

GEORGIA DEPARTMENT OF TRANSPORTATION

How to Utilize WMS Imagery Services To generate Static Aerial Imagery PDFs

2.0

Current Revision Date:

February 2018

How to Utilize WMS Imagery Services.

This document is intended to demonstrate how to utilize the imagery provided by WMS (Web Mapping Services).

The Georgia DOT has contracted with a service that provides Aerial imagery and Roadway information through these services.

The following verbiage shall be included in all printed publications as part of GDOT's licensing agreement

"Microsoft Bing® used with permission from Microsoft Corporation."

This note is provided as a cell in the latest version of the GDOT-GN-Sheets.cel library. The cell is GBNGLO and should be placed in the file at a legible scale based upon the scale of the plot

1 ·			
GBNGLO	GDOT Bing Logo Credits	Grpł	"Microsoft ling t used with permission from Microsoft Corporation.
GLG100	GDOT Long Plot 35"v100"	Groł	

Acquiring the WMS files

Step-1: Open the following location from Windows Explorer: \\gdot.ad.local\gdot\Preconstruction\RoadDesign\Imagery\GDOT-WMS-services\BING\

urn New folder			
ame	Date modified	Туре	Size
WMS-East-Aerial.xwms	12/12/2013 10:07	XWMS File	2 KB
WMS-East-Aerial-2d.dgn	1/21/2014 1:25 PM	DGN File	445 KB
WMS-East-Aerial-with-labels.xwms	12/12/2013 10:06	XWMS File	2 KB
WMS-East-Aerial-with-labels-2d.dgn	1/21/2014 1:21 PM	DGN File	445 KB
WMS-East-Road.xwms	12/12/2013 10:05	XWMS File	2 KB
WMS-East-Road-2d.dgn	12/20/2013 3:21 PM	DGN File	445 KB
WMS-West-Aerial.xwms	12/12/2013 10:00	XWMS File	2 KB
WMS-West-Aerial-2d.dgn	12/20/2013 3:15 PM	DGN File	445 KB
WMS-West-Aerial-with-labels.xwms	12/12/2013 9:59 A	XWMS File	2 KB
WMS-West-Aerial-with-labels-2d.dgn	12/20/2013 3:16 PM	DGN File	445 KB
WMS-West-Road.xwms	12/12/2013 9:54 A	XWMS File	2 KB
WMS-West-Road-2d.dgn	12/20/2013 3:17 PM	DGN File	445 KB

Step-2: Select all of the files shown above and copy them to your current working project directory. At this time, a copy of these files will be required in each project folder in which you wish to use them.

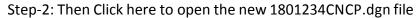
Open Burn New fold	lor	1 1 1			
Name		Date modified		Туре	Size
WMS-East-Aerial.xwms		7-Zip		XWMS File	2 KB
MMS-East-Aerial-2d.dgn				DGN File	445 KB
WMS-East-Aerial-with-labels.x	-	Scan for Viruses TextPad WinMerge WinZip Always available offline Send to Cut		XWMS File	2 KB
MWMS-East-Aerial-with-labels-	1			DGN File	445 KB
WMS-East-Road.xwms				XWMS File	2 KB
MMS-East-Road-2d.dgn	-			DGN File	445 KB
WMS-West-Aerial.xwms				XWMS File	2 KB
MWS-West-Aerial-2d.dgn				DGN File	445 KB
WMS-West-Aerial-with-labels.				XWMS File	2 KB
MMS-West-Aerial-with-labels-		Сору		DGN File	445 KB
WMS-West-Road.xwms		Create shortcut		XWMS File	2 KB
WMS-West-Road-2d.dgn		Delete		DGN File	445 KB

Step-3: Paste these files into your PI# Project folder. (Example: 1801234\1801234CNCP.dgn.)

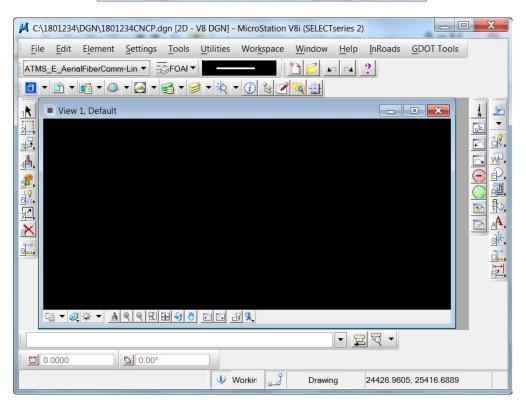
Utilizing the WMS files

Step-1: Create a new Microstation V8i file (Example: 1801234CNCP.dgn file).

Save in:	📜 DGN		- GØP 🗆				3 1
a.	Name		Date	Type	Size	Tags	
2	A 1801234_13	-002.dgn	12/20/2011 2:48 PM	DGN File	207 KB		
Recent Places	A 1801234_13	-004.dgn	10/16/2013 11:52 AM	DGN File	108 KB		
-	A 1801234_13	-024 Completed.dgn	12/20/2011 2:17 PM	DGN File	178 KB		
1	A 1801234_13	-024 Ready to start.don	12/20/2011 2:49 PM	DGN File	82 KB		
Desktop	A 1801234_13	-024 Working.dgn	12/20/2011 2:21 PM	DGN File	340 KB		
A 840	A 1801234_13	-024.dgn	8/24/2012 10:54 AM	DGN File	205 KB		
100	A 1801234_13	-025.dgn	9/25/2012 8:31 AM	DGN File	168 KB		
Libraries	A 1801234_13	-29.dgn	1/13/2014 2:36 PM	DGN File	435 KB		
	A 1801234_13	-098.dgn	8/23/2012 10:44 AM	DGN File	180 KB		
1	A 1801234_13	-099.dgn	12/20/2011 2:53 PM	DGN File	241 KB		
Computer	A 1801234_13	-999.dgn	5/30/2013 9:55 AM	DGN File	667 KB		
0	A 1801234_19	-29.dgn	8/29/2012 2:41 PM	DGN File	435 KB		
(A 1801234_23	ldgn	10/30/2012 2:50 PM	DGN File	552 KB		
Network	1801234_24	-024.dgn	1/13/2014 2:36 PM	DGN File	400 KB		
	1801234_26	-024.dgn	2/5/2013 11:49 AM	DGN File	174 KB		
	A 18012348G	RD.dgn	1/27/2014 1:52 PM	DGN File	599 KB		
	🔏 1801234BRI	DG.DGN	12/20/2011 2:32 PM	DGN File	73 KB		
	M 1801234CN	CP-E.DGN	12/20/2011 2:42 PM	DGN File	74 KB		
	M 1801234CN		8/31/2012 11:03 AM	DGN File	101 KB		
	A 1801234CN	LY.DGN	12/20/2011 2:43 PM	DGN File	74 KB		
	File name:	1801234CNCP.DGN				•	Save
	Save as type:	MicroStation DGN Files (*	dgn)			•	Cancel
	Seed.	CIGDOT_V8/Corporate_	Workspace/MicroStation/Seed/GDOT	_V8_2D dgn			Browne



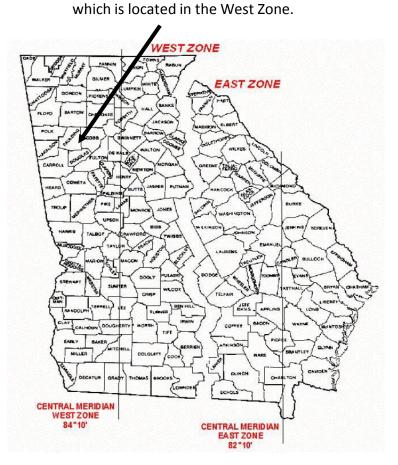
Look in:	L DGN		- 0000-		🗋 🔄 🗈	2D - V8 DGN
P.	Name	*	Date	Type	Si: *	
-7	M 1801234_1	9-29.dgn	8/29/2012 2:41 PM	DGN File		
ecent Places	M 1801234_2	3.dgn	10/30/2012 2:50 PM	DGN File		
1000	M 1801234_2	4-024.dgn	1/13/2014 2:36 PM	DGN File		
i	M 1801234_2	4-098.dgn	2/25/2014 10:11 AM	DGN File		
Desktop	A 1801234_2-	4-098-HL.dgn	2/25/2014 10:12 AM	DGN File		
ALCON ST.	1801234_2	6-024.dgn	2/5/2013 11:49 AM	DGN File		
100	A 1801234BC	GRD.dgn	2/26/2014 4:00 PM	DGN File		
Libraries	🛃 1801234bg	rd2d.dgn	2/21/2014 4:01 PM	DGN File		
	M 1801234BC	GRDold.dgn	1/27/2014 1:52 PM	DGN File		
1000	M 1801234BR	RDG.DGN	12/20/2011 2:32 PM	DGN File		
Computer	M 1801234CN		Type: DGN File Size: 598 KB	le		
	4)1901224CN	III III	Date modified: 2/7/2014	11:56 AM		
Network	File name:	1801234CNCP dgn		•	Open	
	Files of type:	CAD Files (*.dgn;*.dwg	* (bd)	•	Cancel	
		Open as read-only			Options	



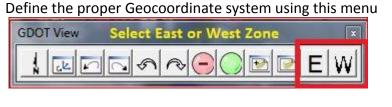
Preparing the file to Reference the WMS Imagery

Step-1: You will need to determine the Zone location of the project for the Georgia State Plane Coordinate

System. The choices are the <u>GA83-WF</u> for the West Zone and the <u>GA83-EF</u> for the East Zone as shown in the map below. Our sample 1801234CNCP.dgn is located in Paulding County



Step-2: When the Correct zone is determined, Use the following GDOT View Menu to select the Coordinate system



GA83-EF for Eastern zone GA83-WF for Western zone

This is DGN file specific and only needs to be selected once per DGN file. You will not see any visible change on the screen. This is just assigning the coordinate system to the file.

There is no harm in re-entering the command. This command does not change any

coordinates but rather identifies the coordinates with the proper Geographic Coordinate system.

If you have a previous Geographic Coordinate System attached, you may receive the Geographic Coordinate System Changed dialog box. Please select "Correcting the Geographic Coordinate System-do not reproject the data" radio button and click OK.

Step-4: Change the Active level to one of the following RAST levels.

RAST_Dsgn_LVL1	✓ ○ 🗆
RAST_Dsgn_LVL2	✓ ○ 🗆
RAST_Dsgn_LVL3	✓ ○ 🗆
RAST_Dsgn_LVL4	✓ ○ 🗆

Step-5: Attach the reference files to be displayed.

In Microstation V8i>File>References>Tools>Attach

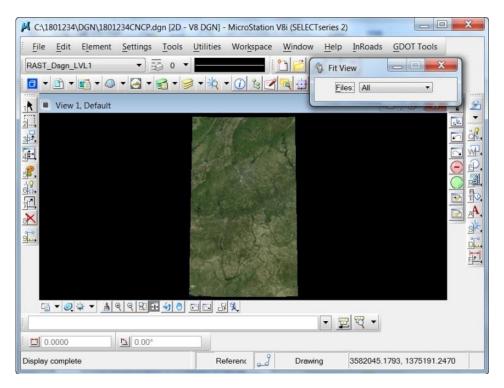
Choose the file you wish to attach and make sure to change the Attachment Method to Coincident World

Look in:	L DGN		• 0 0 P 🗆 •				3 3	20 - V8 DGN
P.	Name		Date	Type	Size	Tags		
-2	M 18012345T	E1.DGN	12/20/2011 2:46 PM	DGN File	75 KB			
Recent Places	M 1801234ST	E2.DGN	12/20/2011 2:46 PM	DGN File	72 KB			10000
-	A 1801234ST	E3.DGN	12/20/2011 2:46 PM	DGN File	73 KB			60,000
1	A 1801234ST	E4.DGN	12/20/2011 2:47 PM	DGN File	73 K8			
Desktop	A 18012345T	E5.DGN	12/20/2011 2:47 PM	DGN File	73 KB			
ART	A 1801234TC	IPO.DGN	12/20/2011 2:23 PM	DGN File	2,087 KB			1. MA. 1
-	A 1801234TR	DG.DGN	12/20/2011 2:35 PM	DGN File	94 KB			
Libraries	A 1801234TY	PS.dgn	12/20/2011 2:44 PM	DGN File	183 KB			
	A 1801234UT	LE.DGN	10/3/2013 2:55 PM	DGN File	129 KB			Attachment Method
1000	A 1801234UT	LP.DGN	1/13/2014 2:37 PM	DGN File	268 KB			Atlachment Method Coincident World
Computer	A 1801234W	ALLDGN	12/20/2011 2:36 PM	DGN File	74 KB			Coincident World
0	A 1801234W	PRO.DGN	12/20/2011 2:37 PM	DGN File	73 KB			
(1)	MUSGS-Top	o-WMS-West.dgn	12/20/2013 3:31 PM	DGN File	445 KB			
Network	work WWSplotTesting.dgn WMSplotTesting2d.dgn WWS-West-Aerial-2d.dgn WWS-West-Aerial-with-labels-2d.dgn		1/15/2014 9:59 AM	DGN File	667 KB			
			1/15/2014 10:00 AM	DGN File	666 KB			
			12/20/2013 3:15 PM	DGN File	445 K8			
			12/20/2013 3:16 PM	DGN File	445 KB			
	WMS-West	-Road-2d.dgn	12/20/2013 3:17 PM	DGN File	445 KB			
	File name:	WMS-West-Aerial-2d.dgn				•	Open	
	Files of type:	MicroStation DGN Files (* dg	a)			•	Cancel	
	-	Save Relative Path					Options	

For our example we are choosing the WMS-West-Aerial-2d.dgn file. Choose the Fit Reference or Fit All command and select the view with a data button.

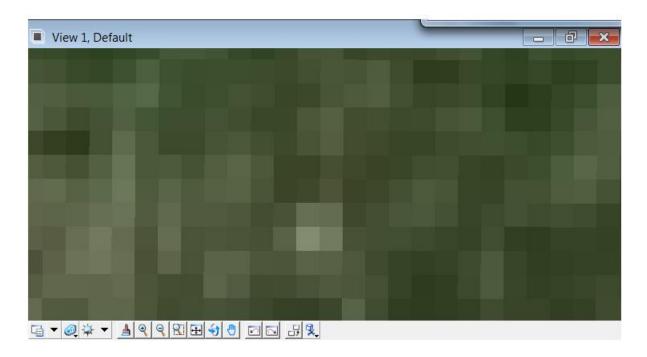
💡 Fit Vie	w			ĸ
Files	All		•	
	<mark>cpand</mark> Clip	oping Pla	nes	

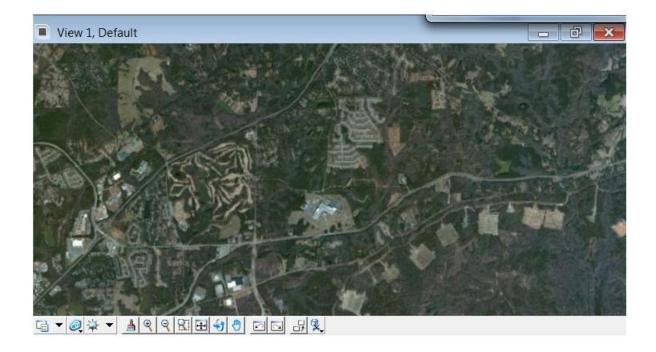
The display will update with a view of the Western half of Georgia. Note: It may take a moment for the display to show based upon network speed.



You may also attach additional reference files based upon your needs.

The imagery has different resolution with increasingly better resolution the further you zoom in and will refresh itself based on the zoom level as shown in the image(s) below. Note: This may take some time due to network speed.





And as you increasingly Zoom in the resolution will get better but may take a moment to update on the screen (as shown below).



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Options for Imagery

Currently there are three options provided for this imagery: (Substitute East instead of West for

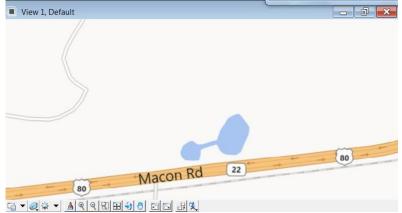


East Zone project). Aerial Imagery (WMS-West-Aerial-2d.dgn)

Aerial Imagery with Labels (WMS-West-Aerial-with-labels-2d.dgn)



Roads Only (WMS-West-Road-2d.dgn)



Trouble Shooting and additional notes:

As this is a new process and procedure, please submit requests for enhancements/additions to the Solution Center based upon your needs.

For instructions on Plotting, please refer to the Concepts Section in the GPlot Document under the Help (tab) of the GDOT Root Menu in MicroStation V8i.

The reference file display may be turned off based upon your needs.

References (1 of 1 unique, 1 displayed)				Service and	
Tools Settings						
	12 2 2 3 9 0 >	Hilite Mode:	None 👻			
Slot 🔶 🏹 File Name	Description	Logical	• 3			
1 WMS-West-Aerial.dgr	ı		√ _ √			
			Di	splay and be turned off by lecting the check mark.		

You may experience the following images displaying a camera in your MicroStation view. The imagery only allows viewing down to a particular zoom level and you may have to zoom back out for the image to reappear. This also may happen from time to time based upon network speed even when zoomed out.



A MicroStation J DGN files may be attached to a V8 DGN file as a reference and also utilizes this imagery as long as:

A V8 DGN file is used as the base file.

Define the proper Geocoordinate system using this View menu



GA83-EF for Eastern zone GA83-WF for Western zone

Make Sure the Reference is attached with Coincident World.

Questions or Comments?

For questions or comments about this document or any other MicroStation related issues, please contact the GDOT Solutions Center help desk.

GDOT Solutions Center Phone: (404)631-1220 Email: <u>SolutionsCenter@dot.ga.gov</u>

(When submitting issues to the Solutions Center please specify a subject line of "*MicroStation*" So the issue will be assigned correctly.)

Creating "Static" Background images for your project

- Create new V8 2d dgn file.
 (Name is insignificant at this point; it is just a temporary file for construction purposes).
- 2. Open this file in MicroStation V8i SS2.
- 3. Assign a coordinate system by selecting one of the following Pre-set Microstation Geographic keyins "geocoordinate assign" from a Library provided in WMS.

See help on GDOT-Root (WMS imagery in Microstation)

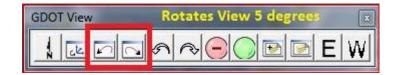


GA83-WF for Western zone

GA83-EF for Eastern zone

4. Attach reference of area you wish to cover (topo, main, or WMS imagery). Make sure to use coincident world when attaching these files. These files may also be Microstation J files as demonstrated in this example.

It is best to rotate the file where a majority of the project area is horizontal on the screen.



5. Attach GDOT-GN-Sheets.cel cell library. Choose one of the following cells:

GLG50, GLG75, GLG100, GLG125, GLG150, GLG175, GLG200. These cells are representations of

long plot borders 35 wide by 50, 75, 100, 125, 150, 175 or 200 long.

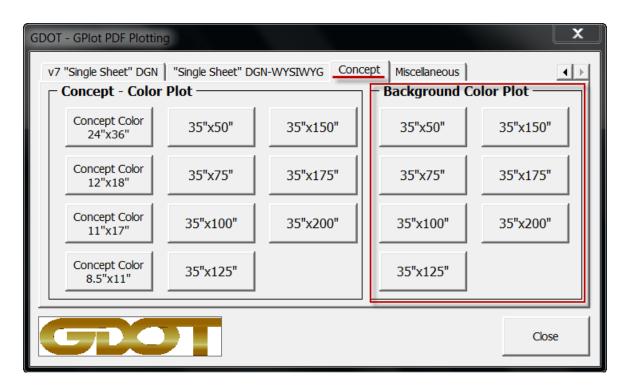
Set scale to cover area you are interested in

It doesn't have to be an exact scale at this point. If a scale of 178 gets you the area you need then that is OK.

Smallest number that works will give it the best quality. I would suggest keeping the scale at 200 or lower.

There are different size from 35x50 (GLG50) in increments of 25 up to 35x200 (GLG200). Use whichever works best for your circumstance.

- 6. Detach any reference files other than the WMS and make sure you don't have anything drawn in this area because you are creating a background only. At this point we are just creating the background image.
- 7. Use the background color plotting from the concept tab that corresponds to the size cell you used. This process may take up to an hour or more depending on your network and time of day.



Creating the "Background" – Color Plot

• **"Background – Color Plot":** (Used for creating background imagery color plots in which services like WMS (web mapping services) are utilized. This is most typically used for creating static PDF images for use as backgrounds generated from WMS imagery.

This allows the resulting PDF to be used as the background image and speeds performance of generating future plots.

• <u>Note: While this assists in the creation of future plots, this process can take quite</u> <u>some time on initial plots and should be performed in off peak times or after hours.</u>

<u>"35'x50" Sheet Size"</u>

"35'x75" Sheet Size"

"35'x100" Sheet Size"

<u>"35'x125" Sheet Size"</u>

<u>"35'x150" Sheet Size"</u>

<u>"35'x175" Sheet Size"</u>

"35'x200" Sheet Size"

Sizes – (Using sheet cells from GDOT-GN-Sheets.cel library)

0	35″ x 50″	Roll plot using GLG50 cell
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- **35" x 75"** Roll plot using **GLG75** cell
- **35" x 100"** Roll plot using **GLG100** cell
- 35" x 125" Roll plot using GLG125 cell
- o 35" x 150" Roll plot using GLG150 cell
- **35" x 175"** Roll plot using **GLG175** cell
- **35" x 200"** Roll plot using **GLG200** cell

Naming Conventions

Example: 1801234_BGRD.dgn

(Background)

Menu Item

"Background"

Output filename

Background

BGRD-35x50-1801234_BGRD.PDF
BGRD-35x75-1801234_BGRD.PDF
BGRD-35x100-1801234_BGRD.PDF
BGRD-35x125-1801234_BGRD.PDF
BGRD-35x150-1801234_BGRD.PDF
BGRD-35x175-1801234_BGRD.PDF
BGRD-35x200-1801234_BGRD.PDF

Note:

This method forces the user to place a fence around either the: Outside (green) border for 24 x 36 or 12 x 18 plots Inside (yellow) border for 11 x 17 or 8.5 x 11 plots **Or Large border** for roll plots.

The system will prompt the user to accept the filename or they may enter in their own.

8. When PDF file finishes.

9. Create a new V8 2d dgn file 123456BGRD.dgn (background). You may need to make multiple files depending on size of the layout-project. Think about how you may want to display them if you attend a PIOH or Public Information Open House meeting.

Example names - 1234567BGRD1.dgn 1234567BGRD2.dgn etc....This naming convention isn't crucial but probably helps for consistency purposes. (BGRD=Background)

10. Set coordinate system. Make your selection like you did in the DGN file from the GDOT View Menus 2 new buttons on the main menu screen.



GA83-WF for Western zone

GA83-EF for Eastern zone

11. Attach using the Bentley Tool for displaying RASTER Reference Files -- Raster Manager

Select the PDF you created. Set the level in the New DGN file to a Raster Level from the Bentley Level Manager. (listed below – Pre-Defined)

File>Raster Manager>File>Attach>Raster 'keyin PDF file name you just created'. Make sure the coordinate system is set to the Georgia East 'GA83-EF' or West 'GA83-WF' Zone.

There are 4 pre-defined Microstation levels available. It doesn't matter which one you select, it is important that you must pre-select a level, because plotting is defined with the proper settings for displaying the proper output for any of the predefined levels.

The Pre- Defined Raster Level Names are:

RAST_Dsgn_LVL1 - RAST_Dsgn_LVL2

RAST_Dsgn_LVL3 - RAST_Dsgn_LVL4

12. Select the view command - Fit All. The raster should now show up.

This New DGN file with the Raster PDF attached **CAN NOW** be **ATTACHED** to a **NEW DGN** file as a Regular '**Reference File'** and contains the PDF file as the background image. The purpose is to make the plotting process much faster. By doing this it saves Microstation from having to read/process the entire State of Georgia Raster Image.

Note: This file is only used for the purposes of creating the static background image.

Creating the "Concept" – Color Plot

GDOT - O	GPlot PDF Plottin	g			X		
	ingle Sheet" DGN		GN-WYSIWYG Conc				
	Concept - Color Plot			Background Color Plot			
	Concept Color 24"x36"	35"x50"	35"x150"	35"x50"	35"x150"		
	Concept Color 12"x18"	35"x75"	35"x175"	35"x75"	35"x175"		
	Concept Color 11"x17"	35"x100"	35"x200"	35"x100"	35"x200"		
	Concept Color 8.5"x11"	35"x125"		35"x125"			
	Close						
	12"x18" Concept Color 11"x17" Concept Color	35"x100"		35"x100"	35"x200"		

- **"Concept Color Plot":** (Used for generating individual color plots in which background imagery is attached. This is most typically used for Concept layouts but can be used for other plots that require imagery to show in the background.
- <u>Note: These plots can take quite some time when using non-static images (such as</u> <u>WMS imagery) and should be performed in off peak times or after hours.</u>

Sizes – (Using sheet cells from GDOT-GN-Sheets.cel library) (GPLN an

(GPLN and SRVPLN)

0	24" x 36" Output utilizing outside plot border	"Plan Sheet Size"
0	12" x 18" Output utilizing outside plot border	"Plan Sheet Half Size"
0	11" x 17" Output utilizing inside plot border	"11x17 Sheet Size"
0	8.5" x 11" Output utilizing inside plot border	<u>"8.5x11 Sheet Size"</u>
0	35" x 50" Roll plot using GLG50 cell	"35'x50" Sheet Size"
0	35" x 75" Roll plot using GLG75 cell	<u>"35'x75" Sheet Size"</u>
0	35" x 100" Roll plot using GLG100 cell	<u>"35'x100" Sheet Size"</u>
0	35" x 125" Roll plot using GLG125 cell	<u>"35'x125" Sheet Size"</u>
0	35" x 150" Roll plot using GLG150 cell	<u>"35'x150" Sheet Size"</u>
0	35" x 175" Roll plot using GLG175 cell	<u>"35'x175" Sheet Size"</u>
0	35" x 200" Roll plot using GLG200 cell	<u>"35'x200" Sheet Size"</u>

<u>"Concept"</u>

Menu Item

Naming Conventions

Example: 1801234_CNCP.dgn

(Concept file)

Output filename

 Concept

 24"x36" PDF Color
 Concept-24x36-1801234_CNCP.PDF

 12"x18" PDF Color
 Concept-12x18-1801234_CNCP.PDF

 11"x17" PDF Color
 Concept-11x17-1801234_CNCP.PDF

 8.5"x11" PDF Color
 Concept-85x11-1801234_CNCP.PDF

35"x50" PDF Color 35"x75" PDF Color 35"x100" PDF Color 35"x125" PDF Color 35"x150" PDF Color 35"x175" PDF Color 35"x200" PDF Color Concept-35x50-1801234_CNCP.PDF Concept-35x75-1801234_CNCP.PDF Concept-35x100-1801234_CNCP.PDF Concept-35x125-1801234_CNCP.PDF Concept-35x150-1801234_CNCP.PDF Concept-35x175-1801234_CNCP.PDF Concept-35x200-1801234_CNCP.PDF

<u>Note:</u>

This method forces the user to place a fence around either the: Outside (green) border for 24 x 36 or 12 x 18 plots Inside (yellow) border for 11 x 17 or 8.5 x 11 plots **Or Large border** for roll plots.

The user then will be prompted to accept the filename or they may enter in their own.