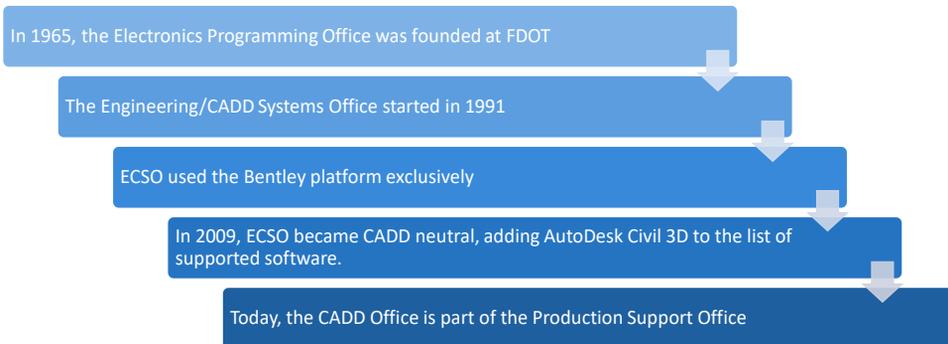


FDOT Production Support Office | CADD
CADD Office Updates 2021



Welcome to FDOT CADD Support, CADD Manual and Training Updates. This presentation covers updates regarding what's new with the CADD Office since last year, including training, development and support, as well as information on how to get CADD support and training.

FDOT and CADD. Where did it all begin?



The Department's use of CADD goes all the way back to the late 60's and early 70's when Engineering and IT were one office at the Florida Department of Transportation.

It all started with a massive IBM 650 computer and what was then called the Electronics Programming Office. Using punch card programming to do design calculations was a revolutionary step toward Computer Aided Design, but as noted by the State Electronics Programming Engineer, Ray L'Amoreaux, Sr., in his autobiography "Data input by punch cards and manual code entered by ten computer dials denied the concept that this was electronic speed."

Then, the Department knew that it wasn't about speed and efficiency at the moment, but investing in technology that would provide speed and efficiency in the future.

And In 1991 the Engineering/CADD Systems Office was founded as its own office under the State Highway Engineer's Office.

At that time, ECSO was a one-platform office, exclusively supporting the use of

Bentley Microstation for the production of FDOT projects. But in 2009, ECSO started developing its first State Kit for AutoDesk Civil 3D, paving the way for CADD platform neutrality in the state of Florida.

Today, the FDOT CADD Office is part of the Production Support Office, providing standards, resources, training and support for both District designers as well as consultants using the FDOT CADD software for FDOT project design.

And our usage of CADD has dramatically changed over the years.

Evolution of CADD at FDOT



Let's look back to how this all began, where we've been and where we are going with CADD.

Computer-aided drafting and design changed that, but it was really just a step along the way to producing paper plans in the end.

Then more automation was incorporated into CADD and the Department started accepting electronic plans deliveries. Followed by Digital Delivery of plans.

All of this has led us to where we are now with 3D modeling and digital delivery of NexGen plans, abbreviated plan sets that otherwise enhance and supplement the 3D design model.

And as a result, we are moving quickly to Model-centric design, BIM deliveries and the 3D model as the legal document.

Model-Centric Design in 2021

Production Support Memorandum 19-01

“In January of 2021, projects beginning their design phase must use the FDOTConnect Workspace for OpenRoads Designer or FDOT2021.C3D State Kit for AutoDesk Civil 3D.”

Since the previous FLUG in 2019, the Production Support Memorandum 19-01 has taken effect. Published in late 2019, the memorandum states:

“In January of 2021, projects beginning their design phase must use the FDOTConnect Workspace for OpenRoads Designer or FDOT2021.C3D State Kit for AutoDesk Civil 3D.

Both of these platforms feature model-centric design. That is, the design process relies on 3D modeling for production of all other aspects of the design and plans.

As previously stated, there is no supported conversion process from the Select Series 10 platform to the OpenRoads or Connect Edition platform. As a result, any projects started in Select Series will need to be carried through and completed in Select Series 10, and what this memorandum effectively means is that there will be no new projects started in the Select Series Platform. All projects will be designed using the OpenRoads Connect Edition platform or the current Civil 3D platform.

Model-Centric Design in 2021

CADD Manual 5.16.2 Modeling Requirements

“Most projects can benefit from some or all discipline-specific model-centric development of designs for construction.

“District leadership will determine the requirements of BIM designs (3D Delivery) for each project. The current FDOT supported CADD platforms are model-centric programs to support these requirements.”

We have also updated the CADD Manual with the following language in section 5.16.2 regarding modeling requirements:

“Most projects can benefit from some or all discipline-specific model-centric development of designs for construction.

“District leadership will determine the requirements of BIM designs (3D Delivery) for each project. The current FDOT supported CADD platforms are model-centric programs to support these requirements.”

This reinforces our model-centric design requirements and empowers District leadership to define model-centric delivery requirements pertaining to different disciplines.

Model-Centric Design in 2021

FDM 900.1

“Building Information Model (BIM) files are signed and sealed, and the use of automated machine guidance (AMG) construction methods are anticipated.”

Finally, the FDOT Design Manual has been updated with the language included in FDM 900.1 stating:

“Building Information Model (BIM) files are signed and sealed, and the use of automated machine guidance (AMG) construction methods are anticipated.”

One of the main reasons that the Department is emphasizing model-centric design is for the purpose of Automated Machine Guidance or AMG. To that end, the BIM files delivered as part of a project must be signed and sealed by the engineer of record. I have posted a preliminary workflow training for signing and sealing native CADD files in both the Bentley OpenRoads Connect Edition platform as well as the AutoDesk Civil 3D platform and also the signing and sealing of XML files such as LandXML using the FDOT XML Signing Tool which is delivered with both of our current software suites.

Overview of FDOT Workspaces

- FDOT Bentley Workspaces
 - FDOT2002
 - FDOT2004
 - FDOT2008
 - FDOT2010
 - FDOTSS2
 - FDOTSS4
 - FDOTSS10
 - FDOTConnect
 - 10.08
 - 10.09
 - 10.10 (Coming Soon!)
- FDOT AutoDesk State Kits
 - FDOT2011.C3D
 - FDOT2012.C3D
 - FDOT2014.C3D
 - FDOT2015.C3D
 - FDOT2016.C3D
 - FDOT2017.C3D
 - FDOT2018.C3D
 - FDOT2019.C3D
 - FDOT2020.C3D
 - FDOT2021.C3D

For reference, the FDOT CADD Office has accomplished some rather robust development over the years. We have been continuously developing workspaces for our CADD users since as far back as 2002 with the release of FDOT2002.

Our most recent platforms, FDOTConnect and FDOT2021.C3D are certified for use with Bentley Connect Edition applications and AutoDesk Civil 3D 2021 respectively.

Current FDOT CADD Platforms

- FDOTConnect for Bentley Connect Edition Applications (10.09.01)
- FDOT2021.C3D for AutoDesk Civil 3D and AutoCAD (01.02.01)
- *FDOTSS10 for Bentley Select Series 10 (01.04.01 or MR4 Hot Fix 1)*

Earlier this month, we released MR1 for FDOTConnect 10.09. Which is to say, FDOTConnect 10.09.01. We also released FDOT2021.C3D MR1 for Civil 3D 2021.

FDOTConnect 10.09.01 is certified for use with the 10.09 versions of Connect Edition Applications such as OpenRoads Designer Connect Edition, Microstation Connect Edition and OpenBridge Connect Edition. At the end of this presentation, I'll show you how to navigate our website and find out what specific versions of these applications are certified for use with our software.

The last version of FDOTSS10 for Bentley Select Series 10 applications was version 01.04.01 which is the Maintenance Release 4 with Hot Fix 1. We don't anticipate any further maintenance releases on this platform. As I mentioned before, this software is only being supported for projects that were started in Select Series prior to January 1st of this year. All new projects should be started in FDOTConnect for the Connect Edition applications or the appropriate FDOT state kit for Civil 3D. You can of course tell this based on context clues and the fact that I have italicized FDOTSS10 in a lighter typeface color than the two software suites listed above it.



Due to rapid developments in the ... development ... of OpenRoads Designer, the FDOT CADD Office is pleased to announce that we have accelerated our own development cycle to release the new FDOTConnect version 10.10 sometime next month. This will be certified for use with the 10.10 schema of OpenRoads Designer and other Connect Edition Applications.

How to Get the Latest FDOT Software (FDOT Employees)

- Contact your District CADD Manager if you need CADD Software
- Most Districts install the CADD Software via SCCM deployment or the Software Center
- Some Districts manually install the CADD Software



Depending on whether you are an FDOT District Design employee or an outside consultant, the most recent FDOT software can be acquired in different ways.

For FDOT District Design employees, always check first with your District CADD Manager. The latest workstation and client software installations are typically available via SCCM deployment within 2 to 3 weeks of a release. Prior to that, if an update is needed, your CADD manager can assist. Your District CADD Manager will also schedule an update to the CADD server with the latest release.

How to Get the Latest FDOT Software (Consultants)

- FDOT CADD Software is updated once a quarter and available for download from our website.



For consultants, our software is available for download from our website. We have workstation, client and server installations for the FDOTConnect software as well as workstation installations for the FDOT2021.C3D State Kit for both Civil 3D and AutoCAD Only.

I'll give you a brief tour of our website at the end of this presentation to give you more information on downloading our software.

FDOTConnect 10.09 - New Features

- Sign Tools, Quantities Take-Off Tool, Pavement Markings, Signals, ITS, Geotech, Automated Quantities
- Converting old VBA's into .NET applications
- Enhanced drainage libraries and resources
- More sheet annotation options
- Workflow for titleblock tools
- Enhanced sheeting options for NexGen plan-sets



It's been a while since I've done a FLUG presentation, so here is a review of some of the enhancements to the FDOTConnect software in 10.09 that we announced during the FDOT Symposium earlier this year.

Updates have been made to the Sign, Pavement Marking and Signalization Tools. Our Quantities Take-Off Tool and Automated Quantities Tools have been updated as well. Additional resources and tools for Geotechnical have been included in this release.

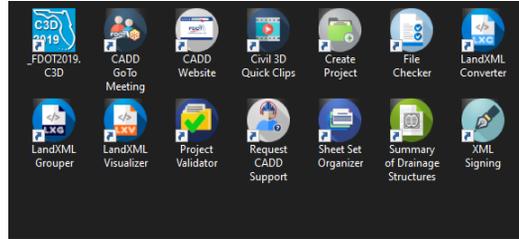
Our development staff have been working diligently at converting many of our old VBA tools to .NET. This conversion process increases the functionality of these tools and ensures better compatibility in cases of Windows systems updates that might otherwise affect the functionality of VBA tools.

We have enhanced the drainage libraries and resources and included additional sheet annotation options.

Our sheeting options have been updated and enhanced to accommodate the development of NexGen plan sets.

FDOT2021.C3D for AutoDesk Civil 3D (UPDATE)

- FDOT has State Kits for AutoDesk Applications
- FDOT2021.C3D is now the current supported platform.
- These state kits are available for AutoDesk Civil 3D as well as AutoCAD
- We have recently released MR1 for FDOT2021.C3D



The CADD Office also develops “State Kits” for AutoDesk Civil 3D and AutoCAD. These State Kits are currently available for AutoDesk 2021. The State Kit contains all the same standards as the FDOTConnect workspaces as well as tools to assist in the FDOT CADD workflow for Civil 3D and AutoCad.

FDOT CADD Training

- Training is now a dedicated team in the CADD Office
- Training Guides for FDOTConnect were completed (10)
- Training Videos for training courses were completed
- ACEC is teaching our curriculum to consultants
- We will have the FDOTConnect certification curriculum in Learning Curve for FDOT employees.



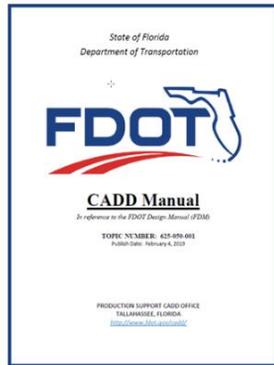
Last year, the CADD Office divided our support team into an additional team dedicated to providing CADD Training. This CADD Training Team is supervised by CADD Applications Support Coordinator Todd Holt. The Training Team provides training coordination for all things CADD Training related in the CADD Office. In addition to training, this team works side-by-side with the Support Team to provide solutions to training-related support issues and input on development and configuration of the FDOT software.

Some of the training-related accomplishments by the CADD Office in the past year include:

Completion of the FDOTConnect Training Guides. The CADD Office has published 10 training guides for FDOTConnect for OpenRoads Designer. These training guides follow a similar path to the FDOTSS4 training guides with which you may already be familiar, starting with FDOTConnect CADD Essentials, and including 2D and 3D design, template design, automated quantities training and traffic plans. In addition to the training guides, we have completed training videos to accompany each of these training guides, creating a comprehensive interactive online training experience for both consultants as well as FDOT employees.

Speaking of FDOT employees, these training courses are now available in our own internal FDOT training system called “Learning Curve” for FDOTConnect certification for FDOT employees.

Finally, the CADD Office training team has coordinated with ACEC of Florida to successfully deliver this same curriculum to outside consultants statewide via virtual training sessions ACEC.

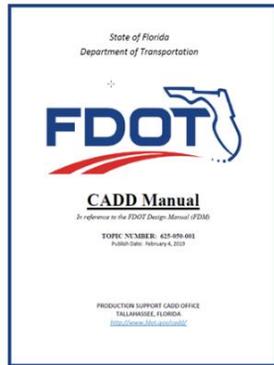


The CADD Manual

- The CADD Office provides CADD standards for consistency in FDOT project design and delivery
- These standards are documented in the FDOT CADD Manual
- The CADD Office updates the CADD manual as needed with each software maintenance release

As mentioned earlier, the CADD Office helps to establish the FDOT CADD standards. These standards exist to provide consistency in the design and delivery process for FDOT projects. We have documented these standards and other relevant CADD information in the FDOT CADD Manual which exists as a living document.

The CADD office updates the CADD Manual as needed with each software maintenance release or major changes to standards.



The CADD Manual

- As established in Florida Statutes, the CADD Manual addresses the minimum CADD standards for FDOT project requirements and identifies tools, techniques and standard procedures to produce consistent and quality CADD products for the Department.

The CADD manual is established by the Florida Statutes and addresses the minimum CADD standards for FDOT projects. It also identifies tools, techniques and standard procedures to produce consistent and quality CADD products for the Department.

The image shows a screenshot of the Florida Department of Transportation (FDOT) website's 'Documents & Publications' section for the CADD Manual. The page header includes the FDOT logo and navigation links. The main content area features a 'Production Support | CADD' section with a sub-section for 'Documents & Publications'. Below this, there is a paragraph explaining the CADD Office's role and a 'NOTES' section with three bullet points. A table with two columns, 'Title' and 'Description', is partially visible at the bottom of the screenshot.

NOTES

1. The **CADD Manual in reference to the FDOT Design Manual (FDM) AND the CADD Manual in reference to the Plans Preparation Manual (PPM)** will remain published as referenced in the **FDOT Roadway Design Bulletin 17-12**.
2. ONLY the **CADD MANUAL in reference to the FDM** will be published with version updates.
3. NO new versions of the **12/1/2017 CADD MANUAL in reference to the PPM** will be published, however links are included to access newly updated CADD standards.

Title	Description
CADD Manual	The CADD Manual in reference to the FDOT Design Manual (FDM) addresses the requirement to utilize Computer Aided Design and Drafting (CADD) for production and delivery of digital project data for the Florida Department of Transportation (Department). The manual in reference to the FDOT Design Manual (FDM) establishes minimum CADD standards in reference to the FDOT Design Manual (FDM) to ensure a consistent, predictable and repeatable CADD data set for the Department's projects. This manual is to be used by all personnel in conjunction with the current CADD Software for producing projects utilizing CADD for the Department. It is to be referenced in contracts requiring engineering plans and 3D Model preparation utilizing CADD. This manual affects all offices of the Department and all consultants, contractors and others who utilize CADD applications.

The CADD Manual

The CADD Manual is available from the FDOT CADD Website under "Documents and Publications"

The CADD Manual is available from the FDOT CADD Office website under "Documents and Publications" and each update to the CADD Manual is announced via the FDOT Contact Mailer which is a self-service email notification system that provides information on various Department-related topics. As I alluded to before, the CADD Manual has been updated to reflect the current standards, workflow and delivery requirements for FDOT projects relative to Model-Centric Design and the FDOTConnect and FDOT2021.C3D software.



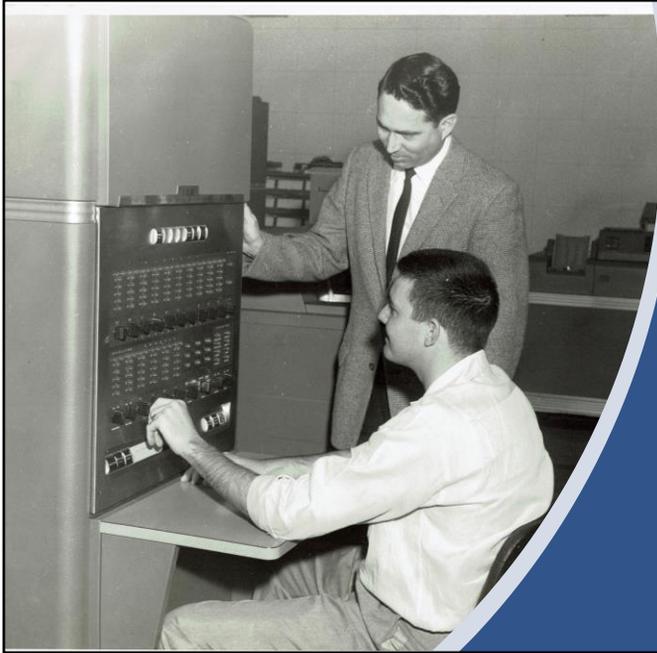
Getting CADD Support

- Email: CADD.Support@dot.state.fl.us
- Goto www.fdot.gov/cadd and select “Request CADD Support”
- Select the “Request CADD Support” shortcut in the FDOT Connect desktop folder

Not only does the FDOT CADD Office develop and configure workspaces, resources and tools for our CADD platforms, we also provide support to FDOT District CADD users as well as the FDOT consultant community.

We have a dedicated team of support specialists to troubleshoot and assist with FDOT CADD-related issues.

There are a number of ways to get support from the CADD Office. You can email CADD.support@dot.state.fl.us or click on “Request CADD Support.” There is an icon for requesting CADD support in the desktop folder created by our workspaces as well as a link on the ribbon or menu inside those workspaces. Selecting one of these options will take you to our CADD Issue Log portal where you can log a support request ticket. This portal is monitored throughout the day and incoming issues are assigned to the appropriate support personnel.



CADD Office Updates 2021

The FDOT CADD Office: From punch cards and computer dials to 3D Modeling and BIM Deliveries.

This has been FDOT CADD Office updates for 2021. Hopefully, this presentation given you an informative look at where we are and where we are going, as well as where we started.

Thank you for
joining us today!

Email: cadd.support@dot.state.fl.us



Thank you for joining us today for Introducing FDOT Connect, Part 2 in our webinar series Getting Started with FDOT Connect for OpenRoads Designer Connect Edition.