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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VRPIN 02675

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.

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.

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.

#### 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

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>
<thead>
<tr>
<th>Weight (WT)</th>
<th>Printed ‘Thickness’ (mm)</th>
<th>Weight (WT)</th>
<th>Printed ‘Thickness’ (mm)</th>
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<td>0</td>
<td>0.18</td>
<td>6</td>
<td>1.4</td>
</tr>
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<td>7</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>0.35</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>0.5</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
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<td>10</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>1.0</td>
<td>11</td>
<td>10</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Printed text height</th>
<th>Scale 1:1000</th>
<th>Scale 1:500</th>
<th>Scale 1:250</th>
<th>Scale 1:200</th>
<th>Scale 1:100</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8 mm</td>
<td>1.80</td>
<td>0.90</td>
<td>0.450</td>
<td>0.36</td>
<td>0.18</td>
</tr>
<tr>
<td>2.5 mm</td>
<td>2.50</td>
<td>1.25</td>
<td>0.500</td>
<td>0.50</td>
<td>0.25</td>
</tr>
<tr>
<td>3.5 mm</td>
<td>3.50</td>
<td>1.75</td>
<td>0.875</td>
<td>0.70</td>
<td>0.35</td>
</tr>
<tr>
<td>5.0 mm</td>
<td>5.00</td>
<td>2.50</td>
<td>1.200</td>
<td>1.00</td>
<td>0.50</td>
</tr>
</tbody>
</table>

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 1.3 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

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

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.
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.

<table>
<thead>
<tr>
<th>File Type</th>
<th>Logical Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Titleblock</td>
<td>tb / tb1 / tb2 / etc</td>
<td>VicRoads Titleblock</td>
</tr>
<tr>
<td>Cadastral Base – Survey Accuracy</td>
<td>cad /cad1 / etc</td>
<td>Surveyed Cadastral Title Base – (Title/Easement/Freeway boundaries etc based on survey)</td>
</tr>
<tr>
<td>Cadastral Base – Approximated</td>
<td>cad approx etc</td>
<td>Approximated Cadastral title base – (Title/ Easement/Freeway boundaries etc based scaled plans)</td>
</tr>
<tr>
<td>VDP title information (VicRoads Digital property base information)</td>
<td>cad approx etc</td>
<td>VDP Title base - approx only</td>
</tr>
<tr>
<td>File Type</td>
<td>Logical Name</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Survey Feature Base</td>
<td>surv / surv1 / etc</td>
<td>Feature Survey Base – Nepean Hwy etc (Ground survey of existing features)</td>
</tr>
<tr>
<td>Survey Enhancement Base</td>
<td>serv / serv1 / etc</td>
<td>Services – Nepean Hwy etc (typically for service information)</td>
</tr>
<tr>
<td>Functional Design Base</td>
<td>func / func1 / etc</td>
<td>Design Base 2D - Nepean Hwy etc (2D Design Base)</td>
</tr>
<tr>
<td>3D Linestrings</td>
<td>des / des1 / etc</td>
<td>Design Base 3D - Nepean Hwy etc (3D Design Base)</td>
</tr>
<tr>
<td>Sub Surface Drainage Base</td>
<td>ssd / ssd1 / etc</td>
<td>Sub Surface Drainage details</td>
</tr>
<tr>
<td>Master Nested Survey</td>
<td>surv master</td>
<td>Master nested survey file</td>
</tr>
<tr>
<td>Master Nested Design</td>
<td>des master</td>
<td>Master nested design file</td>
</tr>
<tr>
<td>Existing Surface Contour</td>
<td>contours exist</td>
<td>Existing surface contours – interval</td>
</tr>
<tr>
<td>Design Surface Contour</td>
<td>contours design</td>
<td>Design surface contours – interval</td>
</tr>
<tr>
<td>Drainage Design Strategy</td>
<td>drain</td>
<td>Drainage Strategy</td>
</tr>
<tr>
<td>Pavement Type Limits</td>
<td>pave / pave 1 / etc</td>
<td>Pavement Type Limits</td>
</tr>
</tbody>
</table>

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 pram 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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Pavement Area</td>
<td>PAVEMENT_EXISTING</td>
<td>23</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO¹</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Pavement Types</td>
<td>PAVEMENT_TYPE1</td>
<td>28</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAVEMENT_TYPE2</td>
<td>29</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAVEMENT_TYPE3</td>
<td>38</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAVEMENT_TYPE4</td>
<td>33</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAVEMENT_TYPE5</td>
<td>34</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAVEMENT_TYPE6</td>
<td>35</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAVEMENT_TYPE7</td>
<td>36</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAVEMENT_TYPE8</td>
<td>37</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAVEMENT_TYPE9</td>
<td>41</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PAVEMENT_TYPE10</td>
<td>43</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driveway</td>
<td>PAVEMENT_DRIVEWAY</td>
<td>26</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>PAVEMENT_MEDIAN</td>
<td>24</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overlay</td>
<td>PAVEMENT_OVERLAY</td>
<td>20</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Path</td>
<td>PAVEMENT_PATH</td>
<td>52</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement to be Removed</td>
<td>PAVEMENT_REMOVE</td>
<td>61</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Pavement</td>
<td>PAVEMENT_TEMPORARY</td>
<td>38</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Contours</td>
<td>SURFACE_EXISTING_CONTOUR_MAJOR</td>
<td>43</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor Contours</td>
<td>SURFACE_EXISTING_CONTOUR_MINOR</td>
<td>37</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text Annotation</td>
<td>SURFACEEXISTING_CONTOUR_TEXT</td>
<td>43</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Contours</td>
<td>SURFACE_DESIGN_CONTOUR_MAJOR</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor Contours</td>
<td>SURFACE_DESIGN_CONTOUR_MINOR</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text Annotation</td>
<td>SURFACE_DESIGN_CONTOUR_TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Barrier - Concrete</td>
<td>SAFETY_BARRIER_CONCRETE</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Barrier – Guard Fence</td>
<td>SAFETY_BARRIER_GUARD_FENCE</td>
<td>0</td>
<td>guard fence 2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Barrier – Wire Rope</td>
<td>SAFETY_BARRIER_WIRE_ROPE</td>
<td>0</td>
<td>wire road safety barrier 2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridge Deck</td>
<td>BRIDGE_DECK</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centre of Bridge Abutment</td>
<td>BRIDGE_ABUTMENT</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crown Line</td>
<td>ROAD_CROWN_LINE</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driveways</td>
<td>MISC_DRIVEWAY</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edge of Shoulder (sealed)</td>
<td>ROAD_SHOULDER_SEALED</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edge of Shoulder (unsealed)</td>
<td>ROAD_SHOULDER_UNSEALED</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edge of Traffic Lane (sealed)</td>
<td>ROAD_LANE_EDGE_SEALED</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edge of Traffic Lane (unsealed)</td>
<td>ROAD_LANE_EDGE_UNSEALED</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fences</td>
<td>MISC_FENCE</td>
<td>0</td>
<td>fence 1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Apron</td>
<td>MISC_CONCRETE_APRON</td>
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<td>Kerb and Channel - Lip</td>
<td>KERB_LIP</td>
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<td>KERB_TEMPORARY</td>
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<td>0</td>
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<td>sand_4</td>
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<td>Pram Crossings</td>
<td>MISC_PATH</td>
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<td>0</td>
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<td>ROW Boundary Existing</td>
<td>BOUNDARY</td>
<td>57</td>
<td>0</td>
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<td>ROW Boundary Proposed</td>
<td>BOUNDARY_PROPOSED</td>
<td>57</td>
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<td>Train Line</td>
<td>RAILWAY_LINE</td>
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<td>1</td>
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<td>Tram Line</td>
<td>TRAM_LINE</td>
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<td>Wall – Noise</td>
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<td>Wall – Retaining</td>
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**Notes:**
1. Refer to VicRoads Custom Linestyles.pdf – Cadastral linetypes group
2. Refer to VicRoads Custom Linestyles.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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
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<tr>
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<td>DRAINAGE_BEACHING</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>beaching_drain2</td>
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<tr>
<td>Beached Catch Drain</td>
<td>DRAINAGE_CATCH_DRAIN</td>
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<td></td>
<td></td>
<td>catch drain beached1</td>
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<tr>
<td>Grassed Catch Drain</td>
<td>DRAINAGE_CATCH_DRAIN</td>
<td>4</td>
<td></td>
<td></td>
<td>catch drain grassed1</td>
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</tr>
<tr>
<td>Thatched Catch Drain</td>
<td>DRAINAGE_CATCH_DRAIN</td>
<td>4</td>
<td></td>
<td></td>
<td>catch drain thatched1</td>
<td></td>
</tr>
<tr>
<td>Culverts/Pipes</td>
<td>DRAINAGE_PIPE</td>
<td>3</td>
<td></td>
<td>1</td>
<td>up to 1m1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0 to 1.5m1</td>
<td></td>
</tr>
<tr>
<td>Pits</td>
<td>DRAINAGE_PIT</td>
<td>3</td>
<td></td>
<td>1</td>
<td>pit2</td>
<td></td>
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<tr>
<td>Endwalls</td>
<td>DRAINAGE_ENDWALLS</td>
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<td></td>
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<tr>
<td>Drainage Detail Text</td>
<td>DRAINAGE_TEXT</td>
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<td></td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrugated Sub-surface Pipe</td>
<td>DRAINAGE_SUB_SURFACE</td>
<td>40</td>
<td>corr pipe pave drain¹</td>
<td>1</td>
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<tr>
<td>Smooth Sub-surface Pipe</td>
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<td>40</td>
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<tr>
<td>Sub-surface Transverse - Corrugated</td>
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<td>corr pipe trans drain¹</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sub-surface Transverse - Slotted</td>
<td>DRAINAGE_SUB_SURFACE</td>
<td>40</td>
<td>trans drain slotted²</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-surface Transverse - Smooth</td>
<td>DRAINAGE_SUB_SURFACE</td>
<td>40</td>
<td>trans drain not perf²</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Sub-surface Pits - Flush Out Riser</td>
<td>DRAINAGE_SUB_SURFACE_FLUSHOUT_RISER</td>
<td>40</td>
<td>0</td>
<td>1</td>
<td>SSFL²</td>
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<tr>
<td>Sub-surface Pits - Drain Outlet</td>
<td>DRAINAGE_SUB_SURFACE_OUTLET</td>
<td>40</td>
<td></td>
<td></td>
<td>SSDO²</td>
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<tr>
<td>Sub-surface Pits - Drain Pit</td>
<td>DRAINAGE_SUB_SURFACE_PIT</td>
<td>40</td>
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<td></td>
<td>SSDP²</td>
<td></td>
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<tr>
<td>Sub-surface Text</td>
<td>DRAINAGE_SUB_SURFACE_TEXT</td>
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<td></td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
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<th>Description of Content</th>
<th>Level Name</th>
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<td>electricity overhead</td>
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<td>Underground</td>
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<td>0</td>
<td>1.8 / 27</td>
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<td>gas below ground</td>
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<td>0</td>
<td>0</td>
<td>1.8 / 27</td>
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<td>Sewer</td>
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<tr>
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<td>Services Text - Sewer</td>
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<td>Printed Text Height (mm)/Font</td>
<td>Cell Name</td>
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<td><strong>Communication</strong></td>
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<td>UTILITY_COMMUNICATION_OVERHEAD</td>
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<td>telecom line</td>
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<td>1.8 / 27</td>
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<td>UTILITY_COMMUNICATION_UNDERGROUND</td>
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<td>telecom below ground</td>
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<tr>
<td>Aerial Wire to House</td>
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<td>1.8 / 27</td>
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<td>Underground</td>
<td>UTILITY_WATER_UNDERGROUND</td>
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<td>water below ground</td>
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</table>

**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

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<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
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<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
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<td>Coloured Pavement – Bus Lane</td>
<td>PAVEMENT_MARKING_COLOUR_FILL</td>
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<td>Coloured Pavement – Bike Lane</td>
<td>PAVEMENT_MARKING_COLOUR_FILL</td>
<td>34</td>
<td>0</td>
<td>1</td>
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</tr>
<tr>
<td>Coloured Pavement – Pedestrian Crossing</td>
<td>PAVEMENT_MARKING_COLOUR_FILL</td>
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<td>Pavement Marking Lines</td>
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<td>varies²</td>
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<td>Post &amp; Sign Symbol</td>
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<td>0</td>
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<td>varies²</td>
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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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
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<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>Street Lighting Details</td>
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<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Conduit Pits</td>
<td>LIGHTING</td>
<td></td>
<td></td>
<td></td>
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<td>varies¹</td>
</tr>
<tr>
<td>Lighting Poles/ Brackets / Luminaires</td>
<td>LIGHTING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>varies¹</td>
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<tr>
<td>Existing Lighting</td>
<td>LIGHTING_EXISTING</td>
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<td></td>
<td></td>
<td></td>
<td>varies¹</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
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<tr>
<td>Significant Trees</td>
<td>VEGETATION_TREE</td>
<td>17</td>
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<td></td>
<td></td>
</tr>
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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

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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

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</table>
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.

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.

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.

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)
VICROADS ONLY R ROAD titleblock - No addresses (for Consultant use)
VICROADS ONLY T 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)
A1 VICROADS ONLY T 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.

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

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### 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](image)

### 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.
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<td>GEOMETRIC PLAN</td>
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<td>CROSS SECTIONS</td>
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<tr>
<th>PROJ_NO</th>
<th>CONT</th>
<th>SHT</th>
<th>ID</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9758</td>
<td>7566</td>
<td>5</td>
<td>55555</td>
<td></td>
</tr>
</tbody>
</table>

### RoadName ProjectDesc Subsec

<table>
<thead>
<tr>
<th>ROAD NAME</th>
<th>PROJECT, DESC</th>
<th>FILE_TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICKLEHAM ROAD</td>
<td>TULLAMARINE Fwy Exit Ramp to Broadmeadows Road</td>
<td>ALIGNMENT PLAN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PROJ_NO</th>
<th>CONT</th>
<th>SHT</th>
<th>ID</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9758</td>
<td>7566</td>
<td>5</td>
<td>55555</td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border – External</td>
<td>LINES</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Border – Internal</td>
<td>LINES</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CADD File Details</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 68</td>
<td></td>
</tr>
<tr>
<td>Contract &amp; Volume Number</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>5.0 / 67</td>
<td></td>
</tr>
<tr>
<td>Control Copy Text and Box</td>
<td>CELLS</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>control_copy_no1</td>
</tr>
<tr>
<td>Project Description</td>
<td>TEXT</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>7.0 / 67</td>
<td>DLCS H1</td>
</tr>
<tr>
<td>Quality Endorsement Logo</td>
<td>CELLS</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>TEXT</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>7.0 / 67</td>
<td>Image</td>
</tr>
<tr>
<td>VicRoads Logo</td>
<td>TEXT</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 = mscol2.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.

<table>
<thead>
<tr>
<th>Locality Plan Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of Content</td>
</tr>
<tr>
<td>Alignment Stations</td>
</tr>
<tr>
<td>Existing Road Network &amp; Shared User Pathway</td>
</tr>
<tr>
<td>Existing Road Network Text</td>
</tr>
<tr>
<td>Major Road</td>
</tr>
<tr>
<td>Major Road Names</td>
</tr>
<tr>
<td>Melways/VicRoads Reference</td>
</tr>
<tr>
<td>Municipal Boundaries</td>
</tr>
<tr>
<td>Municipal Names</td>
</tr>
<tr>
<td>North Point</td>
</tr>
<tr>
<td>Places of Interest</td>
</tr>
<tr>
<td>Railway</td>
</tr>
<tr>
<td>Railway Names</td>
</tr>
<tr>
<td>River and Creek Names</td>
</tr>
<tr>
<td>Description of Content</td>
</tr>
<tr>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Rivers and Creeks</td>
</tr>
<tr>
<td>Dam Area Fill</td>
</tr>
<tr>
<td>Site of Works</td>
</tr>
<tr>
<td>Site of Works - Extent of the Works</td>
</tr>
<tr>
<td>To/From Directional Linework and Text</td>
</tr>
<tr>
<td>Township Names</td>
</tr>
</tbody>
</table>

**Notes:**
1. Refer to VicRoads Cell Library – Misc Stickers.cel

### 3.4.5 Reference File Listing

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td>Black</td>
<td>Road Graphics in Masterfile</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptions</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 28</td>
<td></td>
</tr>
<tr>
<td>Drawing Numbers</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 28</td>
<td></td>
</tr>
<tr>
<td>Sheet Numbers</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 28</td>
<td></td>
</tr>
<tr>
<td>Titles</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2.5 / 65</td>
<td></td>
</tr>
</tbody>
</table>

3.5.5 Reference File Listing

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td></td>
<td>black</td>
<td></td>
</tr>
</tbody>
</table>

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.

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

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**

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chainage/Description</td>
<td>TEXT_ROADNAMES</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Design Line</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Line - Label</td>
<td>TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Design Surface Line</td>
<td>SURFACE_DESIGN</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Description of Content

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension Text</td>
<td>TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Existing Pavement</td>
<td>PAVEMENT_EXISTING</td>
<td>7</td>
<td>Road Xsect Hatch1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Surface Line</td>
<td>SURFACE_EXISTING</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fence Boundary</td>
<td>MISC_FENCE</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Guard Fence (Left &amp; Right)</td>
<td>SAFETY_BARRIER_GUARD_FENCE</td>
<td></td>
<td></td>
<td></td>
<td>guard_fence_L2 guard_fence_R2</td>
<td></td>
</tr>
<tr>
<td>Kerbs</td>
<td>KERB</td>
<td></td>
<td></td>
<td></td>
<td>kerbs2 (varies)</td>
<td></td>
</tr>
<tr>
<td>Leader Lines &amp; Linework</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise Wall Boundary</td>
<td>STRUCTURE_NOISE_WALL</td>
<td></td>
<td></td>
<td></td>
<td>NB2</td>
<td></td>
</tr>
<tr>
<td>Pavement Boxing</td>
<td>PAVEMENT_BOXING</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSR Boundary</td>
<td>BOUNDARY</td>
<td></td>
<td></td>
<td></td>
<td>PSR2</td>
<td></td>
</tr>
<tr>
<td>ROW Boundary</td>
<td>BOUNDARY</td>
<td></td>
<td></td>
<td></td>
<td>ROW2</td>
<td></td>
</tr>
<tr>
<td>Subsurface Drain</td>
<td>DRAINAGE_SUB_SURFACE</td>
<td></td>
<td></td>
<td></td>
<td>SDRAIN2</td>
<td></td>
</tr>
<tr>
<td>Safety Barrier (WRSB)</td>
<td>SAFETY_BARRIER_WIRE_Rope</td>
<td></td>
<td></td>
<td></td>
<td>WRSB2</td>
<td></td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td>Black</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 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.

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Surface Line</td>
<td>SURFACE_DESIGN</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimension Lines</td>
<td>TEXT</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Existing Pavement</td>
<td>PAVEMENT_EXISTING</td>
<td>7</td>
<td>Road Xsect Hatch¹</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Kerbs</td>
<td>KERB</td>
<td>varies</td>
<td>0</td>
<td>1</td>
<td></td>
<td>varies²</td>
</tr>
<tr>
<td>Pavement Detail Boxes</td>
<td>TEXT</td>
<td>varies</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement Heading Text</td>
<td>TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Pavement Layers Lines</td>
<td>PAVEMENT LAYERS</td>
<td>4</td>
<td>0/2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement Listing Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Section Title Text</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Chainage Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramps with loops</td>
<td>10m</td>
</tr>
<tr>
<td>Rural type environment</td>
<td>10m - 20m</td>
</tr>
<tr>
<td>Urban type environment</td>
<td>10m</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geometric Tangent Line</td>
<td>GEOMETRIC_TANGENT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road – Minor</td>
<td>ROAD_MINOR</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event Point Chainage</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>General Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Geometric Heading Text</td>
<td>TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Geometric Listing Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 28</td>
<td></td>
</tr>
<tr>
<td>IP Box</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td>IPbox2</td>
<td></td>
</tr>
<tr>
<td>IP Box Details</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>IP Box with Curve Details</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td>IP_curve_box2</td>
<td></td>
</tr>
<tr>
<td>North Point</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td>north1</td>
<td></td>
</tr>
<tr>
<td>Road Names</td>
<td>TEXT_ROADNAMES</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Survey Control Heading</td>
<td>TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Survey Control Listing</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 28</td>
<td></td>
</tr>
<tr>
<td>Survey Control Points &amp; Text</td>
<td>SURVEY_MARK</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td>black</td>
<td>black</td>
<td></td>
</tr>
</tbody>
</table>

#### 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 = mscol2.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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivers and Creek Names</td>
<td>TEXT_RIVERNAMES</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Design Lines</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Line Chainages</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4_TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>General Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Major Road Names</td>
<td>TEXT_ROADNAMES</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Minor Road Names</td>
<td>TEXT_ROADNAMES</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>North Point</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>north1</td>
</tr>
<tr>
<td>Railway Names</td>
<td>TEXT_RAILWAYNAMES</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
</tbody>
</table>
### Description of Content

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>To/From Directional</td>
<td>TEXT</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Titleblock Key Shape</td>
<td>TEXT_LIMIT &amp; TEXT</td>
<td></td>
<td></td>
<td></td>
<td>10.0 / 151</td>
<td>TBSHAPE _CTB4</td>
</tr>
</tbody>
</table>

**Note:**

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

### 3.9.6 Reference File Listing

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

### 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 ¾ 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.

<table>
<thead>
<tr>
<th>Alignment Plans</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection Criteria</td>
<td></td>
</tr>
<tr>
<td>Rural type environment, where details are sparse and the alignment is straightforward.</td>
<td>1:2000</td>
</tr>
<tr>
<td>Rural and urban type environment, where there are some construction constraints and the alignment is straight forward.</td>
<td>1:1000</td>
</tr>
<tr>
<td>Urban type environment where the alignment is complex and details are important.</td>
<td>1:500</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:2000</td>
<td>100m</td>
</tr>
<tr>
<td>1:1000</td>
<td>100m</td>
</tr>
<tr>
<td>1:500</td>
<td>50m</td>
</tr>
</tbody>
</table>

**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 = mscol2.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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross Reference Notes</td>
<td>TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Design Line</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Line Chainage</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMENT_1 TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4 TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5/27</td>
<td></td>
</tr>
<tr>
<td>Design Line Radii</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td></td>
</tr>
<tr>
<td>General Notes Text, e.g. Driveways, Earth Work, Barriers, Existing Services, Pavement Transition, Road Side Furniture, Bridge Work</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td></td>
</tr>
<tr>
<td>Grid &amp; Annotation</td>
<td>TEXT_GRID</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Inset Information</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td></td>
</tr>
<tr>
<td>Kerb and Channel Type</td>
<td>TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td></td>
</tr>
<tr>
<td>Kerb Outlet Diagram</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td>krbout2</td>
</tr>
<tr>
<td>Kerb and Channel Radii</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td></td>
</tr>
<tr>
<td>Kerb Transition Symbol</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td>KTS2</td>
<td></td>
</tr>
<tr>
<td>Leader Lines and Arrows</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limit of Works Text</td>
<td>TEXT_LIMIT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5/27</td>
<td></td>
</tr>
<tr>
<td>Limit of Works Linework</td>
<td>TEXT_LIMIT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Match Line Text</td>
<td>TEXT_LIMIT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Match Lines</td>
<td>TEXT_LIMIT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Point</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td>north1</td>
<td></td>
</tr>
<tr>
<td>Pram Crossing</td>
<td>MISC_PATH</td>
<td></td>
<td></td>
<td></td>
<td>tgsi_pram_crossing2</td>
<td></td>
</tr>
<tr>
<td>River and Creek Names</td>
<td>TEXT_RIVERNAMES</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Road Names</td>
<td>TEXT_ROADNAMES</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>ROW Boundary Notes</td>
<td>BOUNDARY_TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Services Warning Note</td>
<td>UTILITY_TEXT</td>
<td></td>
<td></td>
<td></td>
<td>warn1</td>
<td></td>
</tr>
<tr>
<td>Typical Island Treatment</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td>island2</td>
<td></td>
</tr>
<tr>
<td>Temporary Kerbing</td>
<td>KERB_TEMPORARY</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3.10.8 Reference File Listing

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

### 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.

<table>
<thead>
<tr>
<th>Drainage Plan Scale</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection Criteria</td>
<td></td>
</tr>
<tr>
<td>Rural type environment, where details are sparse and the alignment is straight forward.</td>
<td>1:2000</td>
</tr>
<tr>
<td>Rural and urban type environment, where there are some construction constraints and the alignment is straight forward.</td>
<td>1:1000</td>
</tr>
<tr>
<td>Urban type environment where the alignment is complex and details are important.</td>
<td>1:500</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Scale</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:2000</td>
<td>100m</td>
</tr>
<tr>
<td>1:1000</td>
<td>100m</td>
</tr>
<tr>
<td>1:500</td>
<td>50m</td>
</tr>
</tbody>
</table>

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

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

**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

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td></td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>Roadway Functional Layout</td>
<td>16</td>
<td>16</td>
<td>All roadway features are displayed as a guide except the line of kerb.</td>
</tr>
<tr>
<td>3D Strings Model</td>
<td>16</td>
<td>16</td>
<td>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.</td>
</tr>
<tr>
<td>Existing Pavement Area</td>
<td></td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Drainage Network Layout</td>
<td></td>
<td>black</td>
<td>The file setting when Drainage Plans are supplied separately to Alignment Plans</td>
</tr>
<tr>
<td>Subsurface Drainage Layout</td>
<td></td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Existing Contours</td>
<td></td>
<td>43</td>
<td>Major contours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>37</td>
<td>Minor contours</td>
</tr>
<tr>
<td>Design Contours / Land Forming</td>
<td></td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>Signs and Linemarking Layout</td>
<td>16</td>
<td>16</td>
<td>All linemarking is displayed</td>
</tr>
<tr>
<td>Engineering Feature Survey (FS)</td>
<td></td>
<td>18</td>
<td>Strings representing invert of water features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Engineering Enhancement Survey (ES)</td>
<td></td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Engineering Cadastral Base (CB)</td>
<td></td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>

### 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.

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaching</td>
<td>DRAINAGE_BEACHING</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>beaching_drain²</td>
<td></td>
</tr>
<tr>
<td>Boxing</td>
<td>PAVEMENT_Boxing</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Surface Line</td>
<td>SURFACE_DESIGN</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Pavement</td>
<td>PAVEMENTEXISTING</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>Road Xsect Hatch¹</td>
<td></td>
</tr>
<tr>
<td>Existing Surface Line</td>
<td>SURFACE_EXISTING</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Pipe/Culvert Line</td>
<td>DRAINAGE_PIPE</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Description of Content

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe/Culvert Line</td>
<td>DRAINAGE_PIPE</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Pit Lines</td>
<td>DRAINAGE_PIT</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Pit Lines</td>
<td>DRAINAGE_PITS</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pit Number Box &amp; Text</td>
<td>DRAINAGE_STRUCTURE_NUMBER</td>
<td></td>
<td></td>
<td></td>
<td>1.8 / 27</td>
<td>pitnum²</td>
</tr>
<tr>
<td>Pit Leader Lines</td>
<td>DRAINAGE_STRUCTURE_NUMBER</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pit Schedule Table</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 28</td>
<td>psched²</td>
</tr>
<tr>
<td>Invert/Outlet Levels</td>
<td>DRAINAGE_TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Pipe/Culvert Size, Grade, Length</td>
<td>DRAINAGE_TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Utility Services</td>
<td>UTILITY_GAS_UNDERGROUND</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UTILITY_ELECTRICITY_UNDERGROUND</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UTILITY_SEWER_UNDERGROUND</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UTILITY_WATER_UNDERGROUND</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility Text</td>
<td>UTILITY_TEXT</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td></td>
<td>black</td>
<td></td>
</tr>
</tbody>
</table>

### 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 = mscol2.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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Line</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMENT_1 to GEOMETRIC_HORIZONTAL_ALIGNMENT_4</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Line Chainage</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMENT_4_TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Grid &amp; Annotation</td>
<td>TEXT_GRID</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Limit of Works Linework</td>
<td>TEXT_LIMIT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limit of Works Text</td>
<td>TEXT_LIMIT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Match Line Text</td>
<td>TEXT_LIMIT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Match Lines</td>
<td>TEXT_LIMIT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Point</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td>north¹</td>
<td></td>
</tr>
<tr>
<td>Notes on Existing Services</td>
<td>UTILITY_TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Pavement Notes</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Pavement Type Legend</td>
<td>TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>River &amp; Creek Names</td>
<td>TEXT_RIVERNAMES</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Road Names</td>
<td>TEXT_ROADNAMES</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>To/From Directional Text &amp; Linework</td>
<td>TEXT</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Design Line - Label</td>
<td>TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
1. Refer to VicRoads Cell library – Misc Stickers.cel

### 3.13.8 Reference File Listing

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

### 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**

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment where set out and construction requires comprehensive information/details.</td>
<td>1:500</td>
</tr>
<tr>
<td>Environment where details are important to the design and construction outcome.</td>
<td>1:250</td>
</tr>
</tbody>
</table>

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.
# VicRoads Final Drawing Presentation Guidelines

## Detail Plan Specifications

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Details</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Reference Notes</td>
<td>TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Grid &amp; Annotation</td>
<td>TEXT_GRID</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>North Point</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>north^1</td>
</tr>
<tr>
<td>River &amp; Creek Names</td>
<td>TEXT_RIVERNAMES</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Road Names</td>
<td>TEXT_ROADNAMES</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>To/From Directional Text &amp; Linework</td>
<td>TEXT</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td><strong>Construction Details</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Line</td>
<td>GEOMETRIC_HORIZON TAL_ALIGNMENT_1 to GEOMETRIC_HORIZON TAL_ALIGNMENT_4</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Line Chainage</td>
<td>GEOMETRIC_HORIZON TAL_ALIGNMENT_1_TEXT to GEOMETRIC_HORIZON TAL_ALIGNMENT_4_TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Limit of Works Linework</td>
<td>TEXT_LIMIT</td>
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<td>2</td>
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</tr>
<tr>
<td>Limit of Works Text</td>
<td>TEXT_LIMIT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Setout Diagram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SOARC</td>
</tr>
<tr>
<td>Design Major Contours</td>
<td>SURFACE_DESIGN_CONTOUR_MAJOR</td>
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<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Minor Contours</td>
<td>SURFACE_DESIGN_CONTOUR_MINOR</td>
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<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Contour Text</td>
<td>SURFACE_DESIGN_CONTOUR_TEXT</td>
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<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Design Line - Label</td>
<td>TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td><strong>Kerb and Channel Details</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerb and Channel Type</td>
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<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Kerb and Channel Radii</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Salient Point Circle &amp; Text</td>
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<td></td>
<td></td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Temporary Kerbing</td>
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<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerb Transition Symbol</td>
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<td></td>
<td></td>
<td></td>
<td>KTS^2</td>
<td></td>
</tr>
<tr>
<td>Kerb Outlet Diagram</td>
<td>TEXT</td>
<td></td>
<td></td>
<td></td>
<td>KRBout^2</td>
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</tr>
<tr>
<td>Match Lines</td>
<td>TEXT_LIMIT</td>
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<td>0</td>
<td>2</td>
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<tr>
<td><strong>Set Out Table</strong></td>
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<td>0</td>
<td>1</td>
<td>1.8 / 28</td>
<td></td>
</tr>
<tr>
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<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

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

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 ant 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**

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

**Notes:**
1. Refer to VicRoads Cell Library – Road Design.cel

**3.15.6 Reference File Listing**

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td></td>
<td>black</td>
<td></td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Longitudinal Sections</th>
<th>Selection Criteria</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freeway and Divided Highway standard facilities proposed for a rural type environment</td>
<td>Horz. 1:5000, Vert. 1:500 or Horz. 1:4000, Vert. 1:400</td>
</tr>
<tr>
<td></td>
<td>Highway, Main roads, Access Roads and Freeway Ramps proposed for a urban type environment</td>
<td>Horz. 1:2000, Vert. 1:200 or Horz. 1:1000, Vert. 1:100</td>
</tr>
<tr>
<td></td>
<td>Short lengths of Access Roads or Urban Roads</td>
<td>Horz. 1:1000, Vert. 1:100 or Horz. 1:500, Vert. 1:50</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Longitudinal Sections</th>
<th>Chainage Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Type Environment</td>
<td>20m or 10m</td>
</tr>
<tr>
<td>- 10m interval maybe required for the auto grade</td>
<td>10m</td>
</tr>
<tr>
<td>Urban Type Environment</td>
<td>10m</td>
</tr>
<tr>
<td>Ramps</td>
<td>10m</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis Linework</td>
<td>SECTIONS</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axis Text</td>
<td>SECTIONS</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Axis Ticks</td>
<td>SECTIONS</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Road Design Line</td>
<td>TEXT</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Road Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Design Gradeline</td>
<td>GEOMETRIC.VERTICAL_ALIGNMENT_1 to GEOMETRIC.VERTICAL_ALIGNMENT_4</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Surface</td>
<td>SURFACE_DESIGN</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Leader Lines</td>
<td>TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Existing Pavement</td>
<td>PAVEMENT_EXISTING</td>
<td>7</td>
<td></td>
<td></td>
<td>Road Xsect Hatch1</td>
<td>0</td>
</tr>
<tr>
<td>Existing Surface Line</td>
<td>SURFACE_EXIST</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection Triangles &amp; Salient Marks</td>
<td>GEOMETRIC.VERTICAL_ALIGNMENT_1 to GEOMETRIC.VERTICAL_ALIGNMENT_4</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection Point Text</td>
<td>GEOMETRIC.VERTICAL_ALIGNMENT_1_TEXT to GEOMETRIC.VERTICAL_ALIGNMENT_4_TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Length of Curve, K Value &amp; Salient Point Text</td>
<td>GEOMETRIC.VERTICAL_ALIGNMENT_1 to GEOMETRIC.VERTICAL_ALIGNMENT_4</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Grade Text</td>
<td>GEOMETRIC.VERTICAL_ALIGNMENT_1_TEXT to GEOMETRIC.VERTICAL_ALIGNMENT_4_TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Reduced Level Grid</td>
<td>SECTIONS</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-headings, e.g. Chainage, Gradeline, Existing Surface</td>
<td>TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Other Surfaces</td>
<td>SURFACE_1 to SURFACE_4</td>
<td>16</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. Refer to VicRoads Custom Linestyles.pdf – General Group
3.16.6 Reference File Listing

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td></td>
<td>black</td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

### Selection Criteria Chainage Interval

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Chainage Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural type environment</td>
<td>10 m - 20 m</td>
</tr>
<tr>
<td>Urban type environment</td>
<td>10 m</td>
</tr>
<tr>
<td>Ramps with loops</td>
<td>10 m</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boxing</td>
<td>PAVEMENT_BOXING</td>
<td>7</td>
<td>Road Xsect Shape²</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Surface Line</td>
<td>SURFACEEXISTING</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Pavement</td>
<td>PAVEMENTEXISTING</td>
<td>7</td>
<td>Road Xsect Hatch¹</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Surface Line</td>
<td>SURFACEDESIGN</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement Boxing</td>
<td>PAVEMENT_BOXING</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crossfall / Slope</td>
<td>TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td></td>
</tr>
<tr>
<td>Fence</td>
<td>MISC_FENCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>fence²</td>
</tr>
<tr>
<td>Kerbs</td>
<td>KERB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>varies¹</td>
</tr>
<tr>
<td>Leader Lines</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise Barrier</td>
<td>STRUCTURE_NOISE_WALL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NB²</td>
</tr>
<tr>
<td>Offsets and reduced levels</td>
<td>TEXT</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td></td>
</tr>
<tr>
<td>PSR Boundary &amp; Text</td>
<td>BOUNDARY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PSR²</td>
</tr>
<tr>
<td>ROW Boundary &amp; Text</td>
<td>BOUNDARY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ROW²</td>
</tr>
</tbody>
</table>

### Cross Section Axis Details

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis Linework</td>
<td>SECTIONS</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axis Text</td>
<td>SECTIONS</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td></td>
</tr>
<tr>
<td>Axis Ticks</td>
<td>SECTIONS</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chainage</td>
<td>SECTIONS</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5/27</td>
<td></td>
</tr>
</tbody>
</table>

### Enhancement Detail Descriptions

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feature Linework</td>
<td>TEXT</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader Lines</td>
<td>TEXT</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text</td>
<td>TEXT</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.8/27</td>
<td></td>
</tr>
</tbody>
</table>

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

3.17.6 Reference File Listing

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td>black</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment where details are sparse and the installation of Signs and Pavement Marking is straight forward</td>
<td>1:1000</td>
</tr>
<tr>
<td>Environment where the detail is complex, e.g. intersections</td>
<td>1:500</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Details</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Reference Notes</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td>north¹</td>
</tr>
<tr>
<td>Design Line - Chainages</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMENT_1_TEXT</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>General Text</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td>warn¹</td>
</tr>
<tr>
<td>Match Lines</td>
<td>TEXT_LIMIT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Match Line Text</td>
<td>TEXT_LIMIT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>North Point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road Names</td>
<td>TEXT_ROADNAMES</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>Services Warning Note</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To/From Directional Text</td>
<td>TEXT</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Limit of Works Linework</td>
<td>TEXT_LIMIT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limit of Works Text</td>
<td>TEXT_LIMIT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td><strong>Pavement Marking Details</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimension Details</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Salient Point Text &amp; Circle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>setout_point_in_circle_18_double²</td>
</tr>
<tr>
<td>Table Line</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Figures/Text</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8 / 28</td>
<td></td>
</tr>
<tr>
<td><strong>Sign Details</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Sign Image</td>
<td>SIGNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Sign Face Panel</td>
<td>SIGNS</td>
<td></td>
<td>Coloured</td>
<td>0</td>
<td>1</td>
<td>various³</td>
</tr>
<tr>
<td>Sign Numbers</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Sign Symbols</td>
<td>SIGNS</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
<td>various³</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>WT Override</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td></td>
<td></td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>Roadway Functional Layout</td>
<td>8</td>
<td>8</td>
<td></td>
<td>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</td>
</tr>
<tr>
<td>- Line of Kerb</td>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement Marking Layout</td>
<td></td>
<td></td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>Drainage Network Layout</td>
<td>8</td>
<td>8</td>
<td></td>
<td>Only pits are displayed</td>
</tr>
<tr>
<td>Engineering Feature Survey (FS)</td>
<td>9</td>
<td>9</td>
<td></td>
<td>This file is clip masked to the limits of the proposed works as necessary</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensioning</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>General Text</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
</tbody>
</table>

3.19.6 Reference File Listing

<table>
<thead>
<tr>
<th>Reference Files</th>
<th>Override Colour</th>
<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>VicRoads Corporate Titleblock</td>
<td>0</td>
<td>black</td>
<td></td>
</tr>
</tbody>
</table>

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  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment where details are sparse and lighting design is straightforward</td>
<td>1:1000</td>
</tr>
<tr>
<td>Intersection environment where details are sparse and lighting design is straightforward</td>
<td>1:500</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Details</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Text</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Match Lines</td>
<td>TEXT_LIMIT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Match Line Text</td>
<td>TEXT_LIMIT</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2.5 / 27</td>
<td></td>
</tr>
<tr>
<td>North Point</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>north1</td>
</tr>
<tr>
<td>Road Names</td>
<td>TEXT_ROADNAMES</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>ROW Boundary Line</td>
<td>BOUNDARY</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services Warning Note</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>warn1</td>
</tr>
<tr>
<td>Grid and Annotation</td>
<td>TEXT_GRID</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>ROW Boundary proposed</td>
<td>BOUNDARY_PROPOSED</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To/From Directional</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27</td>
<td></td>
</tr>
<tr>
<td>Design Line</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMET_1 to GEOMETRIC_HORIZONTAL_ALIGNMET_4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design Line Chainages</td>
<td>GEOMETRIC_HORIZONTAL_ALIGNMET_1_TEXT to GEOMETRIC_HORIZONTAL_ALIGNMET_4_TEXT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend**

### Street Lighting Details

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket length</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>Pole Number</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8</td>
<td>setout_point_in_circle_1_8_double2</td>
</tr>
<tr>
<td>Pole Type</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8</td>
<td></td>
</tr>
</tbody>
</table>

**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

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

### 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

Note: The detectors will be added by Department of Transport Signal Services

The Detector Map Drawing with the relevant layers must be provided as a .JPEG/.PNG/.PDF 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 Rd/Blythe 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
- AS 1428.1 (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 AS 1742.2 Traffic Control Devices for General Use and VicRoads supplementary guidance to this document for placement of pavement markings at signalised 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. Approach grade shall be determined by obtaining the elevation at the stop line, elevation at the Approach Grade Distance and calculating the grade over the Approach Grade Distance (refer to table below for Approach Grade Distance). Elevation points shall be measured from approximately the middle of the approach lanes.

### Approach Grade Distance for determining Approach Grade

<table>
<thead>
<tr>
<th>Design Speed (km/h)</th>
<th>Approach Grade Distance (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤40</td>
<td>40</td>
</tr>
<tr>
<td>45 (right turn vehicles)</td>
<td>40</td>
</tr>
<tr>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>70</td>
<td>90</td>
</tr>
<tr>
<td>80</td>
<td>110</td>
</tr>
<tr>
<td>90</td>
<td>140</td>
</tr>
</tbody>
</table>

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.

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**

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>All graphics representing existing conditions that were formerly sourced from a ground survey or other</td>
<td>EXISTING</td>
<td>8</td>
<td></td>
<td>varìes¹</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All new Paths and DDA requirements</td>
<td>MISC_PATH</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Any proposed drainage graphics representing pipes, etc</td>
<td>DRAINAGE_PIPE</td>
<td>3</td>
<td></td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sign 'Symbols' and actual Sign Graphics</td>
<td>SIGNS</td>
<td></td>
<td></td>
<td></td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Existing Line/Pavement Markings</td>
<td>EXISTING_PAVEMENT_MARKING</td>
<td>8</td>
<td></td>
<td>varies¹</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting Features</td>
<td>MISC_LIGHTING</td>
<td>0</td>
<td></td>
<td>1</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>New Design 'Line of Kerb'</td>
<td>KERB_LINE</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Proposed Line/Pavement Markings</td>
<td>PAVEMENT_MARKING</td>
<td>2</td>
<td></td>
<td>varies¹</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal/Pedestrian Lanterns, Controller, Distribution Box, 'Push Buttons', etc</td>
<td>TRAFFIC_SIGNAL</td>
<td>0</td>
<td></td>
<td>1</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Traffic Detector Pad/Loop</td>
<td>TRAFFIC_DETECTION_LOOP</td>
<td>0</td>
<td></td>
<td>1</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Traffic Signal Conduits Existing</td>
<td>EXISTING</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Traffic Signal Conduits Proposed</td>
<td>TRAFFIC_CONDUIT</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Traffic Light Phasing Existing</td>
<td>TRAFFIC_PHASING</td>
<td>8</td>
<td></td>
<td>varies¹</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Traffic Light Phasing Proposed</td>
<td>TRAFFIC_PHASING</td>
<td>0</td>
<td></td>
<td>varies¹</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Lantern Schedule Existing</td>
<td>TRAFFIC_SIGNAL</td>
<td>8</td>
<td></td>
<td>varies¹</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Lantern Schedule Proposed</td>
<td>TRAFFIC_SIGNAL</td>
<td>0</td>
<td></td>
<td>varies¹</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Traffic Signal Pits</td>
<td>TRAFFIC_PIT</td>
<td>0</td>
<td></td>
<td>varies¹</td>
<td>various³</td>
<td></td>
</tr>
<tr>
<td>Installation Notes Heading</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Installations_Notes</td>
<td></td>
</tr>
<tr>
<td>Lantern Heading</td>
<td>TRAFFIC_SIGNAL</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Lantern</td>
<td></td>
</tr>
<tr>
<td>Phasing Heading</td>
<td>TRAFFIC_PHASING</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Phasing</td>
<td></td>
</tr>
<tr>
<td>Remodel Notes &amp; Heading</td>
<td>TEXT</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Remodel_Notes</td>
<td></td>
</tr>
</tbody>
</table>
### Description of Content

<table>
<thead>
<tr>
<th>Description of Content</th>
<th>Level Name</th>
<th>CO</th>
<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign Schedule Heading</td>
<td>SIGNS</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1.8 / 27 (A3) 2.5 / 27 (A0/A1)</td>
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<tbody>
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<td>0</td>
<td>0</td>
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</tr>
</tbody>
</table>

### UTILITIES

| Communication Lines - Overhead | UTILITY_COMMUNICATION_OVERHEAD | 3  | varies4 | 0  |           |
| Communication Lines - Underground | UTILITY_COMMUNICATION_UNDERGROUND | 3  | varies4 | 0  |           |
| Existing Drainage               | DRAINAGE_UNDERGROUND           | 3  | drainage line | 0  |           |
| Gas Features - Underground      | UTILITY_GAS_UNDERGROUND        | 3  | varies4 | 0  |           |
| Gas Features - Various          | UTILITY_GAS                    | 3  | varies4 | 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  | warn2     |
| Signal Hardware Note            | TEXT                          | 3  | 0  | 1  | TRAF_5002 |

### 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

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<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
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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**

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<th>LC</th>
<th>WT</th>
<th>Printed Text Height (mm)/Font</th>
<th>Cell Name</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
</tr>
<tr>
<td>Road Names</td>
<td>TEXT_ROADNAMES</td>
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<td>0</td>
<td>1</td>
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</tr>
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<td></td>
<td>north¹</td>
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<td>1</td>
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<td></td>
</tr>
<tr>
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</tr>
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</table>

**Notes:**
1. Refer to VicRoads Cell Library – Misc Stickers.cel
2. Refer to VicRoads Cell Library – TM.cel
### 3.22.7 Reference File Listing

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<th>Printed Colour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
<tr>
<td>Traffic Signal Plan – Base</td>
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<td></td>
</tr>
<tr>
<td>Traffic Signal Plan – Pavement Markings</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

### 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:

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<th>Field Type</th>
</tr>
</thead>
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<tr>
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<td>Character</td>
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<td>Revision number</td>
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<td>Alpha</td>
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<tr>
<td>Drawing type</td>
<td>3</td>
<td>Character</td>
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</table>

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.

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<td></td>
<td></td>
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**Notes:**

1. Refer to VicRoads Custom Linestyles.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\Stdtb1.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
## 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.

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## Standard Terminology

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