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# **VicRoads**

## **Final Drawing Presentation Guidelines**

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### **NOTE:**

**Reference to any VicRoads or other documentation refers to the latest version as publicly available on the VicRoads website or other external source.**

# VicRoads Final Drawing Presentation Guidelines

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This VicRoads Guideline has been developed by VicRoads Technical Services and

authorised by the Executive Director – Policy and Programs.

The VicRoads Final Drawing Presentation Guidelines provides information for the production of design drawings to meet VicRoads requirements to be used on works financed wholly or in part by funds from VicRoads.

Although this publication is believed to be correct at the time of printing, VicRoads does not accept responsibility for any consequences arising from the information contained in it. People using the information

should apply, and rely upon, their own skill and judgement to the particular issue which they are considering. The procedures set out

will be amended from time to time as found necessary.

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## Section 1 – Introduction

### 1.1 Introduction

This VicRoads Final Drawing Presentation Guideline (FDP Guideline) has been developed to establish a consistent approach in the preparation of roadwork drawings for VicRoads projects using Bentley Systems' MicroStation application. The use of VicRoads configuration files for this application is assumed in the references below.

The digital CADD file required for storage in VicRoads systems is Bentley Systems' MicroStation DGN format. Consultants who operate CADD applications other than Bentley Systems' MicroStation must complete a translation of their data to deliver the required DGN format and associated file behaviour as part of delivering a design task to VicRoads.

Roadwork drawings may be created in a number of situations including concept, design only, design and construct or as-built.

Use of this FDP Guideline will typically be referred to in contracts entered into with VicRoads.

This section of the FDP Guideline outlines the process and requirements that need to be considered and/or followed to ensure a consistent, accurate and adequate standard product.

The following sections set out the requirements and standards for the various drawing types typically based on an A3 plan size, that address the following areas:

**Drawing Overview** – Overview of the drawing purpose.

**Scale and Chainage Intervals** – Criteria to be considered for the selection of drawing scales and chainage intervals, based on A3 drawing size and readability of details.

**Enhancement Details** – Guidelines covering the type of typical details to be included on the various drawings.

**Drawing Specifications** – CADD symbology and presentation standards to be adopted.

**Presentation Options** – Sample drawings illustrating the preferred presentation standards are provided as a guide.

**Note 1:** The sample drawings are provided as a guide to the drawing presentation standards required and must not be used for determining or interpreting survey, road, traffic or landscape design standards or practices.

**Note 2:** If an error is identified or a designer has a query on any of the information contained in this document, an email outlining the issue can be sent to [technicalconsulting@roads.vic.gov.au](mailto:technicalconsulting@roads.vic.gov.au).

### 1.2 Final Drawing Planning

The plan order for a set of roadworks drawings may vary depending on the characteristics of the project and client requirements.

In some instances there may be opportunity to combine various drawing types on one sheet depending on the amount of information and readability. For example, the Face Sheet, Locality Plan and Table of Contents could be combined on one sheet. The file structure as set out in the drawing specification tables is still to be adopted.

### 1.3 Degree of Accuracy on Drawings

The degree of accuracy represented on a drawing will depend on the design methodology adopted and the clients' requirements.

Design and set out details prepared using computer applications should have the following degree of accuracy:

- all Chainages, reduced levels, offsets, dimensions, coordinates and other setting out details to within 0.005m
- all bearings and angles within 5 seconds, if the observation distance is more than 30 metres
- pavement quantities within 2 percent

- earthwork quantities within 5 percent (accuracy of survey model not taken into account).

**Note:** Chainage measurements radiate from the Melbourne GPO coordinate.

The final drawings must be concise, unambiguous and consistent for use by engineering and construction personnel. The drawings should contain all the necessary data and details to allow a contractor to submit a realistic tender and later to set out and construct the project.

## 1.4 VicRoads Drawing Numbers

VicRoads maintains a numerical drawing numbering system that is administered by VicRoads Corporate Plan Filing.

Consultants undertaking designs for VicRoads or its contractors will be provided with VicRoads drawing numbers by their VicRoads project manager/superintendent. On return to VicRoads those drawings, usually as PDF files and with the drawing number contained within the file name, will be stored in VicRoads Corporate systems.

**Note 1:** All official drawings are to be allocated a unique VicRoads drawing number.

**Note 2:** CADD files that are used as references in the production of drawings do not require a VicRoads Drawing Number. Refer to requirements outlined in Section 1.16.

## 1.5 Quality Assurance Certification

A Quality Assurance Certification panel should be placed on all finished sets of plans, in most cases on the Table of Contents or the Face Sheet.

## 1.6 VicRoads, Government and Other Logos

### 1.6.1 VicRoads Logo

The use and placement of the VicRoads logo should conform to VicRoads Guidelines. For further details on this or for a copy of the latest VicRoads logo, contact VicRoads Corporate Communications on [corpcomms@roads.vic.gov.au](mailto:corpcomms@roads.vic.gov.au).

The VicRoads Visual Identity Guidelines and VicRoads App Icon Guidelines may be referred to for further information. These documents are available by contacting VicRoads Corporate Communications on [corpcomms@roads.vic.gov.au](mailto:corpcomms@roads.vic.gov.au).

### 1.6.2 Government & Other Logos

A Victorian Government and/or Federal Government logo may be placed on all finished sets of plans depending on project requirements e.g. shared funding arrangements, in most cases located on the Table of Contents or the Face Sheet.

A variety of logos may be found within the available VicRoads CADD environment, e.g.

- Victorian Government Logo - vic1(c).tif
- Federal Government Logo - Fedlogob.tif.

Refer to Section 3.2.6 for the requirements of Consultant logos and information.

It may be necessary to refer to the Victorian (or Federal) Government Branding Policy for further requirements in the use of Victorian (or Federal) Government logos, in particular for projects partially or wholly funded by the Victorian (or Federal) Government.

## 1.7 Preliminary or Unfinished Drawings

During the development of a design, preliminary or unfinished drawings need to be provided to other business areas such as service authorities, regions, construction, etc., for comment. It is important that these drawing are:

- assigned a drawing number
- one of the labels as shown in Figure 1.1 is attached to the drawing, if the titleblock has not been signed.

A subsequent change to an unfinished or preliminary drawing that is to be redistributed should have the 'Date of Issue' changed to signify that the drawing has been modified. Figure 1.1 shows the Preliminary or Unfinished Drawing Labels that should be placed on these drawings.

The label cells shown below can be found in VicRoads cell library Misc Stickers.cel:

- Preliminary Label – PRELIM
- Unfinished Drawing Label - UNFIN.

**Note:** External organisation undertaking work for VicRoads and/or its Contractors may undertake variations of this process based on their own internal quality assurance procedures. It is important that the drawing clearly states if it is unfinished or preliminary or is actually a final “as constructed” during for recording.

**Figure 1.1: Preliminary or Unfinished Drawing Labels**



## 1.8 Finished Drawings

Once a drawing has been finalised and approved the unfinished label is to be removed and the drawing signed and dated. Any versioning must also be identified in the appropriate location in the titleblock.

## 1.9 Provision of Drawings to VicRoads

As defined within a VicRoads contract, after a contract or project is complete, the drawings and digital data must be forwarded to VicRoads Corporate Plan Filing for recording and archiving. Each drawing must be provided as a single file. Further details on this can be obtained from the VicRoads contract clauses and/or Section 5 – As Constructed Drawings of this guideline.

## 1.10 Drafting Standards

Drafting shall generally conform to the following Australian Standards:

- AS1100 Technical Drawing
- AS1101 Graphical symbols for general engineering.

## 1.11 Scale of Drawings

The criteria for selection of scale of drawings are specified in the relevant sections.

## 1.12 Text Fonts

For any text placed in a file refer to the following standards for:

- all text, unless otherwise specified - Font: ISOREC MicroStation Font Number: 27
- tabulated text, unless otherwise specified - Font: ISOEQ MicroStation Font Number: 28

### 1.13 Printed Line and Text 'Thickness'

Table 1.1 contains MicroStation '*element weights*' (WT) for both line and text situations. The 'weight' number represents the required 'thicknesses' of both lines and text when printed.

**Table 1.1: MicroStation element weight (WT)**

Weight (WT)	Printed 'Thickness' (mm)	Weight (WT)	Printed 'Thickness' (mm)
0	0.18	6	1.4
1	0.25	7	2
2	0.35	8	4
3	0.5	9	6
4	0.7	10	8
5	1.0	11	10

### 1.14 Printed Text Heights/Scale Factors

All text heights listed in the Drawing Specification Table in each section are based on printed A3 size drawings.

Scale factors will need to be applied to text heights (tx =) when printing plans other than 1:1000 as per the following table.

Printed text height	Scale				
	1:1000	1:500	1:250	1:200	1:100
1.8 mm	1.80	0.90	0.450	0.36	0.18
2.5 mm	2.50	1.25	0.500	0.50	0.25
3.5 mm	3.50	1.75	0.875	0.70	0.35
5.0 mm	5.00	2.50	1.200	1.00	0.50

### 1.15 Colour Palette

The criteria for selection of colour (CO=) is specified in the relevant sections.

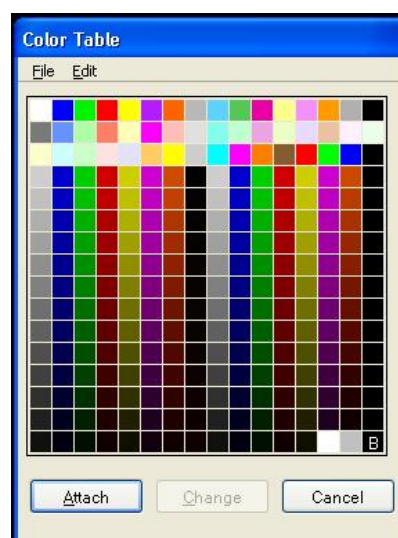
The CADD colours are primarily based on the use of the VicRoads Colour Table.

Figure 1.2 shows the VicRoads Colour Table (vroads.tbl).

**Note:** There are other colours that are 'created' using specific RGB values which will be specifically noted in affected sections. These colours do NOT reside in the colour table.

**Note:** Colour 253 is used in situations where you require element or text to be 'white' when printed.

**Figure 1.2: VicRoads Colour Table**



Note: Actual colours may vary between printers

Figure 1.3 shows the colour palette tables that can be used as a guide to map the 'standard VicRoads' MicroStation colours used in the relevant sections to other software application colour table values. The majority of colours are sourced from the first 3 lines in the colour table.

**Figure 1.3: VicRoads Colour Table**

MicroStation Colour Number	RGB Colour Value	MicroStation Colour Number	RGB Colour Value	MicroStation Colour Number	RGB Colour Value
0	255, 255, 255	18	174, 255, 168	36	228, 227, 255
1	0, 0, 255	19	255, 128, 102	37	255, 204, 102
2	0, 245, 0	20	255, 255, 184	38	255, 255, 0
3	255, 0, 0	21	255, 0, 255	39	206, 206, 206
4	255, 255, 0	22	255, 190, 184	40	0, 255, 255
5	180, 30, 255	23	224, 224, 224	41	255, 0, 255
6	255, 100, 0	24	133, 255, 237	42	255, 127, 0
7	185, 185, 185	25	191, 255, 208	43	135, 92, 49
8	95, 210, 255	26	237, 164, 227	44	255, 0, 0
9	85, 200, 85	27	236, 255, 199	45	0, 255, 0
10	235, 0, 165	28	232, 219, 255	46	0, 0, 255
11	255, 255, 140	29	237, 194, 164	47	0, 0, 0
12	245, 145, 255	30	255, 242, 254		
13	255, 155, 0	31	235, 255, 235	50	0, 206, 0
14	176, 176, 176	32	255, 255, 204	52	206, 206, 0
15	0, 0, 0	33	204, 255, 255		
16	122, 122, 122	34	204, 255, 204	120	143, 143, 143
17	102, 148, 255	35	255, 227, 227	253	255, 255, 255

Note: Actual colours may vary between printers

## 1.16 File Naming Convention for CADD files

Files used within, or delivered to, VicRoads should be unique and the file naming convention used should be logical.

Prior to commencing a project that will result in files being created and returned to VicRoads, agreement should be gained for the particular file naming scheme that is to be used. Within VicRoads, the naming of drawings should be undertaken as described below in Section 1.16.1, 1.16.2 and 1.16.3.

The naming of externally produced drawings should be agreed with the VicRoads project manager/superintendent, with reference to Section 1.16.1, 1.16.2 and 1.16.3 and Section 5 – As Constructed Drawings.

### 1.16.1 File Attribute Information

The following requirement must be completed when files are returned to VicRoads by an external organisation. VicRoads requires an accompanying spreadsheet containing tabular entries linking all file information and file attributes. This tabulation will include files with assigned VicRoads Drawing Numbers as well as other files used in the production of drawings. A list of acceptable file types is provided in Appendix B.

**Note:** CADD files that are used as references in the production of drawings do NOT require a VicRoads Drawing Number but will be included in spreadsheet information, e.g.

Filename	Drawing Number	File Type/Description
123-pd-a-ap-01.dgn	123456	Alignment Plan
223344.dgn	223344	Traffic Signal Plan
123-pd-a-fd-01.dgn		Functional Design Base
44444-lis-a-fs-01.dgn		Feature Survey

### 1.16.2 Internal VicRoads file naming example

Areas within VicRoads typically use a CADD file name that is made up of various sections separated by hyphens, e.g. 5678-pd-a-ap-01.dgn, where:

- 5678 Unique number relating specifically to the job (mandatory field)
- pd Reflects the work area (project design: pd, design west: dw etc – mandatory field)
- a Optional value which identifies the sub-section of the project for example:
  - a General
  - b Hume Freeway main carriageways
  - c Railway Road Interchange (if this option is not required, the character is omitted.)
- ap Specific to the type of CADD file – refer to Appendix B – Abbreviations: File Type (mandatory field)
- 01 Plan counter (mandatory field)
- .dgn Extension of the file name reflects the type of file being created.

### 1.16.3 Naming Victorian Standard Signs

The CADD filename for Signs is made up of characters and numbers to represent different signs.

Sign face drawings must be in accordance with AS/NZS 1743 Road Signs - Specifications or VicRoads' Manual of Standard Drawings for Road Signs as appropriate.

The character "V" in the alphanumeric coding identifies the sign as a Victorian standard sign.

Signs without the letter "V" are Australian standard signs.

**Note:** All Victorian standard sign numbers are issued by VicRoads Technical Services - Road Standards & Traffic group.

## 1.17 MicroStation Reference File Attachments – Descriptions/Names

When attaching reference files to master files, in MicroStation, care should be taken to include a meaningful 'Description' and 'Logical Name' during attachment.

**Note:** Logical names are also used by pen tables in some situations using a 'wildcard' approach, e.g. mono1.tbl uses a search criteria for serv\* and surv\*.

The following table should be used as a guide.

File Type	Logical Name	Description
Corporate Titleblock	tb / tb1 / tb2 / etc	VicRoads Titleblock
Cadastral Base – Survey Accuracy	cad /cad1 / etc	Surveyed Cadastral Title Base – (Title/Easement/Freeway boundaries etc based on survey)
Cadastral Base – Approximated	cad approx etc	Approximated Cadastral title base – (Title/Easement/Freeway boundaries etc based scaled plans)
VDP title information (Victorian Digital property base information)	cad approx etc	VDP Title base - approx only

<b>File Type</b>	<b>Logical Name</b>	<b>Description</b>
Survey Feature Base	serv / serv1 / etc	Feature Survey Base – Nepean Hwy etc (Ground survey of existing features)
Survey Enhancement Base	serv / serv1 / etc	Services – Nepean Hwy etc (typically for service information)
Functional Design Base	func / func1 / etc	Design Base 2D - Nepean Hwy etc (2D Design Base)
3D Linestrings	des / des1 / etc	Design Base 3D - Nepean Hwy etc (3D Design Base)
Sub Surface Drainage Base	ssd / ssd1 / etc	Sub Surface Drainage details
Master Nested Survey	serv master	Master nested survey file
Master Nested Design	des master	Master nested design file
Existing Surface Contour	contours exist	Existing surface contours – interval
Design Surface Contour	contours design	Design surface contours – interval
Drainage Design Strategy	drain	Drainage Strategy
Pavement Type Limits	pave / pave 1 / etc	Pavement Type Limits

## 1.18 Use of MicroStation ‘Models’

In general all master files and reference files will ONLY contain a ‘single’ default design model.

## 1.19 Use of MicroStation ‘Live Nesting’

In complex situations where multiple files exist for a particular reference group ‘live nesting’ may be used, e.g.:

- a single empty ‘master survey reference file’ with multiple attached ‘individual’ survey DGNs.
- a single empty ‘master design reference file’ with multiple attached ‘individual’ design DGNs.

However, use of ‘Live nesting’ is RESTRICTED to a depth of ‘one level’ ONLY.

## 1.20 Cell Library

A Cell Library contains a set of special or common “drawings” that can be included in a design drawing, such as a tram crossing, standard signs, specific symbols to represent an item, pits, subsurface drain attributes (e.g. outlet, riser, etc), signs, north point or arrow, electrical conduit pits, etc for use in VicRoads drawings. They are particularly used for very common items to prevent inconsistencies in their “look” and efficiencies in design (i.e. not required to draw them every time).

The Cell Library is maintained by VicRoads Technical Services Design Systems. The Cell Library is updated at no more than six (6) monthly intervals or on earlier notification of changes to standards and guidelines.

Appendix A shows VicRoads custom styles referred to in Section 2 and Section 3.



## Section 2 – CADD Reference Files

### 2.1 General

#### 2.1.1 CADD Reference Files - Overview

Most roadwork drawings generally use underlying reference files to create the total drawing content. Reference file type and content will be restricted to types defined in the following sections. The majority of the underlying reference files will contain graphics for the total length of a project but in some cases may be broken into major sections. There will be situations where 'element symbology overrides' will be required to suit final drawing presentation.

#### 2.1.2 Text and Custom LineStyle Scale

Generally all CADD reference files are created at 'ground size'.

Any text placed, or custom linestyles used, will need to consider final plan scale of files utilising reference files.

#### 2.1.3 File naming convention for CADD files

Reference should be made to the file naming details located in Section 1.16.

#### 2.1.4 Use of MicroStation 'Models' and 'Live Nesting'

Refer to Section 1.18 and 1.19 for details on MicroStation Models and the use of 'live nesting'.

#### 2.1.5 Order of Reference Files

When creating a final drawing, attaching the files in the order shown below will ensure that when the file is printed all detail will be visible:

- Existing Pavement Area
- Existing Contours
- Services
- Survey Features
- Drainage Layout
- Pavement Type Limits
- Design Contour
- Functional Layout
- Subsurface Drainage Layout.

## 2.2 Existing Pavement Area

### 2.2.1 File Overview

The Existing Pavement Area file (2D only) contains the existing roadway pavement derived from a feature survey as a 'colour filled' area.

### 2.2.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell
Existing Pavement Area	PAVEMENT_EXISTING	23	0	1		

## 2.3 Pavement Type Limits

### 2.3.1 File Overview

The Pavement Type Limits file (2D only) is generally created to contain different coloured shapes which are mapped to different pavement types for the scope of the new road works.

### 2.3.2 Level Content

Description of Content	Level Name	CO <sup>1</sup>	LC	WT	Printed Text Height (mm)/Font	Cell Name
Design Pavement Types	PAVEMENT_TYPE1	28	0	1		
	PAVEMENT_TYPE2	29	0	1		
	PAVEMENT_TYPE3	38	0	1		
	PAVEMENT_TYPE4	33	0	1		
	PAVEMENT_TYPE5	34	0	1		
	PAVEMENT_TYPE6	35	0	1		
	PAVEMENT_TYPE7	36	0	1		
	PAVEMENT_TYPE8	37	0	1		
	PAVEMENT_TYPE9	41	0	1		
	PAVEMENT_TYPE10	43	0	1		
Driveway	PAVEMENT_DRIVEWAY	26	0	1		
Median	PAVEMENT_MEDIAN	24	0	1		
Overlay	PAVEMENT_OVERLAY	20	0	1		
Path	PAVEMENT_PATH	52	0	1		
Pavement to be Removed	PAVEMENT_REMOVE	61	0	1		
Temporary Pavement	PAVEMENT_TEMPORARY	38	0	1		

**Note 1:** Design pavement type colours (shown below) are indicative only and may vary depending on final plan requirements. It may be necessary to change colour/s to avoid clashes or washout between Pavement Types.

## 2.4 Existing Contour

### 2.4.1 File Overview

The Existing Contour file (3D only) contains existing contours. These are generally extracted from a survey model and re-annotated in such a manner that designers can analyse the fall and rise of the existing terrain. Major contours should be annotated.

### 2.4.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell
Major Contours	SURFACE_EXISTING_CONTOUR_MAJOR	43	0	1		
Minor Contours	SURFACE_EXISTING_CONTOUR_MINOR	37	0	1		
Text Annotation	SURFACE_EXISTING_CONTOUR_TEXT	43	0	1	1.8 / 27	

## 2.5 Design Contour

### 2.5.1 File Overview

The Design Contour file (3D only) contains design contours which have generally been extracted from a design model and are annotated in such a manner that designers can analyse the fall and rise of the design surface.

### 2.5.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Major Contours	SURFACE_DESIGN_CONTOUR_MAJOR	8	0	2		
Minor Contours	SURFACE_DESIGN_CONTOUR_MINOR	3	0	1		
Text Annotation	SURFACE_DESIGN_CONTOUR_TEXT	3	0	1	1.8 / 27	

## 2.6 Functional Layout

### 2.6.1 File Overview

Functional Layout file (2D only) generally evolves from the preliminary design concepts through to the final approved functional layout.

The file contains all roadway linear features along with any special treatments required.

Proposed road boundaries generally may be illustrated in this file for further discussions or approval.

**Note:** Usually all cadastral boundary information will generally be contained in a separate MicroStation file provided for reference by a survey group.

All curves will be drawn as arcs and will NOT be 'stroked lines'.

Refer to the Section 2.14 3D Linestring information for details around further information regarding design features.

### 2.6.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Safety Barrier - Concrete	SAFETY_BARRIER_CONCRETE	0	0	2		
Safety Barrier – Guard Fence	SAFETY_BARRIER_GUARD_FENCE	0	guard fence <sup>2</sup>	1		
Safety Barrier – Wire Rope	SAFETY_BARRIER_WIRE_ROPE	0	wire road safety barrier <sup>2</sup>	1		
Bridge Deck	BRIDGE_DECK	4	0	1		
Centre of Bridge Abutment	BRIDGE_ABUTMENT	7	7	0		
Crown Line	ROAD_CROWN_LINE	3	5	1		
Driveways	MISC_DRIVEWAY	3	0	1		
Edge of Shoulder (sealed)	ROAD_SHOULDER_SEALED	0	0	2		
Edge of Shoulder (unsealed)	ROAD_SHOULDER_UNSEALED	4	0	1		
Edge of Traffic Lane (sealed)	ROAD_LANE_EDGE_SEALED	4	0	1		
Edge of Traffic Lane (unsealed)	ROAD_LANE_EDGE_UNSEALED	0	0	2		
Fences	MISC_FENCE	0	fence <sup>1</sup>	2		
Concrete Apron	MISC_CONCRETE_APRON	0	0	2		
Kerb and Channel - Lip	KERB_LIP	8	0	2		
Kerb and Channel - Back	KERB_BACK	8	0	2		
Kerb and Channel - Line	KERB_LINE	7	0	0		
Kerb and Channel – Temporary	KERB_TEMPORARY	0	0	2		

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Lane Line	ROAD_LANE	3	5	1		
Pavement Marking – Lines (solid)	PAVEMENT_MARKING	4	0	1		
Pavement Marking – Lines (dashed)	PAVEMENT_MARKING	4	5	1		
Pavement Marking – Symbols	PAVEMENT_MARKING_SYMBOLS	0	0	2		varies <sup>3</sup>
Material Shading - Concrete Course - Concrete Fine	MISC_CONCRETE	3	0	0		concrete_1 <sup>4</sup> sand <sup>4</sup>
Paths	MISC_PATH	0	0	2		
Pram Crossings	MISC_PATH	varies	0	varies		tgsi_pram_crossing <sup>3</sup>
ROW Boundary Existing	BOUNDARY	57	0	3		
ROW Boundary Proposed	BOUNDARY_PROPOSED <sup>5</sup>	57	3	3		
Train Line	RAILWAY_LINE	4	0	1		
Tram Line	TRAM_LINE	3	0	1		
Verge	ROAD_VERGE	3	0	1		
Wall – Noise	STRUCTURE_NOISE_WALL	10	0	2		
Wall – Retaining	STRUCTURE_RETAINING_WALL	10	0	2		

**Notes:**

1. Refer to VicRoads Custom Linetypes.pdf – Cadastral linetypes group
2. Refer to VicRoads Custom Linetypes.pdf – General group
3. Refer to VicRoads Cell Library – TM.cel
4. Refer to VicRoads Cell Library – Misc\_Symbols.cel
5. ROW Boundary Proposed is a temporary design line until land acquisition details and subsequent Survey Plan are completed and uploaded in the cadastral layer.

## 2.7 Drainage Layout

### 2.7.1 File Overview

A Drainage Layout file (2D or 3D) contains the final drainage layout of pipes, endwalls, beaching and pits.

### 2.7.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name <sup>3</sup>
Beaching at Inlet/Outlet	DRAINAGE_BEACHING	7		0		beaching_drain <sup>2</sup>
Beached Catch Drain	DRAINAGE_CATCH_DRAIN	4	catch drain beached <sup>1</sup>	1		
Grassed Catch Drain	DRAINAGE_CATCH_DRAIN	4	catch drain grassed <sup>1</sup>	1		
Thatched Catch Drain	DRAINAGE_CATCH_DRAIN	4	catch drain thatched <sup>1</sup>	1		
Culverts/Pipes	DRAINAGE_PIPE	3	up to 1m <sup>1</sup>	1		
			1.0 to 1.5m <sup>1</sup>			
Pits	DRAINAGE_PIT	3	0	1		pit <sup>2</sup>
Endwalls	DRAINAGE_ENDWALLS	0	0	2		
Drainage Detail Text	DRAINAGE_TEXT	4	0	1	1.8 / 27	

#### Notes:

1. Refer to VicRoads Custom Linestyles.pdf – Drainage Group
2. Refer to VicRoads Cell Library – Road Design.cel
3. Refer to VicRoads Cell Library – Drainage.cel if using Storm and Sanitary software



## 2.8 Subsurface Drainage Layout

### 2.8.1 File Overview

Subsurface 2D Drainage Layout file (2D) contains the pavement drain design and depending on the scope of the design could be part of the drainage strategy file.

### 2.8.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Corrugated Sub-surface Pipe	DRAINAGE_SUB_SURFACE	40	corr pipe pave drain <sup>1</sup>	1		
Smooth Sub-surface Pipe	DRAINAGE_SUB_SURFACE	40	smooth pipe pave drain <sup>1</sup>	1		
Sub-surface Transverse - Corrugated	DRAINAGE_SUB_SURFACE	40	corr pipe trans drain <sup>1</sup>	1		
Sub-surface Transverse - Slotted	DRAINAGE_SUB_SURFACE	40	trans drain slotted <sup>1</sup>	1		
Sub-surface Transverse - Smooth	DRAINAGE_SUB_SURFACE	40	trans drain not perf <sup>1</sup>	1		
Sub-surface Pits - Flush Out Riser	DRAINAGE_SUB_SURFACE_FLUSHOUT_RISER	40	0	1		SSFL <sup>2</sup>
Sub-surface Pits - Drain Outlet	DRAINAGE_SUB_SURFACE_OUTLET	40				SSDO <sup>2</sup>
Sub-surface Pits - Drain Pit	DRAINAGE_SUB_SURFACE_PIT	40				SSDP <sup>2</sup>
Sub-surface Text	DRAINAGE_SUB_SURFACE_TEXT	40		1	1.8 / 27	

#### Notes:

1. Refer to VicRoads Custom Linestyles.pdf – Drainage Group
2. Refer to VicRoads Cell Library – Road Design.cel

## 2.9 Services

### 2.9.1 File Overview

VicRoads Property Services – Survey and Declarations Section is responsible for survey standards, file content and LevelName structure.

Services information (3D) is provided by survey group as part of the feature survey enhancement details but can also be created as a standalone file relating to services information only.

Symbology standards are the same as those used by survey group to aid visual separation of information when symbology overrides are off.

As service proving information can also be included, within a services file, there is provision for proven service information within the LevelName structure, e.g.

UTILITY\_PROVEN\_GAS\_UNDERGROUND – Service Proving - Gas Features - Underground

UTILITY\_GAS\_UNDERGROUND – Gas Features – Underground

#### **Note: Service Proving**

For 'service proving' LevelName situations all symbology information is identical to existing services listed below but LevelName will include PROVEN as shown above and amended description as can be seen in LevelName listing provided in Section.

Services that are not proven are generally placed in a 2D plane at an elevation that is far removed from the potential vertical position of proven services.

Proven and unproven linework will NOT be joined but may share a common XY position, e.g. there will be no connecting 'vertical line'.

### 2.9.2 Level Overrides

All linework will have colour overrides set to colour 44 (red).

### 2.9.3 Level Content

Description of Content	Level Name	CO	LC <sup>1</sup>	WT	Printed Text Height (mm)/Font	Cell Name
<b>Electricity</b>						
Overhead	UTILITY_ELECTRICITY_OVERHEAD	4	electricity overhead	0		
Underground	UTILITY_ELECTRICITY_UNDERGROUND	4	electricity below ground	0		
Services Text - Electricity	UTILITY_ELECTRICITY_TEXT	0	0	0	1.8 / 27	
<b>Gas</b>						
Aboveground	UTILITY_GAS_OVERHEAD	9	gas line	0		
Underground	UTILITY_GAS_UNDERGROUND	9	gas below ground	0		
Services Text - Gas	UTILITY_GAS_TEXT	0	0	0	1.8 / 27	
<b>Sewer</b>						
General	UTILITY_SEWER_OVERHEAD	3	sewerage	0		
Underground	UTILITY_SEWER_UNDERGROUND	3	sewerage below ground	0		
Services Text - Sewer	UTILITY_SEWER_TEXT	0	0	0	1.8 / 27	

Description of Content	Level Name	CO	LC <sup>1</sup>	WT	Printed Text Height (mm)/Font	Cell Name
<b>Communication</b>						
Aboveground	UTILITY_COMMUNICATION_OVERHEAD	10	telecom line	0	1.8 / 27	
Underground	UTILITY_COMMUNICATION_UNDERGROUND	10	telecom below ground	0		
Aerial Wire to House	UTILITY_COMMUNICATION_OVERHEAD	7	0	0		
Services Text - Communications	UTILITY_COMMUNICATION_TEXT	0	0	0	1.8 / 27	
<b>Unclassified</b>						
Utility Unclassified	UTILITY_UNCLASSIFIED_OVERHEAD	7	7	0		
Services Text - Unclassified	UTILITY_UNCLASSIFIED_TEXT	0	0	0	1.8 / 27	
<b>Water</b>						
Aboveground	UTILITY_WATER_OVERHEAD	8	water above ground	0		
Underground	UTILITY_WATER_UNDERGROUND	8	water below ground	0		
Services Text - Water	UTILITY_WATER_TEXT	0	0	0	1.8 / 27	

**Note:**

1. Refer to VicRoads Custom Linestyles.pdf – Utilities Group

## **2.10 Survey Features**

### **2.10.1 File Overview**

VicRoads Property Services – Survey and Declarations Section is responsible for survey standards, file content and LevelName structure. The following information is based on those standards.

Survey feature files (3D) are normally provided by a survey group using VicRoads survey standards for presentation and data quality.

The feature survey file will normally only contain data captured in field survey.

Post survey 'enhancements' are contained in a separate file.

### **2.10.2 Level Content**

Refer to Property Services – Survey and Declarations Section for VicRoads standards.

### **2.10.3 Level Overrides**

All graphics will have colour overrides set to colour 18 (light green) with the following exceptions.

Features that relate to overland drainage will have colour overrides set to colour 17 (blue):

- DRAINAGE\_DRAIN
- TOPOGRAPHIC\_WATERCOURSE

## 2.11 Signs and Pavement Marking Layout

### 2.11.1 File Overview

A Signs and Pavement (Line) Marking Layout (2D only) file contains the line marking, pavement markings and coloured area fills representing controlled lane usage.

This file may also contain sign locations for the scope of the new road works.

### 2.11.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Coloured Pavement – Bus Lane	PAVEMENT_MARKING_COLOUR_FILL	26	0	1		
Coloured Pavement – Bike Lane	PAVEMENT_MARKING_COLOUR_FILL	34	0	1		
Coloured Pavement – Pedestrian Crossing	PAVEMENT_MARKING_COLOUR_FILL	38	0	1		
Pavement Marking Lines	PAVEMENT_MARKING	0	varies <sup>1</sup>	1		
Pavement Marking Symbols	PAVEMENT_MARKING_SYMBOLS	0		1		varies <sup>2</sup>
Post & Sign Symbol	MISC_SIGNS	0	0	1		varies <sup>2</sup>

#### Notes:

1. Refer to VicRoads Custom Linestyles.pdf – Linemarking Group
2. Refer to VicRoads Cell Library – TM.cel

## 2.12 Street Lighting Layout

### 2.12.1 File Overview

A Street Lighting Layout (2D only) file displays the lighting design and locations of poles for the scope of roadworks.

### 2.12.2 Level Content

#### Street Lighting Enhancement Details

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
<b>General Details</b>						
ROW Boundary Line	BOUNDARY	1	0	3		
<b>Street Lighting Details</b>						
Lighting Conduits	UTILITY_ELECTRICITY_UNDERGROUND	0	2	1		
Conduit Pits	LIGHTING					varies <sup>1</sup>
Lighting Poles/ Brackets / Luminaires	LIGHTING					varies <sup>1</sup>
Existing Lighting	LIGHTING_EXISTING					varies <sup>1</sup>

**Note:**

1. Refer to VicRoads Cell library – Plight.cel

## 2.13 Vegetation Treatment

### 2.13.1 File Overview

A Vegetation Treatment file, typically 2D, summarises the individual status of existing trees in relationship to the scope of the new road works.

Significant trees are either colour coded to be retained and protected during construction or colour coded to be removed.

This file is optional depending on the number of trees affected in the zone of the new roadworks.

### 2.13.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Significant Trees	VEGETATION_TREE	17	0	2		
Trees to be Removed	VEGETATION_TREE_REMOVAL	44	0	2		

## 2.14 3D Linestring

### 2.14.1 File Overview

A 3D Linestring file (3D only) contains roadway features generated as linestrings.

VicRoads uses Bentley Systems' InRoads software for this purpose.

All elements listed in Section 2.6 – Functional Layout file, are included as well as the additional information shown below.

### 2.14.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Batter Tick Symbol	EARTHWORKS_BATTER_TICKS	9	0	1		
Batters	EARTHWORKS_BATTER_TOE EARTHWORKS_BATTER_TOP	9	0	1		
Safety Barrier – Concrete Shape Components	SAFETY_BARRIER_CONCRETE_HINGE SAFETY_BARRIER_CONCRETE_TOE SAFETY_BARRIER_CONCRETE_TOP SAFETY_BARRIER_CONCRETE_INTER FACE	10 10 10 10	0 0 0 0	2 2 2 2		
Bench	EARTHWORKS_BENCH	9	0	1		
Drains	DRAINAGE_MEDIAN_DRAIN DRAINAGE_V_DRAIN DRAINAGE_TABLE_DRAIN	12	0	0		
Drainage Basins	DRAINAGE_BASIN_RETARDING DRAINAGE_BASIN_SEDIMENT	6	0	1		
Water Sensitive Road Design Elements	DRAINAGE_WSRD_ELEMENT	6	0	1		
Linework to Control Pavement Shape	SURFACE_COMPONENT_BREAKLINE	7	0	0		
Mound	EARTHWORKS_MOUND_TOE EARTHWORKS_MOUND_TOP	9	0	1		
Road Crown	ROAD_CROWN	3	5	1		
Surface/Model Exterior Boundary	SURFACE_COMPONENT_EXTERIOR	5	0	4		
Surface/Model Interior Boundary	SURFACE_COMPONENT_INTERIOR	5	0	4		
Concrete Apron	MISC_CONCRETE_APRON	0	0	2		
Verge	ROAD_VERGE1 ROAD_VERGE2	3	0	1		
Wall – Retaining	STRUCTURE_RETAINING_WALL_TOE STRUCTURE_RETAINING_WALL_TOP STRUCTURE_RETAINING_WALL_INTE RFACE	10 10 10	0 0 0	2 2 2		
Wall – Noise	STRUCTURE_NOISE_WALL_TOE STRUCTURE_NOISE_WALL_TOP STRUCTURE_NOISE_WALL_INTERFAC E	10 10 10	0 0 0	2 2 2		



## 2.15 Design Working

### 2.15.1 File Overview

The Design Working File is an optional 3D file created during the design process to contain construction lines/sight lines and vehicle turning paths which influenced the final road works layout.

This file is NOT to be used as a reference file to produce ANY road works construction plans listed in Section 3.

This file may contain multiple models.

### 2.15.2 Level Content

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Clear Zones (for Sight Lines)	CHECK_CLEARZONE	53	0	2		
Sight Line Notes	CHECK_SIGHTLINE_TEXT	4	0	1	1.8/27	
Vehicle Turning Path Notes	CHECK_TURNING_PATH_TEXT	3	0	1	1.8/27	
Sight Lines	CHECK_SIGHTLINE_50	varies	0	1		
	CHECK_SIGHTLINE_60		0	1		
	CHECK_SIGHTLINE_70		0	1		
	CHECK_SIGHTLINE_800		0	1		
	CHECK_SIGHTLINE_90		0	1		
	CHECK_SIGHTLINE_100		0	1		
	CHECK_SIGHTLINE_110		0	1		
	CHECK_SIGHTLINE_120		0	1		
Vehicle Turning Paths	CHECK_TURNING_PATH	varies	0	0		
	CHECK_TURNING_PATH_BDOUBLE		0	0		
	CHECK_TURNING_PATH_BDOUBLE_QQ		0	0		
	CHECK_TURNING_PATH_BUS		0	0		
	CHECK_TURNING_PATH_BUS_ARTIC		0	0		
	CHECK_TURNING_PATH_CAR		0	0		
	CHECK_TURNING_PATH_SEMI_19		0	0		
	CHECK_TURNING_PATH_SEMI_26		0	0		
	CHECK_TURNING_PATH_TRUCK_8		0	0		
	CHECK_TURNING_PATH_12		0	0		
	CHECK_TURNING_PATH1 to		0	0		
	CHECK_TURNING_PATH10		0	0		

## Section 3 – Roadwork Drawings

### 3.1 General Information & Notes

#### 3.1.1 Roadwork Drawings - Overview.

Roadwork drawings will be created to suit the plan types listed in following sections.

With the exception of cross section plans, it is preferred that for longitudinal sections, drainage longitudinal sections, pavement details and typical cross sections all master DGN files will contain graphics for a single plan ONLY.

MicroStation DGN files will contain a single default model which will have accompanying reference files.

File structure will typically be created at ground size thereby enabling accurate measurements and coordinate interrogation to occur within the master file.

**Note 1:** The sample drawings are provided as an example of the drawing presentation standards required and must not be used for determining or interpreting survey, road, traffic or landscape design standards or practices.

**Note 2:** If an error is identified or a designer has a query on any of the information contained in this document, an email outlining the issue can be sent to [technicalconsulting@roads.vic.gov.au](mailto:technicalconsulting@roads.vic.gov.au).

#### 3.1.2 File naming convention for CADD files

Reference should be made to the file naming details located in Section 1.16.

#### 3.1.3 Use of MicroStation 'Models' and Live Nesting

Refer to Section 1.18 and Section 1.19 for details on MicroStation Models and the use of "live nesting".

#### 3.1.4 Survey files & Survey CADD files

VicRoads Survey files MUST NOT be modified without prior agreement from VicRoads.

VicRoads Survey CADD files MUST NOT be renamed under any circumstances.

#### 3.1.5 Order of Reference Files

Refer to Section 2.1.5.

#### 3.1.6 VicRoads, Government and other logos

##### **VicRoads Logo**

The use and placement of the VicRoads logo should conform to VicRoads Guidelines. For further details on this or for a copy of the latest VicRoads logo, contact VicRoads Corporate Communications on [corpcomms@roads.vic.gov.au](mailto:corpcomms@roads.vic.gov.au).

The VicRoads Visual Identity Guidelines and VicRoads App Icon Guidelines may be referred to for further information. These documents are available by contacting VicRoads Corporate Communications on [corpcomms@roads.vic.gov.au](mailto:corpcomms@roads.vic.gov.au).

For further information on government and other logos refer to Section 1.6 – VicRoads, Government and Other Logos.

## 3.2 Corporate Titleblock

### 3.2.1 Titleblock Overview

The VicRoads Corporate Titleblock is referenced into all roadwork drawings produced in Section 3 unless otherwise stated and shall NOT be amended or altered in any way.

The VicRoads Corporate Titleblock is amended and updated at various times so ensure the current file/version is attached when producing roadwork plans.

**Note:** Titleblocks are generally 'scaled up' to ground size conditions.

Plans are generally produced at A3 but the corporate titleblock also provides A1 and A0 options.

See Section 3.2.4 below for information on the use of 'Saved Views' when attaching titleblock to simplify access to correct level display.

### 3.2.2 Scale

The titleblock attachment scale varies depending on the roadwork plan being produced.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.2.3 CADD File Structure

The titleblock does not contain reference files with the exception of a single master reference to produce the VicRoads logo.

### 3.2.4 Models/Saved Views

The titleblock contains individual models for A3, A1 and A0 attachment purposes.

**Note:** A0 and A1 sizes are typically for Traffic Signal plan usage only.

Each model has accompanying Saved Views to simplify task of accessing correct level display.

See the following details of Models/Saved Views.

#### A3 Model – Saved Views

CAMBERWELL REGION	ROAD titleblock + VicRoads Camberwell address
CAMBERWELL TRAFFIC	TRAFFIC titleblock + VicRoads Camberwell address
GEOTECH	Geotech Investigation titleblock + VicRoads Metro South East address
METRO NW REGION	ROAD titleblock + VicRoads Metro North West address
METRO NW TRAFFIC	TRAFFIC titleblock + VicRoads Metro North West address
METRO SE REGION	ROAD titleblock + VicRoads Metro South East address
METRO SE TRAFFIC	TRAFFIC titleblock + VicRoads Metro South East address
PLANNING AMENDMENT	Planning and Investigation - Planning amendment
PLANNING CONCEPT	Planning and Investigation - Concept plan
PLANNING CONCEPT (L)	Planning and Investigation - Concept plan (Large legend)
<b>VICROADS ONLY R</b>	ROAD titleblock - No addresses (for Consultant use)
<b>VICROADS ONLY T</b>	TRAFFIC titleblock - No addresses (for Consultant use)

#### A1 Model – Saved Views (Typically Traffic Signal plan usage only)

A1 CAMBERWELL TRAFFIC	A1 TRAFFIC titleblock + VicRoads Camberwell address
A1 METRO NW TRAFFIC	A1 TRAFFIC titleblock + VicRoads Metro North West address
A1 METRO SE TRAFFIC	A1 TRAFFIC titleblock + VicRoads Metro South East address (for Consultant use)
<b>A1 VICROADS ONLY T</b>	A1 TRAFFIC titleblock - No addresses

**A0 Model – Saved Views (Typically Traffic Signal plan usage only)**

A0 CAMBERWELL TRAFFIC A0 TRAFFIC titleblock + VicRoads Camberwell address

A0 METRO NW TRAFFIC A0 TRAFFIC titleblock + VicRoads Metro North West address

A0 METRO SE TRAFFIC A0 TRAFFIC titleblock + VicRoads Metro South East address

**A0 VICROADS ONLY TRAFFIC** A0 TRAFFIC titleblock - No addresses (for Consultant use)**Note:** 'VICROADS ONLY' saved views will typically be used by external contactors.**3.2.5 Final Drawing Specifications.****A3 Titleblock Parameter Drawing Specifications**

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Printed Line Thickness (mm)
Amendments	TEXT_TITLEBLOCK	2	0	1	1.2-1.8 / 27	0.25
Approved (via Signature Annotation Program)	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	0.25
Catalog & Project	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	0.25
Chainage Limits	TEXT_TITLEBLOCK	0	0	2	2.5 / 27	0.35
Computer File	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	0.25
Consultant Logo^^	IMAGES					
Contract No. / Sheet No. / Drawing No.	TEXT_TITLEBLOCK	0	0	2	2.5 / 27	0.35
Detailed Description	TEXT_TITLEBLOCK	0	0	2	2.5 / 27	0.35
File Type	TEXT_TITLEBLOCK	0	0	2	2.5 / 27	0.35
General Notes/Refer	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	0.25
Municipality	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	0.25
Officer Name	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	0.25
Project Description	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	0.25
Road Name	TEXT_TITLEBLOCK	0	0	2	2.5 / 65	0.35
Scale	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	0.25
Subsection	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	0.25

**A0/A1 Titleblock Parameter Drawing Specifications - typical Traffic Signal plan only**

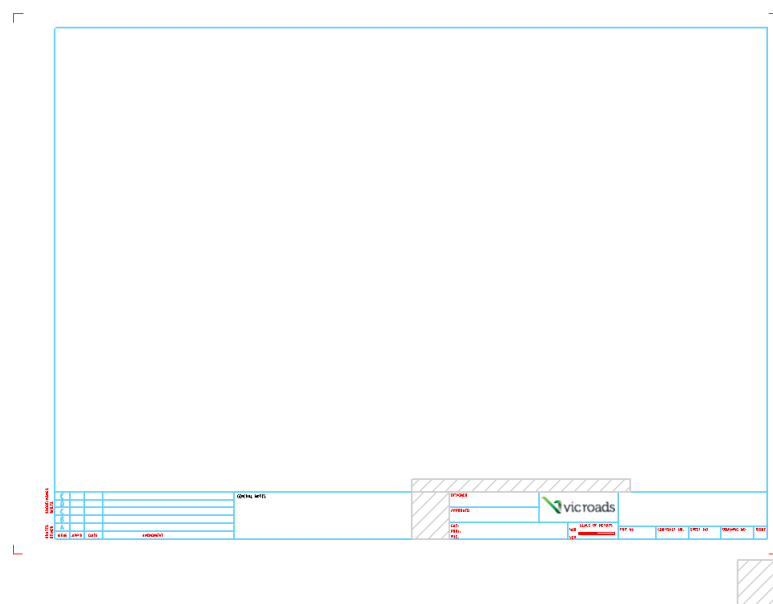
Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Printed: Line Thickness (mm)
Approved (via Signature Annotation Program)	TEXT_TITLEBLOCK	2	0	1	2.5 / 27	0.25
Amendments	TEXT_TITLEBLOCK	2	0	2	2.5 / 27	0.25
Catalog & Project	TEXT_TITLEBLOCK	2	0	1	2.5 / 27	0.25
Chainage Limits	TEXT_TITLEBLOCK	0	0	2	5.0 / 27	0.35
Computer File	TEXT_TITLEBLOCK	2	0	1	2.5 / 27	0.25
Contract No./Sheet No. /Drawing No.	TEXT_TITLEBLOCK	0	0	2	5.0 / 27	0.35
Detailed Description	TEXT_TITLEBLOCK	0	0	2	5.0 / 27	0.35
File Type	TEXT_TITLEBLOCK	0	0	2	5.0 / 27	0.35

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Printed: Line Thickness (mm)
General Notes/Refer	TEXT_TITLEBLOCK	2	0	1	2.5 / 27	0.25
Municipality	TEXT_TITLEBLOCK	2	0	1	3.6 / 27	0.25
Officer Name	TEXT_TITLEBLOCK	2	0	1	2.5 / 27	0.25
Project Description	TEXT_TITLEBLOCK	2	0	1	3.6 / 27	0.25
Road Name	TEXT_TITLEBLOCK	0	0	2	5.0 / 217	0.35
Scale	TEXT_TITLEBLOCK	2	0	1	2.5 / 27	0.25
Subsection	TEXT_TITLEBLOCK	2	0	1	3.6 / 217	0.25

### 3.2.6 Consultant Logos

Consultants are encouraged to display their company logo and other internal file information in the designated area as shown below.

These graphics and textual entries will NOT be placed within the actual corporate titleblock but instead will be located in corresponding drawing files.



Consultant area

### 3.2.7 Titleblock information – Internal & External Users

A variety of cells, located in **VR edms tagset.cel**, are available for use in populating titleblock information in when in appropriate drawing files with titleblock attached.

Cells are available for A0/A1/A3 plan situations.

A0 and A1 sizes are typically for Traffic Signal plan usage only.

Internal VicRoads staff will use 'tagged cells' which will automatically be updated via ProjectWise functionality.

External users have 'plain text' cells available for their use as required.

External users are NOT to use the VicRoads 'tagged cells'

Applicable cells for use by external contractors are preceded by External Users TEXT ONLY, e.g. ExternalUsers TEXT ONLY ctb4 A3 Sec.

Illustrated below are three commonly used cells in their raw and completed form which are used for completing ctb4.dgn titleblock parameters.

**RoadName ProjectDesc**

DESIGNED_BY DESIGN_DATE	ROAD NAME				
APPROVED_BY APPR_DATE CATALOG FOLDER FILENAME	PROJECT_DESC	DETAILED_DESC	FILE_TYPE		
	PROJ_NO	CONT	SHT	0	A
REGIONAL DESIGN CENTRAL 24/7/2010	<b>MICKLEHAM ROAD</b>				
	TULLAMARINE FWY EXIT RAMP TO BROADMEADOWS ROAD				
APPROVED_BY 1/12/2010 DESIGN CENTRAL 12345 Smart Bus Mickleham Road 1234-dc--gp-02.dgn	9758	7566	5	555555	
	GEOMETRIC PLAN				

**RoadName ProjectDesc Municipal**

DESIGNED_BY DESIGN_DATE	ROAD NAME				
APPROVED_BY APPR_DATE CATALOG FOLDER FILENAME	PROJECT_DESC Municipality	DETAILED_DESC	FILE_TYPE		
	PROJ_NO	CONT	SHT	0	A
REGIONAL DESIGN CENTRAL 24/7/2010	<b>MICKLEHAM ROAD</b>				
	TULLAMARINE FWY EXIT RAMP TO BROADMEADOWS ROAD				
	HUME CITY				
APPROVED_BY 1/12/2010 DESIGN CENTRAL 12345 Smart Bus Mickleham Road 1234-dc--gp-02.dgn	9758	7566	5	555555	
	CH 1220 - CH 1400 CROSS SECTIONS				

**RoadName ProjectDesc Subsec**

DESIGNED_BY DESIGN_DATE	ROAD NAME				
APPROVED_BY APPR_DATE CATALOG FOLDER FILENAME	PROJECT_DESC SUBSECTION	DETAILED_DESC	FILE_TYPE		
	PROJ_NO	CONT	SHT	0	A
REGIONAL DESIGN CENTRAL 24/7/2010	<b>MICKLEHAM ROAD</b>				
	TULLAMARINE FWY EXIT RAMP TO BROADMEADOWS ROAD				
	GLADSTONE PARK DRV/INTERNATIONAL DRV INTERSECTION				
APPROVED_BY 1/12/2010 DESIGN CENTRAL 12345 Smart Bus Mickleham Road 1234-dc--gp-02.dgn	9758	7566	5	555555	
	CH 1220 - CH 1400 ALIGNMENT PLAN				

## 3.3 Document Face Sheet

### 3.3.1 Drawing Overview

The Document Face Sheet provides an easily identifiable cover that helps protect the document contents. The details contained on the Document Face Sheet should enable identification of the job, without the need to open the document set.

On smaller jobs the Face Sheet may be included with the Locality Plan drawing.

**Note:** When combined with the Locality Plan drawing, the file type is described as 'Locality Face Sheet' (LFS).

### 3.3.2 Scale

The Document Face Sheet is not produced to any particular scale, but generally at 1:1000.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.3.3 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'.

The pen table to be used during final plan printing = mscol2.tbl.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.3.4 Final Drawing Specifications

The drawing specification table is based on A3 size final drawings.

#### Document Face Sheet Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Border – External	LINES	0	0	2		
Border – Internal	LINES	0	0	2		
CADD File Details	TEXT	3	0	1	1.8 / 68	
Contract & Volume Number	TEXT	0	0	2	5.0 / 67	
Control Copy Text and Box	CELLS		0			control_copy_no <sup>1</sup>
Project Description	TEXT	1	0	3	7.0 / 67	
Quality Endorsement Logo	CELLS		0			DLCS H <sup>1</sup>
Title	TEXT	1	0	3	7.0 / 67	
VicRoads Logo	TEXT		0			Image

#### Notes:

1. Refer to VicRoads Cell Library – Misc Sticker.cel

## 3.4 Locality Plan

### 3.4.1 Drawing Overview

The purpose of the Locality Plan is to show contractors and/or consultants the site of the proposed works in relation to the surrounding areas and geographical features.

The presentation of the Locality Plan may vary depending on the size and complexity of the project.

On smaller jobs the Locality Plan may be included with the Face Sheet

**Note:** When combined with the Locality Plan drawing, the file type is described as 'Locality Face Sheet' (LFS).

### 3.4.2 Scale

The scale of the Locality Plan varies depending on the size of the project and the extent of the surrounding area that needs to be shown.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.4.3 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'.

The pen table to be used during final plan printing = msc02.tbl.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.4.4 Final Drawing Specifications

The drawing specification table is based on A3 size final drawings output.

#### Locality Plan Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Alignment Stations (where applicable)	GEOMETRIC_HORIZONTA L_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTA L_ALIGNMENT_4_TEXT	8	0	2	2.5 / 27	
Existing Road Network & Shared User Pathway	ROAD	18	0	1		
Existing Road Network Text	TEXT_ROADNAMES	18	0	1	1.8 / 27	
Major Road	ROAD	0	0	2		
Major Road Names	TEXT_ROADNAMES	0	0	2	2.5 / 27	
Melways/VicRoads Reference	TEXT	3	0	1	1.8 / 27	
Municipal Boundaries	BOUNDARY_CADASTRAL_ MUNICIPAL	18	6	1		
Municipal Names	BOUNDARY_CADASTRAL_ MUNICIPAL_TEXT	18	0	1	3.5 / 114	
North Point						north <sup>1</sup>
Places of Interest	TEXT	0	0	1	1.8 / 27	
Railway	RAILWAY_LINE	18	0	1		
Railway Names	TEXT_RAILNAMES	18	0	1	1.8 / 27	
River and Creek Names	TEXT_RIVERNAMES	40	0	1	1.8 / 27	



Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Rivers and Creeks	TOPOGRAPHIC_WATERCOURSE	40	0	1		
Dam Area Fill	TOPOGRAPHIC_WATER	24	0	0		
Site of Works	TEXT	0	0	1	3.5 / 27	
Site of Works - Extent of the Works	TEXT	1	0	3		
To/From Directional Linework and Text	TEXT	7	0	1	1.8 / 27	
Township Names	TEXT	18	0	1	2.5 / 27	

**Notes:**

1. Refer to VicRoads Cell Library – Misc Stickers.cel

**3.4.5 Reference File Listing**

Reference Files	Printed Colour	Comments
VicRoads Corporate Titleblock	Black	Road Graphics in Masterfile

**3.4.6 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 1

## 3.5 Table of Contents

### 3.5.1 Table of Contents Overview

The Table of Contents contains a summary index, e.g. excel spreadsheet, listing all relevant final drawings included in a contract, including their computer file name and the VicRoads allocated Drawing Number.

Where an imported spreadsheet is used to create the Table of Contents the printed text size height must be as close as possible to that specified in the specifications in Section 3.5.4. In addition to this information a listing of all MicroStation reference files with a clear description is also to be included on the Table of Contents.

It is used as an easy guide to referencing a particular final plan of interest to a relevant sheet number and VicRoads drawing number. It also contains a listing of all final plans in sequential order of sheet number followed by the VicRoads drawing number and description. It will be divided into various drawing types and sections and is generally drawn 1:1000.

### 3.5.2 Scale

Scale is listed as 'NOT TO SCALE' in the titleblock.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.5.3 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'.

The pen table to be used during final plan printing = mono1.tbl.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.5.4 Final Drawing Specifications

The drawing specification table is based on A3 size final drawing output.

#### Table of Contents Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell
Descriptions	TEXT	3	0	1	1.8 / 28	
Drawing Numbers	TEXT	3	0	1	1.8 / 28	
Sheet Numbers	TEXT	3	0	1	1.8 / 28	
Titles	TEXT	0	0	1	2.5 / 65	

### 3.5.5 Reference File Listing

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	

### 3.5.6 Example Drawing

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 2
- Sheet No. 3

## 3.6 Typical Cross Sections

### 3.6.1 Drawing Overview

Typical Cross Sections illustrate sections of a project that reflect the majority of the new roadway/works in relation to the existing conditions to a relevant scale and also include:

- structural elements of the roadway.
- lateral distance
- crossfalls (m/m, ratio or %)
- batter slopes
- pavement boxing
- subsurface drains

### 3.6.2 Scale & Presentation

Typical Cross Sections should be provided at locations where the road formation is consistent and applies over a reasonable length.

Specific Typical Cross Sections whose application is restricted to a limited and specific area may be shown when the section is relevant.

On smaller jobs the typical cross section, pavement details may be combined with other drawings such as the geometric, table of contents, etc.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

Selection Criteria	Scale
Freeway and Divided Highway standard facilities with wide ROW proposed for a rural type environment.	Hor. and Vert. 1:400, or Hor. and Vert. 1:500
Highways, Main Roads, Access Roads and Ramps generally with narrow ROW proposed for an urban type environment.	Hor. and Vert. 1:200 or Hor. and Vert. 1:100 or Hor. 1:200, Vert. 1:100
Projects based on overlays and/or resheets.	Hor. 1:200, Vert. 1:40 or Hor. 1:200, Vert. 1:20

### 3.6.3 Final Printed Plan

The drawing is set-up for certain colours to be 'resymbolised' at 'print time'.

The pen table to be used during final plan printing = mono1.tbl, except for condition pavement details.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.6.4 Final Drawing Specifications

Drawing specification table is based on A3 final size drawings output.

#### Typical Cross Sections Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Chainage/Description	TEXT_ROADNAMES	8	0	2	2.5 / 27	
Design Line	GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4	8	7	2		
Design Line - Label	TEXT	8	0	2	2.5 / 27	
Design Surface Line	SURFACE_DESIGN	8	0	2		

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Dimension Text	TEXT	4	0	1	1.8 / 27	
Existing Pavement	PAVEMENT_EXISTING	7	Road Xsect Hatch <sup>1</sup>	0		
Existing Surface Line	SURFACE_EXISTING	2	5	1		
Fence Boundary	MISC_FENCE					fence <sup>2</sup>
General Text	TEXT	3	0	1	1.8 / 27	
Guard Fence (Left & Right)	SAFETY_BARRIER_GUARD_FENCE					guard_fence_L <sup>2</sup> guard_fence_R <sup>2</sup>
Kerbs	KERB					kerbs <sup>2</sup> (varies)
Leader Lines & Linework	TEXT	3	0	1		
Noise Wall Boundary	STRUCTURE_NOISE_WALL					NB <sup>2</sup>
Pavement Boxing	PAVEMENT_BOXING	0	0	2		
PSR Boundary	BOUNDARY					PSR <sup>2</sup>
ROW Boundary	BOUNDARY					ROW <sup>2</sup>
Subsurface Drain	DRAINAGE_SUB_SURFACE					SDRAIN <sup>2</sup>
Safety Barrier (WRSB)	SAFETY_BARRIER_WIRE_ROPE					WRSB <sup>2</sup>

**Notes:**

1. Refer to VicRoads Custom Linestyles.PDF – General Group
2. Refer to VicRoads Cell Library – Road Design.cel

**3.6.5 Reference File Listing**

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		Black	

**3.6.6 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 4
- Sheet No. 5

## 3.7 Pavement Detail

### 3.7.1 Drawing Overview

The Pavement Detail drawing provides the pavement structure and materials, and may include the location of kerb and channel, subsurface and surface drainage.

### 3.7.2 Scale

The Pavement Detail drawings are not usually drawn to any nominal scale, but should be visually proportional with the drawing scale being specified as 'Drawn to Scale'. Where there is a need to provide more than one pavement detail a constant nominal scale should be adopted for visual consistency between drawings. Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.7.3 Presentation Options

The presentation of the Pavement Details will vary depending on the size and the complexity of the project.

For complex or involved pavement types for the scope of the roadwork, a separate 'Pavement Type Limits' drawing produced. The Pavement Detail Plan will contain a legend showing colours which represent different pavement designs for the scope of the roadwork which are cross referenced to a 'Pavement Type Limits' drawing. On smaller projects the typical cross section and pavement details may be combined with other drawings such as the geometric, table of contents, etc.

**Note:** Refer to Section 2.3 – Pavement Type Limits File for information relating to colours used. The Pavement Type colours are indicative only and will vary depending on final plan requirements. It may be necessary to change colours to avoid clashes between Pavement Types.

**Note:** Colours used are indicative only and may be changed to avoid clashes or fade out between Pavement Types.

### 3.7.4 Final Printed Plan

The drawing is set-up for certain colours to be 'resymbolised' at 'print time'. The pen table to be used during final plan printing = mscol2.tbl or mono1.tbl. Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.7.5 Final Drawing Specifications

Drawing specification table is based on A3 final size drawings output.

#### Pavement Detail Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Design Surface Line	SURFACE_DESIGN	8	0	2		
Dimension Lines	TEXT	2	0	1	1.8 / 27	
Existing Pavement	PAVEMENT_EXISTING	7	Road Xsect Hatch <sup>1</sup>	0		
General Text	TEXT	3	0	1	1.8 / 27	
Kerbs	KERB					varies <sup>2</sup>
Pavement Detail Boxes	TEXT	varies	0	1		
Pavement Heading Text	TEXT	8	0	2	2.5 / 27	
Pavement Layers Lines	PAVEMENT_LAYERS	4	0/2	1		
Pavement Listing Text	TEXT	3	0	1	1.8 / 27	
Section Title Text	TEXT	0	0	2	2.5 / 27	

#### Notes:

1. Refer to VicRoads Custom Linestyles.PDF – General Group
2. Refer to VicRoads Cell Library – Road Design.cel

### **3.7.6 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 6
- Sheet No. 7
- Sheet No. 8
- Sheet No. 9

## 3.8 Geometric

### 3.8.1 Drawing Overview

Geometric drawings provide the following information:

- a baseline (datum) for the location and setting out of construction works
- the relationship between the design line and other design lines
- coordinated survey control symbols - Point name, Easting, Northing, RL, Point Description.

### 3.8.2 Scale, Presentation and Chainage Intervals

Geometric Drawings are always drawn to a suitable scale and never moved off their coordinate base, e.g. Freeways 1:5000, Other Roads 1:2500.

The length of design line illustrated is dependent on the amount of geometric information that is required to specify the design line or proportion of the line shown on the drawing. Curve information is to be placed in an IP box, left aligned, with a pointer arrow used to locate point on drawing.

Survey control points which were initially used or referenced to during the feature survey are listed in a tabulated manner, e.g. Point name, Easting, Northing, Reduced Level (RL), Point Description. Point name and symbols should also be placed on to the drawing.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

Chainage intervals for cross sections should match the Longitudinal Section Drawing interval and chainage.

Selection Criteria	Chainage Interval
Ramps with loops	10m
Rural type environment	10m - 20m
Urban type environment	10m

### 3.8.3 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'.

The pen table to be used during final plan printing = mono1.tbl.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.8.4 Final Drawing Specifications

The details set out in the drawing specifications table has been based on A3 size final plans output.

#### Geometric Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Chainages	GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4_TEXT	8	0	2	2.5 / 27	
Curve Numbers	TEXT	3	0	1	1.8 / 27	
Curve & Spiral Details	TEXT	3	0	1	1.8 / 28	
Design Line – Major	GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4	8	7	2		
Design Line – Label	TEXT	8	0	2	2.5 / 27	

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Geometric Tangent Line	GEOMETRIC_TANGENT	3	0	1		
Road – Minor	ROAD_MINOR	2	0	1		
Event Point Chainage	GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT	4	0	1	2.5 / 27	
General Text	TEXT	3	0	1	1.8 / 27	
Geometric Heading Text	TEXT	8	0	2	2.5 / 27	
Geometric Listing Text	TEXT	3	0	1	1.8 / 28	
IP Box	TEXT					IPbox <sup>2</sup>
IP Box Details	TEXT	3	0	1	1.8 / 27	
IP Box with Curve Details	TEXT					IP_curve_box <sup>2</sup>
North Point	TEXT					north <sup>1</sup>
Road Names	TEXT_ROADNAMES	3	0	1	1.8 / 27	
Survey Control Heading	TEXT	8	0	2	2.5 / 27	
Survey Control Listing	TEXT	3	0	1	1.8 / 28	
Survey Control Points & Text	SURVEY_MARK	3	0	1	1.8 / 27	

**Notes:**

1. Refer to VicRoads Cell Library – Misc Sticker.cel
2. Refer to VicRoads Cell Library – Road Design.cel

**3.8.5 Reference File Listing**

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	

**3.8.6 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 10
- Sheet No. 11



## 3.9 Alignment Key Plan

### 3.9.1 Drawing Overview

The Alignment Key Plan is typically used for the following:

- as a quick and easy pictorial cross reference to illustrate which sheet numbers or drawing numbers cover different limits of the contract
- sheet numbers or drawing numbers cross reference to different final plan types
- provides general notes for the plan set.

### 3.9.2 Scale and Presentation

The Alignment Key Plan is produced to a scale that clearly illustrates the scope of proposed roadwork on one plan generally.

Chainage intervals specified along the design line should be adequate for reader to cross reference to the appropriate alignment plan.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.9.3 Use of MicroStation 'Live Nesting'

For substantial roadwork contracts consideration should be given to utilising 'live nesting' of reference file groups.

Use of 'Live Nesting' during plan production will reduce time spent when extra files need to be attached or unattached to the Alignment and or Drainage Plans. Refer to Section 1.19 for conditions of use.

### 3.9.4 Final Printed Plan

The drawing is set-up for certain colours to be 'resymbolised' at 'print time'.

The pen table to be used during final plan printing = msc02.tbl.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.9.5 Final Drawing Specifications

The drawing specification table is based on A3 size final drawings output.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

#### Alignment Key Plan Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Rivers and Creek Names	TEXT_RIVERNAMES	3	0	1	1.8 / 27	
Design Lines	GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4	8	7	2		
Design Line Chainages	GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4_TEXT	8	0	2	2.5 / 27	
General Text	TEXT	3	0	1	1.8 / 27	
Major Road Names	TEXT_ROADNAMES	8	0	2	2.5 / 27	
Minor Road Names	TEXT_ROADNAMES	2	0	1	1.8 / 27	
North Point	TEXT					north <sup>1</sup>
Railway Names	TEXT_RAILWAYNAMES	2	0	1	1.8 / 27	

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
To/From Directional	TEXT	2	0	1	1.8 / 27	
Titleblock Key Shape	TEXT_LIMIT & TEXT				10.0 / 151	TBSHAPE_CTB4

**Note:**

1. Refer to VicRoads Cell Library – Misc Sticker.cel

**3.9.6 Reference File Listing**

Reference Files	Override Colour	Printed Colour	Comments
Engineering Feature Survey (FS)	18	9	
	17	40	Strings representing invert of water features
Engineering Cadastral Base (CB)	43	43	
Existing Pavement Area		23	
Roadway Functional Layout		black	
Row		57	Weight = 2
Title Boundary	43	43	
VicRoads Corporate Titleblock		black	

**3.9.7 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 12

## 3.10 Alignment Plan

### 3.10.1 Drawing Overview

Alignment Plan drawings are used for the following:

- location and set out of the road alignment
- identification and location of existing features that are to be retained, relocated or removed
- identification and location of special construction treatment and works
- staging of construction works
- extraction of quantities.

**Note:** All plans should contain more than  $\frac{3}{4}$  of an intersection on the page for clarity purposes. Intersections should never have a match line through them.

### 3.10.2 Presentation Options

When the scope of the proposed construction is complex or involved it is recommended that a separate Alignment Plan is produced.

When the scope of the proposed construction is not complex it is possible that an Alignment Plan could be combined with the Drainage Plan which includes subsurface drainage design.

When combining the alignment, drainage and subsurface design details on the Alignment Plan consideration needs to be given to the readability of the plan and ideally a minimum scale 1:500 is adopted.

### 3.10.3 Scale and Chainage Intervals

Text heights will have to be modified to accommodate alternative suitable scales to equal final required printed text height.

The guidelines for the selection of scales for Alignment Plans are set out in the following table.

#### Alignment Plans

Selection Criteria	Scale
Rural type environment, where details are sparse and the alignment is straight forward.	1:2000
Rural and urban type environment, where there are some construction constraints and the alignment is straight forward.	1:1000
Urban type environment where the alignment is complex and details are important.	1:500

#### Chainage intervals

Chainage intervals specified along the design line may vary depending on the type of the roadwork. Use the options below as a guide:

- rural chainage intervals specified along the design line should annotate every 100m and salient points and display every 20m.
- urban chainage intervals specified along the design line should annotate every 20m and salient points and display every 10m.

**Note:** Chainage measurement radiate east and west from the Melbourne GPO coordinate.

### 3.10.4 Enhancement Details

The following details and reference notes are typically used:

- bridge works and reference notes
- critical dimensions and clearances
- design line chainages and salient points

- environmental sensitive areas including notes on treatment and preservation requirements
- footpaths, bicycle paths details, notes
- kerb and channel transition location
- limits of works
- noise mounds and fences, and associated notes
- pavement transition details
- rehabilitation treatment and/or notes
- special treatments or requirements.

Construction Alignment Plans should be set up so that the chainages can be read in the direction of increasing value from left to right irrespective of the orientation of the North Point.

Ramp chainages are to increase in the same direction as the freeway chainage.

The grid co-ordinates should be arranged so that they are read in the direction of increasing value irrespective of the orientation of the North Point and at a spacing as defined below:

Scale	Spacing
1:2000	100m
1:1000	100m
1:500	50m

### Detail/Setout Enhancements

Particular attention must be given to providing information necessary to setout the project. This information needs to be concise and unambiguous.

There is often a need to provide a separate setting out detail drawing for areas such as intersections, interchanges etc.

Typical setting out details included on alignment plans when provided are:

- contours
- construction set out details for kerb and channel
- kerb and channel salient points and radii
- surface treatments.

**Note:** For small projects this information may be shown on a Combined Alignment Detail Plan.

### Drainage and Subsurface Enhancements

When combining drainage and subsurface design details on the Alignment Plan refer to the relevant sections as a guide to typical enhancements that are required to be on the plan.

#### 3.10.5 Use of MicroStation 'Live Nesting'

For substantial roadwork contracts consideration should be given to utilising 'Live Nesting' of reference file groups.

Use of 'Live Nesting' during plan production will reduce time spent when extra files need to be attached or unattached to the Alignment and or Drainage Plans. Refer to Section 1.19 for conditions of use.

#### 3.10.6 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'.

The pen table to be used during final plan printing = msc02.tbl.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.10.7 Final Drawing Specifications.

Drawing specification tables is based on A3 size final drawings output. The following table acts as a guide of contents to be included on the plan.

#### Alignment Plan Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Cross Reference Notes	TEXT	8	0	2	2.5 / 27	
Design Line	GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4	8	7	2		
Design Line Chainage	GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4_TEXT	8	0	2	2.5/27	
Design Line Radii	TEXT	3	0	1	1.8/27	
General Notes Text, e.g. Driveways, Earth Work, Barriers, Existing Services, Pavement Transition, Road Side Furniture, Bridge Work	TEXT	3	0	1	1.8/27	
Grid & Annotation	TEXT_GRID	16	0	0	1.8 / 27	
Inset Information	TEXT	3	0	1	1.8/27	
Kerb and Channel Type	TEXT	4	0	1	1.8/27	
Kerb Outlet Diagram	TEXT					krbout <sup>2</sup>
Kerb and Channel Radii	TEXT	3	0	1	1.8/27	
Kerb Transition Symbol	TEXT					KTS <sup>2</sup>
Leader Lines and Arrows	TEXT	3	0	1		
Limit of Works Text	TEXT_LIMIT	8	0	2	2.5/27	
Limit of Works Linework	TEXT_LIMIT	8	0	2		
Match Line Text	TEXT_LIMIT	8	0	2	2.5 / 27	
Match Lines	TEXT_LIMIT	0	0	2		
North Point	TEXT					north <sup>1</sup>
Pram Crossing	MISC_PATH					tgsi_pram_crossing <sup>2</sup>
River and Creek Names	TEXT_RIVERNAMES	8	0	2	2.5 / 27	
Road Names	TEXT_ROADNAMES	8	0	2	2.5 / 27	
ROW Boundary Notes	BOUNDARY_TEXT	8	0	2	2.5 / 27	
Services Warning Note	UTILITY_TEXT					warn <sup>1</sup>
Typical Island Treatment	TEXT					island <sup>2</sup>
Temporary Kerbing	KERB_TEMPORARY	0	0	2		

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Design Line - Label	TEXT	8	0	2	25 / 27	
To/From Directional	TEXT	2	0	1	1.8 / 2.7	

**Notes:**

1. Refer to VicRoads Cell Library – Misc Stickers.cel
2. Refer to VicRoads Cell Library – Road Design.cel

**3.10.8 Reference File Listing**

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	
Roadway Functional Layout		black	All roadway features are displayed as a guide except the line of kerb.
3D Strings Model		black	Earthwork batters and batter ticks are displayed from this file. If the verge varies and is greater than 1m it may be displayed from this file.
Existing Pavement Area		23	
Drainage Network Layout	120	16	The file setting only applies when Drainage Plans are supplied <b>separately</b> to Alignment Plans
		black	The file setting only applies when Alignment Plans, Drainage Plans & Sub Surface Design are <b>combined</b>
Subsurface Drainage Layout (optional refer comments)		40	Subsurface file is not normally displayed on Alignment Plans. The file setting only applies when Alignment Plans, Drainage Plans & Sub Surface Design are <b>combined</b> .
Existing Contours		43	Major contours
		37	Minor contours
Signs and Linemarking Layout - Refer to Linemarking & Sign Layouts Standard Set Out Detail - refer to VicRoads website for details)	120	23	The linemarking and pavement markings (arrows and symbols) are only displayed in this override colour.
		varies	Pavement colour fill areas can be displayed if required.
Engineering Feature Survey (FS)	18	9	All linemarking is displayed
	17	40	Strings representing invert of water features
Engineering Enhancement Survey (ES)	19	44	
Engineering Cadastral Base (CB)	43	43	

**3.10.9 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 13
- Sheet No. 14
- Sheet No. 15
- Sheet No. 16
- Sheet No. 17

## 3.11 Drainage Plan

### 3.11.1 Drawing Overview

Drainage Plan drawings are used for the following:

- extraction of quantities
- identification and location of existing drainage to be retained, removed or modified
- identification and location of special drainage treatment and works
- location and set out of drainage network and/or cross culverts
- project specific contract drawings
- staging of construction works.

### 3.11.2 Presentation Options

When the scope of the proposed construction is complex or involved it is recommended that a separate Drainage Plan, including the subsurface design, is produced in conjunction with the Alignment Plan.

When a Drainage Plan, including subsurface design, is provided separately to the Alignment Plan, the scales should be consistent.

When the scope of the proposed construction is not complex it is possible that Drainage Plan, including subsurface design, could be combined with the Alignment Plan. Any combination of the plans should not compromise the readability of the plan.

### 3.11.3 Scale and Chainage Intervals

The guidelines for selecting scales for Drainage Plan drawings are set out in the following table.

#### Drainage Plan Scale

Selection Criteria	Scale
Rural type environment, where details are sparse and the alignment is straight forward.	1:2000
Rural and urban type environment, where there are some construction constraints and the alignment is straight forward.	1:1000
Urban type environment where the alignment is complex and details are important.	1:500

#### Chainage Intervals

Chainage intervals specified along the design line may vary depending on the type of the roadwork.

Use the options below as a guide:

- rural chainage intervals specified along the design line should annotate every 100m and salient points and display every 20m.
- urban chainage intervals specified along the design line should annotate every 20m and salient points and display every 10m.

### 3.11.4 Enhancement Details.

The drawing should be concise and unambiguous and provide sufficient information to distinguish between the existing and proposed enabling the drainage system to be positioned.

General enhancements include:

- design line chainages and salient points
- limits of works

Typical drainage information includes:

- a pit numbering system

- direction of flow
- pipe sizes text
- pipe outlet treatments
- earthwork drain types and treatments including the offset distance, invert level at chainages where there is a change in offset and/or grading, or at inlets and /outlets near culverts
- construction notes.

Typical subsurface drainage information includes:

- sub-surface drainage legend
- pipe grading
- chainage and invert levels of flush out riser and outlets when independently graded
- construction and installation notes and references.

Where the drainage set out details are provided on a separate drawing to the drainage plan both drawings should be cross referenced to each other for clarity.

Drainage plans should be set up so that the chainages can be read in the direction of increasing value from left to right irrespective of the orientation of the North Point.

Ramp chainages are to increase in the same direction as the freeway chainages.

The grid co-ordinates should be arranged so that they are read in the direction of increasing value irrespective of the orientation of the North Point. The grid spacing should be:

**Note:** For chainage & alignment plan (combined) scale = 1:500

Scale	Spacing
1:2000	100m
1:1000	100m
1:500	50m

### 3.11.5 Use of MicroStation 'Live Nesting'

For substantial roadwork contracts consideration should be given to utilising 'live nesting' of reference file groups:

Use of 'Live Nesting' during plan production will reduce time spent when extra files need to be attached or unattached to the Alignment and or Drainage Plans. Refer to Section 1.19 for conditions of use.

### 3.11.6 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'.

The pen table to be used during final plan printing = mscol2.tbl

Pen table contains colour mapping, text substitutions and printer thickness controls

### 3.11.7 Final Drawing Specifications

Drawing specification tables have been based on A3 size final drawings output.

The following table acts as a guide of contents to be included on the plan.



**Drainage Plan Specifications**

Description of Content	Level Name	CO <sup>3</sup>	LC	WT	Printed Text Height (mm)/Font	Cell Name
All Notes	DRAINAGE_TEXT	3	0	1	1.8 / 27	
Cross Reference Notes	TEXT	3	0	1	1.8 / 27	
Culvert/Pipes Sizes	DRAINAGE_TEXT	4	0	1	1.8 / 27	
Design Line	GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4	8	7	2		
Design Line Chainages	GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4_TEXT	8	0	2	2.5 / 27	
Drain Type Text A, B, Catch, etc	DRAINAGE_TEXT	2	0	1	1.8 / 27	
Grid & Annotation	TEXT_GRID	16	0	0	1.8 / 27	
Inset Information	TEXT	3	0	1	1.8 / 27	
Limit of Works Text	TEXT_LIMIT	8	0	2	2.5 / 27	
Limit of Works Linework	TEXT_LIMIT	8	0	2		
Match Line Text	TEXT_LIMIT	8	0	2	2.5 / 27	
Match Lines	TEXT_LIMIT	0	0	2		
North Point	TEXT					north <sup>1</sup>
Notes on Existing Services	UTILITY_TEXT	3	0	1	1.8 / 27	
Pit Number Box & Text	DRAINAGE_STRUCTURE_NUMBER				1.8	pitnum <sup>2</sup>
River and Creek Names	TEXT_RIVERNAMES	8	0	2	2.5 / 27	
Road Names	TEXT_ROADNAMES	8	0	2	2.5 / 27	
ROW Boundary Notes	BOUNDARY_TEXT	8	0	2	2.5 / 27	
Services Warning Note	UTILITY_TEXT					warn <sup>1</sup>
Pit Schedule Table	TEXT				1.8 / 28	psched <sup>2</sup>
Sub-surface Drain Legend	DRAINAGE_TEXT					ssdleg <sup>1</sup> (varies)
To/From Directional Text and Linework	TEXT	2	0	1	1.8 / 27	
Subsurface Invert Levels/ Drain	DRAINAGE_TEXT	40	0	1	1.8 / 27	

**Notes:**

1. Refer to VicRoads Cell Library – Misc Stickers.cel
2. Refer to VicRoads Cell Library – Road Design.cel
3. Care must be taken between **Screen Colour** and **Printed Colour** and will be dependent on the program used to produce the Drainage Plans.

### 3.11.8 Reference File Listing

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	
Roadway Functional Layout	16	16	All roadway features are displayed as a guide except the line of kerb.
3D Strings Model	16	16	Earthwork batters and batter ticks are displayed from this file. If the verge varies and is greater than 1m it may be displayed from this file.
Existing Pavement Area		23	
Drainage Network Layout		black	The file setting when Drainage Plans are supplied separately to Alignment Plans
Subsurface Drainage Layout		40	
Existing Contours		43	Major contours
		37	Minor contours
Design Contours / Land Forming		black	
Signs and Linemarking Layout	16	16	All linemarking is displayed
Engineering Feature Survey (FS)	18	9	
	17	40	Strings representing invert of water features
Engineering Enhancement Survey (ES)	19	44	
Engineering Cadastral Base (CB)	43	43	

### 3.11.9 Example Drawing

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 18

## 3.12 Drainage Longitudinal

### 3.12.1 Drawing Overview

Drainage Longitudinal drawings are used for the following:

- extraction of quantities
- identification of existing pits or pipes that are to be retained
- identification and location of special construction treatment and works
- location and set out of pit and pipes
- staging of construction works.

### 3.12.2 Scale

Drainage Longitudinal drawings are drawn at a scale exaggeration of 5:1 and the nominal scale being Horizontal 1:1000 and Vertical 1:200 or Horizontal 1:500 and Vertical 1:100.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.12.3 Enhancement Details

The following detail and reference notes are typically shown on the drainage longitudinal section.

- critical service details including levels and approximate location
- drainage outlet details including names of rivers and creeks
- highway, roads and ramps names
- pipes / culvert details and classification
- surface treatment including pavement boxing depth, beaching, etc
- pit schedules may be included or placed on a separate sheet
- outlet structures.

#### 3.12.3.1 Pipe / Culvert Details

Pipe/Culvert details are to be placed under the relevant section of the pipe shown on the drainage longitudinal.

The typical details to be specified are:

- inlet/outlet levels (3 decimal places)
- size/diameter and class
- number of cells
- length (centre to centre - 3 decimal places)
- pipe slope (% - 3 decimal places)
- special treatment notes
- construction details, such protection of shallow pipes during construction.

The outlet and inlet invert levels are taken at the centre of the pit shaft and are specified under the relevant pipe section of the drainage longitudinal. The inlet and outlet level for culvert endwall and wingwall is the set out point at the outer face of the wall.

The length of a pipe is measured from the centre of the pit shaft to the centre of pit shaft taking into consideration (i) horizontal curves and (ii) the slope of the pipe. A culvert length is adjusted to unit lengths of 1.22m or 2.44m or as per manufactures specifications.

The specific pipe slope needs to be sufficiently accurate so that field staff can calculate the stated pipe invert level using the pipe length and slope. As a general rule the pipe slope needs to be specified to three figures.

**Note:** The following notes should be included on the drawing:

1. Pipe/culvert labels denote No. of cells, size (DIA./WXH) class, type (if not RCP)
2. Longitudinal section also includes slope, length along slope and invert levels
3. Pipe invert levels, lengths and slopes given to centre of pit shaft, refer to VicRoads Standard Drawings
4. Longitudinal sections show pipe invert levels
5. Pit schedule shows pit invert levels.

### 3.12.3.2 Pit Schedule

A pit schedule should only include information relevant to the drainage longitudinal section shown on the drawing. The pit schedule should contain the following details:

- pit number
- pit type including haunched pits, wingwalls, endwalls
- pit dimensions – length, width and depth
- pit, endwall and wingwall invert levels (3 decimal points)
- pit, endwall and wingwall locations (3 decimal points)
- face bearing of the pit, endwall and wingwall in degrees and minutes
- reference to standard and special drawings
- general remarks (optional).

The pit levels specified are taken at the centre of the pit shaft with the top level being the level at the set out point of the pit. The invert level is the level of the pipe if extended to the centre of the pit shaft as shown in VicRoads Standard Drawing – Kerbs.

**Note 1:** Where pipes are to be laid on steep slopes it is desirable to specify the actual pipe inlet and outlet invert levels in the pit that they have been calculated to and the pipe length.

**Note 2:** A note should be placed on the drawing clearly stating where the calculated pipe inlet and outlet invert levels in the pit have been calculated to and the pipe lengths.

### 3.12.4 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'.

The pen table to be used during final plan printing = mono1.tbl.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.12.5 Final Drawing Specifications

Drawing specification tables have been based on A3 size final drawings output.

The following table acts as a guide of contents to be included on the plan.

#### Drainage Longitudinal Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Beaching	DRAINAGE_BEACHING	3	0	1		beaching_drain <sup>2</sup>
Boxing	PAVEMENT_BOXING	7	0	0		
Design Surface Line	SURFACE_DESIGN	8	0	2		
Existing Pavement	PAVEMENT_EXISTING	7	Road Xsect Hatch <sup>1</sup>	0		
Existing Surface Line	SURFACE_EXISTING	2	5	1		
Existing Pipe/Culvert Line	DRAINAGE_PIPE	4	2	2		

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Pipe/Culvert Line	DRAINAGE_PIPE	4	0	2		
Existing Pit Lines	DRAINAGE_PIT	5	2	3		
New Pit Lines	DRAINAGE_PITS	5	0	3		
Pit Number Box & Text	DRAINAGE_STRUCTURE_NUMBER				1.8 / 27	pitnum <sup>2</sup>
Pit Leader Lines	DRAINAGE_STRUCTURE_NUMBER	3	0	1		
General Text	TEXT	3	0	1		
Pit Schedule Table	TEXT	3	0	1	1.8 / 28	psched <sup>2</sup>
Invert/Outlet Levels	DRAINAGE_TEXT	4	0	1	1.8 / 27	
Pipe/Culvert Size, Grade, Length	DRAINAGE_TEXT	4	0	1	1.8 / 27	
Utility Services	UTILITY_GAS_UNDERGROUND UTILITY_ELECTRICITY_UNDERGROUND UTILITY_SEWER_UNDERGROUND UTILITY_WATER_UNDERGROUND	2	2	1		
Utility Text	UTILITY_TEXT	2	0	1	1.8 / 27	

**Notes:**

1. Refer to VicRoads Custom Linestyles.pdf – General Group
2. Refer to VicRoads Cell Library – Road Design.cel

**3.12.6 Reference File Listing**

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	

**3.12.7 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 19
- Sheet No. 20
- Sheet No. 21

## 3.13 Pavement Type Limits

### 3.13.1 Drawing Overview

Pavement Type Limits drawings are used for the following:

- identification and location of different pavement types and treatment works
- staging of construction works
- extraction of quantities.

### 3.13.2 Presentation Options

When the Pavement Detail Drawing is insufficient to describe complex or involved pavement types for the scope of the roadwork involved it is recommended that a separate Pavement Type Limits drawing is produced.

### 3.13.3 Scale and Chainage Intervals

Generally, when provided, the selected scale for Pavement Type Limits drawings should be consistent with the Alignment Plans.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

Chainage intervals specified along the design line may vary depending on the type of the roadwork. Use the options below as a guide.

- rural chainage intervals specified along the design line should annotate every 100m and salient points and display every 20m.
- urban chainage intervals specified along the design line should annotate every 20m and salient points and display every 10m.

### 3.13.4 Enhancement Details

The following details and reference notes are typically used on this type of drawing:

- limits of works
- special treatments or requirements
- pavement rehabilitation treatment notes
- pavement transition details
- footpaths, bicycle paths pavement, notes
- design line chainages.

Plans should be set up so that the chainages can be read in the direction of increasing value from left to right irrespective of the orientation of the North Point.

### 3.13.5 Use of MicroStation 'Live Nesting'

For substantial roadwork contracts consideration should be given to utilising 'live nesting' of reference file groups.

Use of 'Live Nesting' during plan production will reduce time spent when extra files need to be attached or unattached to the Alignment and/or Drainage Plans, refer to Section 1.19 for conditions of use.

### 3.13.6 Final Printed Plan

The pen table to be used during final plan printing = msc02.tbl.

### 3.13.7 Final Drawing Specifications.

Drawing specification tables is based on A3 size final drawings output.

The following table acts as a guide of contents to be included on the plan.

**Pavement Type Limits Specifications**

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Design Line	GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4	8	7	2		
Design Line Chainage	GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4_TEXT	8	0	2	2.5 / 27	
Grid & Annotation	TEXT_GRID	16	0	0	1.8 / 27	
Limit of Works Linework	TEXT_LIMIT	8	0	2		
Limit of Works Text	TEXT_LIMIT	8	0	2	2.5 / 27	
Match Line Text	TEXT_LIMIT	8	0	2	2.5 / 27	
Match Lines	TEXT_LIMIT	0	0	2		
North Point	TEXT					north <sup>1</sup>
Notes on Existing Services	UTILITY_TEXT	3	0	1	1.8 / 27	
Pavement Notes	TEXT	3	0	1	1.8 / 27	
Pavement Type Legend	TEXT	4	0	1	1.8 / 27	
River & Creek Names	TEXT_RIVERNAMES	3	0	1	2.5 / 27	
Road Names	TEXT_ROADNAMES	8	0	2	2.5 / 27	
To/From Directional Text & Linework	TEXT	2	0	1	1.8 / 27	
Design Line - Label	TEXT	8	0	2	2.5 / 27	

**Notes:**

1. Refer to VicRoads Cell library – Misc Stickers.cel

**3.13.8 Reference File Listing**

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	
Roadway Functional Layout		black	
Pavement Type Limit Plan		varies	
Existing Pavement Area		23	
Engineering Feature Survey (FS)	18	9	
	17	40	Strings representing invert of water features
Engineering Enhancement Survey (ES) Optional File	19	44	
Engineering Cadastral Base (CB)	43	43	

**3.13.9 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 22
- Sheet No. 23

## 3.14 Detail Plan

### 3.14.1 Drawing Overview

Detail Plan drawings are used for the following:

- extraction of quantities
- identification and location of special construction treatment and works
- location and set out of the road alignment
- project specific contract drawings
- staging of construction works.

### 3.14.2 Scale and Chainage Intervals

The guidelines for the selection of scales for Detail Plan are set out in the table below:

#### Detail Plans

Selection Criteria	Scale
Environment where set out and construction requires comprehensive information/details.	1:500
Environment where details are important to the design and construction outcome.	1:250

The 1:250 scale is used for inserts in A3 drawings, or as the nominal scale suitable for A1 final drawings. Where an A1 size drawing is required, the A3 standards are applied and the A1 drawing be created through the plotting process, e.g. plotted at twice the scale.

The chainage intervals specified along the design line should be every 20m and at the salient points.

### 3.14.3 Enhancement Details.

Particular attention must be given to providing information necessary to set out the project. This information needs to be concise and unambiguous.

Typical setting out details includes:

- location and size of conduits
- kerb and channel salient points and radii
- contours
- construction set out details for kerb and channel
- surface treatments.

### 3.14.4 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'.

The pen table to be used during final plan printing = mono1.tbl.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.14.5 Final Drawing Specifications

Drawing specification tables have been based on A3 size final drawings output.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.



**Detail Plan Specifications**

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
<b>General Details</b>						
Cross Reference Notes	TEXT	8	0	2	2.5 / 27	
Grid & Annotation	TEXT_GRID	16	0	0	1.8 / 27	
North Point	TEXT					north <sup>1</sup>
River & Creek Names	TEXT_RIVERNAMES	8	0	2	2.5 / 27	
Road Names	TEXT_ROADNAMES	8	0	2	2.5 / 27	
To/From Directional Text & Linework	TEXT	2	0	1	1.8 / 27	
<b>Construction Details</b>						
Design Line	GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4	8	7	2		
Design Line Chainage	GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4_TEXT	8	0	2	2.5 / 27	
Limit of Works Linework	TEXT_LIMIT	8	0	2		
Limit of Works Text	TEXT_LIMIT	8	0	2	2.5 / 27	
Setout Diagram						SOARC
Design Major Contours	SURFACE_DESIGN_CONTOUR_MAJOR	8	0	2		
Design Minor Contours	SURFACE_DESIGN_CONTOUR_MINOR	3	0	1		
Design Contour Text	SURFACE_DESIGN_CONTOUR_TEXT	3	0	1	1.8 / 27	
Design Line - Label	TEXT	8	0	2	2.5 / 27	
<b>Kerb and Channel Details</b>						
Kerb and Channel Type	TEXT	4	0	1	1.8 / 27	
Kerb and Channel Radii	TEXT	3	0	1	1.8 / 27	
Salient Point Circle & Text	TEXT_SETOUT_DETAIL				1.8 / 27	setout_point_in_circle_18_double <sup>2</sup> setout_point_in_circle_18_triple <sup>2</sup>
Temporary Kerbing	KERB_TEMPORARY	0	0	2		
Kerb Transition Symbol	TEXT					KTS <sup>2</sup>
Kerb Outlet Diagram	TEXT					KRBout <sup>2</sup>
Match Lines	TEXT_LIMIT	0	0	2		
<b>Set Out Table</b>						
Figures/Text	TEXT	3	0	1	1.8 / 28	
Table Line	TEXT	3	0	1		

**Notes:**

1. Refer to VicRoads Cell Library – Misc Stickers.cel
2. Refer to VicRoads Cell Library – Road Design.cel
3. Refer to VicRoads Cell Library – Misc Symbols.cel
4. Refer to VicRoads Cell Library – TM.cel

**3.14.6 Reference File Listing**

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	
Roadway Functional Layout		black	All roadway features are displayed as a guide except the line of kerb.
Drainage Network Layout		black	Display pits only
Engineering Feature Survey (FS)	18	9	
	17	40	Strings representing invert of water features
Engineering Enhancement Survey (ES)	19	44	
Engineering Cadastral Base (CB)	43	43	
Existing Contours	16/23	16/23	

**3.14.7 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 24
- Sheet No. 25
- Sheet No. 26

## 3.15 Lip Profiles

### 3.15.1 Drawing Overview

Lip Profiles drawings are used for the following:

- to show the lip of the kerb and channel in areas not adequately covered by the cross sections, e.g. traffic islands, kerb returns, etc
- locate the high and low points, and respective reduced levels
- extraction of reduced levels for intermediate setting out points
- confirmation of setting out details and checks on contours
- extraction of kerb and channel quantities
- an overview of the kerb profile shape
- starting point - the starting and end point where possible should be at an even design line chainage.

### 3.15.2 Scale

Lip Profiles are drawn with a scale exaggeration of 25:1 and the nominal scale being Horizontal 1:500 and Vertical 1:20.

An alternative scale exaggeration of 50:1 with nominal scale being Horizontal 1:400 and Vertical 1:8 can be adopted for small projects where contours of the final surface are not provided. This allows field personnel to interpret the levels to within 5mm directly from the drawing

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.15.3 Enhancement Details

The following details and reference notes are typically used on the Lip Profiles:

- chainage and reduced levels at high and low grading point particularly when the grading is flat
- kerb type and where applicable the transition point location between kerbs
- drainage pit and kerb opening locations
- additional information such as chainage and reduce level at mid and quarter ordinates points may be required along a large radius where the grading is variable.

Kerb and channel profiles are typically required in areas where the channel grading is variable and the cross section intervals are inadequate to establish kerb levels, for example, within intersections, traffic islands, large tapers, etc

Depending on the number of profile drawings and the complexity of the detail alignment plans it may be desirable to:

- group all the lip profile sheets in one section
- arrange the drawing sheets so that the lip profile drawing and the corresponding detail plan are adjacent to each other
- combine the setting out details and the lip profiles on the same drawing sheet.

### 3.15.4 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'.

The pen table to be used during final plan printing = mono1.tbl.

Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.15.5 Final Drawing Specifications

Drawing specification tables is based on A3 size final drawings output.

The following table acts as a guide of contents to be included on the plan.

### Lip Profiles Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Axis Linework	SECTIONS	4	0	1		
Axis Text	SECTIONS	4	0	1	1.8 / 27	
Chainage & Reduced Levels Listing	SECTIONS	4	0	1	1.8 / 27	
Lip Profile Grading	SURFACE_DESIGN	8	0	2		
Lip Profile - Label	TEXT	8	0	2	2.5 / 27	
Reduced Level Grid	SECTIONS	7	2	0		
Salient Point Circle & Text	TEXT_SETOUT_DE TAIL				1.8 / 27	setout_point_in_circl e_18_double <sup>1</sup> setout_point_in_circl e_18_triple <sup>1</sup>
Salient Point Leader Line	TEXT	7	0	0		
Sub Headings e.g. Kerb Chainage, Design Surface	SECTIONS	4	0	1	1.8 / 27	

#### Notes:

1. Refer to VicRoads Cell Library – Road Design.cel

### 3.15.6 Reference File Listing

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	

### 3.15.7 Example Drawing

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 27
- Sheet No. 28

## 3.16 Longitudinal Sections

### 3.16.1 Drawing Overview

The Longitudinal Section drawings are used to represent the vertical geometry of the roadway.

Longitudinal details combined with the crossfall information are used by the surveyors and constructors in various programs to obtain cut and fill values for both earthworks and pavement construction.

### 3.16.2 Scale and Chainage Intervals.

The guidelines for the selection of longitudinal sections are set out in the table below, incorporating a standard scale ratio of 10:1.

#### Longitudinal Sections

Selection Criteria	Scale
Freeway and Divided Highway standard facilities proposed for a rural type environment	Horz. 1:5000, Vert. 1:500 or Hor. 1:4000, Vert. 1:400
Highway, Main roads, Access Roads and Freeway Ramps proposed for a urban type environment	Horz. 1:2000, Vert. 1:200 or Horz. 1:1000, Vert. 1:100
Short lengths of Access Roads or Urban Roads	Horz. 1:1000, Vert. 1:100 or Horz. 1:500, Vert. 1:50

Chainage intervals for longitudinal section drawings should match the cross section interval and chainage. The table below sets out the guidelines for selection.

#### Longitudinal Sections

Selection Criteria	Chainage Interval
Rural Type Environment - 10m interval maybe required for the auto grade	20m or 10m
Urban Type Environment	10m
Ramps	10m

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.16.3 Enhancement Details.

The following details and reference notes are typically used on the longitudinal sections:

- existing and proposed bridge structures including start and end chainage, depth and critical clearance of structure
- existing and proposed major culverts
- critical service details including type, level and approximate location
- the centre line of creeks and rivers including flood levels and their names
- the centre line/design line of cross roads, ramps and their names
- the centre line of railway tracks and their service names
- the centre line of major services
- label work constructed by others
- cross hatching of existing pavement
- must include K values.

### 3.16.4 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'. The pen table to be used during final plan printing = mono1.tbl. The pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.16.5 Final Drawing Specifications

Drawing specification tables are based on A3 size final drawings output.

The following table acts as a guide of contents to be included on the plan.

#### Longitudinal Sections Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Axis Linework	SECTIONS	4	0	1		
Axis Text	SECTIONS	4	0	1	1.8 / 27	
Axis Ticks	SECTIONS	3	0	1		
Cross Road Design Line	TEXT	4	7	1		
Cross Road Text	TEXT	3	0	1	1.8 / 27	
Design Gradeline	GEOMETRIC_VERTICAL_ALIGNMENT_1 to GEOMETRIC_VERTICAL_ALIGNMENT_4	8	0	2		
Design Surface	SURFACE_DESIGN	8	0	2		
General Text	TEXT	3	0	1	1.8 / 27	
Leader Lines	TEXT	4	0	1	1.8 / 27	
Existing Pavement	PAVEMENT_EXISTING	7	Road Xsect Hatch <sup>1</sup>	0		
Existing Surface Line	SURFACE_EXIST	2	3	1		
Intersection Triangles & Salient Marks	GEOMETRIC_VERTICAL_ALIGNMENT_1 to GEOMETRIC_VERTICAL_ALIGNMENT_4	2	0	1		
Intersection Point Text	GEOMETRIC_VERTICAL_ALIGNMENT_1_TEXT to GEOMETRIC_VERTICAL_ALIGNMENT_4_TEXT	4	0	1	1.8 / 27	
Length of Curve, K Value & Salient Point Text	GEOMETRIC_VERTICAL_ALIGNMENT_1 to GEOMETRIC_VERTICAL_ALIGNMENT_4	4	0	1	1.8 / 27	
Grade Text	GEOMETRIC_VERTICAL_ALIGNMENT_1_TEXT to GEOMETRIC_VERTICAL_ALIGNMENT_4_TEXT	4	0	1	1.8 / 27	
Reduced Level Grid	SECTIONS	7	2	0		
Sub-headings, e.g. Chainage, Gradeline, Existing Surface	TEXT	4	0	1	1.8 / 27	
Other Surfaces	SURFACE_1 to SURFACE_4	16 <sup>1</sup>	5	2		

#### Notes:

1. Refer to VicRoads Custom Linestyles.pdf – General Group

### 3.16.6 Reference File Listing

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	

### 3.16.7 Example Drawing

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 29
- Sheet No. 30

## 3.17 Cross Sections

### 3.17.1 Drawing Overview

Detailed Cross Section drawings are used for the following:

- cross fall details
- setting out the pavement, shoulder, verges and drainage
- setting out the location of top/toes of batters/fills
- walls and barriers.

### 3.17.2 Scale and Chainage Intervals

The guidelines for the selection of the final cross section drawing scale are set out in the following tables. Cross Sections for projects with pavement overlays or resheets have a nominal scale ratio of 5:1 which may be varied as required.

Selection Criteria	Scale
Freeway and Divided Highway standard facilities with wide ROW proposed for a rural type environment	Hor. and Vert. 1:400, or Hor. and Vert. 1:500
Highways, Main Roads, Access Roads and Ramps generally with narrow ROW proposed for an urban type environment	Hor. and Vert. 1:200 or Hor. and Vert. 1:100 or Hor. 1:200, Vert. 1:100
Projects based on overlays and/or resheets	Hor. 1:200, Vert. 1:40 or Hor. 1:200, Vert. 1:20 or Hor. and Vert. 1:200

**Notes:** Vertical exaggeration may be used in certain designs, e.g. 2:1.

Selection Criteria	Chainage Interval
Rural type environment	10 m - 20 m
Urban type environment	10 m
Ramps with loops	10 m

Closer interval may be considered if appropriate. Chainage intervals for cross sections should match the Longitudinal Section drawing interval and chainage. Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.17.3 Enhancement Details

The following details and reference notes are typically used on Cross Sections:

- start and end chainage for extent of works (e.g. match to existing chainage)
- start and end chainage for existing and proposed bridge structures (optional)
- critical services details including type, level and approximate location
- creek and river names
- cross road, and ramp names
- railway tracks and the train service names
- row boundaries
- footpaths and bicycle paths
- crossfall annotation, to be specified on the first and last cross section of each drawing sheet and where the crossfall varies or changes
- cross hatching of existing pavement
- pavement boxing where the existing pavement is being widened
- walls and barriers
- crossfall arrows may be used for clarity (optional).

Where possible, consideration should be given to showing the pavement boxing, kerb and channel, and fill types to facilitate the extraction of quantities. As this will affect the quality of the DETAIL to be shown on a cross section the requirements need to be confirmed with the client. Where the width of cross section is such that it needs to be drawn on two sheets or continues on another sheet the two drawings should be cross referenced for readability.



### 3.17.4 Final Printed Plan

The drawing is set-up for certain colours to be '*resymbolised*' at 'print time'. The pen table to be used during final plan printing = mono1.tbl. The pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.17.5 Final Drawing Specifications

Drawing specification tables are based on A3 size final drawings output. The following table acts as a guide of contents to be included on the plan.

#### Cross Sections Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Boxing	PAVEMENT_BOXING	7	Road Xsect Shape <sup>2</sup>	1		
Existing Surface Line	SURFACE_EXISTING	2	5	1		
Existing Pavement	PAVEMENT_EXISTING	7	Road Xsect Hatch <sup>1</sup>	0		
Proposed Surface Line	SURFACE_DESIGN	8	0	2		
Pavement Boxing	PAVEMENT_BOXING	0	0	2		
Crossfall / Slope	TEXT	4	0	1	1.8/27	
Fence	MISC_FENCE					fence <sup>2</sup>
Kerbs	KERB					varies <sup>1</sup>
Leader Lines	TEXT	3	0	1		
Noise Barrier	STRUCTURE_NOISE_W ALL					NB <sup>2</sup>
Offsets and reduced levels	TEXT	4	0	1	1.8/27	
PSR Boundary & Text	BOUNDARY					PSR <sup>2</sup>
ROW Boundary & Text	BOUNDARY					ROW <sup>2</sup>
<b>Cross Section Axis Details</b>						
Axis Linework	SECTIONS	4	0	1		
Axis Text	SECTIONS	4	0	1	1.8/27	
Axis Ticks	SECTIONS	3	0	1		
Chainage	SECTIONS	8	0	2	2.5/27	
<b>Enhancement Detail Descriptions</b>						
Feature Linework	TEXT	4	0	0		
Leader Lines	TEXT	4	0	0		
Text	TEXT	3	0	1	1.8/27	

#### Notes:

1. Refer to VicRoads Custom Linetypes.pdf – General Group
2. Refer to VicRoads Cell Library – Road Design.cel

### 3.17.6 Reference File Listing

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock		black	

### 3.17.7 Example Drawing

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 31
- Sheet No. 32
- Sheet No. 33

## 3.18 Sign and Pavement Markings

### 3.18.1 Drawing Overview

Sign and Pavement (Line) Markings drawings are used for the following:

- location and type of Pavement marking to be used
- sign codes and manufacturing sizes for signs, e.g. G2-V1A
- ultimate sign layout to be shown i.e. all new signs and any existing signs that are to be retained. Image of project specific existing signs may be inserted
- dimension of lane widths, shoulder widths, set out points, etc.

As an aid to plan clarity it is recommended that all existing conditions that have been replaced in project works be 'masked out' of final printed plan.

Use of masking should be discussed and confirmed prior to delivery of plans.

### 3.18.2 Scale and Presentation

When a Signs and Pavement Marking drawing is provided the scales should be consistent with the Alignment Plan.

The guidelines for the selection of scales for Signs and Pavement Marking drawings are set out in the following table.

Selection Criteria	Scale
Environment where details are sparse and the installation of Signs and Pavement Marking is straight forward	1:1000
Environment where the detail is complex, e.g. intersections	1:500

Chainage intervals specified along the design line may vary depending on the type of the roadwork. Use the options below as a guide:

- rural chainage intervals specified along the design line should annotate every 100m and salient points and display every 20m.
- urban chainage intervals specified along the design line should annotate every 20m and salient points and display every 10m.

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

### 3.18.3 Enhancement Details

The following details and reference notes are typically used on Signs and Pavement Marking drawings:

- sign location and orientation including existing signs that are to be retained
- special treatment requirements
- notes on the location and types of signs
- refer to standard details in the VicRoads Traffic Engineering Manual (TEM) Volume 2 or other relevant manuals
- proposed DDA treatments may be located on a separate plan. Refer to VicRoads RDNs and TEM regarding DDA requirements. DDA requirements may also be included on traffic signal plans. For bus stop requirements refer to DOT.
- limits of Work, etc
- chainages and chainage ticks
- assembly no. may be identified if a Sign & Post Schedule is included, if requested.

### 3.18.4 Final Printed Plan

Drawing set-up is considered as WYSIWYG.

The pen table to be used during final plan printing = std.tbl.

Pen table contains text substitutions and printer thickness controls.

### 3.18.5 Final Drawing Specifications

The drawing specification table is based on A3 size final drawings output.

The following table acts as a guide of contents to be included on the plan.

#### Sign and Pavement Marking Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
<b>General Details</b>						
Cross Reference Notes	TEXT	0	0	2	2.5 / 27	
Design Line - Chainages	GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT	8	0	2	2.5 / 27	
General Text	TEXT	0	0	1	1.8 / 27	
Match Lines	TEXT_LIMIT	0	0	2		
Match Line Text	TEXT_LIMIT	0	0	2	2.5 / 27	
North Point						north <sup>1</sup>
Road Names	TEXT_ROADNAMES	0	0	2	2.5 / 27	
Services Warning Note						warn <sup>1</sup>
To/From Directional Text	TEXT	2	0	1	1.8 / 27	
Limit of Works Linework	TEXT_LIMIT	0	0	2		
Limit of Works Text	TEXT_LIMIT	0	0	2	2.5 / 27	
<b>Pavement Marking Details</b>						
Dimension Details	TEXT	0	0	1	1.8 / 27	
Salient Point Text & Circle						setout_point_in_circle_18_double <sup>2</sup>
Table Line	TEXT	0	0	1		
Figures/Text	TEXT	0	0	1	1.8 / 28	
<b>Sign Details</b>						
Existing Sign Image	SIGNS	Image				
New Sign Face Panel	SIGNS	Coloured	0	1		various <sup>3</sup>
Sign Numbers	TEXT	0	0	0	1.8 / 27	
Sign Symbols	SIGNS	0	0	1		various <sup>3</sup>

#### Notes:

1. Refer to VicRoads Cell Library – Misc Stickers.cel
2. Refer to VicRoads Cell Library – Road Design.cel
3. Refer to VicRoads Cell Library – TM.cel

### 3.18.6 Reference File Listing

Reference Files	Override Colour	WT Override	Printed Colour	Comments
VicRoads Corporate Titleblock			black	
Roadway Functional Layout - Line of Kerb	8 7		8 7	Roadway features to be displayed are those that may impact on the location of signs and may include: lip, line and back of kerb, barriers, etc
Pavement Marking Layout			black	
Drainage Network Layout	8		8	Only pits are displayed
Engineering Feature Survey (FS)	9		9	This file is clip masked to the limits of the proposed works as necessary

**Notes:**

### 3.18.7 Example Drawing

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 34

## 3.19 Sign Face

### 3.19.1 Drawing Overview

Sign Face drawings are used in conjunction with the VICROADS "Standard Specification for Roadworks Section 860 Manufacture of Road Signs" by the sign manufacturers for:

- estimating purposes
- identification of the types of materials to be used for the construction of the sign
- setting out of the sign face design information.

VicRoads requires the use of "GuidSIGN\_V4" for the development of a sign. When transferring a sign to a VicRoads titleblock, the titleblock should be scaled to correspond with the sign size. All dimensions and specifications required for a sign are contained with "GuidSIGN\_V4".

### 3.19.2 Scale

Scale of these drawings may be varied to provide sufficient clarity and for the deciphering of the dimensioning details.

### 3.19.3 Enhancement Details

The following details and references notes are typically used for Sign Face drawings:

- the letter height and series, e.g. 140 DM, 140 EM, 140 EMod, etc.
- dimensioning from the left hand edge of sign and the letter spacing tables
- reference drawings
- colour and class of retro-reflective material
- sign type
- all details to be displayed on the manufactured sign are to be shown, together with all relevant dimensioning.

Sign face drawings must be in accordance with AS/NZS 1743 Road Signs - Specifications or VicRoads' Manual of Standard Drawings for Road Signs as appropriate.

### 3.19.4 Final Printed Plan

Drawing set-up is considered as WYSIWYG. The pen table to be used during final plan printing = std.tbl. Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.19.5 Final Drawing Specifications

Drawing specification tables are based on A3 size final drawings output, e.g. 1:1000. The following table acts as a guide of contents to be included on the plan, not supplied by "GuidSIGN\_V4".

#### Sign Face Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Dimensioning	TEXT	0	0	1	1.8 / 27	
General Text	TEXT	0	0	1	1.8 / 27	

### 3.19.6 Reference File Listing

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock	0	black	

### 3.19.7 Example Drawing

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 35

## 3.20 Street Lighting

### 3.20.1 Drawing Overview

VicRoads Street Lighting drawings are used for freeway lighting schemes and arterial road lighting schemes which are owned and operated by VicRoads.

VicRoads Street Lighting Drawings show:

- locations, numbers and types of poles and luminaries
- electrical details including point(s) of supply
- limits of schemes

In accordance with VicRoads policy, new lighting on arterial roads is to be installed as distributor-operated. The only exception is where there are only a few new lights which would end up being surrounded by VicRoads-owned lights. Design drawings for distributor-operated schemes must meet the standards of the relevant Distribution Company (i.e. VESI standards). A sample drawing is included in this section for information.

### 3.20.2 Scale

The guidelines for the selection of scales for lighting layout drawings are set out in the following table.

Selection Criteria	Scale
Environment where details are sparse and lighting design is straightforward	1:1000
Intersection environment where details are sparse and lighting design is straight forward	1:500

### 3.20.3 Enhancement Details.

The following details are typically used on Street Lighting drawings: re-order in order of importance?

- bracket outreach (where not noted in titleblock)
- bridge abutments
- clearance to overhead lines as appropriate
- electrical circuit design
- limits of lighting scheme
- luminaries details
- pit and conduit layout
- point(s) of supply, distribution box(es)
- pole locations and types, e.g. JUP, slipbase, impact absorbing
- public transport details, e.g. tram stops and bus stops
- safety barriers
- survey features.

### 3.20.4 Final Printed Plan

Drawing set-up is considered as WYSIWYG. The pen table to be used during final plan printing = std.tbl. Pen table contains colour mapping, text substitutions and printer thickness controls.

### 3.20.5 Presentation Options.

The presentation of Street Lighting drawings for major projects and minor projects is:

- street lighting design                      black
- survey/existing conditions                green
- services                                        red
- roadway design                                blue

### 3.20.6 Street Lighting Drawing Specifications

Drawing specification tables are based on A3 size final drawings output. Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

The following table acts as a guide of contents to be included on the plan.

### Street Lighting Details

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
<b>General Details</b>						
General Text	TEXT	0	0	1	1.8 / 27	
Match Lines	TEXT_LIMIT	0	0	2		
Match Line Text	TEXT_LIMIT	0	0	2	2.5 / 27	
North Point						north <sup>1</sup>
Road Names	TEXT_ROADNAMES	0	0	2	2.5	
ROW Boundary Line	BOUNDARY	1	0	3		
Services Warning Note						warn <sup>1</sup>
Grid and Annotation	TEXT_GRID	16	0	0	1.8 / 27	
ROW Boundary proposed	BOUNDARY_PROPOSED	1	3	3		
To/From Directional	TEXT	0	0	1	1.8 / 27	
Design Line	GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4					
Design Line Chainages	GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4_TEXT					
Legend						
<b>Street Lighting Details</b>						
Bracket length	TEXT	0	0	1	1.8	
Pole Number		0	0	1	1.8	setout_point_in_circle_18_double <sup>2</sup>
Pole Type		0	0	1	1.8	

#### Notes:

1. Refer to VicRoads Cell library – Misc Stickers.cel
2. Refer to VicRoads Cell library – Road Design.cel

### 3.20.7 Reference File Listing

Reference Files	Override Colour	Printed Colour	Comment
Additional Design Information Supplied by Others (e.g. PTC, Consultants, Municipalities, Service Authorities)			
Corporate Titleblock File		black	
Engineering Cadastral Base (CB)	43	43	
Engineering Enhancement Survey (ES)	3	red	Override weights: 2 for overhead electricity otherwise 0
Engineering Feature Survey (FS)	9	9	Override weight: 0
Lighting Layout		Black/green	Design /Existing
Roadway Functional Layout	8	8	Display only relevant features

### 3.20.8 Example Drawing

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Sheet No. 36

## 3.21 Traffic & Pedestrian Signal Plan

### 3.21.1 Drawing Overview

A Traffic or Pedestrian Signal Plan drawing within VicRoads have a unique purpose and structure when compared to other plan types. These drawings are typically considered and treated as 'living documents' which are primarily 'self contained' in respect to their content.

Drawings are stored within the VicRoads Document Management Systems and are typically subject to revision over time.

This Guideline is the only agreed format and standard for new traffic and pedestrian signal plans created for VicRoads and any deviations will not be accepted.

When remodelling an existing signalised site already in MicroStation CADD format, the existing drawing number and titleblock shall remain and a new version, e.g. A, B, C, etc, issued for that plan. The plan shall be prepared in accordance with the existing CADD and presentation format of such plan, whereby basic colour presentation comprises of cyan base information, black for proposed works and red for services. Where the existing presentation format varies from that mentioned within this situation, the Consultant shall refer to the Superintendent (who will seek advice from the relevant VicRoads Technical Services team) for further instruction regarding plan presentation format prior to submitting the quotation.

For existing manual hand drawn plans, where a CADD format is not available or the base information is not adequate, the site shall be re-surveyed, a new drawing number issued and the new plan format and standards requirements shall apply.

The Standard Sign numbers (#1 - #14) are reserved and not to be used for other sign identification. When identifying signs other than 1-14 you will begin numbering from #15 onwards.

### 3.21.2 Document Delivery

Provision of a complying DGN and PDF is now part of the requirements to be met prior to commissioning of traffic and pedestrian signals. Contractors should provide a copy of the master drawing (DGN) and a single 'text searchable' PDF per plan.

The DGN and PDF files will be named according to the issued VicRoads Drawing Number, e.g. 456745.dgn / 456745.pdf. Site number MUST be included within the documents.

A requirement to comply with document delivery is the provision of a Detector Map Drawing with the **final** Traffic Signal Plan.

The Detector Map Drawing is an extract of specific layers that will be used on the Controller Operation Specification (Op Sheets/EPROM) for the traffic signals. Detector Map Drawings of Pedestrian Operated Signals (attached to a signalised intersection) do not need to be provided unless requested.

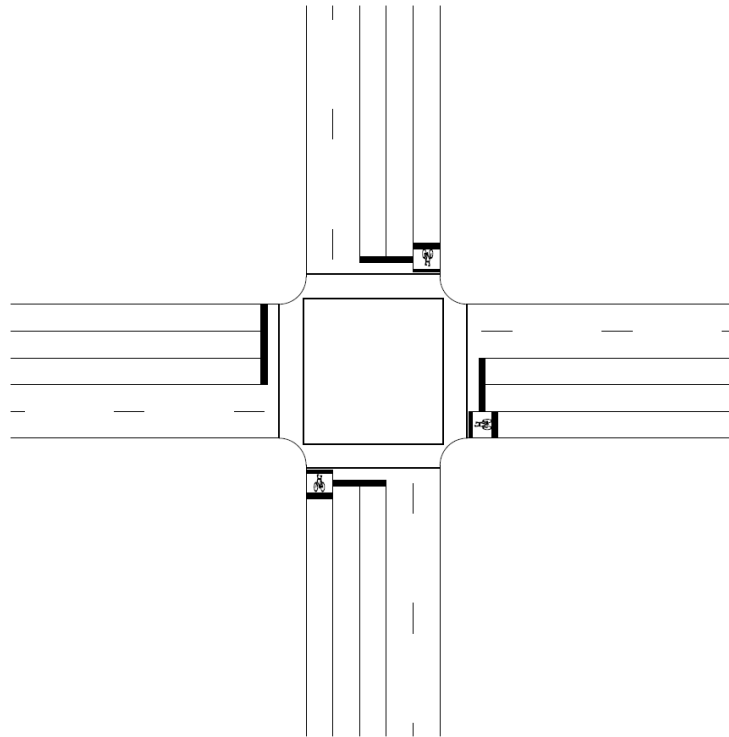
The following details are to be included on the Detector Map Drawing of the Traffic Signal Plan:

- Lip / Line of kerb
- Lane markings, including bus & bicycle markings, but excluding lane arrows
- Tram tracks
- Pedestrian crossing line marking

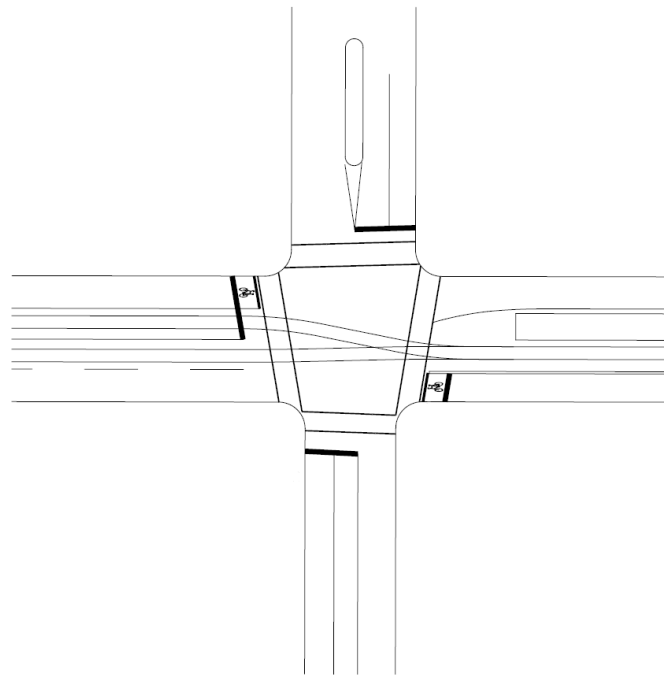
The Detector Map Drawing with the relevant layers must be provided as a .JPEG/.PNG file alongside the **final** Traffic Signal Plan. If an intersection requires multiple Traffic Signal Plans (e.g. large freeway interchange), the Detector Map Drawing should also be divided in the same manner.

For example Detector Map Drawings, refer to the Figures below.

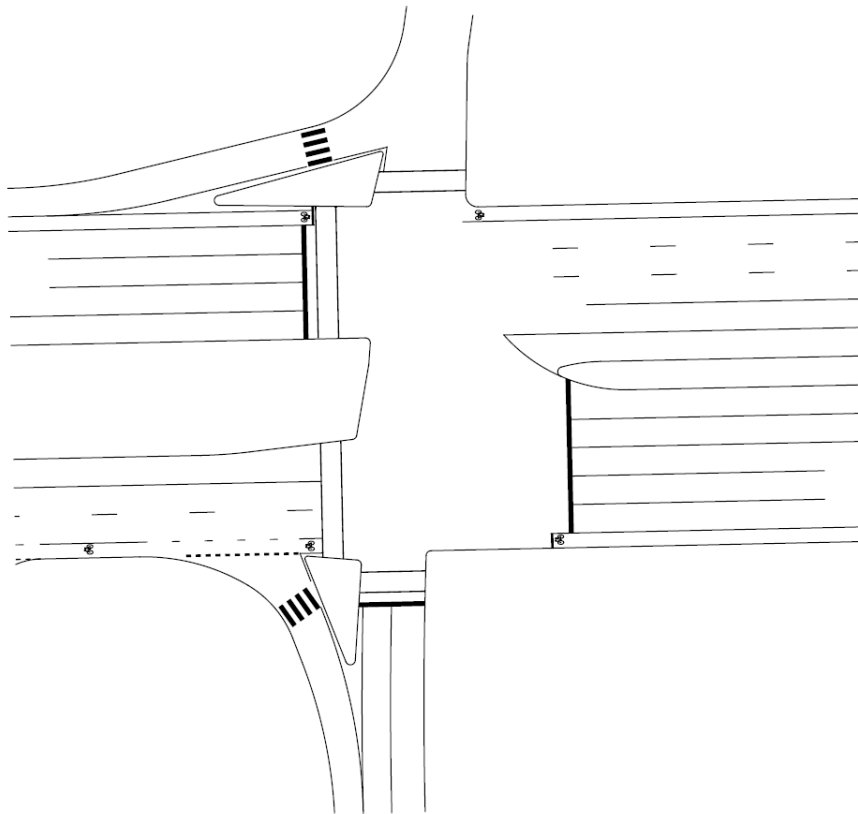




**Fig 3.21.2.1.** Auburn Rd/Burwood Road – Simple cross intersection



**Fig 3.21.2.2.** Nicholson St/Arthurton St/Bylth St– Cross intersection with tram tracks



**Fig 3.21.2.3.** Hume Fwy/Cooper St – One section of a freeway interchange

### 3.21.3 Document Verification

Contractors may, by agreement, seek feedback on CADD compliance when preliminary comments on design are requested from VicRoads. MicroStation DGNs should be provided for that purpose. General comments on presentation format ONLY can be sought with the provision of a PDF.

**Note:** Plan is not to be versioned prior to initial construction.

### 3.21.4 Drawing Size and Scale

Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

The sheet size and scale adopted for the Traffic or Pedestrian Signal plans will vary depending on the nature and complexity of the project with plans drawn at A3 (1:500) or A1 (1:250) accordingly.

Confirm size and scale requirements with client prior to commencement of drawing.

### 3.21.5 Enhancement Details

The following details and reference notes are typically used on Traffic and Pedestrian Signal Drawings, as relevant:

- installation / remodel notes
- pedestal type and number (signal hardware)
- conduit pits, conduit runs, detector loops and detector pits
- phasing and lantern configuration diagrams
- kerb reinstatement, pram crossings and construction notes
- public lighting
- Disability Discrimination Act requirement details and notes
- parking restrictions
- pavement/line markings

- signs location and sign schedule
- special treatment or requirements.
- cross section dimensioning, e.g. lane and median widths, etc
- public transport requirement notes
- photo violation sites
- tram detection and bus detection and treatments
- speed zones.

Refer to VicRoads Traffic Engineering Manual (TEM) Volume 2 for placement of pavement marking at intersections.

The speed zones at intersections need to be stated on the drawing in the General Notes/Cross References area of the Titleblock. This detail is used to determine the yellow and red times for a site.

The Approach Grade for each approach shall be included on the drawing. The Approach Grade information shall be written as "APPROACH GRADE +/-X%", surrounded by a border and located and orientated so that it is clear as to which approach the Approach Grade applies to. Guidance on the calculation of Approach Grade can be found in VicRoads Signal Design and Operation Guideline

Separate Signs and Pavement Marking drawings and Traffic or Pedestrian Signal Plans must be provided for major projects with adequate cross referencing to each other. Both drawing types will be used by the signal operation for preparing the signal controller program.

All road signs (except for street name signs, local council signs, e.g. neighbourhood watch, etc) must be included on minor and small projects (e.g. isolated traffic or pedestrian signal sites). Regulatory signs must be included on the traffic or pedestrian signal drawings as this information is used to determine what signal operation can be implemented at a site during the preparation of the signal controller program. These signs are to be included on the drawings whether or not a separate Signs and Pavement Marking drawing is to be provided.

### 3.21.6 Existing Conditions

All existing conditions will be included within the drawing as Colour 8 (Blue) on level EXISTING with the exception of pavement marking which will be placed as Colour 8 (Blue) on level EXISTING\_PAVEMENT\_MARKING.

The origin of 'existing conditions' graphics, i.e. originating company, file name/job no, date when picked up, will be included within the titleblock General Notes.

### 3.21.7 New Roadwork Detail

All new work will be shown as Colour 0 (Black) and will be on levels that accord with VicRoads' LevelName standards. New line marking is to be shown in Colour 2 (green) and services in Colour 3 (red). The inclusion of new roadwork details on the traffic and pedestrian signal drawing in respect to kerb and channel should be limited to 'Line of kerb'.

### 3.21.8 Text

Standard ISO text sizes, e.g. 1.8/2.5/3.5 mm, are normally used in plan preparation.

In many cases annotations and notes need to be 'reduced' in size to fit space available within drawing area.

This departure from standard sizes is allowable but the minimum printed size will not be less than 1.2mm.

Fonts used within plans:

- Font 27 (ISOREC) – predominate text font in plans
- Font 217 (ARIALBD) – ROAD 'heading' in body of titleblock road names within the body of the plan

- TrueTypeFont (GILL SANS MT) – used/contained in a selection of Parking and Clearway 'SIGNS' to more closely represent 'number styles'.

### **3.21.9 CADD File Requirements**

#### **Format:**

- Bentley Systems' MicroStation DGN is the only format accepted by VicRoads
- DGNs will be created using a VicRoads MicroStation 'seed file'.

#### **Use of Models:**

- DGNs will contain a single 2D model for all plan content
- only ONE plan per model/dgn
- use of multiple models is NOT permitted.

#### **Referencing:**

- there will be no 'external reference files' used with the exception of the VicRoads Corporate Titleblock.

#### **TitleBlock:**

- the current VicRoads Corporate Titleblock will be attached as a reference file using appropriate/required 'format size' and 'Saved View'
- the titleblock will be scaled up to the relevant sheet size, e.g. 1 to 1
- there are to be NO alterations made to the VicRoads Corporate Titleblock whatsoever
- external provider company logos and 'their internal file naming details' are to be placed within the 'master file'.

#### **Symbology Overrides:**

- all elements will be placed within the DGN with defined symbology.
- Symbology Overrides should not be used with the exception of the VicRoads Corporate Titleblock.

#### **LevelName Structure:**

- all elements placed in master file will be located on defined VicRoads LevelNames

#### **Linemarking:**

- only VicRoads Custom LineStyles are to be used.

### **3.21.10 Final Printed Plan**

Drawing set-up is considered as WYSIWYG. The pen table to be used during final plan printing = std.tbl. Pen table contains text substitutions and printer thickness controls.

### **3.21.11 Final Drawing Specifications**

Drawing specification tables include A1/A0 and A3 size final drawing output. The following table acts as a guide of contents to be included on the plan.

**Traffic & Pedestrian Signal Plan Specifications**

<b>Description of Content</b>	<b>Level Name</b>	<b>CO</b>	<b>LC</b>	<b>WT</b>	<b>Printed Text Height (mm)/Font</b>	<b>Cell Name</b>
All graphics representing existing conditions that were formerly sourced from a ground survey or other	EXISTING	8	varies <sup>1</sup>	varies <sup>1</sup>		
All new Paths and DDA requirements	MISC_PATH	0	0	1		various <sup>3</sup>
Any proposed drainage graphics representing pipes, etc	DRAINAGE_PIPE	3		0		
Sign 'Symbols' and actual Sign Graphics	SIGNS					various <sup>3</sup>
Existing Line/Pavement Markings	EXISTING_PAVEMENT_MARKING	8	varies <sup>1</sup>			
Lighting Features	MISC_LIGHTING	0		1		various <sup>3</sup>
New Design 'Line of Kerb'	KERB_LINE	0	0	2		
New Proposed Line/Pavement Markings	PAVEMENT_MARKING	2	varies <sup>1</sup>			
Signal/Pedestrian Lanterns, Controller, Distribution Box, 'Push Buttons', etc	TRAFFIC_SIGNAL	0		1		various <sup>3</sup>
Traffic Detector Pad/Loop	TRAFFIC_DETECTION_LOOP	0		1		various <sup>3</sup>
Traffic Signal Conduits Existing	EXISTING	8	2	1		various <sup>3</sup>
Traffic Signal Conduits Proposed	TRAFFIC_CONDUIT	0	2	1		various <sup>3</sup>
Traffic Light Phasing Existing	TRAFFIC_PHASING	8	varies	1		various <sup>3</sup>
Traffic Light Phasing Proposed	TRAFFIC_PHASING	0	varies	1		various <sup>3</sup>
Lantern Schedule Existing	TRAFFIC_SIGNAL	8	varies	1		various <sup>3</sup>
Lantern Schedule Proposed	TRAFFIC_SIGNAL	0	varies	1		various <sup>3</sup>
Traffic Signal Pits	TRAFFIC_PIT	0	varies	1		various <sup>3</sup>
Installation Notes Heading	TEXT	0	0	1		Installations_Notes
Lantern Heading	TRAFFIC_SIGNAL	0	0	1		Lantern
Phasing Heading	TRAFFIC_PHASING	0	0	1		Phasing
Remodel Notes & Heading	TEXT	0	0	1		Remodel_Notes
Sign Schedule Heading	SIGNS	0	0	1		Sign_Schedule
Pedestal Number	TRAFFIC_SIGNAL	0	0	1		setout_point_in_circle_18_double <sup>3</sup>

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
<b>General TEXT:</b>						
General Text	TEXT	0	0	1	1.8 / 27 (A3) 2.5 / 27 (A0/A1)	
North Arrow						north <sup>1</sup>
Reference Corner Text	TEXT	0	0	2	1.8 / 27 (A3) 2.5 / 27 (A0/A1)	
Property Text	TEXT	0	0	2	1.8 / 27 (A3) 2.5 / 27 (A0/A1)	
Road Names	TEXT_ROADNAME	0	0	0	2.5 / 217 (A3) 5.0 / 217 (A0/A1)	
<b>UTILITIES</b>						
Communication Lines - Overhead	UTILITY_COMMUNICATION_OVERHEAD	3	varies <sup>4</sup>	0		
Communication Lines - Underground	UTILITY_COMMUNICATION_UNDERGROUND	3	varies <sup>4</sup>	0		
Existing Drainage	DRAINAGE_UNDERGROUND	3	drainage line	0		
Gas Features - Underground	UTILITY_GAS_UNDERGROUND	3	varies <sup>4</sup>	0		
Gas Features - Various	UTILITY_GAS	3	varies <sup>4</sup>	0		
Specific notes that relate to Gas Services	UTILITY_GAS_TEXT	3	0	0	1.8 / 27 (A3) 2.5 / 27 (A0/A1)	
Specific notes that relate to Telecommunication Services	UTILITY_COMMUNICATION_TEXT	3	0	0	1.8 / 27 (A3) 2.5 / 27 (A0/A1)	
Services Warning Sticker	UTILITY_TEXT	3	0	1		warn <sup>2</sup>
Signal Hardware Note	TEXT	3	0	1		TRAF_500 <sup>2</sup>

**Notes:**

1. Refer to VicRoads Custom Linestyles.pdf – Line marking group
2. Refer to VicRoads Cell Library – Misc Stickers.cel
3. Refer to VicRoads Cell Library – TM.cel
4. Refer to VicRoads Custom Linestyles.pdf – Utilities/Services group

**3.21.12 Reference File Listing**

Reference Files	Override Colour	Printed Colour	Comments
VicRoads corporate titleblock	0	black	

**3.21.13 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Drawing No. 269687
- Drawing No. 269687A

## 3.22 Disability Discrimination Act (DDA) Compliance Plan

### 3.22.1 Drawing Overview

A Disability Discrimination Act (DDA) Compliance Plan drawing is typically used for the following:

- the installation of Warning and Directional Tactile Ground Surface Indicators (TGSIs)
- the construction of Pram Crossings and Footway Connections as specified.

The installation of Warning and Directional TGSIs and construction of Pram Crossings are to be in accordance with AS1428.

### 3.22.2 Scale and Presentation

The Disability Discrimination Act (DDA) Compliance Plan is produced to a scale that clearly illustrates the scope of proposed works on one plan.

The sheet size and scale adopted for the Disability Discrimination Act (DDA) Compliance Plan should be drawn at A3 (1:250) or A1 (1:125) accordingly.

### 3.22.3 Referencing

The Disability Discrimination Act (DDA) Compliance Plan will reference in the relevant Traffic Signal Plan, Alignment Plan, Signs and Line Marking or Design Plan showing the base information and services accordingly together with VicRoads Corporate TitleBlock.

Redundant level information in the base reference file is to be turned off to produce the Disability Discrimination Act (DDA) Compliance Plan base information. The Master file will be enhanced in accordance with final drawing presentation.

### 3.22.4 LevelName Structure

All elements placed in the master file will be located on defined VicRoads LevelNames

### 3.22.5 Final Printed Plan

Drawing set-up is considered as WYSIWYG. The pen table to be used during final plan printing = std.tbl. Pen table contains text substitutions and printer thickness controls.

### 3.22.6 Final Drawing Specifications

The drawing specification table is based on A3 (1:250) size final drawings output. Text heights will have to be modified to accommodate alternative scales to equal final required printed text height.

#### Alignment Key Plan Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
All new Paths and DDA requirements	MISC_PATH	0	0	1		various <sup>2</sup>
General Text	TEXT	0	0	1	1.8 / 27 (A3) 2.5 / 27 (A0/A1)	
Road Names	TEXT_ROADNAMES	0	0	1	1.8 / 217 (A3) 2.5 / 217 (A0/A1)	
North Point	TEXT					north <sup>1</sup>
Property Names	TEXT	8	0	1	1.8 / 27 (A3) 2.5 / 27 (A0/A1)	
Services Warning Note						warn <sup>1</sup>
Signal Hardware Note						TRAF_500 <sup>1</sup>

#### Notes:

- Refer to VicRoads Cell Library – Misc Stickers.cel
- Refer to VicRoads Cell Library – TM.cel

### 3.22.7 Reference File Listing

Reference Files	Override Colour	Printed Colour	Comments
VicRoads Corporate Titleblock	0	0	
Traffic Signal Plan – Base	8	8	
Traffic Signal Plan – Pavement Markings	2	2	

### 3.22.8 Example Drawing

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- Drawing No. 269689



## Section 4 – Landscape Drawings

### 4.1 Landscape General

#### 4.1.1 Plan Overview

The purpose of this section is to guide Landscape Architects in the preparation of final drawings for Design and Construction contracts. All landscape plans shall be provided as MicroStation (e.g. dgn) files.

#### 4.1.2 Limitations

These requirements are incomplete and do not contain requirements for the phases of design including:

- Preparation of a concept for design and construct tender documents
- Preparation and refinement of landscape designs during a design and construct document
- Preparation of landscape drawings for construction

### 4.2 Landscape Introduction Drawings

Landscape Introduction drawings include:

- Face/Cover Sheet
- Table of Contents
- Locality Plan
- Key Plan.

These may be collated as a single sheet if the clarity of information is not compromised.

#### 4.2.1 Face Sheet Overview

The Face Sheet provides an easily identifiable cover that helps protect the document contents. The details contained on the Face Sheet should enable you to identify the job, without the need to open the document set.

#### 4.2.2 Table of Contents Overview

The Table of Contents is a summary index listing all final drawings included in a contract. It is used as an easy guide to referencing a particular final plan of interest to a relevant sheet number.

The Table of Contents contains a listing of all final plans in sequential order of sheet number followed by drawing number and description can be divided into various drawing types.

On smaller jobs the Table of Contents may be included on the locality plan.

#### 4.2.3 Locality Plan Overview

The purpose of the Locality Plan is to show contractors and/or consultants the site of the proposed works in relation to the surrounding areas and geographical features.

#### 4.2.4 Key Plan Overview

The purpose of the Key Plan is to assist in locating Planting Plans and/or CADD Files.

The Key Plan is typically used for a quick and easy pictorial reference to illustrate which Planting Plan cover different areas of the contract.

The Key Plan is also used as a cross reference for sheet numbers, drawing numbers and CADD files. On smaller jobs the Key Plan may also form the Locality Plan.

#### 4.2.5 Landscape Introduction Drawing Specifications

Under development – Please contact VicRoads Landscape and Urban Design team for further details on these specification requirements.

## 4.3 Landscape Detail Drawings

### 4.3.1 Landscape Detail Overview

VicRoads does not have standard landscape drawings, and most requirements for new landscapes are outlined in Section 720 Landscape, contained in the standard specification for roadworks and bridgeworks.

Together with the specification, landscape plans and schedules, the Landscape Detail drawings must provide any additional information to ensure the contract requirements are clearly explained to the landscape contractor. Landscape detail drawings may include:

- specific cross sections
- planting, seeding, mulching (if requirements are additional to section 720)
- ripping requirements (if requirements are additional to section 720)
- planting offsets
- planting patterns
- swale drain planting
- planting adjacent to walls
- planting adjacent to paths or boardwalks
- planting adjacent to verge/kerb
- rock or retaining wall treatments
- wetland details
- rock features
- existing tree treatment, though tree protection requirements should be incorporated into the road design drawings to ensure they are not missed by the construction contractor.
- material types or standards (if requirements are additional to section 720)
- materials sizes and dimensions (if requirements are additional to section 720)
- construction dimensions, depths and locations.
- identification and location of existing features that are to be retained
- project specific construction plans, particularly for hard landscape elements such as seating or shelters.

### 4.3.2 Landscape Detail Drawing Specifications

Under development – Please contact VicRoads Landscape and Urban Design business area for further details on these specification requirements.

## 4.4 Landscape Master Planting Schedule

### 4.4.1 Master Planting Schedule Overview

A Master Planting Schedule forms part of the complete planting plan documentation. A planting plan shall include a Master Schedule, used by the landscape contractor to identify:

- plant species and numbers required for the entire contract
- plant species and numbers required each sheet
- container sizes (if requirements are additional to section 720).

### 4.4.2 Enhancement Details

The following details and reference notes are typically used on Master Planting Schedule:

- plant species – both by botanical and common name
- plant species should be broken into groups e.g. trees, large shrubs, etc
- size e.g. tube stock, cell/tube, advanced, direct sown, etc (if requirements are additional to section 720)
- planting area
- total quantity of individual species and quantity of species per Planting Plan
- titleblock.

#### **4.4.3 Sample Landscape Master Planting Schedule**

Please contact VicRoads Landscape and Urban Design for further information on the preparation or examples of planting schedules.

### **4.5 Landscape Planting Drawings and Planting Schedule**

#### **4.5.1 Plan Overview**

Planting Plans and Planting Schedules form part of the complete planting documentation. A planting plan should be accompanied by a planting schedule which is used by the landscape contractor for the following:

#### **4.5.2 Planting Plan**

The planting plan shall include:

- set out of planting sites and ground preparation. Area measurements should be adjusted to reflect slope rather than being measured as a horizontal surface.
- location and set out of plants and mulching
- street or other furniture e.g. seating, bins, shelters etc.
- paving, surfacing, patterning and other features such as art/sculpture
- identification and location of existing features that are to be retained, and new features to be added
- existing vegetation to be protected or removed
- identification of planting requirements, through links to the planting schedule
- staging and extent of construction works
- location of landscape handwork and construction works, e.g. paves, walls, swale drains
- a legend for all elements. The legend may also be repeated on the planting schedule to improve the clarity of the drawings.

#### **4.5.3 Planting Schedule**

For small or simple projects, individual planting schedules may be incorporated in the master plan (i.e. avoiding the need for a planting schedule sheet for each plan sheet) or onto the planting plan itself if legibility is not compromised.

The planting schedule shall include:

- plant species – by both botanical and common names
- plant species should be broken into groups e.g. trees, large shrubs, etc
- plant numbers per sheet, by species, by planting area, by mix type and by sheet
- a simple denotation if a species is indigenous to the site (and subject to genetic requirements for indigenous plant supply)
- species of plants in plant mixes
- spacing or density of plants
- container sizes (if requirements are additional to section 720)
- area of mulch required for each planting area or planting type.

#### **4.5.4 Reference Files and Related Information (typical)**

The following files are an integral part of the drawing, and are typically attached as reference files. The following information must be incorporated into plans:

- Title block
- Road information including the alignment, chainage, road safety barriers, kerbs, shoulders, verges, batters, lighting and cameras involved in monitoring the freeway network.
- Road drainage
- Shared paths and public transport facilities
- Noise Walls
- Landscape earth forming details
- Survey feature (refer to ??? for road design drawings)

- Survey of above and below ground services (such as gas, oil, power, communications, sewerage, water, drainage)
- Cadastral base and right of way information
- Fencing
- Survey photogrammetry (if available)
- Existing contours

## Section 5 – Provision of “As Constructed” Drawings

### 5.1 As Constructed Drawing Overview

The purpose of “As Constructed” drawings is to reflect the “as built” conditions including any changes made to the design during construction.

“As Constructed” drawings are required for the following reasons:

- to assist in answering general public enquiries
- to ensure prompt action may be taken in the event of emergencies
- to provide base information for any future work
- to assist staff to undertake routine maintenance.

For Records Management in accordance with the VicRoads Specification Contract documentation, Section 1130, a complete set of “As Constructed” drawings shall be supplied as per contract specification when a project is finalised. The level of detail to be shown on As-Constructed drawings shall be in accordance with VicRoads Final Drawing Presentation guidelines.

All drawings shall be provided in both hardcopy and PDF formats.

For D&C contracts PDF files provided to VicRoads for As-Constructed Drawings shall meet the following requirements:

- PDF files shall be compliant with Acrobat 6 (PDF 1.5)

A list of all ‘As-Constructed’ drawings and documents shall be provided on a spreadsheet in accordance with the following requirements:

- PDF/A and four hardcopy sets of all drawings (A3 size) and other documents;
- a CD ROM containing a complete set of the above drawings scanned in uncompressed PDF/A format at a minimum scan resolution of 300 dots per inch and with file names corresponding to the VicRoads supplied Drawing Number with a .PDF extension;
- a CD ROM containing copies of the Alignment Design Files; the Existing Ground Survey File; computer aided design drafting (CADD) drawings and associated reference files with file names corresponding to the VicRoads supplied Drawing Numbers in Bentley MicroStation DGN format.

CD ROM media shall be:

- compliant with ISO9660 and in accordance with the requirements of VicRoads Final Drawing Presentation Guidelines;
- include a Table of Contents (full index of all drawings and documents) file detailing the content of the CD; and
- be labelled with the Contractor’s Name, Contract Number, Project Name and Description, Road Name and Section, date and description of content.

When project drawings are provide to VicRoads they should be supplied with a spreadsheet listing all drawings and the following attributes:

Attribute Name	Max Field Width	Field Type
VicRoads Drawing Number	7	Numeric
File name	10	Character
Revision number	1	Alpha
Description	254	Character
Drawing type	3	Character

Information about common acceptable abbreviations and terminology is provided in Appendix B.

## **Section 6 – Bridge Drawings**

Section 6 - Bridge Drawings has been removed.

Refer to the Austroads Guide to Bridge Technology – Part 5 and the VicRoads Supplement to Austroads Guide to Bridge Technology – Section 4, available on VicRoads website, for details on Bridge Drawing Presentation.

## Section 7 – VicRoads Standard Drawings (SD)

### 7.1 Standard Drawing (SD) Menu Detail

#### 7.1.1 Drawing Overview

A Standard Drawing (SD) provides practitioners with specific details regarding components of road constructions and associated detail, e.g. kerb, pits, guard fence & barriers, culverts, etc.

#### 7.1.2 Scale

A Standard Drawing (SD) **MUST** be 'Drawn to Scale' at A3 size, and that scale in millimeters (mm) or meters (m) identified on the title block.

A suitable scale needs to be selected based on the information to be placed on the drawing, e.g. 1:1000 or 1: 250, etc.

In some limited circumstances further detail may be identified and highlighted on a SD, but this must be clearly labelled with "Not to Scale" or another scale shown.

#### 7.1.3 Presentation Options

The presentation of a Standard Drawing (SD) will vary depending on the size and the complexity of the details to be drawn. Preference is given to not overcrowding a SD but splitting it into two or more SDs if required.

Only similar component detail should be placed on a single separate SD.

#### 7.1.4 Final Printed Plan

A drawing is set-up for certain colours to be 'resymbolised' at 'print time'. The pen table to be used during final plan printing = mono1.tbl (black & white). Pen table contains colour mapping, text substitutions and printer thickness controls.

#### 7.1.5 Final Drawing Specifications

Drawing specification table is based on A3 final size drawings output.

Must use the SD titleblock.

#### Standard Drawing (SD) Detail Specifications

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Group Description & SD No. (Line 1)	TEXT_TITLEBLOCK	0	0	2	2.5 / 217	
Detailed Description - Line 2 (& Line 3 if reqd)	TEXT_TITLEBLOCK	0	0	2	2.5 / 27	
Amendments	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	
Approved	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	
SD Number	TEXT_TITLEBLOCK	0	0	2	2.5 / 27	
Scale	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	
Issue No.	TEXT_TITLEBLOCK	0	0	2	2.5 / 27	
VicRoads Drawing No.	TEXT_TITLEBLOCK	2	0	1	1.8 / 27	
References & Notes	TEXT	2	0	1	1.8 / 27	
Dimensioning Text	DIMENSIONING	4	0	1	1.8 / 27	
Heading Text	TEXT	8	0	2	2.5 / 27	
General Text	TEXT	3	0	1	1.8 / 27	
Place Note	TEXT	3	0	1	1.8 / 27	

Description of Content	Level Name	CO	LC	WT	Printed Text Height (mm)/Font	Cell Name
Table Text	TEXT	3	0	1	1.8 / 28	
Table Text Line	TEXT	3	0	1		
Section Text & Symbol	TEXT	0/8	0	2	2.5 / 27	varies
Construction Line	CONSTRUCTION_LINE	12	2	1		
Detail – Major Line	DETAIL_MAJOR_LINE	8	0	2		
Detail – Minor Line	DETAIL_MINOR_LINE	3	0	1		
Detail - Centre Line	DETAIL_CENTRELINE	4	7	1		
Detail - Dashed Line	DETAIL_DASHED_LINE	3	varies	1		
Detail - Reinforcement Line	DETAIL_REINFORCEMENT	0/3	0	1		PATTERN_CIRCLE_35 <sup>4</sup>
Detail - Road Hatching	PAVEMENT_EXISTING	7	road xsect hatch <sup>1</sup>	0		
Pavement Arrows	PAVEMENT_MARKING_SYMBOLS	0		1		Varies <sup>3</sup>
Existing Pavement Fill	PAVEMENT_EXISTING	23	0	1		
Concrete Pattern	MISC_CONCRETE	3	0	0		concrete_1 sand <sup>4</sup>
Existing Surface	PATTERNS	2	0	0		PATTERN_EARTH <sup>4</sup>
Breakline (1:1)	TEXT					BREAK_GS <sup>4</sup>

**Notes:**

1. Refer to VicRoads Custom Linetypes.PDF – General Group
2. Refer to VicRoads Cell Library – Road Design.cel
3. Refer to VicRoads Cell Library – TM.cel
4. Refer to VicRoads Cell Library – Misc\_Symbols.cel
5. Refer to VicRoads Cell Library – VRB\_PATT.cel

**7.1.6 Example Drawing**

For an example of this type of drawing, refer to the VicRoads FDP – Example Drawings (July 2013) document:

- SD No. SD2091B
- SD No. SD2101



## 7.2 Updating VicRoads Standard Drawings – Works Instruction

### 7.2.1 Overview

Standard Drawings (SD) are reviewed and updated as necessary to ensure the content is current. Typical modifications include comment from industry and general referenced information, such as Australian Standards, other SD, VR Specifications, VicRoads logo and or title block changes.

A number of tools have been developed to help maintain consistency when updating SD:

- A SD CADD menu is available
- Works instructions to assist in locating source files and workflow

### 7.2.2 Purpose

The purpose of this works instruction is to:

- Outline the workflow to be undertaken when updating a VicRoads Standard Drawing
- Assist in initiating new SD and the naming and saving to the correct location.

### 7.2.3 Instructions (for external users obtain relevant file/s from VicRoads)

#### 1 New Standard Drawing (SD):

All new SD should be drawn from scratch. Do not copy old SD into a new file as the level, colour, line styles and scale will not comply with the current standards.

##### 1.1. Find the location for SD in ProjectWise ® and locate the appropriate sub-folder.

*pw:\\VRPCADCAM03.roads.vic.gov.au:cad\_edms\Documents\VICROADS\_DOC\RS&T\Standard Drawings for Roadworks\Std Drawings\[sub-folder] (Internal only).*

##### 1.2. The SD must be produced in a 2D file created using the SD specific seed file.

*pw:\\VRPCADCAM03.roads.vic.gov.au:cad\_edms\Documents\VICROADS\_DOC\AAA\_CADD\_Config\SEED\_FULL\_LEVELNAMES\StandardDrawingSeed\_2D (Internal only).*

#### 2 Saving:

##### 2.1. New SD will be assigned a SD number and a VicRoads Drawing number.

##### 2.2. All modifications to compiled SD are modified with a version letter. If the existing SD has a version letter, the modified file is saved with the next version letter. (ProjectWise ® version control retains a copy of the previous file.)

#### 3 Drawing:

##### 3.1. The content of the SD shall be drawn to scale at 1 to 1.

##### 3.2. The SD title block shall be referenced into the SD file at an appropriate scale.

*pw:\\VRPCADCAM03.roads.vic.gov.au:cad\_edms\Documents\VICROADS\_DOC\AAA\_CADD\_Config\REF\Stdtdb1.dgn (Internal only).*

##### 3.3. Where additional clarity is required, specific detail from the 1 to 1 drawing can be referenced in at a smaller scale.

##### 3.4. All dimensions and text shall be placed at the title block scale.

##### 3.5. The SD tag set shall be used to populate the Title Sheet data.

### Notes

Do not use models within standard drawings.

Standard drawings must be readable when printed at A3.

SD - drawing numbers have been pre allocated; they are locked in ProjectWise ®.

### VicRoads Drawing No's.

VicRoads Drawing No's are only to be added after the SD has received final approval and a signature applied.

## **Appendix A – VicRoads Custom Linestyles**

# CUSTOM LINESTYLES AT 1 :1000 (vr\_lines\_v8.rsc)

## General

Boundary Fence	(VicRoads Boundary Fence)
Design Line	(VicRoads Design Line)
Guard Fence	(VicRoads Guard Fence)
Guard Rail	(VicRoads Guard Rail)
Wire Rope Safety Barrier	(VicRoads Wire Rope)
Railway - Abandoned Track	(VicRoads Railway - Abandoned)
Railway - Multi Track	(VicRoads Railway - Multi Track)
Railway - Single Track	(VicRoads Railway - Single Track)
Road Xsect Hatch	(Vic Roads Road Cross Section Hatching 1mm)
Road Xsect Shape	(VicRoads Road Cross Section Shape 1mm)

## Drainage

Catch Drain Beached	(VicRoads Catch Drain Beached)
Catch Drain Grassed	(VicRoads Catch Drain Grassed)
Catch Drain Thatched	(VicRoads Catch Drain Thatched)
Corr Pipe Pave Drn	(VicRoads Corrugated Pipe Pave't drain)
Corr Pipe Trans Drn	(VicRoads Corr Pipe Transverse Drain)
Drainage Line	(VicRoads Drainage Line)
Drainage Pipe 1m	(VicRoads Drainage Pipe up to 1m Dia)
Drainage Pipe 1.5m	(VicRoads Drainage Pipe 1 to 1.5m dia)
Open Concrete Drain	(VicRoads Open Concrete Drain)
Smooth Pipe Pave Drn	(VicRoads Smooth Pipe Pave't Drain)
Trans Drain Slotted	(VicRoads Smooth Transverse Drain - Slotted)
Trans Drain Not Perf	(Smooth Transverse Drain Not Perforated)

## Utilities/Services

Abandoned Service	(VicRoads Abandoned Service)
Electricity Overhead	(VicRoads Electricity Line - Overhead)
Electricity Below Ground	(VicRoads Electricity Below Ground)
Gas Line	(VicRoads Gas Line)
Gas Below Ground	(VicRoads Gas Below Ground)
Oil Above Ground	(VicRoads Oil Above Ground)
Oil Below Ground	(VicRoads Oil Below Ground)
Sewerage Below Ground	(VicRoads Sewerage Below Ground)
Sewerage	(VicRoads Sewerage Line)
Telecom Line	(VicRoads Telecom Line)
Telecom Below Ground	(VicRoads Telecom Below Ground)
Water Above Ground	(VicRoads Water Above Ground)
Water Below Ground	(VicRoads Water Below Ground)

## Cadastral Linetypes

County Boundary	(VicRoads County Boundary (CS))
Crown Boundary	(VicRoads Crown Allotment Boundary (CS))
Crown Section Boundary	(VicRoads Crown Section Boundary (CS))
Forest Boundary	(VicRoads Forest Boundary (CS))
Lot Boundary	(VicRoads Lot Boundary (CS))
Municipal Boundary	(VicRoads Municipal Boundary (CS))
National Park Boundary	(VicRoads National Park Boundary (CS))
Parish Boundary	(VicRoads Parish Boundary (CS))
Township Boundary	(VicRoads Township Boundary (CS))

Brick Above	(VicRoads Brick Above (CS))
Brick Below	(VicRoads Brick Below (CS))
E'ment & Road Conn	(VicRoads Easement and Road C'tion (CS))
Fence	(VicRoads Fence (CS))
<del>** Fence on Freeway</del>	<del>(VicRoads Fence on Freeway Boundary (CS))</del>
<del>** Fence on Title</del>	<del>(VicRoads Fence on Title Boundary (CS))</del>
Fence on Title - Solid	(VicRoads Fence on Title (Solid) Boundary (CS))
Kerb	(VicRoads Kerb - Top or Back of Kerb (CS))
Kerb Lined	(VicRoads Kerb Lined (CS))
<del>* Kerb and Channel</del>	<del>(VicRoads Kerb - Top or Back of Kerb (CS))</del>
PM&RM Connection	(VicRoads PM & RM Connection (CS))
Rd Align Not Surveyed	(VicRoads Road Align't NOT Surveyed (CS))
Traverse Line	(VicRoads Traverse Line (CS))

- \* No longer used  
\*\* Superceded by 'Fence on Title - Solid'

## Engineering Survey and Photogrammetry

Plantation Orchard	(VicRoads Plantation Orchard (ES))
Vegn Grp Trees/Shrubs	(VicRoads Veg'n Group Trees/Shrubs (ES))
Boundary Line	(VicRoads Boundary Line (ES))

# CUSTOM LINESTYLES AT 1 :1000 (vr\_lmark\_v8.rsc)

## Line Marking

Barrier-One Way	(VicRoads 100 Wide Solid + 100 Wide 3m/9m)
Barrier-Two Way	(VicRoads 2 x 100 Wide Solid)
Barrier-Single Separation-80	(VicRoads 80 Wide Solid)
Barrier-Single Separation-100	(VicRoads 100 Wide Solid)
Barrier-Single Separation-150	(VicRoads 150 Wide Solid)
Barrier-Single Separation-100 6m RRPM	(VicRoads Barrier - Single Separation 6m Twoway RRPM)
Barrier-Single Separation-100 12m RRPM	(VicRoads Barrier - Single Separation 12m Twoway RRPM)
Barrier-Single Separation-100 24m RRPM	(VicRoads Barrier - Single Separation 24m Twoway RRPM)
Barrier-One Way 12m RRPM	(VicRoads Barrier-Combination 12m RRPM)
Barrier-One Way 24m RRPM	(VicRoads Barrier-Combination 24m RRPM)
Barrier-Two Way 12m RRPM	(VicRoads Barrier-Twoway-Twoway 12m RRPM)
Barrier-Two Way 24m RRPM	(VicRoads Barrier-Twoway-Twoway 24m RRPM)
Continuity-Freeway and Special	(VicRoads 150 Wide 1m/3m)
Continuity-Standard	(VicRoads 100 Wide 1m/3m)
Continuity-Statcon	(VicRoads 150 Wide 0.6m/0.6m)
Controlled Intersection-Give Way	(VicRoads 300 Wide 0.6m/0.6m)
Controlled Intersection-R'about	(VicRoads 400 Wide 0.6m/0.6m)
Controlled Intersection-Stop	(VicRoads 300 Wide Solid)
Edge Line-Normal/Parking Control	(VicRoads 100 Wide Solid)
Edge-150 Wide	(VicRoads 150 Wide Solid)
Edge-One Way 6m RRPM	(VicRoads 150 Wide Solid for Oneway 6m RRPM)
Edge-One Way 6m RRPM (RHS)	
Edge-One Way 7m RRPM	(VicRoads 150 Wide Solid for Oneway 7m RRPM)
Edge-One Way 7m RRPM (RHS)	
Edge-One Way 12m RRPM	(VicRoads 150 Wide Solid for Oneway 12m RRPM)
Edge-One Way 12m RRPM (RHS)	
Edge-One Way 20m RRPM	(VicRoads 150 Wide Solid for Oneway 20m RRPM)
Edge-One Way 20m RRPM (RHS)	
Edge-One Way 24m RRPM	(VicRoads 150 Wide Solid for Oneway 24m RRPM)
Edge-One Way 24m RRPM (RHS)	
Edge-One Way 40m RRPM	(VicRoads 150 Wide Solid for Oneway 40m RRPM)
Edge-One Way 40m RRPM (RHS)	
Edge-One Way 48m RRPM	(VicRoads 150 Wide Solid for Oneway 48m RRPM)
Edge-One Way 48m RRPM (RHS)	
Edge-Profiled	(VicRoads 150 Wide Solid for Oneway 12m RRPM)

Lane-Continuous-Arterial/Local	(VicRoads 100 Wide Solid)
Lane-Continuous-Fwy/Commuter	(VicRoads 150 Wide Solid)
Lane-OneWay 6m RRPM	(VicRoads 100 Wide Solid Oneway 6m RRPM)
Lane-OneWay 6m RRPM (RHS)	
Lane-OneWay 12m RRPM-Rural Ramp	(VicRoads 100 Wide 3m/9m 12m Oneway RRPM)
Lane-OneWay 12m RRPM-Turn	(VicRoads 100 Wide Solid Oneway 12m RRPM)
Lane-OneWay 12m RRPM-Entry/Exit	(VicRoads 150 Wide Solid for Oneway 12m RRPM)
Lane-OneWay 12m RRPM-MedianTurn	(VicRoads Twoway Median Turn)
Lane-OneWay 12m RRPM-Urban Ramp	(VicRoads Oneway 12m RRPM with Dots)
Lane-OneWay 20m RRPM	(VicRoads Oneway 20m RRPM with Dots)
Lane-OneWay 24m RRPM	(VicRoads 100 Wide 3m/9m 24m Oneway RRPM)
Lane-Special-100 Bicycle	(VicRoads 100 Wide 1m/2m)
Lane-Special-100 Roundabout	(VicRoads 100 Wide 9m/3m)
Lane-Special-150 Roundabout	(VicRoads 150 Wide 9m/3m)
Lane-Standard	(VicRoads 100 Wide 3m/9m)
Pedestrian Crossing-Zebra	(VicRoads Ped Crossing-Zebra)
Pedestrian Crosswalk	(VicRoads 150 Wide Solid)
Rail Crossing-Give Way	(VicRoads 600 Wide 0.6m/0.6m)
Separation-Reversible	(VicRoads 100 Wide 6m/6m)
Separation-Special Use-80	(VicRoads 80 Wide 1m/7m)
Separation-Special Use-100	(VicRoads 100 Wide 9m/1m)
Separation-Special Use-150	(VicRoads 150 Wide 9m/3m)
Separation-Two Lane Two Way	(VicRoads 100 Wide 3m/9m)
Separation-2Way 12m RRPM	(VicRoads 100 Wide 3m/9m Twoway 12m RRPM)
Separation-2Way 12m RRPM-Solid	(VicRoads 100 Wide-Solid-Twoway 12m RRPM)
Separation-2Way 24m RRPM	(VicRoads 100 Wide 3m/9m 24m Twoway RRPM)
Separation-2Way 24m RRPM-Solid	(VicRoads 100 Wide-Solid-Twoway 24m RRPM)
Stop Line	(VicRoads 600 Wide Solid)
Tram-Full Time-One Way 4m RRPM	(VicRoads Tram-Full Time-Oneway 4m RRPM)
Tram-Part Time	(VicRoads 100 Wide Solid)
Tram-Part Time-Broken	(VicRoads 100 Wide 6m/6m)
Turn Line-Solid	(VicRoads 100 Wide Solid)
Turn Line-Broken	(VicRoads 100 Wide 0.6m/0.6m)

## Line Marking (Superseded)- pre Feb 2004

Std Lane 100 wide	(VicRoads Std Lane Line 100mm wide)
Std Cont 100 wide	(VicRoads Std Cont Line 100mm wide)
Rev Sep 100 wide	(VicRoads Rev Separatn Line 100 wide)
Part Time Bus/Trans	(VicRoads Part-Time Bus/Trans Lane 150 wide)
Fwy & Spec use lane	(VicRoads Fwy & Special use cont lane 150wide)
Statcon	(VicRoads Statcon cont line 300x600x600)
Roundabout	(VicRoads Roundabout 400x600x600)
Oneway 12 Bkn Lane	(VicRoads Oneway 12 RRPM Broken lane line)
Oneway 24 Bkn Lane	(VicRoads Oneway 24 RRPM broken lane)
Oneway Rev 12 RRPM	(VicRoads Oneway Rev 12 RRPM lane)
Oneway Rev 24 RRPM	(VicRoads Oneway Rev 24 RRPM lane)
Twoway 12 Bkn Sep RRPM	(VicRoads Twoway 12 Bkn Sep RRPM)
Twoway 24 Bkn Sep RRPM	(VicRoads Twoway 24 Bkn Sep RRPM)
Oneway 6 RRPM	(VicRoads Oneway 6 RRPM)
Oneway 12 RRPM	(VicRoads Oneway 12 RRPM)
Oneway 20 RRPM	(VicRoads Oneway 20 RRPM Fwy)
Oneway 24 RRPM	(VicRoads Oneway 24 RRPM Fwy)
Oneway 40 RRPM	(VicRoads Oneway 40 RRPM)
Oneway 48 RRPM	(VicRoads Oneway 48 RRPM)
Twoway 6 RRPM	(VicRoads Twoway 6 RRPM Fwy)
Twoway 12 RRPM	(VicRoads Twoway 12 RRPM Fwy)
Twoway 24 RRPM	(VicRoads Twoway 24 RRPM Fwy)
Twoway 48 RRPM	(VicRoads Twoway 48 RRPM)
Fwy 12 lane on ramps	(VicRoads Fwy 12 lane on ramps)
Fwy 20 lane thru carr	(VicRoads Fwy 20 lane thru carriage)
Std tram lane line	(VicRoads Std Tram lane Line)
Sep Bars Type A	(VicRoads Sep Bars Type A at 4m (RS))
Sep Bars Type B	(VicRoads Sep Bars type B at 4m (RS))
Full Time Tram lane	(VicRoads Full Time Tram lane line)

# CUSTOM LINESTYLES AT 1 :1000 (vr\_lmark\_v8.rsc)

## Line Marking for Animations/Images

Ani Lane Line	— — —	(VicRoads Std Lane Line for Animations)
Ani Oneway barrier	—	(VicRoads oneway barrier line for Animations)
Ani Twoway barrier	—	(VicRoads Twoway barrier line for Animations)
Ani STD edge line	—	(VicRoads Std Edge line for Animations)
Ani FWY edge line	—	(VicRoads Freeway edge line for Animations)
Ani FWY&Spec Use	—	(VicRoads Fwy & Spec Use line for Animations)
Ani STD cont line	- - -	(VicRoads STD continuity line for Animations)
Ani Statcon 300	.....	(VicRoads Statcon 300 mm for Animations)

## Appendix B – File Types & Abbreviations

The following is a list of common File Types and standard terminology abbreviations that may be used in VicRoads Drawings.

**Note:** Some historical abbreviations are still in use. This has resulted in a duplication of abbreviations in some cases for differing terms. If it is unclear which term is being referred to, the term should be written in full or placed in a note on the drawing.

### File Types

Term	Abbreviation	Term	Abbreviation
3D Line Strings	3DS	Endpost	EP
Abstract of Field Records	FR	External Computer Files	EXT
Abutment	AB	Face Sheet	FS
Abutment Concrete	ABC	Fauna Crossing	FX
Abutment Reinforcement	ABR	Feature Survey	FS
Acquisition/Disposal	SP	Feature Survey Enhancement	ES
Alignment & DL	ADL	Final Plan	FP
Alignment Plan	AP	Foundation Layout	FL
Alignments and Geometrics	AG	Freeway Ramp Signals	FRS
Approach Slabs	AS	Functional Design	FD
Architectural Drawing	AD	Functional Layout	FD
Arterial Road Strategy	ARS	Gazettal	GP
Barriers	BAR	General Arrangement	GA
Base (not TSL, study areas, etc)	BAS	Geometric Plan	GP
Bearing Plate/Bearing	BE	Geometry File	ALG
Bicycle Facility Plan	BFP	Geotechnical Drawing	GTD
Bike Path/Shared User Path	BFP	Image Backgrounds and Mosaics	IMG
Bridge Detail Drawing	BDD	Incident Management	IM
Bridge Preliminary Drawing	BPD	InRoads Roadway Libraries	RWL
Bridge Site Plan	BSP	InRoads Storm & Sanitary Database	SDB
Bridge Standard Drawing	BSD	InRoads Template Libraries	TML
Building Detail Plan	BDP	Key Plan	KP
Cadastral Base	CB	Land Acquisition	LA
Collision Diagram	COL	Landscape Assessment Plan	LAP
Concept Plan	CPS	Landscape Concept Plan	LCP
Construction Set Out	SO	Linemarking Plan	LMP
Construction Standards	DES	Lip Profiles	LIP
Contour Plan	CP	List of Abbreviations	LOA
Contours and Drainage	CD	Locality and Face Sheet	LFS
Contract Specific	CON	Locality Plan	LP
Control Survey	CS	Longitudinal Section	LS
Cross Sections	CS	Master Schedule	MS
Culvert	CUL	Melbourne Road Network	MRN
D&C Documentation	DCD	Ministerial Approval	MA
DDA Compliance Plan	DDA	Miscellaneous Drawing	MD
Deck Overlay	OV	Miscellaneous (LI&S)	MS
Declaration Survey	DP	Monitoring	MN
Design and Construction Standards	DES	Noise Attenuation	NA
Design Information	DI	Organisation Chart	OC
Detail Plan	DP	Overlay	OV
Display Plan	DSP	Pavement Details	PD
Drainage Alignments & Longitudinals	ADL	Pavement Type Limits Plan	PTL
Drainage Longitudinal	DL	Pedestrian Crossing	PX
Electrical Drawing	E	Pedestrian Operated Signals	POS

Permanent Mark Sketch	PM	Typical Cross Sections & Pavement	
Phase Selection Diagram	PSD	Details	TPD
Photogrammetry	PH	Unknown Type	UNK
Photogrammetry Base Information	PBI	User Drawing Set	UDS
Pier	PI	Vegetation - Tree and Lower Storey	VEG
Pile	PIL	Weed Management	WM
Planning Report	PR	Wetlands and Drainage	LWT
Planning Scheme / Amendment	PA / PSA	Wingwall	WW
Planting Plan	PP		
Planting Schedule	PS		
PRC Documentation	PRC		
Preliminary Alignment	PA		
Program Plan	PRP		
Project Plan Set Book	PBK		
Quantities	Q		
Railing	RA		
Record of Reestablishment	RE		
Reference File	RF		
Reinforced Concrete Pile	RCP		
Reinforcement Standards and Shapes	SS1		
Report	RPT		
Right of Way (ROW) Plan	RP		
Roundabout	RBT		
Route Control Strategy	RCS		
Safe Maintenance Review	SMR		
Services Plan - Exist and New	SER		
Set Out Detail	SOD		
Sign Face Drawing	SFD		
Signs and Gantry	SIG		
Signs and Linemarking Plan	SLP		
Special Drawing	SPD		
Standard Drawings	STD		
Street Lighting Plan	SLT		
Subdivision Act - Plan of Consolidation	PC		
Subdivision Act - Plan of Easement	CE		
Subdivision Act - Plan of Subdivision	PS		
Subsurface Drainage	SSD		
Superelevation Diagram	SD		
Superstructure	SST		
Surface	SRF		
Survey Information	SI		
Table of Contents	TOC		
TCS & Pavement Details	TPD		
Tender Verification	TV		
Test Site Location Plan	TLP		
Test Site Locations - Longitudinal	TLL		
Title Plan	TP		
Traffic Management Plan	TMP		
Traffic Signal Plan	TSP		
Traffic Studies	TS		
Traffic Survey Data Drawing	TSD		
Tram/Bus Route Treatment	TBR		
Tslab Mk A	TSA		
Tslab Mk B	TSB		
Tslab Reinforcement	TSR		
Typical Cross Section	TCS		

## Standard Terminology

Term	Abbreviation	Term	Abbreviation
Abutment	ABUT	Commercial Vehicle	CV
Acceleration	ACCEL	Common Tangent Point	CTP
Acoustic Mound	ACSTCMND	Concrete	CONC
Aggregate	AGGR	Consolidated	CONSOL
Agricultural	AG	Construction	CONSTR
Ambulance Alarm	AA	Construction Joint	CJ
Annual Average Daily Traffic	AADT	Co ordinate	COORD
Approved	AAPD	Creek	CK
Approximate(ly)	APPROX	Crest	CST
Asbestos Cement	AC	Crossfall	XFALL
Asphalt Surface	ASURF	Crossing	XJNG
Assumed Datum	ASSD	Crossover	XOVER
Australian Height Datum	AHD	Crossroad	XRD
Australian Map Grid	AMG	Cross Section	XSEC
Australian Standard	AS	Cubic Centimetre	cm <sup>3</sup>
Auxiliary	AUX	Cubic Metre	cm <sup>3</sup>
Avenue	AVE	Cubic Millimetre	mm <sup>3</sup>
Average	AVG	Culvert	CULV
Australian Geodetic Datum 1994	AGD94	Deceleration Lane	DECELLANE
Bearing	BRG	Decibel	dB
Between Kerbs	BTNK	Dept Crown Lands & Survey	DLS
Bench Mark	BM	Design Hourly Volume	DHV
Bending Moment	M	Design Speed (m/s)	v
Bitumen	BIT	Design Speed (km/h)	V
Bituminous Concrete	BITCONC	Diameter	DIA
Bituminous Seal	BITSEAL	Inside	ID
Block	BLK	Outside	OD
Bottom	BOT	Dimension	DIM
Brick	BK	Distance	DIST
Brick Veneer	BKV	Drain	DR
British Standard	BS	Drainage Easement	DRENT
Building	BLDG	Drawing	DWG or DRG
Building Line	BL	Driveway	DRWY
Bicycles per Day	BPD	Earthenware Pipe	EWP
Breakaway Cable Terminal	BCT	Easement	EMT
Cast Iron	CI	Edge of Bitumen	E BIT or EB
Cement Lined	CL	Edge of Formation	EFORM or EF
Centre	CTR	Electric	ELEC
Centre Line	CL	Electric Light Pole	ELP
Centre of Circular Arc	CC	Elevation	ELEV
Centre to Centre	C/C or C to C	Existing	EXST
Centre of Gravity	CG	Expressway	EXWY
Chainage	CH	Fence Line	FL
Change Point	CP	Fibro Cement	FC
Circle	CIRC	Field Book	FB
Circular Arc	CIRCARC or CA	Figure	FIG
Circular Arc through Tangent to Circular Arc	CTC	Figure No	FIG No
Circular Arc to Spiral	CS	Fine Crushed Rock	FCR
Circular Arc to Tangent	CT	Finished Surface	F/S
Coarse Crushed Rock	CCR	Fire Alarm	FA
Coefficient	COEF	Fire Plug	FP
Combined Field & Level Book	CFLB	Flange	FLG
		Flood Level	FL



Footpath	F/P	Maximum	MAXL
Freeway	FWY	Mean Sea Level	MSL
Full Supply Level	FSL	Mega Pascal	MPa
Galvanise (d)	GALV	Metre	m
Galvanised Iron	GALVI or GI	Mild Steel	MS
Gram	g	Millilitre	ml
Grid	GD	Millimetre	mm
Ground Level	GL	Minimum	MIN
Guard Rail	GR	Miscellaneous	MISC
Guide Post Widening	GPW	Mounting	MTG
Heavy Duty	HD	Municipal	MUN
Hectare	ha	Natural Surface	NS
Height	HT or HGT	Negative	NEG
High Pressure	HP	New Peg & Trench	NPT
High Tensile Steel	HTS	Nominal Size	NS
High Voltage	HV	Not to Scale	NTS
Highway	HWY	Number	No
High Water Mark	HWM	New Jersey	NJ
Horizontal	HORIZ	Obvert	OBV
Hour	h	Old Peg & Trench	OPT
Initial Treatment Prime & Seal	ITPS	Outside Diameter	OD
Irrigation	IRR	Overall	OA
Inspection Opening	10	Overhead	OH
Intermediate	INTER	Pavement	PAVT
Internal	INT	Pedestrian/Crossing	PED/XING
International System of Unit	SI	Permanent	PERM
Intersection Point	IP	Permanent Survey Marking	PSM
Invert	INV	Pillar Hydrant	PH
Invert Level	IL	Plate	PL
Junction Pit	JP	Post & Rail	P&R
Kerb	K	Post & Wire	P&W
Kerb and Channel	KC	Quantity	QTY
Kerb Line	K/L	Radian	Rad
Kerb Dried	KD	Radius	RAD
No Kilogram	kg	Railway	RLY
Kilometre	km	Reduced Level	RL
Kilometre per Hour	km/h	Reference	REF
Kilopascal	kPa	Reference Mark	RM
Kilovolt	kV	Reference Peg	RP
Landing	LDG	Reinforced (-ing)	REINF
Left Hand / Left Hand Side	LH / LHS	Reinforced Concrete	RC
Length	LG	Reinforced Concrete Box	RCBOX
Level	LEV	Reinforced Concrete Pipe	RCP
Level Book	LB	Required	REQD
Level Crossing	LXING	Reserve (d)	RES
Linear	LIN	Right / Right Hand Side	R / RHS
Liquefied Petroleum	LPET	Right of Way	ROW
Litre	L	River	RIV
Lodged Plan	LP	Road	RD
Longitudinal	LONG	Schedule	SCHED
Low Point	LP	Secant Distance	S
Low Pressure	LP	Section	SECT
Low Voltage	LV	Service Road	SERVRD
Low Water Mark	LWM	Sewer	SEW
Manhole	MH	Sewerage & Drainage Easement	SEW & DR EMT
Map Grid Australia	MGA	Shift Distance	P
Material	MATL	Shoulder	SHLD

Side Entry Pit	SEP
Specification	SPEC
Spiral to Circular Arc	SC
Spiral through Tangent to Circle	STC
Spiral through Tangent to Spiral	STS
Square Centimetre	cm <sup>2</sup>
Square Kilometre	km <sup>2</sup>
Square Metre	m <sup>2</sup>
Square millimetre	mm <sup>2</sup>
Stabilised	STAB
Stadia Book	SB
Standard	STD
Station	STA
Steel	STL
Stop Valve	SV
Street	ST
Structure	STR
Subdivision	SUBDIV
Surface (ing)	SURF
Survey Plan	SP
Tangent Distance	T
Tangent to Circular Arc	TC
Tangent Point	TP
Tangent to Spiral	TS
Temporary Bench Mark	TBM
Tonne	t
Transition	TRAN
Traverse	TRAV
Trigonometric Meridian	TRIG MER
Trigonometric Station	TRIG STA
True Meridian	TRUE MER
Typical	TYP
Underground	UG
Vehicles per Day/per Hour	VPD / VPH
Vertical	VERT
Vertical Curve	VC
Volume	VOL
Waterhole	WH
Water Level	WL
Weatherboard	WB
Weight	WT
Wide (Width)/ing	W
Wire (s)	WI