# Drafting Design and Presentation Standards Manual
# Volume 1: Chapter 2 – General Standards
## Appendix 2E TMR AutoCAD Drawing Environments

**August 2019**

Queensland Government

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## Amendment Register

| Issue / Rev no. | Reference section | Description of revision | Authorised by | Date |
|---|---|---|---|---|
| 1 | - | Update to Corporate Template | Owen Arndt | February 2014 |
| 2 | All | Numbering of sections updated | Director (Road Design) Geospatial, Design and Capability (E&T) | October 2016 |
| | Section 1.2 | Changes to terminology | | |
| | Section 6 | Minor amendments to CAD data filename requirements | | |
| | Section 6.2 | Update to Drawing Series Number | | |
| | Table E2.5 (b)<br>Table E2.5 (c) | Added reference to TMR Surveying Standards | | |
| | Section 8 | Removed reference to:<br>• TMR AutoCAD Customisation Help file | | |
| 3 | Section 1.3.8 | ctb plot style removed from TMR plot style modes | Director (Road Design) Geospatial, Design and Capability (E&T) | August 2019 |
| | Table E2.2 (a) | Accommodation Works (AW) added to the drawing type code table | | |

## Contents



## Tables

## Figures

## 1 Drawing composition

Figure E1 (a) and Figure E1 (b) illustrate the basic components used in the preparation of a final CAD drawing consistent with the Department of Transport and Main Roads standards.

***Figure E1(a) - Layout***

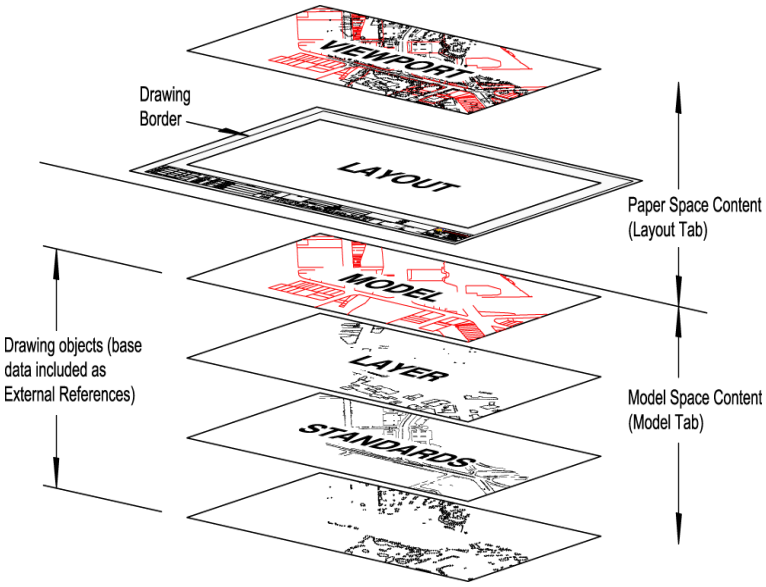
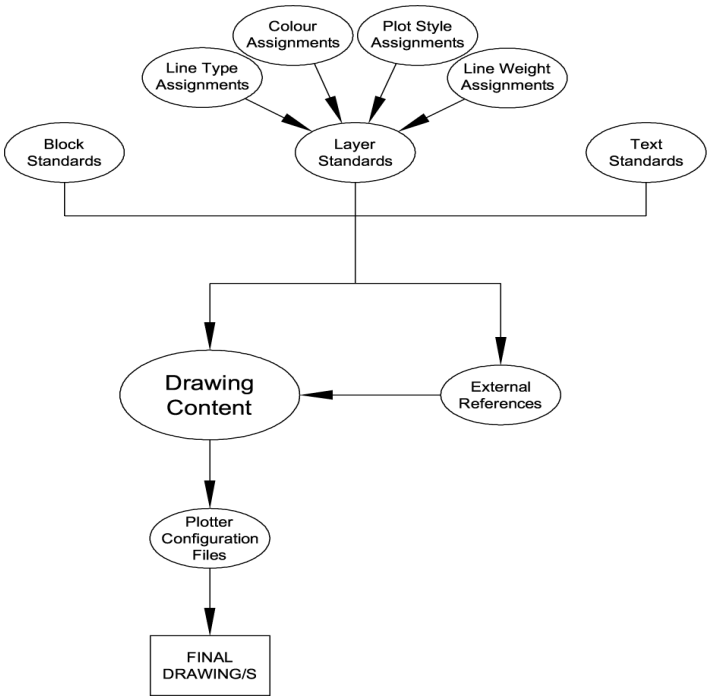



***Figure E1(b) – Components***




Each completed drawing file shall contain necessary information only, and any extraneous or unnecessary data shall be deleted prior to delivery to the department. All unused blocks, layers and line types are to be purged from the drawing files.

## *1.1 Using model space and paper space*

AutoCAD allows the user to choose between two drawing environments – model space and paper space – and the appropriate use of each space for the department's drawings is detailed as follows:

### 1.1.1 Model space

Model space (***the Model tab***) is where the physical objects forming the model (including items that help define the model such as text, hatching, dimensioning etc.) are created and edited in the drawing. Elements drawn in model space must be to full scale, including additional sections or details.

### 1.1.2 Paper space

Paper space *(**the Layout tab**)* is the environment used to layout and prepare drawings for printing. Each layout tab in the electronic CAD environment simulates a sheet of paper and provides a paper space drawing environment with a predictable printing setup. It is in the Layout tab that various views (viewports) of object in the model are created and positioned, and standard drawing borders are added. Other secondary drawing elements such as locality maps, legends, standard notes or tables should also be drawn in paper space. Unlike model space the features represented here are scaled to fit on the sheet. Single or multiple layouts may be created in a single CAD file to display various drawings, as they will be finally output.

Only one standard drawing border is permitted per layout tab.

Layout tabs are to be named with reference to the department's Drawing Series Number (*see CAD Data Filename Convention in this appendix*). This allows a name (to match the drawing type of the drawing to be output using the layout) to be assigned to the tab at the time of creation of the layout. All Layouts are initially named using a contraction of the Drawing Series Numbers.

Depending upon the number of drawings involved, this name assignment may or may not remain for the full drawing lifecycle. For small projects, (say no more than twenty drawings), prior to supply of CAD data to the department, Layout tabs are to be renamed from the initial Drawing Series Number (DSN) to the same six-digit number as shown in Table E1.1.2 (a) for representation on the final drawing.

***Table E1.1.2(a) - Layout tabs small projects***

| Drawing Type | Initial Layout Name (DSN) | Final Layout Name | Final DSN |
|---|---|---|---|
| General Details | GD-1 | 345678 | 6 of 12 |
| Plan & Profile | PP-9 | 345679 | 7 of 12 |

*For larger projects, final Layout tabs are to be assigned the same Drawing Series Number as shown in Table E1.1.2 (b) for representation on the final drawing.*

***Table E1.1.2(b) - Layout tabs larger projects***

| Drawing Type | Initial Layout Name (DSN) | Final Layout Name | Final DSN |
|---|---|---|---|
| General Details | GD-1 | GD-1 | GD-1 of 2 |
| Plan & Profile | PP-9 | PP-1 | PP-9 of 9 |

*For details regarding drawing series number, see CAD Data Filename Convention in this appendix.*

## *1.2 TMR standard drawing sheets – title block*

The department's title block must be used for each drawing. The department has developed standard electronic drawing sheets for specified use as shown in *Appendix 2D*.

These title blocks are included in the CAD drawing and are output when the drawing is printed. These standard drawing sheets are available as part of the department's 12D and AutoCAD Customisation system and is available to outside parties engaged to prepare drawings for the department in accordance with the Department of Transport and Main Roads standards.

Title block formats have been standardised in order to facilitate the inclusion of the necessary information in a uniform manner. This is achieved by the use of pre-defined attributes and data entry fields included in the block definition for each of the standard drawing sheets.

It is a mandatory requirement that all relevant attribute data fields are completed at the completion of every final drawing.

## *1.3 Layering*

The structure of CAD data needs to be understood when data is transferred between internal systems (within Transport and Main Roads) and between external organisations and the Department of Transport and Main Roads in order to efficiently manage the data.

Layering is a technique to be used to achieve such structure of the data. Unique names are assigned to data layers in CAD files and collections of survey and design graphical data are assigned to designated layers. This principle is also to apply when graphical data is contained in external reference files (XREFS) - refer to the section External Reference (XREF) Drawing Files in this appendix for additional information.

Only applicable layers are to be used and blank layers are not to be included in the CAD data deliverables.

### 1.3.1 Layer by discipline

The department has adopted a system that divides layers into categories – generic (or non-discipline based) layers and those that relate to specific disciplines. The organisation of cad layer names by discipline is merely a convenience to assist in using the appropriate layer.

*For example:*

- MR_TLE is the only acceptable layer for placing the department's standard title block in a drawing, this applies to all disciplines.
- In the same manner, MRS_BP is the only acceptable layer for indicating a property boundary in a resumption drawing or a traffic signals drawing.

Layer names are subdivided into major and minor groups using the following format:

##_**_nnn

*Where:*

| | | |
|---|---|---|
| ## | = | Major Group Identifier (min. 2, max. 3 characters) |
| "_" | = | the underscore character |
| ** | = | Minor Group Identifier (min. 2, max. as required) |
| nnn | = | Minor Group Modifier (used only for generic "MR" group) |

***Major Group Identifiers*** define the layer's discipline (or generic nature in the "MR" case) as follows.

*Some examples are:*

- MR = Generic lines, text, dimensions, hatching and miscellaneous elements
- MRB = Bridge discipline
- MRE = Erosion & Sediment Control discipline
- MRI = Intelligent Transport Systems discipline
- MRLR = Landscape & Revegetation discipline
- MRR = Roads discipline
- MRRL = Roadway Lighting discipline
- MRS = Survey discipline
- MRT = Traffic Signals discipline

***Minor Group Identifiers*** define sub-types of each of the major groups.

*Some examples are:*

- MRS_**RC** is the layer used to represent Road Crown lines for survey data
- MRR_**MC** is the layer used to represent Master Control lines for road design data
- MRE_**FS** is the layer used to represent grassed Filter Strips for erosion and sediment control data.

Minor Group Identifiers for each of the various disciplines are specified in the following sections of this chapter for preparation and presentation of each specific type of CAD data used by the department.

*Sections 1.3.2 to 1.3.6* contain details of the minor group identifiers for the generic MR group of layers.

### 1.3.2 Line layers

- MR_CON = Used to draw general construction lines (not normally plotted)
- MR_CON_nnn = Used to draw general continuous lines, further subdivided by a modifier (nnn = modifier relating to line thickness at full scale - e.g. 035)
- MR_CHN_nnn = Used to draw general chain style lines, further subdivided by a modifier (nnn = modifier relating to line thickness at full scale - e.g. 035)
- MR_DSH_nnn = Used to draw general dashed style lines, further subdivided by a modifier (nnn = modifier relating to line thickness at full scale - e.g. 035)

### 1.3.3 Text layers

- MR_TXT_@@ = Used to draw general text, further subdivided by a modifier

  (@@ = modifier relating to text height at full scale - e.g. 035)

### 1.3.4 Dimension layer

- MR_DIM = Used to draw dimensions

### 1.3.5 Hatching layer

- MR_HAT = Used to draw hatch patterns

### 1.3.6 Miscellaneous layers

- MR_TIMESTAMP = Used for timestamp information on drawing prior to plotting
- MR_TLE = Used for standard title block
- MR_VPT = Used for viewports (not normally plotted)

The TMR AutoCAD Customisation system provides automation of structuring CAD data suitable for delivery to the department.

Where additional layers are required to structure the data, due to the nature of the project or drawing, expansions of the layering standard may be proposed. The proposed expansion must be detailed in writing and agreed to by the officer responsible for the provision of funds for the acquisition of the CAD data. In all cases of any proposed expansions to the layering standard, the varied layer must be assigned a standard departmental line type and plot style (see Plot Style Modes).

### 1.3.7 Object colour and line type

Object colour and line type (and line weight and plot style where applicable) for all objects in a CAD file supplied to the department are to be determined by the properties assigned to the object's layer i.e. objects are to be drawn “bylayer” and inherit the colour and line type (and line weight and plot style where applicable) associated with the layer on which they reside.

### 1.3.8 Plot style modes

All CAD data files must be capable of being printed using the departments AutoCAD Customisation system using named plot style tables. Named plot style tables are stored in files with the extension .stb. Each drawing must contain layers that are completely in this mode and must not contain layers with other modes nor mixed modes. Standard files for a range of enlargements or reductions of stb mode are supplied with the customisation system.

Colour-dependent plot style tables (files with the extension .ctb) are not supported by the departments AutoCAD Customisation and therefore ctb mode shall not be used (except for structural drawings as specified under Volume 3, Chapter 2, Section 2.3.

### 1.3.9 External Reference (XREF) drawing files

The principle of using external references is based on the need for clear separation and logical organisation of information (e.g. survey and design data). A benefit of this approach is that it is easy to split up and combine information in a CAD file to suit the needs of end users of the information.

The type of files that should be xrefed include:

- any file with line work that typically appears throughout multiple or the majority of project drawings
- survey base files
- design base files
- title blocks
- standard notes.

Using XREFS, when data needs to be changed you only change it in one location and the information is updated in all drawings.

CAD data is generally to be presented using external references attached to a parent-drawing file. A basic requirement is that separate survey data and design data files are created. The extent and complexity of data division and subdivision must match the technical complexity of the project and suit the ultimate purpose for which the data is presented. An example of where further subdivision is warranted is on complex road design projects where a full range of utility services may be encountered, and/or there are multiple design disciplines, construction sequencing or staging to be presented.

Where a project warrants special requirements, the actual structure of data to be presented, in terms of external references, is to be agreed to by the Project Officer and the data supplier and set out in the brief.

Where external references are attached to a parent-drawing file, the relative pathing technique is to be used (see Appendix 2B). Attach or overlay all xrefs at coordinates 0,0,0 unless absolutely necessary to do otherwise.

XREF layer placement can take the following options:

Option 1 - Layer 0 as the most basic option and appropriate for simple drawings.

Option 2 - A single dedicated layer for XREFs.

Option 3 - A layer for each XREF.

Option 2 above will release layer 0 for other purposes and enable locking of the XREF layer to avoid accidental relocations.

Option 3 above will provide the additional benefit of layer locking to be set for each XREF independently.

Names for XREF layers should be clear and easily understood. AutoCAD will prefix the external layers with the drawing name and the pipe character ( | ) - *for example*: X_S_250_1|MRS_RC

Therefore a logical name for the XREF layer could be the name of the referenced drawing - *for example* X_S_250_1

An alternative could be to use XREF at the start and use the remainder of the drawing name - *for example* XREF_S_250_1. This will have the advantage of allowing the creation of layer filters in the drawing that isolate the “XREF_” layers while not presenting all the layers from the external reference as well.

Where external references are used in conjunction with a file, the names of all referenced drawing filenames are to be included on the drawing. The department’s AutoCAD Customisation system includes a utility to automatically generate the external reference filename annotation on a drawing.

## 2 CAD data filename convention

All files included in the electronic data deliverable package must conform to the following file naming convention. Alternative file naming conventions may be utilised only with prior written approval of a detailed alternative. Approval of alternate naming conventions is solely at the discretion of the officer responsible for the provision of funds for the acquisition of the data.

CAD data file naming for Resumption, Native Title and Limited Access drawings is to follow the format specified in the relevant chapter of this manual.

Each drawing shall include the CAD data filename in the area provided at the bottom left corner of each drawing sheet title block. The department's AutoCAD Customisation system automatically includes the drawing name and computer on which it is held. e.g. \\computername\..\filename.dwg.

## *2.1 Naming final AutoCAD drawing (.dwg) files*

### 2.1.1 General

**For small projects** (say no more than 20 drawings) final CAD data files are to be named using a convention based on the six-digit drawing number(s) as shown on the final drawing(s).

**For larger projects**, final CAD data files are to be named using a convention based on the Drawing Series Number(s) as shown on the final drawing(s).

Since single or multiple layouts may be created in a single CAD file to display various drawings, it is necessary for a file naming convention to cater for both possibilities.

## *2.2 Drawing Series Number (DSN)*

A DSN is the "…. of …." information that is included in the title block area of the standard drawing borders (near the bottom right corner).

The purpose of a DSN is to allow drawings to be placed in groups in sequential order before the allocation of a six digit final drawing numbers occurs, as the assignment of final drawing numbers does not usually occur until immediately prior to printing the final drawings.

**For small projects** (say no more than twenty drawings), the DSN is assigned using the following format:

*number* of *total*

Where:

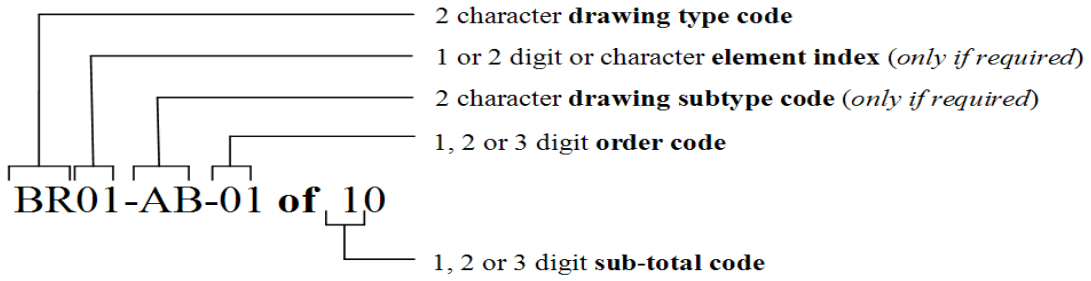
| | | |
|---|---|---|
| *number* | = | a number indicating the order in which a drawing is sorted in a set of project drawings (incrementing, starting with the number 1 for the 1st project drawing). Note: leading zeros are to be omitted |
| *total* | = | the total number of project drawings. |

*For example:*

- The first drawing in a set of eight project drawings (it may, for example, be a Typical Cross Sections and Details drawing) would be numbered:

  **1 of 8**

**For large projects** each drawing is classified using a drawing type code, extracted from a standard list of drawing types (see Table E2.2 (a)), and this is incorporated in the drawing series number using the following format:



*Where:*

| | | |
|---|---|---|
| drawing type code | = | drawing type identifier (see Table E2.2 (a)) |
| element index | = | an index to identify a particular element in a series of like elements e.g. a series of retaining structures or bridges. Indices may be either alpha (A, B …) or numeric (1, 2… or 01, 02…)<br>**use only if required** |
| "–" | = | the hyphen character used as separator between code |
| drawing subtype code | = | for use where further subdivision of drawing type is required (see Table E2.2 (b)<br>**use only if required** |
| order code | = | a number indicating the order in which a drawing is sorted in a sequence of drawings **of the same type or subtype** (incrementing, starting with the number 1).<br>Note: padding using leading zeros is permitted |
| sub-total code | = | subtotal of number of drawings of this type or subtype<br>(**NOT** the total number of project drawings as for small projects) |

*For example:*

- The first Typical Cross Sections and Details drawing in a series of four Typical Cross Sections and Details drawings would be numbered:

  **TC-1 of 4**

- The 9th Alignment Detail drawing in a series of 12 Alignment Detail drawings would be numbered:

  **AL-09 of 12**

- The 75th Cross Section drawing in a series of 100 Cross Section drawings would be numbered:

  **S-75 of 100**

- The 4th Bridge Abutment drawing in a series of 20 Bridge Abutment drawings would be numbered:

  **BR-AB-04 of 20**

- The 4th Bridge Abutment drawing in a series of 20 Bridge Abutment drawings for the 2nd bridge in a series of bridges would be numbered:

  **BR02-AB-04 of 20 or BRB-AB-04 of 20**

***Table E2.2(a) - Drawing type codes***

| Identifier | Drawing Type |
|---|---|
| AL | Horizontal / Vertical Alignment Details |
| AW | Accommodation Works |
| BR | Bridge Layout / Details |
| BW | Bikeway Layout / Details |

| Identifier | Drawing Type |
|---|---|
| CC | Cut and Cover Tunnel Layout / details |
| CD | Construction Drawing |
| CL | Control Line and Setout Details |
| CM | Communications Layout / Details |
| CO | Concept Drawing |
| CP | Concrete Pavement Layout / Details |
| CR | Compensatory Revegetation Layouts |
| CS | Construction Sequencing / Temporary Works Layout / Details |
| CT | Construction Tables |
| DD | Drainage Layout / Details |
| DI | Locality Plan, Drawing Index and/or Works Element Index |
| DK | Drawing Key Diagram |
| DS | Detail Setout |
| DT | Driven Tunnel Layout / Details |
| EC | Environmental Management Plan (Construction Layouts) |
| EF | Existing Features Layout / Details |
| EL | Electrical Services Layout / Details |
| EM | Environmental Features and Management Layouts |
| ES | Erosion & Sediment Control Layout / Details |
| EW | Earthworks |
| FN | Fencing Details |
| GA | General Arrangement Layout / Details |
| GD | General Details |
| GE | Geotechnical Layout / Details |
| IN | Interchange Layout / Details |
| IS | Intersection Layout / Details |
| IT | ITS Layout / Detail |
| LI | Limited Access Plan |
| LR | Landscape and Revegetation Layouts / Details |
| LP | Locality Plan |
| LS | Longitudinal Section |
| MD | Miscellaneous Details |
| ME | Mechanical Services |
| NB | Noise Barriers Layout / Details |
| PA | Private Access Location / Details |
| PC | Power / Communications Network Layout / Details |
| PD | Pavement Layout / Details |

| Identifier | Drawing Type |
|---|---|
| PE | Pedestrian Path Layout / Details |
| PP | Plan and Profile |
| PU | Public Utility Plant Layout / Details |
| RE | Rehabilitation Works Layout / Details |
| RF | Road Furniture |
| RL | Roadway Lighting Layout / Details |
| RP | Resumption Plan |
| RS | Relieving Slab Details |
| RW | Railway Line / Details |
| SD | Structural Details |
| SL | Signs and Pavement Markings Layout / Details |
| SN | Structural Notes and / or Legend |
| SP | Site Plan |
| SF | Signs / Signs Fixtures |
| SS | Soil Suitability Layouts |
| ST | Signs / Traffic Control |
| TC | Typical Cross Sections and Details |
| TD | Turnout Layout / Details |
| TM | Traffic Management Layout / Details |
| TS | Traffic Signals Layout / Details |
| TU | Tunnel Layout / Details |
| TW | Tramway Line / Details |
| WM | Waste Management Layout / Details |
| WP | Working Plan |
| WS | Weigh Station Layout / Details |
| XS | Cross Sections |

***Table E2.2(b) - Drawing subtype codes***

| Identifier | Drawing Type |
|---|---|
| **Bridge** | |
| BR-AB | Abutment Layout / Details |
| BR-BA | Balustrade Layout / Details |
| BR-DD | Drainage Layout / Details |
| BR-DU | Deck Units Layout / Details |
| BR-GA | General Arrangement |
| BR-GI | Girders Layout / Details |
| BR-LD | Lighting Drawing |

| Identifier | Drawing Type |
|---|---|
| BR-MD | Miscellaneous Details |
| BR-PA | Parapet Layout / Details |
| BR-PI | Piles Layout / Details |
| BR-PR | Pier Layout / Details |
| BR-SC | Stage Construction Layout / Details |
| BR-RS | Relieving Slab |
| BR-SF | Sign Frames Layout / Details |
| BR-TR | Traffic Rail Layout / Details |
| **Drainage Detail Drawing Subtype Codes** | |
| DD-CS | Drainage Cross Sections |
| DD-CU | Culvert |
| DD-DS | Drainage Schedule |
| DD-FL | Flood Levels |
| DD-GP | Gully Pit Details |
| DD-LD | Layout Drawings |
| DD-LS | Longitudinal Sections |
| DD-MD | Miscellaneous Details |
| DD-PS | Pump Station Layout / Details |
| DD-SB | Sediment Basin Layout / Details |
| DD-SD | Subsoil Drains Layout / Details |
| DD-ST | Structure Details |
| DD-WS | Watersheds |
| **Public Utility Drawing Subtype Codes** | |
| PU-EA | Electricity - Above ground Layout / Details |
| PU-EL | Electrical Services Layout / Details |
| PU-EU | Electricity - Underground Layout / Details |
| PU-FA | Optical Fibre - Above ground Layout / Details |
| PU-FL | Fuel Layout / Details |
| PU-FR | Fire Protection Services |
| PU-FU | Optical Fibre - Underground Layout / Details |
| PU-GS | Gas Layout / Details |
| PU-SE | Sewerage Layout / Details |
| PU-SS | SubSoil drains Layout / Details |
| PU-SW | Stormwater Layout / Details |
| PU-TA | Telecommunications - Above ground Layout / Details |
| PU-TU | Telecommunications - Underground Layout / Details |
| PU-WA | Water Layout / Details |

| Identifier | Drawing Type |
|---|---|
| **Structural Drawing Subtype Codes** | |
| SD-BO | Boat Ramp Layout / Details |
| SD-BU | Building Layout / Details |
| SD-JE | Jetty Layout / Details |
| SD-RW | Retaining Structure Layout / Details |
| SD-WH | Wharf Layout / Details |
| **Environmental Features and Management** | |
| EM-NL | Env. Features & Management / Notes & Legends |
| EM-LD | Env. Features & Management / Layout Drawings |
| **Soil Suitability** | |
| SS-NL | Soil Suitability / Notes & Legends |
| SS-LD | Soil Suitability / Layout Drawings |
| **Erosion & Sediment Control** | |
| ES-NL | Erosion & Sediment Control / Notes & Legend |
| ES-LD | Erosion & Sediment Control / Layout Drawings |
| ES-CD | Erosion & Sediment Control / Construction Details |
| **Environmental Management Plans (Construction)** | |
| EC-NL | Env. Management Plans (Construction) / Notes & Legend |
| EC-LD | Env. Management Plans (Construction) / Layout Drawings |
| **Landscape & Revegetation** | |
| LR-NL | Landscape & Revegetation / Notes & Legend |
| LR-LD | Landscape & Revegetation / Layout Drawings |
| LR-CD | Landscape & Revegetation / Construction Details |
| LR-XS | Landscape & Revegetation / Cross Sections |
| **Compensatory Revegetation** | |
| CR-NL | Compensatory Revegetation / Notes & Legends |
| CR-LD | Compensatory Revegetation / Layout Drawings |

## *2.3 Naming drawings containing single layouts (1 final drawing per CAD file)*

### 2.3.1 For small projects (say no more than 20 drawings)

Final CAD data files are to be assigned the same six-digit number as shown on the final drawing, in the bottom right corner of the relevant departmental drawing border. The number is issued by the District responsible for the provision of funds for the acquisition of the data.

*For example:*

- The CAD file containing a layout of final drawing number 345678 would be named: **"345678.dwg"**

### 2.3.2 For large projects

Final CAD data files are to be named using a contraction of the Drawing Series Number(s) (DSN) as shown on the final drawing(s), in the bottom right corner of the relevant departmental drawing border.

For example:

- The CAD file containing a layout of a Drawing Key Diagram with a DSN of DK-1 of 1 would be named: **"DK-1.dwg"**

## *2.4 Naming drawings containing multiple layouts (more than one final drawing per CAD file)*

Drawing numbers are generally issued in blocks sufficient to include all final drawings required for a scheme or project. While it is desirable for drawing numbers issued for a project to run sequentially, this is not always the case.

### 2.4.1 For small projects where drawing numbers are sequential

For small projects where drawing numbers are sequential, the CAD file shall be named using the following format:

######_* dwg

*Where:*

| | | |
|---|---|---|
| ###### | = | the first six digit drawing number in project sequence |
| "_" | = | the underscore character |
| * | = | a number containing only sufficient number of digits to clearly indicate the last drawing number in project sequence |

*Sequential examples for small projects:*

- The CAD file containing layouts of final drawings numbered 345678 to 345688 inclusive would be named: **"345678_88.dwg"**
- The CAD file containing layouts of final drawings numbered 345698 to 345708 inclusive would be named: **"345698_708.dwg"**
- The CAD file containing layouts of final drawings numbered 345998 to 346008 inclusive would be named: **"345998_6008.dwg"**

### 2.4.2 For small projects where drawing numbers are non-sequential

For small projects where drawing numbers are non-sequential, the CAD file shall be named using the following format:

######_*,nnnnn.dwg

*Where:*

| | | |
|---|---|---|
| ###### | = | the first six digit drawing number of first series of numbers |
| "_" | = | the underscore character used where the following numbers in the series of numbers are sequential |
| * | = | a number containing only sufficient number of digits to clearly indicate last drawing number in first series of numbers |
| "," | = | the comma character used to separate different series of numbers |

nnnnn = add digits and underscores as necessary for next number(s) in series (only sufficient number of digits to clearly indicate drawing number)

*Non-sequential examples for small projects:*

- The CAD file containing layouts of final drawings numbered 345678 to 345688 inclusive and final drawing 345720 would be named: **"345678_88,720.dwg"**
- The CAD file containing layouts of final drawings numbered 345678 to 345688 inclusive and final drawings 345720 to 345725 inclusive would be named: **"345678_88,720_722.dwg"**

### 2.4.3 For large projects with sequential numbering

If multiple layouts are used in a single CAD file, Final Drawing Series Numbers (DSN's) will always be sequential (i.e. drawing series numbers will never skip a number) and the CAD file shall be named using the following format:

######_*.dwg

*Where:*

###### = alpha-numeric characters comprising the drawing type identifier and the order number in the series of the first included drawing

"_" = the underscore character

* = a number containing only sufficient digits to indicate the last DSN in series (note – the alpha characters relating to drawing type are not included).

*Sequential examples for large projects:*

- The CAD file containing layouts of cross section drawings with DSN's XS-1 of 120 to XS-7 of 120 inclusive would be named: **"XS-1_7.dwg"**
- The CAD file containing layouts of cross section drawings with DSN's XS-07 of 120 to XS-14 of 120 inclusive would be named: **"XS-07_14.dwg"**
- The CAD file containing layouts of cross section drawings with DSN's XS-90 of 120 to XS-100 of 120 inclusive would be named: **"XS-90_100.dwg"**

## *2.5 Naming AutoCAD external reference (XREF) drawing files*

Each external reference drawing file shall be named using the following format:

X_***_**_*

*Where:*

X = meaning external reference

"_" = the underscore character

*** = discipline identifier (four characters max – see *Table E2.5 (a) - XREF Discipline Identifiers*)

** = stage identifier (if required)

* = scale (*to be provided where feature blocks are required to be presented at different scales*)

***Table E2.5(a) - XREF discipline identifiers***

| Discipline | Identifier | Data included in XREF |
|---|---|---|
| SURVEY | S | Survey (where further subdivided, S is replaced by Survey Group Code see *Table E2.5 (b)* - Survey Group Codes) |
| DESIGN | D | Design (where further subdivided, D is replaced by Design Group Code see *Table E2.5 (d)* - Design Group Codes) |
| TITLE | TLE | Title Sheet (to be used where a standard departmental drawing border with common Project specific attribute data is used for multiple drawings) |

*For example:*

| Filename | Description |
|---|---|
| X_S_1000 | External reference containing general survey data to suit presentation scale of 1:1000 |
| X_D_1 | External reference containing general design data (strings) for project Stage 1 (note: general design data does not contain blocks and therefore does not need scale suffix) |
| X_SFEN_500 | External reference containing only survey fence data to suit Presentation scale of 1:500 |
| X_SEEA_2000 | External reference containing only survey above ground electricity data to suit presentation scale of 1:2000 |
| X_DROA | External reference containing only road design data |
| X_DPEU_250 | External reference containing only the design public utility plant underground electricity data to suit presentation scale of 1:250 |
| X_TLE | External reference containing only the project specific title sheet with Project title data common to multiple drawings included |

***Table E2.5(b) - Survey group codes***

| Survey Group Code | Data included in XREF |
|---|---|
| SCAD | Survey **CAD**astral |
| SDCD | Survey **DCD**B |
| SCON | Survey **CON**tours |
| SDRA | Survey **DRA**inage (where further subdivided, SDRA is replaced by code shown in *Table E2.5 (c)* - Extended Survey Codes) |
| SDTM | Survey **DTM** |
| SELE | Survey **ELE**ctricity (where further subdivided, SELE is replaced by code shown in *Table E2.5 (c)* - Extended Survey Codes) |
| SFEN | Survey **FEN**ces |
| SGEN | Survey **GEN**eral |
| SLIN | Survey **LIN**emarking |
| SPRA | Survey **PR**otected Area |

| Survey Group Code | Data included in XREF |
|---|---|
| SROA | Survey **RO**Ad (where further subdivided, SROA is replaced by code shown in *Table E2.5 (c)* - Extended Survey Codes) |
| SSTM | Survey **ST**rea**M** |
| SSTR | Survey **STR**uctures |
| SSUR | Survey **SUR**vey |
| STEL | Survey **TEL**ecomm (where further subdivided, STEL is replaced by code shown in *Table E2.5 (c)* - Extended Survey Codes) |
| SUTI | Survey **UTI**lities (where further subdivided, SUTI is replaced by code shown in *Table E2.5 (c)* - Extended Survey Codes) |
| SVEG | Survey **VE**Getation |
| *Refer to the current 'TMR Surveying Standards' for additional detailed information for all survey data.* | |

***Table E2.5(c) - Extended survey codes***

| Survey Group Code to be replaced | Extended Survey Code to be used | Data included in XREF |
|---|---|---|
| SDRA | SDSS | [**S**urvey **D**rainage] **S**ub**S**oil drainage |
| SDRA | SDSW | [**S**urvey **D**rainage] **S**torm**W**ater drainage |
| SELE | SEEA | [**S**urvey **E**lectricity] **E**lectricity - **A**bove ground |
| SELE | SEEU | [**S**urvey **E**lectricity] **E**lectricity – **U**nderground |
| SROA | SRSI | [**S**urvey **R**oad] **SI**gns |
| STEL | STFA | [**S**urvey **T**elecomm] optical **F**ibre – **A**bove ground |
| STEL | STFU | [**S**urvey **T**elecomm] optical **F**ibre – **U**nderground |
| STEL | STTA | [**S**urvey **T**elecomm] **T**elecomms – **A**bove ground |
| STEL | STTU | [**S**urvey **T**elecomm] **T**elecomms – **U**nderground |
| SUTI | SUFL | [**S**urvey **U**tilities] **F**uel **L**ine |
| SUTI | SUGS | [**S**urvey **U**tilities] **G**a**S** |
| SUTI | SUSE | [**S**urvey **U**tilities] **SE**wer |
| SUTI | SUWA | [**S**urvey **U**tilities] **WA**ter |
| *Refer to the current 'TMR Surveying Standards' for additional detailed information for all survey data.* | | |

***Table E2.5(d) - Design group codes***

| Design Group Code | Data included in XREF |
|---|---|
| DBRI | Design **BRI**dge |
| DCON | Design **CON**tours |
| DDRA | Design **DRA**inage (where further subdivided, DDRA is replaced by code shown in Table E2.5 (e) - Extended Design Group Codes) |
| DESC | Design **E**rosion & **S**ediment **C**ontrol |
| DITS | Design **I**ntelligent **T**ransport **S**ystems |
| DLRV | Design **L**andscape and **R**evegetation |

| Design Group Code | Data included in XREF |
|---|---|
| DPAM | Design **P**avement **M**arking |
| DLIG | Design **R**oadway **LI**Ghting |
| DPUP | Design **P**ublic **U**tility **P**lant (where further subdivided, DPUP is replaced by code shown in Table E2.5 (f) - Extended Design Public Utility Plant Codes) |
| DRES | Design **RES**umptions |
| DROA | Design **ROA**d (where further subdivided, DROA is replaced by code shown in Table E2.5 (e) - Extended Design Group Codes) |
| DROF | Design **RO**adway Furniture |
| DTRS | Design **TR**affic Signals |
| DSSU | Design Soil **SU**itability |
| DCRV | Design **C**ompensatory **RE**vegetation |

***Table E2.5(e) - Extended design group codes***

| Design Group Code to be replaced | Extended Design Code to be used | Data included in XREF |
|---|---|---|
| DDRA | DDSS | [**D**esign **D**rainage] **S**ub**S**oil drainage |
| DDRA | DDSW | [**D**esign **D**rainage] **S**torm**W**ater drainage |
| DROA | DRRF | [**D**esign **R**oad] **R**oad **F**urniture |
| DROA | DRSI | [**D**esign **R**oad] **SI**gns |
| DROA | DRNB | [**D**esign **R**oad] **N**oise **B**arriers |
| DROA | DRPM | [**D**esign **R**oad] **P**avement **M**arkings |

***Table E2.5(f) - Extended design public utility plant codes***

| Design Group Code to be replaced | Extended PUP Code to be used | Data included in XREF |
|---|---|---|
| DPUP | DUEA | [**D**esign public **U**tility plant] **E**lectricity - **A**bove ground |
| DPUP | DUEU | [**D**esign public **U**tility plant] **E**lectricity - **U**nderground |
| DPUP | DUFA | [**D**esign public **U**tility plant] optical **F**ibre – **A**bove ground |
| DPUP | DUFL | [**D**esign public **U**tility plant] **F**uel **L**ine |
| DPUP | DUFU | [**D**esign public **U**tility plant] optical **F**ibre – **U**nderground |
| DPUP | DUFR | [**D**esign public **U**tility plant] **F**i**R**e Protection Services |
| DPUP | DUGS | [**D**esign public **U**tility plant] **G**a**S** |
| DPUP | DUSE | [**D**esign public **U**tility plant] **SE**wer |
| DPUP | DUSS | [**D**esign public **U**tility plant] **S**ub**S**oil drainage |
| DPUP | DUSW | [**D**esign **P**ublic utility plant] **S**torm**W**ater drainage |
| DPUP | DUTA | [**D**esign **P**ublic utility plant] **T**elecomms – **A**bove ground |
| DPUP | DUTU | [**D**esign **P**ublic utility plant] **T**elecomms – **U**nderground |
| DPUP | DUWA | [**D**esign **P**ublic utility plant] **WA**ter |

### *2.6 Naming of AutoCAD images*

Each image file shall be named using the following format:

X_IMG_Name

*Where:*

| | | |
|---|---|---|
| X | = | meaning external reference |
| "_" | = | the underscore character |
| Name | = | name/description of image |

*For example:*

| ***Filename*** | ***Description*** |
|---|---|
| X_IMG_AerialPhotoBaseJune05 | External reference containing an aerial photo image flown in June 2005. |

## 3 Dimensioning

All dimensions included in the project deliverables shall be fully associative. Dimension definition points should be located with an appropriate Object Snap (End Point, Mid Point, etc.) or otherwise located precisely on the model. Manual input of dimension text or otherwise over-riding the actual dimensions is NOT acceptable in CAD data submitted to the department.

## 4 Standard coordinate system

For all plan view drawing files using a coordinate system, easting, northing and height coordinates are to be provided in the project coordinate datum in metres, as established by the project survey data.

## 5 Sheet sets

The use of sheet sets for drawing management purposes is encouraged.

Sheet sets allow:

- Single point of access to multiple drawing files regardless of location.
- Single point access for plotting/publishing.
- Single point access for carrying out e-transmits.

The department's AutoCAD customisation provides a default sheet set containing custom properties that can then be called by fields stored in plan sheet attributes.

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