

SCOTT

All right. We're going to get started. We're two minutes early, but we're almost out of seats. So we're going to go ahead and get started. Welcome to AU. I guess no one's broke yet. That's good. No one's crying in here. My name is Scott Hallmark. I'm with Applied Software. I'm going to be trying my best to shove as much into 90 minutes as I can.

HALLMARK:

We're going to cover a lot of content. If you downloaded the handout for this, you can see there's like 60, 61 pages. So there's a lot of content here. I'm going to try to go through it and complete it, but I'm going to go through it as quickly as I can to make sure that we have some time at the end for some questions and things like that.

A little bit about me, I've been an user, I've been an end user. So I've been where a lot of you have. I've been an instructor and a consultant since 2008 for Plant 3D. I've traveled southeast, eastern US, I've been to Canada teaching and implementing Plant. Been an Embedded Consultant for Autodesk at a large ESP for the last four months, April to August, implementing plant 3D in Vault.

I'm also the developer of Steel Supports Bundle for Plant 3D. I'm not here sell that, but if you're interested, come see me afterwards. And also, I've been just an AutoCAD user for many, many years, since 1988 in high school. Got interested in the drafting class, so got in there and started using Release 9 of AutoCAD. Also I'm Inventor certified as well, Certified Professional, User, Instructor, and consultant since 2007. Also I've dabbled in other competing 3D products such as SolidWorks, and ProE, and Solid Edge. I've been trained in those as well.

So why are you here? Hopefully to be a better designer in Plant 3D. We're going to cover a lot of things that should be beneficial to you. Over the years, I've sat over the shoulder mentoring users, and kind of watching what they do, and so I've developed these classes from that. You'll see here soon, I did a class in 2013 on the same subject, but completely different topics. So I try to make a new class for this every time.

So in this class, we're going to look at some complex pipe routes. Some things that I've seen end users just kind of scratch their head, draw, erase, draw, erase, draw, erase because they couldn't get it to work. I quick touched my mouse. We're also look at some tricks for developing platforms and structures, tricks for equipment creation. We're going to get into Autodesk Inventor for that to look at simplifying, and then we're going to look at some pipe

support placing tricks using Point Filter.

This is a classes for those that are fairly new to Plant 3D. I know Joel's back here, and I know he's been in it just a couple months right, in Plant. No, Joel is one of the best. Do you have a class this time?

AUDIENCE: Actually, I'm teaching a recap class.

SCOTT
HALLMARK: Recap, cool. Well, it'll still be good. Even if it's not playing, it'll still be good. So this is kind of geared for the beginner. It's kind of geared for that person who's either just looking at plant, or you've been using it for about a year. About after a year you kind of get a comfort level with it, and you start learning some tricks on your own. These are some of the things that I've kind of run into.

So why is this called Tricks of the Trade Two? Well, we did Tricks of the Trade One. It wasn't called one, but it was Tricks of the Trade back in 2013. This PowerPoint is going to be available on the AU site. So you can go get this, and instead of having to write this down, this long link, just get the PDF and you can click on it, and go to that if you want to watch it from three years ago.

So at the end of this class, what we're going to try to make sure you get out of this is not just one or two nuggets that you can come out of here with. This booklet or this handout that you have, is going to have 17 different tricks. So some of them are kind of combined, but it's a lot to take in, and hopefully can help you be about a modeler.

So we're going to cover those four things, and then we're going to throw in some bonus stuff at the end, hopefully, if we have time at the end. And I do want to try to leave some questions towards the end for you guys. So because of the amount of content, hopefully we can kind of hold off questions until the end, if you don't mind. I just want to make sure we cover everything, and not get sidetracked on questions. All right.

So we're going to just jump right in. Complex pipe routing. I've got a few here that, again, these are things that I've seen users do. I've been over the shoulder watching them in training classes, mentoring, consulting, and I just watch what users do when they're trying to route different things. This looks simple, right? Until you try to do it.

What we're trying to do here is connect two lines at a tee from a given angle. So we have two nozzles coming off of a tank. One is coming up, turning 90 degrees. It's staying on the

horizontal-- or staying on probably the x-plane, or heading north or west, or something like that. But this is coming off another novel and going 45 degrees, and it's going to need to tee in.

OK, so here's the basics steps for this. We're going to delete the pipe here, and there we're going to draw in some construction lines, and do a line to pipe. It makes it so much simpler to do it this way. You can do assisted routing, and you can get all kind of additional elbows in there that you didn't want, and I'll show you that. But this method is what I have found to work pretty efficiently.

So just to show you what you might end up with, if I was to continue this line out, and I wanted to come up here and try to connect. It's going to give me a message telling me I'm going to have some cut back elbows, or disconnected, and I might get something like this. This is not what we want. Right? We want to get something completely different from that. So what I want to do is delete the pipe in between. Right, we'll just draw a line from node to node, and then we'll draw a line from here.

We know this is 45 degrees, but if you weren't sure you could type it in. And I want to pull this out at-- we'll just say 36 inches at 135 degrees. I know my x is going to the lower left corner here. So y is 90, another 45 is 135 degrees. Let me go back and input my angle in there. So we'll put-- all right, so I get this line drawn in.

Now, if I select the line and we look at this from a top view, we're going to see where that crosses over. Now, there's a version difference here when you go to do this trim. In 16, you're going to have to use a project option in your command line. In 17, you don't have to. I didn't read that in the What's New, but it's something that's in 17, but not in 16.

So all we have to do is when we do a trim, we just select the two lines. We do our trim. We'll select the cutting line, and then select this line, even though they're on different planes. Again, in 16 you had to use this project option to do that. So if you're working in 16 or earlier, look for that project to be able to do that.

Now we just go from the end point of this line up to a perpendicular, and we're ready to do our line to pipe. Let me turn my grid off because it's going to get confusing there. Right, so by having this now, it's just a matter of setting our line number, our size and our spec, make sure it's the same as what our existing line was. So I would hover over an elbow or a pipe, and pull

that information.

I don't have a line number, but I have a size and spec, and so that's already set here, 4 inch and CS 300. So it's just a matter of line to pipe. So I'll just do a window over those, grab them, and that makes it so much easier to route something like this. OK, you could try and try point filters, and all kinds of stuff. This is quick and easy. So goes in, put your fittings in, and all that stuff.

Next trick is resting pipe on steel or concrete. I've seen users try to do this, and it's just fun to watch, especially new users. I'm going to show you two methods to do this. One is by using the toggle elevation snap, the other is by using point filters. If you use the toggle elevation snap, there's only one additional step, and that's IDing the top of steel, or the top of that concrete that you're going to be placing it on.

But the other items are drag pipe to elevation, change set routing line to BOP, and change your plain to horizontal. That's the compass. When I talk about the plane, I'm talking about the red compass that shows up on the end of the line. That's what I'm referring to.

So let's go over here to this line right here, and so what I want to do is I want to have this pipe come down, turn, and rest on top of the steel. So again, I'm going to do the first method, which is using the elevation snap. So what we do is first we need to ID the top of steel. If you don't know what your elevation is, just type in ID, grab the top of the steel, and we'll see that it's 12 foot 6. So I can take that number and put it in here, 12 foot 6, enter, and I'm going to toggle that.

Now, I'm doing it now, but you're going to see I'm going to have to come back and do it again. Once I start routing this line, it turns it off, and then I need to come back and turn that toggle elevation snap back on. So I'm going to route the pipe. I'm going to turn this on, and notice what it does. It just drops to that elevation, and now I can turn it, and rotate it in whatever direction I want.

But also look at your elevation routing. The COP is set to a center of pipe. I want to change this to a bottom of pipe. It doesn't modify this until we turn the compass, or the plane. So that's a control right-click. Right now it's underneath the steel. I'm going to do a control right-click again. There's actually four toggles there, not three. There's an east-west, north-south, horizontal, and horizontal. There's two horizontals when you're set to a BOP or a TOP. But now when we pull this in this direction, you can see that we are sitting on top of steel. OK?

Real easy.

Now I'm going to back up. I'm going to do the same thing, but this time I'm going to use the point filter to do the exact same thing. So I'm not going to use this at all. I'm going to turn that toggle off, and so I want to drag this down, and I'm going to use a point filter x. I'm going to get the top of steel, and you see it's going right through the middle again. We're going to change our compass, and then pull in this direction.

So you save a step there. Actually, I missed it a little bit, but you save a step there by not having to ID the top of steel. You can use point filters to grab existing lines.

AUDIENCE: What if I want to put a shoe on there?

SCOTT
HALLMARK: Then if you know what your shoe size is, you could just grab this and add four inches to your elevation.

AUDIENCE: So you could put it on there, the number up there?

SCOTT
HALLMARK: Yeah, you could change-- if you had a four inch shoe underneath, you could add four inches to that so it's not sitting on the steel. Yeah. All right. Let's keep moving. Routing from pumps with eccentric reducers. This is fun too, especially sitting in a training class with brand new users. They're wanting to place everything they can from that tool pallet. They're wanting to place their flanges, they're looking for gaskets, and they're going to place their essential reducers.

Sometimes though, they'll just click the plus on the nozzle of the section of the pump, and start routing it around. They'll go back and change size, then they realize I really should have had a reducer in here. So they route pipe all one size, and then they have to go back and make all these modifications in order to get that reducer in there.

And yeah, I realize I did it backwards here. So for those you who are about to dog me about that, yeah, I know. All right. I was in a hurry to get the PowerPoint done. All right, so I'm going to show you how to take some steps out of this. The whole point of this class is to not use so many picks and clicks, remove some of the steps that you normally go through when doing this work.

So I'm going to find a reducer. I'm not going to find the flange that I want to put on this. I'm not going to pick the pump and start routing from it. I just want to find my central reducer first. I

want to set my size. I'm going to hover over this, and let's see what size is. I think it's a six. Yes, it's a six. And so my header is actually going to be eight. So I'm going to find my central reducer.

You can see my insertion point is on the large end. I want the small end, so I'm going to a Control. We hover over the pump. Let's just get the node. Place the node in, and so it puts the flange in, puts the gaskets in, and my central reducer. So I can now pull a flat on top. Same item here. I'm just going to do a Control to swap to the other insertion point. Right click node. We'll place it on, pull down, and then we have our flat on top.

Now, to route the rest of this, simple. We just pull in the direction we want. If we're going to pull this out 48 inches, we'll just do assisted routing back to the other side. I'm not going to go find an elbow, find a tee, because I'm going to tee off of this. I'm going to keep this as simple as possible. So I'm just going to finish the route, and now when I want to branch off of this with my 10-inch header, I'm just going to select this pipe.

We'll click the plus, there's our header. We can come straight out or we can go up, whatever you're planning on doing there. Let's turn this a little bit. But here's where I would not place it and then go back and change the size. Use the command options down in the command line. So I'm going to do an S for size. It prompts me for it's size, we'll put in a 10 inch, and so it automatically puts the reducer in. Again, saving me picks and clicks. All right.

Now also, I may want to position this not on dead center. I may, for whatever reason, I need it to go over six inches or eight inches to the left or to the right. So what I want to do is turn on my dynamic input, and now you can see those dimensions that are sitting there, three foot on one side, three foot on the other. Just tab over to one of those. So if I want to move this to say, 30 inches, I'm going to type in 30. Don't hit Enter, hit Tab so you can actually see it move. And now if I want to change the other one to 30, Tab, and you see it move. OK, then you can hit Enter, or you can click how far do you want this line to go up. OK?

Now, I know that this is in the wrong position. I actually need the tee to be a 10 inch, and not the reducer on top, and the reducers on the sides. So this is one of those few times-- actually, let me-- because I'm using-- the width isn't going to work there. I'm going to move this over six inches, and center it back up. But now I'll just go to the properties of this, and we'll change this to a 10.

So again, people there who are just starting with Plant, they'll delete the reducer, they'll delete

the tee, they'll go find their 10 inch and start putting things in, and trying to build this up. All you have to do is just change that one item, and it's going to remove the reducer at the top, add the reducers on the side. It's very intuitive, so let the software do most of the work for you. OK? So that's tip three.

Trick four is rolled offset piping. This is the one and only item that I showed in the first session three years ago, that I'm showing again, and it's because apparently it didn't stick in. So I'm showing it again. It's really simple to do, but I want to emphasize the line types that we can use.

You're going to see me use line, just the standard AutoCAD line. You're going to see me use PolyLine, and you're going to see me use 3DPoly. And I use them for different circumstances, and the reason I do that is so that when I actually go to do my line to pipe I'm not picking 20 segments, or having to window around other pipe that might be in the background. I want to pick three items, and that's it. I just want to pick three lines when I do my line to pipe.

Just to emphasize this, it's all in the manual as well, but a 3DPoly-- has anybody ever used a 3DPoly before? OK, a 3DPoly lets you draw a polyline in all directions. It doesn't matter if it's x, y, or z, it's all directions. A polyline is only in your xy. So it's going to stay in that. You can't draw a vertical out of it. It's strictly that. A line command is in all directions, but it's individual segments.

So we're going to draw this first part here, coming off because I'm staying in the xy, I'm going to draw that with just a polyline. And then when I go to do my rolled offset box, I'm going to use the line command. So I'm going to go with my horizontal width, vertical high, horizontal length, and then I'm going to connect it back corner to corner. That gives me my rolled offset pipe run. OK, and then for this, I'm going to do a 3DPoly, which allows me to go in all directions. So I can complete my route with a 3DPoly.

So let's go over here to this pipe right here. And so again, I'm going to use just a p-line for this, just a standard polyline. We can type in a value if you want to type in a value, and pull it in that direction. We'll do 60 in this direction. And I'll cancel the command. Now, in this end, this is where I want to start my rolled offset box. So I'm going to use the line command for this.

I don't want to use polyline because when I go to pick it for a line to pipe, it will select everything. We just need the one segment connecting the corners. So I'm going to do my

horizontal, and we'll go 24 inches that way, we'll go up 9 inches, and then we'll go vertically-- sorry west, we'll go 48 inches. All right, so now you can see my box right there, and I'm just going to go back and connect the corner.

Simple enough. So now we'll do our 3DPoly. On this end I'll just finish my route. So let's say we're going to continue in that direction, 48 inches, we'll go up. See now I can go vertical, I'm not restricted because of using a polyline. A 3DPoly allows this. So now I'm just going to eyeball the rest of it. OK?

So this is the route that I want to create. So again, always go back to my existing line that I'm coming off of, finding what my size, spec, and line number is. I don't have a line number assigned, so I just need to change to a four, CS 300, and we'll do our line to pipe. So I'm just going to pick one item here, one item here, and one item here. OK? That's the reason we use the three different line types. Hit Enter, and we get our full run with rolled offset piping.

So if we go and look at this elbow now, we're already in properties. We'll scroll down and look at the elbow. We have a 28 degree cut back angle on that elbow. OK? Has anybody struggled with that before? OK, I don't see hands, but I see heads. So we're good. That's good. I want to make sure we're getting some stuff out of this.

All right, structure and platform creation tricks. Now, I know that in Plant the structural tool is background steel. You're wanting to generate something until your structural department gets off their tail, and gets their work done, and gives it to you. So you've got to you've got to develop some stuff and get it in there so that you can start placing equipment, you can start routing pipe around it. So it's background steelwork, it's just for platforms, but you're not coping, you're not doing clip angles, you're not doing gussets and things like that. It's just background steel.

So one thing we're going to look at is just a quick way. Obviously you don't want to spend a day, or days generating steel, when a structural department is doing this for you. Want to be able to generate something very quickly. We're going to generate this structure here in about 15 minutes. All right, so what we're going to do is you're going to see me use swap a lot from line model to shape model. I'm going to constantly go back and forth between.

Has anybody tried to create structures with shape model turned on, and then you find that hand rail is kind of at a slope going down because you accidentally picked the wrong end point of something? Maybe the web of one of the beams, and things just don't line up correctly. If

you change your plan-- it's still set rep to line model. It is so much easier to build a structure, and do it quickly.

We're going to trim and miter. This is the other time saving tip. We're going to trim and miter before we do any copying and arraying. I want to make sure that that is handled prior to, because again, what I see standing over fairly new users is they'll place all that steel in there, and then they'll go. now I need to go clean it up. And so they'll spend hours just trimming, and trimming, and trimming this deal. And so I'm going to show you a quick way to do this.

Bonus trick is to do the explode method for member placement. That's where we actually just-- we place in a grid, and explode it. Just a standard AutoCAD explode, and then we can use a window crossing, and just place members by using the line option. And I'll you that also. We're going to also place footings with this before we do any copying as well. That's another thing that I see. People will place their columns. They'll copy them around. They'll do all this, and then they come back and realize, I've got to get my footings in, and so they go through that process, again, of copying an arraying.

We want to plan this differently. We want to approach this in a different way. Let's turn this property window off. And we'll turn the grid back on. So I've got a grid here, and so I want to go into my structure now, and I'm already in a structure layer. So that's good. I'm going to go to my settings and take a look at the settings for this structure. And so let's pick [INAUDIBLE] at 31. Centered on our own center because we're dealing with columns. I'm just going to place one in. Now, we're seeing shape model right now. So if we were to zoom in, we would see all the detail, the curve inside the web here and all that. We're seeing detail.

Now if you change this to line model, obviously you're going to get just a profile. You're going to get just a line straight down with a profile view of that. This is the view I'm going to be in when I'm drawing most of my steel, when I'm placing most of my steel in. Now, this is time consuming. Right here. Having to go up and click a drop down, and then pick shape model, click again to go back the line model.

Tip 17, or trick 17 in your manual. I'm going to get to that, but I'm going to go ahead and show you what it is, and that's to create these objects over here in your tool palette. So it's just an easy button click. It's saving me one click, but it could be 50 to 100 in an hour's time of me swapping back and forth.

So here, I'm just adding-- I made a brand new toolbar called my commands, and I'm adding

some things in here that I don't want to have to drop down to find. OK? So I'm in a line model now, so now I want to do a copy of this. Wait, I almost did what I told you not to do. Let's go and place our footing. Let's get that in. Now we'll do our copy. If we get those together, then we're going to speed up the process. We only have to do this copy one time.

And by using line model, it's so much easier to grab these points of the grid. Right? If you had shape model turned on, you could accidentally pick some other corner on that member. Some other endpoint, and so I'm just going to do a row, and then I'll select those again, and the bottom. Now if I had more than three in both directions, I would probably do some type of array, but I tend to do copies if I know that my column spacing is not equal, which is not always the case. Sometimes they're not equal.

So we'll just copy this down in this direction. OK, so this makes it so much easier to get your columns and footings in. Now we're ready to go in and place a beam. So I'm going to place one beam. Again, I'm going to go to Settings and make sure that I'm set to a top of steel for this. I'm going to change this to a top of steel orientation, and we'll place this one in here, again, corner to corner, or end point to endpoint.

Now this is one of those that I'm going to need to trim. So I go over here to my shape model so I can see it, and I'll do my trim. So I'll pick my cutting number first, and then my beam, which is being cut. Since I've got that cut, I'm not going to have to worry about that one, doing that 22 times, which is how many I'm going to have across here. I don't want to have to do that operation 22 more times.

So now we can just go in and do our array RECT, our array R-E-C-T. This allows me to not only create the array in a horizontal, in two directions, but also vertical. So I'm going to select the beam, and we just come up here and modify some of these values here. So I'm going to have 11 spaced out at two feet, two rows at 10 foot, and two levels at 12 foot 6.

Close the array. So real quickly, we've got a lot of steel in there that normally I watch people draw construction lines, and then they place on the construction line one at a time. So use the tools in AutoCAD, in vanilla AutoCAD, to help you be much faster in Plant. All right, I'm going to go back to this line model again. We'll go to member.

I'm just going to do the same thing here, except I'm not going to do an array. I'm just going to do a copy, and I'm not going to try this. You understand what we're doing with that. So I'm

going to place these across, and just pick endpoints.

AUDIENCE: [? So the point of the ?] beams are [? you're accidentally clicking ?] at the point of that graphic of the profile?

SCOTT
HALLMARK: No, not at all. That's why I stay in line model. So now when we're in shape everything is straight and easy. All right, so we've got our footings in. Now let me show you the explode method. I was going to show you that one also.

So let's create a new grid, and I've got one already created, and it's going to end up back here in the back. If we explode this, you're no longer able to go in and modify this using the structure modify. It's not available. If you explode it, it's just lines. But it really doesn't matter on the grade anyway, because you're still doesn't update to the grid. Right? I'm sure you've figured that out, but it doesn't update to the grid.

So I'm just going to explode this, and now all these lines are individual. So if I wanted to generate a-- we'll go to member, and we'll check our settings again. So we're top center. Justify. So I'm just going to do a line, and I'm just going to window these exploded lines. OK, and let it create.

So another quick way to get them in. If you're just doing background steel, and you don't want to take the time to trim, this is a quick way to get to just place members on the existing grid. Explode it so that they're just lines, and then I could window the whole thing if I wanted to, window or crossing, and just let it put members on all of those existing lines, and that's a quick way to get those in also.

All right, so going back here, let's go look at-- So that was five and six. Seven and eight is dealing with stair and handrail placement. So we're going to be using the line model for this, swapping back and forth between line model and shape model. We're going to sketch out our landings, we're going to place-- and stair points with just the standard line command. I recommend using a construction layer, or something like that. Something you can turn off when you're doing this because they don't disappear. And they were going to place handrail while in line model also, and then also look at turning off the kick plate.

So again, go to line model, and we're going to do a line coming off the end. I'm just going to do 48 inches in this direction, and we'll go 48 and then close it back up. So that's one landing. All right, the other landing is going to be on the other level down here, and so I'm going to do the

same thing. except this time I'm going to come out 96 inches, 48 because I'm going to have a down, from the second to the first, and then a down again going to the ground. So we'll go back and close it up here on that beam there.

And then I'll do one more, which is out here, which will be 48 plus a 24, which will give me the endpoint of my stair. So hopefully this is making sense. If it's not, it's in the manual. But what I want to do is I basically want to go from this endpoint to a perpendicular here. That will be my first staircase. All right, the next one. I'll go from a midpoint, steal a line from a midpoint up here, perpendicular. So you can start to see the landing and the staircases that are going to be placed in.

All right, I'm going to go in and let's do our members, and I'm staying with the eight at 31. We'll do a top center justification. So I'm going to start placing these on the outside of that landing. I'm not going to do the one on the stair side, and I'll show you why in just a minute. I'm just going to do the ones on the outside for center justification.

All right, now we'll do the do this again, but this time I'm going to move it to one corner because if you haven't noticed, the stair will go into your grid, which means your steal is going to be overlapping. Half of your beam is going to be overlapping the stairs. So I tend to move that in when I'm placing this member here, and actually that's backwards. So I'll just do a modify or edit structure, and change it to the other side. So you can see how that profile is to the inside now, of that line.

We'll do the same thing at the top, and that one is already to the inside. So that one's good. Just real quick, just to show you, we're going to do our shape view to see the landing. OK, and now I'll go back to a line, and we'll place the stair. So again, we're just going endpoint to endpoint, Enter, and then endpoint to endpoint. Shape model.

All right, so real quickly we can get that staircase built in, this background steel staircase, and we're ready to do some handrail now. So again, handrail, the same thing. I go to line model. It is so much easier to pick grid lines for this. I know probably a lot of you don't have to deal with the steel on this, so you might be getting bored with this, but we've just got a little bit more to do with this. Let's do the handrail.

So for this, for handrail, I tend to go into the settings for this and make sure my kick plate is turned on. If you haven't noticed with handrail, if you go in a clockwise direction, the kick plate is on the inside. If that's where you want it, we want that case here. So I'm going to add a five-

inch kick plate, and I'm going to start at the end of the stair and worked my way around, clockwise. I'm also going to stop at every column location, and I'll show you why when we get finished with this. So I'm stopping at every single column location. I'm not doing the full distance across.

So I'll come over here to this end, and then stop at the top of the stair again. Let's go to our shape model. All right, so by having this in there like this, I'm now able to-- by separating those out at every column location, it's so much easier now to modify this. So maybe I want to put a ladder on this. A ladder opening right here. I can just modify that one item, instead of having to modify one and then place a whole new handrail, which is what I see people do a lot. They do that full length of handrail.

I'm not going to the bottom part, but I'm going to show you the stair, and so when we go and do the railing for the stair, let's go back to a line model. Again, I'll go to Settings, I'll turn the kick plate off just by putting a 0 in. That turns it off, so I don't have a kick plate on my stair, and we'll just go from endpoint to endpoint.

So hopefully you can see how much easier it is to do this by having the line model turned on. It might be difficult to see it first, but you get a much cleaner structure that way, and you're not having to go back and redo anything. That's that, so let's move onto equipment. Let's see where we are on time here.

All right, so equipment creation tricks. This is a really cool thing that I ran across. I was working with a client, and we were trying to figure-- he was constantly getting new vendor components in, a tank that had been modified by the vendor, and so here's the new one. And he would have already have it in place. He'd have pipe routed to it, he would have his nozzles placed.

And so he was having the yank that whole thing out, take the new one, convert it, and then place all the nozzles again. You know, locate nozzles on that. So we were trying to figure out a good way to do this, and so this is what we came up with, was using the box method. And so we're going to do is we're going to create just a simple box. It can be a cylinder, just something that is common. It's going to be a common size and location for that equipment.

In this case, I'm just going to draw a small-- I think it's like a three by three box, and I'm going to use the lower left corner as my insertion point for both of those items. So this is actually going to become my equipment, the box, not the pump. So I'm going to convert this to equipment, call it a pump, and then I'm going to attach the pump to it. So that when I get a

new pump in that has a new configuration, I just detach it, place the new one in. And I don't lose my equipment, I don't lose my call out, I don't have to replace one or 18 nozzles.

AUDIENCE: All your equipment's [INAUDIBLE]

SCOTT
HALLMARK: No, it's not dynamic. Because we're pulling in vendor equipment, it's a dumb solid. But if you get a new configuration of it, your rework is much reduced by doing it this way. All right, so I just explained all those bullet points of what we're going to do. So let's go here to Plant and do that.

All right, so right here, this is the original pump. You can see I've got two nozzles coming off. If we look at this from the top, it's going to be much easier to see. These nozzles are lined up, but over here the nozzles are all set, and this is the new one that the vendor is sending me. Or the customer has said we want this one instead. Now, with a pump, it's just two nozzles. But if you're talking about a tank, a vessel of some sort that has 18, 20 nozzles on it, you don't want to have to do those nozzles every time you get a new configuration of that equipment.

So here's what we're going to do. If you look at this box that was created, all you have to do is go to modeling box. It's really easy. Draw the face of it, and then pull the height. So you can make it whatever height you want. This is just that. It's just a box at this point, it's not intelligent. There's nothing intelligent about it.

So we're going to get home, equipment, convert. So that's this button right here, it has the blue and red arrows. We're going to convert that to a pump. Pick an end point, an insertion point. All right, prompts me for a tag. It thinks now that this box is a pump. So we can put a tag in there. We can put description, properties, all that good stuff.

Now I'm just going to move my pump over to it, and again, I want to pick a corner that is least likely to change. So I'm going to match my corners here. So I purposely made this one a little bit higher so you could actually see the box, but normally I would make it small. So I couldn't see it inside, it's actually sitting up underneath. But here you can see it's just it's just a box.

So now, I need to attach this. So this is when we come up here to the attach equipment, has the paper clip. We picked the box, which is what Plant thinks is a pump right now, and then we add the pump to it. So now this is all intelligent, and so I can add my nozzle to it, and I'm going to add it off the center point of the suction and discharge. So there's one. I can tell that it's a four inch 300, erase face, close.

We'll do the same thing here on the other side, and we'll do a center off of it. Pull in that direction. Again, I want to make sure all that's set to what it needs to be. It's non-parametric. It's not going to change if I change to a 6 or 8, it's not changing the graphics at all. All right, so now this is ready to route from just like any other pump.

Now, the vendor sends a new configuration of this pump, and I need to get this one out so I can put a new one in. So again, I'm just going to go to Detach this time. Not attach, but detach. I'm going to detach this. Yes, I want to detach everything, and I don't want that pump here anymore. I want this one. So let's move the new one over into position, same corner, same common corner, and then we'll attach it.

Again, we pick the box, pick the pump. It's all there, and now if you notice, it still remembers where my insertion points were-- the nozzle locations were. The only one I need to modify is this one. So I'm going to click on the pencil for that particular one. Go to change location, change, and now I can pick a brand new nozzle location for this, and pull it out.

All right? All that's good race. Erase face, close, and so now to get this into position I'll just select these items, and we'll move this down to the node to get a connection. I'll back it out, I could probably do a connect, but I'll just drag it back to the node. There we go. And there's my gasket and bolt. So it's that easy.

If you've had to do this before, you can immediately see the time savings of making that simple box, or simple cylinder, and then attaching your vendor equipment, something that was made in something other than Plant in here.

AUDIENCE: [INAUDIBLE]

SCOTT
HALLMARK: It was a 3D solid that was converted to a block. I think that particular one was actually made in Solidworks. So it was a step file brought in, and then we just converted it-- I'm sorry, attached it to a converted piece of equipment. All right, so now another item you might run into is-- and hopefully you're not doing this-- is placing vendor equipment in as is, because they love to throw detail.

They love to show all their nuts and bolts on their equipment, and this is a very complex looking piece of equipment with the motor housing. It's got all the ribs on it, and you see every single detail of this pump. You do not want to do this in Plant. You do not want to grab that and

place that in. I'm going to show you some file size differences after we get through with this process, of what you're going to run into if you continue to do this.

This is not just for equipment, it's for valves. I've seen users pull in valves that have these very complex actuators on it, and it just brings Plant to a crawl. It brings AutoCAD to a crawl. So we want to eliminate that detail. Plant does not need bolt holes. It does not need to see a bolt circle on your flange. So we're going to get rid of some of those things in Inventor.

So let's go to Inventor. So this is that complex pump. Way too much detail for Plant. So what I want to do is I want to start off by removing some things. If you've never used Inventor before, everything that I'm looking at in here-- this was a step file. You can tell because it says third party here, but everything in here is a component. So there's bolts in here. If I scroll down through here and just move my mouse, you're going to start to see some small items highlight. So right there.

Now, I'm just going to move down into all the small items, quit highlighting, and I'll start turning those off, or suppressing those features. And I'll do that through the whole model. Another thing I'll do is I'll come up to-- I'm not going to do them all here. Another thing that I'll do is I'll come up to the simplify options. Now if you don't have simplify-- the tab turned on in your ribbon, you can come over here to this drop down, and make sure that it is turned on right here, simplify. I think by default, it's turned off.

But I want to remove some details. I don't need to show fillets, all these fillets that are on this bottom here. So I'm going to select the fillets that we're seeing on some of these components. Now, you're probably wondering, why would I go through this much pain to get this file size down? You're going to see it. I promise you. It's worth the time simplifying this, or shrink wrapping this, before getting it into Plant, then to just insert this thing in as is.

All right, so I'm going to let this go out and remove some of these details. You saw as I was moving around, it automatically found those fillets. I just had to move my mouse over it, and it saw where a fillet was. So like back here, it sees the fillet. That is the circle of thought. If you didn't know what that meant.

What do you never do here?

AUDIENCE: Double-click.

SCOTT Any click. Don't click again. Don't think that the mouse click will fix it. Yeah, right. So I'm going

HALLMARK: to wait until this comes back. While it's doing that, I'm going to go back over here and we're going to look at some of the file size changes that we're going to see in this. Now, that unmodified pump that we were just looking at-- now we're back. All right, we'll come back to that.

OK so that's how we can remove some of the fillets, some of the details. Another thing that I'll do is still in the simplifies, is I'll remove voids. I'll pick hole openings, and I'll remove those, and you do have to pick the front and back of the hole. So I'll do a couple of these in the flange right here. Now, you wouldn't have to do the flange. You're going to see it in the next step an easier way to do a flange, and then just turn this flange off. But I'm just going to do a few of these, and let it fill in those holes. The less holes Plant has to deal with in this complex equipment, the better.

So we're going to see the few holes fill in here, and the ones that I did on the base of the pump.

AUDIENCE: If you have to do it in [INAUDIBLE] do these logs help [INAUDIBLE].

SCOTT
HALLMARK: Well, you're going to see what I'm going to end up with here in just a second. I've actually got another model open of a completely simplified pump. The exact same pump, but all this stuff I'm doing to it, I did all of it. I did all the holes and removed details. So it depends on how much detail you want to see in that render. If you want to see all this detail, then no, it's not going to help you.

All right, so there's the holes removed. Again, the more that we remove, the better off it's going to work in Plant, another thing I'll do is define envelopes. So this back here, there is no way I'm going to bring that into Plant. There's just no way. So I'm going to completely define a new envelope for that motor. So we're going to go to define envelope.

I'm just going to pick this circular saw edge here, we're going to do a resize, and right now it's a square. I want this to be a cylinder. And so we'll look at this from the back, and I'm just going to drag this arrow up until it's to the top of those ribs. And now I'll look at it from the front, and I'm going to adjust this to the face of it, here, and then to the back.

I'm just wanting something that is going to allow me to do a class detection. I'm really not concerned about it looking like a motor, but it's going to look very similar. All right, so now that's a depiction of my motor. Let's go in and do another defined envelope, and I'm going to

pick this face here. We'll do a resize, and this does not need to be a circle. It needs to be a box.

And so again, I'm going to look at this from the front, and we'll stretch this up to the top, to the bottom, and the sides. I'll look at it from the side, and we'll stretch it in. Make sure it's out to the edge, and then I'll just drag it all the way into the cylinder. I don't care. All right? Let it create that. Now, I'll go down and find that motor and suppress it, turn it off completely.

I will do that with just about everything on here. I'll do a box for this, and remove all those components. I'll do a box for this in the cylinder on top, and remove all those components in between. I'll do a cylinder here for this flange, so I don't have to remove every single hole, and then just turn off the flange or suppress it. So what I end up with is something that looks like this. OK. This is much better for your Plant model. We'll take this and go to BIM, and do a BIM exchange. This lets us create the ADSK file that we can then just import into-- convert an ADSK into a Plant equipment.

So if you wanted to, you could add pipe connectors here, and go ahead and assign that information. I like to just do it in Plant. I don't deal with pipe connectors in Inventor. I do two things here, I check design, and I'm looking for this right here, model complexity. If that says low, I'm good. OK? If it says high, too many faces, if this is in the thousands, that number, you're not done. It's going to slow down Plant. OK, so I want to make sure that is low, and then once that's done, I'll do an export and build my ADSK file. All right, it defaults to an RFA or a Revit family, but change it to ADSK so that you can get into Plant.

All right, so once I got that completed, I can bring that into Plant. So now let's go back and look at some of these file sizes. This is the unmodified pump that we were just looking at, what I started with, 16.6 meg. If I take that and just do a convert, I don't do anything else to it. I don't simplify it all, and I convert, I'm making about a 10 meg pump that I'm about to bring into my model.

Here's the simplified version, the ipt. After I went in and removed details, replaced, turned things off, suppressed items, it's down to 1.8. After I create my ADSK it's down to less than a meg, 890 K. The original drawing with no pump inserted, the one we were just looking at, the size of that drawing is 8.85 meg. When I go in and insert that pump, non simplified, you can see it goes from 8.85 to 20.67. Over doubled in size because of one pump.

Because of the simplification we did, this is the size after the simplified is put in, not the

unsimplified. So it increased by 0.15 meg. If you can do that with your equipment, your models will not bog down to the point that you want to throw your computer out the window. Take the time to get those models down to a simplified version, and you will be much happier.

All right, pipe support placing trick. We've got about 30 minutes, so we're doing good. Pipe support placing trick. Now, I'm going to use one of the supports from that bundle I was talking about, the clevis hanger. This will work with those supports, it also works with the out of the box supports. But what we're going to do with this pipe support placing trick is we're going to use the toggle lock point of support, and point filters in order to place these.

So we're going to have the same configuration here. I'm going to place one support, I'm going to turn on that toggle, lock it to the bottom of steel. And then we're going to go very quickly and place the rest of these using point filters, and that toggle lock, and you can see how much time you're going to save with it. So let's go back to Plant, and we're going to be on this backside here.

All right, so I'm going to place one support in here. So I'm going to go to my pipe support spec, we're going to find the clevis hanger with rod and beam clamp, and I'm going to place this in. I'm not going to eyeball this. I want it lined up on my grid. So I'm going to do a point filter, x. Now looking down here at my UCS, the pipe is running in the x direction, so I want to make sure that I select x when I do my placement for this.

So I'm going to do a point filter x, and I'm going to hover over and pick that grid line, and then when I come down to my pipe, you can see it jumps to the end. It doesn't matter where I put my mouse. So it's a little misleading, but when I click it, it's dead center on that line. OK? And now I'll just take this, drag it down to bottom steel.

Now, this is where the time saving comes in. This is this lock tool right here, toggle lock point of support mode. You want to make sure that this is highlighted or pushed in, and turned on. So once that is turned on, we'll select the support, the hanger, then we'll come down and select the move part icon. That small blue-- it's a cyan square, right in the center. And you'll see some commands. Well, that's interesting.

It's not there right now. My copy options is missing. Let me do another one. All right, so we'll do a point filter x, grid, place. Well, that is just odd. I should have a command at the bottom that says a copy option. It was there yesterday. Well.

AUDIENCE: Can you Right-click copy on the node?

SCOTT
HALLMARK: No, it should be in the command line. That's what's odd about this. You're supposed to select the move part, and there should be a copy option, but I'm not sure what's happening there. All right. I'll just place the others with without that. I won't use the copy. Well, the copy is the whole point of the lock. That's the whole point, is to be able to do a copy, and it automatically adjusts. I'm not sure why that is not showing. Let's do this. Let's save this as is.

When in doubt, shut it down and open it back up. All right, while that's coming back up, I'm going to just run through some of these bonus because I want to leave some room at the end for any questions you might have. Trick 12 is dealing with PLANTFITTINGSTICKFACTOR. It's a variable that's in their. I don't know if you've ever seen it or messed with it, but if you've noticed that if you grab a valve off of the pipe and you start to move it along that pipe, and then if you get your mouse too far away, it jumps off the pipe and is on your cursor.

That's a variable that you can adjust. The ranges are from 0 to 10. I think it defaults to 4, or it might default to 6. I forget which one. I've changed it so many times in mine. But the further you move your mouse away, the higher the number, the further you can move your mouse away without the component coming off of the pipe. That's all that is.

Trick 13 is PLANTGRIPEDITMODE. This is another one of those unique kind of commands where if the PLANTGRIPEDITMODE is set to pipe segment, when you grab an item, an asset on that line, it only can stay on that line if it's at the pipe segment. You can't grab it and drag it to another pipe anywhere in the model. If it's at the pipeline, then you can. You can drag it and drop it onto any other pipe. So that's another nice little feature that if I wanted to have that set, I would set it in my custom tool palette over on the right.

Let's get this open again. Another item is the PLANTFITTINGADD. Most people see this dialogue when you're routing pipe, and you F, and this pops up, and you're able to pick valves, fittings, flanges, whatever, and sort through whatever is available in your spec. A lot of people didn't know that you can actually just run this command. You don't have to be in the middle of routing. If you don't use the dynamic pallet, and you don't use your spec viewer to place components, you can use this and you can type PLANTFITTINGADD, or you can create a toolbar button for this called that command. And so that will pop up and then you can place valves. It just looks at what's in your spec and gives you options in there.

All right, let's see if this-- no, I don't want to cancel that. All right, let's try this one more time

and see if I have a copy option now. Look at there, there it is. All right, so copy is there. So I click on the move part icon, and you see down on the bottom it says C-O-P-Y. P is the capitalized letter, so that's the one I want to place. And so again, I'm just going to use point filter x, node, place.

And so it's going to automatically adjust, it's going to line it up with all my other hanger's. Point filter x, I'll just pick out one again, place. Whoops, I hit the wrong pipe. Point filter x, place, point filter x. From here, place. So they're all coming in all lined up, all adjusting to the bottom of steel. Point filter x will be the last one here. Node, place. All right, so that easy. Use that tool. Use your point filters. If you're not routing with point filters, I don't know how you're doing it.

All right PLANTFITTINGADD. Again, let me just show you that. Again, that's one of those items I put over here in my tool palette. So if I just want to place an item, it opens that dialog box. I don't have to be in the middle of routing a pipe. That's normally when you see it, when you do a route pipe, and you're routing a line, you can hit F for fitting, and it opens that same dialogue. You don't have to be routing. I just want to find an item, a valve, ball valve, place, and so it's easy to use.

Another one is the SELECTIONEFFECT. Some people don't like to see your pipes turn that blue glow when you select items, or whatever it is you're selecting, your equipment. So there's a way to just turn it on to where it's a wireframe view, and that's your selection effect. One is the glow, zero is off. And again, that's one of those items I put over here in my tool pallet.

So if I select a pipe here, and you see it's highlighting. It's actually highlighting gray, which is the next tip. Let me change to blue. This is what you normally see when you select, but if you turn that selection effect off, it just shows you the wireframe. It might be a little bit easier on the eyes. So that's selection effect.

Now, there's another one called SELECTIONEFFECTCOLOR, which allows you to change the color of that glow if you want to change to a different color. Maybe you're color blind, and you can't see certain colors, and so you may want to modify that. So SELECTIONEFFECTCOLOR will allow you to do that, and those are your numbers that coincide with the color.

So I want to turn my selection effect back on so you can see we can select with red highlights, we can select with yellow highlights, green, whatever you like. OK, it's just a customization thing that I was playing with. And then a dark gray here so it's not so bright, actually kind of

hard to see. All right.

And then 17 is just what I was showing you, what I've been showing you the whole time, is adding common commands to the tool palette. I create my own tool palette tab called my commands, and I'm dropping in certain commands in there that I don't want to have to either go find in a drop down list, or I don't want to have to type it in. So I just add them to this and it makes it really quick to place those in.

Some of these commands that you might want to put in here are transparent. So instead of putting a Control C, Control C in front of that command, which will cancel any command you're in, put an apostrophe in front of it and that makes it a transparent command. So if I'm in the middle of routing pipe, and I want to change from a red to a light blue, or light blue to red, I can click that because I put an apostrophe in there. It will run that command transparently and not kick me out of my existing current command.

So I'll just real quick show you the process that I go through, and it's just CUI. Has anybody never been in the CUI before? Have you ever heard of CUI? All right. Everybody's dreaming of slot machines.

AUDIENCE: Does that apostrophe trick work for any [INAUDIBLE]?

SCOTT
HALLMARK: Not any, no. There are some commands it just will not work with. Some commands are built to be transparent, but you have to, in order for it to be transparent in the command you create, you need to purposely put that apostrophe there, and see if it works. Some just do not. You can't do in an erase while you're drawing a line. That's not a nontransparent command, but the selection effects are. They can be.

So just to show you one that I've done, I called it green. I went in and scrolled down to the icons here where the Plant icons are, looking for a piece of pipe. Where is it. I found a pipe here, I think it was that one right there.

But I just grabbed that icon, selected it, made some modifications to it over here, added some color to it so I could easily see in my toolbar what it was going to change to, and then the command-- there's that apostrophe, right there, and so the command is just SELECTIONEFFECTCOLOR, colon 3, whatever number coincides with the color you want to create. So you create the command, create your icon, create the name of it in the macro, and then just drag it over and drop it into your tool palette. It's just really, really simple to do.

All right, we are at the point of questions, and we've got about 20 minutes left, which is good. I do want to mention this, if you're interested in a LiveLab Learning annual pass, we're giving one away at the end. Applied Software is giving one away. So it's a complete year of taking any class that we offer, and these are not recorded classes. These are live classes that we teach. So if you want to take an Inventor class, a Revit class, a Plant class, anything we offer, you can go to that site, fill in the form, and you're entered to win. All right, so there was a question in the back. Yeah.

AUDIENCE: Simplification question. In your experience, have you ever received from the vendor, a step file that is a giant service? The whole thing?

SCOTT
HALLMARK: Yeah, and what I do in Inventor is when I do the import from step file in Inventor or the open, I go to the Options tab and see if there are any options available that might be turned off to where it's forcing a surface model. If I'm stuck with just a surface model, then I'm going to have to go into my surfacing tools and create a solid. There's just no way around that.

AUDIENCE: So you're manually [INAUDIBLE]

SCOTT
HALLMARK: Yes, unfortunately, yes. Yeah, I guess you've run into that.

AUDIENCE: It's all I run into.

SCOTT
HALLMARK: Oh, gosh. You need to talk to your vendor then. Tell them, I don't need the intelligence, just give me a dumb model.

AUDIENCE: Some of those-- it falls on deaf ears more than not. A lot of the equipment that [INAUDIBLE] and they don't even [INAUDIBLE].

SCOTT
HALLMARK: Ask a question and you get a charger, a multi-port charger. Any more? There we go, now we're getting hands. All right, what's your question?

AUDIENCE: Some of the Autodesk representatives have commented on getting too far away from zero-zero, and our Civil department works [INAUDIBLE]

SCOTT
HALLMARK: Draw the model as close to zero-zero as you can, and then once it's finished, move it. That's what I've had to do, when I was an end user and then teaching it. If there's other ways to do that, I don't know. But that's what I've had to do is we would draw the model near origin, and

then when it was complete, we would move it to the actual location in real world.

AUDIENCE: [INAUDIBLE] Can I convert that to Advance Steel?

SCOTT You can export that out directly to Advance Steel, yeah.

HALLMARK:

AUDIENCE: [INAUDIBLE]?

SCOTT Yeah, there's a button at the top. Structure, there is an Advanced Steel xml export, right here.

HALLMARK:

AUDIENCE: [INAUDIBLE]

SCOTT Yeah.

HALLMARK:

AUDIENCE: [INAUDIBLE]

SCOTT That might just be in 17. Yeah, I'm not sure. I don't remember it.

HALLMARK:

AUDIENCE: [INAUDIBLE]

SCOTT OK. Good comment. Yes?

HALLMARK:

AUDIENCE: Can you export your model to IOC?

SCOTT No. That is a no. Yeah?

HALLMARK:

AUDIENCE: [INAUDIBLE]

SCOTT Repeat the question. Repeat the question so I can get into the mic here.

HALLMARK:

AUDIENCE: [INAUDIBLE] What happens?

SCOTT All right, so what-- the CER? The CER. So the question is what happens when your computer crashes 10 times a day, and you get the message that says send the information to Autodesk?

HALLMARK:

It creates a CER or whatever that stands for, something report, error report. It does go to an actual person. It does not go into a bit bucket that is seen ever again, because I do that. I worked for a reseller and if mine crashes, I put a description in there of what I was doing, I put my email address in it, and I send it. I occasionally get emails back that says there's a hot fix for this. There is a service pack available for this. Normally I'm up to date with all that. I'm keeping up with that, but even if I know I'm up to date, I'm still going to send it because somebody in development is going to see that. Development is seeing those things.

AUDIENCE: [INAUDIBLE]

SCOTT I'm sorry. What was--

HALLMARK:

AUDIENCE: I mean, you're right. They always get back to you when you send it.

SCOTT Yeah, they're very good about that.

HALLMARK:

AUDIENCE: [INAUDIBLE] What do you recommend with large equipment files that require the detail? [INAUDIBLE] boilers and stuff like that. What do you recommend doing while you're working? They're highly detailed step files and they want that detail in the model.

SCOTT I would have a second model. I would create a second model that's the same envelope as
HALLMARK: that, and then when it's time to deliver, pull that one out. Put your detailed one in and say, good luck because you're not going to be able to open it.

[LAUGHTER]

Yeah. Enjoy your detail.

AUDIENCE: You're simplified pump was very simple, [INAUDIBLE] What would be the advantage of going through all those steps in Inventor versus just making an AutoCAD block out of that vendor supply pump?

SCOTT Either. I just used the pump as an example because it was simple, but if you are dealing with--
HALLMARK: there's one company I was dealing with, they were bringing in valves-- oh, I mentioned that, but they had so much detail in those actuators, management wanted the detail. They said we've got to see this, and the users were like, I can't work. They're still doing that. They're still

doing that, and they're still calling and saying, what's wrong? There's really not an advantage. I mean, you could do either or. If you build the pump in Plant, then you have the flexibility of the parametric values to modify. But if not, to me, I mean-- I don't know.

AUDIENCE: Follow up, you said because Plant makes it's own pumps, it has it's parametric pumps, what's the file size on those? Is that relatively small versus a--

SCOTT
HALLMARK: Yeah, they're real small. I mean, they're just they're basic solids. Yeah, they're basic. Did I give you one already? OK.

AUDIENCE: Some of the worst ones are like the ones you had in there, the pump that has all the things [INAUDIBLE].

SCOTT
HALLMARK: I'm sorry, I missed that. Was there another question? OK.

AUDIENCE: All right, when we're modeling, [INAUDIBLE] reducing tee. Is there a way in your spec editor to set to pull [INAUDIBLE] so I don't have to go and change it?

SCOTT
HALLMARK: Yeah, you can set priorities. You can set priorities in your spec. Yeah, and also your branch table. You can set the priority in your branch table.

AUDIENCE: Yeah, I just don't want to click if I [INAUDIBLE]

SCOTT
HALLMARK: I can show you-- well, I probably can't show you here because another class will come in, but I can show you out there where that is if you want to hang around. Did i give you one?

AUDIENCE: Have you worked with Light R [INAUDIBLE] class?

SCOTT
HALLMARK: With what kind?

AUDIENCE: Light R [INAUDIBLE] class?

SCOTT
HALLMARK: Light R Point Cloud--

AUDIENCE: [INAUDIBLE]

SCOTT Oh, OK, I see what you mean now.

HALLMARK:

AUDIENCE: It's really hard to [INAUDIBLE]. Do you have any tricks that you use to work with [INAUDIBLE]

SCOTT Fortunately, I have not had to deal with any monochrome scans. Everything I've worked in has
HALLMARK: been full color.

AUDIENCE: There's [INAUDIBLE].

SCOTT Is there? OK. I mean, what I tend to do even with the colored ones, I'll bring that into recap,
HALLMARK: and I'll create my regions so that when I bring into my Plant model, it's just like cutting off layers and I'm dealing with an area. Yeah?

AUDIENCE: [INAUDIBLE] it's visual only within your recap. You cannot take it to AutoCAD. When you take it to AutoCAD it will [INAUDIBLE] the same, correct?

SCOTT No, you're able to see it. I can bring a point cloud in my Plant model.

HALLMARK:

AUDIENCE: Sorry, Navisworks. You can't take it to Navisworks, sorry. You can't take it to Navisworks, for sure.

SCOTT OK. I thought I could, but OK. OK. Yeah?

HALLMARK:

AUDIENCE: When you're placing fittings or components, you can use the dynamic pallet, you can use the spec [INAUDIBLE]

SCOTT Fitting head.

HALLMARK:

AUDIENCE: Which ones do you like using best? I don't like the dynamic pallet because sometimes it takes a [? short ?] description [INAUDIBLE] description, and it's too abbreviated. I just want to kind of get your preference on which [INAUDIBLE]

SCOTT I like the dynamic [INAUDIBLE], because I'm going to make my spec read what I need it to
HALLMARK: say.

AUDIENCE: I've got an engineer right here that writes my spec--

SCOTT The spec viewer.

HALLMARK:

AUDIENCE: [INAUDIBLE]

SCOTT If you're working in dual monitor, the spec viewer is great because it looks just like your spec

HALLMARK: editor. And so you can find what you need, and add that way. The Plant fitting add, that is a good tool to use. I mean, if you can make a button and stick it in the ribbon, or stick it in a toolbar or something, just be able to click that, it's everything in your spec, except for supports.

If you're going to do any kind of custom support, they're only going to show up in that tab.

They're not going to be available in the supports ribbon option. So yeah, this is my last one.

AUDIENCE: Thanks. [INAUDIBLE] It was a very nice tips presentation, thank you very much.

SCOTT Thank you.

HALLMARK:

[APPLAUSE]