HYBRID DIGITAL DELIVERY REFERENCE GUIDE

The hybrid digital delivery method leverages electronic files that can be readily generated in design and utilized efficiently in construction. In most cases this is in the form of LandXML files that can be directly consumed by survey and construction equipment for Automated Machine Guidance (AMG) and Global Positioning System (GPS) technologies or Excel files providing tabular data. Providing this information digitally also eliminates the need for presenting this information within the 2D plan set, thereby reducing the resources investment in plan sheet production. The following steps are necessary to deliver a PSE in this format:

1) Digital Data - Identify the digital data that will be provided as a contractual document in addition to the 2D plans. This should be done within the preliminary design phase of the project to prevent any duplication of effort. The table below is a list of design elements that have been pre-approved for use. Please make suggestions and requests for additional design elements to digital.delivery@dot.ny.gov

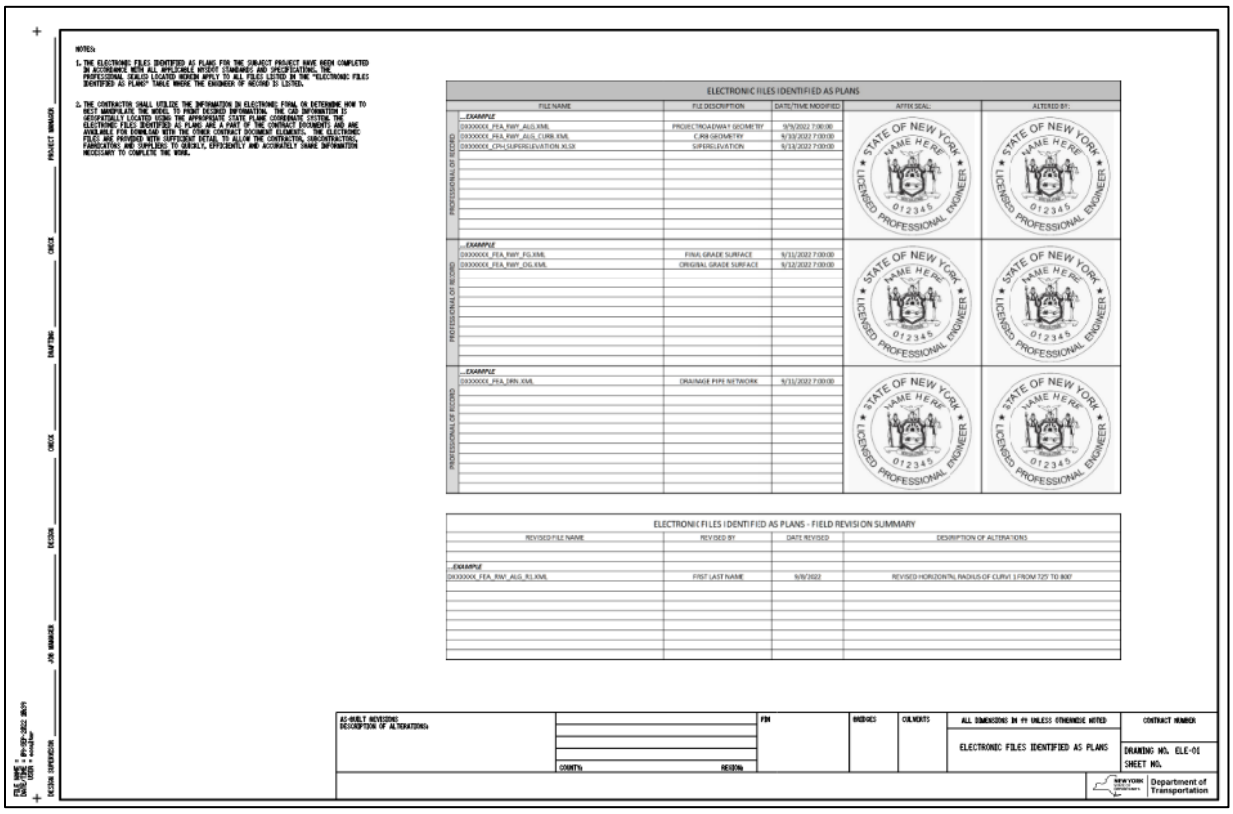
		Design Element (Select all that apply "X")	Drawings Removed from the 2D Plans	Digital Data (File Format)	Supplemental Files Required for Design Reviews and Bidding (File Format)
HIGHWAY		Horizontal Alignment	Road Alignment Data	ALG/XML	OpenRoads horizontal alignment report (PDF)
		Vertical Alignment	Vertical Profile	ALG/XML	Vertical profile fenced plot (PDF)
		Superelevation	Banking Diagram	Excel	Vertical profile fenced plot with banking diagram (PDF)
		Baseline Alignment	Baseline Ties	ALG/XML	Survey control report (PDF)
		Final Grade Surface	Grading Plan	DTM/XML	None
		Utility Pipes (Invert In/Out)	Plan/Profile/Table	ALG/XML	Utility profile fenced plot (PDF) & utility table export (PDF). Utility roll plot plan recommended (PDF)
		Utility Vaults/Shutoffs/etc. (Layout Pt.)		CogoPoints/XML	
		Work Zone Horizontal Alignment	WZTC Road Alignment Data	ALG/XML	OpenRoads horizontal alignment report (PDF)
		Work Zone Vertical Alignment	WZTC Vertical Profile	ALG/XML	Vertical profile fenced plot (PDF)
		Work Zone Superelevation	Banking Diagram	Excel	Vertical profile fenced plot with banking diagram (PDF)
STRUCTURES		Bearing Table	Bearing Table	Excel	None
		Desing Load Table	Desing Load Table	Excel	None
		Moment and Shear Tables	Moment and Shear Tables	Excel	None
		Camber Table	Camber Table	Excel	None
		Haunch Table	Haunch Table	Excel	None

It is important to note that by removing illustrative plan sheets and replacing with digital data, it is still crucial to provide reviewable information for both design and bidding reviews. The right most column identifies the mitigation that must be provided as supplemental information which requires minimal effort to produce.

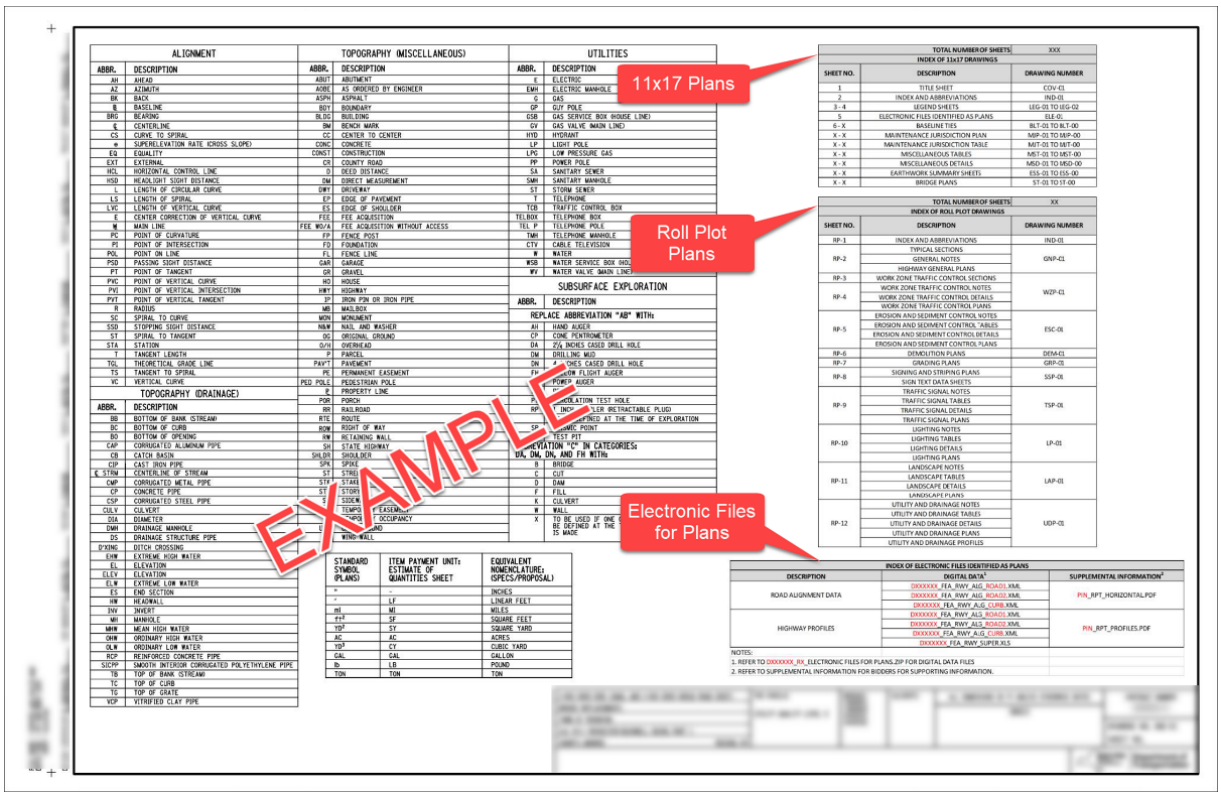
2) Special Note – A special note has been developed for use on all digital delivery projects. This note enables the use of electronic files, and equates them to plans in the hierarchy. Refer to the hybrid digital delivery special note embedded within the Digital Delivery Guidance Document. The sections of the note are summarized as follows:

I. Definition of Terms
II. Electronic Files
III. Level of Development
IV. Electronic File Content
V. Software Required & Training Videos
VI. Field Revisions to Electronic Files

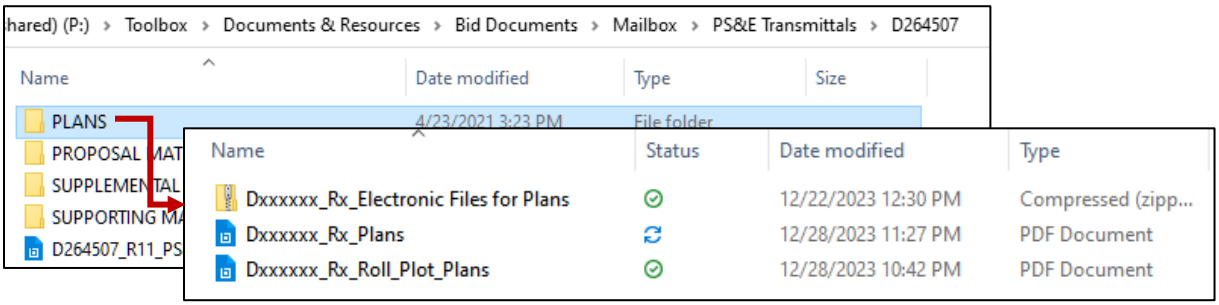
3) Professionally Sealing Digital Data – Sealing digital files and maintaining a “single source of truth” is accomplished by listing the files on a plan drawing titled Electronic Files Identified as Plans. This drawing identifies the name of the file, format, date, and time and provides a location for professional seal. Both the MicroStation drawing, and Excel file used to create this sheet are embedded within the Digital Delivery Guidance Document for designers to use on their project. The number of professionals can be increased or decreased as necessary for your project. The date and time modified should be entered after the files are placed in a zip folder (See step 5). Note that the date/time is for the file not the folder.



4) Index of Drawings – An index of drawings should be provided for all contract plan drawings (including roll plots if provided) and electronic files identified as plans within the plan set. Isolating this information by the deliverable makes it easier for downstream users to locate the desired information. Refer to the embedded documents within the Digital Delivery Guidance Document for an index of drawings shell.



5) DQAB Submittal – All electronic files identified as plans shall be zipped within a folder named "Dxxxxxx_RX_Electronic Files for Plans". Add the traditional plan set and all electronic files identified as plans to the "PLANS" folder.



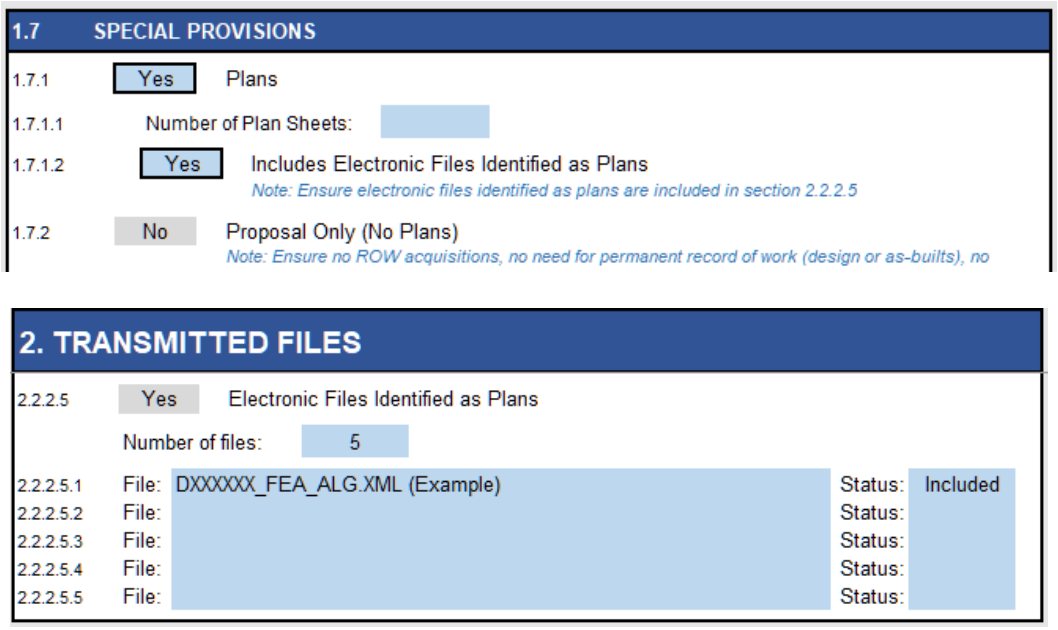
Before submitting to DQAB, designers should check to ensure all digital delivery information is included.

- ☐ Digital Delivery Special Note
- ☐ Digital Delivery Index
- ☐ Electronic Files Identified as Plans sheet (Drawing No. ELE-01) and verify date/time
- ☐ Electronic Files for Plans Zip Folder
- ☐ CONR9 includes supporting information

6) CONR9 Information – Provide the materials to support bid review as supplemental information under section 11. For example:

FILE NAME *(Including File Format)*	DESCRIPTION	DETAILS
1. CADD DRAWINGS [1]		**CHOOSE...**
2. CADD SURFACES [1]		**CHOOSE...**
3. CADD ALIGNMENTS [1]		**CHOOSE...**
4. QUANTITY WORKUPS [2]		**CHOOSE...**
5. UNSEALED LAYERED PDF or 3D PDF		**CHOOSE...**
6. CROSS SECTIONS		**CHOOSE...**
7. RECORD PLANS		**CHOOSE...**
8. SIGN FACE LAYOUTS		**CHOOSE...**
9. SUBSURFACE INFORMATION		**CHOOSE...**
10. ANTICIPATED CONSTRUCTION SCHEDULE		**CHOOSE...**
11. SPECIAL REPORTS OR OTHER INFORMATION		**Provided**
PIN#_	OpenRoads Horizontal Alignment Report	Digital
PIN#_	Vertical Profile Roll Plot	Digital
PIN#_	Drainage Profile Roll Plot	Digital
PIN#_	Drainage Table Report	Digital
PIN#_	Design Approval Document	Digital
PIN#_	Project Labor Agreement	Digital
PIN#_	Stormwater Pollution Prevention Plan	Digital
PIN#_	Permits	Digital
PIN#_	Asbestos Blanket Variances	Digital
PIN#_	Asbestos Report	Digital
PIN#_	Survey Control Report	Digital
PIN#_	Wetland Compensation Report	Digital
PIN#_	Project Location or Information (KMZ)	Digital
12. BRIDGE INFORMATION[3]		**CHOOSE...**

7) PSE Transmittal Memo – The digital data identified in step one, sealed in step three, and submitted to DQAB in step five needs to be listed in the transmittal memo as well. Under section 1.7.1.2 selecting "YES" for Digital Delivery will enable section 2.2.2.5 and allow you to list the additional contractual files.



1.7	SPECIAL PROVISIONS	
1.7.1	Yes	Plans
1.7.1.1	Number of Plan Sheets:	
1.7.1.2	Yes	Includes Electronic Files Identified as Plans
		Note: Ensure electronic files identified as plans are included in section 2.2.2.5
1.7.2	No	Proposal Only (No Plans)
		Note: Ensure no ROW acquisitions, no need for permanent record of work (design or as-builts), no

2. TRANSMITTED FILES				
2.2.2.5	Yes	Electronic Files Identified as Plans		
	Number of files:	5		
2.2.2.5.1	File:	DXXXXX_FEA_ALG.XML (Example)	Status:	Included
2.2.2.5.2	File:		Status:	
2.2.2.5.3	File:		Status:	
2.2.2.5.4	File:		Status:	
2.2.2.5.5	File:		Status:	

8) Amendments – The electronic files should be treated the same as a traditional plan sheet. If a file is revised by amendment, it should receive the A1 suffix in the file name. The plan sheet drawing no. ELE-01 also needs to be revised with the new file name, date and time stamp and seal. There is also a table located at the bottom of the ELE sheet to provide a description of changes made to the file.

ELECTRONIC FILES IDENTIFIED AS PLANS - REVISIONS SUMMARY			
REVISED FILE NAME	REVISED BY	DATE REVISED	DESCRIPTION OF ALTERATIONS
…EXAMPLE			
DXXXXXX_FEA_RWY_ALG_R1.XML	FIRST LAST NAME	12/8/2022	REVISED HORIZONTAL RADIUS OF CURVE 1 FROM 725' TO 800'

Within the body of the amendment document, the amendment information should be summarized as follows:

1. Electronic Files Identified as Plans deletions/additions/replacements are summarized in the following table:

Old File Name	New File Name	Description of Changes
Dxxxxxx_fea_rwy_alg.xml	Dxxxxxx_fea_rwy_alg_A1.xml	Revised curve 1 horizontal radius from 700' to 800'
Dxxxxxx_fea_rwy_fg.xml	Dxxxxxx_fea_rwy_fg_A1.xml	Updated final grade surface based on changes to curve 1.

Any new or amended files shall be zipped within a folder and labeled “Dxxxxxx_A#_Electronic Files for Plans”. Do not include any existing, unchanged files within the zip folder. It is recommended to create the zip folder before filling out the date/time modified on the ELE sheet to prevent any changes to the file properties.

9) Field Revisions – Again, revisions to the electronic files should be treated in the same manner as a plan sheet. The R1 suffix should be added to the file name. Drawing no. ELE-01 should be updated to provide users with the current version of the file including revised date and time information. If the file was revised by a new professional, there is a box for an altered by seal. The revisions summary table mentioned previously should be updated to provide information on the changes made to the file(s).

10) As-Builts – All of the electronic files listed on drawing no. ELE-01 at the end of the project need to be provided along with the traditional plan set for the as-built records. In addition, it is recommended to also provide the supporting information shown in step one and provided via the CONR9 is step 6. This will provide downstream users with an easy way to view the digital data.

