

SAPTA



Government of South Australia
Department for Infrastructure
and Transport

Drafting requirements for SAPTA Drawings

Engineering Standard

Asset Management

AM5-DOC-003408

DOCUMENT AMENDMENT RECORD

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1. Introduction

The South Australian Public Transport Authority (SAPTA) is a Directorate within the Department for Infrastructure and Transport (DIT) responsible for the delivery of public transport services.

SAPTA on behalf of the department manages the Adelaide Metropolitan Public Transport Network. As part of the execution of responsibilities of this role it must have a governance structure which includes the adoption of standards, policies and procedures.

2. Purpose

The purpose of this standard is to define the requirements for drawings produced for public transport infrastructure and rollingstock.

3. Scope

This standard applies to all SAPTA public transport drawings.

Where there is significant road or third-party infrastructure associated with a project, the DIT *Road Design CAD Manual RD1* should be applied to the drawings applicable to the road/third party component of the project.

In the case of doubt, advice shall be sought from SAPTA prior to proceeding.

4. Related Documents

DOCUMENT NAME	DOCUMENT NUMBER
Railway – Master Specifications	Various
Bus Infrastructure – Master Specifications	Various
Public Transport Infrastructure – Master Specifications	Various
Lifecycle Management of Technical Documents and Drawings	FR-AM-GE-803
Identification and Numbering of SAPTA Technical Documents and Drawings	FR-AM-GE-806
SAPTA Drawings Acceptance Procedure	PR-AM-GE-1013
Signalling Design Process and Design Production Standard for Contractors	SG1-DOC-000375
<i>Road Design CAD Manual</i>	RD1
Asset Management Technical Data Requirements	PTS-MS-05-AM-PRC-00000091

5. Drawing Title Blocks, Templates and examples

Table .1. Drawing title block templates (KNet reference for internal DIT purposes only)

DRAWING TITLE BLOCK TEMPLATES	KNET NUMBER
TRAIN, TRAM AND BUS	
DIT (SAPTA) - A1 Title Block - Drawing Template - (Non-Rail Signalling)	KNet 7636680
DIT (SAPTA) - A2 Title Block - Drawing Template - (Non-Rail Signalling)	KNet 7636685
DIT (SAPTA) - A3 Title Block - Drawing Template - (Non-Rail Signalling)	KNet 7636665
DRAWING TITLE EXAMPLES FOR TRAIN, TRAM AND BUS	
DIT (SAPTA) - Train, Tram, and Bus - Drawing Title Examples - <i>Refer Appendix F within</i>	KNet 19046970
RAIL SIGNALLING DRAWING TITLE BLOCK TEMPLATES	KNET NUMBER
TRAIN AND TRAM: RAIL SIGNALLING:	
DIT (SAPTA) - Rail Signalling - Bonding & Master Signalling Plan - Drawing Template - Size A0	KNet 18637292
DIT (SAPTA) - Rail Signalling - Circuit Plan - Drawing Template - Size A2	KNet 18637313
DRAWING TITLE EXAMPLES FOR TRAIN AND TRAM: RAIL SIGNALLING	
DIT (SAPTA) - Rail Signalling - Drawing Title Examples - <i>Refer Appendix E within</i>	KNet 18637343

Project Managers and Designers requiring access to AutoCAD versions of the drawing templates should contact the SAPTA Asset Management Document Controller (AMDC).

5.1. Contractor / Projects responsibilities

For all public transport drawings, it is the responsibility of the Contractor creating or updating both new and existing drawings under a Public Transport Project to:

- Update the Drawing Title Block to the most current version (at the commencement of the project).
- Update the Drawing Title in accordance with;
 - (i) This document, and
 - (ii) FR-AM-GE-806 Identification and Numbering of Technical Documents and Drawings

Note:

Drawing titles are not to include the *design package number* or the *project name* unless part of the project name is the actual location of the drawing itself.

Example:

- **Paradise Interchange Park & Ride** is acceptable in the drawing title as it sets out the location of the drawing, but;
- **Paradise Interchange Park & Ride Project** is not acceptable as it is just the project title.

5.1.1. New Drawings

For any new drawings, the Project on behalf of the Contractor must request drawing numbers from SAPTA.

- a) The Project on behalf of the Contractor must request drawing numbers from SAPTA;
- b) These new drawing numbers must be used as the primary drawing number by any Contractor / Project;
- c) In a set of drawings, all internal references in the drawings themselves shall refer to the SAPTA drawing numbers allocated;
- d) Any number allocated by the project /contractor that is not a SAPTA allocated drawing number, will be considered foreign and shall not be referred to officially on the drawings themselves nor the SAPTA Project Drawings Acceptance Form;
- e) Drawings with incorrect numbers shall not be accepted.

6. Roles and Responsibilities

6.1. Designer

The Designer is responsible for:

- verifying the design requirements/changes;
- ensuring that the design meets the design requirements/changes;
- ensuring that the design meets all relevant standards;
- ensuring, where required, that the design is independently verified, and
- Initial and surname of designer shall be shown on the title block of the 'As Built' drawings.

6.2. Drafter

The Drafter is responsible for:

- following the designer's directions in composing the drawing;
- ensuring that the drawing complies with this document and other relevant drafting standards, and
- Initial and surname of drafter shall be shown on the title block of the 'As Built' drawings.

6.3. Checker

The Checker is responsible for:

- ensuring the drawing complies with this drafting standard;
- carrying out a review of the drawing content against the design requirements/changes, and;
- Initial and surname of the Checker shall be shown on the title block of the 'As Built' drawings.

6.4. Approver

The Approver is responsible for:

- Ensuring the Designer, Drafter and Checker have the competency to carry out their design and drawing development responsibilities;
- Authorising the drawing for use, and;
- Initial and surname of Approver shall be shown on the title block of the 'As Built' drawings.

6.5. Designer / Drafter / Checker / Approver — Non-Rail Signalling Drawings

- The Designer and Drafter can be the same person
- The Designer and Checker must be different people
- The Designer and Approver must be different people
- The Checker and Approver can be the same person

6.6. Designer / Drafter / Checker / Approver – Rail Signalling Drawings

- The Designer and Drafter can be the same person
- The Designer and Checker must be different people
- The Designer and Approver must be different people
- The Checker and Approver must be different people
(For signal drawings there must be at least three independent people excluding the draftsman)
- Where applicable, an Independent Design Verifier (external to the design organisation) may also annotate a drawing as being verified.

7. AutoCAD® Drafting Requirements

7.1. Drawing Size

The following sheet sizes will be used:

- | | | |
|-------------------------|----------------|-----------------------|
| • A0 (841 mm x 1188 mm) | KNet #18637292 | (rail signalling) |
| • A1 (594 mm x 841 mm) | KNet #7636680 | (non-rail signalling) |
| • A2 (420 mm x 594 mm) | KNet #7636685 | (non-rail signalling) |
| • A2 (420 mm x 594 mm) | KNet#18637313 | (rail signalling) |
| • A3 (297 mm x 420 mm) | KNet #7636665 | (non-rail signalling) |

KNet references are for internal DIT purposes only. Project Managers and Designers requiring access to AutoCAD versions of the templates should contact SAPTA.

7.2. Drawing Files

1. The current version of AutoCAD software must be used.
2. No other software will be accepted, including Visio or other similar products.
3. The format during all updates must remain in native AutoCAD format; ie it is not acceptable to transfer designs into other software products, rework then transfer back to AutoCAD;
4. Each DWG file shall only contain one drawing – multiple layout tabs for different drawings in one DWG file are not acceptable. Each sheet must have its own CAD file.
5. All drawing files shall be stand-alone drawings with no reference files (X-refs) attached.
6. External references shall not be used.
7. Internal reference files may be used but shall be merged prior to submission to SAPTA.

7.3. Layout Plans and Cut lines

1. Unless otherwise agreed by SAPTA Asset Management, existing plans and drawing cut lines shall remain the same; and
2. Existing drawings are required to be checked out, modified and checked back in to correctly align the layout and cut lines.

7.4. Drawing Layout

1. Views, symbols, dimensions, etc. should be spaced to provide clarity. If necessary, areas of fine detail should be shown suitably enlarged on additional drawing sheets
2. Dimensions should be placed clearly above the dimension line
3. Crossing of dimension lines should be avoided (The suitable AutoCAD command may be used)
4. Extension lines should extend at least 2 mm beyond the dimension line
5. Notes should be located clear of the drawing entities and leaders used where necessary to ensure it is clear what the note relates to. Notes should be referenced in the drawing as – ‘See Note X’
6. Details of reference drawings or documents should be placed below Notes.

7.5. Model Space

1. Model Space shall contain all the information for the body of the drawing including the dimensions
2. All content in ‘the model’ and any other content that needs to be positioned with respect to the model should exist in Model Space.

7.6. Paper Space

1. Content that needs to be located in relation to the sheet of paper should exist in Paper Space.
2. The title block should be inserted in Paper Space.
3. Paper Space may only contain the title block, legend, north point, scale bar, notes, and tables. The title block shall be referenced in at the origin location of (0, 0) at a scale of 1:1 in Paper space and shall incorporate accurately scaled viewport/s as required to display the information contained in ‘the model’.
4. The drawing limits shall be set to the correct sheet size (A1, A2, A3 or A0) with the bottom left-hand corner set to (0, 0).
5. Viewports shall be set to ‘not print’ and be ‘locked’ unless visible objects for details are required.
6. Any scaling and rotation of information shall be performed within viewports.

7.7. Drawing Scale

1. All Model Space contents shall be created at 1:1 and displayed in Paper Space at one of the preferred scales listed below
2. Where it is not practical to create the drawing at 1:1 or to use any specific scale (e.g., for schematic drawings) then the whole drawing or the specific detail shall be clearly marked as “NTS (Not to Scale)”
3. Where multiple scales are used, provide the specific scale block in the appropriate viewports.

Preferred Scales

- (i) Generally, 1:200, 1:250, 1:500, 1:1000, 1:2000, 1:5000, 1:10000
- (ii) Details 1:2, 1:2.5, 1:5, 1:10, 1:20, 1:25, 1:50, 1:100

7.8. Line Types

- (i) Only standard AutoCAD line types or those supplied by the Department shall be used.

7.9. Shape Files

- (i) Only standard AutoCAD shape files or those supplied by the Department shall be used.

7.10. Line Colour and Line Weight

For signalling designs refer to *Signalling Design Process and Design Production Standard for Contractors - SG1-DOC-000375*.

For all other drawings, the colours of the lines in the drawing can be set by the Drafter. Examples of line colours for drawing layers are shown in Appendix A and B.

When drawings are plotted the weight of each line shall be determined by its colour. (See the table below). Default width of the line is 0.25 mm.

When plotting at a reduced size the line weights shall be scaled accordingly by selecting the 'Scale Line Weights' option from the AutoCAD plot dialog.

Colour on drawings must be used when it would otherwise be difficult to interpret the information on the drawing, if printed in black and white, or greyscale. If a colour is used in the engineering content of a drawing, then a key or legend containing details of what each colour represents, and the line weight and style shall be added to the drawing. Use of coloured logos on a drawing would not necessitate the placement of drawing colour coded box.

For rail signalling drawings refer to table 2

Table 2. SAPTA Rail Signalling - colour styles and lines

COLOURS				PLOT STYLES			
AUTOCAD COLOUR	COLOUR NAME (RGB VALUES)	USAGE EXAMPLES	SAPTA COLOUR		SAPTA BLACK		
			MM	COLOUR	MM	COLOUR	
1	Red (255,0,0)	Specific design features (Addition of signalling asset, infrastructure, and electrical component/circuit)	1.00	Object Colour	1.00	Black	
2	Green (0,255,0)	Specific design features (Removal of signalling asset, infrastructure, and electrical component/circuit)	1.00	Object Colour	1.00	Black	
3	Blue (0,0,255)	Specific design features (Cloud and Notes)	0.25	Object Colour	0.25	Black	
4	Black / White (255,255,255)	Specific design features (Bonding & Cable Plan, Master Signalling Plan and Circuit Plan)	0.25	Object Colour	0.25	Black	

7.11. Text**7.11.1. Size**

The finished paper text height for all text shall be either 2.5mm, 3.0mm, 3.5mm, 5mm, 7mm or 10 mm.

7.11.2. Colour

For SHX fonts, the text colour shall be dependent upon the text height as indicated in the table below.

Other text may either be black or follow the convention in Table 3 below:

Table 3. Commonly used text height and colour

TEXT HEIGHT	COLOUR
2.5mm	Black
3.5mm	Green
5mm	Red
7mm	Blue
10mm	Blue

7.11.3. Case

All text shall be in upper case except for notes & references and where a recognised convention dictates otherwise. This includes SI units (e.g. mm, kg, kV, kPa). Also see 7.11.5.

7.11.4. Fonts

All text shall use one of the following fonts:

- ARIAL NARROW
- ISOCP
- ISOCP 2
- ARIAL

7.11.5. Electronic Signature

A signature with the first name initial and full second name of the 'Approver' shall be inserted using 2-5mm text height "Mistral" font. This shall be in sentence case to look like a signature i.e. *A. Prover*

7.11.6. Width Factor / Angle

All text shall be vertical and have a width factor of 1.

7.11.7. Elevation

All text shall have an elevation (Z level) of 0.

7.12. Layer**7.12.1. Layer Naming**

The format for all layer names shall be:
X-CODE-DESCRIPTION

Where,

X – 'D' for design features, 'S' for surveyed features, 'R' for rest of features
CODE – one of 4-character feature type codes from the table below:

Table .4. Layering naming

CODE	DESCRIPTION
RAIL	Features related to train or tram track works
BUS I	Features related to Bus Infrastructure
RAEL	Features related to rail electrification and other electrical systems
RAST	Features related to civil structures for rail (bridges, safety screens etc.)
RASA	Features related to rail station works (platforms, shelters etc.)
SIGS	Features related to signals
COMM	Feature related to communications
SECU	Feature related to security and passenger interface
CORR	Feature related to corridors and fencing
ENHA	General Drawing Enhancements (Title block, notes, legends, text & leaders, north points etc.)
MECH	Features related to mechanical components (rolling stock, plant, equipment, tools etc.)
MISC	Only to be used for items that do not fit into one of the other type codes
ELEC	Feature related to Electrical Low voltage installations

7.12.2. Subdividing Layers

Base layers may be subdivided by adding a further description to the right-hand end of the layer name. For example, “D-RASA-Platform” may be subdivided into “D-RASA-Platform-Edge” and “D-RASA-Platform-Paving”

7.13. AutoCAD File Name

The drawings shall have file names consisting of the SAPTA drawing number and revision.

7.14. Title Block

The following title block shall be used for Train, Tram and Bus drawings. (Non-Rail Signalling). Available in sizes A1, A2 and A3. (Refer section 5 within).

Fig 1 Title Block – (Non-Rail Signalling)

UNCONTROLLED WHEN PRINTED

1	2	3	4	5	6	7	8
A							A
B							B
C							C
D							D
E							E
F							F

	DESIGNER: A DESIGNER	STANDARD DRAWING/ASSET LOCATION ASSET TYPE ASSET DESCRIPTION DRAWING TYPE	Government of South Australia Department for Infrastructure and Transport XXX-DRG-XXXXXX				
	DATE: DD/MM/YYYY			REVISION	1	SHEET No.	A3
	DRAFTER: A DRAFTER			SCALE	1 : 1	1 OF 1	
	DATE: DD/MM/YYYY						
	CHECKER: A CHECKER						
	DATE: DD/MM/YYYY						
	APPROVER: <i>A Proves</i>						
	DATE: DD/MM/YYYY						
1 AS BUILT. MOC _____ & AF _____							
REV	DESCRIPTION	DSGN	DRFT	CHK	APRV	DATE	DATE
1							

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Fig 2 Title Block – (Non-Rail Signalling)

DESIGNER: A DESIGNER DATE: DD/MM/YYYY DRAFTER: A DRAFTER DATE: DD/MM/YYYY CHECKER: A CHECKER DATE: DD/MM/YYYY APPROVER: <i>A Proves</i> DATE: DD/MM/YYYY	STANDARD DRAWING/ASSET LOCATION ASSET TYPE ASSET DESCRIPTION DRAWING TYPE	Government of South Australia Department for Infrastructure and Transport XXX-DRG-XXXXXX								
	SAVED: Thursday, 29 September 2022 1:19:44 PM	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">REVISION</td> <td style="width: 30%; text-align: center;">1</td> <td style="width: 30%;">SHEET No.</td> <td style="width: 10%; text-align: center;">A3</td> </tr> <tr> <td>SCALE</td> <td style="text-align: center;">1 : 1</td> <td>1 OF 1</td> <td></td> </tr> </table>	REVISION	1	SHEET No.	A3	SCALE	1 : 1	1 OF 1	
REVISION	1	SHEET No.	A3							
SCALE	1 : 1	1 OF 1								

The following title block shall be used for Rail Signalling Train and Tram drawings. Available in size A2.

Note: There is also a separate Bonding Plan and Master Signalling Plan title block. Available in size A0. (Refer section 5 within).

Fig 3 Title Block - (Rail Signalling)

UNCONTROLLED WHEN PRINTED

1	2	3	4	5	6	7	8
A							A
B							B
C							C
D							D
E							E
F							F

DESIGNER: A DESIGNER DATE: DDMMYYYY	SCALE: N.T.S	LINE NAME AREA/SECTION LOCATION BOX/WOC DESIGN DETAIL/DESCRIPTION			Government of South Australia Department for Infrastructure and Transport SG1-DRG-XXXXXX		
DRAFTER: A DRAFTER DATE: DDMMYYYY							
CHECKER: A CHECKER DATE: DDMMYYYY							
APPROVER: A Psaute DATE: DDMMYYYY							
1 AS BUILT, MOC & AF	AD	AD	AC	AP	DDMMYYYY	DDMMYYYY	DDMMYYYY
REV	DESCRIPTION	DSGN	DRT	CHK	APRV	DATE	DATE
1							

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Fig 4 Title Block - (Rail Signalling)

DESIGNER: A DESIGNER DATE: DDMMYYYY	SCALE: N.T.S	LINE NAME AREA/SECTION LOCATION BOX/WOC DESIGN DETAIL/DESCRIPTION			Government of South Australia Department for Infrastructure and Transport SG1-DRG-XXXXXX				
DRAFTER: A DRAFTER DATE: DDMMYYYY									
CHECKER: A CHECKER DATE: DDMMYYYY									
APPROVER: A Psaute DATE: DDMMYYYY									
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		REFERENCE: -							

Designed, Drafted/Drawn, Checked and Approved attributes shall be ‘filled out’ appropriately in accordance with *PR-AM-GE-1013 SAPTA Drawings Acceptance Procedure*, including 1st initial and surname in all drawings. Other attributes should be ‘filled out’ as indicated below:

7.14.1. Drawing Titles for Train, Tram and Bus (Non-Rail Signalling)

Generally, four separate lines giving a descriptive title of the drawing contents in accordance with *FR-AM-GE-806 Identification and Numbering of Technical Documents and Drawings* and *DIT (SAPTA) Train, Tram and Bus - Title Examples - (Non-Rail Signalling) (Appendix F within)*

7.14.2. Drawing Titles for Train and Tram (Rail Signalling)

Generally, four separate lines giving a descriptive title of the Signalling drawing contents in accordance with *DIT (SAPTA) - Rail Signalling - Drawing Title Examples (Appendix E within)*

7.14.3. Scale

Scale or scales of the *drawing* or “NOT TO SCALE” if the drawing is not drawn to any specific scale.

7.14.4. Drawing Number

The drawing number shall be issued by the SAPTA AMDC, in accordance with *FR-AM-GE-806 Identification and Numbering of SAPTA Technical Documents and Drawings*.

7.14.5. Revision Numbers

The revision number corresponding to the most recent revision shall be inserted in the revision box. For legacy drawings refer to 7.15.4.

Interim, Internal Revision Numbers to be removed at ‘As Built’

Interim, internal revision numbers by the project’s contractors relating to each stage of the project, shall be removed prior to submitting the ‘As Built’ for approval by SAPTA. The revision number for the project should be only one revision number higher than the one it was when it was checked out for updating.

7.14.6. Sheet

In the case of individual or stand-alone drawings, it shall always be 1 of 1.

In the case of a group of drawings, it shall be appropriately numbered, for example 1 of 10, 2 of 10, 3 of 10 etc. However, each individual sheet in a group of drawings shall have a unique drawing number.

7.14.7. Revision Box

Fig 5. Revision box example for Train, Tram and Bus (For Rail Signalling & Non-Rail Signalling drawings)

F									DESIGNER: A DESIGNER
									DATE: DD/MM/YYYY
									DRAFTER: A DRAFTER
									DATE: DD/MM/YYYY
									CHECKER: A CHECKER
									DATE: DD/MM/YYYY
	1	AS BUILT. MOC _____ & AF _____	AD	AD	AC	AP	DD/MM/YYYY		APPROVER: A Prover
	REV	DESCRIPTION	DSGN	DRFT	CHK	APRV	DATE		DATE: DD/MM/YYYY
	1	2	3			4			5

For each drawing revision the following details shall be filled out in the revision box;

- (i) Revision number of letter
- (ii) Brief description e.g. ‘minor correction to notes’
- (iii) Management of Change Number (Moc)
 - a. Bus Drawings do not have MoC numbers, so delete MoC
- (iv) Drawing Acceptance Form Number (AF)
- (v) 1st initial and surname of the Designer
- (vi) 1st initial and surname of the Drafter
- (vii) 1st initial and surname of the Drafter
- (viii) 1st initial and surname of the Approver
- (ix) The date the drawing revision was approved for use

7.14.8. Drawing acceptance details

A Drawing Acceptance Form (AF) number shall be obtained for all drawings belonging to this group.

7.15. Drawing Revisions

Revisions record the changes made to a drawing throughout its life. The details of each revision shall be recorded in the revision area at the bottom left side of the title block.

The description box shall identify a brief description of the project, the project status, the management of change number (MoC) and the acceptance form number (AF), as per the example in figs. 5.

7.15.1. Design Development Stage

a) Drawing Revisions for New Drawings

Drafts that occur prior to a drawing revision being 'approved' by the approver are identified with an alphabetical revision letter (A, B, C etc.).

The alphabetical characters "O" and "I" shall not be used as they are easily confused with numerical characters 0 and 1.

The changes made shall be highlighted with the use of a symbol containing the revision number or letter.

'Clouding' may also be used in combination with the revision symbol to further highlight the changes at the Drafter's discretion during the design development stage.

b) Drawing Revisions for Existing Drawings

Where the drawing is a modification of an existing drawing, the reference of the latest 'As Built' version shall be used in conjunction with the design revision being undertaken.

That is, if the latest version of the drawing is version 3 and the drafter is drafting the first (nominal 30%) modification of that existing drawing, this revision shall be referred to as revision 3A. Subsequent revisions through the design development process shall be revision 3B, 3C and so forth including IFC.

c) Drawing Revisions for Legacy Drawings

Legacy drawings that contain an alphabetical character as their latest revision, shall be up revved to revision 1 and then continued numerically. For the purpose of design review, if the last alphabetical revision was up to revision C, then C1, C2, C3 can be used, then revision 1 when final design is issued as 'As Built'.

If a legacy drawing has a book number, then DIT Transport Projects Delivery (TPD) shall contact SAPTA to allocate a new drawing number.

7.15.2. At Approval (Issued for Approval)

At approval, an AF form shall be completed in accordance with the *SAPTA Drawings Acceptance Procedure PR-AM-GE-1013*.

7.15.3. Following Approval (IFC)

Following approval of the design (IFC), the construction, testing and commissioning activities will take place;

1. Any changes to the design made during this period will be marked up in red by the field staff undertaking the work. These marked up drawings are referred to as "Red Line Mark-up Drawings" and are returned to the original designer for validation and 'up-revving' to 'As Built', and;
2. In some circumstances where the immediate return of 'As Built' drawings is not practical, hard copies of red line mark ups may be provided as 'interim maintenance copies' and denoted as such.

Once a drawing is “approved” the drawing shall be deemed to be the next numerical revision. For new designs ‘Revision 1’ shall be used. For existing designs, the next number shall be used.

At this stage / time, all clouding and revision symbols are to be removed from the drawing. The exception to this is when:

- (i) Equipment and/or wiring has been installed, however not yet commissioned into service. In these circumstances relevant areas can still be highlighted with a cloud to indicate (Not Commissioned or Not in Service)

All design development details are to be removed from the revision area at the left side of the title block.

The revision number shall be added to the ‘Revision Box’ at the right side of the title block. Generally;

- (i) latest alpha’ should be used for ‘issued for construction’ (IFC), and sequentially ‘numeric’ should be used for ‘As Built’.

Revisions that are made from this point on are identified by a number, following the numerical order 1, 2, 3. For the purpose of pre ‘As Built’ approvals 1A,1B, shall be used during design development process, when accepted ‘As Built’, revision 2 shall be used.

Drawings submitted at the ‘As Built’ stage shall not have design development revisions shown thereon including IFC. That is, only the ‘As Built’ versions shall be accepted for submission into the Drawing Management system.

7.15.4. Following Commissioning

Following commissioning, the final AutoCAD (DWG) and PDF versions of all ‘As Built’ drawings shall be provided as soon as practicably possible, however this timeframe shall not exceed eight weeks. If the drawings are referred out for correction, they shall be rectified within four weeks and shall not exceed this.

7.16. Superseding Drawings

At times, a new drawing may ‘supersede’ an older drawing. When this occurs both the new and old drawing shall have a note added stating the following:

On the SUPERSEDED drawing:

- THIS DRAWING IS SUPERSEDED BY FIM-XXX-NNNNNN

On the SUPERSEDING drawing:

- THIS DRAWING SUPERSEDES FIM-XXX-NNNNNN

Note: The cross-reference note may list multiple drawing numbers if required.

Where cross reference notes represent a revision to the drawing the relevant processes for revising drawings as detailed in 7.15 shall be used.

All fully superseded drawings should be flagged for archive when the relevant Drawing Acceptance Form (AF) is submitted, and new reference added to both the drawing and the AF.

For cut line processes to an up-rev of a drawing refer to 7.3.

7.17. Abolished / Decommissioned drawings

A drawing that is Abolished / Decommissioned means all infrastructure pertaining to that drawing has been removed from service and the drawing has no relevance or relationship to any other in-service drawing, the drawing is therefore no longer required.

Once a drawing has been Abolished or Decommissioned the following activities should occur:

1. The drawing should be watermarked "Abolished";
2. All the contents of the drawing should be highlighted green (for rail signalling only);
3. On the relevant AF the drawing status should be 'archive'.

7.18. PDF Files

All PDF files shall be created by converting the DWG into a high-resolution PDF. This is to achieve the highest quality of drawing content. Scanning of hard copies to create PDF files shall not be permitted.

There shall be only one PDF file for each drawing sheet. PDF files shall include layer information but not be restricted or password protected in any way.

7.19. Drawing Housekeeping Upon Completion

The following drawing housekeeping rules shall be applied prior to final approval/acceptance.

DWG files:

- Shall be cleaned up using the purge command to remove unused content
- Shall not contain any custom objects or proxy graphics
- Shall have the current layer set to '0'
- Shall have the 'Base' set to 0,0,0
- Shall have all layers displayed or not displayed, as required so that the drawing displays as intended without further manipulation
- Shall not contain any Paper Space objects outside the area of the title block
- Shall have all design development revisions removed
- For non-rail signalling drawings, these shall be saved with the drawing being zoomed to extents in paper space
- For rail signalling signal drawings, these shall be saved with the drawing being zoomed to extents in either paper space or model space
- Shall accompany raster image files, if used.

No other files should be transmitted unless their use has been expressly authorised in writing by the relevant SAPTA Functional Group Technical Lead / Manager. This includes such things as plot style tables, font files, line styles files and shape files.

APPENDIX A: LAYERS FOR GENERAL DRAWING ENHANCEMENT – EXAMPLES

LAYER NAME	COLOUR ID#	LAYER DESCRIPTION
D-ENHA-TABLE	9 (Grey)	Contains a table within the drawing
D-ENHA-TEXT	0 (White)	Contains all drawing text excluding sheet related text
D-ENHA-NOTES	177 (Blue)	Contains additional notes that may be required for construction purposes.
D-ENHA-DIMENSIONS	0 (White)	Contains all drawing dimensions

APPENDIX B: LAYERS FOR SIGNALING DRAWINGS

Example of LOC box

Refer to design standard

LAYER NAME	COLOUR ID#	LAYER DESCRIPTION
D-SIGS-ADDITIONS	1 (Red)	Contains all additions to be made (prior to commissioning)
D-SIGS-REMOVALS	3 (Green)	Contains all removals to be made (prior to commissioning)

APPENDIX C: LAYERS FOR TRACTION POWER (RAEL) DRAWINGS – EXAMPLES

For schematics follow the layer of design consultants

LAYER NAME	COLOUR ID#	LAYER DESCRIPTION
D-RAEL-TERMINALS	0 (White)	Contains information for terminal connections and equipment
D-RAEL-CABLE_HV	1 (Red)	Contains all HV cable conduits and pits
D-RAEL-CABLE_CONTROL	Blue	Contains all control cables, connections, and information
D-RAEL_EARTH	3 (Green)	Contains all earth cables, connections, and information
D-RAEL_EQUIP_HV	0 (White)	Contains all HV (High Voltage) equipment and details
D-RAEL-EQUIP_LV	0 (White)	Contains all LV (Low Voltage) equipment and details
D-RAEL-SWITCHGEAR	0 (White)	Contain all switchgear detail and information
D-RAEL-TEXT	0 (White)	Contains all text
D-RAEL-NOTES	0 (White)	Contains all notes
D-RAEL-TABLES	0 (White)	Contains all tables
D-RAEL-ADDITIONS	Orange	Contains all additions to be made (prior to commissioning)
D-RAEL-REMOVALS	Magenta	Contains all removals to be made (prior to commissioning)

APPENDIX D: LAYERS FOR STATION ELECTRICAL & LIGHTING DRAWINGS (ELEC) – EXAMPLES

Station Electrical and lighting are to have their own designation in drafting document i.e., 'ELEC' for LV electrical. This is to be used on electrical drawings for train stations, pedestrian crossings, tram stops, bus shelters and stops.

LAYER NAME	COLOUR ID#	LAYER DESCRIPTION
D-ELEC-SAPN_UG	0 (White)	Contains incoming feed from electricity provider i.e., SAPN
D-ELEC-POWER_UG	1 (Red)	Contains all electrical conduits
D-ELEC-EQUIPMENT	0 (White)	Contains all equipment i.e., Switchboards, Isolation, Transformers, Pits etc.
D-ELEC-LIGHTS	0 (White)	Contains all lights for site
D-ELEC-POLES	0 (White)	Contains all lighting, camera, stobie poles etc.
D-ELEC-SPEAKERS	0 (White)	Contains all speakers, hearing loops
D-ELEC-GENERAL NOTES	0 (White)	Contains all notes and information
D-ELEC-TABLES	0 (White)	Contains all tables
D-ELEC-LEGENDS	0 (White)	Contains all legend information and symbols
D-ELEC-SLD	0 (White)	Contains all single line diagram details
D-ELEC-ADDITIONS	1 (Red)	Contains all additions to be made (prior to commissioning)
D-ELEC-DELETION	3 (Green)	Contains all removals to be made (prior to commissioning)
D-ELEC-ARCH	9 (Grey)	Contains site architectural detail
D-ELEC-SURVEY	9 (Grey)	Contains any site survey information collected

APPENDIX E: DIT (SAPTA) - RAIL SIGNALLING - DRAWING TITLE EXAMPLES

BONDING PLAN TITLE BLOCK

Table with 3 rows of drawing title blocks for Bonding Plans: ADELAIDE/GOODWOOD/WYE, BELAIR LINE, and SEAFORD LINE. Each block includes project name, distance, and metadata.

MASTER SIGNALLING PLAN TITLE BLOCK

Table with 3 rows of drawing title blocks for Master Signalling Plans: GRANGE LINE, GAWLER LINE, and SEAFORD LINE. Each block includes project name, distance, and metadata.

BUILDING / RELAY ROOM

Table with 2 rows of drawing title blocks for Building / Relay Rooms: DRY CREEK DEPOT RAIL OPERATIONS CENTRE and GAWLER LINE GAWLER RELAY ROOM.

CONTROL TABLE

Table with 5 rows of drawing title blocks for Control Tables: ADELAIDE/GOODWOOD/WYE, ADELAIDE/GOODWOOD/WYE, GAWLER LINE, GAWLER LINE, and GAWLER LINE.

POWER DISTRIBUTION

Table with 3 rows of drawing title blocks for Power Distribution: BELAIR LINE, GAWLER LINE, and GAWLER LINE.

COMBINED SERVICES ROUTE

Table with 1 row of drawing title block for Combined Services Route: GAWLER LINE ADELAIDE - ISLINGTON.

CIRCUIT PLAN TITLE BLOCK FOR LOCATION BOX & LEVEL CROSSING BOX

Table with 10 rows of drawing title blocks for Circuit Plans: ADELAIDE/GOODWOOD/WYE, BELAIR LINE, BELAIR LINE, BELAIR LINE, GAWLER LINE, GRANGE LINE, OUTER HARBOR LINE, and SEAFORD LINE.

CIRCUIT PLAN TITLE BLOCK FOR WOC BOX

Table with 2 rows of drawing title blocks for WOC Boxes: ADELAIDE/GOODWOOD/WYE and GAWLER LINE.

CIRCUIT PLAN TITLE BLOCK FOR LEVEL CROSSING & PEDESTRIAN LOCATION BOX

Table with 4 rows of drawing title blocks for Level Crossing & Pedestrian Location Boxes: ADELAIDE/GOODWOOD/WYE, GAWLER LINE, GAWLER LINE, and SEAFORD LINE.

CIRCUIT PLAN TITLE BLOCK FOR RFS BOX


Table with 1 row of drawing title block for RFS Box: OUTER HARBOR LINE ADELAIDE - WOODVILLE.

NON - SIGNALLING TEMPLATE MUST BE USED FOR COMBINED SERVICES ROUTE DRAWINGS AS THEY COMBINE DIFFERENT DISCIPLINES (COMM'S, CIVIL etc.) REFER SECTION 4

APPENDIX F: DIT (SAPTA) TRAIN, TRAM AND BUS -TITLE EXAMPLES - (NON-RAIL SIGNALLING)

TRAIN STATIONS

FLINDERS LINE FLINDERS STATION COVER SHEET TITLE AND INDEX	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1


FLINDERS LINE FLINDERS STATION STATION PLAZA STEELWORK MARKING ELEVATION	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1

TRACK & CIVIL


SEAFORD LINE CH 12.310 TO CH 13.537 km OTHER RETAINING WALLS & ENGINEERED SLOPES REVTMENT WALL - DRAINAGE DETAILS	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1

SEAFORD LINE MEYER ROAD MEYER ROAD BRIDGE GUARD RAIL LAYOUT	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1

PORT DOCK LINE CH 00.000 - CH 00.000 km TRACK CIVIL FORMATION CROSS SECTIONS	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1

GOODWOOD RAILWAY STATION MIKE TURTUR BIKEWAY OVERPASS SUBSTRUCTURE WEST RAMP WALL DETAILS	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1

OHW / SECTIONING DIAGRAM

ADELAIDE STATION ADELAIDE STATION TO MILE END SECTIONING DIAGRAM	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1

STANDARD DRAWING


STANDARD DRAWING PEDESTRIAN CROSSING ARRANGEMENT ACTIVE CONTROL STANDARD DETAILS	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
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TRAM BONDING


HINDMARSH TRAM LINE NORTH TERRACE TO ADELAIDE ENTERTAINMENT CENTRE POLES H40 H45 BONDING LAYOUT	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1


OVERHEAD WIRING


GLENELG TRAM LINE LINDSAY STREET TO MORPHETTVILLE RACECOURSE POLES G252 - G256 OVERHEAD WIRING LAYOUT	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
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GLENELG TRAM LINE GLENGOWRIE DEPOT TENSION LENGHT DIAGRAM SCHEMATIC LAYOUT	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
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PLATFORM / CIVIL

EAST LINK TRAM LINE BOTANIC GARDENS STOP HYDRAULIC SERVICES PLAN PLATFORM SERVICES	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
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FESTIVAL PLAZA LINK TRAM LINE KING WILLIAM ROAD FESTIVAL PLAZA STOP PLATFORM LAYOUT PLAN	 Government of South Australia Department for Planning, Transport and Infrastructure
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GLENELG TRAM LINE VICTORIA SQUARE TRAM STOP PLATFORM DETIALS & SECTIONS	 Government of South Australia Department for Planning, Transport and Infrastructure
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COMBINED SERVICES ROUTE

GAWLER LINE ADELAIDE - ISLINGTON COMBINED SERVICES ROUTE CH 00.000 - CH 00.000 km	 Government of South Australia Department for Planning, Transport and Infrastructure
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BUS PARK & RIDE

O-BAHN BUS CORRIDOR PARADISE INTERCHANGE PARK & RIDE COVER SHEET & DRAWING INDEX	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
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O-BAHN BUS CORRIDOR PARADISE INTERCHANGE PARK & RIDE GENERAL NOTES	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
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PARADISE INTERCHANGE PARK & RIDE GENERAL ARRANGEMENT LEVEL 1 BEAM REINFORCEMENT LOCATION PLAN	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1

REAL TIME BUS TOTEM

ADELAIDE METRO BUS SERVICE STOP D3 CURRIE ST. - NORTH SIDE REAL TIME BUS TOTEM POWER SUPPLY - SITE DRAWING	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
SAVED: Thursday, 6 October 2022 11:06:45 AM	SCALE 1:1

BUILDING SERVICES

PARADISE INTERCHANGE PARK & RIDE BUILDING SERVICES HYDRAULIC SERVICES SECTIONS AND 3D VIEWS	 Government of South Australia Department for Planning, Transport and Infrastructure
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PARADISE INTERCHANGE PARK & RIDE BUILDING SERVICES ELECTRICAL SERVICES SITE PLAN	 Government of South Australia Department for Planning, Transport and Infrastructure
XXX-DRG-XXXXXX	REVISION 1 SHEET No. 1 OF 1 A2
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NON - SIGNALLING TEMPLATE MUST BE USED FOR **COMBINED SERVICES ROUTE DRAWINGS** AS THEY COMBINE DIFFERENT DISCIPLINES (COMM'S, CIVIL etc.) REFER SECTION 4