structural? And I don't have contractors up there, but any contractors in the room? Educators?

Did I leave anybody out? Other? Think I got everybody. Thank you for coming. One more question. Why did you come to this class? I'm just curious.

Sometimes when you're going through that list of classes on the AU site, it's like reading a foreign menu. You have no idea what you're picking. So I'm just curious, anybody want to share why you selected this class? Anybody? Don't be shy.

**AUDIENCE:** Everything else was full.

**MIKE MASSEY:** Thanks. Everything else was full. The door's right there, OK? Yes?

**AUDIENCE:** I'm looking for more of a technical class. I like a lot of classes that have the big picture existential questions, but I want to be able to take something home that's practical to me tomorrow.

**MIKE MASSEY:** OK. I think you will. Hopefully, you will. Yes?

**AUDIENCE:** Sometimes there's like a million ways to get stuff [INAUDIBLE] in Revit.

**MIKE MASSEY:** Yeah. Who all likes the dialogue box that says warning, the objects you just created are not visible. Doesn't tell you why. Just says they're not visible. Yes. That's what we're here about.

So couple things. Giveaways. I've got two giveaways, essentially. They're the same thing, but two of them. I'm going to pass cups-- I don't have a bag. I'm going to pass these cups.

If you put your business cards in this, we are giving away a free what we called LiveLab Learning. This is online training of your choice. Anything you want. It could be Revit architecture. It could be Revit MEP. It could be Revit Structure. It could be 3ds Max.

Whatever you want to learn, we're giving away a free online training session. So put your name in there and we'll draw at the end of the class. We are also giving one away online. So you can go to our website, which is [Asti.com/au2015](http://Asti.com/au2015), and sign up online, too. So we're giving away one online and one in the classes. So feel free to fill that out.

The class summary. Pretty much, we're going to talk about trying to get to see things that we don't normally see and setting up views and working with views, specifically view filters and templates and section boxes and all kinds of different things. But before we leave today, you will be able to create view filters and view templates and have a good understanding of what those are.

You will be able to use what's called a Selection Set. Does anybody know what a Selection Set is? Some. This is a tool that's been around for a couple releases, but I don't know too many people that know about it. So we'll talk about that.

Also understand the difference between assigning and applying view templates. Big difference. We'll talk about the differences there. And also using what's called temporary view properties. So those are the main things we'll look at.

As far as our agenda, there it is. Pretty much what I just said. The only things added on there there's not in those key learning points are the view range. I have found that understanding the view range inside of Revit is the most complicated thing in the whole entire program. And it's even harder to teach.

So I will do my best to try to teach that. We'll see how good it does. And finally, we'll wrap up on the lost marble challenge. You should have got an email from me with a puzzle. I did not generate that puzzle. I don't know who created it.

I got it about probably four years ago. Somebody sent it to me. But I've used that before as a

training exercise to help people understand how you can hide things in Revit. But anyway, I'm going to go through the answers of the solution of the lost marble challenge there.

This is my philosophy. Every time I teach, I try to do this. If I cannot explain it simply, then I don't know it. So I'm going to do my best to explain it in terms that you all will understand and leave here with a good understanding. Let's get going.

As far as questions, trying to decide if I have time for questions. I was running short on time Tuesday. I tell you what. I'm going to try to hold questions to the end. Maybe at the end of each section, I might have a little question and answer time if you got questions on that.

But we'll save that to the end of each section, how about that? Creating view filters. First of all, what is a view filter? This is not new.

This has been around for a while. Most people may already use this and understand it and know it. View filters basically provide a way to select objects based on a parameter that's in common. For example, walls. Walls is a pretty big category.

We all have lots of walls in our projects. But how do we select just the walls that meet this certain criteria? And my example up there is talking about rated walls. So how do we pick all the one hour walls or the two hour walls or whatever it is? We can use filters for that.

So the process is simply to, first of all, create the filter for the project. And then once the project filter is created, then we can start applying that to our views and changing and overriding the graphics of it. View filters can be transferred from project to project using transfer project standards.

I recommend that you create these in your Revit project templates. Matter of fact, I'm going to say that for everything I'm going to talk about today. Just about everything I'm going to talk about, you should be doing this in your template, your project template, so that when you start a new project, these are there ready for you to use and you don't have to recreate these a lot.

So once you create them, then you will start applying them to the views. So this is done inside of Visibility/Graphics. You'll have a tab in there called Filters. And you can start changing the graphics and overriding the graphics, whatever you want to do.

In this case, I am changing the cut pattern, the fill pattern, to a color and also using a fill pattern hatch pattern to indicate the one and two hour walls in there. So let's take a look at this

and show you.

Thank you. Anybody else? Other cup?

So let's take a look at this. I learned about six years ago if it can go wrong at AU, it will go wrong. I have had a computer crash. I have had my monitor being cracked on the plane. I have been sick as a dog one year, and I had to present.

So I have learned to pre-record everything. So all my videos are going to be there. I do have the projects open. So if we want to see it live, we can. But I'm going to talk through videos just because I don't want it to be crashing.

So let's take a look at this. So this is going to open up a project. And this project, I'm going to go ahead and start creating view filters for those walls. So I'm going to use the Filter command and simply just go up and click New and type out one for one hour in there.

The next step is to assign the category, which I do for walls. And then I'm going to use the parameter Fire Rating. And just say that when the Fire Rating parameter equals one hour, then it's part of this filter. Going to do the same thing for the two hour filter.

You can actually duplicate a filter to create another one. So all I have to do on the duplicate is change the name. The category is still going to be the same. It's still going to be a wall category. And I just change the filter over there to be two hours instead of one hour. So it's pretty simple to create those.

Once they're created, then we start applying them to the views by going to Visibility/Graphics. So in there, we have a Filter tab. And I can apply both of those to the view. And then I can start overwriting the graphics of them.

So like I said, I'm going to change the color of them. One of the red and one to green. And set one of them to a one hour fill pattern and the other one to a two hour fill pattern. And we'll talk about that in just a second.

Once I do this and say OK and OK, get out of all my dialog boxes, you will see that now my plan shows and indicates my fire rated walls. There's lots of ways to indicate your fire ratings on walls. This is just one way.

I'm not sure if it's the best way, but it's a pretty good way. I have been asked how and where

did you get that hatch pattern, that fill pattern? That is not an out-of-the-box fill pattern. That has been created.

But you're lucky because in the additional files on the AU site, I have included the one hour, the two hour, the three hour, and the smoke .pat files. If you want to download those and use them, feel free to. But these .pat files are just a bunch of numbers, is basically how these things are made up. So there's kind of complicated, all those numbers.

But you can see that the one hour has a one dash. The two hour has a two dash, and so forth. So those are there if you want to use them. And so that's what I used in this example.

Any questions? Does that make sense? Yes?

**AUDIENCE:** [INAUDIBLE] on anything in coarse level of detail [INAUDIBLE].

**MIKE MASSEY:** OK. Very good question. Let me show working on what I've done. Well, I'll show you after class. Come down after class, and I'll show you.

The question was that she has tried that in the course level of detail, made it a solid fill instead of showing a pattern. And I've done that. Been there, done that.

Let's move on to Selection Sets. As I indicated a while ago, Selection Sets have been around for I think three releases. But every time I talk or teach or present, not very many people know about them and not very many people using them. So let's talk about what they are.

How many have ever gone into Revit and started selecting objects and you're probably having to hold the Control key down or Shift key down to go around and pick the objects that you want to modify, maybe even doing the funnel filter to filter out things that you don't want selected.

It's time consuming. So what this does is once you have those things selected, you can save the selection so next time you just reload it and don't have to go back and pick them all. So it's going to save you time so that you don't have to pick them every time. So in this example, I've got all these public restrooms selected there.

Once they're selected, you'll have, up on the Modify tab, the Save button. Just simply hit the Save button and it's going to ask you to give it a name. And you can save that and go back and reload that for later on. So it's going to be a quick, easy way to pick things in your model.

The bigger benefit, though-- oh, you can also go back in there, modify them to add and remove and edit what's inside of that. So you have those options, too. But I think the bigger thing is that when you create a Selection Set, it automatically makes it a view filter just like we just talked about.

So here, I've created that Selection Set. And you can see in the dialog box of my Filters, it added one in there. But it's not the same way. It's under Selection Filters. And notice that all the parameters over here and all the properties are grayed out because it's not using this. It's just using the Selection Set as the filter.

And so there's not too many things in common with all these things I have selected. So if I was trying to create a filter for all these things, it would be hard for me to find a parameter that I could use that was in common with everything. So this allows me to create filters out of anything. Just highlight what you want to create a filter out of, save the set, and boom, you got a new filter with those things in there.

So it's pretty easy to use there. This is the other benefit. This is not really, I guess, necessarily exactly tied to Selection Sets, but it's a pretty cool tool. This is a tool that's new in 2016. If you're not on 2016, sorry.

But this is my favorite new command. It's called the Selection Box. And you can have things selected in Revit. In one click, it will jump you to a 3D view and automatically crop that 3D view around the items that you have selected. So it's pretty cool.

Basically uses a section box and crops it down for you. But it's a quick and easy way to see a 3D view of things that you have selected in the model. So let's take a look at that. Excuse me.

So here's my model. I'm going to go down and zoom up around those bathrooms and just do a crossing and select all those bathrooms. I'm going to un-select the corridor. But now that I have them selected, I'm going to go up and just hit the Save button and give it a name. So I'm going to call this Public Restrooms.

And once it's saved, if I Escape out and go do something else, if I want to go back and reselect them, on the Manage tab there is a Load button. I could click on that and reselect those objects without having to go back and re-pick them. So that's the first thing.

It allows you to go back and reselect objects. You can also, if you go in there under the Filter tab, it automatically creates the project filter for you. So there it is. You can see everything's

grayed out in there.

But if I want to use that in this view, I simply just add it like any other filter. And once it's added to the view, I can start overriding the graphics. And so in this one, I'm going to change-- I think I change it to purple or magenta, whatever color that is. And change it to be a hidden line type.

And it automatically is going to change everything in the Selection Set. So just like any other filter would do. So it's a great way to create that filter when you have objects that are not in common with each other. You can also, if you want to just simply go in there and modify it, you can hit Edit. And I'm going to add to the Selection Set those two drinking fountains up at the top.

And just by adding it to the set. And when I finish, they automatically take on the same properties as everything else. If you want to simply just turn off the filter, just like any other filter, you can go back and just uncheck the Visibility check box and turn the entire set off. So you can turn it on, turn it off. Whatever you want to do.

I'm going to turn it back on, I believe. And then the last thing I'm going to do is show you that 3D tool that you can use in there. So I'm going to go back and reload the Selection Set and have that selected. And then just simply go up and hit the section box, which is right there. And it automatically jumps me to a 3D view and crops the view down around what I have selected there.

Pretty cool. And that is, like I said, my favorite new feature in Revit 2016 is that selection-- section box. Too many selection, section. I'm getting mixed up here.

Pretty cool? You all like that? Anybody use that? I'm just curious. Some? OK. That's worth the price of admission right there, I think.

Any questions? Yes, in the back?

**AUDIENCE:** Can you do it with a linked model?

**MIKE MASSEY:** Can you do it with a linked model? Yes, you can. You can. Any other questions?

Moving on. View templates. A view template definition. It is a collection of view properties. Every time you go into a view, you start turning things on and off. You set the scale of it. You set the Visibility/Graphics of it. All those are properties of the view.

So a view template is nothing more than grabbing all those and saving all those so that you can reuse them on another view. So it's a great way to set up standards in your office. So if you want to have some standards where your plans always look a certain way, you can create a view template and then apply that to all your views in your project. And that way, your views always look the way the office standards is set.

The last thing I got up there is in my mind, I think that every view type should have a template. Every view type. So if you have multiple floor plans, if you have a furniture plan or a life safety plan or a partition plan or whatever, each one of those should be using a view template. That way, you're sure that the graphics are looking correctly.

Also sections. Also elevations. Also details. All those can have view templates. And so I think every view should have that. There's actually three ways we can create a view template.

The most common way and the easiest way, I think, is to go ahead and get one view set up the way that you like it. Once you have it set up, you can simply right click on the name of the view and say Create New View Template. Give it a name and boom, you've got it. So it's real easy to do it that way.

You can also duplicate an existing view template. Or you can go create one directly from the Graphic Display Option dialog box. At the bottom of that dialog box, this is where you can go in change it to hidden line or change the turn shadows on and stuff like that. But at the bottom, there's a Save to Template, and that will create you a view template from those settings in there.

Tips. You're going to have the option when you create these view templates to not include certain things. And so I typically recommend that you may think about-- you don't have to-- but maybe not include the scale and the view range. Because sometimes those are different depending on the size of the project and what the project is.

So you want everything else to be set to be off this standard, but I want to be able to change the scale to be quarter inch instead of eighth inch or whatever it is. And so you may want to opt out of having everything included in there.

I would also remove the out-of-the-box templates. For the BIM managers, this is going to make your user's life a whole lot easier if you just don't give them the option to pick the wrong

template. Just get rid of them. That way, they only have your office templates in there.

Create view templates in our Revit project template so that they are always there. And also, you can use transfer project standards to transfer them to one project or the other. So let's take a look at creating view templates. We're not going to apply them yet.

We're just going to talk about creating them. So we're going to do this in baby steps. To create them, simply go up to the view that's looking correctly. I've got a floor plan here. It's a partition plan. So I'm just going to right click on that and give it a name. And I think I called it AU Floor Plan Partition.

So there's my floor plan. It's going to ask you what we want to remember. I'm going to include everything. I'm not going to uncheck any of those boxes so it includes all those view properties. Then I'm going to go through and quickly do the other ones. I also had a furniture plan set up that's got everything turned off except the furniture and everything's grayed out. So I'm going to just call that AU Floor Plan Furniture.

And then I also have two more. I've got a Life Safety Plan that I'll do the same thing to. And also a Presentation type view. So it's real easy. Like I said, you just get the view looking correctly the right time first of all. Then you can save this that we can use later on.

So there's my Life Safety Plan. And finally, I've got a colored up floor plan in here maybe for presentational type view. And I'll just give this the same type of name and call it AU Floor Plan Presentation. So that's how you create it.

Pretty simple. Just right click on the View and say Create View Template. Once it's created, if you want to apply it-- oh, if you want to change them, you can always go up to Manage View Templates up at the top. And you can come down and modify the view templates. Or you can start cleaning up the list.

You see this long list of view templates in there. So I'm going to start deleting some of these. If you do delete one of them that is assigned to another view, it will tell you. This one says that it's assigned to two other views. And it will ask you to pick a new view template for those views that's assigned to the one you're trying to delete.

So you can pick that and just move on and assign that to a different view template. But I'm going to go through here and just clean these up and get rid of all the ones that I don't need.

These are all the out-of-the-box view templates that came with the program. And just start using mine so I don't have the extra ones in there.

Pretty simple process. Once you have them cleaned up, if you want to go back and modify them, you've got the buttons over there that you can pick on to modify it. So in this case, I'm going to go ahead and go into my Elevations and go into my linked file Elevation drawing and turn off the level lines for all the links in there, because I don't want to have multiple level lines in there.

So I'm going to go ahead and that in my template so that all my elevations and sections will not have those duplicate level lines. So that's pretty much it as far as creating them. Any questions? We're fixing up plenum or [? signum. ?] We're fixing to go there. But outside of that, yes?

**AUDIENCE:** So in previous versions of Revit, transferring from another project, you would lose the Revit link settings. Is that still the case?

**MIKE MASSEY:** That is still the case. And even I've been asked before in your template file, you don't have links in your template. So how do you do that in a template file to have it already made?

What I've done is I've linked in dummy files. Make a dummy file for MEP. Make an MEP dummy file and go ahead and link that dummy file in. And then when you do actually get the MEP file from the MEP engineers for the project, just simply go to Manage Links and replace the dummy file with the new one.

That way, you can go ahead and preset the dummy file link and go ahead and turn off the things you don't want to see. Does that make sense? So that's the only workaround I know.

When you work in Revit, it's pretty much-- I mean, it's a great tool. But a lot of times you're sitting there going, OK, what's the workaround? How can I make it do this? And you got to figure out those little tips and tricks, I guess. Any other questions?

Assigning versus applying templates. Applying is a new way. I'm sorry. I got that backwards. Assigning is the new way.

We've always been able to apply view templates. But three releases ago, they introduced assigning the view templates. So I want to talk about the differences and how you do this. So

let's first talk about applying.

The easiest way to apply a template to a view is go to the project browser, right click on the view name, and pick on-- what does it say-- Apply Template Properties. And that will apply the view template to the view.

Couple things about it. It will apply it immediately. So that view will change graphically to make it match whatever the template has in it. But here's the caveat. If the view template changes, it will not automatically go back and reapply the changed view template to the views.

So what that means is if I've created all my view templates and then I realize, you know what? I really should have turned off those column grids, or turned on those column grids. So I go back in there and manage the view template and hit the Edit button and turn those on or off, I have to then go back and reapply the view template to every view that's using that template.

So it's a great tool. But I like the other way better, the assigning better, because I don't like having to go back and reapply that every time I make a change to it. So anyway, that's applying it.

So let's look at that first. And so this is pretty straightforward. You pretty much just right click on the view and say Apply and boom, it's going to take it on. So I'm up on the second floor now. And I've duplicated the second floor and I've renamed the views, but they all look identical. They got everything turned on.

So I'm going to start applying those level one view templates that I created to the second floor. So I just come in there and right click and say Apply and pick it off the list and say OK. And now that looks like my partition plan.

Do the same thing for the furniture plan. Right click and say Apply. And it's going to apply that to make it look like a furniture plan. And so forth. So it's pretty simple to apply them.

And there, I think I've got two more real quick. I've played with the speed of these videos to try to slow them down or speed them up. And I slowed them down because I didn't think I could talk that fast. So there it is.

So now that I have all my second floor plans looking just like my first floor plans. Pretty simple. Let's talk about the next method, assigning the view templates. The difference is this is actually going to create a link between the view template and the views. And so if the view

template changes, it's going to automatically update all the views that have this view template assigned to it.

So this is a much better way. It also will change it automatically to all the views. One thing you got to watch out for, view properties display in gray indicating that they are disabled. If you actually assign a view template to a view, all your properties-- for example, the scale-- notice they're all grayed out. I can't change it.

And that's because the view template is now controlling everything about that view. If I want to change the scale, I'm going to have to open up a Manage View Templates and change the scale of the view template, or uncheck the check box to tell it not to remember the scale for this particular template. And then I could change the scale. But right now, the scale's being included in the view template.

So just know that everything's going to be grayed out as far as the properties of the view. If you go to Visibility/Graphics, it's all grayed out. If you go to change the detail level from fine, coarse, or medium, it's grayed out. Everything's being controlled by the view template at that point.

Another good way you can manage your view templates is to create a view schedule. If you create a view schedule listing all your views in project browser, this is a great way that you can see what view templates are assigned to it to make sure everything's looking the way that you want it to look based on the view templates.

So let's take a look at this. So I'm going to begin this exercise by showing you what happens when we change something when things are applied, not assigned. So I'm going to come in here and try to turn on the column grids. And so I'm in the partition plan and I'm going to go down and turn on those column grids that I meant to turn on.

And nothing happens. So what all do I have to do? I have to go back and physically right click on that and reapply the template and pick the template name. And now we see the grids come on.

So we have to reapply. I have to do it for the first floor and the second floor. Reapply that template to get the grids to show up there. So that's apply. And so now let's talk about assigning.

So I'm going to go to the furniture plan now and do the same thing. But before I do it, I'm going

to use this parameter. Over here in my properties, it says view template. Initially, it's going to say none. But I'm going to assign the furniture template to that and then do it for the first floor and the second floor.

Now that they are assigned, if I go back up and start managing my templates and go into the Properties and turn that grid on, just like I did for the partition plan, it's going to automatically do it. I'm not going to have to reapply the templates. So I'm just going to turn the grid on and say OK.

And boom, the grid shows up on this floor and also on level one. So there it is. So it's going to save you time. You don't have to go back and reapply this. Especially if you got a 10 story building, it can be huge as far as the time that you save here.

So you can do the same thing. I'm doing the same thing here for the life safety plan or the-- see, I'm going back and applying it for the partition plan here instead of assigning them. So I'm just picking this None button over in the View Properties and changing that and assigning that to use that view template.

Once you do that, notice here that everything's going to be grayed out, like I said before. So if I go down to the bottom and try to change-- or I tell you what, I'm going to turn the grid back on here. I didn't turn the grid on for those other views. There we go.

So now my life safety plans have the grid turned on as well. But if you go down and try to change the scale, everything's grayed out. I can't change the scale. If I try to change the detail level, it's all grayed out. I can't change the detail level.

So now the view template is controlling all of that. If I want to change it, I'm going to have to go back to the view template to change it there. Visibility/Graphics, all grayed out. So again, go back into Manage Templates. And then you can hit one of the Edit buttons over there and modify Visibility/Graphics or change the scale or whatever you want to do. But you have to do it in the Template Settings because now that's controlling it.

Now I'm going to wrap up here just by showing you a schedule. This is just a view schedule listing all my views in the project. And you can see I've got a column there called View Template. So I can quickly see what view templates those views are using to make sure that they're all set to the right ones.

So again, BIM managers in the room, I would take your Revit template, go ahead and create your typical views, and go ahead and assign these view templates to those views so when your users start using it, boom, they're going to look the right way. Make sense? Try to make that easy for everybody.

Duplicating view types and assigning view templates to new views. When I was writing this and trying to figure out the order of things I wanted to talk, I almost left this out. But I put it back in there because I think it's important. This is talking about two different things.

The first thing is that you can duplicate view types. We have a view type called Floor Plan. We can duplicate that Floor Plan type to create other floor plan types. And that's going to help us organize our views in Project Browser. So in Project Browser, instead of having all our plans lumped together, we can create different types in there and have Partition Plans, Life Safety Plans, Furniture Plans.

Whatever it is. So it organizes them inside of Project Browser. You can also go into these view types and there's a button in there that you can pick on to go ahead and assign what view template you want those views to use when you create a new one. This is specifically useful for sections.

So if you have sections and you want those to use a specific view template and every time you cut a section, it doesn't look right, you can go ahead and make your view template and change this button right there to point to your section view template. That way, every time you cut a section, it looks the way you want it to look.

So again, looking for ways to save you time and make it easier for you. You can also create standards for all types of views. Speeds up the process of creating views. Think I said all that.

So let's look at this. So I'm going to do a couple things here. I'm going to start off with the floor plans and I'm going to highlight my two partition plans. And when I do that, I'm going to click on Edit Type to get into the Type Properties of the view. And I'm not going to duplicate this.

I'm just going to rename this first one. So I'm going to rename it and just call it Partition to group these under the Partition Plan. I'm going to also go ahead and assign my partition template to those views so that every time I create a new one, it's going to be right.

Do the same thing for furniture. This time, though. When I go into the Type Properties, I will

duplicate the type to create a new type and I'll give it a new name. So I'll duplicate it and call this one Furniture. And when I do this, if you watch my Project Browser over here, as soon as I say OK, you can see it's starting to organize and group those together, those furniture plans in there.

So again, it just gives you a way to organize your views inside the browser. So I'm going to go through and change and modify all these in there as far as setting them up under different categories. And I sped it up here and jumped down to Sections and Elevations. Doing the same thing for those.

I'm going ahead and assigning the view template for Sections and Elevations so that when we do cut a section, it uses that particular view template. So it doesn't take very long to set this up. But now if I go over and start trying to cut a section here, it's going to automatically use that view template so that I don't have to change the graphics of it.

So I'm just going to cut me a section through the building and zoom up and go to that section. And again, it's automatically going to be assigned this section view template that I created in there. So it looks the way I want it to look.

And then the last thing I've got here is just, again, looking at that schedule to verify that all your views are using the correct view templates in there. How many create schedules for your views? Anybody?

This is a great management tool. If you go to the View tab and go to Schedules, the drop down, the last type of schedule that you can pick is a View Schedule. And it will list all your views so you can see everything about them in one screenshot. Questions? Yes.

**AUDIENCE:** If you apply, [INAUDIBLE].

**MIKE MASSEY:** Yes. So all I got to do is add that parameter in the schedule. And they'll be blank if there are things assigned, and you can pick in there and use the drop down and just pick it off the list. Yes?

**AUDIENCE:** I find myself having all the boxes checked with the management view templates. It'd be really cool to have a secondary assignment template that could control those check boxes that aren't checked there. Does that make sense?

**MIKE MASSEY:** You lost me a little bit. A secondary set of check boxes to control--

**AUDIENCE:** Just assign a secondary view template.

**MIKE MASSEY:** To jump back and forth. Hang on. We're going to get there. I got a tool for you. We're going to show you what happens there. I think I got it answered.

Right here. Temporary view properties. How many of you know what temporary view properties are? Anybody? Is this what you're talking about? This won't fix it? Come to me after class and we'll talk about it.

Temporary view properties. Again, this was released at least two releases ago. I can't remember the exact year they introduced this. But this is fairly new, but it's going to add a-- and there's a button down at the bottom of your screen. Down here, one of these buttons is Temporary View Properties.

And let me ask you another question. How many have views in your project that's called working copies or sheet copies? And you have two different sets of views, one that you are free to work in and one that is reserved for printing or putting on sheets?

And you do that because you don't want to mess up the printed version of what's going to be on the sheet. If you do this and use this Temporary View Properties, I believe this eliminates the need for having those working copies. So what this will allow you to do, you can enable Temporary View Properties and have the view already set to be using the view template, but you can enable this.

And once it's enabled, it's going to put a purple little border around your screen, but you're free to do anything you want to. You can change the scale. You can change the detail level. You can turn things on and off. Anything you want to do. It's just temporary.

And when you get done, go back and restore it and everything will go exactly back to the way it looked before you did anything. So it allows you to mess up the view without permanently messing it up. And this is temporary because if you get out of the file and come back in the file, they're going to be back on. If you try to print it, even if this is enabled, it's still going to print the way it's supposed to print using the view template.

And so again, it eliminates the need for that working copy in there. Let's see. You can also temporarily change the entire view to temporarily look like another view template. So you got

some listings there. I could temporarily change this to look like the presentational template that I've got in there. Again, when I get done, just hit Restore and it goes back to looking the way it did.

So let's take a look at that live and see how that works in here. So I'm back in my Partition Floor plan. That's got the partition template assigned to it. I'm going to go down and enable the temporary view properties. And I'm going to get that big purple border around my screen. And then I'm going to start messing up this view.

So I'm going to come in here and first of all just pick on some things. Maybe the wall tags and the dimensions. And just turn those off. So I'm going to come in there and hide things in there. Do whatever you want to do.

I think I also pick on the actual furniture because the furniture is a separate link in here. And I'm going to pick on the furniture link and turn that link off just by hiding it. Also, if you want to go into Visibility/Graphics, you can do it that way as well. And come in there and find maybe the door tag category and turn off the door tags.

So I'm trying to purposely mess this up so it doesn't look the way it did. You can actually come in here, and I think I changed the scale next. And I think I pick a scale in here that's really large. The tags are going to get really big.

So that looks awful. So I make it a little bit smaller. But you can change that. You can change the detail level. You can change the color. Anything you want to change about this. This is all just temporarily changing it.

So when I get through messing it up here, to go back to the way it was I simply go back to the bottom, pick the button again, and simply say Restore. And boom, everything goes back to exactly the way it was. I don't have to remember what I did, what I turned off or turned on. It's going to remember for me.

And then you can also, like I said, I'm going to change it temporarily to look like a different plan. So I'm going to change it to-- what did I look at, the furniture plan? Maybe I didn't. I could have. I thought I did.

But you can temporarily change it. So that's a great tool to eliminate the accidents that may be out there. How many times have you been sitting at the printer or the plotter watching your plot

come out and go, ah, man, I forgot to turn those dimensions back on. This will eliminate that.

Here we go. I've enjoyed this one. Let me ask you questions first. Go ahead.

**AUDIENCE:** Can you draw lines in that mode [INAUDIBLE] draw and delete items from that mode and [INAUDIBLE].

**MIKE MASSEY:** Let me repeat the question. The question is can he draw lines in that mode and delete things and then--

**AUDIENCE:** [INAUDIBLE].

**MIKE MASSEY:** No. It's just Visibility/Graphics. So no, it doesn't have anything to do with remembering what was created as far as geometry or anything like that.

**AUDIENCE:** So if you deleted something--

**MIKE MASSEY:** It's gone. If you delete something, it's gone. It doesn't matter if you're in the temporary mode or not.

**AUDIENCE:** It's good if you're using it for working.

**MIKE MASSEY:** Yes. Any others? I've been dreading this topic. I dread this every time I teach. Who has trouble with this? Does everybody have trouble like this with-- yeah. It's kind of complicated.

What is a view range/ basically this controls what we see in our plans. It controls how far down we see items and how far up we see items in our plans. And so if you go into the View Range-- a matter of fact, if you haven't ever seen this dialog box, this is a 2016 release two.

It was a mid-year release they put out in October. This is one of the new features. They added a graphic in here to try to help explain view ranges. So it's a nice little add in there.

You have three main numbers in here, in the primary range. I'll start with the cut plane. That's the easiest one to understand. The cut plane is how high up the section is being cut to create the floor plan.

Default on plans is going to be four feet. So anything that goes through that four foot range is going to be cut in section. Then we have a top range and a bottom range. And that controls how far up we see things and how far down we see things.

The one that throws everybody is this view depth. What in the world does this do? The view depth, initially it's going to be set to match the bottom, whatever the bottom is set to. Your bottom cannot be lower than the view depth.

So if my view depth is set to be zero, I can't change my bottom to be lower than that. If I do, I have to change the view depth. So the view depth has to be at least equal to the bottom. But you can go in there and make the view depth lower.

So if I come in there and make this maybe minus five feet, it's going to create a range in there between zero and minus five feet. And everything that falls in that range in there is going to automatically be assigned a different line type. It's going to be automatically assigned a beyond line type, and you can change that beyond line type to be a hidden line or whatever you want to so that it indicates that it's below grade or something like that.

So what I've got here is several pictures talking about this. This first picture is talking about the view range where we do not have a view depth, where the view depth is set to be equal to the bottom. So there's no view depth in here.

So I got two primary ranges in here. First of all, I got my cut plane. My cut plane's at four feet in this section. Everything in green is below that. Everything in green is going to be shown in projection. And everything in red or pink is going to be above the cut plane in there.

And this is the important part. Read my note up there. Says that elements in this range are not displayed in plan view unless the categories are windows, casework, or generic models. So if I have a piece of furniture hanging from the roof, it's not going to show that piece of furniture because Revit doesn't show those categories.

So that's the key that people don't understand. You got to have those categories to show up in that top range. There's workarounds. We could create a plan region in there to change that plan region to show a different range in there to show that piece of furniture hanging from the ceiling if we wanted to.

So in plan view over here, notice that I've got some pipes down here below my slab. We don't see the pipes because they're outside of my view range. They're below the bottom range. So let's do the same example, exactly the same example.

This time, the only difference I did, I changed the view depth down there to be minus five feet. So I created me a third range. So I've got my primary range up here, but now I've got this blue

level down here that's beyond for my view depth. So in my plan, I've got the pipes now being shown.

And it changes it to a beyond line type. But for whatever reason, all the out-of-the-box templates, the line type for beyond is set to be a solid line. So I went into Line Types and changed that type to be hidden. I like my underground stuff to be hidden, so it change the graphics there.

So again, that's pretty much how it works. So I got the same example for ceiling plans. Ceiling plans work exactly the same way, but opposite. So if we have a ceiling plan, we have the cut plane. And typically, the cut plane is at seven foot six which is above the doors, which is why we don't see doors in our plan.

It's not because they're turned off. It's because they're outside of our range there. Because our bottom number is grayed out. In ceiling plans, your bottom number is always going to be defaulted to be whatever your cut plane is. And so you can't see anything below your cut plane.

But we do have the green section here. This is my top range in there. So it will show everything in that top range. So same thing. If we add a view depth to a ceiling plan, it works exactly the same way. But now, the view depth is above, not below.

So I can create a view depth in there for my plenum space if I want to. So that's what I've done. I actually changed the top to match the ceiling at nine foot one, and then I added a view depth in there to go all the way up to the level two level line. So that allowed me to have a range in there that's, again, going to use that beyond line type so I can see those pipes and duct work up in the ceiling.

Now, I did cheat because ceilings are not transparent. So unless I said it's a wire frame, I wouldn't see them anyway. But I did change the ceiling to be transparent so I could see that duct work above my ceiling if I wanted to. So again, like I said, view ranges are hard to understand, but that's how it works.

I heard the people clapping over there. I was like, oh my goodness, I'm out of time. I got 15 minutes left. I'm doing good. Any questions about that? Let me go back. Yes.

**AUDIENCE:**

So the view depth control the viewing plot and view range? The view depth--

**MIKE MASSEY:** I'm sorry. I didn't understand the question.

**AUDIENCE:** The view depth control in your ceiling.

**MIKE MASSEY:** OK. So if you got the view depth here, I've got it set-- I first of all changed the top to be nine foot one, which is at the ceiling. So the green level is the top range.

And then I've added a view depth in there all the way up to level two. So it created this purple range. So that purple range is that beyond line type. Does that make sense?

**AUDIENCE:** Yeah.

**MIKE MASSEY:** It works the same way as a floor plan, but a floor plan puts it down below and the ceiling plan puts it above.

**AUDIENCE:** Did you set your ceiling transparency in the view template?

**MIKE MASSEY:** I should have, but no. I didn't. Yes. You could. You can go into Visibility/Graphics and just pick on Ceiling, the category, and change it in Visibility/Graphics or the view template to be transparent. Yes.

**AUDIENCE:** Does view depth trump phase filters?

**MIKE MASSEY:** Does view depth trump phase filters? Yes and no. It doesn't matter. If a phase filter has got something turned off, you're not going to see it. But I guess if I wanted to see that duct work, that duct work would have to be in the current phase and it would have to have the view depth in there for me to see it.

So if it's set to be on a demolition phase and I've got the demolition phase not shown, then no. I wouldn't see it. Yes?

**AUDIENCE:** The rules are a little bit different for mechanical views.

**MIKE MASSEY:** OK.

**AUDIENCE:** If you took the mechanical stuff, even though they're technically above the cut plane, [INAUDIBLE] view.

**MIKE MASSEY:** OK. Is that good or bad? Is there a question there? Yes?

**AUDIENCE:** No question, it's just--

**MIKE MASSEY:** Yeah. Just a comment. He's right. And if you ever done an MEP model, the view is assigned to be an MEP discipline. And when a view is assigned to be an MEP discipline, all the architectural stuff becomes transparent.

So you don't have to change the ceiling in an MEP model because the discipline of the view does that automatically. That way, they can see the MEP stuff through the architectural categories, I guess. Good comment. Yes?

**AUDIENCE:** What about structural?

**MIKE MASSEY:** Same. Structural doesn't make things transparent, I don't believe. Structural typically makes the architecture items gray and not bold, not black. But I don't think it makes it transparent. I'd have to check that. Yes?

**AUDIENCE:** The structural, not the ceiling plan, but the floor plans, some structural items show differently than the normal ones.

**MIKE MASSEY:** Yes. They do. It's trying to just show the structural items and get rid of all the non-structural items, it what it's trying to do.

**AUDIENCE:** In that extended view depth, it showed different. The crossings and stuff were weird.

**MIKE MASSEY:** OK. I'd have to look at that.

**AUDIENCE:** There's a special condition. Like you said, there was only like two or three things that show up in view depth, floor plans work differently. But then just different set of rules, like your architectural objects?

**MIKE MASSEY:** You're right.

**AUDIENCE:** Structure has that same concept rules as you do.

**MIKE MASSEY:** If you're having trouble with and want to work around, you can change the discipline of the view maybe just architectural back to coordination. And then it should turn everything back on and look normal, if you do that. And then you can control it with typical view settings in there.

Let me go through this real quick and then we'll open up for final questions. This is the puzzle, the marble puzzle. I wanted to go through here and show you the results of the answers to

this. So if you haven't looked at this, you may want to close your eyes and not look at it.

But this is a spoiler alert. So I'm going to go through it and talk about, like I said, I use this as a training example to talk about how many ways you can hide things inside of Revit. Or how you un-hide things inside of Revit.

So I'm just going to jump back over to-- if you haven't looked at this, let me explain it first. So the puzzle was this. You've got all these marbles in this Revit file. And I've got two views there. I've got one at the bottom that says Marbles Hidden and Marbles Revealed.

So the point is when you first open up this project, all of these marbles in this hidden view is going to be turned off, some way or another. So the puzzle is to try to figure out how to turn them all back on and make them graphically look just like the ones that's in the Revealed. So there's lots of marbles there and there's probably, I don't know, 30 or 40 different ways we're going to do this.

So I'm just going to jump back over to Revit. And switch to my project. So here we are. So you can see that the Marble Hidden view down here doesn't show anything. They're all turned off one way or another. So I'm just going to jump into the Hidden view.

And again, I don't see anything. The first thing that I'm going to change-- I don't even understand why this is in Revit-- but there is an option in here, there's a parameter in the properties that says Display Model. And this one is set to Do Not Display.

I don't know why you would not ever want to display your model at all in your Revit file, but you can. I'm just going to simply change that back to Normal. That's the first setting I'm going to change.

The next setting I'm going to change is the detail level. A couple of the marbles in there are set to only show in fine view. So I'm going to change the detail level to fine. And then there are phases set up in this project.

So I'm going to change the phase filter for this view to show not just new, but to show complete, to show everything in there. And the last thing I'll change here is the view range. I'm going to look at the view range.

And the marbles are actually drawn four inches above the level line. And so I need to change

this view range because right now, it's outside of my view. I don't see them because some of them are not the right category. So I'm going to change this view range to be four inches.

And that's going to be the first thing. And I don't see anything yet because most of them are all controlled inside of Visibility/Graphics as far as having categories turned on and off. But that's the first set of settings that I've changed, and that's all in the Properties dialog box.

Now I will go into Visibility/Graphics and start turning them on by categories in here. So if I go to the View tab at the top, go to Visibility/Graphics, I'll just go through the list. The first thing I'm going to do is I've determined that one of them is on a Detail Item category.

I'm sorry. The Detail Item category is covering up one of the marbles. There's like something that's covering it up. So I'm actually going to turn off the Detail Item category. One of them is set to be on a piece of furniture. So I'm going to turn on the Furniture.

One of them is a generic model. So I'm going to turn on Generic Model. And one of them is a piece of mechanical equipment. So I'm going to turn on Mechanical Equipment.

The next thing I'm going to change is the furniture category. One of the marbles on the furniture category is set to only show in coarse view. And if you remember a while ago, we set the view to be fine. But to see this one marble that's set to coarse, I'm going to have to change this category for furniture to only show that in coarse view instead of matching the view.

So that's another setting. And then the last setting, these two are kind of hidden. But if you expand some of these categories out, there are subcategories in here. If I go back up to the Generic Model category and expand out the subcategories, I'm going to turn on the subcategory called Marble because one of them is assigned to be on that subcategory.

And the last one, you have to hunt for this one. It's on a structural Stiffener category on a subcategory inside of that. So marble. So again, this is getting deep. But you can start seeing all the different ways you can hide things in here.

Let me go the Annotation tab. I'm going to just apply that so you can start seeing these marbles. Now we start seeing the marbles start showing up in there. Under the Annotation tab up here, I'm going to do three things.

I'm going to turn on the Generic Annotation category. So let me go down and find that. Generic Annotation, there it is. And by the way, this is all in the handout, all the answers to

this.

I'm also going to turn off the Mask subcategory inside of this category. So there's a masking covering up one of them. And then the last thing I'm going to do, I'm going to turn off the Generic Model tag category. So let me go down and turn that one off as well.

Hit Apply. Couple more show up. So we start seeing a couple more in there. I'm just going to continue on in Visibility/Graphics and go to the Imported Categories tab. I do have a marble in here that's actually an AutoCAD file that's turned off. So I'm going to turn on the AutoCAD file.

And I'm going to go to the Filter tab. And the filters in here, basically there's one view filter in there that's turned off. So I'm going to turn that back on. And then finally, go to the Work Set tab. This does have work sharing enabled and there are work sets in here, and some of these work sets are set to not show. So I'm going to change the work set in here to be visible.

And I'm going to just set these to show on these other two work sets that are in there so it shows them. So let me hit Apply again. We start seeing a couple more. So we're getting closer.

Go to the Revit links. One of them is a linked file and it's turned off. So I'm going to turn on the link file. And also, some of the links have been overridden as far as what it displays. I'm going to set this back to be by host view. So I'm going to come in there and change this back to be my host view instead of custom on both of these sub-links in there.

And hit Apply. We should see a couple more. Another one shows up. And then the last one is the Display Options. Design Options, I'm sorry. Design Options are turned on. I'm going to set those design option back to Automatic and say Apply. And we see another one show up.

So we're getting closer. We're not quite there yet. But we've got a lot more than what was there. The rest of this is all going to be done inside of the view itself. I'm going to reveal some hidden elements in there.

So I'm going to review go into the Reveal mode. One of them is just flat out hidden. So I'm going to pick on the one that's hidden and just Unhide it. And then there's also a plan region in here. A plan region will allow you to have a separate view range inside that area of the plan region.

So this plan region has got its own view range. I'm going to again change this plan region back

up to be a four inch cut plane in there so I can see that marble at four inches. I'm also going to turn off the crop. One of them is being hidden by the crop. So I'm going to turn off the crop so it does not crop it in there.

And then I'm going to hide this mask. This is a mask covering up one of them. I'm simply going to right click on that and hide the element. And the last one that's here, this one right there. This one is being overridden by graphical overrides. Display graphical overrides.

So I'm going to pick on this one and return via Override Graphics in the View By Element and reset it back to normal to get rid of the override that's in there. The override's making it just white. I'm getting very, very close.

But if I go back and look at my solution back here, there's one thing that's different right now. Anybody see it? It's this black one right here. This is the one, unless you're an MEP guy-- the MEP guys may be able to figure this out. But unless you're MEP, you may struggle with this one.

Let me go back and show you about the black one there. It is the wrong color because this is assigned to be a piece of mechanical equipment and there's been some graphical overrides for the system that it's on. So if I pick on it and go to Duct Systems and look at this, it's assigned to be the supply air system.

And the supply air system is using a material down here called Brass Two as opposed to Brass. And so I'm going to change that back to Brass in there and say OK. And when I do, it's no longer black, but now it's the tan color in there. So now ending it up, now both of them look exactly the same as far as the marbles.

So that's the solution. Pretty cool? BIM managers can use that as a test to see if your employees can figure it out.

**AUDIENCE:** How long did it take?

**MIKE MASSEY:** What was that, about five minutes? No, I'm just teasing. It took me a while. It did. It did. It took me a while.

But I did get two responses. One was about 10 minutes after I sent the email, somebody sent it back to me. Was that you? Come see me after class, OK?

**AUDIENCE:** Create a view template from the top?

**MIKE MASSEY:** Do what?

**AUDIENCE:** Was it to create a view template from the top one?

**MIKE MASSEY:** Yeah, I don't know. Maybe. That's in the rules. If you read the rules, you can't do that. So maybe that's-- I couldn't tell if they cheated or not. Let me go back to my PowerPoint one more time and let's wrap this up and get you all to the AU party.

You all going to the party tonight? It'd be fun. This is very, very important. Survey survey, survey. You all been filling out your surveys? This is what enables us to come back. If we get bad marks, we don't come back.

So if you all have your surveys. I like fives. Fives are the best answer if you're in question there. But fill out the surveys. Also don't forget to go to [Asti.com/au2015](http://Asti.com/au2015) for that door prize. And that is it. Thank you all very much.

[APPLAUSE]