

**RANDY**

My name is Randy Roberts, and welcome to my session on using Civil 3D for transportation

**ROBERTS:**

infrastructure design, or as you may refer to it, all the other sessions were full, and here I am. Actually, you will be glad you attended this session, because I'm going to be showing you how Florida DOT took out-of-the-box Civil 3D and added on some extra functionality, added on tools and applications that you can use in your transportation designs and plans.

And I got to ask this: how many in the audience have heard of the Florida State Kit? How many people have downloaded it and use it? Well, those that this is the first time that you have seen it, you're welcome. This is going to be good for you. And everything I'm showing is free to download. Even in the handouts, there's a link that you can go to everything I'm going to be talking about, and you don't have to be doing work in Florida DOT or Florida to use this State Kit for your everyday use. In fact, we get a lot of support calls from out-of-state people using the kit for their own need.

Currently, there are two flavors of the State Kit available. There's a 2016 MR1, maintenance release one, and a 2017 initial release that you can download. There will be a Q&A session at the end. So please hold your questions until then. And I guess we'll get started. This room reminds me of my flight coming over here. So it's a full one.

Today's class summary, I'm going to talk about some of the tools and demonstrate some of the tools. You don't want to see a PowerPoint presentation all day, so we're going to do a live presentation. What could possibly go wrong, right? Some of the key learning objectives today is where the State Kit is-- where you can download it, the location, the special subassemblies that have robust help documentation and can also be used with the stock, out-of-the-box Civil 3D subassemblies. You're going to gain knowledge on how these tools work, how you can use them. Give you some ideas when you get back home, how you can use it just for general usage. And there is an AutoCAD-only install that we have, just a AutoCAD State Kit, that just has the resources, blocks, templates. Mainly, those are for architects or landscape architects that still do work within Florida, but don't need Civil 3D or don't have it.

Where is the FDOT State Kit? Like I said in the handout, there's a link that you can click on. As you can see on the screen, currently there is-- this is the 2017 page right here, and here is the AutoCAD-only install. And there's also, like I said, a 2016 that goes to it. We have some additional resources available, so the items that I don't have time to cover-- and there's a lot--

you can go and there are quick clips associated with each tool and application. Just hover over the tool, hit F1, and it will take you to this first page here, the little help document, with a link to the quick clip. For this example, FDOT signs, once you go to the quick clip, whatever you select is highlighted, the video. So you can just click on it and play. And that's a really short, concise video. They range from 45 seconds to 15 minutes, but they're broken up into little chapters so you don't have to sit through the entire video.

So that concludes the PowerPoint, or as I call it, the power nap presentation portion. So once you download the State Kit and install it, which I do recommend that you read the installation guide. Who reads instructions, right? Because I can tell, not a lot. Once it installs, there's a folder structure that installs-- in this case, this is on my C: drive, FDOT 2017 dot C 3D. There we go. Thank you. There we go. Inside the folder, once it's installed, there is an apps folder. This is where all the applications are that we use.

We have, inside the data folder, all the blocks, the block folder. And inside some of these drawings contain-- I'd say they range from 15 blocks to up to 1,000 in each DWG. So it's broken into the FDOT standard. There is a template folder, which contains the templates that FDOT uses, that has all the styles and objects in it, the layers, everything you need to do your plan work to the standard of the state. There is a XLSX folder, which contains all the spreadsheets that are used for quantity reporting. I'm going to show you how to generate some quantity reports a little bit later. In our sheets roadway folder, there's another set of templates. Basically just the paddle blocks, your plan and profile sheets, your section sheets, with material, without material, and all this is used.

Let me show you one thing, because I'm going to refer to this in a little bit. There is a folder here called FDOT Project Template. And this is the folder structure that FDOT uses where each discipline, the design file goes into its appropriate folder. And as I go through some of the applications, I'll show you how these are used. Let's start with the folder applications that are external to the State Kit. So when you install it, you also get this shortcut folder on your drive. And starting with the LANDXML Visualizer application. That is used to open up anything you can export out of Civil 3D Surfaces, pipes, anything that you can export as LandXML, you can open it up in this viewer and do a little quick data check or analysis. For example, on a surface, you can open it up and it has all the points. You can cut on the points, cut them off, cut the triangles on, cut them off, check the slope, that little slope arrows. But that's a good tool to use if you're sending out data to a consultant or something. You can do a quick check

on it so you know what they're getting, and they can also check it before they bring it into their file.

The Create Project application. This is where it all begins in Florida. As you know, it is a dual-platform state, MicroStation and Autodesk. But as the project manager first starts a project, they pick-- it's highlighted first-- it's the default, hopefully-- the AutoCAD Civil 3D project, which from then on, hopefully it's done in Civil 3D from start to finish. And inside this application, as you go through and fill out information such as county, engineer record, project manager-- as you go through this process, when you exit and save, it opens up Civil 3D, opens up all the DSTs that are in that project folder I showed you. There are five DSTs in that folder tool. And they will get populated with this data, so as you create your sheets, a lot of your information is already ready to go.

Sheet Set Organizer. If you use Sheet Set Manager, you know that you can open up one DST at a time, one sheet set. If you have more than one, you can't. One at a time. Sheet Set Organizer will allow you to-- say you have a project with different disciplines, different DSTs, you can open a project, and it will scour through that folder structure, look for all the DSTs, bring them up here. So you can print them all at once. You can actually edit some of the information, sheet title, sheet number, and it will send it back to those DSTs, to your sheet sets, and update that way. So that's pretty neat. This was developed to enhance Sheet Set Manager where it left off.

And obviously, this is the icon, the Civil 3D-- the green icon, top left-- that's your shortcut to launch the State Kit. And when it launches, all it's doing, is it has a FDOT user profile that it uses to load up all the trusted paths and all the resources so everything works. So let me go over to our Civil 3D. I'm using 2017 here with the latest State Kit, and this is our FDOT ribbon, as you see on top. It has all the tools that you need to do your design, and some of those commands will look familiar, the regular AutoCAD commands that have been moved over to the FDOT ribbon for convenience.

So let's get into the first one here, Create File. Create File does what it says. It's going to create your design files. And what it's going to do, after you select your project location and the discipline and your file group-- in this case, roadway design files-- it has a list of all the files that are used in a FDOT project. So if a drainage map-- use an example. We have on the bottom, an output file. Gives it a name. And the last two numbers-- 01 on this case. If there was an 01 existing in that folder, it would move it to 02, 03, 04, so forth. So it wouldn't

overwrite any file you have. It is reading the FDOT master template, which is the main template used. Used to be 35 templates. Nightmare. So now, cut it down to, I think, 10 that we use.

One of the little handy things that create file does, if you have your data shortcut folder set, when you went through the Create Project using the county, it knew what coordinate zone that that project was located in, and it will set the coordinate zone automatically in this design file, if you have it set in the project. And if you didn't have your shortcut folder set, it would give you a little message saying, hey, you're not linked up here. Are you sure you want to continue? Everybody thinks that's an error message. No, it's just a friendly message. You can keep going. You can create the file if you want. But if you already have a project set, go ahead and set it, and then run the Create File. And there's another little coordinate system set here that you can put in manually. From here, you would just Create Open File. It's really taking the FDOT master template, renaming it, and putting it into the proper output folder, which is the discipline.

First thing I'm going to do here, I have an alignment, and I created an alignment file, and what's really nice is as you create alignments, for example, all the styles are set as a default. So you can label-- they automatically label, everything's correct. And there's a command called Two-point Twist and Untwist here. And this is used when you're in model tab. It will rotate. I'm just clicking on the center line, the alignment, just two clicks. It'll just rotate your UCS there. Really use that for labeling right in the model. Because it mimics having your sheet layouts already done. And you can easily untwist it. Just click on that. We'll do that before I finish.

Let me go from-- still in the tool section here, there's is a Swap Parts. Everybody knows you can swap drainage parts in Civil 3D one at a time. This, you can swap multiple parts. You can swap, for example, if you have five different-sized pipes and you want to change them to one size, you can swap them all at once. And it also works for structures too. Take five structures and move them into one. One different name.

One of the main tools here, the FDOT signs. So I'm going to show you how this works, and this is just using the MUTCD sign set, so you could use this in your project now. Only difference is this puts pay item data onto the post, which you may not need, but you want the panel and the sign assembly. So to use the Sign Assembly tool, we can either start with an auto-name, or we can give it a name. I'm going to give it a name. Let's call this single. And I

have to set a panel, so I'm going to select a square select set panel. Notice when I selected Set Panel, Clear Panel comes up, which will take that away.

And the front and back here-- best way to explain this to you is if I have a piece of paper and I fold it in half, this is the front, this is the back. It's just like this. So from here, with the blue glyph-- that's the panel I'm using-- I'm just going to go from top to bottom. Conventional, regulatory-- let's see who's lucky. What number today? Oh goody, a busy, busy panel here. Have to select a size, and most of the panels already have a set size. If they don't, you can add in a custom size if you need to. It'll calculate the area for you. For a state, there are four: currently proposed, existing to remain, remove, and relocate. And as you change your state, the layer changes, the line top changes, so you don't have to worry about it after it's placed.

So let's do proposed. Make that the main panel. You have to make one, at least, the main panel. And as you can see here, there is a area of the panel. Guess my mouse is over it. How about that? Each individual panel has an area, and as I add more panels to this assembly, this total area here will go up. In the state of Florida, that's how signs are calculated. The total square footage, panel square footage on one post, two posts, one assembly. All right, so we go over to Post Properties, and just go from top to bottom again, selecting the installation method. So we're doing a ground mount, single or multi-post, proposed, furnished and install ground mount, and, in this case, one-sided. This is nice. Auto-select the pay item. So what it's going to do is automatically select the post-- it gives you a preview of the post that you're using-- and the pay item number that's going on it.

And from here, really, you just place your panel. Up here's-- when they changed the icons, I had to start reading the tool tips, because the icons are a little weird to me. So place a panel. And from here, you look at your command line. Select the object. Going to select this alignment, and as I go north and south, you see how the sign automatically rotates to the traffic direction? That is due to this setting up here on the Rotation Is Relative. So it's always going to be relative to your alignment. So let's just put it down here. This dude, the post, does the same way. You have a jig here that's attached to the alignment, giving you some feedback. Now, I can place it here, or I can use Precision. You can use the transparent command station offset if you want to do a station offset to get the post set correct. I'm just going to put it right here. And here, we're almost done. We're going to label it. Going to place a panel label and a post label. And these are Civil 3D labels too, so took a while to get that hooked up to use that. And there's a feature called Connect right here. It's a chain link, and

you select the panel and then the post. I didn't change my layer.

It's wanting to draw the connect line with the guard rail, which we don't need that. Do that process again. It's got a little leader line there, and before, users in a very busy traffic plan would manually draw their little leader line from the post to the panel and drag it out of the way. So what we did is connect them, so now you can just drag the panel and it stays connected to the post. And let me go over to the labels tab here. There's a couple of settings here. You have a group label, right here on top. That will group the label with the panel. So if you move the panel, the labels would move with it. You have a arrow direction, and what that means is as I drag this label off, you see, it works great when I drag it to the left. Drags off. But when I drag it to the right, you've got to really adjust that style. So what we did, select the-- change the direction of the arrow and just relabel. Gives you a message that you're about to delete it. Reselect the spot, and now you can drag it to the right side. So gives you a little control there.

Now, one of the nice things about the Sign tool is as you create your assemblies, you can save them to reuse them. So if you create a project that has all of the signage in it, and you want to use it in other project, hopefully you saved them, and all you have to do is reopen them and to reinsert them. And all the information will repopulate automatically based on how you placed them originally. And let's go and let's open up one. You can set where the location is, in this case, the file panel. XML. You see a preview here, and this is an AutoCAD thing, right? This text never centers in the preview, but it places it correctly when you place it. So I'm going to select Open. Now, you notice that-- I'm going to select the Preview button here, and go back to open that up. Notice the 441 panel is on the left side of that assembly. You can control that panel. Select it. You have a justification, left, center, right. And you see the total area has also increased.

So let me place this real quick, and show you how you can edit. So if I select a panel, I can go to Edit mode. Little burgundy box comes up around the tool. Means you're in Edit mode. I can do several things here. I can change the route number or I can absolutely change the panel too. So either one. I'm just changing the route number. Hit Save. Poof, that changes. All right, say you wanted a double-sided sign. All you have to do is hit Mirror here. Poof, it pops in the back side of that sign. Little time saver. And if I hit Preview, you'll see all of them together, front and back. That preview. Let's say you wanted to have an Existing to Remain edit a panel. Change the state, Existing to Remain, and select the All button. That'll force that state to all of

them. That's enough for the Sign tool.

Let's go to, on the FDOT ribbon, the multiline. How many people use the AutoCAD MLINE? You like it? No. Let me answer that for you. No. In fact, you can't find it on the ribbon. You have to either know it to type it in, right? So we took the concept of the MLINE and made it usable. Because now you can control the layer and the line type. Before, you could only control the line type and color. Now, you can build roadway sections or 2D graphics. All right, let me open up a sample. And this comes in the State Kit also. It is located-- where is it located? In the Data Multiline Patterns folder, there are plans, preparation manual, samples. And when I open it, you have some control here. You have a name, pay item ID, description, layer, and the offset, how it was built. And we can place, very simply-- you can use an alignment polyline, line, XREF line work too. Right now, I have the buffer set to zero. So what that means is, it's based on how you build your pattern. The first offset's 35 feet, so I'm going to make a roadway, both sides, so I've got to place it on both sides.

And I hover over these-- some of them that have the pay item information, like the curb face has it. These are just polylines. You can just use regular AutoCAD commands to edit these. And let's say we want to add some striping to this. Hit the plus button, and let's browse to-- you can give it a name if you want. 1030 striping. And select the layer. All these layers are in your file. There we go. And an offset, so I'm going to do 12 foot, because I want to go 12 foot from the center line here, which is the alignment. Select Add. Puts it in order. Goes ahead and puts it into ascending order correct, based on the offset. So now let me erase one side and redraw it. Now I have striping.

Now, if you want to add another stripe, shortcut is just double-click on an existing pattern, change your offset to 24, hit Add, and it adds an additional one. So that's how you can edit an existing pattern. So let me erase that side again and draw it. Now you've got your striping in here. This is a easy way to get a lot of the line work done in advance. Even though we're still doing 3-D, we still have to have some-- got to know what you're targeting.

There is also-- instead of a foot, you can enter in inches, too, in case some of the standards are on inches, especially in structures. Everybody's looking at that, right? That little striping issue there. How many people have done traffic plans with striping? How you like them line tops? You do? No, you don't like those line tops. Well, you will. I've got something for you. I've got something up my sleeve for that. You have to wait on that a little bit. You're going to love it when I'm done here.

So let's go to Entity Manager. And Entity Manager is an application that is used to draw every object that FDOT uses with the correct symbology. Layers, line types, pay item data. You can draw it with Entity Manager. It will draw, place blocks, and it has a compute method here. It's very complicated, right? And what I don't cover, go to the quick clip on Entity Manager and spend 30 minutes getting to know it. I'm going to draw just a little shape here. This is how we draw sod. And there are tools on the bottom here. These are regular-- they look like regular AutoCAD commands, but they're not. Because as I select performance turf sod here, and I draw a rectangle, and then I hatch that rectangle, you've calculated it-- you've got twice the calculation, twice the amount, right? So if you're going to do that, use the regular AutoCAD rectangle, which has nothing on it, and hovering over it just got color, layer, line type.

Go back to Entity Manager and up top, there are commands. Here's a little hatch, Field Close Region. Hover over it. Has a little truck symbol you see there. That means it is under the influence of a pay item number. And the developer actually put that in there. Draw under the influence. I said, "That's DUI." Right? So I noticed he changed it. It doesn't say that now. I left click, hit Enter, and it generates a label with an area ID. And if you're familiar with AutoCAD, every single object in AutoCAD has an ID, has a handle. And if you erase one object, draw another one, another one is generated. That's important to developers. Bored me to death. I'm going to show you the importance of that area ID in a second, here. Entity Manager, there are, like I said, these tools up top here. You can append, if you have an object without pay item data on it you get from a consultant or whatnot, you can make a selection, select the little plus button, and it adds it to that object. You can replace a pay item number with a new one. The hatch, which I just showed. You can also remove all pay item data from an object, and you can edit the pay item. When you edit, really all that happens is an edit attribute ad hoc dialogue box comes up, and you can change-- it has an association to an alignment. You can change that. If it was a block, it would give you information on that. And over on the ad hocs, you have a quantity factor, design notes that you could enter, and that's picked up on the Take-Off Manager, which I'll run shortly.

So let's go to-- oh, a trick if you want to use Entity Manager here, it has a tool here called Match Properties. So if I had a line and I use the Match Properties within Entity Manager, I select the source, then select the target, it will change it to the striping, and the pay item data will be attached to it. So it moves all the properties-- extended properties, moves them.

Place Block Group tool. It's used, basically, to place pavement messages like Right Turn Only,

all your painted word messages. And there is a shortcut to get to it from Entity Manager, and you can use it separately. It's on the ribbon. But let's do a Right Turn Only, and the Place Block Group has three blocks that you can use. Three different panels. And by default, the middle one is turned on. You can turn on the top one and the bottom one. But we're going to already fill it out here with this Right Turn Only message. You have to select the middle message first if it's a multi-part. So I have Turn. Now I want to do Right and Only. And like Civil 3D, just right-click, a lot of your commands are there. I want to do Place Block Group. Poof, there it is, Right Turn Only.

And this one's a pretty simple application to use. We have an offset. Each one, each block has an offset. So I'm going to do it six feet in each one, has an upstream and downstream spacing, and that measures from the center of the block to the center upstream and downstream. Really, the insertion point of your block. So I'm going to do 25 feet and 25 feet downstream. Enable Grouping, by default, is selected, because you use this tool, also, to place reflective pavement markers, and if you are placing miles of pavement markers and you don't have grouping enabled, you get individual pieces. Individual blocks. That'd be a nightmare, because you think, well, I'm just going to select one, right-click, select similar, and hit Delete. Well, you're going to delete the other ones you placed, so that's why it is default.

On the location tab, just select the entity you're going to use to place off of again. Line, poly-line, alignment, XREF, line work, whatever. And in this instance, we want to do Once. Want to do that message one time. You can do Increment, which would be the pavement markers, or you can do it at endpoints. So let's do Once. And you see how the end grayed out. That means I need to select the instance where I want this. There's a jig associated with that entity. So I'm just going to pick here, and ready to go. Just hit Place. There's my Right Turn Only message. Now, because relative angle was selected, it rotates along that alignment. Does AutoCAD do offset arrays still? I mean, is that in there yet? No? It hasn't been. This tool will do it. Because you offset pavement markers, puts them on a radial to the alignment.

Who all going the party at the Promenade tonight? I am that guy holding us up, because I'm closing the day out here. Let me speed up.

Pavement markings. Let's get back to the messy line types. On the FDOT ribbon, Pavement Marking tool, we can do regular striping, we can do separations, and we can do diverge and merge striping. It also has a history pull-down, so you don't have to browse to your pattern. But if you did need to browse, you can select the inside. A pay item database window opens

and you can browse to your pattern. So I'm going to use what's here already. You can also have an outside-- you can do an inside-outside, say you want to do a double yellow or a double line, you could do that. For a reference entity, I am going to select the edge of pavement here. For offset, 12. And then I'm going to draw the stripes. Step one of fixing the striping line type was-- AutoCAD by nature wants to-- it can't start on a skip. It has to start with an object, and it wants to go from beginning to end. In this instance, we're using a 1030 stripe, which is a-- pattern repeats every 40 feet. So if the pattern cannot do an even increment by it gets to the end, it will add, at the beginning and the end, the leftover, so it never looks right. So here, it looks right. And at the end, you have a-- or it ends, because it cannot continue. Cannot put another pattern in. I think you'd rather see that than-- because some reviewers have a fit. It doesn't look right. And you have other reviewers, ah, it doesn't matter. It's going to calculate right.

So let me go back to-- there's a new line type that's introduced here. There we go. There's two line types. A P.M. Stripe, which is by default what's always been in there, but now the new line type, P.M. Skip, which starts on a skip. If I select it, and I'm just going to draw it with the Entity Manager here, that's going to continue it from here. Let's do it 240. I can close this. Close this. Now look. I got it to start on a skip, because I had to trick it. There's a little tiny dot that acts as the beginning solid. So now you have striping that you can calculate from beginning to end exact. Is that good?

**AUDIENCE:** What about going around corners? The radial portion of it [INAUDIBLE] the radius, there's that long area [INAUDIBLE]

**PRESENTER:** Thank you for reminding me. Part of the fix here is you can-- this is a polyline, you could just enable the-- cut the line type on, right? So I go to Properties, Enable, it fixes it in that radius, because AutoCAD, again, wants to take the PC and PT and add all the leftovers at it. So this moves that leftover to the end. Which is here. You can see it's a little bit longer. Distance is right, but line type's wrong. Is that good? You like this? You don't know until use it. You'll be thankful.

Another tool is the linked calculator. Let's say you wanted to-- you have some objects drawn, and you want to know the length of those, just real quick calculations. Comes up, Select Entity. Pick each one. Pick as many as you want. Hit Enter. Comes up here, has a layer, a length, and a line type. Gives you a total distance. Total, and it gives you a distance for each one. And since Florida calculates striping by miles, you can convert it to miles. Comes in there real nice.

And if you are confused on which one you're looking at, it highlights as you select which entity, so you can navigate through there.

So let's say it's 4:55, Friday afternoon, boss comes up and say, hey, run me a Q.C. quick check of that file you've been working on. Q.C. quick check measures the quality control. We have checks and balances that we can use. So if I run-- click on it, whoa, I'm zero-- I'm 15% compliant, right? That's what we call a resume-generating event, potentially. Right? The reason it's off is because I did all this work in my alignment file, not running the Create File and creating a striping file that has those layers in it. But the reason I'm showing you the Q.C. quick check here is you can easily fix your file. Mostly, they're either line types or layers. You can change to the correct layer and rerun it. Typically, 95% to 100% is acceptable.

Take-Off Manager. There's a rocket icon here. I don't quite know why, but the developer picked that particular icon. So let's take off with that. Anybody use the Civil 3D QTO? You like it? Yeah, see? Yeah, we did that too. When we have the meetings, we're like, it just doesn't do what we need. So we need to have an application that does. So this picks up where QTO should have went, or could still go. In this file, I have some items with pay items on it, as you saw me draw.

I can-- well, let me go over the interface. There's two tabs here, a quantity reports tab and a summary table. If you just want a quick report, just use the quantity reports tab. Select the alignment you're going to run your report off of. Like Civil 3D, you select the alignment. The default is the beginning and end, total distance. You can put a range in, or you can select it in the file. You can control your offset distance, and include-- these are set as default here. Really, just hit Compute Take-Off. And there are four report types, just like in QTO. Area, count, linear, and volume. Now, I have some linear objects in here. Pretty neat. Gives you the start, station, and offset.

Now, drainage. The QTO, out of the box, doesn't do station and offset for pipes. It does a centroid, if you've run reports with pipes. This you can use, and it will run station offset of your beginning and end of your pipes and structures. So just using that alone'll give you a little bit more information that you can use in your structure reports.

So let me go over to this summary tables tab. Here we have a list of tables that we can use that will automatically populate with the data. So we're going to do summary of performance turf, and I've already selected-- we're just going to put it on the desktop for now. Going to

select Create Summary Table. Whoop. Didn't select my alignment. So it's going to open up Excel. Don't look at that. Here we go. You want to open up Excel and the data will automatically fill in to the spreadsheet. And from here you just use Linked Data Manager to link it into your drawing file. Now if you had a lot more data, of course, it would fill in. You have a box one and box two. The program'll automatically fill in additional boxes as you need it.

One thing you must do before you do link this in is in Florida, the plan sheets are all 11 by 17. All plan sheets. There's no size bigger. But this particular spreadsheet has every conceivable performance turf option that you could have, and the ones that are not used, just simply delete the columns. Shrink it down to what's filled in so it will fit into your sheet. And then after it's done, gives you a message that it did it, which to me is funny.

So let's go on-- let's over to the palette. Let's start with the civil blocks. One of the new things started working on is using dynamic blocks in our plan usage which, hey, they're great. Complicated. Anybody deal with dynamic blocks? Makes them? Complicated. Right? I have a few here we use. Bring one in, tapered, turn lane, type F. Has an alignment parameter to it. So it'll lock onto the correct rotation.

Has a few controls here. You have some grips. There is the default, which is the taper only. There's a curb return with no sidewalk, curb return with sidewalk and no curb return with sidewalk. And to change these, simply-- you can do it either grip, or go to the properties. So if I want to change the-- whoop, went that way. Taper length stretches out. And my curb radius stretches out, and you can control the sidewalk with also. So starting to dabble in those. As we release more versions, you'll see better and better dynamic blocks. But I do have the curb and gutter also. And it has all of the FDOT standard curb already set. Just select it and it'll change. You can enter, on the properties, the length, to edit that.

One thing regular QTO can't do that FDOT Take-Off Manager can now is read dynamic blocks. Before, you had to explode them, which you can explode these. Curb and gutter'd be the one that you would explode if you wanted to target it in your corridor, but reading dynamic blocks is pretty exciting because each visibility state here, which is what each option is, has a different pay item number. And if you do explode it, it explodes, with the current visibility state, that pay item data.

There is a driveway block. Let me get to that. Now DOT work, you have a lot of driveways. Don't just have one or two. You might have 100. But this block here is unique. You can also

use it for handicap ramps. Has different standards. There's a lot there, so as you go through and pick the standard, shape changes.

And there's a new option here called corridor modeling, that when I cut that on, that's what you're going to want to create feature lines from. Either you explode it and create your feature lines for targeting or-- you have to explode it. There's no or. But that's a new option.

The subassembly. Has anybody use the subassemblies out of this State Kit? You can use this on any project you're working on. They're very neat. Oh, before I get to that, let me go to my traffic. I'm going to do the subassemblies last. We have some dynamic blocks here, mast arm assemblies, which before, you had different mast, poles mast arm poles, and different mast arms. It's like LEGOs. There was a lot of combinations that you could put in and the users said, hey, it would be lot easier if you had, like, a system we could just pick and choose when you insert it. So what happened was, created a dynamic block that has all the different options with all the different pay item numbers attached. So as you change it, you can-- changes the poles. Changes the look. Have a single pole and a multiple pole. And good news is they just changed it. So there's a lot more work ahead, because all this is invalid on July 1 of next year.

Now we can get to the subassemblies. Now, like I said, you can use these in any project you're working on. Then we have assemblies, existing feature. And I'm going to show you how that looks in a second. But we have barriers, curb and gutter, daylight, general, lanes, medians, milling and overlay, which is very powerful, and it will generate a report for you. We have traffic separators and urban driveways. You'd use this for the driveway block itself.

So what I want to show you is if I right-click on any subassembly here, there is robust help documentation that will explain how to use this assembly. What it's used for, what it will target, how it is coded, and how it's attached. You have your input parameters, which will go through and explain all your options available and what they do. You have your target parameters, output parameters, how it behaves, layout mode operation, the point link, and shape code diagram, which is very useful. Now, every single subassembly has this, and a lot of support calls really cut down when this was added, because the users go through that and figure it out pretty quick how to use it. If there is a problem when they call in, it's easy to fix.

The most complicated one is the existing features subassembly, because you have an existing job with survey figures or feature lines, 3D polylines on certain layers. This assembly will run down and target those layers and build a 3-D existing view of your roadway, which is really

neat. And you can control the thickness of the pavement, the curb and gutter, sidewalks, and for a 3R project, which is milling and overlay and resurfacing, this is a real handy subassembly to use. This is the very beginning of your project. As you can see, it's very lengthy. Let me switch back over to PowerPoint. And this is how that subassembly looks when you use it. It's got a 3-D, got your pavement, got your curb and gutter. They're labeled, and that's really nice. Let me go back to Civil 3D right quick. We're almost done.

Links and contacts. From here, we have links to the FDOT design standards, plans preparation manual, the explore your directory, go straight to where I showed you at the beginning of the session. Has the AASHTO home page, the basis of estimate, the MUTCD home page, which is all the signage. It love doing that. Under Engineering Links is where all that is. And under CAD resources, there are our handouts from events and presentations, the Autodesk resources, the CAD manual, the quick clips I was referring to, the posted webinars that are on YouTube-- have a YouTube channel-- and the GoToMeeting link when you call in with a problem and you want us to do help.

So what did I show today? What and where the FDOT Civil 3D State Kit is, the help documentation on the subassemblies, which I think you will really enjoy, demonstration on some of the applications and tools-- there's plenty more in there in which you can look in the quick clip or the YouTube channel-- and the AutoCad-only install, which only has resources, blocks, templates, et cetera. And if you didn't download the handout or the presentation, you can do that any time and for any session here that you've attended. And any questions? When's the party? Oh. What?

**AUDIENCE:** Your line type [INAUDIBLE] XREF management of the drawing [INAUDIBLE]

**RANDY**  
**ROBERTS:** You change the line type scale. Right now, all plans in Florida DOT are basically done at 40 scale. Those line types are designed at 40 scale. So if, say, you wanted to go to 50 scale, you'd have to change those to 0.8 for the striping, for that layer. It's a small price to pay for accuracy.

**AUDIENCE:** You can change that in the x:Reference? Or you change it in the line sheet? I don't think you can change it in the line sheet. When you x-reference it into your line sheet. I don't think you can change your line factor scale.

**RANDY** Of the XREF line?

**ROBERTS:**

**AUDIENCE:** Yeah.

**RANDY** Haven't tried that. You can't? Oh, OK. Created more work. Yes.

**ROBERTS:**

**AUDIENCE:** What does your I.T. [INAUDIBLE] push everything to the local drive, the C: drive, or do they all have-- how do you work between offices? [INAUDIBLE] Do you [INAUDIBLE] in their own CAD, all within one office, or they share with other towns or offices? How do you share that data?

**RANDY** Well, in the server. When you install the State Kit, there has been some issues on some  
**ROBERTS:** consultants. They have special scripts that they use when they install it, based on where their information is, but typically, it's just for a network-wide installation.

**AUDIENCE:** [INAUDIBLE]

**RANDY** No.

**ROBERTS:**

**AUDIENCE:** Or share on the local platform.

**RANDY** It is. Florida's a decentralized state. The consultants have more of an issue. But they've got  
**ROBERTS:** theirs set up. One location, like Panama City, then you got another location that does drainage in Jacksonville, so they got it set up. The state of Florida just adopted Vault as its default document management system, so we're in for some changes. Any other questions? Yes.

**AUDIENCE:** Does FDOT have any conditional assemblies or conditional subassemblies [INAUDIBLE]

**RANDY** Daylight. We have a few conditionals. Civil 3D out-of-the-box did a pretty good job on their  
**ROBERTS:** conditionals. So we point to those. Because we didn't want to reinvent a new assembly. And these assemblies were written in-house using .NET, which made life a whole lot easier. So if a problem's discovered, it gets fixed and sent back out. We don't have to rely on anybody else. Yes.

**AUDIENCE:** [INAUDIBLE]

**RANDY** Yeah.

**ROBERTS:**

**AUDIENCE:** And then still create [INAUDIBLE]

**RANDY** Yes. Yeah. Everything's adjustable. A lot of work's went into those. Yes.

**ROBERTS:**

**AUDIENCE:** Do you have a driveway assembly?

**RANDY** You can model a driveway, yes.

**ROBERTS:**

**AUDIENCE:** I see you have that in a block. Do you actually have an assembly?

**RANDY** Yes. On that urban palette is three slabs of the driveway. It represents a driveway. If you look at the standard, index standard, you can see slab one, two, and three, what each one does, or you can also go to the help documentation on those driveway slabs. Tells you how to use it. Jeff Bartels did a video on it, on the driveway. It's on our YouTube channel too. Anything else? Nothing? OK.

Well, like all, you got to fill out a class survey, so there is your reminder. I've been busy doing that all day, all of the sessions I've been. And before I let everybody go, moving to Florida, I've learned one pun, which is, how do you tell when it's fall in Florida? The car tags change color. I didn't say it was good, I just said it was a pun. Well, thank you for spending time with me this afternoon, and if any other questions come to mind, I'll see you all tonight.

[APPLAUSE]