Territory and Municipal Services

TAMS Drafting Standard

Issue 1 Revision 0

Approved by:

Ms Rosemary Kennedy
Executive Director
Community and Infrastructure Services
1 August 2006

CONTENTS

1 INTRODUCTION

1.1 SCOPE

This Standard describes and specifies requirements for the preparation and submission of drawings for Traffic Control Devices (TCD), Design and Works As Executed (WAE) to the Department of Territory and Municipal Services and business units thereof.

This Document supersedes the “Drafting Standard for Traffic Control Devices (TCD) Design Drawings Version 1.4”.

1.2 OBJECTIVE

This standard has been created as a two-part document to define TCD plus Design and WAE Drafting conventions.

The basis of Section 4 of this document is the previously disseminated “Drafting Standard for Traffic Control Devices (TCD) Design Drawings Version 1.4” and “Drafting Standard Version 1.0” issued by Roads ACT. Changes have been implemented while incorporating the TCD standard as layer prefixing has been made consistent from one layer group to the next.,

The WAE aspect of this document is at second iteration, with limited asset classes and layer conventions having been defined.

This standard while not exhaustive has been derived from Australian Standards (AS) 1100 and 1742. Components have been modified to suit local government specifications.

It has been prepared to ensure effective and efficient drafting processes whilst providing a uniform standard for drawings within the Territory and Municipal Services Inventory and Asset Management Systems.

This document does not negate the requirement to submit detailed engineering drawings as per construction and project processes.

The intention is for the future expansion of this standard as business unit requirements and asset management systems evolve.

1.3 REFERENCED DOCUMENTS

DS08 - Design Standards For Urban Infrastructure, Guide Signs

DS09 - Design Standards For Urban Infrastructure, Traffic Control Devices

DS23 - Design Standards For Urban Infrastructure, Plant Species For Urban Landscape Projects

AS 1742 Part 5 Street Name and Community facility name signs.

Ref-08 WAE Quality Records

AutoCAD Online Manuals - Command Reference

1.4 WEBSITE FOR DOWNLOADING THIS STANDARD & SUPPORT FILES

This standard along with support files will be made available for download from http://www.roads.act.gov.au/downloads after feedback has been incorporated from the industry consultation, if required.

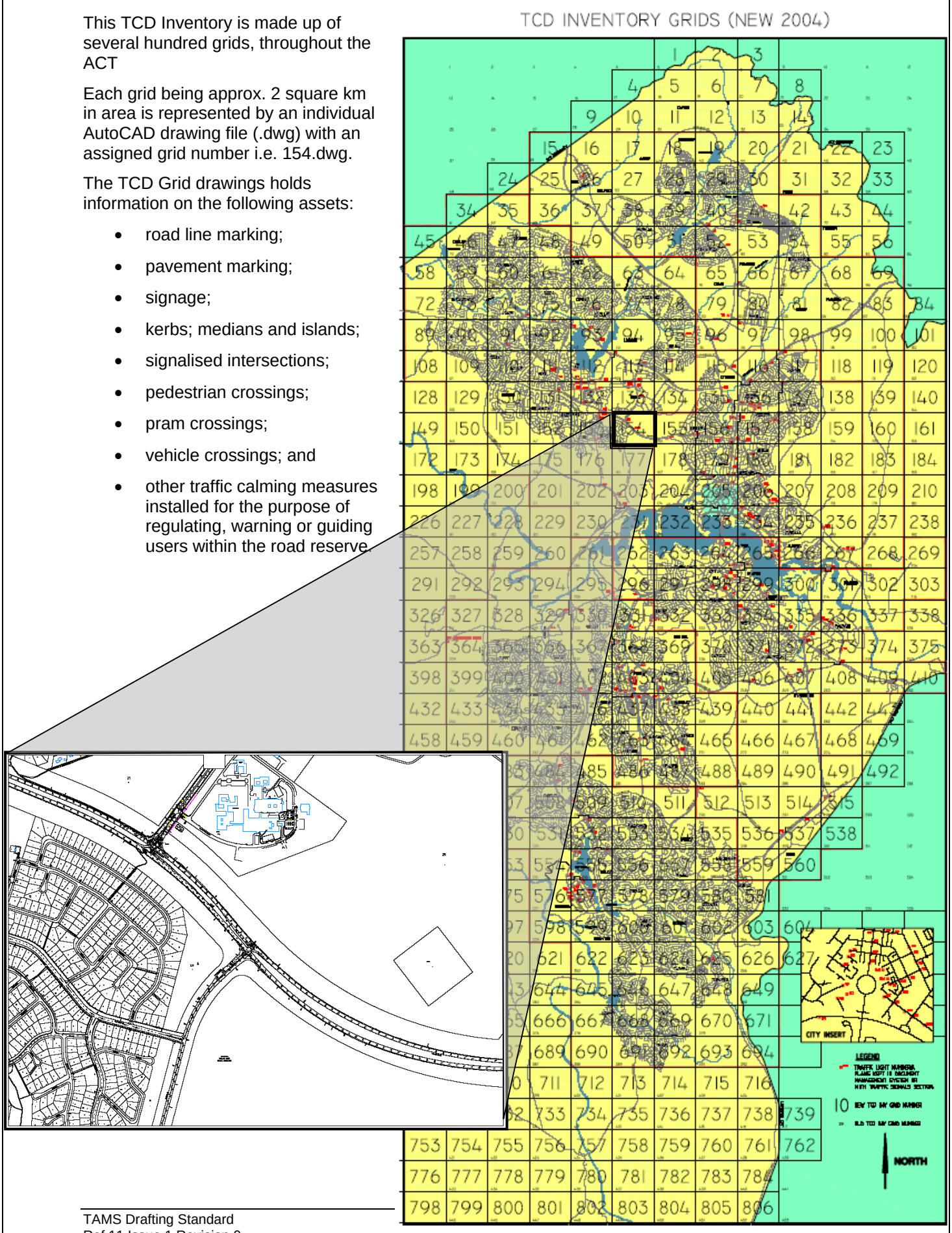
2 CHANGES TO THE TCD INVENTORY GRID

This TCD Inventory is made up of several hundred grids, throughout the ACT

Each grid being approx. 2 square km in area is represented by an individual AutoCAD drawing file (.dwg) with an assigned grid number i.e. 154.dwg.

The TCD Grid drawings holds information on the following assets:

- road line marking;
- pavement marking;
- signage;
- kerbs; medians and islands;
- signalised intersections;
- pedestrian crossings;
- pram crossings;
- vehicle crossings; and
- other traffic calming measures installed for the purpose of regulating, warning or guiding users within the road reserve.



2.1 WEBSITE FOR DOWNLOADING TCD GRIDS

ACT Government's Asset Management Services undertook a trial with a select number of consultants during August 2005. The trial involved enabling these consultants to download TCD information from a new government website instead of having to obtain the data in person from Macarthur House in Lyneham.

The trial was very successful and all the consultants involved were extremely positive about the ability to download the required grids whenever they needed them.

This Territory and Municipal Services' TCD website is restricted to authorised consultants involved in Traffic Control Device (TCD) or Temporary Traffic Management (TTM) works.

Authorised consultants are able to download TCD grid information enabling them to retrieve the latest TCD grid information any time of the day, 7 days a week. The website is generally updated 5 times per week.

Initially the website is quite basic however an improved spatial interface is currently being developed.

In it's initial state each TCD grid has been stored on the website as a compressed zip file which includes that particular grid and all subdirectories which can comprise of signalised intersection data and approved TCD submissions that may have been approved but not yet constructed.

The zip files have the following naming convention:

GRID NUMBER (OLD GRID NUMBER).ZIP

e.g. 040 (old 67).zip or 871.zip (if no old number was associated with it.)

The size of each zip file varies from 10kb to over 30Mb. Some of these larger files may take considerable time to download if the consultant has a dial-up connection. Asset Management Services will endeavour to keep the size of the files as small as possible through routine maintenance and efficient data storage.

Please note that due to the extensive maintenance being carried out daily on the grids, consultants are required to obtain the latest TCD data for project specific areas prior to preparing drawings from TCD submissions.

2.2 APPLYING FOR AUTHORISATION TO DOWNLOAD TCD GRIDS

Consultants can apply for authorisation by completing & accepting the terms in the licence data agreement and returning it to Territory and Municipal Services.

For more information contact:

Standards and Data Quality Officer

Asset Management Services
Level 6, Macarthur House
12 Wattle Street Lyneham
ACT 2602

Phone (02) 6207 6558

Authorised consultants will then be notified of the website address & required login information.

2.3 TCD INVENTORY GRID – VALIDATION PROJECTS

The TCD Inventory is also undergoing extensive updating through various contracts as part of several government projects including The TCD Validation Project, Signals Validation Project & the Guide Sign Validation Project. We are still in the process of updating the TCD grids through the various validation projects and therefore not all the grids have been verified.

2.4 SUMMARY OF DATA CAPTURED VIA VALIDATION PROJECTS

The table below lists the various assets that have been captured or excluded from the various TCD validation projects.

Data captured via validation projects	Validation Projects			
	TCD Project	**Signals Project**	**Guide sign Project**	**Carparks Project**
	Completion Date Mid 2006	Completion Date Mid 2006	Completed †	Pending
Linemarking	✓			
Kerbs	✓			
Vehicle crossings	✓			
Pedestrian crossings	✓			
Pavement markings	✓			
Signs (excluding guide signs)	✓			
Guide signs			✓	
Poles				
Carparks				✓
RPM's part of specific linetypes	✓			
RPM's not part of specific linetypes				
Paths				
Signalised intersection poles		✓		
Signalised intersection hardware, cables & loops		✓		
Roads and TCD data within block boundaries (e.g. ADFA, private hospitals, ANU)				
NCA Land e.g. Parliamentary Triangle	✓			
Neighbourhood & town shopping centres				

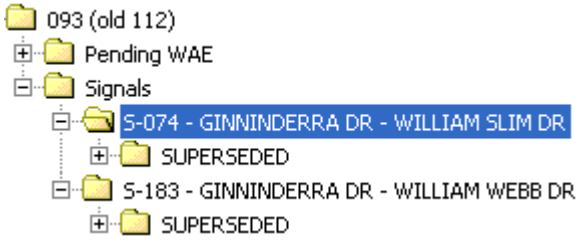
2.5 TCD VALIDATION PROJECT

The TCD Validation Project validates each TCD asset indicated in the above table with both ortho photos and field validation. This method was chosen since it is considerably more cost effective than using only traditional survey methods of data capture.

† Note: Work is currently being undertaken to update the TCD Grids with the validated data captured in the guide sign validation project. Signs that have not been updated into the grids have been stored in a separate drawing within the TCD Grid Inventory. Each of these guide signs has a photo of the sign hyperlinked to them for convenience. The guide signs also have attached objectdata specifying number of posts, blade dimensions, guide sign numbers, facing direction and date installed where known.

2.6 SIGNALISED INTERSECTION DATA IN THE TCD INVENTORY GRID

The grids are also being updated through the Signals Validation Project. This project is scheduled for completion in the second half of 2006. To enable consultants to readily access the traffic light data, whilst endeavouring to keep the signals data current in the grids, all signals spatial data is now stored directly in the TCD inventory grid. A single signals drawing with multiple layouts depicting the TCD, loops layouts, cable charts, cable and hardware layouts has the appropriate grid attached as an external reference (xref). The Signals drawings are stored in signals subdirectories within the appropriate grid. See example below:

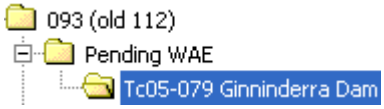


Example of location of signalised intersection drawings

2.7 LOCATION OF APPROVED SUBMITTED TCDS WITHIN THE GRIDS PRIOR TO WAE'S BEING SUBMITTED.

Previously approved TCDs were stored in backlog subdirectories under the appropriate grids. Insufficient resources resulted in a large build up of these approved TCD drawings not being incorporated into the TCD inventory Grid and consequently the data in the grids becoming very out of date. As a result, various data capture projects mentioned earlier in this section have been undertaken to improve the quality of the data in the inventory.

Approved TCDs where construction has not been completed are stored in subdirectories under the grid under a "Pending WAE folder". See example below:



Example of location of recently approved TCDs where construction has not been completed

2.8 INCORPORATING THE APPROVED SUBMITTED TCDS IN GRIDS PRIOR TO WAE'S BEING SUBMITTED.

A new method has been adopted to ensure the grids are kept as up-to date as possible.

As soon as a submitted TCD drawing is approved, it is saved in the locations as mentioned above and only the relevant changes are xreferenced into appropriate grids to identify the proposed works. By xreferencing the approved works into the grid this identifies that changes to the current TCDs in that area have been approved and due to be constructed in the near future. This reduces the risk that the grids get out of date again by approved TCD data not getting shown in the grids as was the case before with the backlog files.

2.9 INCORPORATING THE APPROVED SUBMITTED TCDS IN GRIDS WHEN THE WORK HAS BEEN COMPLETED

When Asset Management Services have been notified that the works been completed the relevant TCD data from the WAE drawings will be inserted into the appropriate grid as existing works and the previously xreferenced drawing removed from the grid.

2.10 INCORPORATING THE APPROVED IN-HOUSE TCDS IN GRIDS WHEN THE WORK HAS BEEN COMPLETED

Minor new works produced internally by Asset Use are inserted directly into the grids on new / remove layers until works have been completed. When Asset Management Section have been notified that the works been completed the relevant TCD data within the appropriate grid are changed to existing..

3 CHANGES TO PREVIOUS STANDARDS FOR TCD DRAWINGS

3.1 LAYERS

There have been several changes in the standard layers to be used in TCD drawings. Whilst the majority of them have remained the same, a number of layers have been added, some renamed and a few discontinued. The tables for layering conventions in Section 4 of this document have also been organised & separated to depict existing data, new works, demolition works & paperspace layers.

3.1.1 New layers

Listed below are new layers that have been added to this standard.:

Layers added to this standard depicting existing works

Layer Name	Description
KERB_EXG_TXT	All text relating to existing kerbs (i.e. KG RVC MLBK) *Previously text relating to existing kerbs was placed on the **KERB_EXG** layer. This has been changed to enable the text to be turned off in signals drawings.*
LINEMARKING_EXG_TXT	All existing pavement marking associated text *Previously text relating to existing kerbs was placed on the **LINEMARKING_EXG** layer. This has been changed to enable the text to be turned off in signals drawings*

Layers added to this standard depicting amended works

Layer Name	Description
KERB_AMD_TXT	All text relating to amended kerbs (i.e. KG RVC MLBK) *Previously text relating to existing kerbs was placed on the **KERB_AMD** layer. This has been changed to enable the text to be turned off in signals drawings*
LINEMARKING_AMD_TXT	All amended pavement marking associated text *Previously text relating to existing kerbs was placed on the **LINEMARKING_AMD** layer. This has been changed to enable the text to be turned off in signals drawings*

Layers added to this standard depicting new works

Layer Name	Description
KERB_NEW_TXT	All text relating to new kerbs (i.e. KG RVC MLBK) *Previously text relating to new kerbs was placed on the **KERB_NEW** layer. This has been changed to enable the text to be turned off in signals drawings*
LINEMARKING_NEW_TXT	All amended pavement marking associated text *Previously text relating to existing kerbs was placed on the **LINEMARKING_NEW** layer. This has been changed to enable the text to be turned off in signals drawings*

Layers added to this standard depicting demolition works

Layer Name	Description
SIGNS_ATTRIB_REM	Sign attributes associated with the sign blocks are inserted on this layer for existing signs to be removed. *Previously the sign blocks depicting signs to be removed were placed on the **SIGNS_ATTRIB_EXG** layer, with the word REMOVE entered in the instruction attribute. This has been standardised so all demolition works are represented as colour 10 (red).*
SIGNS_SYMB_REM	Sign blocks are inserted on this layer for existing signs to be removed - object representing the sign blade and post *Previously sign blade and post depicting signs to be removed were placed on the **SIGNS_SYMB_EXG** layer. This has been standardised so all demolition works are represented as colour 10 (red).*

3.1.2 Modified layers

In earlier versions of this standard, there were a mixture of suffixes used in layer names depicting data to be removed. (e.g. _REM, _ERAD, _DEM) In this new standard, such layer names have been standardised using the suffix _REM.

Listed below are Layers that have been renamed in this standard.:

Layers renamed in this standard depicting existing works

No layers depicting existing works have been renamed.

Layers renamed in this standard depicting amended works

No layers depicting amended works have been renamed.

Layers renamed in this standard depicting demolition works

Layer Name	Description
KERB_REM	Existing nominal kerb line, edge of bitumen, edge of shoulder and edge of sealed shoulder to be removed. Previously layer was named KERB_DEM. This has been changed to standardise demolition layers with the suffix _REM.
LINEMARKING_REM	All linemarking to be eradicated *Previously layer was named **LINEMARKING_ERAD**. This has been changed to standardise demolition layers with the suffix _**REM.***
PATHS_REM	Existing paths to be demolished and associated text *Previously layer was named **PATHS_ERAD**. This has been changed to standardise demolition layers with the suffix _**REM.***

Layers renamed in this standard used in comments

Layer Name	Description
CONSULTANT_RMKS	Consultants remarks to Roads ACT *Previously layer was named **CONSULTANT_REM**. This has been changed since the suffix _**REM** is used for demolition layers.*

3.1.3 Discontinued layers

Listed below are Layers that have been discontinued in this standard.:

Layer Name	Description
ARCINFO_1	Default layers to be used for data imported from arcinfo *No longer required*
ARCINFO_2	Default layers to be used for data imported from arcinfo *No longer required*
CONSTRUCTION_LINE	Design construction lines, (not for plotting) *No longer required*
CONSULTANT_TITLE	Default layer for title block and other information required only for the consultant's internal use *Three layers commonly used for title blocks have now been combined to **TITLE***
CONTOURS	Used for surface contours if these are available / required / requested *No longer required*
HATCH	Large areas of hatching only (small areas of hatching to be included on the appropriate layer) *No longer required*
PARKING_SPACE_ATTRIB	All parking space blocks (none plot layer) *No longer required.*
SIGNS_SHEDULE	Sign schedule (quantities of signs erected, removed and relocated) *Sign schedules can now be placed on layers **WORKS_INFO** or **TITLE***
TRAFFIC_TITLE	Default layer for title block and other information required only for Roads ACT's internal use *Three layers commonly used for title blocks are now the layer **TITLE***

3.2 BLOCKS

3.2.1 Updated TCD AutoCAD blocks

All previous AutoCAD blocks for TCD submissions have been audited and updated since many blocks from previous versions had various CAD, variable and insertion and spatial problems.

3.2.2 Updated traffic signals blocks

Traffic signals blocks have been updated to include LED lanterns.

3.2.3 New AutoCAD TCD blocks

Additional standard TCD blocks have been created for bus lane pavement marking.

3.2.4 Support files

Customised AutoCAD templates (.dwt), menus, standard files (.dws) and lisp routines have been created to assist TCD submissions to conform to these CAD standards.

3.3 SUBMISSION OF TCD DRAWINGS

3.3.1 Drawing versions

All drawings are to be supplied in a format compatible with AutoCAD R2000 or higher.

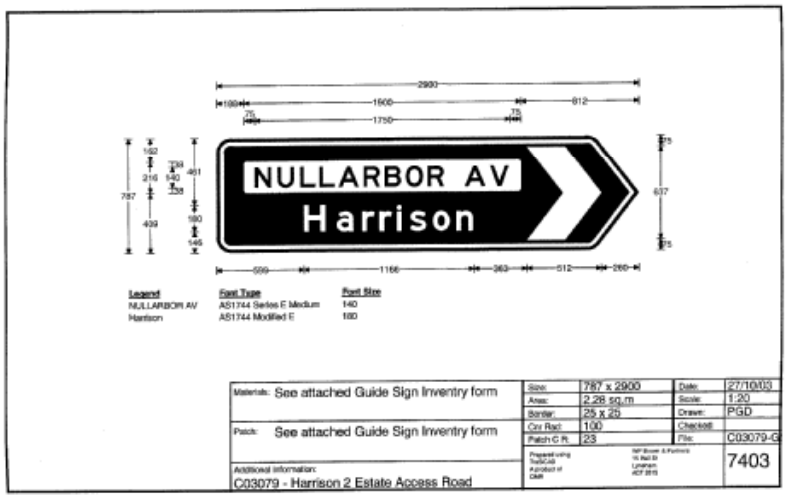
3.3.2 Digital media

Digital data is to be supplied on CD-ROM with all submissions.
CD Disks are to be labelled appropriately.
Digital data must be identical to the hardcopy plans to ensure reproduction of drawings if required

3.4 GUIDE SIGN DESIGN

Guide sign inventory forms, guide sign design drawings and TCD drawings are required to be submitted for approval.

Typical Guide sign inventory form



Typical guide sign design drawing

Guide signs are to be designed and erected in accordance with the following design standards including associated standard drawings:

DS08 - Design Standards For Urban Infrastructure, Guide Signs

DS09 - Design Standards For Urban Infrastructure, Traffic Control Devices

3.4.1 Requesting guide sign information for existing signs

Contact staff from Asset Management Services on (02) 6207 6613 to request information for existing guide signs.

3.4.2 Allocation of guide sign numbers for new signs

Guide sign numbers can be issued to consultants prior to submitting guide signs & TCD drawings for approval.

To obtain guide sign numbers, complete the guide sign inventory form (preferably using the downloaded excel spreadsheet) Contact staff from Asset Management Services on (02) 6207 2013 for email address to email completed guide sign inventory form. Submitted guide sign numbers will then be assigned to the proposed signs and emailed back to the consultant. The guide sign numbers are to be included on the TCD drawing. The completed guide sign inventory forms, guide sign design drawings and TCD drawings are then submitted for approval.

Any modification or relocation of existing guide signs will require a new guide sign number to be allocated

Guide sign forms can be downloaded from the ACT Government website
http://www.roads.act.gov.au/downloads

3.5 SYSTEM VARIABLES OR AUTOCAD COMMAND SETTINGS

The following AutoCAD system variables or AutoCAD Command Settings are required to be set in all TCD drawings:

AutoCAD Command	Setting
INSUNITS	0 (if different setting is used, this can cause insertion problems with versions of AutoCAD 2006 or higher)

4 TRAFFIC CONTROL DEVICE (TCD) DRAWINGS

4.1 OVERVIEW

Traffic Control Device (TCD) Design Drawings are submitted to & approved by an authorized pursuant to Part 5 of Road & Transport (Safety & Traffic Management) Act 1999, within Territory and Municipal Services .

Paragraphs 4.2 to 4.18.5 inclusive, define all components associated with the TCD drawing submissions.

An inventory of TCD Drawings is maintained by Asset Management Services on behalf of Territory and Municipal Services .

Access to the inventory can be arranged by contacting CAD Staff on 02 6207 6558 to collect the required TCD grids in person or downloaded via the TCD website

The inventory of TCD drawings data is covered by a grid .
Each Grid drawing covers an area of approximately 1.6km x 1.2km

These individual Grid drawings are maintained by incorporating the latest TCD data for that area. Whilst every effort is made to keep the inventory of TCD drawings data up to date, recent approved TCD drawings may exist in Backlog folders or Pending WAE folders within the Individual Grid folders prior to being incorporated into the appropriate Grid drawing.

There can be many months from when TCD drawings are approved to when they are constructed. Territory and Municipal Services has decided not to insert approved TCD data immediately into the appropriate grids within the inventory. Instead they will be xreferenced into the appropriate Grid until the WAE drawings have been submitted or the expected construction date.

Separate detailed drawings also exist for traffic lights and signalised pedestrian crossings. These drawings will be located in subdirectories within the grid and have the appropriate Grids xreferenced into them.

When obtaining TCD data and signalised intersection data from Territory and Municipal Services ensure you also obtain all backlog files and Pending WAE TCDs related to the required grids. This along with field verification will aid in you obtaining the most recent digital data.

These standards have been developed to assist drawings to be submitted for approval and later incorporated into the inventory to ensure consistency in the data for all users.

4.2 DRAWING TEMPLATE

The drawing template file TCD Standard xxxxx.dwt has been provided for use by internal and external parties.

Layering conventions, text styles, and dimension styles and certain system variables have all been predefined within the template. If the above drawing is opened in AutoCAD 2005 and above, layer descriptions have been created which are displayed in the Layer dialog box in accordance with this standard.

Explanations of the above conventions are defined in the pursuing paragraphs.

Asset Management Services use a .dws Drawing Standards file based on the above template to conduct quality control procedures. This dws file is included in the latest version of the compressed zip file available for download at the ACT Government website http://www.roads.act.gov.au/downloads

xxxxx denotes the Version Month and Year of issue i.e. Oct04

4.3 SETTINGS & ACCURACY

4.3.1 Units

All drawing units shall be in metres and decimals of a metre.

All drawings shall be created at a scale of 1:1.

4.3.2 System variables or AutoCAD command settings

The following AutoCAD system variables or AutoCAD Command Settings are required to be set in all TCD drawings:

AutoCAD Command	Setting
INSUNITS	0 (if different setting is used, this can cause insertion problems with versions of AutoCAD 2006 or higher)
PSLTSCALE	0 (to be set in modelspace and all layouts)
LTSCALE	5
PLINEGEN	1
VIEWRES	1000 (or greater)
ELEVATION	0.000
BASE	0,0,0

4.3.3 Co-ordinate system

The coordinate system used in all drawings must be in the Canberra Map Grid (Stromlo) with origin set to WCS (AutoCAD World Coordinate System).

The Canberra Map Grid is a transverse Mercator map projection that uses the longitude of Mt Stromlo trig station as its central meridian. Hence it is also known as the Stromlo coordinate system. It is based on the AGD66. The AGD66 was modified to take advantage of the ACT's limited east-west dimension and account for scale differences caused by the ACT's height above sea level. The resulting ACT grid can be treated as a plane (rather than geodetic) system of coordinates, without the need to apply scale factors, grid convergence, arc-to-chord, or sea level corrections

For further information on this coordinate system refer to the following web address: www.actpla.act.gov.au/actlic/surveying/gda.htm

AutoCAD Base system variable must also be set to 0,0,0.

Elevation is to be set to 0.0.

4.3.4 Accuracy

All drawings are expected to have a horizontal accuracy of ±0.5m.

Survey drawings should have a horizontal accuracy of ±0.1m (or as directed by the Business Unit Project Officer). The initial horizontal set up position for As-Constructed surveys must be established by using a minimum of 3 control points to prove location. Existing hardcopy data may be utilised. If survey information exists in hardcopy format and is of a suitable accuracy and currency this data may be digitised and structured to comply with the layering requirements described in this document.

4.4 TITLE SHEET

The standard title sheet provided by the consultant is A1 or as required.

4.5 PAPERSPACE, MODELSPACE & XREFS

All base drawings are to be saved in modelspace. The title block is to be saved in the Layout (paperspace). Each title block sheet may either be placed in a different layout or separate drawing.

For signalised intersections all model space information should be contained on the appropriate layers in the drawing and each layout is to be named accordingly. Eg: Hardware, TCD, Cable and Loop, Cable Chart etc.
Or consultants may use separate drawings instead of separate layouts.

4.6 MENU'S

A Territory and Municipal Services AutoCAD Menu is under development. This menu includes pull down menus for both TCD and WAE data, including various lisp routines, links to the Roads ACT websites and referenced documents. The purpose of the menu will be to assist in creating the standard items on the correct layers to conform to the standards.

4.7 LINETYPES

Linetype descriptions are contained within Design Standards (DS9-01) issued by Roads ACT. No polyline width is allowed except for HL1 & HL2 (Hold Lines), SL1 & SL2 (Stop Lines) and TB (transverse bars) which are to be 0.3 & 0.5 units wide. The support line definition file TCD2004.lin has been provided. This file contains all superseded and current linetypes. Having all linetypes contained within one file eliminates the need to load superseded linetype files.

4.8 HATCHING

Hatching will be created on the appropriate layer.

Hatching is to be scaled so as to be clearly identifiable when plotted.

Hatching shall not be exploded.

4.9 ENTITIES

All entities within the drawings are to have their linetype and colour properties set to BYLAYER, except where otherwise specified, with the exception of TEXT, which should be, colour white (7) unless otherwise specified.

Where practical, all lines should be polylines.

4.10 TEXT

All text is to be placed within modelspace with the exception of information contained within the Consultant's title block and any required tables.

Where practical, text for roads should be aligned along the road centre line.

Only specified text styles are to be used, the standard AutoCAD fonts are to be used are listed below or as specified by Business Units.

Preferred fonts	Example
ISO3098B	AaBbCc1234
HELVET1D	AaBbCc1234

Colours should be by layer, or as detailed in the layer specification.

All text is to be colour white (7) except for the Street names or as otherwise specified.

Bigfonts are not to be used, since text may not be visible if appropriate bigfonts are not found.

4.10.1 Text styles

In general the 1:500 text styles should be used for all text on TCD drawings, except on the layers CABLES_TXT, HARDWARE_TXT, and LOOPS_TXT where the 1:200 text styles should be used, and on the layers TITLE where all text styles may be used.

4.10.2 Text styles to be used in modelspace for 1:500 drawings

Style Name	Font	Height (Plotted)	Height (Modelspace)
TXT25500	ISO3098B	2.5 mm	1.25 units
TXT35500	ISO3098B	3.5 mm	1.75 units
TXT50500	ISO3098B	5.0 mm	2.5 units
TXT70500	ISO3098B	7.0 mm	3.5 units
TXB25500	HELVET1D	2.5 mm	1.25 units
TXB35500	HELVET1D	3.5 mm	1.75 units
TXB50500	HELVET1D	5.0 mm	2.5 units
TXB70500	HELVET1D	7.0 mm	3.5 units

4.10.3 Text styles to be used in modelspace for 1:200 drawings

Style Name	Font	Height (Plotted)	Height (Modelspace)
TXT25200	ISO3098B	2.5 mm	0.5 units
TXT35200	ISO3098B	3.5 mm	0.7 units
TXT50200	ISO3098B	5.0 mm	1.0 units
TXT70200	ISO3098B	7.0 mm	1.4 units
TXB25200	HELVET1D	2.5 mm	0.5 units
TXB35200	HELVET1D	3.5 mm	0.7 units
TXB50200	HELVET1D	5.0 mm	1.0 units
TXB70200	HELVET1D	7.0 mm	1.4 units

4.10.4 Text styles to be used in paperspace

Style Name	Font	Height (Plotted)	Height (Modelspace)
TXT25	ISO3098B	2.5 mm	NA
TXT35	ISO3098B	3.5 mm	NA
TXT50	ISO3098B	5.0 mm	NA
TXT70	ISO3098B	7.0 mm	NA
TXB25	HELVET1D	2.5 mm	NA
TXB35	HELVET1D	3.5 mm	NA
TXB50	HELVET1D	5.0 mm	NA
TXB70	HELVET1D	7.0 mm	NA

4.11 DIMENSIONS

All dimensions and text are to be on correct layer(s).

All text should be scaled according to the expected plotting scale. Which is 2.5 mm for survey drawings plotted at a scale of 1:500 (or as described elsewhere).

All text is to be aligned either normal to the page or normal to the feature such that it is right reading (which ever is more correct), except as detailed below.

Arrows and leaders should be on the same layer as the associated text or dimension.

For 1: 500 Plotting Scale use DIM25500 (using Text Style TXT25500, colour white 7) and DIM35500 (using Text Style TXT35500, colour yellow 2).

For 1:200 Plotting Scale use DIM25200 (using Text style TXT25200, colour white 7) and DIM35200 (using Text Style TXT35200, colour yellow 2).

Dimension styles and text styles most commonly used:

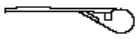
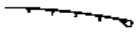
Dimension Style Name	Text style
25 STYLE	TXT 25
25 STYLE	TXT 35
DIM 25200	TXT 25200
DIM 25500	TXT 25500
DIM 35200	TXT 35200
DIM 35500	TXT 35500
Standard	Standard text height 2.5

4.12 TCD BLOCKS

Sections 4.12.1 to 4.14.5 have been categorised to provide details of the standard blocks to be used.

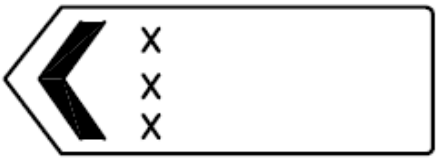
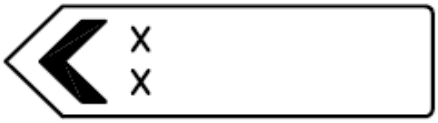
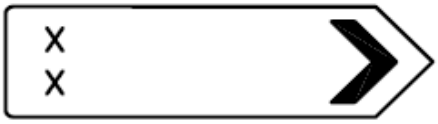
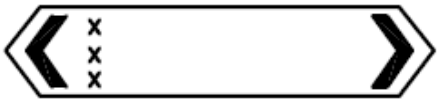
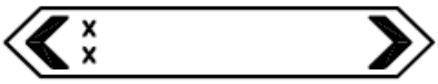
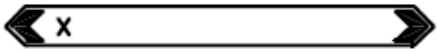
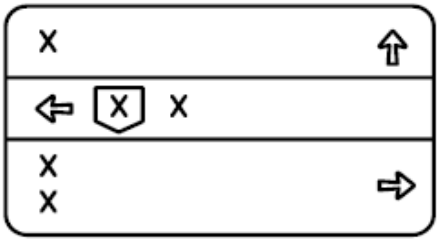
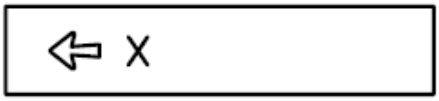
Non-standard Blocks may not be used where a standard Block is available.

4.12.1 Blocks – Barriers

Symbol	Block Name	Description
	REST	REST RAIL (CYCLIST)
	LOG	LOG BARRIER
	**BOL**	BOLLARD
	BKTS	BARRIER KERB TEMPORARY
	MKTS	MOUNTABLE KERB TEMPORARY
	WS	WHEEL STOP
	LK	LOG KERB
	FENCE	FENCE
	GATE	GATE
	**TD**	TRAFFIC DOME
	**GR**	GUARD RAIL
	**GRSTART**	GUARDRAIL START
	**GREND**	GUARD RAIL END
	**GRFLARE**	GUARD RAIL FLARE
	**NJB**	NEW JERSEY BARRIER
	**CATGRID**	CATTLE GRID (SINGLE)
	**SHELTERC**	BUS SHELTER (CONCRETE)
	**SHELTERG**	BUS SHELTER (GLASS)

All above blocks are used on layers **BARRIERS_EXG, BARRIERS_AMD, BARRIERS_NEW & BARRIERS_REM**

Blocks – Guide sign pictures

Symbol	Block Name
	GS01
	GS02
	GS03
	GS04
	GS05
	GS06
	GS07
	GS08
	GS09
	GS11
	GS12

All above blocks are used on the **SIGNS_PICTURE** layer

4.12.2 Blocks – Miscellaneous

Symbol	Block Name	Description
	**TREE**	TREE
	**TPC**	TANGENT POINT CENTERLINE
	**TPK**	TANGENT POINT KERB
	**NP**	NORTH POINT
	**BINP**	PEDESTRIAN REFUGE BIN
	**BINR**	ROUNDABOUT " KEEP LEFT" BIN

4.12.3 Blocks – Pavement arrows

Symbol	Block Name	Description
	**AD**	ARROW D|AGONAL
	**AL**	ARROW LEFT
	**AS**	ARROW STRA|GHT
	**AM**	ARROW MERGE
	**AR**	ARROW R|GHT
	**ARL**	ARROW, RIGHT, LEFT
	**ASD**	ARROW STRA|GHT D|AGONAL
	**ASL**	ARROW, STRA|GHT, LEFT
	**ASLR**	ARROW, STRA|GHT, LEFT, RIGHT
	**ASR**	ARROW, STRA|GHT, R|GHT
	**FLOW**	FLOW D|RECT|ON

All above blocks are used on layers **LINEMARKING_EXG, LINEMARKING_AMD, LINEMARKING_NEW & LINEMARKING_REM**

4.12.4 Blocks – Parking bays

Symbol	Block Name	Description
	PB90	PARKING BAY 90°
	**PB60**	PARKING BAY 60°
	**PB45**	PARKING BAY 45°
	**PB30**	PARKING BAY 30°
	**PC1**	PRAM CROSSING
	VC	VEHICULAR CROSSING
	**VCS**	VEHICULAR CROSSING+SINGLE DRIVEWAY

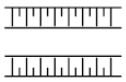
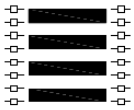
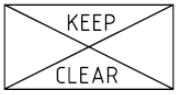
All above blocks are used on layers **LINEMARKING_EXG, LINEMARKING_AMD, LINEMARKING_NEW & LINEMARKING_REM**

4.12.5 Blocks –crossings

Symbol	Block Name	Description
	**PC1**	PRAM CROSSING
	VC	VEHICULAR CROSSING
	**VCS**	VEHICULAR CROSSING+SINGLE DRIVEWAY

All above blocks are used on layers **PATHS_EXG, PATHS_AMD, PATHS_NEW & PATHS_REM**

4.12.6 Blocks – Pavement marking

Symbol	Block Name	Description
	**SSH**	SLIM SPEED HUMP (ANY)
	**PIANO**	PEDESTRIAN CROSSING
	**ZEBRA**	PEDESTRIAN CROSSING
	**KEEPCLR**	KEEP CLEAR
	**DISABLED**	DISABLED SYMBOL
	**CYCLE**	CYCLE SYMBOL
	**BUSSTOP**	BUS STOP
	**LOADING**	LOADING ZONE
	**TAXI**	TAXI ZONE

All above blocks are used on layers **LINEMARKING_EXG, LINEMARKING_AMD, LINEMARKING_NEW & LINEMARKING_REM**

4.12.7 Blocks – Pavement marking

Symbol	Block Name	Description
		
	**FOL**	FORM ONE LANE
		
	**BUS_ONLY_AHEAD**	BUS ONLY AHEAD
	**BUS_LANE**	BUS LANE
	**END_ONLY_BUS**	END ONLY BUS
	**ONLY_BUS**	ONLY BUS
	**AHEAD**	AHEAD
	**BUS**	BUS
	**END**	END
	**FORM**	FORM
	**ONE**	ONE
	**LANE**	LANE
	**ONLY**	ONLY

All above blocks are used on layers **LINEMARKING_EXG, LINEMARKING_AMD, LINEMARKING_NEW & LINEMARKING_REM**

4.12.8 Blocks – Reflective pavement markers (RPM's)

Symbol	Block Name	Description
	**RPM_WU**	RPM_WHITE UNIDIRECTIONAL
	**RPM_WB**	RPM_WHITE BIDIRECTIONAL
	**RPM_YU**	RPM_YELLOW UNIDIRECTIONAL
	**RPM_WY**	RPM_WHITE / YELLOW
	**RPM_YB**	RPM_YELLOW BIDIRECTIONAL
	**RPM_RU**	RPM_RED UNIDIRECTIONAL
	**RPM_BB**	RPM_BLUE BIDIRECTIONAL
	**RPM_WBD**	RPM_WHITE BIDIRECTIONAL DOUBLE
	**RPM_YBD**	RPM_YELLOW BIDIRECTIONAL DOUBLE
	**RPM_WYD**	RPM_WHITE YELLOW DOUBLE
	**CPM**	CERAMIC PAVEMENT MARKER
	**LL_C12**	L3 CPMs @ 12m
	**LL_C24**	L2 CPMs @ 24m

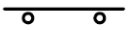
All above blocks are used on layers **LINEMARKING_EXG, LINEMARKING_AMD, LINEMARKING_NEW & LINEMARKING_REM**

4.12.9 Blocks – Poles & parking meters

Symbol	Block Name	Description
	**PP**	POWER POLE
	**LP**	LIGHT POLE
	**DUALP**	DUAL LIGHT/TRAFFIC SIGNAL PEDESTAL
	**MATL**	MAST ARM TRAFFIC LIGHT
	**TSP**	TRAFFIC SIGNAL PEDESTAL
	**PMS**	PARKING METER (SINGLE)
	**PMD**	PARKING METER (DOUBLE)
	**PMM**	PARKING METER (MULTI)
	**VM**	VOUCHER MACHINE AND SINGLE POST
		
	**SPEED-CAMERA**	SPEED CAMERA

All above blocks are used on layers **POLES_EXG, POLES_AMD, POLES_NEW & POLES_REM**

4.12.10 Blocks – Signs

Symbol	Block Name	Description
	BLADE	Mounted sign
	**BUSPEG**	Bus Peg
	**BUSSIGN**	Bus Sign
	CANTILEV	Cantilevered Sign
	**DS1**	Double Sided Sign One Post
	FB1	One Finger Board
	**FB2**	Two Finger Boards
	**GUIDE**	Guide Post
	**HORSESHOE**	Horseshoe Chevron
	**SS1**	Single Sided Sign One Post
	**SS2**	Single Sided Sign Two Posts
	**SS3**	Single Sided Sign Three Posts
	**SS4**	Single Sided Sign Four Posts
	**SC_PEG**	School Crossing Peg with Flag

All above blocks are used on layers **SIGNS_SYMB_EXG, SIGNS_SYMB_AMD, SIGNS_SYMB_NEW & SIGNS_SYMB_REM**

4.13 ATTRIBUTE BLOCKS

Block Name	Placement/Use	Tag	Prompt	Example Value
SIGN	At right angles, or parallel, to the kerb, which the sign is facing. No leaders are to be used. One block per sign.	INSTRUCTION	Instruction: Erect/Remove/"Blank"	
		SIGN_NO	Sign No: eg R2-3A(L)	R2-3A(L)
		ASSET_NO	Asset No: To be provided by Roads ACT – Asset Creation	
		DESCRIPTION	Description: To be used for guide signs and other more complex signs.	
Data Custodian		Roads ACT		

4.14 TRAFFIC SIGNAL BLOCKS

4.14.1 Blocks – Traffic signal hardware - LED

Symbol	Block Name	Pictorial	Description
	LED01		200 DIAMETER 3 ASPECT LED
	LED02		300 DIAMETER 3 ASPECT LED
	LED03		200 DIAMETER 3 ASPECT LED
	LED04		300 DIAMETER 3 ASPECT LED
	LED05		200 DIAMETER 3 ASPECT LED
	LED06		300 DIAMETER 3 ASPECT LED
	LED07		200 DIAMETER 4 ASPECT L-CONFIG LED
	LED08		300 DIAMETER 4 ASPECT L-CONFIG LED
	LED13		200 DIAMETER 4 ASPECT IN-LINE LED
	LED14		300 DIAMETER 4 ASPECT IN-LINE LED
	LED15		200 DIAMETER 4 ASPECT LED
	LED16		300 DIAMETER 4 ASPECT LED
	LED17		200 DIAMETER 5 ASPECT LED
	LED18		300 DIAMETER 5 ASPECT LED
	LED11		200 DIAMETER 6 ASPECT LED
	LED12		300 DIAMETER 6 ASPECT LED

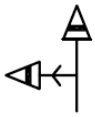
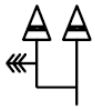
All above blocks are used on layers **HARDWARE_EXG, HARDWARE_AMD, HARDWARE_NEW & HARDWARE_REM**

4.14.2 Blocks - Traffic signal hardware – PKX

Symbol	Block Name	Pictorial	Description
	L18		200 DIAMETER 3 ASPECT PKX
	L17		300 DIAMETER 3 ASPECT PKX
	L25		200 DIAMETER 3 ASPECT PKX
	L19		300 DIAMETER 3 ASPECT PKX
	L26		200 DIAMETER 3 ASPECT PKX
	L20		300 DIAMETER 3 ASPECT PKX
	L30		200 DIAMETER 4 ASPECT IN-LINE PKX
	L24		300 DIAMETER 4 ASPECT IN-LINE PKX
	L45		200 DIAMETER 4 ASPECT L-CONFIG PKX
	L44		300 DIAMETER 4 ASPECT L-CONFIG PKX
	L38		200 DIAMETER 4 ASPECT PKX
	L36		300 DIAMETER 4 ASPECT PKX
	L34		200 DIAMETER 5 ASPECT PKX
	L32		300 DIAMETER 5 ASPECT PKX
	L29		200 DIAMETER 6 ASPECT PKX
	L23		300 DIAMETER 6 ASPECT PKX

All above blocks are used on layers **HARDWARE_EXG, HARDWARE_AMD, HARDWARE_NEW & HARDWARE_REM**

4.14.3 Blocks - Traffic signal hardware – BIPIN

Symbol	Block Name	Pictorial	Description
	L16		200 DIAMETER 3 ASPECT BI-PIN
	L46		200 DIAMETER 3 ASPECT BI-PIN
	L47		200 DIAMETER 3 ASPECT BI-PIN
	L49		200 DIAMETER 4 ASPECT IN-LINE BI-PIN
	L51		200 DIAMETER 4 ASPECT L-CONFIG BI-PIN
	L53		200 DIAMETER 4 ASPECT BI-PIN
	L50		200 DIAMETER 5 ASPECT BI-PIN
	L48		200 DIAMETER 6 ASPECT BI-PIN

All above blocks are used on layers **HARDWARE_EXG, HARDWARE_AMD, HARDWARE_NEW & HARDWARE_REM**

4.14.4 Blocks - Traffic signal hardware – INCANDESCANT

Symbol	Block Name	Pictorial	Description
	L01		200 DIAMETER 3 ASPECT INCANDESCENT
	L02		300 DIAMETER 3 ASPECT INCANDESCENT
	L03		200 DIAMETER 3 ASPECT INCANDESCENT
	L04		300 DIAMETER 3 ASPECT INCANDESCENT
	L05		200 DIAMETER 3 ASPECT INCANDESCENT
	L06		300 DIAMETER 3 ASPECT INCANDESCENT
	L07		200 DIAMETER 4 ASPECT L-CONFIG. INCANDESCENT
	L08		300 DIAMETER 4 ASPECT L-CONFIG. INCANDESCENT
	L13		200 DIAMETER 4 ASPECT IN-LINE INCANDESCENT
	L14		300 DIAMETER 4 ASPECT IN-LINE INCANDESCENT
	L37		200 DIAMETER 4 ASPECT INCANDESCENT
	L35		300 DIAMETER 4 ASPECT INCANDESCENT
	L33		200 DIAMETER 5 ASPECT INCANDESCENT
	L31		300 DIAMETER 5 ASPECT INCANDESCENT
	L11		200 DIAMETER 6 ASPECT INCANDESCENT
	L12		300 DIAMETER 6 ASPECT INCANDESCENT

All above blocks are used on layers **HARDWARE_EXG, HARDWARE_AMD, HARDWARE_NEW & HARDWARE_REM**

4.14.5 Blocks - Traffic signal hardware – ACCESSORIES

Symbol	Block Name	Description
	**P1**	PEDESTRIAN LANTERN INCANDESENT
	**P2**	PEDESTRIAN LANTERN BI-PIN
	**P3**	PEDESTRIAN LANTERN PKX
	**P4**	PEDESTRIAN LANTERN LED
	**ATAC**	AUDIO TACTILE PUSH BUTTON
	**TAC**	STANDARD PUSH-BUTTON
	**DCOWL-L**	COWL DOUBLE LONG
	DCOWL-S	COWL DOUBLE SHORT
	**S-LOV**	SINGLE LOUVRE
	**S-LOVV**	SINGLE LOUVRE VERTICAL
	**D-LOV**	DOUBLE LOUVRE
	**D-LOVV**	DOUBLE LOUVRE VERTICAL
	**JBR**	JUNCTION BOX ROUND
	JC-1	JOINTING CABLE PIT
	**JC-4**	JOINTING CABLE PIT (NOT PREFERED)
	**SCOWL-L**	COWL SINGLE LONG
	SCOWL-S	COWL SINGLE SHORT

All above blocks are used on layers **HARDWARE_EXG, HARDWARE_AMD, HARDWARE_NEW & HARDWARE_REM**

4.15 LAYERS

In order to differentiate between new assets, assets already held within the inventories and existing assets not shown within the Inventory along with assets that have been deleted, moved or modified, the following suffices have been used within the Layer names,

Existing (_EXG)	Data, which has been supplied from the TCD Inventory
Amended (_AMD)	Data captured by the consultant of an existing asset that is not represented within the supplied inventory. Existing assets, which have either been deleted or moved to reflect the true representation of the asset in the field.
New (_NEW)	New Assets.
Removed (_REM)	Assets that are either to be demolished, eradicated or removed

These have been implemented to improve the integrity of the TCD inventory and allow transfer to linked asset management systems, should you require further clarification please contact the CAD Staff at Roads ACT.

Non-specified layers are not to be used, and Layer 0 is not to be used for drafting.

Every layer is to have a colour and linetype set, with the exception of layer 0 which should remain as white (colour number 7) and a linetype of continuous.

4.15.1 Layering conventions for depicting existing data in TCD drawings

Cadastral layers

Layer Name	Colour	Linetype	Description
0	white	Continuous	Only to be used for inserting blocks to be exploded
BLOCK	211	Continuous	Block boundary lines – Colour bylayer, Building outlines –Colour 150
SECTION	211	Continuous	Section boundaries, section number, district boundaries and boundary names
BLOCK_TXT	yellow	Continuous	Block numbers, house numbers, and ownership details
ROAD_NAMES	52	Continuous	Road names, building names or descriptions
KERB_EXG	green	By linetype	Existing nominal kerb line, edge of bitumen, edge of shoulder and edge of sealed shoulder
KERB_EXG_TXT	white	Continuous	All text relating to existing kerbs (i.e. KG RVC MLBK)
KERB_DETAIL	white	Continuous	All lines other lines associated with kerbs - lip of gutter, back of kerb, raised platforms and thresholds
CENTRELINE	white	Center	Centre line of carriageway and or design centre lines
PATHS_EXG	white	Continuous	Existing paths and associated text

Linemarking & lane width layers

LINEMARKING_EXG	yellow	By linetype	All existing pavement markings On-road cycling green degadur drawn as closed polyline and solid hatch - Colour 90 (green)
LINEMARKING_EXG_TXT	white	Continuous	All existing pavement marking associated text
DIMENSIONS	white	Continuous	Linemarking setting out details, lane widths & sign setting out details

Signage layers

SIGNS_ATTRIB_EXG	white	Continuous	Sign attributes associated with the sign blocks are inserted on this layer for existing signs
SIGNS_SYMB_EXG	yellow	Continuous	Sign blocks are inserted on this layer for existing signs - object representing the sign blade and post
SIGNS_PICTURE	yellow	Continuous	Used if a pictorial representation of the sign is required

Traffic signal layers

HARDWARE_EXG	white	Continuous	All existing lights hardware, including pedestals and controller
HARDWARE_TXT	yellow	Continuous	All text used on a hardware drawing to be placed on this layer including text blocks
CABLES_EXG	white	Continuous	All existing conduits including junction boxes
CABLES_TXT	yellow	Continuous	All text relating to new & existing cables, and text blocks
LOOPS_EXG	white	Continuous	All existing loops excluding junction box
LOOPS_TXT	yellow	Continuous	Any text relating to new or existing loops
POLES_EXG	white	Continuous	All existing poles and associated text

Features Layers

BARRIERS_EXG	white	Continuous	All existing barriers
FEATURES_EXG	white	Continuous	All existing features not specifically included on other layers *(Do not include features in TCD drawings such as hydrants, stop valves gas meters etc.)*
VEGETATION	60	Continuous	All vegetation and trees

Instruction layer

WORKS_INFO	yellow	Continuous	Contract limits, staging details, works notes, legends etc

4.15.2 Layering conventions for existing data in TCD drawings that is missing in the TCD Grids

Cadastral layers

Layer Name	Colour	Linetype	Description
0	white	Continuous	Only to be used for inserting blocks to be exploded
KERB_AMD	114	By linetype	All existing Nominal kerb line, edge of bitumen, edge of shoulder and edge of sealed shoulder
KERB_AMD_TXT	white	Continuous	All text relating to existing kerbs (i.e. KG RVC MLBK)
KERB_DETAIL	white	Continuous	All lines other lines associated with kerbs - lip of gutter, back of kerb
CENTRELINE	white	Center	Centre line of carriageway and or design centre lines
PATHS_AMD	122	Continuous	Existing paths and associated text

Linemarking & lane width layers

LINEMARKING_AMD	70	By linetype	All existing pavement markings On-road cycling green degadur drawn as closed polyline and solid hatch - Colour 90 (green)
LINEMARKING_AMD_TXT	white	Continuous	All existing pavement marking associated text
DIMENSIONS	white	Continuous	Linemarking setting out details, lane widths & sign setting out details

Signage layers

SIGNS_ATTRIB_AMD	202	Continuous	Sign attributes associated with the sign blocks are inserted on this layer for existing signs
SIGNS_SYMB_AMD	202	Continuous	Sign blocks are inserted on this layer for existing signs - object representing the sign blade and post
SIGNS_PICTURE	yellow	Continuous	Used if a pictorial representation of the sign is required

Traffic signal layers

HARDWARE_AMD	122	Continuous	All existing lights hardware, including pedestals and controller
HARDWARE_TXT	yellow	Continuous	All text used on a hardware drawing to be placed on this layer including text blocks
CABLES_AMD	122	Continuous	All existing conduits including junction boxes
CABLES_TXT	yellow	Continuous	All text relating to new & existing cables, and text blocks
LOOPS_AMD	122	Continuous	All existing loops excluding junction box
LOOPS_TXT	yellow	Continuous	Any text relating to new or existing loops
POLES_AMD	white	Continuous	All existing poles and associated text

Features Layers

BARRIERS_AMD	122	Continuous	All existing barriers
FEATURES_AMD	122	Continuous	All existing features not specifically included on other layers *(Do not include features in TCD drawings such as hydrants, stop valves gas meters etc…)*
VEGETATION	60	Continuous	All vegetation and trees

Instruction layer

WORKS_INFO	yellow	Continuous	Contract limits, staging details, works notes, legends etc

4.15.3 Layering conventions for depicting new data in TCD drawings

Cadastral layers

Layer Name	Colour	Linetype	Description
0	white	Continuous	Only to be used for inserting blocks to be exploded
BLOCK	211	Continuous	Block boundary lines – Colour bylayer, Building outlines –Colour 150
SECTION	211	Continuous	Section boundaries, section number, district boundaries and boundary names
BLOCK_TXT	yellow	Continuous	Block numbers, house numbers, and ownership details
ROAD_NAMES	52	Continuous	Road names, building names or descriptions
KERB_NEW	210	By linetype	New nominal kerb line, edge of bitumen, edge of shoulder and edge of sealed shoulder
KERB_NEW_TXT	white	Continuous	All text relating to new kerbs (i.e. KG RVC MLBK)
KERB_DETAIL	white	Continuous	All lines other lines associated with kerbs - lip of gutter, back of kerb
CENTRELINE	white	Center	Centre line of carriageway and or design centre lines
PATHS_NEW	140	Continuous	New paths and associated text

Linemarking & lane width layers

LINEMARKING_NEW	30	By linetype	All new pavement markings On-road cycling green degadur drawn as closed polyline and solid hatch - Colour 90 (green)
LINEMARKING_NEW_TXT	white	Continuous	All new pavement marking associated text
DIMENSIONS	white	Continuous	Linemarking setting out details, lane widths and sign setting out details

Signage layers

SIGNS_ATTRIB_NEW	magenta	Continuous	Sign attributes associated with the sign blocks are inserted on this layer for new signs
SIGNS_SYMB_NEW	magenta	Continuous	Sign blocks for new signs - sign blade and post
SIGNS_PICTURE	yellow	Continuous	Used if a pictorial representation of the sign is required

Traffic signal layers

HARDWARE_NEW	140	Continuous	All new lights hardware, including pedestals and controller
HARDWARE_TXT	yellow	Continuous	All text used on a hardware drawing to be placed on this layer including text blocks
CABLES_NEW	140	Continuous	All new conduits including junction boxes
CABLES_TXT	yellow	Continuous	All text relating to new and existing cables, and text blocks
LOOPS_NEW	140	Continuous	All new loops excluding junction box
LOOPS_TXT	yellow	Continuous	Any text relating to new or existing loops
POLES_NEW	140	Continuous	All new poles and associated text

Features Layers

BARRIERS_NEW	140	Continuous	All new barriers
FEATURES_NEW	140	Continuous	All new features not specifically included on other layers *(Do not include hydrants, stop valves gas meters etc…)*
VEGETATION	60	Continuous	All vegetation and trees

Instruction layer

WORKS_INFO	yellow	Continuous	Contract limits, staging details, works notes, legends etc

4.15.4 Layering conventions for depicting demolition works in TCD drawings

Cadastral layers

Layer Name	Colour	Linetype	Description
KERB_REM	10	By linetype	Nominal kerb line, edge of bitumen, edge of shoulder and edge of sealed shoulder to be demolished
PATHS_REM	10	Demolish	Paths and associated text to be demolished

Linemarking & lane width layers

LINEMARKING_REM	10	By linetype or demolish	All pavement markings to be eradicated

Signage layers

SIGNS_ATTRIB_REM	10	Continuous	Sign attributes associated with the sign blocks are inserted on this layer for signs to be removed
SIGNS_SYMB_REM	10	Continuous	Sign blocks are inserted on this layer for signs - object representing the sign blades and posts to be removed

Traffic signal layers

HARDWARE_REM	10	Continuous	All lights hardware, including pedestals and controller to be removed
CABLES_REM	10	Continuous	All including junction boxes to be removed
LOOPS_REM	10	Continuous	All loops excluding junction box to be removed
POLES_REM	10	Continuous	All poles and associated text to be removed

Features Layers

BARRIERS_REM	10	Continuous	All barriers to be removed
FEATURES_REM	10	Continuous	All features not specifically included on other layers to be removed *(Do not include features in TCD drawings such as hydrants, stop valves gas meters etc…)*

Instruction layer

WORKS_INFO	yellow	Continuous	Contract limits, staging details, works notes, legends etc

4.15.5 Layering conventions for depicting paperspace information in TCD drawings

Layer Name	Colour	Linetype	Description
TITLE	Byblock	Continuous	Title block and other information *(may include sign schedules)* This replaces the following layers: **CONSULTANT_TITLE** & **TRAFFIC_TITLE**
VPORTS	white	Continuous	AutoCAD viewports
WORKS_INFO	yellow	Continuous	Contract limits, staging details, works notes, legends etc *(may include sign schedules)*

4.15.6 Layering conventions for depicting spatial information in TCD drawings

Layer Name	Colour	Linetype	Description
CHANGES	Red	Divide	Polyline around all areas where changes have occurred, together with the TC number
CONSULTANT_RMKS	yellow	Continuous	Consultants remarks to Roads ACT
MAPGRID	Cyan 4	Continuous	ACT Map grid Grid, north point (these must be in model space not paper space)
RASTER_1	Red	Continuous	Layers to be used for raster information (excluding logos & sign pictures)
RASTER_2	8	Continuous	Used internally for temporarily inserting aerial & satellite imagery into drawings for audit purposes.
ROADS_ACT_RMKS	white	Continuous	Remarks layer for Roads ACT use

4.15.7 Plotting & pen parameters for TCD drawings

Plot styles and pen tables are provided within the following table and .ctb files 500-colour.ctb for 1:500 plots (A!) & 1000-colour.ctb for 1:1000 plots (A3).

COLOUR	PEN No.	PEN Settings	
		500-color.ctb	1000-color.ctb
Red 1	7	0.18	0.15
Yellow 2	7	0.35	0.30
Green 3	7	0.35	0.30
Cyan 4	7	0.25	0.15
Blue 5	7	0.50	0.25
Magenta 6 †	94	0.35	0.20
White 7	7	0.25	0.15
Colour 8	8	0.15	0.10
Colour 9	7	0.35	0.15
Red 10	10	0.35	0.30
Colours 11-29	7	0.20	0.15
Colour 30	96	0.35	0.30
Colour 31	31	0.25	0.15
Colours 32-39	7	0.20	0.15
Colour 40	40	0.35	0.20
Colours 41-51	7	0.20	0.15
Colour 52	7	0.50	0.30
Colours 53 -59	7	0.20	0.15
Colour 60	7	0.25	0.15
Colours 61-69	7	0.20	0.15
Colour 70 †	7	0.35	0.20
Colours 71-93	7	0.20	0.15
Colour 94 †	94	0.35	0.30
Colours 95-113	7	0.20	0.15
Colour 114 †	7	0.35	0.20
Colours115-121	7	0.20	0.15
Colour 122 †	7	0.30	0.20
Colours 123-139	7	0.20	0.15
Colour 140	140	0.35	0.20
Colours 141-149	7	0.20	0.15
Colour 150	7	0.35	0.20
Colours 151-161	7	0.20	0.15
Colour 162	162	0.35	0.25
Colours 163-201	7	0.20	0.15
Colour 202 †	7	0.30	0.20
Colours 203-209	7	0.20	0.15
Colour 210	210	0.50	0.30
Colour 211	7	0.25	0.18
Colours 212-250	7	0.20	0.15
Colour 251	251	0.25	0.15
Colours 252-255	7	0.20	0.15

† New Pen assignment

4.16 VALIDATION

Data that has been digitised from existing plans shall be field checked by the consultant to ensure that the information captured is both current, and that the accuracy standards are achieved.

Drawings received within Territory and Municipal Services shall be verified against this standard and Design Standard (Engineering) Specifications prior to acceptance. Territory and Municipal Services holds a right to reject drawings that are non-conformant to the above standards.

4.17 DATA OWNERSHIP

4.17.1 ACT Government

All data submitted shall become the property of the ACT Government.

4.18 ANCILLARY DATA

4.18.1 Drawing approval

Hardcopy drawings are to include the consultants own title block in conjunction with the approval stamp "Stamp.dwg" issued within the CAD_BLOCKS_TCD\Approval Stamp zip file.

4.18.2 Digital conformance

Non-conformant drawings shall be returned to the consultant along with comments on the form "TCD_Checklist" shown below.

4.18.3 Tips for ensuring digital data conforms to these standards

Download all relevant TCD grids for the location of the proposed works from the TCD download website

Create a new drawing from the latest TCD standard template file This will ensure the correct layers, linetypes fonts are in the drawing from the start

To reduce the amount of work in ensuring digital data complies with the standards, where possible limit the extents of the modelspace drawing to the general location of the proposed works instead of including whole grids in TCD submissions.

Configure the CAD Standards to the current TCD dws file and use the standards checker to fix all nonconforming data in the TCD drawing to be submitted.

Prior to TCDs being submitted for approval, new or modified guide sign designs along with completed guide sign inventory forms require approval. They will be allocated a unique guide sign number that must be included within the sign attribute block for the appropriate guide signs in the TCD drawing

Guide sign inventory forms are downloadable from the Roads ACT website.
http://www.roads.act.gov.au/downloads

Purge drawings prior to submitting.

Complete the checklist below and ensure data conforms to the standards and the checklist

4.18.4 Common non-conformances found in TCD submissions

Many non-conformances can be eliminated if consultants completed the TCD CAD Check List and also used the Territory and Municipal Services DWS file TCD Standard xxxxx.dws with the CAD Standards function in AutoCAD and used the template file TCD Standard xxxxx.dwt

Often linetype entities for barrier lines (B1, B2 & B5) linemarking are incorrectly set to bylayer.

Incorrect Text styles being used.

Data in incorrect coordinates

Not using CAD Standards & therefore non-conformances in existing TCD data is not being fixed.

Incorrect layer names being used.

Non-standard TCD blocks being used

Non-conforming layers JAMB-3 & LEAF-3 in the TCD drawings. These particular layers can be quite hard to remove unless you perform an audit before purging.. Remove them by using the Audit command . This will change the nonconforming data to a block "AUDIT_I_050204121251-0" or similar. Next use the Purge command to purge this audit block first. This will then allow the layers JAMB-3 & LEAF-3 to be purged

Drawings not being purged.

Original drawings with comments from Territory and Municipal Services, are not being attached when resubmitting TCD drawings for approval.

Ltscale, Psltscale & Plinegen AutoCAD system variables not conforming with the TCD standard.

4.18.5 TCD CAD checklist

CONSULTANT: _____

TC No: **TC_**

TCD CAD Check List

CHECK ✓ OR X	CHECK ITEMS
	DRAWING COORDINATE SYSTEM OVERALL TO BE IN ACT COORDINATE (STROMLO).
	USED SETTINGS: LTSCALE 5, PSLTSCALE 0, PLINEGEN 1, INSUNITS 0
	TITLE SHEET IN “CONSULTANTS _TITLE ” LAYER
	STANDARD TRAFFIC LINETYPES USED
	STANDARD TRAFFIC BLOCKS USED
	LAYER COLOURS CORRECT AND ONLY ROADS ACT LAYERS USED (ADOPT MOST APPROPRIATE LAYER; PURGE OTHERS; CHECK USING LATEST CAD STANDARDS FILE)
	ONLY ROADS ACT FONT STYLES USED (PURGE ALL OTHERS)
	SIGN ATTRIBUTE BLOCK “SIGN” USED
	ARRANGE SIGN ATTRIBUTE BLOCKS AT RIGHT ANGLE OR PARALLEL TO ROAD
	EACH SIGN TO COUNT FOR ONE ATTRIBUTE BLOCK (AVOID LEADERS IF POSSIBLE)
	GUIDE SIGNS TO HAVE THEIR OWN ATTRIBUTE BLOCK AND ALLOCATED GUIDE SIGN NUMBER
	SIGNS PICTURES TO BE ON “SIGNS_PICTURE” LAYERS
	HOLD LINES & STOP LINES ONLY REQUIRE POLYLINE WIDTH (0.3/0.5 UNITS WIDE)
	ANY LINEMARKING & KERB TEXT WHITE (NOT BY LAYER)
	ANY INSTRUCTION TEXT AND LIMIT OF WORKS TO BE ON WORKS_INFO LAYER ONLY
	B5 LINETYPE @ 0.4 SPACING
	TRAFFIC LIGHTS DRAWINGS TO INCLUDE 4 LAYOUTS PER INTERSECTION – CABLES AND LOOPS, CABLE CHARTS, HARDWARE, TCD

TCD DESIGN DRAWINGS WILL NOT BE APPROVED UNTIL DRAWINGS CONFORM TO THIS STANDARD

IF IN DOUBT PHONE CAD STAFF ON (02) 6207 6883

5 DESIGN & WORKS AS EXECUTED DRAWINGS FOR ASSETS TO BE HANDED OVER TO TERRITORY AND MUNICIPAL SERVICES (TAMS)

5.1 OVERVIEW

WAE Drawings are to consist of only those drawings that depict permanently constructed, abandoned, demolished or reconstructed works and show all amendments made to the approved design during the construction phase. Each drawing is to be certified that it accurately details the completed works. WAE drawings for Traffic Control Devices (TCD) to comply with the TCD requirements of this standard. Traffic control devices are to be constructed as per approved TCD drawings otherwise resubmissions for approval will be necessary. This may result in works having to be demolished, modified & reconstructed.

WAE Drawings are submitted to Territory and Municipal Services by consultants and contractors for all works for which ACT Government will become the ultimate owner and operator and which are managed by Territory and Municipal Services.

In this revision, standardised layering conventions, blocks, linetypes, plotstyles and hatching have not been established. Drafting conventions vary from consultant to consultant. Each consultant has developed their own office layering conventions, blocks, linetypes and plotstyles. There are many benefits in establishing a structured drafting standard that can either be easily adopted by consultants or converted prior to submission. TAMS will shortly undertake a review in close consultation with the industry to establish a structured drafting standard that is practical and easily implemented.

5.2 DRAWING FORMAT

Drawings are to be submitted in all of the following formats:

- One full set of drawings in AutoCAD DWG format R2000 or above.
- All drawing formats compliant with the latest version of Territory and Municipal Services document Ref-08 “Requirements for Work as Executed Quality Records

DXF formats are no longer accepted due to large percentage of corrupted DXF drawings and lack of support for xrefs.

5.3 UNITS

All drawing units shall be in metres and decimals of a metre.

All drawings shall be created at a scale of 1:1.

5.4 CO-ORDINATE SYSTEM

The coordinate system used in all drawings must be in the Canberra Map Grid (Stromlo) with origin set to WCS (AutoCAD World Coordinate System).

Drawings not drawn to this coordinate system will be rejected and require resubmission.

The Canberra Map Grid is a transverse Mercator map projection that uses the longitude of Mt Stromlo trig station as its central meridian. Hence it is also known as the Stromlo coordinate system. It is based on the AGD66. The AGD66 was modified to take advantage of the ACT’s limited east-west dimension and account for scale differences caused by the ACT’s height above sea level. The resulting ACT grid can be treated as a plane (rather than geodetic) system of coordinates, without the need to apply scale factors, grid convergence, arc-to-chord, or sea level corrections

For further information on this coordinate system refer to the following web address:
www.actpla.act.gov.au/actlic/surveying/gda.htm
Asset Management Services can supply base maps in Canberra Map Grid for most areas of the ACT.

5.5 INSERTION POINTS

A drawings insertion point is defined by the AutoCAD system variable Base

Base must also be set to 0,0,0.

Blocks used in drawings are to have functional insertion points. For example a block depicting the plan view of a street light should have an insertion point in the centre of the street light pole (not hundreds of metres from the pole). This is important when the blocks are being imported into GIS applications. Blocks representing the plan view of a stormwater manhole should have the insertion point in the centre of the manhole.

Drawings that have blocks with bizarre insertion points representing Territory and Municipal Services assets will be rejected and require resubmission.

5.6 ELEVATION

Drawings are to be drawn with the Elevation set to 0.0.

5.7 PAPERSPACE, MODELSPACE & XREFS

All base drawings are to be saved in model space. The title block is to be saved in the Layout (Paper space).

Each title block sheet should be placed in a different Layout with the corresponding name.

5.8 LINETYPES

Where non standard or modified linetypes have been used in the drawings, the linetype files are to be submitted with the WAE drawings.

5.9 DIMENSIONS

It has not been established wether to standardise Dimension Styles at this time.

5.10 HATCHING

It has not been established wether to standardise Hatching Styles at this time.

5.11 FONTS

In this revision, it has not been established wether to standardise styles and fonts. Where third party AutoCAD SHX fonts have been used in the drawings, the shx fonts are to be submitted with the WAE drawings. Bigfonts are not to be used due to the problems caused by styles using bigfonts making the text in drawings invisible if the required bigfont cannot be located.

5.12 PLOTTING & PEN TABLES

In this revision, it has not been established wether to standardise pen settings. Consultants must include plotstyle files used in the drawings with each submission.

5.13 LAYERS

In this revision, it has not been established wether to standardise layering conventions. It is important that layering conventions used in the drawings are easy interpreted. Care must be taken to ensure data is placed on the appropriate layers. Where the consultant's layering conventions are not obvious please provide with the submission documentation explaining the layering conventions adopted within the drawings.