

Florida Utility Coordination Committee (FUCC) Response to FDOT NexGen Plans, Position Statement

registration fucc.org <registration@fucc.org>

Tue 5/9/2023 11:06 AM

To:Overton, Patrick <Patrick.Overton@dot.state.fl.us>

Bcc:Chris Stermer <Chris.Stermer@wginc.com>

 5 attachments (3 MB)

FUCC NexGenFDOT_5.8.23.pdf; NexGen Sub_Committee Meeting Summary of Concerns.pdf; NexGen Sub_Committee Meeting Summary_February 8, 2023.pdf; NexGen Sub_Committee Meeting Summary_January 11, 2023.pdf; NexGen Sub_Committee Meeting Summary_March 8, 2023.pdf;

Mr. Overton,

As you know, The Florida Utility Coordination Committee (FUCC) created a Sub-Committee to meet and discuss the NexGen plans format and assemble the questions, concerns, and issues that have been identified from the Utility Industry (Utility Representatives, Utility Consultants, Utility Coordinators, and plans production personnel) and are providing the minutes of those meetings as attachments to a cover letter. The FUCC wants to work in cooperation with FDOT in making the NexGen plans in an agreeable format. We want to offer the FUCC, its committees, and sub-committee's as a platform to facilitate discussion and help identify areas for change. Please do not hesitate to reach out to the FUCC with questions and concerns.

Respectfully,

Florida Utility Coordination Committee
Steering Committee



5/8/2023

To: Patrick Overton, P.E., FCCM
Florida Department of Transportation
State Utility Engineer
605 Suwannee Street, MS 75
Tallahassee, Florida 32399
patrick.overton@dot.state.fl.us

From: Florida Utility Coordinating Committee
Steering Committee
PO Box 2561
DeLand, FL 32721
Email: info@fucc.org

Dear Mr. Overton,

On behalf of the Florida Utilities Coordinating Committee (FUCC), this letter has been drafted to share with the Florida Department of Transportation (FDOT) in writing the concerns about the NexGen plans that have been brought forth by the FUCC membership.

Collectively, we would like to address these concerns and find resolutions that will be mutually beneficial and agreeable. The FUCC officers, Steering Committee, NexGen Sub-committee, and general membership would like to work in partnership with the FDOT to reach a mutually agreeable resolution to the list of concerns and any others that may arise regarding the NexGen plans. We have attached herein the Summary of Concerns with the supporting meeting minutes that have been compiled to date through the three sub-committee meetings where an open forum was used to gather the concerns of all parties involved. Upon review, please contact the FUCC Steering committee via info@fucc.org to coordinate the next steps in reaching a mutually agreeable resolution. We are hoping that the FUCC meetings can provide a forum to work hand-in-hand at our regularly scheduled meetings in workshops or discussions to resolve the concerns presented by our membership.



We at the FUCC look forward to being able to partner with FDOT to make this endeavor a success for all parties involved in the process.

**From: Florida Utility Coordinating Committee
Steering Committee**

info@fucc.org

Sincerely,

Tara Miller

Tara Miller, Duke Energy, Steering Committee Chair and FUCC Vice Chair

Respectfully Submitted,

Chris Stermer Digitally signed by Chris Stermer
Date: 2023.05.05 15:02:45
-04'00'

Chris Stermer, WGI Inc. FUCC Chair

Enc: FUCC NexGen Sub-Committee Meeting Summary of Concerns

FUCC NexGen Sub-Committee Meeting Summary, dated January 11, 2023

FUCC NexGen Sub-Committee Meeting Summary, dated February 8, 2023

FUCC NexGen Sub-Committee Meeting Summary, dated March 8, 2023

**Summary of Concerns from the
NexGen Plans Non-Standing Subcommittee Meeting Attendees
at the 1/11/2023, 2/8/2023 and 3/8/2023 Meetings**

The following list combines the concerns that have been expressed by the combined 256 participants in the last three (3) meetings held on the dates referenced above. Please refer to the individual meeting summaries for additional information on these concerns.

Each concern has been footnoted to include a “(*#)”. This footnote will direct you to the meeting summary that the concern originated from. If the concern was brought up to the group in multiple meetings, the concern will reflect multiple footnotes. The legend for the footnotes are as follows:

- (*1) January 11, 2023 (1/11/2023) Meeting
- (*2) February 8, 2023 (2/8/2023) Meeting
- (*3) March 8, 2023 (3/8/2023) Meeting

List of Concerns:

- Not many NexGen projects to date
 - Some UAOs have had limited experience with the NexGen Plans to properly evaluate them and their concerns. (*1)
 - Worried there will be more concerns before resolution (*2)
 - Need a real-world example of NexGen Plans – physical print (*2)
- Large Format Paper Size – 3 ft by 4 ft, 3 ft by 6 ft
 - Change in plans - margin of error significantly increased. (*1)
 - The small utilities are where the biggest challenge comes into play as the utility coordinators can't get them to provide what is needed today before the introduction of large format. (*1)
 - Concern that this may create more delay claims if the UAO is not able to mark-up plans correctly. This will cause more time and money to be spent. Need accurate 11x17 plans. (*1)
 - Concern in regard to marking up transmission poles on large format plans is difficult. (*1)
 - 6 ft roll plot is too big for truck and field personnel to use in the field (*2)
 - Tile printing does not help (*2)
 - No easy way to scale down (*2)
 - Large Format Roll Plot not useful (*2)
- Costs associated with purchasing technology to support NexGen.
 - Cost prohibitive for UAOs to purchase tablets or laptops (*2)
 - Costs associated with training UAO personnel on how to use equipment (*2)
 - Costs associated with technology savvy personnel (*2)
 - UAOs do not have plotter (*2)
 - Cost prohibitive to send to printing company for UAO (*2)
 - UAOs are burdened with these additional costs (*2)
- FDOT has not provide documentation, mandate or State Statute
 - No documentation has been provided requiring the UAO to mark-up large format (*2)
 - No documentation has been provided with format change (*2)

- Insufficient notification to UAOs (*2)
- UAOs not consulted in change (*2)
- No opportunity to review the change and provide input (*2)
- No time provided for transition for UAOs (*2)
- Utility Work Sheets
 - Labeling issue what the line work represented Existing R/W, Centerlines, north arrow, scales, callouts – concern regarding the higher amount of callouts for the 11x17 utility work sheets (560 ft per sheet) than the large format (2300 ft per sheet) – both from providing a document similar to what has been provided in the past, as well as a level of effort for EOR for units/staff hour concern. Duplicate linework. (*1)
 - Concern that utility worksheets will not contain the same information that was provided previously.
 - Need to ensure that the effort for the utility worksheets is there was discussion that utility adjustment sheets is not a Tab 7 unit/staff hours and should be in Tab 5 unit/staff hours
- FDOT has not provide documentation, mandate or State Statute
 - UAO industry not consulted on the change (*1)
 - In UAM 5.1.2, it states that the project drawings are provided to the UAO for markup in an agreeable format. (*1)
 - This is not a format that was agreed on by everyone
 - This was not discussed with the UAOs prior to implementation
 - There was not understanding of what is needed to properly coordinate a project by the FDOT
- Drainage Structure Sheets
 - Concern with change to drainage structures sheet and missing information (*1 and *2)
 - No longer able to gauge proximity or constructability concerns with pipes and structures (*1, *2, and *3)
 - Unable to put together a picture of the proposed drainage structure by only using profile, table and FDOT Standard Plans, which increases the margin of error (*1, *2, and *3)
 - Utility unable to properly review the plans to determine if conflicts resolved. Most utility owners are not engineers. (*3)
 - Concern with increased liability for the EOR since the Utilities have “less information” that they can review in the plans (*3)
 - No information for orientation and bottom elevations of structures (*3)
- Cross Sections Sheets
 - Concern that they are seeing during negotiations that the roadway cross sections (5.16 – Cross Sections) are being removed from the roadway negotiations for projects that are model centric. (*1)
 - Concern roadway cross sections are not in final plan deliverable (*1)
 - No being provided in final plan set (*2)
- Concern with electronic format
 - Most utilities only use PDF Format, not MicroStation or AutoCAD (*1)
 - Typically, FDOT Projects are MicroStation (.DGN) (*3)

- Utilities that use CAD software mostly use AutoCAD (.DWG) or a software other than MicroStation (*3)
- Large File size of the NexGen Plans
 - Concerns with timing out on uploads to OSP (*3)
 - Concerns with timing out on downloads and uploads to PSEE (*2 and*3)
- Permitting Requirements per UAM
 - NexGen Plans do not provide Roadway Cross Sections in Final Plans (*3)
 - NexGen Plans do not provide Drainage Structure Cross Sections in plans (*3)
 - Concern with the Plan Sheet Size (*3)
- FDOT's Plan Format inconsistent to other agency partners
 - Other agencies like local and county agencies are keeping with their plan size format (*3)

Meeting Summary for January 11, 2023 Meeting

We had 112 participants in the meeting. The meeting opened with note that the purpose for the creation of the NexGen Plans non-standing subcommittee was to gather the concerns from industry, identify the key issues and in the end working toward solutions for those issues/concerns.

The FUCC Chairman advised that the Spring 2023 FUCC Meeting is coming up on April 12 – 14 in Ocala Florida. The room block is going to be opening soon and the agenda is being worked on. Since the last FUCC Meeting in November 2022, he noted that the FDOT has issued some directives to the consultants on how to create the 11"x17" worksheets. He asked that Ms. Schwartz and Mr. Purvis discuss some of that to get everyone up to speed on where things stand since the last meeting.

Ms. Melonie Schwartz noted that she and Mr. Shaun Purvis are Co-Chairmen for this committee. Mr. Purvis advised that he chose to join this committee to try to find a better way for the NexGen plans – since industry was not consulted on this change.

Ms. Schwartz noted that at the Fall 2022 FUCC meeting Mr. Paul Hiers gave a history of the development of the NexGen Plans, but she went through the basics of what is NexGen, what the FDM 900-series is, and what updates have been provided to date.

Ms. Schwartz noted that the Florida Design Manual (FDM) 900-series is FDOT's NexGen Large Format plans production process. She noted that there are four main sections, and the following summarizes the discussion for each section:

- 2023 FDM 905 Roadway Cross Sections (Key Changes)
 - The Roadway Cross Sections are provided for the review process at Phase 2 and Phase 3 plan submittals but are not provided in Final Plan Submittal.
 - She showed an exhibit from FDM of the large format roll plot with the cross sections.
- 2023 FDM 915 Roadway Plan-Profile Sheet
 - She noted that the Roadway Plan and Profile Sheet can be 11"x17", or large format (24"x36", 36"x48" or 36"x72").
 - She showed an exhibit from the FDM of the large format roll plot that is 36"x72" (3 ft by 6 ft) long.
 - She noted that they are just plan view followed by a profile, stacked plan and profile and that is determined by the EOR and FDOT during the design negotiations.
 - She noted that the scale is larger than when we typically receive them in 11"x17".
 - She noted that you can zoom into the sheets on the computer to see the details.
- 2023 FDM 916 Drainage Structure Sheet
 - She noted in the previous FDM 300-series (11"x17" guidelines) the drainage structure sections were previously provided with a section at each drainage structure that showed the orientation of the structure and the things around it.

- She noted that the sheet format can be 11"x17", or large format (24"x36", 36"x48" or 36"x72").
- She showed an exhibit from the FDM of the large format roll plot that is 36"x72". She broke the sheet into 4 quadrants.
 - Top left is the traditional plan view of the drainage locations.
 - Bottom left is now just a profile view of the drainage with the structures represented as rectangles and pipes that connect them.
 - She noted that there will be indicators for utilities and conflict nodes. She explained that conflict nodes are where the system has identified a potential conflict with the utilities.
 - Top Right is the Utility Conflict Table that indicates the conflict node number, conflicting design element and what it is conflicting with. The designer can also show a detail of the structure.
 - Bottom Right is the pipe data and structure data for the drainage design. They show the size, invert, and what type of structure it is, etc.
 - She noted that, where previously you had the picture to see how the structure impacts the utility, you now have to look at the invert and type of structure, go to the FDOT Standard Plans to look up the structure type to determine how the structure is going to interact or impact the utility facilities.
 - She noted that the conflict nodes are going to show the direct conflicts between the pipes/structures and facilities; however, she noted that there are also proximity / constructability concerns, which will not be reflected in the conflict nodes.
- 2023 FDM 923 Utility Adjustment Sheets
 - She noted that the sheet format can be 11"x17", or large format (24"x36", 36"x48" or 36"x72").
 - She noted that it should show all the proposed design elements that are on there.
 - She noted that the exhibit that is shown on in FDM is 11"x17" and not large format. However, she noted that typically the NexGen plans are done in large format.
 - She noted that FDOT created a way to take the large format and kick out a utility work sheet at a size of 11"x17". It will display the information at the traditional size that we are used to using; however, some of the concerns noted to date with the utility work sheet is that the normal labels that we are used to having like "Existing R/W", north arrow, and scale. She noted that this job aid was created by FDOT Central Office to assist the EORs on how to create these utility work sheets.

- She noted that more direction is needed on what will be required to be on the sheets is needed – like the normal labeling that comes on the plan sheets.
- She noted that FDOT has the FDM 900-series and the How-To Create Utility Worksheets on their website (link provided in the links list below).
- A Utility Coordinator attendee noted that in an email correspondence that they had seen from Central Office noted that the effort to create these 11”x17” utility worksheets process is minimal effort and that the time could come out the Tab 7 Utility Coordination Hours; however, he noted that plans production is under Tab 4 / Tab 5 not Tab 7.
- Ms. Schwartz noted that, as far as the level of effort for the utility work sheets, the concern for effort is the labeling. She advised that with the large format plan sheet you are getting around 2,300 LF on one sheet. She advised that the labeling should be done at a scale for the size of a sheet. Conversely, she noted that on 11”x17” you are getting maybe 500 LF one a sheet. Accordingly, she noted that you would simply need more labels on the 11”x17” to ensure we give enough information on the adjustment sheets.
- An engineering consultant attendee noted that they had run through the 11”x17” utility worksheets from a large format plan sheet to gauge the level of effort. He noted that the effort for the system to push out the utility worksheets is maybe a couple of hours of work most to make sure they print right, and the scale is correct, etc. He noted it could be even faster if everything was set up right. He noted that the issue with re-labeling all these sheets, which is duplicate effort, could be 2-6 hours (for big projects) per sheet and additional cost to the FDOT. He noted that if you add different roadway cross section sheets or create drainage structure sections those are all additional costs as well. Ms. Schwartz noted that the concern with the utility worksheet is that there are no labels to tell what each line represents like existing verses proposed right-of-way and can be tricky for the folks using these sheets without the normal information/labels.
- A UAO attendee noted that the labels that are missing are actually needed to make them a manageable set of plans. He advised that the utilities need to know that when you chop down the set that is manageable, scalable, has the callouts.
- A consultant working for a UAO noted that marking up transmission poles on a 36”x72” roll plot is very difficult. He has seen a few NexGen Plan Sets coming through and he attended today to get more information about what the change was from. He asked what was wrong with the old way and will 11”x17” be sent out still. He noted that this new format creates more room for things to be missed. Ms. Schwartz noted that, as far as the plan size is concerned, it is based on how the project is negotiated. Another UAO attendee noted that at the Fall 2022 FUCC Conference the FDOT Roadway Design advised the FDOT made the changes to the plans. He noted that the utility side of the argument is UAM 5.1.2 states that the “Project drawings are provided to the UAO for mark-up in an agreement format”. He noted that NexGen is not an agreeable format, and this was not a negotiated or agreed upon change – it is a forced change by the FDOT. He noted that when the UAM was developed by rule under the Florida Statute and that is a process where there is public comment and agreement between the FDOT and industry. He advised that his concern is that they never came to industry to discuss this change, never got

input, industry never agreed this was an agreeable format, what is the next change to the UAM that is going to be made without input from industry. He went on to say that the FDOT State Utility Office has been understanding of the concerns.

- A utility coordinator attendee noted that their concern was during the Fall 2022 FUCC Conference the presentation provided by FDOT about why the change to NexGen was about saving the FDOT money. She noted that, at the Fall 2022 FUCC Meeting, the group pointed out the concern about the labeling, as well as the small city/counties/utilities cannot afford to hire an engineer to new give mark-ups. Her concern is the FDOT expects the RGB mark-ups to be provided with specific information from the UAO on them. However, she noted that the plans being sent to the UAO are missing critical information like north arrow, cross sections are critical - even in construction - to get resolution on utility conflicts. She also noted that UAOs are not roadway engineers and does not feel it is proper for UAOs to be asked to go into standards to try to piece together how your facility is impacted without all the information put together. She noted that in the end the change isn't saving FDOT money, but probably costing FDOT money in the long run.
- An engineer consultant / utility coordinator attendee noted that for a FDOT D7 Project he pushed in negotiations for the cross sections to be put back into the plans for the utility companies. He reiterated that the UAOs are not roadway and drainage engineers. They are going to be providing them for this project, but the engineers and utility coordinators on the call need to advocate for the proper information in the plans for the UAOs to properly identify the conflicts with their facilities. He advised that this is necessary information for the UAOs to make an informed decision about their facilities and for the utility coordinators and engineers to properly coordinate the project and get them certified.
- A consultant for UAO had a question about whether any FUCC UAO members has put their concerns in writing yet to file a dispute. Ms. Schwartz noted per UAM 1.7 has the process for the UAOs to dispute something with FDOT. She noted that this committee is to gather all the concerns from all facets of industry and determine how to proceed. However, she noted that any disputes have to come from the UAOs, as the UAM is between the UAOs and FDOT in the FDOT R/W. The FUCC Chairman noted that if a UAO has a concern with 5.1.2 then 1.7 is the pathway to dispute what has happened. He advised that the reason he created this non-standing subcommittee was to get a general consensus of industry concerns so the organization can put together a response on this issue. He noted that, in the interim, 1.7 is the pathway for the UAO to dispute or express concern. The consultant for UAO who had the original question noted that the UAOs that are being impacted to put together in write the concerns in detail to FUCC as part of the efforts of the organization, but also to FDOT via 1.7 to formally submit their specific concerns. He also suggested an intent to dispute letter to on notice.
- An engineering consultant attendee asked for clarification on how the plans are less accurate. Additionally, he noted that we do want to be good stewards of taxpayer dollars and not duplicate effort and with model-centric design there are better tools for clash detection and design to identify conflicts. He inquired if it is just limitation of software or understanding, then there may be ways to help mitigate those concerns and still move forward with the model-centric design. In response, a construction attendee noted that the plans are less accurate because the section data is not shown in the plans verse tables. Another UAO attendee concurred and noted that you are

looking for a table and referring to another manual and they aren't roadway engineers. Ms. Schwartz also noted that the system generates conflict nodes based on direct conflicts, but it doesn't address constructability or proximity conflicts. She noted that the loss of the sections and the implementation of the table creates margin of error for the utility in evaluating their conflicts.

- A UAO attendee noted that he understood that FDOT was looking at model only projects and eliminating plan development. He inquired if this is still the direction for FDOT. An engineering consultant noted that ultimately there likely won't be a full removal of plans; however, the move to provide the contractor more information with the model. He noted that the movement is to provide a more accurate model that ultimately provides the contractor with more information with less plans. Another engineering consultant made a comment that they are seeing roadway cross sections being removed during design negotiations on model-centric projects but have to fight to get them back in for the purposes of utility coordination. Ms. Schwartz noted that there appears to be an inconsistent application for when this information is being included in the design from the beginning with model centric.
- A UAO attendee noted that a lot of small UAOs do not even use Adobe or Bluebeam and most UAOs do not use AutoCAD or MicroStation.
- A consultant attendee noted that detailed input from UAOs, consultants, coordinators – industry – is needed to properly respond to this change.
- A consultant for a UAO noted that each UAO or folks within industry to be specific with their concerns, get them in writing, and he asked who to send them to. The FUCC Chairman asked that folks send them concerns to the co-chairs of the committee. He also asked that if any UAO submits a 1.7 to provide a copy to FUCC, so the organization is aware this has occurred.
- Ms. Schwartz noted that input is needed from all facets of the industry including the engineers and utility coordinators. She noted that there is more risk with the NexGen that is being born by the EORs with the loss of the drainage structure sheets, etc.
- There were a few chat comments that came up that were concerns and/or thoughts that were not expressed verbally during the meeting which are summarized below:
 - A utility coordinator attendee noted that it would be good to know how the UC efforts went on the pilot model-centric projects.
 - A utility coordinator attendee asked if it was possible to keep the 300-series information but still deliver a model for the contractor.
 - A UAO attendee expressed a concern that there will be more delay claims during construction because there is not enough information in the plans for the UAO to properly evaluate the conflicts with their facilities. He noted this will increase FDOT costs both in time and money. They expressed that the 11"x17" plans and sections have worked very well and the new NexGen plans are difficult to follow and increases chances of error.
 - A consultant attendee noted that input should be gotten from contractors on the concerns that the utilities are expressing especially related to drainage.

- A permitting attendee note they would like to receive the model and PDF of the plans.
- A UAO attendee noted they have not received any NexGen Plans, so they are concerned that they have not had the opportunity to review them to provide input.

Ms. Schwartz noted that the next meeting was scheduled for February 8, 2022 via TEAMS.

With these discussions complete, the meeting was adjourned. The Links shared during the meeting and a Summary of Concerns summarized above are included below.

Links provided:

- FDOT Connect – Creating Utility Worksheets
 - YouTube Video: <https://youtu.be/JPU5hXFO2Yg>
 - Presentation: https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/cadd/downloads/webinars/files/microstation-connect/fdotutilityworksheets.pdf?sfvrsn=8e517c41_2
- FDOT Design Manual – Refer to 2023
 - <https://www.fdot.gov/roadway/fdm/default.shtm>
- FDOT UAM
 - https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/programmanagement/programmanagement/utilities/docs/uam/uam2017.pdf?sfvrsn=d97fd3dd_0

Summary of Concerns Presented at this meeting:

- Not many NexGen projects to date
 - Some UAOs have had limited experience with the NexGen Plans to properly evaluate them and their concerns.
- Large Format Paper Size – 3 ft by 4 ft, 3 ft by 6 ft
 - Change in plans - margin of error significantly increased.
 - The small utilities are where the biggest challenge comes into play as the utility coordinators can't get them to provide what is needed today before the introduction of large format.
 - Concern that this may create more delay claims if the UAO is not able to mark-up plans correctly. This will cause more time and money to be spent. Need accurate 11x17 plans.
 - Concern in regard to marking up transmission poles on large format plans is difficult.
- Utility Work Sheets
 - Labeling issue what the line work represented Existing R/W, Centerlines, north arrow, scales, callouts – concern regarding the higher amount of callouts for the 11x17 utility work sheets (560 ft per sheet) than the large format (2300 ft per sheet) – both from providing a document similar to what has been provided in the past, as well as a level of effort for EOR for units/staff hour concern. Duplicate linework.
 - Concern that utility worksheets will not contain the same information that was provided previously.

- Need to ensure that the effort for the utility worksheets is there was discussion that utility adjustment sheets is not a Tab 7 unit/staff hours and should be in Tab 5 unit/staff hours
- FDOT has not provide documentation, mandate or State Statute
 - UAO industry not consulted on the change
 - In UAM 5.1.2, it states that the project drawings are provided to the UAO for markup in an agreeable format.
 - This is not a format that was agreed on by everyone
 - This was not discussed with the UAOs prior to implementation
 - There was not understanding of what is needed to properly coordinate a project by the FDOT
- Drainage Structure Sheets
 - Concern with change to drainage structures sheet
 - The loss of drainage cross sections does not allow for the evaluation of proximity conflicts.
 - Concern that the loss of information from the plans will increase the room for error
 - The need to use the table data and the FDOT Standard Plans to try to figure out the structures
- Cross Sections Sheets
 - Concern that they are seeing during negotiations that the roadway cross sections (5.16 – Cross Sections) are being removed from the roadway negotiations for projects that are model centric.
 - Concern roadway cross sections are not in final plan deliverable
- Concern with electronic format
 - Most utilities only use PDF Format, not MicroStation or AutoCAD

905 Roadway Cross Sections

905.1 General

Cross sections depict the existing ground and manmade features, and proposed roadway template as sections perpendicular to the respective stations along a centerline or baseline of construction.

Cross section sheets are used to convey supplemental information during the plans phase review process. These sheets may also be used for coordination purposes (e.g., permit or utility, local agency, public meetings). These sheets are not to be placed within the Contract Plans Set. Signing and sealing these sheets is not required.

Enter a PDF of these sheets into the Electronic Review Comments (ERC) system with the **Phase II and Phase III plans submittals**. Include these sheets with the Phase IV ERC submittal when there are Phase III comments related to the cross sections. **Provide a PDF of the cross-section sheets for coordination purposes as needed (e.g., permits, utilities, public meetings).**

Place the final Cross Section sheets in Project Suite Enterprise Edition (PSEE) within the Design Development Documentation Module (see **FDM 111.7**)

See **Exhibit 905-1** for an example of a Cross Section Sheet.

905.2 Sheet Set Up

This sheet may be produced on a standard-format sheet (11"x17") or a large-format sheet (24"x36", 36"x48" or 36"x72"). Use landscape orientation regardless of sheet size selected.

Place as many cross sections on a sheet as possible using multiple columns of sections when appropriate. Create cross sections using a scale of 1" = 20' horizontal and 1" = 10' vertical. The standard cross section interval is 50 feet. Another interval may be used when appropriate based on the type and complexity of the project.

Show cross sections with stations increasing from the bottom to the top of the sheet and multiple columns placed from the left to the right.

Cross sections for mainline, side streets, and ramps are typically shown on separate sheets within a single PDF. The order of cross sections contained in the PDF should be the mainline, side streets, then ramps.

Display the begin and end construction limits and include the name of the mainline (e.g., SR 22), side street (e.g., Easy Street), or ramp (e.g., Ramp A). Indicate exception limits (e.g., Bridge No. 770175 STA 105+20 to 109+60).

905.3 Required Information

As illustrated in **Exhibit 905-1**, each cross section must include a background grid at the appropriate scale. Display the station for each cross section must be shown in the lower right area of the grid. Display (in feet) the horizontal offset from centerline along the bottom of the grid. Display the vertical elevation along both sides of the grid.

Each cross section must provide the following:

- (1) Label the centerline or baseline of construction.
- (2) Show and label R/W limits.
- (3) Show existing ground lines.
- (4) Show below ground portions of existing features, e.g., pavement, curb, sidewalk.
- (5) Show and label parallel underground utilities. Label only the utility type (e.g., "G", "W"); the size of pipe is not required.
- (6) Show the proposed roadway template and include:
 - (a) Profile grade elevation
 - (b) Special ditch elevation
 - (c) Pavement and sidewalk cross slope
 - (d) Median and outer slope ratio
- (7) Show, and label, the lower limits (undercut line) of the removal of organic or plastic material. See **FDM 216** and [Standard Plans, Index 120-002](#) for the requirements of subsoil excavation; i.e., removal of unsuitable organic or plastic soils.

Showing parallel drainage pipes or structures is not required.

915 Roadway Plan-Profile Sheet

915.1 General

The signed and sealed Building Information Model (BIM) files contain the complete horizontal and vertical geometry definitions for the project. The Roadway Plan-Profile sheet shows a 2D representation of the design contained within the model(s). Various roadway elements such as pavement width, medians, paved shoulders, curbs, drainage elements, tapers, turn provisions, and intersecting roadways, are annotated on this sheet.

Prepare the Roadway Plan-Profile sheet using a standard-format sheet (11"x17") or a large-format sheet (24"x36", 36"x48", or 36"x72"). Use landscape orientation regardless of sheet size selected.

Roadway profiles are typically provided for new construction and reconstruction projects and are shown with the plan view on the same sheet. When roadway profiles are not needed, title the sheet as Roadway Plan Sheet.

When appropriate, the plan or plan-profile sheet may utilize multi-stacking (subdividing sheet horizontally); each panel containing a roadway plan view with (when appropriate) the corresponding roadway profile directly below.

Use the following horizontal scales:

	<u>Standard</u>	<u>Optional</u>
Curbed Roadways	1" = 40'	1" = 50'
Flush-shoulder Roadways	1" = 50'	1" = 100'

See **Exhibit 915-1** for an example of a Roadway Plan-Profile sheet.

915.2 Roadway Plan

Display a north arrow and scale within each plan view, typically in the upper right portion.

Display roadway plan view such that the centerline of construction or baseline of construction stationing increases from left to right. Display bearings for tangent sections (in the direction of stationing) below the centerline or baseline. Display station numbers close to station ticks.

Display and label existing topography, including roads, streets, drives, buildings, underground and overhead utilities, walls, curbs, pavements, fences, railroads, bridges,

drainage structures and similar items, as well as streams, ponds, lakes, wooded areas, ditches, existing gasoline storage tanks within limits of topographical survey, and other physical features.

915.2.1 Required Labeling and Information

Include labeling and dimensions only to the extent necessary to convey the design intent of the improvements. Provide the following labeling and dimensions:

- Flag and station the begin and end project limits, and construction limits. Project limits should be at the beginning and the end of the full typical sections. Begin construction and end construction where construction limits are other than project limits. Transitions for maintenance of traffic and other construction work such as feathering, friction course, guardrail, drainage work, signing and marking work, and sidewalk may fall outside of the project limits but must be included within the construction limits. If plans include more than one project, identify the limits for each by Financial Project ID.
- Display station equations along centerline or baseline of construction.
- Flag and station the begin and end of project exceptions (e.g., excluded intersections, bridges).
- Indicate each type of construction classification where more than one type is involved (e.g., new construction, resurfacing, bridge work, widening, and milling). Use shading, patterning, or labeling to convey the information. Indicate the limits of pavement and grading at side street intersections. Provide a legend when shading or patterning is used.
- Display proposed curbs, traffic separators, sidewalks, curb ramps, retaining walls, and driveways. Label curbs and curb ramps indicating type. Label and dimension sidewalks, medians, and traffic separators at intervals no greater than 2,500 ft.
- Dimension traveled way along mainline at intervals no greater than 2,500 ft., or where pavement widths change. Dimension traveled way of side streets and driveways.
- Display drainage system by depicting drainage pipes and French drain with a single line, and the outline of inlets, manholes, junction boxes, and outfall features (e.g., MES, end wall). Identify by structure number only. Do not label pipe size or length.
- Display box culverts and three-sided culverts. Identify by structure number only. Do not label culvert size or length.

- Display and label R/W lines at intervals no greater than 2,500 ft. Display and label construction easements or license agreements.
- Display and label the limits of wetlands based on permit or regulatory requirements.
- Display and label Verified Vertical Elevation and Horizontal Location (V_{vh}) for underground utilities.
- Display and label overhead utilities indicating the line voltage. For a multi-line electrical overhead crossing, accurately show the location of each line. Show utility line height where overhead lines may impact proposed construction.
- Identify all traffic monitoring sites in or within one-half mile of the project limits with the following notation:

Traffic Monitoring Site Number (XXXX)

Roadway Section Number (XXXX)

Milepost (XX.XXX)

Site includes vehicle detectors in roadway and pedestal, pole or base mounted cabinet, buried cable, and solar power unit on R/W. Inquiries about monitoring sites should be addressed to the Traffic Data Section Manager of the Transportation Data and Analytics Office, Office of Planning.

- When it is determined that a sectional view is helpful to convey the design intent at critical locations, display and label the sectional view near the critical location.

Projects with minor utility work or impacts may include these features on the Roadway Plan-Profile sheet.

915.2.2 Horizontal Curves

PC and PT points of horizontal curves are designated by small circles with short radial lines from these points, and PI points by a small triangle with a short section of tangent on either side. Display the following horizontal curve data on the plan view:

PI	(Station)	R	(Radius Length)
Δ	(Delta Angle with Direction)	PC	(Station)
D	(Degree of Curve)	PT	(Station)
T	(Tangent Length)	e	(Superelevation Rate)
L	(Length of Curve)		

915.2.3 Bridges and Bridge Culverts

Bridge-sized culverts (a.k.a., bridge culverts) are defined in **FDM 265.1**. Flag and station the begin station and end station for the bridge culvert (outside wall to outside wall). Provide a bridge number and a drainage structure number for all bridge culverts.

Display proposed bridges and approach slabs by simple outline. Flag and station the begin station and end station for the bridge and for the approach slabs. Provide a bridge number for all bridges.

When appropriate, display a short section of lateral ditch/outfall centerline on the Roadway Plan-Profile sheet.

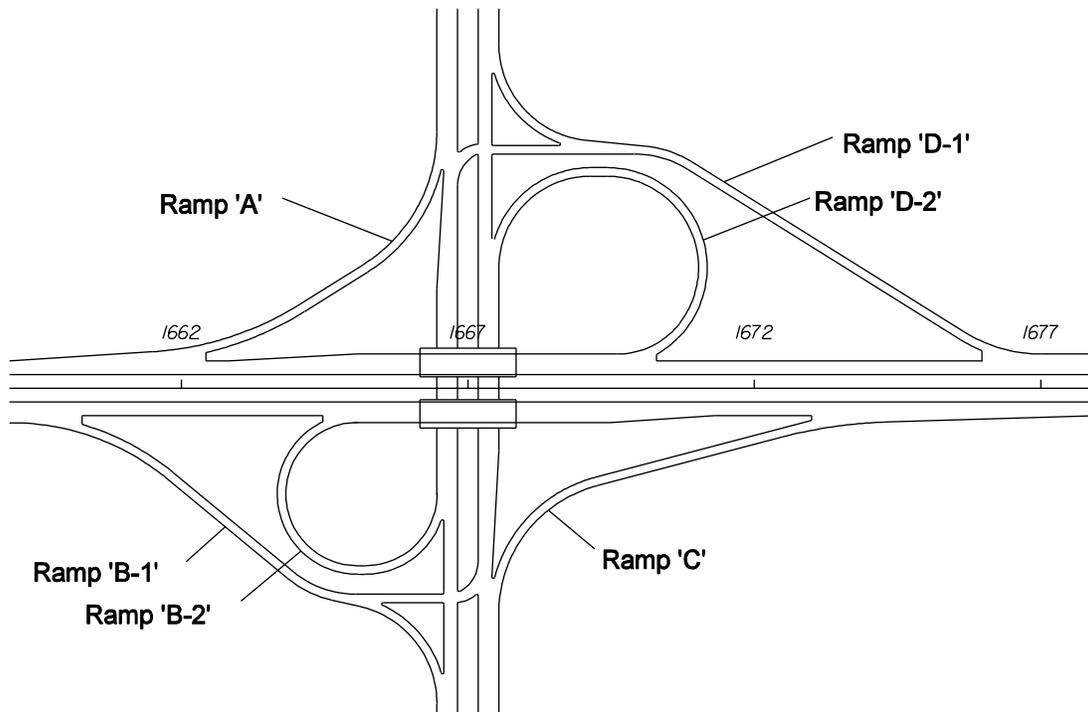
915.2.4 Interchanges

The entire interchange should be shown on one sheet using a 1" = 100' scale. With larger interchanges, consider using match lines and placing extended portions of alignment in available space on the sheet.

Display the ramp baseline of construction, typically located on the right edge of the pavement with respect to the direction of traffic. Ramp stationing should be increasing in the same direction as the project.

Identify ramps using letters or a combination of letters and numbers (e.g., Ramp A, Ramp B-1, Ramp B-2). Ramps in the first left quadrant along mainline stationing should be assigned first. Name assignments progress in a counterclockwise direction around the interchange (see **Figure 915.2.1**). For projects with two or more interchanges, continue name assignments with the next letter and in same counterclockwise direction noted above.

Figure 915.2.1 Interchange Layout



Frontage roads should be assigned a unique alpha or numeric designation to avoid confusion with ramp nomenclature.

915.2.4.1 Ramp Terminal Details

Consider providing ramp terminal details at a scale of 1" = 40'. Ramp terminal details should be shown on the same page as the interchange.

915.3 Roadway Profile

Display roadway profiles directly below the corresponding roadway plan view. As illustrated in **Exhibit 915-1**, each roadway profile must include a background grid at the appropriate scale. The horizontal scale and interval stationing for the roadway profile must be the same as that used for the roadway plan view. The vertical scale is typically 10% of the horizontal scale (e.g., 1" = 100' horizontal scale would typically use a 1" = 10' vertical scale)

Align the begin roadway profile stationing with the begin roadway plan view stationing. Display stationing along the bottom of the grid. Display the vertical elevation along both sides of the grid.

915.3.1 Required Labeling and Information

Include labeling and dimensions only to the extent necessary to convey the design intent of the improvements. Provide the following labeling and dimensions:

- Flag and station the begin and end project, and construction limits matching what is shown in the roadway plan view.
- Label percent grade for each tangent section. When two tangent grades intersect and no vertical curve is required, label the PI station and elevation.
- Flag and station the superelevated sections (see **FDM 915.3.3**).
- Show the cross-section template of the underlying road, railroad, or waterway for bridges and box culverts along the centerline or baseline of construction. Display minimum vertical clearances for bridges.
- Display and label only transverse underground utilities.

Do not display proposed drainage pipes or inlets in the profile view.

915.3.2 Vertical Curves

Indicate vertical curve PCs and PTs by small circles and PIs by a small triangle with short sections of tangent shown on each side. Extend vertical lines from the PC and PT points and place a dimension line indicating the length of the vertical curve. The PC and PT stations and elevations must be labeled on the vertical lines.

For vertical curves, show the profile grade elevations on even stations and at appropriate intervals. Place the elevations between the dimension line and the grade line. Also, place the curve length, dimension lines and the profile grade elevations above the grade line for sag vertical curves and below the grade line for crest vertical curves. Place the dimensions and elevations reasonably near the grade line. The PI station and elevation must be noted, lettered vertically above the PI symbol for crest curves and below for sag curves.

Show the profile grade elevation of the beginning and ending station of each sheet vertically just above the grade line, except when the beginning or ending station is on a vertical curve.

915.3.3 Superelevation

Standard superelevation details shown in [Standard Plans, Indexes 000-510](#) and [000-511](#) may be used for projects with simple curves.

Show superelevation profiles for:

- Reverse curves
- Compound curves
- Other conditions requiring special superelevation not covered in the standards

Show complete profile grade line and edges of pavement (right and left) within the superelevation zone on the grid format. Label the begin and end superelevation stations and indicate the section in full superelevation.

915.3.4 Special Ditch Profile

Display and label special ditches and treatment swales (ditch blocks) in the profile. Show percent ditch grade and a beginning or ending ditch PI with elevation and station plus. Show ditch PI with elevation at the begin and end point of ditch blocks.

For multi-lane divided projects, three special ditch grades (right and left roadway ditches and median ditch) may occur at the same location. In such cases, it may be advantageous to:

- Show the median ditch at a convenient location on the sheet with a separate elevation datum, or
- Provide spot elevation labels in the plan view.

Depict uniform ditches of non-standard depth by a dimension line in the lower portion of the grid and label as a special ditch with location and depth or show them by flagging the DPIs at each end with station elevation and side. Standard depth ditches are not labeled.

915.3.5 Special Gutter Grades

Show special gutter grades in profile for cases where the gutter grades are not controlled by the typical section. Include prolongations of gutter profile grades across street intersections on plan-profile sheets if an inlet is not provided before the intersection.

915.3.5.1 Shoulder Rocking Gutter Profiles

Shoulder rocking is used to achieve positive drainage when a minimum 0.3% longitudinal gutter grade cannot be maintained using uniform shoulder cross slopes. Provide a gutter profile for each side of a concrete barrier wall, along with the profile of the wall top. The top of the wall profile must follow the roadway profile which will create a varied wall height between the high and low points along the gutter profile.

A special detail depicting the concrete barrier wall reveal is often provided to supplement the **Standard Plans** details. These profiles may be depicted in either table or graphical format on the Plan-Profile sheet.

See **FDM 210.4.1 or FDM 211.4.1** for more information on design requirements for shoulder rocking profiles.

915.3.6 Special Sidewalk Profiles

Display and label special sidewalk profiles when the profile grade of the proposed sidewalk is independent of the roadway profile. Sidewalk profiles are typically located at the back of the proposed sidewalk (closest to the R/W).

When special sidewalk profiles are included on the Roadway Plan-Profile sheet, indicate the location of the sidewalk profile grade line (PGL) on the typical section.

915.4 Ramp Profiles

Develop ramp profile grades along the baseline of each ramp. A profile of the edge of the pavement opposite the baseline is typically shown as well. Show ramp profiles anywhere within available space on the Roadway Plan-Profile sheet.

Use the same scales used for the Roadway Plan-Profile sheet displaying the interchange. Each ramp profile must include a background grid at the appropriate scale.

915.4.1 Spline Grade

Spline grades are used to show the interconnection and interrelation of the ramp edge of pavement with the mainline edge of pavement. Showing this profile in the plans is typically not necessary. However, if the mainline pavement is superelevated or within the superelevation transition zone, the profile can be beneficial to illustrate the design intent.

Display the spline grade elevations at intervals of 20 or 40 feet. Show elevations for the outer edge of mainline pavement and inner and outer edges of the ramp pavement at the nose areas.

Join the grades of each pavement edge by smooth splines or simple curves. Label the three grade profiles and all equality stations. Flag and label nose stations. Place the scale in proximity of the profile.

915.5 Special Profiles

Showing special profiles in the plans is typically not necessary. However, if it is determined that providing a special profile in the plans is helpful to convey the design intent, they should be shown anywhere within available space on the Roadway Plan-Profile sheet.

Standard scale used for special profiles should be 1" = 20' horizontally and 1" = 2' vertically. Each profile must include a background grid at the appropriate scale.

915.5.1 Intersections

Supplemental profiles at intersections may be necessary to define edge of pavement profiles. Include sections showing pavement surface elevations for nose points and other critical locations. Label the existing ground line and curb line per the [CADD Manual](#).

915.5.2 Curb Returns

Curb return profiles may be necessary to define the gutter flow line from the PC to the PT point of the return at an intersection.

Identify each return profile and its PC and PT stations shown. Elevations should be shown at appropriate intervals and low and high spots must be identified by location and elevation.

915.5.3 At-Grade Railroad Crossings

Supplemental profiles for at-grade railroad crossings may be necessary to define lane lines, edges of pavement, and gutter flow lines.

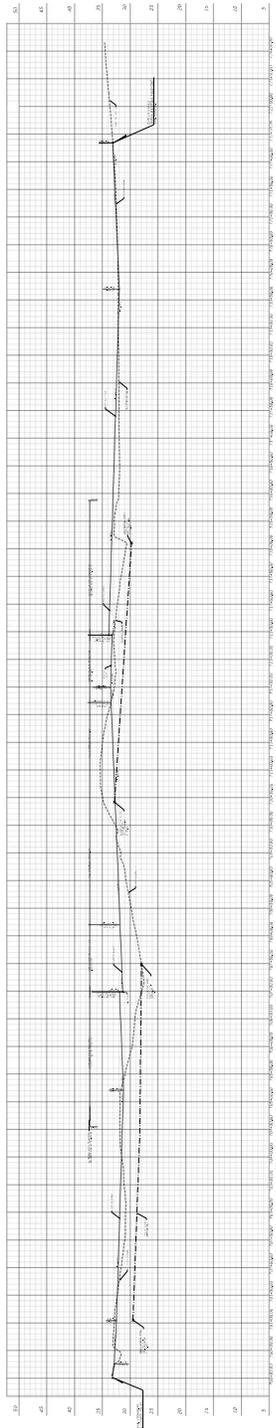
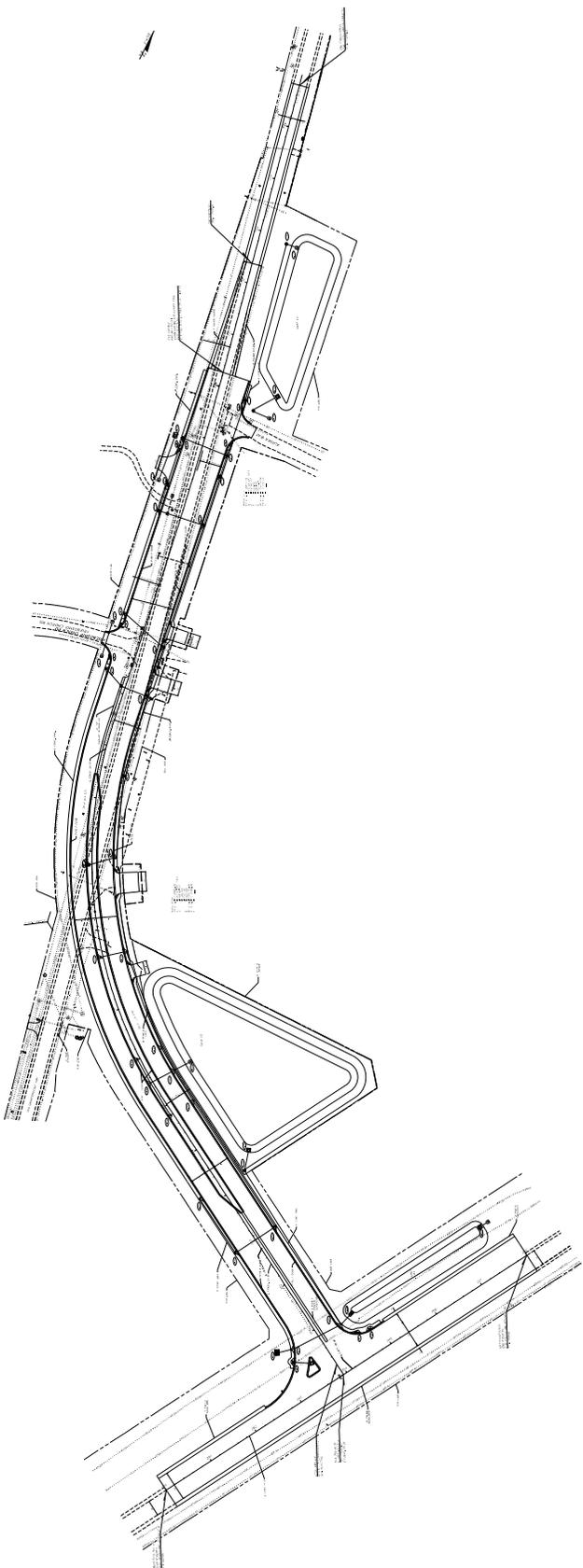


Exhibit 915-1
Date: 1/1/21

916 Drainage Structures Sheet

916.1 General

The signed and sealed Building Information Model (BIM) files contain the complete drainage system information for the project. The Drainage Structures sheet provides supplemental data and information for proposed drainage structures, including:

- (1) Drainage Plan View
- (2) Drainage Profiles
- (3) Drainage Tabular Information
- (4) Drainage Special Details and Notes
- (5) Optional Materials Tabulation

The Drainage Structures sheet is produced as a contract document and placed within the Roadway Plans. This sheet may be produced on a standard-format sheet (11"x17") or a large-format sheet (24"x36", 36"x48" or 36"x72"). Use landscape orientation regardless of sheet size selected. Sheet size selection should be based on size and extent of drainage network(s). The Drainage Structures sheet should display the complete extents of individual drainage network(s).

Use the following horizontal scales:

	<u>Standard</u>	<u>Optional</u>
Curbed Roadways	1" = 40'	1" = 50'
Flush-shoulder Roadways	1" = 50'	1" = 100'

Provide a legend for all abbreviations included in the drainage tabular information. See **Exhibit 916-1** for an illustration of the Drainage Structures sheet.

916.2 Drainage Plan View

The drainage plan view is typically shown in the upper half of the sheet. The purpose of this view is to highlight the storm drain network(s), cross drains, and side drains that will be shown in the profile views and included in the tabular data. The drainage plan view is not required when side drains are the only drainage structures included with the project,

however side drains must be shown and labeled on roadway plan sheet, and included in the drainage tabular information.

The display limits of the drainage plan view should contain the entire proposed drainage network. If multiple drainage networks are shown or overlap, clearly indicate which network the profile and tabular information is associated with.

916.2.1 Required Information

Provide the following information in the plan view:

- (1) Display the view such that the centerline of construction or baseline of survey stationing is increasing from left to right. Display station numbers close to station ticks. Include a north arrow and scale above and near the drainage plan view.
- (2) Display proposed limits of pavement, curbs, traffic separators, sidewalks, curb ramps, and driveways. Show proposed bridges and approach slabs by simple outline and indicate the bridge structure number. The intent is to show an outline of the proposed roadway to give context to the location of the drainage structures. The elements of the proposed roadway should be gray scaled.
- (3) Display and label existing and proposed underground utilities only where a conflict exists. Identify the underground utility as a conflict node.
- (4) Display the proposed drainage system by depicting drainpipes with a single pipeline style indicating direction of flow, and the outline of inlets, manholes, junction boxes, and outfall features (e.g., MES, endwall).
- (5) Display and label existing structures that are to be filled, plugged, and remain in place.

Do not display existing topography, except to the extent those elements are to be incorporated into, affected by, or accommodated by the proposed drainage system. Existing topography elements may include roads, streets, driveways, buildings, underground and overhead utilities, walls, curbs, pavements, fences, railroads, bridges, drainage structures and similar items, as well as streams, ponds, lakes, wooded areas, ditches, existing gasoline storage tanks within limits of topographical survey, and other physical features. When shown, display existing topography elements as gray scaled.

916.2.2 Structure and Pipe Numbers

Provide drainage structure numbers (w/ prefix “S”), and a pipe number (w/ prefix “P”) between structures. Include the bridge number for proposed bridge culverts. Establish the structure and pipe numbers using the convention shown in **Exhibit 916-1** and described as follows:

- (1) Storm drain networks: Assign structure numbers in ascending order along the centerline of construction or baseline of construction. Assign pipe numbers that correlate with the structure at the hydraulically upper end of pipe.
- (2) Cross drains and side drains: Assign structure number in ascending order along the direction of flow (hydraulic upper end to lower end). Assign the same structure to intermediate or end structures with suffix letter (i.e., A, B, C). Assign pipe numbers to correlate with the structure at the hydraulically upper end of pipe. When there are multiple pipes associated with the cross drain or side drain include a suffix letter.

916.3 Drainage Profile

Drainage profiles are typically shown in the lower left portion of the sheet as illustrated in **Exhibit 916-1**. Stack or space the profiles to avoid overlapping of structures or notes. Display drainage profiles from left to right, beginning with the structure at the hydraulically upper end of the system run to the outfall or structure at the hydraulically lower end. All storm drain networks and cross drains are to be shown in profile view.

Do not include profile views for side drains.

Each drainage profile must include a background grid at the appropriate scale. Use the same horizontal scale for the profile portion that is used for the plan portion. The vertical scale is typically 10% of the horizontal scale (e.g., 1” = 50’ horizontal scale would typically use a 1” = 5’ vertical scale).

916.3.1 Required Information

Drainage profiles depict vertical relationships of the drainage network or cross drain along the centerline of the pipes. Provide the following information for each drainage profile:

- (1) Display drainage structures (typically depicted as rectangles) and connecting pipes. Place the outside edge of the first structure at the first vertical grid line as shown in **Exhibit 916-1**. Assign the value of zero to the first vertical grid line; subsequent vertical grid lines reflect the true distance along the pipe system.

- (2) Display and label wall zone pipes.
- (3) Label drainage pipes and structure numbers.
- (4) Display and label existing and proposed surfaces along centerline of pipe. Displaying surfaces past the limits of the first and last pipes is not required.
- (5) Provide horizontal grid line elevations along the left side of the background grid.
- (6) Display and label existing and proposed underground utilities. When appropriate, identify underground utility as a conflict node.

916.4 Drainage Tabular Information

Drainage tabular information provides necessary data for the installation of structures and pipes associated with storm drain networks, cross drains, and side drains. The drainage tabular information is typically shown on the lower right portion of the sheet and consists of four tables:

- (1) Pipe Data
- (2) Structures Data
- (3) Endwall and MES Data
- (4) Optional Materials

If there is insufficient space on the Drainage Structures sheet, the Drainage Tabular Information may be placed on a separate sheet titled "Drainage Structures Data".

916.4.1 Pipe Data

The Pipe Data table contains the following information:

- Pipe number, length, and size
- Hydraulic upper end structure number with invert elevation
- Hydraulic lower end structure number with elevation
- Optional materials group number

916.4.2 Structures Data

The Structure Data table contains the following information for each structure:

- Structure number
- Baseline feature
- Structure location (baseline station and offset)
- Structure type and bottom dimensions
- FDOT Standard Plans (Index 400 series) Notes
- Reference point elevation
- Pipe label for each pipe entering or exiting the structure

916.4.3 Endwall and MES Data

The Endwall and MES Data table contains the following information:

- Structure number
- Baseline feature
- Structure location (baseline station and offset)
- Structure type
- Pipe invert elevation
- Structure notes

916.4.4 Optional Materials

Modification for Non-Conventional Projects:

Delete **FDM 916.4.4** and see **Chapter 6** of the [Drainage Manual](#) for Optional Material requirements.

Consider optional materials for all pipes; however, match pipe extensions and end section replacements to the existing pipe material. See the Department's [Drainage Design Guide](#) (Optional Pipe Material Chapter) for more information.

Conduct an Optional Pipe Materials Analysis and place an Optional Materials table with the Drainage Tabular Information. The Optional Materials table shows all materials allowed and indicates which material is plotted in the plans and used as the basis for pay item quantities. The Optional Materials table is to include:

- Optional Pipe Group Number
- Size(s)
- Material, thickness or class, corrugation requirements, and protective coating
- Plotted and as-built notations, and construction remarks

916.5 Drainage Special Details

Showing special horizontal or vertical details in the plans is typically not necessary. However, if it is determined that providing a special drainage detail is beneficial to conveying the design intent, the detail is typically placed in the upper right portion of the sheet but may be shown anywhere within available space on the sheet. Any scale may be used.

The following are examples of information that may be depicted:

- Clash detection results and utility clearances
- Drainage structure details (non-standard structures, pond outfall structures multiple or off-centered pipe connections to a structure wall)
- Isometric and 3D views with identifying labels

923 Utility Adjustments

923.1 General

Utility Adjustments sheets provide a plan view that highlights the location of existing, proposed, and relocated utilities. These sheets are used when the project corridor contains numerous utilities with significant potential for conflict or harm. Projects with minor utility work or impacts may include this information on roadway (or other component) plan sheets.

Prepare Utility Adjustment sheets on standard-format sheets (11"x17") or a large-format sheets (24"x36", 36"x48" or 36"x72") using a horizontal scale of 1" = 40', or 1" = 50'. Use landscape orientation regardless of sheet size selected.

923.1.1 Utility Notes

See **FDM 914** for required utility notes to be include on the General Notes sheet.

923.2 Required Information

Display a north arrow and scale within each plan view, typically in the upper right portion.

Display roadway plan view (gray scaled as background) such that the centerline of construction, or baseline of construction stationing, increases from left to right. Other proposed design elements should also be shown, such as overhead sign or mast arms. Do not display information and graphic data that is not relevant.

Display and label the following information:

- (1) Display existing and proposed utilities within the project limits using lines and standard utility symbols (see the [CADD Manual](#)). Though not utilities, display and label Department-owned subsurface communication (ITS) lines.
- (2) Indicate the disposition of existing utilities not to remain in service (e.g., "To Be Removed", "To Be Adjusted", "To Be Relocated", "To Be Placed Out Of Service").
- (3) Indicate the utility type, Agency Owner (UAO), and size and material of existing utilities to remain in service.
- (4) Display and label overhead utilities indicating the line voltage. For a multi-line electrical overhead crossing, accurately show the location of each line.

- (5) Indicate field verified vertical elevation and horizontal location (V_{vh}) of existing utilities (SUE data). Leader line must point to location on plan view where field data was taken. Include the V_{vh} number shown in the Utility Verification table.
- (6) Display a Utility Verification table in each view panel of the sheet that contains V_{vh} information for utilities shown in that panel. Required table information includes:
 - (a) V_{vh} number
 - (b) Utility type and owner
 - (c) Size and Material
 - (d) Location (Sta/Offset/Lt or Rt)
 - (e) Existing ground and top of utility elevations

If number of V_{vh} data points or required view panels are extensive, the table may be shown on separate standard-format sheets (11"x17") titled "Utility Verification Sheets".

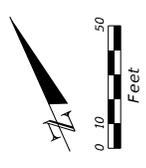
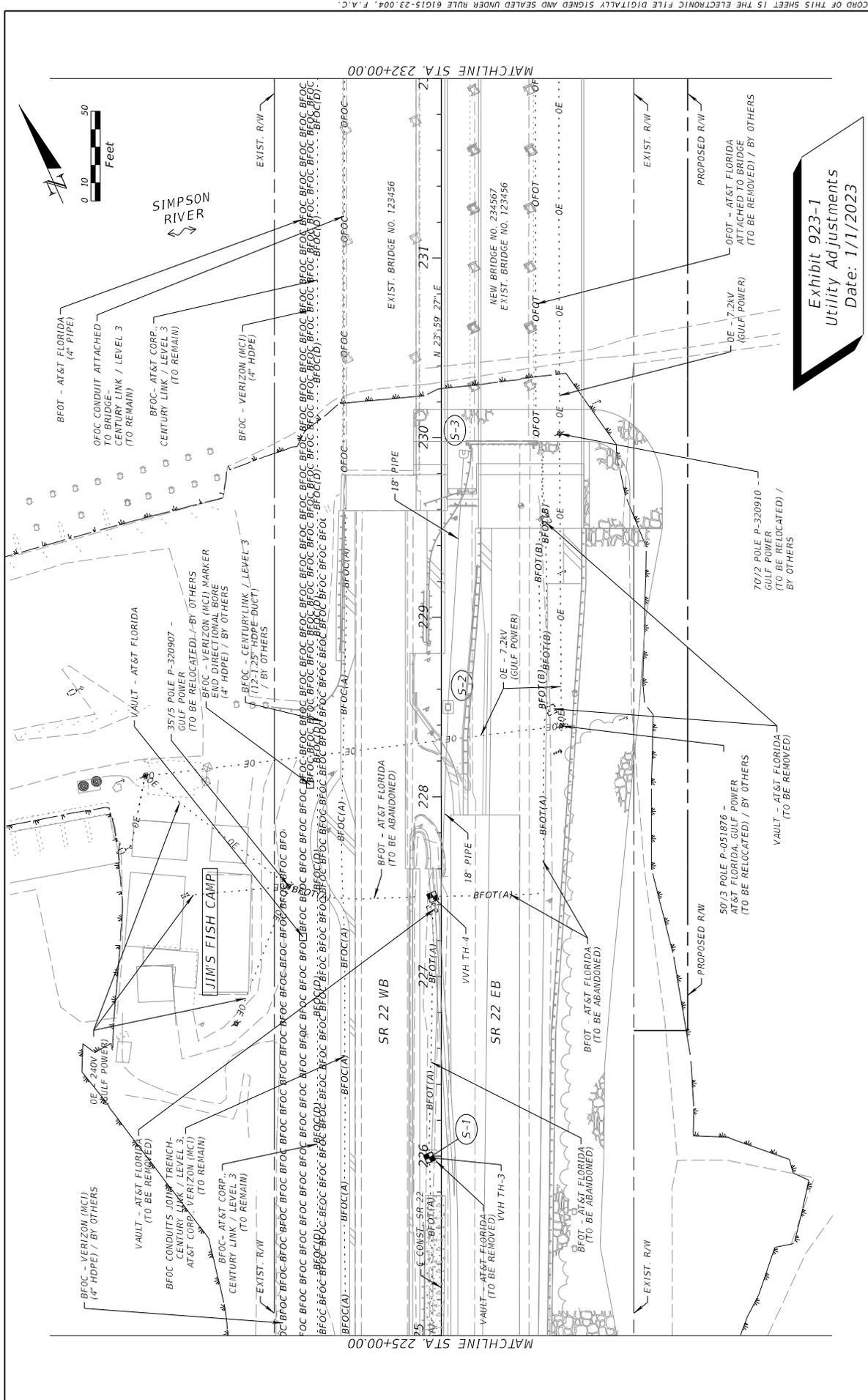


Exhibit 923-1
Utility Adjustments
Date: 1/1/2023

REVISIONS		ENGINEER OF RECORD		DEPARTMENT OF TRANSPORTATION		STATE OF FLORIDA	
DATE	DESCRIPTION	NAME	ADDRESS	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SHEET NO.
		LUKE S. WALKER, P.E.	123 MAIN STREET	SR 22	BAY	1234567-52-01	102
		ROADWAY ENGINEERS, INC.	TALLAHASSEE, FL 32301				

UTILITY ADJUSTMENTS



Florida Department of Transportation

FDOT CONNECT 10.10

Utility Worksheets

Steps in FDOTConnect 10.10 for ORD

1. Create/Open a New PLANRD file named for worksheets, Ex. PLANRD_Utility_Worksheets00
2. Reference all appropriate data content files, Ex. ALGNRD, DSGNRD, SURVRD, TEXTRD, UTEXRD etc.
3. Use the ORD Drawing Production Tools to create named boundaries and sheets
 - a) Select 11"x17" Plan Only and 50 Scale
4. Use Plan Set Manager to add sheet title block information (save and commit changes)
 - a) Sheet Title: Utility Worksheet (representation of project design files)
 - b) Page Number (UW-1, UW-2, etc.)
5. Use Plan Set Manager to Plot Sheets to single pdf (this is the most time consuming, click it and come back when finished!)

- 603 Two-Lane, Two-Way, Work Within the Travel Lane
 - 604 Two-Lane, Two-Way, Work In Intersection
 - 605 Two-Lane, Two-Way, Work Near Intersection
 - 611 Multilane, Work Outside Shoulder
 - 612 Multilane, Work On Shoulder
 - 613 Multilane, Work Within the Travel Lane - Median or Outside Lane
 - 615 Multilane, Work In Intersections
 - 625 Temporary Road Closure 5 Minutes of Less
 - 616 Multilane, Work Near Intersection - Median or Outside Lane
 - 660 Pedestrian Control for Closure of Sidewalk
- 5) The UAO shall not cut any roadway pavement.
 - 6) The UAO shall not cut or otherwise damage more than ten (10) linear feet of sidewalk.
 - 7) The UAO shall not commence work that conflicts with any FDOT construction project, scheduled local events and activities, other scheduled permitted activities, or FDOT lane closure restrictions.
 - 8) The UAO shall not excavate more than eighty (80) cubic feet.
 - 9) The UAO shall not work within FDOT limited access R/W or an FDOT rail corridor.
 - 10) The UAO shall not add third party utilities.
 - 11) The UAO shall comply with ***UAM Section 3.14*** when installing any pole.

2.4 Permit Application Package

2.4.1 General Documentation

In addition to the information required for the One-Stop Permitting website and the utility permit in ***UAM Section 8***, the UAO shall attach and incorporate as part of the utility permit application the following if applicable:

- 1) When not using the One-Stop Permitting website, the UAO shall provide a key map showing the proposed installation's location and the approximate distance and direction from the proposed work area to the nearest town, major road intersection, bridge, or railroad crossing.
- 2) Plan view drawings (preferably to scale) showing all of the following:
 - a) The R/W Lines, limited access lines, and the UAO's easement lines within the FDOT R/W.
 - b) The proposed utility and proposed utility appurtenances (except for utility appurtenances mounted at least fifteen (15) feet above the ground and less than eight (8) cubic feet).
 - c) The horizontal distance from the proposed utility to a well-defined feature of the transportation facility (such as the edge of travel lane).
 - d) When work is within an FDOT project, a tie to project stationing, otherwise a tie to roadway mileposts.
 - e) The limits of the work area (including staging areas, access points, or other areas to be used).
 - f) For trenchless installations, the proposed method of installation, materials, function, type, size of proposed installation, and bore diameter.
 - g) Maximum allowable operating pressures of proposed gas mains and the locations of proposed shut-off valves.
 - h) Aboveground features such as existing utility poles within the work area.
 - i) Underground features such as utilities, drainage pipes, or Intelligent Transportation System (ITS) lines within the proposed work area as can reasonably be obtained by a review of existing records and a topographical survey of above ground features.
 - j) Significant physical features such as vegetation, wetlands or bodies of water.
- 3) When installing underground utilities, the UAO shall provide profile view drawings showing all of the following:
 - a) The location of the proposed utility and proposed appurtenances larger than eight (8) cubic feet.
 - b) Benchmark information.
 - c) Horizontal and vertical location of all existing underground facilities such as utilities, drainage pipes, or ITS lines within the proposed work area as can reasonably be obtained by a review of existing records and a topographical survey of above ground features.
 - d) The proposed utility's depth below the top of the pavement or existing unpaved ground.
 - e) Top of water table or confining layer when required per ***UAM Section 3.16.9.1***.
 - f) **Cross-sectional view showing one (1) or more typical cross sections to adequately reflect the proposed installation's location.**

4.6 Access for Servicing or Patrolling Utilities

Where practicable, the UAO shall access utilities only from nearby frontage roads, public roads, or trails leading outside of the LA R/W. For utilities placed along non-limited access overpasses or underpasses the UAO shall, where practicable, service these utilities from the non-limited access R/W and not impact traffic on the LA R/W.

4.7 Attachments to FDOT Bridges

The UAO, shall not attach utilities to FDOT bridges. Alternatives to this requirement may be approved in accordance with *UAM Section 6*.

5 Project Coordination

Project coordination is a cooperative effort between FDOT and the UAO. This section covers the responsibilities of both FDOT and the UAO prior to construction activities of projects.

5.1 FDOT Coordination

FDOT shall make arrangements to ensure all of the following is done:

- 1) Advance planning of highway projects is coordinated with affected UAOs no later than the project being placed in the *FDOT Five-Year Work Program*.
- 2) Project drawings are provided to the UAO for markup in an agreeable format.
- 3) Conflicts with the UAO's utilities are identified to the UAO. This may be provided in a conflict matrix format when available.
- 4) Reasonable lead-time is provided for the UAO to relocate or adjust their utilities.
- 5) Reasonable lead-time is provided for the UAO to physically expose their utilities when the UAO elects to do this work.

5.2 UAO Coordination

The UAO shall do all the following:

- 1) Provide project work schedules to resolve all conflicts between the FDOT project and the UAO's utilities.
- 2) Obtain permits for utility work in compliance with all applicable laws and the *UAM*.
- 3) Identify to the designer utilities and utility service connections the UAO has determined to be in conflict that were not previously identified.
- 4) Provide existing and proposed utility locations and elevations on the project drawings or project CADD files with ties to the project's survey points, as can reasonably be obtained by a review of existing records, topographic surveys and detection devices without physically exposing the utility. The UAO shall use the following color code:

Red: Existing utilities that are:
 (a) To be removed or relocated horizontally or
 (b) To be placed out-of-service (deactivated) but left in place.
Green: Existing utilities to remain in place with no adjustment.
Brown: Utilities that are:
 (a) Existing and are to be adjusted vertically, but are to remain in the same horizontal alignment, or
 (b) New utilities to be installed.
- 5) Complete the utility work schedule provided in *UAM Section 8* for all needed utility work activities when requested by FDOT. The UAO shall include in the utility work schedule all of the following:
 - a) In Section B, all special conditions and constraints needed to perform the UAO's work activities and/or other important information.
 - b) In Section C, the type, size, material, status and offset to the centerline of construction, or other FDOT approved baseline, from station to station of the UAO's utilities.
 - c) In Section C, all UAO work activities to facilitate the needed relocations or adjustments, indicating an activity number, the TCP phase, the number of consecutive calendar days needed to complete the utility work activity by showing the breakdown of days prior to FDOT project construction and during FDOT project construction. In addition to UAO's work activities within the project limits, other offsite utility work activities such as procurement of material or property shall be included when these activities affect the time needed to complete the UAO's work activity.

Meeting Summary for February 8, 2023 Meeting

We had 76 participants in the meeting. The meeting opened with the note that “we have a diverse grouping of individuals from many facets within industry. It is important to note that the opinions expressed in this meeting are those of the individual. Consultants participating in the discussion are not speaking on the behalf of or representing the FDOT or any other agencies during the discussion.”

Mr. Purvis noted that, with NexGen being relevantly new, not all UAOs have seen the new format. He noted that there are some projects now; however, they have not seen a ton. He advised that the concern is that if the UAO has issues with the format.

A UAO attendee advised that their personnel cannot manage a 6-foot-long piece of paper. They requested the FDOT provide documentation on where it is mandated either by memorandum or statute to mark-up the large format plans. This is a similar inquiry to what is the documentation from FDOT for the mandate to utilize ProjectSuite Enterprise Edition (PSEE) for project. He inquired on how the utility agency was supposed to print the large format plans, as they do not have plotters, so they have to send them out to a printing company to have them done. He noted that they are concerned about this change and how to outfit their personnel with equipment they don't have, don't know how to use and train them. He advised that a 6 ft plan sheet is not possible in the cab of a truck. He noted that the large format is not a viable format, and a different plan sheet size is needed.

A Consultant for a UAO attendee advised that their experience expands from all three sides of the industry: FDOT, UAO and Consultant. He noted that this issue is similar to when the plans went from mylar plans to half sized CADD plans. He noted that FDOT should utilize a procedure to provide time for reviewing the proposed changes and work towards a negotiation between industry and FDOT. Additionally, he noted that once it has been negotiated, there should be transition timeframe for the change to occur, as these changes have cost implications for industry. He noted that some thought should be given to the impact and how best to move forward.

A Construction Consultant inquired why the UAOs cannot print large format plans and a UAO attendee on the call noted that they no longer have roll plot printers for over 10 years. The consultant inquired if the UAO can send out the plot to a printing company or like a Staples and the UAO attendee that is additional cost to the UAO. The UAO attendee also noted that their printers maximum size is 11x17 and you can not shrink down the large format to 11x17 because the result is too small and not readable.

A UAO attendee presented an idea that would benefit the folks is to get a real world example, as they have not had any projects to date for the large format. At this time, they noted that this is currently not an issue for their UAO since they have not encountered the NexGen / large format projects yet. He noted that the UAO would like examples of this format not in computer format, so they can better understand the logistical concerns with the large format. He noted that showing them on a computer does not help. Mr. Purvis noted that the non-standing subcommittee is planning to bring physical printed role plots and as well as the tiled 11x17 printer option (printing out roll plot on 11x17 paper and then taping pieces together to remake the 11x17 format).

An Engineering Consultant inquired on the need for paper plans and inquired about the possibility of harnessing technology like laptops and tablets in lieu of roll plots for field personnel. He noted that the benefit of the large single roll plot at a larger scale allows the viewer to see more detail and more

contiguous information. A UAO attendee noted that field locaters do not touch design files and aren't tech savvy. He noted that that this would increase costs for the UAO employees for the technology, but also the training of the personnel. He further noted that not all utility agency owners have the capabilities either due to cost, technology ability, etc. to make this change. The consultant attendee noted that the costs of purchasing the equipment are part of the costs of doing business, as well as the costs for training would benefit their employees. He also noted that there are costs associated with the learning curve, but it will lead to improvements in the employees and the technology used. The UAO attendee noted that the UAOs are having to incur costs for something the FDOT does not have to incur. A Consultant for a UAO attendee noted that there is a significant difference between the consultants costs and the UAOs costs. He noted that consultants have their overhead costs factored into their rates and percentages when they pursue projects for FDOT and will recoup some of that cost in the labor rates. However, he noted that the UAO does not have that benefit. The UAO attendee noted that the costs to the UAOs associated with this change to NexGen Plans / large format plans that needs to be considered.

A UAO attendee advised they have a few challenges with NexGen format and the electronic files format. She advised that they cannot do mark-ups on 3 ft x 4 ft, 3 ft x 6 ft roll plots. She advised that the information contained in the plans as it relates to the drainage structures no longer show you how the structure is position at that location – it is just profile now. As for the electronic files, she advised that they work in DGN and the DGN save as to DWG does not work correctly and typically do not get what they need from the files. She advised we don't know how they will do what they need to do to evaluate and mark-up plans, as the format does not work for them. She advised that it makes it hard to bring their information into the sheets and they have to re-train their personnel and there is no time to ramp up.

A FDOT Construction attendee suggested the creation of an application specifically for NexGen Plans. She noted that one person per UAO, per FDOT, Per Consultant access per project and update the plans in the application in lieu of mark-ups.

A Utility Coordinator attendee noted that they have five (5) NexGen Projects with the Turnpike. He advised that, with the removal of the cross section and the drainage cross sections, it is very difficult to evaluate the utility conflicts associated with the drainage structures or cross sections. He noted it's very difficult looking at the profiles, determining the structure type from the chart, then referencing the FDOT standard plans to understand the design of the drainage structure type listed in the chart. It makes it very difficult trying to evaluate the conflicts using three separate documents to determine what would previously be shown in the drainage structure sections. Subsequent to the meeting, he sent an email with a breakdown of all his concerns as a utility coordinator, which are shown below for the benefit of the group at large.

1. With the roll plots, he advised that the size of the files is difficult to share. On his project, the Roadway files are 264 MB and the Structure Plans 204 MB. He noted that they are uploaded to PSEE; however, he still has to utilize a OneDrive Link as PSEE will cut out with download of large files.
2. He noted that, with the cross sections as a roll plot, he can send them separately, but the limitations of the UAO to print the large format plans is an issue.
3. He noted that his biggest concern is the drainage sheets. He noted by not have cross sections that show the particular drainage structure and only a chart with the pipe elevations, this really complicates working in tight locations. He noted that he would like to see the drainage structure

section design and how the pipes leave the structure. He noted that this would allow him to see how the drainage structure design affects the utilities. He advised that, by using the chart and the illustrations shown, he then has to create his own exhibit and then show the utility agencies. He noted that it takes four pictures to see the pipe elevations from one structure and notes that he does not have the bottom elevations of the structure. He went on to note that, with the old plans, he typically used a copy of the plan view between the structures and sheets along with the drainage structure cross sections.

4. Finally, he noted that the drainage crossings and roadway elevation changes are some of the most important elements of our utility conflict analysis.

An Engineering Consultant attendee agreed that the NexGen plans that are being delivered are lacking information. He noted that with the cross sections they are typically in a separate submittal. He noted that he is not certain how the drainage structures go through the 3D plans development process and how they are rendered in the model, as well as utility features and class detection in the models. He noted that this process should be completed and an example of the plans that have gone through that rendering process and see what information could be provided to the utilities from this effort. He also noted that cross sections should be provided as they are required per the FDM. A utility coordinator attendee concurred that per the 900-series FDM roadway cross sections should be provided. He advised that if other utility coordinators aren't receiving them, they need to speak up.

A UAO attendee noted that it would be good if an example of a completed project could be provided and the conflicts identified for it. He noted that having a project that has gone "cradle to grave" in the FDM 900-Series is necessary to understand the full impacts on what is missing and what additional documentation is needed.

Another UAO attendee inquired on when the FUCC will issue a response, as their agency is looking at issuing a response. Ms. Schwartz noted that these meetings were to gather concerns and present them at the April FUCC meeting and for the Steering Committee to determine how to respond.

The meeting closed with the note that "we have a diverse grouping of individuals from many facets within industry. It is important to note that the opinions expressed in this meeting are those of the individual. Consultants participating in the discussion are not speaking on the behalf of or representing the FDOT or any other agencies during the discussion."

Ms. Schwartz noted that the next meeting was scheduled for March 8, 2022 via Teams.

With these discussions complete, the meeting was adjourned. The Links shared during the meeting and a Summary of Concerns summarized above are included below.

Links provided:

- FDOT Model-Centric Plans
 - <https://www.gotostage.com/channel/5f598fa79fb84067b1a7bd573efabcf1/recording/ca7c98cabafd438390bcf915c249900c/watch?source=CHANNEL>
- FDOT Connect – Creating Utility Worksheets
 - YouTube Video : <https://youtu.be/JPU5hXF02Yg>

- Presentation: https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/cadd/downloads/webinars/files/microstation-connect/fdotutilityworksheets.pdf?sfvrsn=8e517c41_2
- FDOT Design Manual – Refer to 2023
 - <https://www.fdot.gov/roadway/fdm/default.shtm>
- FDOT UAM
 - https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/programmanagement/programmanagement/utilities/docs/uam/uam2017.pdf?sfvrsn=d97fd3dd_0

Summary of Concerns Presented at this meeting:

- Not many NexGen projects to date
 - Not all UAOs have seen a NexGen Plan Set
 - Worried there will be more concerns before resolution
 - Need a real world example of NexGen Plans – physical print
- Large Format Paper Size – 3 ft by 4 ft, 3 ft by 6 ft
 - 6 ft roll plot is too big for truck and field personnel to use in the field
 - Tile printing does not help
 - No easy way to scale down
- Costs associated with purchasing technology to support NexGen
 - Cost prohibitive for UAOs to purchase tablets or laptops
 - Costs associated with training UAO personnel on how to use equipment
 - Costs associated with technology savvy personnel
 - UAOs do not have plotter
 - Cost prohibitive to send to printing company for UAO
 - UAOs are burdened with these additional costs
- FDOT has not provide documentation, mandate or State Statute
 - No documentation has been provided requiring the UAO to mark-up large format
 - No documentation has been provided with format change
 - Insufficient notification to UAOs
 - UAOs not consulted in change
 - No opportunity to review the change and provide input
 - No time provided for transition for UAOs
- Drainage Structure Sheets
 - Profile only – no structure section
 - Difficult to put together picture of structure between a profile, table and FDOT Standard plans
 - No longer able to gauge proximity or constructability concerns with pipes
- Cross Sections Sheets
 - Large Format Roll Plot not useful
 - No being provided in final plan set
- Large File size of the NexGen Plans
 - Concerns with timing out on downloads and uploads to PSEE

Meeting Summary for March 8, 2023 Meeting

We had 68 participants in the meeting. The meeting opened with the note that “we have a diverse grouping of individuals from many facets within industry. It is important to note that the opinions expressed in this meeting are those of the individual. Consultants participating in the discussion are not speaking on the behalf of or representing the FDOT or any other agencies during the discussion.”

The FUCC Chairman advised that the FUCC Steering Committee would be looking for the NexGen non-standing subcommittee to be prepared to bring a meeting report status and the direction that subcommittee is looking from the steering committee to the FUCC Spring 2023 Steering Committee Meeting.

Mr. Purvis and Ms. Schwartz noted that the subcommittee has discussed their plans for the upcoming April Spring FUCC (In-Person) non-standing subcommittee meeting. They noted they were planning to bring roll plots of the roadway sheets, cross sections, drainage structure sheet and Utility Adjustment Sheets in roll plot form for the attendees to review. Additionally they discussed bringing a tile print (11” x 17”) of a plan sheet for the group to review. They asked the attendees if there was anything else that might be beneficial. A Consultant attendee suggested a tablet or viewer that has the plans on them or Bentley viewer for folks to interact with. The attendee suggested that this might allow other meeting participants to take back their interaction with the device to their management as a possible mitigation to the large format.

At this point, the meeting was opened to discussion on any concerns, questions needs, or solutions from all aspects of industry (UAO, EOR, UC, Agency, Permitting, Construction, etc). Mr. Purvis noted that if anyone did not want to bring forth their comments online that they are welcome to present them to the chairs and they can bring them forward anonymously to the group.

A UAO attendee noted that he had received a set of plans of over 692 pages, large file size, and it was NexGen format. He advised that he was submitting a permit via OneStop Permitting (OSP) and got comments back from the reviewer requesting 11” x 17” plans; however, the plans received for the project were large format. Previous to the meeting, he had shared this example with the group at large. A FDOT attendee noted that they had followed up with the permit reviewer and it was a mis-communication and that the permit reviewer was looking for a bore profile and plans not specific size. They continued by noting that they discussed with the reviewer to utilize more specific language in their comments. The UAO attendee advised that the comment specifically requested 11” x 17” and he further advised that the FDOT looks for the roadway cross sections and drainage structure sections in the permit submittals especially in D5 and D7, the latter of which are not provided in the NexGen Plans. As for the file size of plans, a UAO attendee advised that they had issues with OSP timing out and uploading these large file size plans. The FDOT attendee inquired if the concern if there is a max limit to the file size and the UAO attendee advised yes. The FDOT Attendee to provide max file size limit in OSP.

A Utility Coordinator (UC) attendee advised that they had an issue with a project with NexGen Plans that had over 450 drainage structures and he has found it very difficult to for him and the impacted UAOs to properly evaluate the impacts since all they have is a table and plan view in lieu of structure sections. He asked if anyone else was having similar issues or better ways they have been able to better navigate using two separate charts for the drainage structure information. A UAO attendee advised that the margin of error is greater with the new NexGen drainage sheet and that there is more liability since it is easy to

misinterpret the drainage structure in lieu of the visual section that used to be provided in the 300-series. The UC attendee advised that there is a lot of difficulty for him and the UAOs on the scale, table and referencing multiple documents to try to determine what is happening.

A UAO attendee advised that the FDOT should consider doing all drawings in AutoCaDD, as they noted that most utilities use AutoCADD and don't have MicroStation. Their utility uses AutoCADD 3D, which he noted is an acceptable format to use for the FDOT plans development and the FDOT could set the requirement at negotiations. He went on to note that the "save as to DWG from DGN" method is not very workable as they do not translate easily, require a lot of fixing, multiple DGN files with multiple models so you don't always know what you have or more importantly don't have. He noted there is a method to take the file to ERES and mapping but it takes time. He noted that they have not received NexGen plans yet, but they know they have a FDOT project coming soon that will be and they were not aware of the changes to the drainage structure sheets from 300-series to 900-series. A UC attendee noted that he thought there was issues between ORD and AutoCADD with geo referencing. A design consultant notes that it takes some work to work through the issues with ORD and AutoCADD.

Mr. Purvis inquired if there were any other agencies looking to follow the FDOT move to Large Format Plans (900-series) verses the older 11" x17" (300-series plans. One UAO advised that they are staying the course with 11" x 17". A Consultant that deals with agency permitting for their UAOs clients advised that they did not foresee the change to large format.

A Consultant attendee noted that they are looking into different perspectives and concerns to brainstorm on how to overcome these issues.

Mr. Purvis and Ms. Schwartz inquired if there are any further comments or open discussion items. There were none.

Ms. Schwartz reminded the attendees that there is NO TEAMS Meeting in April as the meeting will be held in-person at the Spring FUCC meeting. She reminded the group that the non-standing subcommittee meeting will be on Wednesday, April 12 at 4 pm in-person. She noted that the re-occurring calendar invite for the TEAMS meeting would be canceled due to the in-person Spring Meeting. She advised the re-occurring TEAMS meeting would resume in May as scheduled.

The meeting closed with the note that "we have a diverse grouping of individuals from many facets within industry. It is important to note that the opinions expressed in this meeting are those of the individual. Consultants participating in the discussion are not speaking on the behalf of or representing the FDOT or any other agencies during the discussion."

With these discussions complete, the meeting was adjourned. The Links shared during the meeting and a Summary of Concerns summarized above are included below.

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- FDOT Connect – Creating Utility Worksheets
 - YouTube Video : <https://youtu.be/JPU5hXFO2Yg>

- Presentation: https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/cadd/downloads/webinars/files/microstation-connect/fdotutilityworksheets.pdf?sfvrsn=8e517c41_2
- FDOT Design Manual – Refer to 2023
 - <https://www.fdot.gov/roadway/fdm/default.shtm>
- FDOT UAM
 - https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/programmanagement/programmanagement/utilities/docs/uam/uam2017.pdf?sfvrsn=d97fd3dd_0

Summary of Concerns Presented at this meeting:

- Large File size of the NexGen Plans
 - Concerns with timing out on uploads to OSP
 - Concerns with timing out on downloads and uploads to PSEE
- Permitting Requirements per UAM
 - NexGen Plans do not provide Roadway Cross Sections in Final Plans
 - NexGen Plans do not provide Drainage Structure Cross Sections in plans
- Drainage Structure Sheets
 - Insufficient information to determine impacts to the utility facilities
 - Utility unable to properly review the plans to determine if conflicts resolved. Most utility owners are not engineers.
 - Concern with increased liability for the EOR since the Utilities have “less information” that they can review in the plans
 - No visual at each section for evaluation of proximity and constructability conflicts
 - Unable to put together a picture of the proposed drainage structure by only using profile, table and FDOT Standard Plans
 - No information for bottom elevations of structures
 - No orientation information
- Concern with electronic file format
 - Typically FDOT Projects are MicroStation (.DGN)
 - Typically most utilities work in AutoCAD (.DWG) or a software other than MicroStation
- FDOT’s Plan Format inconsistent to other agency partners