JUAN SOTO: So my name is Juan Soto. This is my first class. This is my first time doing a class at AU. Did a-- co-hosted a class last year with a couple of buddies of mine, so I always wanted to do it. I thought I was a little bit like, well, you don't have enough content. You don't know enough, but I think I had enough content this time around to do a class and kind of show you guys some stuff.

I'm originally out of Mexico. I was born in Mexico. My family's from the real small town in Texas, but I live in Fort Worth, Dallas Fort Worth area. I work for Kimley-Horn, worked there for about three years . Been doing civil and master planning and visual stuff. I just been all over the place, jack of all trades, right?

The place you can find me at the most is Twitter. I love Twitter. It's a good tool for me to communicate back and forth with you guys. I don't have to send you guys an email or go back and forth with phones or phone calls or anything. So I'm on Twitter a lot. That's where I met half of the people that I met here at AU.

Content is good because they can send me screen caps, send me information through Twitter. And we can kind of communicate that way. So that's the best way to get a hold of me. If you have a question for me, get on Twitter or you can send me an email. I'll reply to you guys' email from work. I don't answer my email on the weekend. That's why I put Twitter up there for you guys.

Yeah, the main the main thing of the class, main objectives of the class that I want to go through is-- I went to a class this week, the guy said, you're just going to learn cool stuff. That's what I want to show you guys. I want to show you guys some cool stuff.

Now there's a lot of times when you get into these models, that there's certain ways that kind of Autodesk came up with workflows to do it, but sometimes we've got to come up with our own. Because there's stuff that takes too long. Like some of the visual stuff that I come up with, it's fast. . Quick Got to generate-- sometimes I don't get paid for that stuff. So I got to work that stuff in and try to sell my project. And my PM's like, whoa, we can't spend that much time on it.

Well, OK, let me see what I can get for you? So a lot of the methods you see, it's not because this is the best way, it's just faster for me. Time is money, right? We need to be able to

produce something that's good, but also that's cheap and that's going to sell our project. So I'm going to go through some of those workflows. Just cool stuff, right?

Four objectives I got for you. I hope at least one of these you guys take back and do in your everyday office. First one is I take an assembly of a retaining wall. Now why do I do that? Retaining walls. There's no method right now in InfraWorks.

We do a lot of land development projects where you have variable sloped walls, right? Variable slope walls, there's nothing in InfraWorks that does that right now. So you have to come up with a different workflow, right? I've tried different methods, and I'll show you guys a couple that I've tried that didn't work.

Second one is create your own FBX FBX is the proprietary format to Autodesk. It's their model-based file, right? Everything works. Everything is supposed to work. So I"ll show you how to create one from scratch.

The third one is raster imagery. Way underutilized. And I'll show you guys an example at the end of how I utilize this to the max potential that I figured out too. OK? It's pretty cool.

The fourth one is a lot of times we get this in our head, where we can't get accurate data inside InfraWorks You can get any survey objects, any blocks, any trees, anything that we've already CADed up. You can get in InfraWorks you just got to go through the right process. But it;s got to be quick.

We get these tree surveys. This is one of the examples that I use. We get this tree surveys from our surveyor, just trees everywhere. It's like I want to be able to get all of these inside Infraworks and kind of show them how dense an area is or something. So that's one of the other things that I'll go through.

Show you guys a couple of examples of why I picked retaining walls to go over. See that picture on the left here? See this right here? How many of you guys like seeing that inside your model? Does that look like a good representation of what the texture applied to a retaining wall would look like?

So the problem is, InfraWorks if you do SDF, which is a normal process, right? You take a close shape, and you bring it into InfraWorks and then you apply a texture. What doesn't understand the Z value in the texture. It's not vertical. So it stretches and skews the image. It

warps it really bad.

I mean, when I first started doing this, I was like, there's got to be an easier way. Well, this might not be the only way, but I came up with a better way of doing this. This what I end up with. Nice retaining wall. Texture applied to it. Looks a little bit better than the warped material over here, right?

All right, so a couple of methods that I've tried that didn't work, so you guys don't spend hours and hours and hours trying to do what I did. I'll give you guys an example of what not to do. All right. This first example, this is an SDF that I've extruded inside InfraWorks but the problem-- if you see right here? See that right there? The top of the wall doesn't match the slope of my verbal slow terrain.

It matches over here. But not over here. So it doesn't vary with the ground. That's one of the problems with using SDF or even a barrier, right? I've gone as far as to create a barrier, which is a fence, and made it look like retaining wall, so I can put it on a model. I've tried a bunch of stuff. I mean, I've tried a bunch of stuff.

So don't do this. This second one here? I've actually tried a grade. Has anybody tried a grade inside InfraWorks Is it fun? It's-- you can't do it, right? So I tried, back in the day, when it was an older product, I've tried to actually create these terrain shapes, and try to extrude them or protrude them through the surface, to where I can get the top of the surface to match. Doesn't work, right?

So I try to make-- see what happens to the toe? It skews it. Stretches it because it doesn't know there's a sharp vertical curve there. There's no drop, right? So don't do that. It sucks.

All right. So this third option over here. I've gone as far as to create a shape inside civil 3D and I've clipped out the terrain surface to try to give it that width of my wall inside my terrain. Yeah, I actually tried that. I did. And it didn't work.

So it's like, don't try these methods. If you come up with another method that's better, email me please. Because we can collaborate on figuring out better ways of doing these retaining walls. So those are three that I say, don't do.

All right, the other objective is SDF versus Raster, right? So right now the process is-- everybody, if you're here to try to figure out how to do SDF imports. There's 100 other classes that will show you how to do that, right? The normal process, which would be this, to show you

how to bring in SDFs and apply textures to them inside Air forge. That's the normal process.

This is what I'd do over here. See this over here? Can anybody do this in InfraWorks right now? Can you see what's going on here? What I did is I took an image. I took a CAD drawing that somebody already had hatch pattern. I'm using it as an example, right?

Somebody already had put patterns on it and put these textures on, and I'm like, why can't I just get that in my InfraWorks right? And I know the new version allows you to stretch and skew the DWG now, but I think this method is a little bit better. What's happening here is I printed the PDF from our CAD drawing.

I created a PDF. Take the PDF. I create an image, right? I take the image, and I create a world file. You create a world file of that same image, you can drape it over any surface. So that's not the trick. The trick is, we're in the world of change, right? We do a lot of sight work, so stuff changes all the time, all the dang time changes. I needed a method that would say, OK, if I change my site, I want to be able my image change too.

So I just reprint the image, save over the JPEG. I don't have to redo any world because it's just saving over that same image name. I come to my InfraWorks model, refresh. Boom, my site updates. Right? That's pretty cool, right?

That's one method. All right, so the third one here is SDF imported as blocks. A lot of times we get these servers, and I'm going to pick on servers because they don't standardize in civil 3D, right? We get some guy send us Eagle Point. If you're still doing Eagle Point, beat them up. Don't do Eagle Point.

I know because I use them back in the day, and it's archaic. Let's do something else. But we still get stuff like that. So we get these blocks, and we get all these-- sometimes they're not even blocks. But I'll tell you right now, inside InfraWorks you can't click faster than you can inside Civil 3D.

I can generate old-school commands by using divide, measure, generate. All these weird blocks, right? It doesn't matter what type of block they are. I just need the XYZ location or that component. So I'll sit there and do SDF points out all day for landscape, and our landscape guys are like, wow, that's pretty cool.

You know, because their mindset is you can't get it as exact as it is in CAD. No, you can.

You've just got to go through the right process. And don't think of it just in landscape terms. Think of it as cars. Think of it as hydrants. Quick tip.

I'm working on something right now that allow me to insert a hydrant inside InfraWorks and it creates a coverage of the hoe link, right? With just a shape. So you can create an SDF of that location with the shape aside to the cose link, right? Because I want to be able to show my client, this is the extent of why we need that hydrant, so we can cover your hose link for your fire hydrant cover, right? Just a quick method for fire hydrant coverage.

But the main one I'm going to go over is the landscape, right? Because we do a lot of landscape stuff. We have our own landscape guys, and they've adapted to InfraWorks a lot, so that's they're--

Last one is FBX objects. So I came up with this because InfraWorks doesn't have a north there. So my boss came to me, he's like, hey, the client wants to know which way north is on your really pretty little screen capture, or video. I'm like, well, I can do it in Photoshop. Or I can do it in any photo editor. I could put in a north arrow.

I wanted a solid, I wanted a block that I could put in, that I could share with the whole firm, that way everybody has the same one too. So I just generated my own.

Now the trick to this is, what you have to do inside InfraWorks is you have to create these contrasts. Because when you're inside InfraWorks the reason I understand why Autodesk has not created 3D text for InfraWorks, because if you think about it, it's real difficult to fly a site and to have that same object look like it's text from every angle, right?

They need something to contrast with. So if everything is white or black, and you're zooming around your sight, you're flying. It's really hard to see what that word is inside your model, depending on your angle. So I can understand why they don't have labeling inside there. But I'll show you guys some cool methods for that.

And this over here. This is a water tower I did. So the thing about FBX and the models, you have to-- they're real. They're exact. I mean, they gave me a cut sheet. So I built that tower exact, with the exact textures. With the exact letter height that they needed.

So you can create your own custom FBX and bring them into InfraWorks. So that's kind of the fourth object we'll get to, hopefully we'll get to it

All right, but let's get to the demo. That's what you guys want to see, right? All right, let's give a book away right quick. I have a book that I want to give away, but I have a question for you guys. All right. Who can tell me-- who can tell me what this is?

And what you're going to do is you're going to get this book by my friend Ish. Ish, you're in the room? There he is. Ish? No, Ish is not here.

This guy right here wrote this book. Ishka. He's around here. He signed it. There he is. There he is. You can take a picture with him, if you want. He actually, him and another friend of ours wrote this book. It's Mastering Civil 3D.

So first one that can tell me-- I guess I better just show you guys. First one that can tell me what this is? Who could tell me what that is? What product? He got it. He got it first.

That is the icon. This is how long I've been on InfraWorks. That is the icon to the beta version of InfraWorks. It was originally called Galileo. I ran into this icon. I was like what the heck is it. I Couldn't remember. It's the icon to the beta version of InfraWorks.

Yes, ma'am? Actually, that man back there, if you talk to him, he could tell you exactly where that-- the author is back there. He signed it. Take a picture with him.

All right. So let's get into the demo. You know what? I'm going to duplicate. There we go. You guys see that? All right. So, let's boot up CAD here. I should, I think I have that open.

All right, so everything that I'm going to go over, I have a data set for. I've had a little issues getting InfraWorks models on there, because they're kind of big. But I've tried to compress them as much. So if you need the InfraWorks model, I can send it to you. I can Dropbox it to you. We could get it to somehow. Just get a hold of me, and we'll get it to you.

But everything you see here, I'm going to upload again to the website, the AU website, so you guys can get it. Just-- it's timing out on the InfraWorks models themselves. So--

All right, so if I go fast, it's because of time. But the paper, the documentation, should have every click in there. I'm just not going to go through every click, because I think you guys should know how to import a surface into InfraWorks by now. Looks like half of you guys were InfraWorks users, so.

All right, let's open up the drawing that has the preliminary plan. Now by the time it gets to me,

somebody has always spend a little bit of time on the front side. So they'll give me a preliminary grading plan where they assume these retaining walls would be at, right? So by the time it gets to me, I already pretty much know where they're going to be at.

The only thing I need to do is I need a spruce it up a little bit. I need to put some vertical walls in there are going to look right, because right now it's just a terrain surface, right? Just a basic 10. All right, so this file has a corridor. it's just a retaining wall corridor. It's basic, it's out of the box. Nothing difficult about it. It's got two surfaces, right? Existing and future.

And it's got a poly line in it. This poly line just defines the top of my wall, right? All right, so I'm going to create a line from it. Everybody knows how to do that, right? If you don't, you're in the wrong class.

All, right, so I'm going to call this wall one. I'm going to create, take this off, and I'm going to go ahead an delete that. Now I got an alignment, right? So I'm going to create a profile of my next thing I need to do. And I want to profile both of these services.

And I want to change the FG because I want to see the difference in the line types. All right. There's my profile now. Now, This is, I need to point this out, because this happens to me a lot. What's happening there is that alignment is cutting the face of the tin, that's all. So I need to do is just stretch that slightly.

And as somebody pointed out when I showed other people how to do this, they're, well, it's not as accurate as your tin surface is now. I'm like, no, it is. Because all you're trying to do is you're trying to get the elevation that your vertical sloped wall is going to attach to. So that same elevation, I mean, that's not that much difference. You're just trying to get that wall to flow along that profile.

So if you ever done corridors, it's going to crap out right there. Right? Like it doesn't like that. It needs to be smoother transition. So the way to fix that. Since I know where the problem is. It's this curve. So you just take it. And I'm going to show you guys, show you what happens.

All you do stretch that slightly. Now that fixes it. Now the elevation didn't change, right? It's still the same elevation. It's just you took out the part where that curve is actually cutting that skewed face along the retaining wall, grading plan. So just a quick little tip.

All right, next thing we need to do is go ahead and build the corridor. We'll call this wall one. For our profile we're going to use our FG, right? Because it's cutting the FG surface.

Assembly, we're going to use that one that's in the data set. And for our target, it's going to be the EG.

Now. a quick here. If your footing for your retaining wall extrudes beyond the EG surface, right? Sometimes what happens is that footing is too long, and so your EG surface doesn't have enough room in there to kind of not protrude through the EG surface.

Just real quick, copy the surface, or create a surface. Paste your EG in there, right? And then lower that EG surface, and attach your toe to it. So you to lower that EG surface 10 feet, five feet, as long as the footing for the retaining wall doesn't extrude, who cares? I'm just worried about that vertical slope on the top. I just want to be sure that it looks right in my model, right? That make sense?

Right. So I'm going to hit OK here. Hit refresh, because I want the whole thing. I'm going to rebuild. And there's my retaining wall. You guys see that? I'm going to live dangerous here, right? Just a simple corridor retaining wall, right? All right, so, you can hardly see that. It's there.

All right. So next thing we need to do is, I don't need all this extra junk that's in the file. I don't need the surface. I don't need the EG, the FG, I don't need the alignment. All I need is that part of my model, right?

So if you-- who does a lot of corridors? OK, you guys should know about this extract feature, right? This extract corridor solids, when you're doing InfraWorks, is going to be your best friend. Because if I do custom objects, I need something that will get me directly from here to there, right? And so solids, for InfraWorks does that.

Extract. Here's a couple of things you need to know, though. Corridors work in regions, so if you set up your corridor as region, that's why I don't leave any spaces in my corridor. It's going to leave a gap in your solid too. So I use the whole entire thing. You can subdivide the regions as you want, but I use the whole retaining wall.

So if you pick by region, you can do a little portion of the wall every time. You know, it's up to you. I do the whole entire thing. So when I pick all regions, it's actually went through and it extracted all that data for me. It's creating a solid now.

Now the one thing I like about the extraction is, which is the preferred method I use, add to a

new drawing. Because I don't need that other junk. Right? Once I do the corridor, once I extract the solid, I want to add to a new drawing. Because then it's going to extract the solid. It's going to leave the corridor where it's at. And I'm just going to get a blank drawing with the solid in it.

So I'm going to place this in a blank drawing. I'm not going to overwrite it. Because I don't want anything to go wrong during the demo. Now let's go open up that drawing. Go where that directory is at.

This is what my solid looks like after i t extracts. All right, wireframe mode. Go to realistic. So that's what I generated, right? It's just a corridor extracted. That's what it looks like.

Next thing I want to do is I want to create a texture for it, right? The reason you want to texture it up here-- and if you're a MAX user, I recommend using MAX because you can play a lot with the textures and SKUs and the warps of the textures.

But I wanted to show you guys everything is possible inside Civil 3D. What You can do all these things inside Civil without going to another product. But sometimes I need to go to MAX to create these different textures that apply in different locations. That water tower I did in MAX, because it was exact-- they wanted those fonts and those textures and those paints and everything to be exact per a detail. So I had a lot more leeway inside that software.

All right, so if you're using 17, I think the commands a little different. But I'm using 15 here. I don't know why, but I am. All right, so just type in materials. Brings up the material box. Now I know that I need some sort of stone, right?

So if you go to the search box, you can actually search for different components that are in here. Now, it's real important to know that the textures, the textures are applied here through Civil 3D, right? So when you export that material, you've got to just tell it, attach the texture with it. That's all you've got to do, right? So I'm going to pick that stone pattern that I have inside the documentation.

Now there's different methods of doing this. I like to drag and drop in my drawing. You can actually pick it. Go to your properties too, in the materials here. And then you can assign it here as well. You can drag it from here to there. Or you can pick from a dialogue box here and say, I want to attach that material. All right?

So I like it, but I wanted to change the scale now. So if you go to the material itself and hit this

little pencil icon here, it's the edit material. What I want to do now is, I want to edit that scale factor on it. So right now it's set to a 5 sample. I want to go to a little bit bigger, because I know I have bigger panels on it.

So now my texture on my wall just updated, right? Right? So now I want to get this inside InfraWorks, right? Next thing I do is, need to be sure, you need to be sure that the coordinate system matches your InfraWorks model, right? So you need to make sure that is. I'm Texas, so it's 983. North Central US foot. Or, I think it's central because this is El Paso. This one.

OK. All right. Now all I've got to do is come up to the export and say, export FBX. I'm going to put this where my project is it. I'm not going to override it because I know it works. All right. Close this. Come up to my InfraWorks model.

Now in the documentation, I go step-by-step. I show you guys how to bring the tins in and the surfaces, but you know, I kind of bypass that for time. So go up to data sources, import, say model, pick where your wall is at. Hit refresh. Or configure, sorry.

I like doing building. I've gotten different results with both methods. Sometimes with buildings, the texture doesn't come in. I don't know why. It's just-- it's a trial and error thing right now for me, but I use buildings a lot. I don't use city furniture. I use buildings a lot for it.

I'll set my coordinate system right. Now I really like the preview box because before I bring that in, I can make sure that that texture's being applied there the same way that it's applied inside. My Sometimes the texture doesn't come, so you have to try different things on it.

Now one thing I learned this week, this model-handling thing, I learned this week in a class. So the guy was saying that sometimes when you're zoomed in really close on your model, it dumbs that resolution down if you set that auto. I didn't know that. All right, it's a good tip. I'm going to leave that alone though, for now.

I'm going to hit Refresh. All right, so-- this is where I think I need a surveyor. What's happening here, the FBX came in, but it's not in the right location, right? So this week, when, I'm at AU, I had a lot of conversations with guys about what's going on here. Somehow the FBX, and this happens a lot in MAX, right? Because of the origin point.

The whole reasoning behind what I wanted to do was get this in the exact location that my corridor is, but because of the coordinate system that I was using, it truncated that XYZ

location. Now I don't know why it does that. If anybody from Autodesk is here, let me know please. We can sure use it.

So I still scale it here. I wish there was a function of just exporting the FBX and it being in the right location. So I still have to do some manual input here. But because I know what that scale factor is already, I'm going to punch that in. What's that? Thank you.

All right. So now I think it was-- I'm just going to scale this because I know what that factor is. Now I don't know why the FBX export does that, but it does do that. I don't know-- I wish somebody could explain it to.

AUDIENCE: [INAUDIBLE]

JUAN SOTO: I think it's everything. And the reason I found this out a while back was because I had a site that had about 10 retaining walls, right? And I'm like, OK, I went through this method. I finally figured out how to do it. I went through this method, so I'll export all the retaining walls in one file with all the these in it.

When I brought it into my site, everything was just shifted, and I couldn't figure out why. And so I talked to my surveyor, and he's like, well, it's not a grid-to-surface thing. It's not a translation thing. You know, I don't know. He's like, I don't know FBX. All I know is XYZ coordinates. You He couldn't figure out what the issue was.

So I started, like, OK, so I talked to my MAX guys, and they're like, well, what happens in MAX. The reason these guys move these structures from this $6 $2 million location down to zero is because I think the objects, they get shifted and skewed if you don't. I get truncated that XYZ location

So you still have to do a little bit of manual input, but there's a lot of methods to do this. But I think this one's worked for me very well over the years. And it's really easy to update. Now that I have that in there, if I want to apply a different texture, I just go to CAD. Change the texture. Export again back to FBX. Refresh my solid here, and I don't have the scale it anymore. Yes, sir?

AUDIENCE: [INAUDIBLE]

JUAN SOTO: I think it's based on your region. I think it's based on whatever coordinate system you set. Because I was in a class yesterday, and a guy from Alaska was having some issues. He was

doing a class, and he had some issue with some of the models. And I couldn't figure out what his scale factor was either.

I mean, mine is just trial and error. I just figure it out. That's what worked for my site. So now, I think I have like five or six in this site. I just set that same scale factor of them and it works. Yeah. Pretty cool, right? All right.

Let's close this guy out. Let's go to the next thing. The next one is, I think, pretty interesting too. Let's go-- all right, the rest are-- When I first figured is-- I thought I was pretty cool. I was walking out with my chest puffed out in the office, you know. Because the thing is is that the first thing people ask about InfraWorks is well, can you label that contour? Or can you, you know, show me what the street name is.

And I've always done 3D text, right? Like you can go into SketchUp, put your label, put your street name in there. Extrude it, export FBX from there. Bring it in, then you have to place it in your street right.

But the other thing that's interesting about this method is it doesn't have to be text. It could be anything. Like if you can stack it inside Civil 3D, I could project on my terrain. So if I can print it at enough high resolution where it doesn't look weird, you can label as much junk as you want inside your InfraWorks model.

And I'll show you guys an example of something that was this simple, but I'll show you something a little bit more complex that I put together. One of the things that you guys probably don't is, you can filter a color inside an image. When I found that out, the only problem is you can only do one.

So if you have an image, let's say, that's all white. You can go into InfraWorks and say, I want to filter white. Right? So you could get anything that's color inside there. So this is the basic concept of it, but don't think about it in just a small site. Think about it contours, images, line work. You know anything you can actually drape and print, you can actually take to that tint.

So let's go through the workflow. All right, so let's just assume this is your site, right? So the first thing you notice is, I drew a box for the outer extents. That just tells me this is a good place for me to go back to and print and use the exact same extents every time.

So I'm going to plot this. This is just line work and hatches. This is just line work and hatches. I'm going to use this as my extents for my plot, and I'm going to say, now, everybody asks me

about the scale. The scale doesn't really matter right now, but if you apply a scale to your PDF, it's easier to apply a factor to it, right? If it's a 10, you can do 220, if it's a 40, you could do 120 or whatever.

So the scale doesn't really matter, because you're going to take it and you're going to scale it up back inside your drawing anyways. So I'm going to hit 10, because I've done this 1,000 times. Hopefully it works.

Now don't print with the pin table. I know you guys probably have 1,000 pin tables in your office. You don't need it. You want to have that true color, you want to have whatever you're printing show up so take that pin table off. So I'll just hit preview. This is what my PDF looks like.

All right, you guys with me still? All right, so I'm going to hit plot, but I'm not going to override my PDF, because I already have one. So I'm going to go into my Raster. And this is my PDF. Now we use blue beam in our place. You could do this with anything that converts a PDF to an image, right?

So now I'm going to go to export. I'm going to say, export JPEG. There's my JPEG. I'm not going to overwrite it. Now what I want to do is I want to bring that image in. Now right now, I don't care about where it's at. I just need it in my drawing, right?

So now I'm going to take this guy. And I should have used one that had that. But I'll use the bottom corner. It's the same exact thing. So now what I want to do is I want to move this guy from here to this corner right here. All right.

Now because I know the factor, because I applied a scale to it, I think it was 20. Oh, nope, let's go back one. I'll just do scale. You can do scale or line. I'm old school. I use scale reference a lot. I know there's a faster way of doing it, but I'm old.

All right. Pretty close. Now it's important to get this as accurate as you can do it. That's why I usually have that border around it, because I can use that same border and align my drawing with that JPEG. This is kind of the trick, right? The most accurate you can place that image back in your drawing, the better it's going look on your model when you're done.

So I'll do send to back, because I want to see how close it looks. Looks close enough to me. Close this. Now you come up to the Home tab, I mean the Raster, I'm sorry. Go to Rastar

tools. This little icon right here. You know, it's just a really quick-- what it does is it just creates an xyz location for the image. It's called a world file. So if you have Raster tools, if you don't have it, you need to get Rastar tools, because it allows you to kind of play with some of the corner systems for the images, especially if they're skewed. You know, grid-to-surface things.

So it's a good way of re-translating them. So I create this world file of the image, right? And so it's important to understand that world file gets dumped in the same location that the JPEG exists. If you move it, you've broken the link between the JPEG and the world file.

All right, so normally I would hit that guy, and it would ask me where do I want to store the world file? And I would tell him the same location. So now I'm going to open up my InfraWorks model. And again, in the handout, I go through how to bring in each one of the 10. Kind of scratch that for time purposes. And I probably should have removed that.

All right, so that's what it normally looks like, right? So now what we want to do is to bring in the Rastar image. So let's bring in the Rastar. Let's go to where that image is kept at. This guy right here. Now I want to hit Figure, because it's, I think it's north-central. Let me hit Refresh. And that's the image that I just printed from CAD. Yes, sir?

AUDIENCE: [INAUDIBLE]

JUAN SOTO: I've tried that. The problem is is that the resolution is not good. You want to output from CAD the highest resolution you can. And inside the PDF, there's actually a option in there to go from 100 dpi to 200 dpi. So you want a higher end image because you want it to actually depict some of the stuff you're working on in the ground, right? Like you, now, think about this, right?

Like somebody said, well, InfraWorks has way better textures and SDFs. You can actually apply grass to that. So one thing I did, when I started playing with, and I'll show you this example. You don't have to just use hatch patterns. You can use high-res images, and do VP clipping on them. Like that intersection is actually a textured image that I put in plan, and I just clipped it, using that same shape. I just clipped the boundary, printed it.

Guess what? I didn't have to attach an SDF to that texture. So now I can change that really quick. That's the whole point of this. My boss is like, hey, we're spending a little bit too much time with all these SDFs on these large sites. I'm like, well, shoot, this is going to get our point across. It's the same exact method.

Now if you're worried about quality and high-res, go to MAX. But if you're dealing with InfraWorks, this is a real quick method because I can go into that drawing, change whatever I want, print it, save over the image. I don't have to recreate the world file. Every time I save over that same image, I'll come back up here, refresh, and my image updates. Pretty cool, right?

All right, goes to the third one. Let's close this. How much time I got, Jeremy?

All right.

Let's open up. Let's do some survey stuff for landscape. All right. Just quick. Just quick methods. Ever since I've been doing InfraWorks, sometimes you get a little bogged down on applying little textures to these one curb along your team, you know, just kind of a quicker method to do it.

So all right, here we got a generic landscape plan that our guys did. Our guys are a little bit better about using blocks and stuff for their components, you know, for their trees. But I know a lot of people, sometimes you get a bunch of junk, you know. It's like you get a landscape from some other guy. So I'm going to show you guys a quick method of generating some of these objects into InfraWorks.

It's the same concept if you're using hydrants, cars, blocks, it doesn't matter. We can click a lot faster inside Civil 3D. We've all been using it lot quicker, I mean a lot longer. So do the hard-in, you know, the hard stuff that gets repetitive in here. I cannot click all these 30 trees inside InfraWorks faster than I can generate this workflow and bring those objects into InfraWorks.

I can't. Some of you guys might, that have been doing it for longer. But this is a really cool method of bringing in these components in the exact location that they need to be if you don't have objects inside InfraWorks. So let's go through the process.

This is a standard block, right? First thing I do is I go to the block editor. because that same block exists in my drawing, I like to separate the drawings based on the trees, because it's a lot simpler to export the objects. You can do randomisation in there, but a lot of times when we're doing our own landscape, we already know that this tree is a specific type or this hydrant is a specific type. So I'll separate that stuff out after the fact so I can work on it a little bit better and kind of group them.

First thing I do is-- who knows PD size? Knows what that is? Anybody? So PD size is back when we did not have Civil 3D. Or Pete type, I'm sorry. Back when we didn't have Civil 3D, this is what we used to have to do for points, right? Bob knows.

So this dialog box just lets you see what the variable for that node is. Now I need a node. I need to put a node right in the center where my tree is at. So this command allows you to bring up this dialog box and lets you see what that variable is set to. I like using this cross because it's big, and I can set that. Also the scale, the point, right? Seeing how big.

Sometimes when you put a node, you don't even know that you put a node there. So you want to change this prior to doing this. So I'm going to make this 200, because I like it to be big. All right, so now I'm going to type in point.

Now there's a difference between an AutoCAD point and a Civil 3D point, right? You have to go through this process to get them into the right format, right? So I have this block. I'm going to go center of this guy. There's my point, right?

Now the cool thing about the block editor, if I close it, because the same block, it exists in every one of the blocks already, right? So it's inside there. So I'll just select it, select similar. Explode it. That's my AutoCAD point, right?

Now what you want to do is move up to the home tab, and you want to do convert, AutoCAD points, right? Pick it. Window my area. Now here's the trick. It's asking for a description. I don't care about randomizing the tree. It's going to be the same type of tree right now. So if I just select the Enter key, it's going to cycle through all of those and convert Civil 3D points.

So all I did was I took a block, I created a point. I took a point, I created it Civil 3D. I made a Civil 3D point. Now the reason is is because there is a method, SDF is a method that you can extract the coordinate location for an object and bring it into InfraWorks, right?

So now that I did that, now I need to be sure that my coordinate system is set. And for time, I'm not going through that, because I already know I have the file. Set your coordinate system. You go to this output tab. You hit this export SDF, and it's going to take anything that it knows that's a point, and it's going to put it inside that file for you.

So I'm going to come up to my InfraWorks model. Close this guy. Let's open up our landscape file. And this model was a lot more complex. I chopped it up because I wanted to show you guys what the SDF import trees and objects is. This is the one that I was having trouble with

uploading, so let's get rid of these two guys. I thought I did this, but apparently not.

All right. So you come on to the data sources. You go SDF. You go to where the scenic export is at. And I think it's trees. This guy right here, I think. Here's a trick. Just make it trees, right? If you want hydrants, this is where you change it. It doesn't care about what the block was, or what the component was before. It's just worried about that XYZ location. You can make in any component you want.

So instead of doing-- this is how I came up with this. Instead of doing light poles inside InfraWorks, like do it inside CAD. You could snap to centers. You can put them on curve locations. You can do old measure commands, and you can use divide commands so much quicker than you can and randomize stuff inside InfraWorks, that this method is going to work so much faster for you every time. Doesn't matter what the component is. You just need the location of it.

So there is a script. Sometimes if you're doing randomisation, you can put in the script, and I think there's a lot of classes that have that. I'm going to use just a generic standard tree, because I know it's the same one. And it really doesn't matter. Like I say, you can substitute for anything you want.

So I'm going to hit Refresh. Now this comes up sometimes because of the coordinate system. I'm working on a local system. So it comes up, and InfraWorks doesn't like those local systems. But I'm OK with just going through that.

So those are the same exact trees that I had inside my CAD drawing. So this is a cool method of getting these objects in and out real quick.

Now let's go through existing, right? One of the issues with this site was the owner was selling the adjacent property. This property out here. He wanted to show how dense that was. He wanted to show somebody a rendering, if they were going to buy it, so they could see how many trees were there. So it's an existing survey file, right?

Let me open up that survey file that we got, and I'll show you the kind of stuff we get from surveyors. I'm still picking on surveyors. This is scary. So I've already took out all the junk except the trees, but this is what they give us. Like piece of tags and a block right there. I mean, that's supposed to be a tree. It's not a point. There's no attributes, no z elevation. There's nothing assigned to it.

So it's the same method, right? I take this. I go block edit. P type. Make sure that my type is set. And make sure this is 200. Hit OK. All right. Now type in point. Go to center. Close it. Save. So there's my nodes, right? So I'm going take this guy, select similar, I'm going to explode.

So that's my AutoCAD points there. I'm going to com up, convert. Select them all. This is how fast it does it. Whoops. Dang. This is how fast it does it. Points. Convert. You zoom out. There we go. Now it's asking for a description. I don't really care. I just want to show how dense it is. I'll just hit the Enter key. [INAUDIBLE] pressed. You'll know when it's done.

That's a lot of points that it's going through, right? So a lot of points. It's done. So it just converted all those points, and it gave me Civil 3D points now. Now I can take those, go output, all right. XDF. Again, I'm not going to override the fox. I know it works. Go into my model. Go SDF. Go, I think it's-- shoot, which one was it? I think it's this guy right here. Which one was it? Ah, x tree. Open. Configure.

And this time I'll do something different. I mean, I'll use a tree, but I'm going to use a different type of tree just to distinguish the difference. So use this guy. Hit refresh. And that's how dense that area is with those existing trees. Pretty cool. It works.

All right. Last one. How M time I got, Jeremy? All right, I'm going to try to rush through this one. It's a little bit more clicks involved, but it's the creating your own FBX, right? Let's open up. Let's go too- right there. All right.

So this is our standard north arrow. This is just generic line work and hatches, right? Like this is on all of our plans. So I took this, right? First thing I do is you got to get rid of all the shades and all the blocks. I mean, you just got to make it lines, right? So I exploded it. And I got rid of this.

Now, you've got to explode the text. Now, I'm going to warn you, when you're doing this with text, you're going to get different results every time. I've extruded text because I needed to label a street name inside InfraWorks, and it looks really cool. But the method is real archaic, right? Like you take a piece of text, and you explode the text, which turns it into lines.

But the problem with it is it doesn't have the same results every time. It just randomizes junk. So you can sit there and sketch around it or hatch it or whatever you have to do, but you need to get a shape of the text out of the components. So there's an option, and I'll show you what I

mean by the different ways you can do it, and you're going to get different results.

I've found that it's more dependent on the zoom area that you're in. So the further out, the crappier lines you get. The closer you are in to the text, the more smoother text you get. But the end result is going to be, is you just need a close shape of the text, right?

So inside the Express Tools, there's a explode text, right? So I'll pick this guy right here, and I explode it. And this is what I mean, why different results. These little shapes, they're different every time. I don't know. It's just depending on where you're at, I guess. for the text.

That's why I started doing my text inside SketchUp, because it's a lot simpler. Doesn't really care about this process. But because I was doing a custom Norther, I wanted to use whatever they were having here so, I can use it. I could have combined other stuff, but I think here you can either hatch the areas, recreate geometry, or you can trim it out.

The other thing you've got to do is you've got to give it a width. You've got to sit there and offset these lines to make it look like an extrusions going to look inside InfraWorks correctly. So I have a file that already has all cleaned up. It's basically trimming and filling. I know you guys know how to do that, so I'm not going to go through the process.

But I did want to show you that when you explode this text, and it works with anything, when you explode the text, sometimes you're going to get different results, so just know that. So I'm going to close this guy.

This is what I have right here. So this is a really cool trick. Inside InfraWorks, it needs contrast, right? Because depending on the angle you're at, you're not going to be able to see words. So what I do is I offset that text a little bit so I can see it on, like on a canvas. Like sometimes, if you have a car on top of it, you're not going to be able to see the wording.

So if you have something on the backside of something that's supposed to be text, you can actually read the text a little bit better. And I'll show you what I'm talking about when I open the InfraWorks models.

AUDIENCE: [INAUDIBLE]

JUAN SOTO: You can't see it? Select-- How about that? So it's just a slight offset. You know, just I just put in the offset in there. Well, you know, what let's change this guy too. That better? Yeah, so just clean up your file. This is what you need. I mean, this is like a pin stroke, right? Just a pin

stroke for what the font or the north arrow outline would look like. I sit there and trimmed it out. I just didn't want to go through the whole process inside the class, but this is what you end up with, right?

Next thing I do is I need to extrude this, right? I've used AutoCAD 20 years, so I know how to build a lot of these solids from scratch. But one of the things that you can do is, if you don't have-- if you have something that's generic, don't spend all your time regenerating. Go to the Google warehouse. Pull it.

There's so much content there. I can't believe how much content is-- I actually did a site where I put in the Cowboys Stadium. Because it was in Google, I didn't have to go recreate the model. So I put the Cowboys stadium on the site just because I could. Because somebody already had generated it.

So a lot of times I put in these generic objects, and if you need to create your own, this is where this tool is going to come into play. Because you can create your own tools, you create your own objects, create your own materials, and apply them to the FBX and bring them into InfraWorks.

So I'm going to, for time sakes, I'm not going to sit there and go through every click. But just extrude the objects and subtract the components inside. Every step by step is inside the handout. So let's open one that I've already did that has the extrusion already applied to it.

So this is what my north arrow looks like after I subtract and extruded it. And you see what the difference is. All I have here is just a canvas for my text to overlay on top. So the one thing I did here that I didn't show is I just attached the material. I like using that blue faded transparency because you can actually almost see through it inside InfraWorks. But the white, I don't want to be able to see through it. So I want to be able to just read what that text is, right?

So at this point, all I do is I create SBX export. And the coordinate system doesn't matter, because this one is an insertion point that I'm going to need is lower left hand corner. It doesn't really matter. So all I did is I go export FBX, right? And I'm going to bring it into my model. Let's go back to models. I think I have enough time for it.

Now this is the model I wanted to show you guys earlier. And I'm going to bring that north arrow in here. I think it's already in here. If it is, it's better. Because all you do is just go to your

models. Bring in FBX, and it's going to bring in the textures with it. But this is something I wanted to show you guys.

So what you're seeing there, and I know I'm running out of time, but what you're seeing there is the north arrow. You're seeing everything that I compiled SDF wise is inside InfraWorks. But I've also overlaid an image of the grading plan, right?

When my boss saw this, he said, I thought you said InfraWorks couldn't label stuff in it. I'm like, well, I figured it out, dude. I got it. So it was like, this was like, this is the day I was walking around with my chest puffed out. Because it's like, I hadn't been able to-- we're engineers. We need to be able to see stuff that's actually engineer's work.

So this method, what I did here, is I printed the grading plan that was white, and I filtered out the white, and then I draped it onto my tint. And then I was like, well, shoot, I can do the image. I can do hatch patterns. I could do all-- like, all you've got to do is stack it right inside CAD.

So all you've got to do, just stack it right. Draw order rise. Print it at a high resolution, and then drape it over your image, over your tint. And you end up with something like this. Now, this was a little bit longer, so I couldn't use this in my demo. But this is the kind of stuff you can do with the Raster drape image in their with the world file.

So first of all, thank you for coming. I know there's a lot of choices that you guys have, so I know that this my first class, so if you can, please grade me, because it's going to let these guys know if I did a bad job or if I did a good job. So thank you very much for coming, everybody. I hope you guys got a little bit something out--

[APPLAUSE]