

TRAFFIC DESIGN INFORMATION

Note: These instructions are based on the assumption that the drafter has had some Microstation training. It is recommended that the drafter read through the documentation first before attempting any of the procedures. These directions are just one way of accomplishing these tasks and are not necessarily the only way to represent our final product.

All traffic project plan sheets are to be drawn in 3-D. The plan sheet border located at U:\rd\Bentley\MicroStation\bdr\English\plan.bdr is referenced into the individual xxx.dgns. Only levels 20 and 60 are turned on in the plan.bdr file. When plans are sent to Bid Letting, level 60 is to be turned off.

All cells placed on traffic plan sheets should be at a scale 1:1. The cells used for tables are scaled down to fit the table.

New items on the plan sheets are solid (line style 0) and existing items are dashed (line style 1).

All plan sheets should use a scale of 1" = 40'.

Stationing, street names, and dimension style should be color 5 (blue), font 3, style 0, weight 1 and text size 3 with open arrowheads. There are cells for sheet headings (signal layout, conduit layout, wiring diagram, etc.) in c:\dot\rd\cel\tr.cel. The sheet subheadings (intersection or roadway name) should be color 10 (gray), font 3, style 0, weight 1 and text size 8.

TITLE SHEET – titleL.dgn, titleM.dgn

Using Windows Explorer in U:\rd\prj\COUNPCN#\, copy title.dgn and rename to the following naming convention; titleL.dgn for signal and lighting plans or titleM.dgn for pavement marking plans. Edit the file as needed to include Section L or Section M.

A title sheet can also be created by following the directions to “Creating a Title Sheet” in www.sddot.com/PE/roaddesign/docs/Procedures/CADD-Drafting.pdf.

Figure 1 depicts a typical title sheet for Section Method and Figure 2 depicts a typical title sheet for Non-Section Method.

TRAFFIC DESIGN FILE – fPCN#.dgn

The traffic design file is fPCN#.dgn. The fPCN#.dgn file has the following reference files attached with these levels to be left on:

cgPCN#.dgn	.....	19
dPCN#.dgn	.....	1,2,17,30
rPCN#.dgn	.....	25,27
tPCN#.dgn	.....	7,11,13-15,21,25,33,35,40-44,46-50,52,54,55

SIGNAL LAYOUT – STAes.dgn, STAs.dgn

The signal layout illustrates the placement of signals at an intersection. The signal layout consists of signal poles, mast arms, and vehicle signal heads. Luminaires, luminaire extensions, emergency vehicle preemption units, pedestrian heads, signs, and buttons are also included, if applicable.

Signal poles, mast arms, luminaires, and luminaire poles are placed in the fPCN#.dgn.

The signal layouts are named STAes.dgn for existing signal layouts and STAs.dgn for new signal layouts. STA is the nearest even stationing in the center of the intersection. For example, if an intersection starts at Station 3+00 for a new signal layout, it would be named 003s.dgn.

The existing signal and signal layouts are plotted in color.

When a survey has been done for the project, the following files need to be referenced into the signal layouts with these levels to be left on:

cgPCN#.dgn	.....	19
dPCN#.dgn	.....	1,2,17,30
fPCN#.dgn	.....	36,37,39
rPCN#.dgn	.....	25,27
tPCN#.dgn	.....	7,11,13-15,21,35,49,52,54,55

All new items shown on the signal layouts are listed in the estimate of quantities table on the signal layout sheet. If existing items will be salvaged and/or relocated, a table of existing items and/or relocate signal equipment will also need to be shown on the signal layout sheet. And the existing signal layout will need a salvage & remove signal equipment table and an estimate of quantities table.

Everything is drawn on level 38 in the signal layouts. All cells are on level 38 and level 40. All items found on the signal layouts are cells located in the *tr.cel* library (c:\dot\rd\cell\tr.cel).

Pedestrian heads, signs, and buttons are located below the signal head mounted on the pole. It is important to show the pedestrian sign and button on the side of the pole the pedestrian will stand to press the button.

Each existing signal pole must be labeled. Existing signal heads must be numbered when they will be reused or relocated. Each new signal pole needs to be labeled and stationed. Every new signal head must be numbered. The distance along the mast arms between signal heads needs to be dimensioned on new signal layouts.

Stationing, ROW lines, street names, a north arrow and scale must also be included on the new signal layout. Figure 3 depicts a typical existing signal layout and Figure 4 depicts a typical signal layout.

CONDUIT LAYOUT – STAc.dgn

The conduit layout is a diagram of the service connections necessary to operate the signals and can contain the placement of luminaires. The conduit layout includes location of signal pole footings, junction boxes, detector loops, conduit and cable, the service cabinet, utility poles, meters, the controller, a table of estimated quantities, and a table of existing items if needed.

Signal poles, junction boxes, conduit, service cabinets, utility poles, meters, and controllers are placed in the fPCN#.dgn.

Conduit is drawn on level 38 using color 101 (aqua), style 0 or 1, and a weight of 4. Secondary conduit is drawn on level 43 using color 101 (aqua), style 0 or 1, and a weight of 4.

The conduit layout is named STAc.dgn. In the event of a signalized intersection, STA is the nearest even stationing in the center of the intersection. For example, if an intersection starts at Station 3+00 for a conduit layout, it would be named 003c.dgn. In the occurrence of no signalized intersections, STA is the nearest even stationing at the beginning of the plan sheet. For example, if a plan sheet begins at Station 2+00, it would be named 002c.dgn.

When a survey has been done for the project, the following files need to be referenced into the conduit layouts with these levels to be left on:

cgPCN#.dgn	.....	19
dPCN#.dgn	.....	1,2,17,30
fPCN#.dgn	.....	36,38-44
rPCN#.dgn	.....	25,27
tPCN#.dgn	.....	7,11,13-15,21,25,33,35,40-44,46-50,52,54,55

All items found on the conduit layout are cells located in the *tr.cell* library (c:\dot\rd\cell\tr.cell).

The conduit layout is plotted in color using level symbology. Level symbology is used according to the following table:

STAc.dgn	COLOR - 11	STYLE	WEIGHT - 0
OVERVERRIDE ON			
OVERVERRIDE OFF	ALL	ALL	ALL

cgPCN#.dgn	COLOR - 11	STYLE	WEIGHT - 0
OVERVERRIDE ON	ALL BUT 19		ALL BUT 19
OVERVERRIDE OFF	19	ALL	19

dPCN#.dgn	COLOR - 11	STYLE	WEIGHT - 0
OVERVERRIDE ON	ALL BUT 1 & 2		ALL BUT 1 & 2
OVERVERRIDE OFF	1 & 2	ALL	1 & 2

fPCN#.dgn	COLOR - 11	STYLE	WEIGHT - 0
OVERVERRIDE ON			
OVERVERRIDE OFF	ALL	ALL	ALL

plan.bdr	COLOR - 11	STYLE	WEIGHT - 0
OVERVERRIDE ON			
OVERVERRIDE OFF	ALL	ALL	ALL

rPCN#.dgn	COLOR - 11	STYLE	WEIGHT - 0
OVERVERRIDE ON			
OVERVERRIDE OFF	ALL	ALL	ALL

tPCN#.dgn	COLOR - 11	STYLE	WEIGHT - 0
OVERVERRIDE ON	ALL BUT 49		ALL
OVERVERRIDE OFF	49	ALL	

Stationing, ROW lines, street names, a north arrow and scale must also be included on the conduit layout as shown in Figure 5.

WIRING DIAGRAM – STAw.dgn, STAbegin-STAendw.dgn

The wiring diagrams illustrate the route of each cable through the controller, junction boxes, signal poles, luminaire poles, power source and service cabinet.

The wiring diagrams for signals are named STAw.dgn. STA is the nearest even stationing in the center of the intersection for a specific signal layout. For example, if the intersection starts at Station 3+00 for a specific signals' wiring diagram, it would be named 003w.dgn to correspond to the existing signal, signal and conduit layouts. The wiring diagrams for lighting are named STAbegin-STAendw.dgn. STAbegin is the

nearest even stationing at the beginning of the plan sheet and STAend is the nearest even stationing at the end of the plan sheet. For example, if the plan sheet begins at Station 3+00 and end at Station 9+00, it would be named 003009w.dgn.

The wiring diagrams for signals and lighting are plotted in black and white.

A letter from the alphabet that is followed by a number identifies each cable. The number increases as the cables pass through the controller, junction boxes, signal poles and service cabinet. Signal poles, detector loops and the power source are identified on the controller. Detector loops are also shown on the junction boxes. The signal heads are shown on the signal poles. Label the signal poles, signal heads and detector loops to coincide with the rest of the plan sheets.

All items found on the wiring diagram for signals and lighting are cells located in the *wiring.cel* library (c:\dot\rd\cell\wiring.cel).

Label the wiring beginning with the letter A followed by the number 1 (A1, B1, C1,...), as shown in Figure 6. Beginning with the next letter alphabetically, followed by the number 1, label the detector loops (...E1, F1, G1...). Using the conduit layout sheet for reference, indicate the path of each cable. As a cable passes through a junction box, the number of the cable, preceded by the alphabet letter, increases. Label the service cabinet using this same method, but begin with the letter Z and work backwards (Z1, Y1, X1,...) Also, indicate the cable coming from the signal pole, detector loop and service cabinet.

The wiring diagram for signals and lighting will also indicate who is supplying the power, the type of power, fuse sizes and luminaire descriptions. Figure 6 represents a signal wiring diagram and Figure 7 represents a lighting wiring diagram.

SIGNAL TIMINGS – STAtime.dgn

The signal timings plan sheets illustrate the signal indication for each interval of the cycle.

The signal timings plan sheets are named STAtime.dgn. STA is the nearest even stationing in the center of the intersection. For example, if an intersection starts at Station 3+00 for a signal timing, it would be named 003time.dgn.

Figure 8 represents a signal timings plan sheet.

The signal timings plan sheets are plotted in black and white.

PAVEMENT MARKING LAYOUTS – STApm.dgn

The pavement marking layouts indicate how the road is to be striped.

The pavement marking layouts are named STApm.dgn. STA is the nearest even stationing of the beginning of the plan sheet, for example, if a plan sheet starts at Station 3+00 for a pavement marking layout, it would be named 003pm.dgn.

Pavement marking layouts are plotted in black and white.

All the pavement marking cells are located in the *marking.cel* library (c:\dot\rd\cell\marking.cel).

All pavement markings are placed in the fPCN#.dgn and referenced into the STApm.dgn. They are drawn on level 55 using color 8 (light gray) and color 20 (yellow), a weight of 4, and a style of 0.

When a survey has been done for the project the following files are referenced into the pavement marking layouts with these levels to be turned on:

cgPCN#.dgn	.....	19
dPCN#.dgn	.....	2,17
fPCN#.dgn	.....	55
tPCN#.dgn	.....	35

A table of quantities must be included on the first sheet of the pavement marking layouts. Stationing, street names, a north arrow and scale must also be included on all the pavement marking layout sheets as shown in Figure 9.

ELECTRONIC PLANS

Format: PDF

Naming Convention:

		Addendum	CCO
Section Method	PCN#_Section?.pdf	PCN#_Section?Add#.pdf	PCN#_Section?CCO#.pdf
Non-Section Method	PCN#_Nonsection.pdf	PCN#_NonsectionAdd#.pdf	PCN#_NonsectionCCO#.pdf

Note: Each Addendum or CCO includes only the revised sheet(s) for that Section.

PDF Information

Fast Web View – Yes

Tagged PDF – No

Embed Thumbnails

Note: To check the above options **File>Document Properties>>Description...**

Initial View

Document Options

Show: Pages Panel and Page

Page Layout: Default

Magnification: Fit Page

Note: To check the above options **File>Document Properties>>Initial View...**

Electronic Project Numbers and Sheet Numbers

- 1) Place "name" cell in the MicroStation sheet file.
- 2) **Create** or open IPS for sheets.
 - A. Optional (except for IPS method) - Add blank sheet(s) for sheets printed outside of Iplot.
(U:\rd\Bentley\Iplot\iparm\blank.i)
 - From Windows Explorer drag and drop blank.i into your IPS.
 - Repeat as needed.
 - B. Optional (except for IPS method) - Add standard plate(s) for section.
(U:\rd\Bentley\Iplot\iparm\Standard_Plates.i)
 - From Windows Explorer drag and drop Standard_Plates.i into your IPS.
 - Repeat as needed.
 - a. Double click the newly created plot.
 - b. Select "Reference Files" tab.
 - c. Highlight logical name "Left".
 - d. Select rename.
 - e. Type in plate number or Browse (U:\rd\Misc\stdplates\English).
 - f. Un-highlight logical name "Left" and highlight logical name "Right".
 - g. Select rename.
 - h. Type in plate number or Browse (U:\rd\Misc\stdplates\English).
 - Repeat as needed.
- 3) Edit and save settings file. WordPad recommended. (Project&Sheet.set – default location C:\dot\rd\settings\)
 - Fill-in Project Number(s) replacing "none" – up to three
 - EX. Environment = [Project_Number="NH-BRF 0012(103)303"]
 - Fill-in Section with section letter.
 - EX. Environment = [Section=L]
 - Fill-in Sheet_Number with: a) number b) "plotname" or c) "IPS"
 - Fill-in Sheet_Total with: a) number b) number or c) "IPS"
 - Save.

Note: Do not delete quotation marks.

In IPLOT Organizer select desired files and **Edit>Settings File...>Apply** settings file. This adds your edited information to your IPS.

- 4) Complete step for option selected in step 3 (a, b or c)
 - a) Sheet Number from variable.
 - Modify Sheet_Number variable.
 - b) Sheet Number from individual plotname in the IPS.
 - Rename plotname to match sheet numbers.
To rename multiple plotnames use **Edit> Rename**
 - c) Sheet Number & Total Sheets from IPS order. (Doesn't work with Ver 8.01.00.25)
 - Arrange sheets in order. Sheet Number is from plot order in the IPS.
 - Total sheets is from number of plot in the IPS.

To create a PDF from MicroStation with IPLOT Organizer

1. Create or Open an Iplot Plot Set (.ips) of the file(s) to plot.
2. Select PDF printer from **File > Print Setup...** (\\trpr1srv9\PDF)
3. **Select** which one you want to plot.
4. **Edit > Apply Settings...** > 11x17_pdf.set
5. **Print.**
6. **Save.**
7. **Exit.**
8. Files are written to an output folder. (\\trpr1srv9\pdf_folder)

To connect to output folder on trpr1srv9

Start > Search

Select **Printers, computers, or people**

Select **A computer on the network**

Type in **trpr1srv9**

Click **Search**

Double Click **trpr1srv9**

Double Click **pdf_folder**

****Note: Add it to your favorites or get it mapped to a drive letter.**

- Name of PDF is:
 - a) If submitted as **one print job** the name will be the Iplot Plot Set(.ips) name.
"Untitled" if unnamed.
 - b) If submitted as **separate print jobs** the name will be plotname.
Warning: If the name exists in the output folder it will overwrite.
9. **Copy** the file from the output folder to project folder.
 10. **Delete** the file from the output folder. This will help keep the folder cleaned up and reduce the opportunity of locking up the Server by resending a PDF with the same name.

PDF from Word or Excel with Adobe PDF

Open file

File>Print

Select **Acrobat PDF**

Confirm print options **Properties > Adobe PDF Setting**

Default Setting: **Standard**

If a color file but want a Black and White Print **Properties > Paper/Quality**

Color: Select **Black & White**

OK

Select folder to save PDF

Save

Open the PDF and set the following options:

File>Document Properties>>Initial View>>Document Options...

Show: Pages Panel and Page

Page Layout: Default

Magnification: Fit Page

Number pages to match Section in PDF (Ex. L for Section L)

Select **Page Tab** of Navigation Pane

Select **Options > Number Pages...**

Pages: All

Prefix: Type in Letter for Section (L or M)

To Insert Pages

Select Page Tab of Navigation Pane

Select **Options > Insert Pages...**

Select File containing the insertion pages

Location: After or Before

Page: Select desired location

Click **OK**

To Replace Pages

Select Page Tab of Navigation Pane

Select **Options > Replace Pages...**

Select File containing the replacement pages

Original: enter pages to be replaced in the original document

Replacement: enter first page of the replacement range.

Click **OK**

To Embed Thumbnails

Select Page Tab of Navigation Pane
Select **Options > Embed All Page Thumbnails**

Use the Save As command

After you've made any final changes to the Adobe PDF document, choose File > Save As. Save the document with the same name to overwrite the original with your changes.

When you choose Save As, Acrobat rewrites the entire PDF document as efficiently as possible. When you choose Save, changes are appended to the file, which may increase the file size. By default, Acrobat also optimizes a PDF document for Fast Web View when you save it using the Save As command. Documents optimized in this way can be downloaded one page at a time from a Web server or network, reducing the time it takes to access and view them.

Printing a PDF

PDF's can be printed on different sizes of paper and different scaling. If possible it is best to print to a paper size that matches the PDF page size with no scaling. Most plan sheets will be on 11x17 PDF page size, so if your printer is capable of printing 11x17 you can print a scalable print. A simple way to do this is the check "Choose Paper Source by PDF Page Size" and set "Page Scaling: None" when printing.

Note: the preview will show the size and zoom.