PAUL KIRKENDALL: Well, I'm going to get started. So welcome to hump day of Autodesk University. We made it to Wednesday. So my name is Paul Kirkendall. I'm going to go through visualization from simple 3D in a Infraworks, Max, and Navisworks.

I'm going to go through some of the ways to get your visualization to look pretty nice in all three also, depending on what it is. However, I'm not going to go super deep. It's pretty basic stuff in each one. And then, hopefully by the end of the day, you'll know which one I use for what project, and why do I use that, and in what area or what phase, I guess, would I use that in each software.

But I'm Paul Kirkendall. I'm an Application Engineer at MasterGraphics. I have been there for almost five years. I came from the field, before that, working for a company that did a lot of municipal stuff. No visualization, but I did roads mainly for municipal, lot of GIS.

Went in the survey department for a little while. And then I took them from Land Desktop to Civil 3D, so the transition between those two. And now at MasterGraphics, I've been working a lot with the Wisconsin DOT, getting their transition and helping them with their training and stuff as well.

So I don't need to go through that, you guys read that when you signed up. So general expectations for today are going to be to get the visualization and get the actual data or the geometry from one software to another. Civil 3D to whatever software we're going to be at the time.

Beginner-ish level class, need knowledge of AutoCAD, Civil 3D, kind of the whole suite essentially, which is a collection now. Silence your phones if you could, and hold questions to the end. I'm going to power through this. It's a lot of stuff we're going to go through and how we get to each one. So hold your questions for the end, and I've got prizes to give away for good questions at the end. So you'll want to ask some good ones.

At the end to class today, you're going to learn how to bring data from Civil 3-D into Max, from Civil 3-D into Navisworks, from Civil 3D into Infraworks. And if I have enough time at the end, if I get too excited and talk too fast, we're going to go through some other stuff in maybe Infraworks and Navisworks going back the other way. And then, how to decide what platform is right for what project, and why you need to use it, and what you can get out of each one.

So to start it off, what questions do you need to have before your project starts and why you need to visualize something. What type of visualization is going to be required? Are you on going on municipality or are you going to a DOT?

Who are going to be in front of? What are you going to try to convey? Do you need that visualization to be in super high def quality, walk through. Like you're driving the car and it looks like you're actually driving the car in that scene. Or is it a pretty basic super fast visualization that just gets your intent to your client?

And what's your budget? How long can you spend on each one? If you go to 3ds Max, you're going to spend more time to get a nicer product. If you go to Infraworks, it's going to be less time. If you're in Navisworks, well, maybe you're not going to do a visualization, you're going to do a time-liner for your phasing. So I mean you're 3/4 done with the project, halfway done with the project, depending on where you're at, and you can phase it. So just depending on your budget and how much you can spend on it.

What object data should be designed before you export it? So depending on which one you're in, if you're Infraworks, you can go to Infraworks first then bring it in. Or what we're going to do today is go the other way.

So what we need is the existing surface. Alignments and profiles, you could use feature lines as well. There are some pretty cool extraction tools now that you can extract that stuff. The corridor we're going to use in a couple of them. Pipe networks, parcels are optional. I did a partial export and I'll show you how to do that. Works pretty slick in Infraworks. And then proposed grading surfaces are optional as well.

So we'll bring all that stuff in. I don't want to go to that one yet. So I'm going to go live for the rest of this period, so hopefully everything goes well. Dealing with the software I'm dealing with, I have parts saved so hopefully it doesn't go bad. But here we go.

So in Civil 3D, I have a project built out. Phase 1 of this big development that we're going to do. Phase one actually-- I'm going to switch here. There we go. There we go.

So phase one of this project has my surface. So I got this existing surface in here. I have a corridor. I have a surface on my corridor. Or I have some pipe networks going on. I have surfaces for my corridor and I'm going to bring that stuff out.

So the first thing I'm going to do is I'm going to bring this thing to Max. How do I bring it to Max? To bring it to Max, I need to go to the Output Tab and there is an export for 3ds Max. There's also, on the Toolbox of your prospector, there is in the Subscription Extension, there's an extension for Civil View that came out as an additional pack this year, or for yeah for this year. And that is going to do an export for the pipe network and alignments.

I'm going to bring in the corridor, because I want the materials from my corridor. I don't want to have to reassign materials. And if I have good materials in my corridor from Civil 3D, I don't have to reassign those right away.

So if I want to bang, bang, get this thing out and have it looked pretty nice. I can do that with the corridor, instead of going into 3ds Max and applying a bunch of materials which takes longer. If I want to do it I can still, but I don't have to.

So either option. I'm going to use the export to 3ds Max on top here. In here it's going to tell you what it's going to bring in and why. And in the handout I showed where there is a little warning symbol. So if your corridor is out of date, it hasn't been rebuilt in a while, it's not going to let you import it. It has to be fresh. It has to be rebuilt and up to date. And then it will let you bring it in. And then that little warning will go away and look like this.

So once you do that, go ahead and click Export. It's going to give me a VSP 3D file. That 3D file I can open up in what's called Civil View. In 3ds Max, which comes with 3ds Max now. So Civil View allows us, as civil engineers, to try to be visualization specialists in Civil 3d-- or in Max. So it helps the process.

So I'm going to go and save that. And it's going to go through. And in mine, I've gotten a few errors where things aren't connecting for the feature lines for my assembly. I haven't actually seen where it's an issue. So I'm not going to worry about it because everything looks pretty good visually.

Well, you'll see here when it gets done, there's going to be a few errors that pop up. To me it's not a big deal because I don't see an issue. It's not design, it's visualization. It looks good, we're good.

But I guess some link sequence-- and I'm guessing that it's because I have two roads side by side. Because I wanted to do materials for my main road, and the materials for my bike lane that I did. And so I separated them as two different ones, instead of having it go the full width.

Now I can get separate materials for each instead. And I think that links because they're the same name, it just doesn't understand that they shouldn't cross and it's erroring out. But like I said visually it's not going to do anything different.

So I have a file and go to 3ds Max. Oops. Open up Max here. Normally I'd have them all open, but I don't want to open them all up and then [LAUGHING] have some issues here.

So in Max there is a Civil View tab up here. If I clicked on that Civil View tab, I'm going to have to start Civil View. There is an option in here, once you start Civil View it's going to initialize. Once it initialises, s you can save it so it won't initialize every single time you open up max now.

I set it to manual, so it's going to initialize each time and then I can set my country units. So you'll have a UK country kit, and then a US country kit, or imperial, metric. I can't remember if there's an Australian one or not. But there's like five different country kits in there that you can set that to for your units right away, and then you don't have to redo it again.

So if I start it,it's going to initialize. When you first do it, on the first one, it's going to make you restart 3ds Max. Then I can go back up to Civil View and I have my three options in here. You've got Civil View. The Civil View explorer is where I'm going to have most of my work done, but initially, my geometry import is were I have to go and find that VSP file that I saved from Civil 3D.

So from there, I'm going to bring in this VS-- You'll find it, and then it's going to show what I can bring in, depending on what it is. Now if you have separate regions-- so if you have an intersection that's going to have a ton of regions in here that are going to try to come together.

I only did one main road, so it's only one region. So I don't have to separate it out. I can bring in as this whole entire region.

You also see that there are networks that I can bring in. So pipe networks, surfaces, alignments, and sites and corridors. So I'm going to go ahead and click on the corridors. I'm going to select all this, check it, go to my surfaces, make sure my surfaces are checked.

I'm going to do the existing ground and the surface. I'm only going to bring them in to show you that I can come in. I'm going to turn them off once I get there.

The other thing that I initially was going to do, but I'm not going to do now. It's in my document on how to bring in the aerial and map it to the surface. [INAUDIBLE] I'm not going to go over that in the class at least.

But you can also apply a material to it. So you can get away from the aerial, and say, I want a material to be on my surface that's just going to be some super longer grass, so it looks visually nice. So I got them all checked and we go ahead and click OK.

It's going to do a global import shift. And I've seen two different things happen here. Sometimes it's going to do a different global shift each time you bring it in. Sometimes it's going to be the same global shift. So it's something that it's calculating on its own.

Consistently, in my file, it's been the same. If you re-import on top of something, it is dynamically linked back and forth, so you don't have to worry about that shift changing because you linked to it. However, you got to keep that in mind. It might move on you, which essentially doesn't matter, because in Max you're not really geolocated anyways.

And then you'll get a feature interpretation styles. Allow, Yeah, I will. And it will take a few moments. It will bring that in. Surface will come in, the corridor will come in. Surface looks kind of funky just because it doesn't have anything mapped to it. So if you have a JPEG of your surface, export it out. You can bring that in. You cannot bring in a SID file or a TIFF file.

However, if-- and this is just an extra one, if you go to Infraworks and you FBX out or IMX out, actually I think it's FBX, if you FBX out your surface, that surface is going to come out with a whole folder full of your JPEG image squares that you can put together, and map it as a JPEG in here.

Which takes a while, but you can do it. Got a little Raster Design. If you know how to use Raster, you can map those things together, and then put them in.

So I'm going to go ahead and click on the servers. I'm going to turn that off. So now I just see my corridor here.

I've got a surface in here also, so I'm going to turn that one off. And now I have my materials from my corridor. And this is because I set it in my code set style. So my code set style had those materials already mapped to it.

It looks pretty nice. Now, like I said, I could not bring in the corridor and map these through the

materials in Max. But why would I want to do that when I already have these and they look pretty nice. Now if I need some super photo realistic stuff, well maybe then I take the extra half hour and start mapping all these.

So now, I have everything in here. I'm going to go back up to Civil View, and I'm going to make some road stripes. And then I'm going to bring in some furniture. I'm going to call it furniture.

In Infraworks it would be furniture as well, but I'm going to bring in some light poles. And then we're going to bring in some cars. I'm going to animate the cars. And you can see how fast that we can get this thing out the door.

So I'm going to go to Civil View. I'm going to go to Object Placement. Actually, I'm going to go to the road marker's first. In the road markers, I'm going to go ahead and add a new element. And in there I have to essentially, pick what I want to add this marker to.

So I'm going to go pick shape label. It's going to let me go out to the drawing and I can pick on my label here. I want it to be my Civil 3D baseline. So what I ran into was a small little issue, where because I wanted to quantities in another file, I have pavement here and then I have pavement here because of the quantities.

The bad part is, I got I got three crowns. So if I select my crown and I put my road markings on there. I'm going to have three road markings because it's wrong one. So I had to bring in a separate feature line or the alignment, either one. So that it's separate and it's not the crown. Otherwise, I could just do the crown for the center line, if I just had one.

So I got my feature line. And you can see, that's where it's showing the crown here. So that's the wrong one. So if I map my road markings, it's actually going to show up as all three, which I don't want.

So I'm going to try to select the correct one here. Hopefully it will let me. Otherwise we're just going to go with the one that I got. Might not let me here. We're going to go with it. This morning it let me find that alignment. But it's not working for me today. So anyways, we're going to pretend like I have the right one.

So I'm going to do the road markings. Right now, the width, and the mark length, and the gap length, and then there's a center gap, so where it's going to show up. I'm going to put in a width of 0.3. Mark length is good. The center gap is going to be 0.1. Center gap's going to be 0.1.

And then my color, I'm going to make that yellow. So you got 225, 183, and 0. So now I got yellow. Zero. Click Apply. Yeah. So this morning I was running this issue too. I'm not sure why it's not coming to the top.

So I'm going to move on to the cars here. Once you have that road marking, you can save these styles so you can bring them forward, and I don't have to redo them over, and over, and over again. So if I have this saved as my stripes or whatever, I can save it. And then if I go back up to my Civil View road markings essentially, I can open that style, and say I want that style. And now it's going to apply that style to whatever I have picked.

So moving on. I'm going to put some light poles on this thing. So I have to go back into Civil View. I'm going to do what's called an Object Placement Style Editor. So if I go in here. I'm going to add a new element.

And then I have a bunch of categories in here. On the bottom, I have vehicles, furniture, trees and plants, signs, cameras, and primitives. So all these things I can add to certain objects in here. I'm going to go ahead and go to the furniture, and I'm going to add a light pole. I got a 30 foot single column light pole that I'm going to add to side of the road.

So I click on that. That populates up here on the top. And then I can put in how I want it to show up. And what I want and show it up-- or what I want it to show up on. So I want to parent shape. If I click on the parent shape. Again, it's going to come out to my model.

And I have it shown to show up on my crown or my center line alignment, and then I can offset that from there. I could also pick-- let's say I want it to show up off of my back of curb. So if I go parent, back of curb, or top, and then I can just offset that a couple of feet instead of 30 feet.

So now if I go multiple, regular interval. My horizontal offset, I'm going to go, let's say two feet. And my interval, I'm going to keep at 200 feet and that is interval in between each one. So if I hit apply, now I can see those poles and it looks like it's going to the other side.

So now if I go ahead and change that offset to maybe four. Let's try negative four. 2 and 1/2 and then I can rotate it 180. Now we have our poles running down the road.

So now if I copy this-- I want them on our side of the road too, go ahead and copy, paste. Now I have these on the other side. Now I just need to flip them. So this, I'm going to go 50. I don't

need a rotation. If I hit Apply, then it's going in the other side.

So let's go 45. And there I have poles on the other side too. So running down the whole thing, I've got poles at intervals.

AUDIENCE: Would there be a quick way to stagger the opposite side? [INAUDIBLE]

PAUL KIRKENDALL: If I use the different-- if I use the different feature line, I could stagger. The question was, can I stagger it, and if I use the different feature line, so if I went and picked another feature line, instead of using the same one, I could stagger that. So I would create another object placement. I wouldn't copy and paste, because the copy and paste is going to marry the two together for the parent shape.

So then my spine object count would be 1. Go ahead and click OK. I've got a current style. I'm going to say that style. And again, I can save that out so I don't have to repeat this stuff. So I'm going to keep it in my project folder. Save it, I can bring it back.

So next, what I want to do is, I'm going to back in to Civil View and I'm going to add cars to this. So I'm going to go Civil View, object placement. This time I am going to add a new element and I'm going to pick cars. Now I want, not just one car to kind of repeat itself over, and over, and over, and over, I want different iterations of each car in here, and go in different directions. I want traffic to move across.

So I want to pick my parent shape. Pick that again. That crown is being stubborn today. But anyways, so I'm going to go and I'm going to pick my longitudinal placement is the important one. I want random stations, . Number one and I also want, in my other options, to use random objects from the selected category. So that select a category is going to be cars, in this case.

And it's going to randomize those cars as it sees fit. So if I go ahead and click on those cars and then check this use random. My horizontal offset, depending on where I'm at and what feature line or alignment I pick. As you can see, I can offset and figure out where that needs to be depending on what I pick.

So that one is going to be, we're going to try to go with what I had originally, six feet. I don't need a vertical offset. I'm going to go ahead and ply. And this is going to take a few seconds depending on how many randomize cars. If I put more than 20 for the count, it's obviously

going to take longer for it to calculate.

You can see the little green progress bar and then I have my cars on the wrong side of the road. So for some reason everything is going opposite for me today. I don't know.

AUDIENCE: [INAUDIBLE] [LAUGHING]

PAUL KIRKENDALL: Maybe it is. That's it. I hit the wrong one. I'm driving on the left side of the road. So I was supposed to do that.

So now if I go ahead and copy and paste it again, I'm going to have that and other random cars, and then I can flip it to the other side. One thing that I ran into, when I first started doing this, is that miles per hour has to be opposite also. Otherwise, the traffic is going to go the same. So both sides of the road are going to fly down the same way.

So you've got to put a negative in the mile per hour too. Not just the offset. So in here I have my negative 20. It's multiple random stations. I need this to be negative 6. And then the miles per hour here is going to be negative 67.

I'm going to go back up and make sure I got this one at 67. I would put 80 but I don't want to get in trouble. Hit Apply. It's going to create that vehicle animation, so to speak. Or what it's supposed to do.

AUDIENCE: I don't like how it re-randomizes every time you hit Apply.

PAUL KIRKENDALL: It does re-randomize every time you hit Apply. So if you got a huge corridor, you're going to be chugging along after a while here. So you got to be careful. That's why I'm doing Max first. because it's about the only one that's going to super crash.

And now I've got them going in the bike path too. So I picked on the wrong center line and that crown, is just giving me issues and I really don't know why. But if you pick the right feature line, it's going to fly down the right way. Now, like I said earlier, you can save these out.

So if I already had one saved to my alignment and it looked good, I can go up to my open-- I don't want to save that one-- and I'm going to open up my traffic. If I open up that line, you see that-- no that one is going to go on the crown too. So let's see. we're going to hit Apply. We're going to go through and see what happens with this one. So it's going to re-randomize, like he said earlier. And couple minutes or a couple of seconds here, it's going to re-randomize those

cars. Hopefully, we can get them going in the right direction.

I can see the one thing that I didn't do in the first one, was I put a rotation on the first ones and the second ones I didn't. So you want to rotate those cars. So not only do you have a negative offset, you've got a negative miles per hour, and then you've got to rotate them so that they're looking in the right direction so that everybody's not driving backwards. Kind of like when you're a kid you are driving in when you're in a station wagon and you're sitting in the back you're looking at it behind you. I make myself old.

AUDIENCE: [LAUGHING]

PAUL KIRKENDALL: So now they're going in the opposite direction. Now, if I just go ahead and hit play for my-- well, let's hit OK first. Yep. And if I just hit play for the animation, you see how that are going to go. And that's what I need it to do.

And for visual effect, if I wanted to show a camera path that's going to go down the center line-- and this one I saved out, so I know it'll work. But I'm going to stop this for a second. So I can bring in a camera path that I have already saved. And that camera path is going to be right at somebodies visual reference inside a car, but you're on the center line. So when you're riding down the center line with this camera path as the cars are going past.

AUDIENCE: You just need to add barrels in a construction zone.

PAUL KIRKENDALL: Perfect. And you're good to go. I was supposed to do that too.

So now I can add a camera path. Same deal, I'm going to go to Civil View. I'm going to go-- and this time I'm going to go to explorer. So this is the explorer, this is where all your information is going to be when you need it after you put it in.

I can go to my shapes. And in my shapes, if I pick on the baseline, and then I want to right click on this main line here, and I'm going to apply object placement style to that. So this is a different way to do it, instead of going and picking.

So I see two times that I got screwed up because it picked up on the wrong feature line, because I have three crowns. And then it ended up offset in the wrong place. Well, if I don't want it to do that, I can purposely go in here and select my real true baseline. Right click on it

and say Apply object. And it's going to apply it to that actual center line instead of trying to figure out which one I can pick.

So I want that to be my parent shape. Now that one's going to show up in my parent shape, and that one is actually the right one. And then I'm going to add something that I already created.

So in here I have a camera path at 60 miles per hour. It's already set, so I can go ahead and open that. Click Apply. Click OK. And then, now at the beginning of this, I'm going to see I have a camera path sitting here.

Now if I hit C to get the camera path-- so C is kind of your shortcut to get to your camera path. If you have multiple camera paths, you have to hit C a few times, it'll get to that eventually. And now I can ride my roller coaster of camera path animation.

Now if I had a lot more time left for my class after I'd do everything else, I could bring this into VR and show that in a VR set up through Stingray too. Not that I'm going to go through that, but you have that option to export it now right away into VR/AR. Off the road I go.

AUDIENCE: Does it loop automatically or [INAUDIBLE]?

PAUL KIRKENDALL: I don't think it's going to loop for me. No. It's going to hit the end and we're going to stop.

AUDIENCE: There's a way to do it.

PAUL KIRKENDALL: Oh, it does. I lied. So that's 3ds Max. Do I have any questions on that? I'm going to move on next to go to Infraworks, and then we're going to do Navisworks.

AUDIENCE: So basically, what you did was you had a corridor surfaces [INAUDIBLE] exported into 3ds and then were able add all these features into your corridor [INAUDIBLE] whatever it is. Right?

PAUL KIRKENDALL: So in conclusion, he's saying that what I did is I took my corridor, my surfaces, I brought that into Max. I applied a bunch of objects so that I could animate that scene, and yeah, that's exactly what we did.

AUDIENCE: I came in late.

PAUL It's all good. So it's a super fast way to do it, instead of starting from scratch and Max. You

KIRKENDALL: could also bring in an FBX from Infraworks. So if you're already using Infraworks, you can bring that FBX from Infraworks too. And there's different things that can be applied in the same way. Just depending on the visualization that you want.

AUDIENCE: If you bring the FBX into Infraworks, does that come through Civil View or [INAUDIBLE]?

PAUL KIRKENDALL: The FBX, you would import as an FBX, so it would not come through Civil View, it would be separate. Yup.

AUDIENCE: And pretty much everything you just did was through the Civil View.

PAUL KIRKENDALL: Everything I did was through the Civil View option, yes. So I'm going to close that out. We're going to go into the Infraworks export. So I got Civil 3D, I want to bring that back into Infraworks.

Traditionally, you're going to see everybody is going to bring Infraworks, , and start, and go into another software. I'm going to go backwards. I'm going to pretend that-- I'm actually going to start in Infraworks. We're going to grab a bunch of the data and then I'm going to go backwards from Civil 3D and bring that stuff back.

So I'm halfway or 3/4 through a project, and now somebody is like hey, I want to see what that looks like. How do you do that? That's what I'm going to do. Instead of starting at the presentation side, where I got conceptual design. Well, it's not conceptual anymore. I've got this thing almost built, except for it's not actually in construction yet.

But my stakeholder wants to see what it looks like. So I can quickly go ahead and say look, this is what it looks like. It's not 3ds Max, but it's going to look pretty good really fast so.

So I'm going to go and I'm going to start in Infraworks first. I'm going to get the data through the model builder. So I'm going to go to Infraworks 360. Open that up. Infraworks 360 comes with the collection now, if you have collections. There's some goofy stuff that went on with the suites, so it was separate for a little while.

So in the model builder, if you haven't used Infraworks before, you can go into model builder. You can select an area in here, bring in the data. That's going to bring in roads, buildings, imagery, and terrain. It's also going to bring in rail, and it's going to bring in waterways. So depending on what type of water, it'll bring in rivers. It will bring in streams. It will bring in lakes.

My little area, this subdivision, is actually in my little tiny town in Randolph, Wisconsin. So there isn't a whole lot of buildings in there, because I'm way in the country. But once you select your area, you put a name to it. Add a group. Whoever's on that group can be added to it and see that data.

Create the model. Models going to take, in this case, it took four minutes. The more populated of an area, so you take downtown Chicago or you take downtown Las Vegas, it's going to take maybe 10 15 minutes to get that model to shoot up to the cloud. Just because there's a lot more data.

So once you do that, you're going to get a thumbnail here. I'm going to pop open that thumbnail. It's going to download locally, initially. You can download that to your network, or wherever you'd like to download it to.

And then you get this. So this is what I want to start out with because it was super fast. I mean, even if I didn't have this model, it would have took five minutes, maybe six to totally download it locally. And then I could start visualizing with it, instead of trying to find stuff that I didn't have. Or if I had a SID file, I try to bring that stuff in. This is just faster. And it's geolocated.

So here's my little area. In here is where the subdivision is going to go. So now I can bring in different types of information that I have already built and Civil 3D. So I have these roads. I'm going to connect to this road, and that is going to connect over right here. And then I've got different phases I can bring in if I wanted to show that to you.

So let's say the stakeholder wanted to see, initially he wants to see a drive-through. What is it going to look like, just the road? And then, what is it going to look like once we put some houses in the subdivision? So kind of a marketing plan.

And then, what is it going to look like once the parcels are there? And I want to see the parcels in relationship to everything else for each phase. So we can do all three of those really fast.

So in here, I'm going to go to the Infraworks icon. I'm going to go to my data sources. And then I'm going to bring in my Civil 3D drawing straight from Civil 3D. I don't have to export anything or do anything fancy. I can just hit Import. Go to my project. And I'm going to bring in the corridor. Same file I had in Civil 3d.

So I have the corridor built. I have the surfaces built. Sometimes the surfaces will give you issues. They'll try to do some funky triangulation in here. So you want keep that in mind, that I

have this corridor top surface that I don't want. Because it's going to do some funky stuff. I put that in the document, as how it actually tried to triangulate all these roads and surfaces together. And it just doesn't work very well. So you've got to be careful.

So I'm going to not bring that in. I'm going to bring in the existing ground. It's the same as this anyways, so I don't have to. Actually I'm not going to.

But you can see in here, I have my pipe networks. So I can bring in my pipe networks and show those visually too. So if they wanted to see how that stuff is going to get put in and where it's going to be. It comes in automatically.

So I have my roads and my drainage. Click OK. And then I need to configure it. So in here the one thing I want to configure is going to be my roads. If I click on that, hit configure.

And I have multiple values. I'm going to go ahead and click Close and refresh, because I did all of them at the same time. So if I just pick one, right click Configure. It's going to configure just that road.

So it shows me what the road is. It's going to automatically know what type it is based off of what it it's reading. I'm going to go to Civil 3-D and make sure that it's going to do the two alignments that I have. So I did do an intersection in here, so the cool part is it's going to automatically create an intersection. I don't have to bring the whole corridor in if I don't want to.

So I'm going to do that. On common, I need to pick a road style. So if I pick a road style here, I created a road style specific for this, so it looks just like the corridor. So I don't have to bring the corridor in. I got my lane. I got my bike lane. I've got curving gutter sidewalk and it's going to daylight.

Go out and click OK. Geolocation, I want to double check that I'm in the right coordinate system. Close and refresh it. And it's going to bring in, and you can see that it didn't actually pick up the style of my road. However, if I pick, on it I can go to my properties, click on road style. Pick on this little thumbnail here, more styles. And pick on my bike path and reset it.

And now I have what the roads are actually going to look like. Go ahead and click on that one. I'm going to do the same thing here. And you could see it meshes together pretty nice for the intersection. It creates a legit intersection.

I have my pipes in here. So I got sanitary and storm. Bam. So I can see all that stuff too. And now all I need to do is say, look, I want to go ahead and create a presentation of it.

Go to my storyboard creator. I'm going to go ahead, and because this is going to be a road-- a design road coming in, I can go create from design road. Select on that. My horizontal offset from the center line is going to be 3 feet. Let's say 3 and 1/2 maybe. Vertically offset, will go the same.

Speed will be automatic. I could go in reverse like I was in the wagon again. Go create. It's going to create all of my keyframe tiles based off of what I put in there. And then I could go ahead and just say play.

And now I can export that as a MP4, WMV. I can bring it into the viewer for Infraworks. If somebody didn't have it, I can send them a URL if I set up a path. So anybody can see it, even if they didn't have Infraworks 360.

I want to go ahead and hit Stop. And I'm going to add something. I want this thing to look a little bit better than just the plain old road going through. So what do I want to do? I want to add parcels in here, houses in here, trees probably.

So I don't know where all these house parcels are. So I want to bring in the parcels from Civil 3-D. So on a separate file I created all the parcels for phase one, two, three, and four of this subdivision.

And then, I want to export it as an SDF. The SDF, I can bring in and I can create these parcels as coverages, and change the colors for my different phases. And it looks like it's phase one, two, three, and four, and it makes sense visually.

So I'm not going to go through that entire process. It's pretty easy to export from Civil 3-D, a SDF file. So if I had my parcels in this file, there is export civil objects as SDF, and it would automatically recognize that they were parcel's. And it would bring those in. And then I would import those as an SDF.

So back into Infraworks. I'm going to go ahead and bring those in. So in my data sources, I'm going to bring in an SDF. So there's an option in here to bring that SDF in. I have-- that's not the one.

I have my overall development parcel's as an SDF. Click on that. And the SDF, at the time

when I created those, I had points and alignments in there, so I could bring those in this way too. And then hook on a road. I wouldn't have to necessarily bring it in through the corridor. But I wanted to show you that you could bring just the DWG straight or an SDF. There's multiple options to bring it in.

So I'm going to do parcels. Click OK. Now we need to configure those. I want those to be coverages, so when I open up my common tab, those are going to be coverages in alphabetical order. So coverage areas--

The rule style, I'm not going apply right away. What I want to do is a rule that is going to say, if this parcel has a name of phase one, I want phase one style to be, phase two, if it's phase two name. Geolocation, I obviously want to make sure that it's geolocated.

Source, I want it to drape. No tool tips. And then the rule style, I can set in here later. Close and refresh. It's going to bring in the outlines as coverages. Actually it's going to import, I got to configure it.

There we go. And I didn't put a style to it. So you can see, as I'm scrolling over these things, this is what it's going to show up as. So I don't have a huge lot of time to show you how to actually apply each one individually. I'm going to show you a couple of them here. But if I select on one, go to control, I can select a bunch.

So this is going to be my phase one, phase two, or phase one up here. And now I can go to my style palette. Click on a covered style. In my zoning, I have set up some different styles, which I just changed the color essentially, so it looks visually different. And I can drag and drop those. Apply that to those styles and there's my phase one.

Now if I wanted to go down to my phase two, I got phase two down here. Phase three, select those. This is phase three. Add those and you see how fast that I can just add that different style to each one.

So I have this on what's called a proposal. I created another proposal and that's where I actually imported it. So I'm going to show you what that looks like here. So I did all the work already. You guys don't want to watch me go through that stuff, I'm sure.

So here's phase one, two, three, and four. I added some pond features in here, which is pretty simple to do. If I go to my sketch tool. Then I can add different types of furniture, essentially.

So if I wanted to add a city furniture, which is going to be houses and stuff that I'm going to show you in a minute. Water areas are going to be the ponds. So if I click on a water area, I have the option of doing spline or default. And then I can put a water feature in and that's really what I did for these.

And now I can go ahead-- and I know it's a new proposal, but I can go in and say, look I want this storyboard to run down this proposal instead. It's going to take the same exact path. So if my surface is different, it might go down a different path on the surface, but it's going to take the same path that I took it from in my initial bringing of that alignment and profile, or that alignment.

So if I hit play, it's going to run right down it. If I'm in the same area, I can have multiple proposals showing different visualizations. And you can see, because this one was in a previous stage, I changed my surface of my corridor a little bit, so it kind of went underneath the surface. So I would have to just move that down a little bit and we should be good.

But you can see how fast that, I mean-- granted it would take me a little while to pick the parcels and change which phase it was, but you're talking 30 minutes and I have something to go to my client with. And then I want to add some houses. Let's say I want to stage this for some advertisement. I want to bring this to whoever wants to see it and advertise for them. Show them this is what it's going to look like in this new subdivision

So I go to city furniture. There are some people in here that you can add. There's trees vehicles. There's a plethora of stuff that's out of the box. All this stuff comes out of the box.

I know Willie Campbell did a session yesterday on visualization, bringing it from Max to Infraworks. He showed a little bit more in detail how to bring that stuff into. So if you want to check that out. That will go through some cool stuff too.

So let's see if I can find a house here. It's probably-- there we go. So I've got a single story, I can just click on that. Add that house. Say I want to add one down here. I'm just double clicking to put it in. If I want to rotate it to make it look like it's not built crooked, I can move it, place it, and there's my house.

So let's say I went through bringing 15 20 houses in, I put some people in here, a couple of cars, some poles, some stop signs OK. I did that already just because I don't have time to go through the whole entire thing. So now I have all this stuff in here. I've got kids getting on a

bus for school.

How realistic do you want it to get? And you can do it a lot faster than in other software. I've got some cars. The police like to hang out near me. I thought I had the cop car in here. There he is. Yup. He patrols my neighborhood a lot for some reason. I think it's tattoos, but I don't know. Just suspicion.

So now, same deal. If I go ahead and hit play, it's going to run down that same exact path and now I have all this information in here. And I can export this one as the new phrase. And show it. This is what it's going to look like with a bunch of houses on it. I'd have to drop it because, like I said, I changed it halfway through and my surface went down.

So easily fixable. If I went to stop. And I came in here and said, this designer needs to come down. I'm going to go to Geometry. I can show my profile. So if I go show profile view.

I have my profile view here. I'm going to shut down my storyboard. And now wherever that was, maybe that was over here. If I go up back into my mall space. That's going to update. Now I can open up my presenter again. Click on my storyboard and say play. Let's see if that works.

Keep in mind, I just want it to work visually. I don't need it to be perfect design in this scenario. Now I'm a little bit too high. So I'd have to go through and make it work a little better. So if I go ahead and sit pause. If I back it up. Let's see, I'm super high right here. Let's see it that works.

There we go. Now I'm right on. So I can run that path again and export it as my WMV, MP4, whatever it is. Go for it. What question you got? [INAUDIBLE] OK.

So yes. So if I wanted to export this, now I could. I have some options in here to export. It's going to hover over it. So I got import existing storyboards. And then if I do my export current storyboard to video, then I have the option in here, what kind of video I want to export it as and where.

And I can go from there. So you got WMV. I thought that you could do MP4 but I was wrong. I'm thinking of something else, so my apologies. MJPEG compressor, on and on.

AUDIENCE: Hey Paul. It seams to be [INAUDIBLE] out on the visuals for going through it. Is there setting that you can play with to smooth that out.

AUDIENCE: Talking about the video integrity. Yeah, you've got to into the [INAUDIBLE] If you wanted to go back in the export--

PAUL KIRKENDALL: Oh in the export. That's what you're talking about. I gotcha.

AUDIENCE: You go to the properties of the actual [INAUDIBLE] like if you pick Windows media player and go to properties, that bit rate by default is 1500. [INAUDIBLE] The higher you set it, the smoother it will get.

PAUL KIRKENDALL: The smoother it will get.

AUDIENCE: I usually go 10,400.

PAUL KIRKENDALL: So his question was, how do I get that to smooth out, because it's going to be ch, ch,ch, ch. It's going to kind of jog and jar. It's going to go through straight path, to straight path, to straight path and the more that you change your bit rate here, the better it's going to look.

It's also going to increase the size of your file, too. So you've got to watch out. You can have this huge media file that's going to come out by having that bit rate super high too. So it's kind of one of those you're going to play with.

What can your machine handle? And how much do you actually want to have as a video size? Because you can make that thing gigantic, and it's going to be really sweet looking. Or you can not have that so great looking, but it's not a big file and you can email it. Just depends on what you want. So that's Infraworks.

AUDIENCE: Can Infraworks also animate the subjects, such as vehicles [INAUDIBLE]. Are they animatable?

PAUL KIRKENDALL: So his question is, can you animate the vehicles in Infraworks? The answer is no. However, the session I talked about Willie Campbell did earlier yesterday, he talked about how you can bring 3ds Max animation into Infraworks.

So I'm not going to go through it. But you can bring that in and have it animated. And there's one object in here that is animated, it's a wind turbine. So you can bring anything animated you want in here, as long as it's the model.

You can also bring 3ds Max animated stuff. So if I had that animation set up, I could bring that animation in here and run with it. So you can, you just can't do it in here, specifically. You can't create that. So last but not least, I'm going to go through the Navisworks part. So the cool thing about Navisworks-- and honestly, I'm not big into doing a nice visualization like this in Navisworks, what I like to do in Navisworks is going to be called the TimeLiner. And that TimeLiner is going to be able to do sequencing of your project visually or clash detection.

So if you have a bunch of pipes coming in, I have sanitary and I have storm, I can do it in Civil 3D, but I can have these selections sets and everything set up in here to do it for me super quick when I do it and Navisworks too. And it's going to show me a little bit faster. But mainly what I'm going to go through is going to be the TimeLiner and sequencing a project construction.

I can also bring in materials. How much are the materials going to cost? I can put a cost to it in my visualization per phase.

So in this case, what I did, is I created-- we're going to create different regions. I'm going to show you how to export it from Civil 3D. It's a different type of export. So when I export it, there's some specific things you need to do in order to get your sequencing in Navisworks to run right. OK.

So I'm going to shut this thing down so my computer doesn't go so hot.

AUDIENCE: [INAUDIBLE]

PAUL KIRKENDALL: I do.

AUDIENCE: [INAUDIBLE]

PAUL KIRKENDALL: What's that?

AUDIENCE: Do you have [INAUDIBLE]?

PAUL KIRKENDALL: So in Civil 3D, what I want to do is I want to export the solids. OK. There are some things I can do in here to export solids. This one is a Civil View. If I go under-- is it under this one? Not under that one. It's under the miscellaneous utilities I think. No it's not.w

Pipe networks, there we go. So pipe networks can be exported as a solid through this. You can do pipes separate. I'm going to go through a different way, and I'm going to export the solids from the corridor extraction tool.

So if I click on my corridor, there is an extract corridor solids from here. And this is where I want to do this one, specifically because of what my intent is to do in Navisworks. So if I click on this one, it's going to ask me what do I want to pick. I want on the command -- this one is a bit command line driven versus other software is going to tell you at your cursor. I could do that too but--

So I got station range. I got within polygon or all regions. I want all regions. Granted, I only have one region in here, but if you had an intersection already built and you wanted to do that, you would pick all regions. So if I just hit Enter-- oops. Strike solids. I want all regions.

So once I do all regions, what it's going to do is it's going to open up the extract corridor solids. If I deexpand that it's going to do the entire thing at once. Well, my entire project isn't going to get built in one fell swoop. There's no way that they're going to lay that much pavement and all those pipes in one day.

So I need to show what they're going to do each day. How they're going to put the pipes in. In this case, I did pretty simple one, where it's just the straight sanitary storm and then my corridor.

But if you had a force main that had to breakthrough an intersection and they needed to shut traffic down for how long. You want to show how long I'm going to shut that traffic down or move that traffic somewhere else. So that's what you can do with this construction analysis and sequencing.

But what I want to do is I want to break this into regions, to show you how I can do the different regions. And they're going to end up being based off of your layer. So I can create an Excel spreadsheet that's going to base the layer off of a time frame, and a material, and all that stuff.

So in here, if I have the regions, if I say add region, it's going to fly me out into the drawing and it's going to say, what region? Well, I only have one. So I'm just going to select the one that I have.

And I'm not sure why it does this, but the command line doesn't show back up again. So if I

just hit enter, it's going to add another one in here. So this is where I was kind of struggling when I first started doing this a while ago. Like what's going on why is it doing this?

And I haven't found necessarily a fix to get it down to my command line again. So I guess-- I know that I have to be at a certain amount of space in between the two. So if I go add region, click on my region, and then I'm going to go from four plus zero zero and then I'm going to pick eight plus zero zero. Hit Enter, and it should add-- so did it again.

See when you're in front of people you're always going to do something screwy man.

AUDIENCE: Can you dock [INAUDIBLE]?

PAUL KIRKENDALL: I'm telling you. You can't dock that. I wonder if I dock my command line. There you go. All right let's try that again. So you can see, I start from scratch, add a region.

There we go. Now it's telling me. Good call. So I got start station. If I go zero plus zero zero, my end station is going to be four plus zero zero. If I hit Enter now, you're going to see in here zero to four. And then I can keep going from four to eight, eight to twelve, twelve to whatever, and keep moving on, and on, and on, and on.

The other thing that I wanted to do-- and I'm not going to walk through that you don't need to see me typing in numbers for five minutes. So the other thing I did is I took and I put my pipe networks on certain layers. I created a style that had a new layer in it for each section of my phasing.

So in here, for my layers and my styles essentially, I have layers in here for my pipe networks. Sanitary, there you go. So in my storm and sanitary, I would create a layer in here for pipe one, pipe two, pipe three, and pipe four. And then I put each style on a different phase, and that's how I brought it in to my Navisworks model.

So I'm going to show you that. So I exported all that stuff out. I put my styles in new layers on each section. And then I'm going to bring that in to Navisworks.

And I went a little bit more in-depth on my handout. I know my hand was super late just because it is so long. But there's a new hand out that I put up on the thing that has-- it's going through how each thing was done. A little bit more in-depth than I had time to do today.

AUDIENCE: [INAUDIBLE]

PAUL KIRKENDALL: What's that?

AUDIENCE: [INAUDIBLE] export [INAUDIBLE]?

PAUL KIRKENDALL: If you click on your corridor, it comes up in the contextual ribbon as a command, export, extract, corridor solids. And then when you want your pipe networks, the pipe network is going to go through the pipe tool in your toolbox. So there's a new-- I think it's a V1 enhancement for 17 that will allow you to bring those pipes out as a solid.

But you want to create your styles and your layers before you export that stuff, so it exports it on a special layer as a solid. So we're go in--

AUDIENCE: If you change the layers on the object or [INAUDIBLE] style?

PAUL KIRKENDALL: I change-- I put them-- I made a new style with a layer, and then I put those specific pipes on the new layer instead of creating separate networks. Because it was all one network, they're just going to build it in sequence. Right I could do different networks and export those as different networks too. If you had-- we're going to build this whole entire network in one day, which isn't going to happen. You could do it that way too.

So in Navisworks there's a few different ways, and depending on who you talk to, on how you can bring this stuff in. So this is more of a, I think that you should do it this way. [LAUGHING] Because I think it works really well. And talking to and doing a lot of homework with the Revit people at my office, they seem to think that it works out pretty slick this way too. And I haven't had many issues doing it until probably today. [LAUGHING]

AUDIENCE: Which version of Navisworks are you using?

PAUL KIRKENDALL: So Navisworks 17. I'm using 17 for everything. The Infraworks 360 was 17.2. Civil 3D 2017 and then Navisworks 17. All this stuff works in all versions though, except for some of the export tools for-- so a 3ds Max Civil View is in, I think it's in 15. I think is 14, 15, 16, and 17. So that works for all of the versions. The pipe networks export to solids, though, is a new V1 enhancement.

Now, on the Home tab, what I like to do, you can bring in the DWG straight and that works. What I like to do is a command called, and I didn't show it, but it's called NWCOUT. So if you type in NWCOUT. It's a Navisworks tool in Civil 3-D that will allow you to export this as an

NWC, which is a Navisworks cache file. So that has the integrity of Navisworks already built in from that Civil 3D model for you.

So I've seen a lot more consistency with that than bringing in a DWG. My personal opinion but-- and then instead of opening the cache, I'm going to append the cache to this file. Save it as what's called an NWF, which is an Navisworks file set. And that I've also seen it's consistent. And it works well when you're doing sequencing like this, or anything in Navisworks honestly.

So if I go to C drive. Actually I saved out the NWF, so I need to change that to NWC. And here's my corridor with solids. I'm going to open up. And like I said, this one I did-- I exported the solids through the corridor, like I showed earlier. And then I had them on sequencing.

So in here you can see the layering is zero to four, four to eight, eight to twelve. And that's what I said, 400 feet for each section we're going to lay each day. It's getting to be towards fall and we don't have a lot of daylight, so they're not running as much pavement by me in the sticks of Wisconsin. So that's what I was thinking they were going to run.

So what I want to do, is I have all these daylight's in here. I have the road lanes and all these are going to be a layer. I also have my storm structure two, three, and four. And each one is going to be a layer.

So if I go to my TimeLiner up here. I have TimeLiner, if I click on TimeLiner, that's going to open up my TimeLiner tab. And I have a bunch of different things that I can do in the TimeLiner for bringing that data into here. I can do it manually. It's going to take you a while. Forever and then another day.

But you can add your tasks through here, and then click on that task and say, I want that task to be this layer. And then you can add a plan start, a plan end, an actually start, blah, blah, blah, blah. Add your cost. Add your cost to build. Your cost for what the actual object costs.

You can add all that in here and sequence it in. Manually takes forever. What I can do, is I can say, I want to insert a task for every top most layer. So the bad part is because I brought in the whole entire export with an NWCOUT, a going to dd everything in here. So I'm going to have to take stuff out, which is a little bit faster than manually.

So if I say, everything in here, it's going to add every layer in here. Which, you can see, if I go to the top here, it's going to have all these miscellaneous layers that I don't need. All the [INAUDIBLE] and all that. I don't need that stuff in there, so I can take that out. So I want to

delete that task, delete that task, and I can control, select a bunch and delete those. And that's kind of fast.

But it doesn't necessarily put in my costs. So a shortcut would be, I want all these tasks to be automated somewhat. So I can do control select, and copy, and paste this into an Excel spreadsheet, and then do it in there. And that's what I did. And then I have this Excel spreadsheet I can bring back into here, and get rid of all this garbage and then run it.

And if you're good at Excel or if you have somebody that's good at Excel, they can type that stuff in super fast. Or you can use Primavera our Microsoft Project. So if you guys are already using that stuff to set up your sequence or your project any ways, you just import that in, you're done. Because you got it. Depending on where you're at.

AUDIENCE: If you add a pay item to this, would it show up in the cost?

PAUL KIRKENDALL: I added pay items to these. So the question is, if you added a pay item, would it bring it in? And I added pay items to some of this stuff and I didn't see it. But I didn't go too far into that, because I already had some pay item stuff in my CSV developed already.

So in here there are a couple of things that I want to do, like turn off. I want to clean some of this stuff up. So if I select on something, it's going to select an entire object. It's going to select it in my selection tree, and then I can go ahead and hide the entire thing. So I won't see it anymore.

Some of the 2D line work is going to come in as well because it exported. So all these alignments and stuff I don't need. I can go ahead and select them, hide those also. And on and on. I can just keep cleaning up my file, depending on what I brought in. Or I can export my solids to a different file and clean it up before I bring it. It just depends on what you have time to do.

So going back to the TimeLiner, in my TimeLiner, if I wanted to bring in all this stuff a lot faster, I'm going to bring this CSV file in. So I have a CSV file up here sitting in it and I logged it so that it shows each thing getting done at a certain time. So I know that my pipes are going to get put in before my road, obviously.

So I want those to be first, but it's only a partial section of it. They're going to put those in, and then they're going to build the road behind. And put the next stuff in [INAUDIBLE]. Or

sometimes they'll just do all the piping and then they'll come through depending on what it is.

And then I can assign a time. I can assign what the selection is. Well, that explicit selection means that it's going to be this layer. This is the explicit selection that it does. And then I got the scale provided 0%.

If I scroll over here, I have some cost in here. So I've got a material cost and I've got a labor cost. And I can show that visually, when I'm going through my sequence, it'll pop up on the top corner if I want it to.

So I can annotate that stuff visually in there, and as I'm running through each sequence in the time it's going to show that as I'm going. So if I need to show that to a client, saying this is how it's going to get built. This how much is this going to cost you, and you could see him going oh man.

AUDIENCE: Does it [INAUDIBLE]?

PAUL KIRKENDALL: What's that?

AUDIENCE: Does [INAUDIBLE] the value?

PAUL KIRKENDALL: Sorry.

AUDIENCE: Does it accumulate the value [INAUDIBLE]?

PAUL KIRKENDALL: So the question is, does it cumulatively add the values up? And it does yes. And that just depends on how you annotate it in there. There's some options on how you can annotate. What you want to annotate. It's not an automatic thing. It's a what do you want to put in. So how am I doing for time? Oh I got 15 minutes to go. Nice.

You said, real quick, that you have [INAUDIBLE] Microsoft Project or whatever [INAUDIBLE] up to the start and end date. And show this visually [INAUDIBLE] Right?

PAUL KIRKENDALL: Correct.

AUDIENCE: That in your Excel or Microsoft Project to show that?

PAUL KIRKENDALL: So the question is, can I manipulate that in Project or whatever I want to bring it in from. And the answer is yes. So all the raw data I can manipulate in Project, Primavera or CSV file depending on what you have. When you bring that in, it's going to attach all that to whatever you want it to attach to, which is in this case, it's going to be my layering. And then it's going to go.

So I want to get rid of all the stuff I have here first. So I'm going to shift select all that stuff. I'm going to get rid of it. So I got a clean slate. And now I'm want to go to my data sources and in here's where I can add CSV, Project, or Primavera.

If I click CSV project, I got to go get it. And then the critical part is right here, where I need these names to match. So I have a display ID is going to be the display ID. My task type has to have a task type column. So all these columns have to match otherwise, it's not going to come back. It's not going to come in. It's not going to show up.

And I think I'm actually missing one. And it's going to show me that it's not there. And so if I click OK. Go on my TimeLiner and I have that there. So now I'm going to go back to my tasks and I have an attach in here. Actually no.

Where's that one at? Is it this one? There we go. So I want to attach all that stuff in here. I want a map TimeLiner task from column name. I'm going to apply those rules. Did I skip a spot here? I got that. What did I skip?

I added-- It should add through there. I don't know why it's not applying my rules here. So you should be able to apply, like I said, through the layers right there. Hit your apply rules and it should populate. If something's going to go wrong, it goes wrong when you're in front of a bunch of people. So I don't know why that's not populating, but it should populate everything in there.

So what I'm going to do is I'm going to open up one that I have already as an NWF. Just to show you what it's going to do. So my TimeLiner should be populated like this. So your TimeLiner is going to show up here. The Gantt Chart is going to show the timing of everything.

And you can manipulate it after the CSV is out and re-export it. And then shift around your CSV. If you update your CSV you can re-import it, and it's not going to change anything other than what you changed. And then--

AUDIENCE: I'm sorry. Since you're connected to data [INAUDIBLE] to data. Is there like a dynamic when you update something [INAUDIBLE] Is that [INAUDIBLE]?

PAUL KIRKENDALL: Correct. If you update your CSV, you're connected to data. It's going to update your file in here and you can run the sequence again.

AUDIENCE: [INAUDIBLE]

PAUL KIRKENDALL: It should, I believe when you refresh it, it it should refresh that file. And then I can run my sequence. So I have in here the simulate. If I hit Play, you're going to see in here, if I don't zoom out too far-- Hold on a second here. There it is. Where'd you go?

There you are. So what you should do is you should set a view, so you don't-- because this thing flies all over the place. I'm telling you, one thing in Navisworks that annoys me to no end, is that this thing is going to fly out to Never Never Land. Because you got to zoom on your exact part, so to speak. Or you have to have your cursor right on something that is in view otherwise. It's going to [INAUDIBLE] see you later.

So I'm seeing part of my TimeLiner here. If I open TimeLiner and up again, I'm going to start this over. I'm going to hit play. And you'll see in here on the top, I had already set some annotation up in there. I don't have all of it, but you can add costing and all that stuff into that annotation at the top here.

As it's running through my simulation, this is what it's going to look like. I can add materials to all this stuff. So if the materials didn't come in good from Civil 3D and I want it to be better similar to Max, I can add those materials through here.

You saw that my-- initially when I first brought in my surface, my existing surface, if you bring it in from an FBX, I found that's the best way to bring it in because it's going to come from Infraworks as that surface. And it's going to actually map the typology and the aerial together. Where if I do an NWCOUT and bring that surface that way, that's not going to come with it.

AUDIENCE: Can you attach views to the TimeLiner [INAUDIBLE]?

PAUL KIRKENDALL: You know that's a good question I'm--

AUDIENCE: [INAUDIBLE] past your view [INAUDIBLE]

PAUL KIRKENDALL: It is. So it's dynamic-ish. So I can move it. [LAUGHING] But no. That's a good question and I don't know the answer if you can set up a specific view per-- yeah that I don't know. I'll have to get back to you on that one. Give me your card and I'll check into that. Or a skin. Yeah. Because I'm not 100% sure but--

So the materials that I applied on this one, you can see that halfway through I stopped the materials just to show you the difference between some of the materials in Navisworks versus what came in Civil 3D. So in here I have mapped materials from Navisworks in the upper portion, and then this portion is what came in from Civil 3D. Just to show you the difference of the materials. It's super easy to put materials on this stuff though.

There's a material editor in here that-- Oh, where's it at? On Render, if I go to my Autodesk rendering. That's going to open on my materials drop down, and then I can you say, look I want that one. You get your little dropper. Drop it on and go just pick your material and [INAUDIBLE]. It takes it a little bit, but I mean, it's going to look a little bit better than having your standard materials.

AUDIENCE: If your doing a site and you have a lot of cut in it, how would you [INAUDIBLE] that? Would it show the dirt just going from existing to cut or [INAUDIBLE] trickle down like it would be [INAUDIBLE]?

PAUL KIRKENDALL: So the question is, if you have a lot of cut, would you be able to show that extracting. And the answer is not super easily. What I've done in this situation is I created an inside boundary of my existing surface. Otherwise, that existing surface is going to fly into the road and you won't be able to see it. So I created a high boundary and when I exported that, that high boundary would actually hit my slope intercept so that it shows.

If you wanted to show it actually cutting down to get the pipes, you'd have to show different subsurface stuff in there. So you'd create a surface that was essentially like a retaining wall, where you would dig it out. And you can bring that in here as a separate surface to show. Does that makes sense?

AUDIENCE: [INAUDIBLE] surface extract [INAUDIBLE]?

PAUL KIRKENDALL: You could do that, like if you have the geotechnical, you can do sub-surfaces with-- Yeah. Or you could just drop your surface each time as they're digging if you wanted to too. It depends on how good you want to get it.

I think that's it for what I had for today. So if you get any questions and you've got like no time left. [LAUGHING]

AUDIENCE: [CLAPPING]

PAUL KIRKENDALL: Thank you.