



Estates and Campus Services procedures

CAD PROCEDURE – February 2026

1.0 INTRODUCTION

Information contained within electronic drawings is a valuable asset that should be easily accessible and understandable so as to support collaborative working. Drawings may also need to be compatible with other Estates and Campus Services (ECS) systems. To ensure that these requirements are satisfied consistently, computer aided design (CAD) procedures are necessary.

This procedure is for issue to all framework consultants and to any organisation invited to quote for consultancy work. It is expected that the procedure will evolve over time; therefore, please ensure that you are using the most recent version.

2.0 DEFINITIONS

2.1. Architect, Consultant or Contractor

An Architect, Consultant or Contractor can mean any Architect, Consultant, Main Contractor or Sub-Contractor that may make any changes to University of Leicester CAD drawings or produce their own drawings for the University.

2.2. External Reference

Externally referenced drawings (XREFs) should be attached on the appropriate layer (Z-Z920-XREF in colour 8) as per the layer table in section 7.0.

The insertion point should be 0,0 **and must be bound into the drawing in the correct colour.**

2.3. Current Building Layout Drawings

Current Building Layout Drawings are simplified floor layout plans that form the backbone of the University's property information system, AiM.

Version 3.6

3.0 DRAWINGS TO BE SUPPLIED

For every completed project the Architect, Consultant or Contractor shall, as required by relevant project procedure to be advised, provide to the Project Manager an Operation & Maintenance manual containing a set of 'Current Building Layout Drawings' produced and formatted according to this procedure, notably Section 9.0.

4.0 RELEASE OF CAD DRAWINGS BY THE UNIVERSITY

Where it is necessary in order for you to complete the work for which you have been contracted, the University will release CAD drawings (i.e. dwg files) to you. The terms of release of any such drawings are as follows:

1. We will only give you access to plans that are required for the contracted work.
2. The plans must be held securely on your system.
3. They must only be accessed by staff that need access to them.
4. They should be destroyed when they are no longer required.
5. Under no circumstance should they be shared with a third-party company.
6. The plans are provided for the specific use in relation to the contracted work and for no other purpose.

5.0 DRAWING PRODUCTION

5.1. Drawing Templates

All drawings produced for the University must be produced to the standards contained in this procedure. Template files containing the standard layers, standard text styles are available for paper sizes A4, A3, A2 and A1. The Project Manager will supply these template files upon request.

5.2. File Format

Software to be used to create or modify drawings will be AutoCAD. The drawings should be saved in AutoCAD 2018.dwg format.

5.3. Drawing Units

All drawings shall be drawn in Model Space at a scale of 1:1 where one drawing unit = 1mm.

The unit shall be accurate to two decimal places. The lower-left corner of the drawn image should be positioned at the origin (0,0) in line with the World Co-ordinate System (WCS). Angles shall be shown in decimal degrees and measured anti-clockwise with 0 measured as a horizontal line drawn to the right.

5.4. Drawing Revisions

Drawing revisions shall be given an alphabetic issue letter which appears in the title box, revisions to drawings shall also be clouded to clearly outline the changes. Any revisions/clouds should be placed on the appropriate layer (Z-Z300-Revs in colour 150) as per the layer table in section 7.0. Revisions shall be described in sufficient detail to enable the nature of the revision to be identified and shall be located above the title block.

5.5. Text styles

The text shall be standardised to Standard Arial and should be sized appropriately, not less than 2.5mm in height. All text should have a width no greater than 1 at a scale of 1:1. Blocks and Title blocks should be left in the text style they were made in and not changed to Standard Arial.

5.6. Pen Settings

If varying pen thicknesses are used, a PCP or PC2 file should be supplied with the drawing files. It is essential that all the master outlines (XREF) should be in colour 8 when attached to M&E services drawings to emphasise the M&E services.

5.7. Line types

Standard AutoCAD line types must be used. Site survey drawings showing main service supply routes may use special line types such as GAS___GAS and CCTV___CCTV. These special line types must be supplied with the drawing files.

5.8. Drawing legend

Any drawing legend must refer to actual notation used on the drawing and must not be a generic list of notations.

5.9. Insertion of images and JPEGs

Any images and JPEGs must be embedded into the drawing and not linked to a folder where they are saved.

6.0 DRAWING FRAME SETUP

All drawings shall be drawn within the bounds of the contractor/consultant's own drawing frame.

All drawings will have a title block, which will be inserted into a drawing in Paper Space at an origin of 0,0. All title blocks will be in an attribute format allowing all information to stay the same, but with editing facility. The title block must be fully completed as appropriate, with such information as:

- Building Name
- Project Name and Number
- Drawing Title
- Scale
- Date
- Author and Company Name
- Revision

While in paper space a viewport must be inserted on a layer called Z-Z900-VPOR so that any XREFs or drawings in Model Space can be viewed within the Title block frame. The view within Paper Space should be zoomed to an appropriate scale. The preferred scales for use are: 1:1, 1:10, 1:20, 1:50, 1:100, 1:200, 1:250, 1:500, 1:1250, 1:2500.

MODEL SPACE/PAPER SPACE

All drawing objects, text, symbols, charts, diagrams etc. will be added to a drawing in Model Space (MS). All title blocks, legends, revision notes etc. will be added to a drawing in Paper Space (PS). Drawings should be saved in Paper Space and zoomed to extents.

7.0 STANDARD LAYERING PROCEDURE

The contractor/consultant must adopt the University of Leicester's own layer naming convention set out in 8.1 for all design drawings. This layer naming convention must then also be used on the set of Current Building Layout Drawings that must be supplied with the O&M manual.

7.1. Naming convention

The following layer names have been taken from AEC (UK) CAD Standards for Layer Naming V3.0.

The layer names must be exactly as shown below, i.e., the spelling and capitalisation must be identical). This can be achieved easily by ensuring that every new drawing is based on a current floor layout drawing (see Section 9.0) or is created using a University of Leicester drawing template (see Section 5.1).

Any complex projects requiring a more detailed layering system than that specified below should contact the University of Leicester CAD Technician for advice.

All layers should be coloured BY LAYER, and all corresponding text and leaders should be on the correct services layer name.

A: Architecture		
Layer Name	Description of Contents	Colour
A-G2-Demolition	Demolition(s)	Blue
A-G3-StripOut	M&E Strip Out	190
A-Ele-Wall Tiles	Elevation wall tiles	Red
A-G7-Site	External Works	Grey (8)
A-G7T-SiteTxt	Site Text	White
A-G22-Floor	Floor outlines	Green
A-G23-Strs	Staircases / Steps / Level Changes	Green
A-G24-Roof	Roof Outlines	Grey (8)
A-G26-Strc	Structural Columns, Steelwork, Lift shafts etc	White
A-G44-FittSani	Sanitary Fittings	150
A-G44T-FittSaniTxt	Sanitary Fittings Text	White
A-G251-WallExtl	External Walls	White
A-G252-WallIntl	Internal Walls / Partitions	White
A-G253-Partition	Partition wall	Red
A-G321-Wndw	Windows / Glasswork	Yellow
A-G322-Door	Doors	Red
A-G3322-SuspCeil	Suspended Ceiling Grid	Green
AL-G712-Land	Landscaping	Green

E: Electrical		
Layer Name	Description of Contents	Colour
E-G45-AccessControl	Access Controls	142
E-G46-CallSystem	Call Systems	Magenta
E-G47-Containment-AV	Audio Visual Containment	160
E-G48-Containment-ELV	Extra Low Voltage Containment	234
E-G49-Containment-HV	High Voltage Containment	149
E-G50-Containment-LV	Low Voltage Containment	191
E-G51-Containment-Elec	Electrical Containment	84
E-G52_ElecEquip	Electrical Equipment – Panels etc	116
E-G53-ElecPower	Electric Power	Green
E-G53T-ElecPowerTxt	Electric Power Text	White
E-G54-Light	Lighting and Lighting Controls	Cyan
E-G54T-LightTxt	Lighting Text	White
E-G55-LightingProtect	Lightning Protection	177
E-G56-Trans	Transport	White
E-G56T-TransTxt	Transport Text	White
E-G571-ProtSecr	Security Protection	Blue
E-G571T-ProtSecrTxt	Security Protection Text	White
E-G572-ProtFire	Fire Protection	Red
E-G572-ProFire-FireRisk	Fire Protection Risk	Red
E-G572T-ProtFireTxt	Fire Protection Text	White
I: Interior		
Layer Name	Description of Contents	Colour
I-G4-Fitt	General Fittings & Equipment	Red
I-G4T-FittTxt	General Fittings & Equipment Text	White
I-G5-Valves	Valve Fittings	Magenta
I-G6-DuctAccs	Duct Accessories	209
I-G42-FittWork	Work Fittings / Furniture	Red
I-G42T-FittWorkTxt	Work Fittings / Furniture Text	White
J: Telecommunications		
Layer Name	Description of Contents	Colour
J-G55-Coms	Communications	30
J-G55T-ComsTxt	Communications Text	White
J-G56-CAT5-DW-Services	CAT-5 Cabling	229

M: Mechanical		
Layer Name	Description of Contents	Colour
M-G49-MechEquip	Mechanical Equipment	34
M-G49T-MechEquipTxt	Mechanical Equipment Text	White
M-G50-SpecialistGas	Specialist Gases	75
M-G50TSpecialistGasTxt	Specialist Gases Text	White
M-G51-GasS	Gas Supply	42
M-G51T-GasSTxt	Gas Supply Text	White
M-G52-HVAC	Heating / Ventilation / Air Conditioning	Cyan
M-G52T-HVACTxt	Heating / Ventilation / Air Conditioning Text	White
M-G53-VentSupply	Ventilation Supply	Magenta
M-G53T-VentSupplyTxt	Ventilation Supply Text	White
M-G54-VentExtract	Ventilation Extraction	30
M-G54T-VentExtractTxt	Ventilation Extraction Text	White
M-G55-CompressedAir	Compressed Air	52
M-G55T-CompressedAirTxt	Compressed Air Text	White
M-G58-Disp	Drainage/Disposal/Removal	Green
M-G58T-DispTxt	Drainage/Disposal/Removal Text	White
M-G59-SoilVent	Soil Vent Pipe (Soil Stack or Vent Pipe)	149
M-G60-WastePipe	Waste/Soil Pipe	Blue
M-G61-Condensate	Condensate Services	102
M-G500T-WsupTxt	Water Supply Text	White
M-G501-WsupCold	Cold Water Supply	Blue
M-G502-WsupCold-Flow	Cold Water Supply Flow	40
M-G503-WsupCold-Return	Cold Water Supply Return	242
M-G504-WsupTank-Cold	Cold Water Supply from Tank	122
M-G505-WsupMains-Cold	Cold Water Supply from Mains	223
M-G506-WsupHot	Hot Water Supply	Red
M-G507-WsupHot-Flow	Hot Water Supply Flow	204
M-G508-WsupHot-Return	Hot Water Supply Return	241
M-G509-LTHW-Flow	Low Temperature Hot Water - Flow	200
M-G510-LTHW-Retrurn	Low Temperature Hot Water - Return	155
M-G511-WsupChill	Chilled Water Supply	171
M-G512-BCWS	Boosted Cold Water Services	152
M-G513-LCWS	Laboratory Cold Water Supply	70
M-G514-RefrigCooling	Refrigerant/Cooling Services	150

Z: General (Non-Disciplinary)		
Layer Name	Description of Contents	Colour
Z-F2-RoomPoly	Room Area Polylines	Blue
Z-F919-AreaGros	Gross Internal Area Polyline	Green
Z-Z000-Anno	Annotation / General Notes	White
Z-Z000-Hatch	Room(s) hatching	Grey (8)
Z-Z003-BldgRoomLabl	Building Name / Room Name	White
Z-Z011Titl-TitleBlock	Title Block	
Z-Z030-Grid	Building Grid	Grey (8)
Z-Z300-Revs	Revisions / Revision Clouding	150
Z-Z900-VPORT	Viewport	Magenta
Z-Z920-XREF	External Reference	Grey (8)

8.0 USE OF STANDARD SYMBOLS

8.1. Mechanical & Electrical Symbols

All symbols must be inserted on the appropriate layer as per section 7.0.

The contractor/consultant will use their own approved symbols where required on all new drawings. For continuity, where a drawing has existing symbols, the contractor/consultant must match/copy these symbols.

A detailed legend itemising each symbol must be added to the title block.

8.2 Drawing Blocks

All symbols and individual drawing items must be created as a block and inserted into the drawing on the correct layer as per section 8.0. Any text associated with a symbol, needs to be attached to the block as an attributed block.

9.0 SUBMISSION OF DRAWINGS

9.1. Current Building Layout Drawings

At the completion of any work resulting in new or reconfigured floor layouts, the consultant must submit Current Building Layout Drawings as soon as possible and no later than one month after practical completion. This is in addition to the usual as-built general arrangement floor plans included with the O&M manual.

In addition to the requirements of the preceding sections, for the Current Building Layout Drawings:

1. There should be one drawing per floor.
2. All extraneous construction detail (such as the internal construction of walls) should be omitted.

Closed room polylines should be drawn around the perimeter of every space on each floor (including ducts, lifts, etc.) on the layer Z-F2-RoomPoly. The University will use these polylines to create room objects that will populate its property information system.

9.2. M&E Drawings

At the completion of any work resulting in new or reconfigured M&E layouts, the consultant must submit separate layouts for each asset type, i.e., one layout drawing for lighting, one for power and one for ventilation etc. The drawings must be submitted as soon as possible and no later than one month after practical completion. This is in addition to the usual as-fitted general arrangement plans included with the O&M manual.

The University's drawing templates (see Section 5.1) should be used.

9.3. Drawings produced in REVIT

All drawings produced in REVIT and converted to AutoCAD also need to adhere to the University CAD Procedure, ensuring that special attention is taken to the Standard Layering Procedure as outlined in Section 8.0.

10.0 FILES AND DRAWINGS

10.1. University of Leicester's Hardware and Software Systems

It is the responsibility of the Architect, Consultant or Contractor to ensure that their CAD system is capable of accepting the CAD files issued with this CAD strategy. It is the responsibility of the Architect, Consultant or Contractor to ensure that all CAD files produced under their contract are compatible with the University of Leicester CAD system (currently running AutoCAD 2023), and that all the drawing files shall be capable of being reproduced on the University of Leicester's printing/plotting system. "Compatible with the University of Leicester CAD system" shall mean that any drawing file submitted by the Architect, Consultant or Contractor can be interrogated, revised and stored on the University of Leicester system to the satisfaction of the University of Leicester's CAD operators. "Capable of being reproduced on the University of Leicester's printing/plotting system" shall mean that drawings plotted on University of Leicester's system shall be identical in all respects to the hard copy of the drawings submitted under the contract without requiring alterations to the file.

10.2. Submission of Files

The electronic record drawings shall be in a file format compatible with the University of Leicester's CAD system (currently running AutoCAD 2023).

All data in whatever format remains the property of the University of Leicester and the contractor must destroy all records and data when instructed by the University of Leicester. The University will have rights for re-use over all drawings produced as part of any project.

ITEMS TO BE DEVELOPED IN FUTURE VERSIONS

- Adherence to Building Information Management (BIM) protocols

Procedure ends.