Science Museum Group

Estates AutoCAD Standard

Post Project Handover AutoCAD Standard

SMG ESTAES AM0004E

SCIENCE MUSEUM GROUP

Summary

This document sets out the standard formatting for AutoCAD drawings to standardise all works produced for sites within The Science Museum Group.

The purpose of this standard is to ensure going forward all generated AutoCAD drawings are standardised across the group in a bid to improve the quality and consistency of information recorded about the estate under SMG care.

The use of this standard is required when creating or modifying AutoCAD drawing for SMG Estates.

Formatting & Specifications

All documents should be saved as instructed below;

Document Name -
Year of Drawing/Site/Name of Building/Project/Drawing/Discipline

All site names should be referred to as the appropriate acronyms listed below

Museum Site Name	Acronym
Science Museum	SCM
National Science and Media Museum	NSMM
Science and Industry Museum	SIM
National Railway Museum	NRM
Science and Innovation Park	SIP
Locomotion	LOCO

Where a drawing is for an external space the 'Name of Building' shall be replaced with 'Name of location on site'

AutoCAD files must be provided to the SMG team in an 2D format in AutoCAD LT 2019 and most **not** be developed in a TAB form as all drawings should be on a single DWG file containing the layers as per 'Layering Standards' below.

Layering Standards

For Block creation, each should be given a set of attributes for Number, Eastings, Northings and Height. These 3 attributes will be made into fields using the appropriate field button, rather than the manual default option.

All line weights should be configured by layers and each item should be plotted on separate layers using the references provided. E.g. Wall Structure would be listed on its individual letter as PE_Wall Structure.

Item	Layer Ref:	Colour
Reference Points - General		
Room Names	GE_	
Grounds & Section Lines	GE_	
Primary Elements		
Wall Structure	PE_	
Roofs	PE_	
Beams	PE_	
Doors	PE_	
Windows	PE_	
Safe Access Equipment	PE_	
Measurements incl. Elevations	PE_	
M&E		
Radiators AHU	M&E_	
Fixtures	M&E_	
Ventilation	M&E_	
Emergency Lights	M&E_	
Air Conditioning	M&E_	
Smoke Detector System	M&E_	
CCTV	M&E_	
Grounds		
Drainage	GR_	
Downpipes	GR_	
Sanitary Services	GR_	
Rail	GR_	

Where applicable, M&E plans are to use the symbols in *'AM004F_Post_Project_Handover_CAD_Mechanical_symbols'* to highlight location.

VALVE SYMBOLS

- BALL VALVE — F = FULL PORT BALL, R = REDUCED PORT BALL
- BUTTERFLY VALVE
- CHECK VALVE — D = WITH DASHPOT
- GATE VALVE OR MISCELLANEOUS VALVE
- GLOBE VALVE
- NEEDLE VALVE
- PLUG VALVE
- ANGLE VALVE (UNDEFINED)
- THREE WAY VALVE
- FOUR WAY VALVE
- ANGLE CHOKE VALVE
- CHOKE VALVE
- PRESSURE OR SAFETY RELIEF VALVE–PILOT OPERATED TYPE
- RUPTURE DISC OR PIN
- PRESSURE OR SAFETY RELIEF VALVE–CONVENTIONAL OR BALANCED BELLOWS TYPE
- DIAPHRAGM OPERATED CONTROL VALVE (GLOBE BODY)
- SELF–CONTAINED REGULATING VALVE
- DIAPHRAGM OPERATED CONTROL VALVE WITH HANDWHEEL
- DIAPHRAGM OPERATED CONTROL VALVE (BUTTERFLY TYPE)
- DIAPHRAGM OPERATED CONTROL VALVE (VEE BALL TYPE)
- DIAPHRAGM OPERATED CONTROL VALVE (CAMFLEX TYPE)
- FLOAT OPERATED VALVE (LCV)
- HAND CONTROL VALVE / IN–LINE CHOKE VALVE
- DOUBLE DIAPHRAGM CONTROL VALVE
- MOTOR OPERATED VALVE (MOV)
- 2 WAY SOLENOID VALVE
- THREE WAY SOLENOID VALVE WITH MANUAL RESET FAIL OPEN A TO C
- HYDRAULIC OR PNEUMATIC PISTON OPERATED CONTROL VALVE OR SHUTDOWN VALVE (BALL TYPE VALVE)
- WELLHEAD WING VALVE (SSV)

PIPING SYMBOLS

- LINE NUMBER CHANGE
- LINE SIZE CHANGE
- SPECIFICATION BREAK
- HOSE CONNECTION (HC)
- SPECTACLE BLIND (OPEN OR CLOSED)
- PADDLE BLIND (SPACER) (OPEN OR CLOSED)
- HAMER BLIND (OPEN OR CLOSED)
- SPECIALTY ITEM (SP)
- FLAT STRAINER
- Y–TYPE STRAINER
- T–TYPE STRAINER
- BASKET STRAINER
- DUPLEX STRAINER
- CONE STRAINER (APEX DOWNSTREAM)
- TUNDISH TO OPEN DRAIN SYSTEM
- CLOSED DRAIN
- OPEN DRAIN SYSTEM (WITH LIQUID SEAL) (LS)
- TRAP–STEAM, AIR OR LIQUID (T)
- SWIVEL JOINT
- CHAMFERED TERMINATING LINE
- BETE FOG NOZZLE TYPE N2W, N2, N1, N1W, N3, N5
- DELETED
- CLAMP CONNECTOR
- TECHLOK TYPE CONNECTOR
- EXTRUDED HEADER
- PULSATION DAMPENER / STABILIZER

INSTRUMENTATION SYMBOLS

- FLOW ELEMENT (VENTURI OR NOZZLE)
- FLOW ELEMENT (TURBINE)
- FLOW ELEMENT (ORIFICE PLATE)
- FLOW ELEMENT (ANNUBAR)
- FLOW ELEMENT (QUICK CHANGE ORIFICE PLATE)
- FLOW ELEMENT UNCLASSIFIED (FE)
- FLOW STRAIGHTENING VANES
- POSITIVE DISPLACEMENT METER (LOCAL TOTALIZING) (FQI)
- ROTAMETER (FI)
- ROTAMETER WITH INTEGRAL THROTTLE VALVE (FI)
- SIGHT GLASS (SG)
- LOCALLY MOUNTED INSTRUMENT
- CENTRAL CONTROL PANEL MOUNTED INSTRUMENT, HARDWIRED INDIVIDUAL INSTRUMENT
- LOCAL PANEL MOUNTED INSTRUMENT (LOCAL PANEL 4) (4)
- REAR OR PANEL MOUNTED INSTRUMENT (SINGLE LINE – CENTRAL C.P.) (DOUBLE LINE – LOCAL C.P.)
- INSTRUMENT FUNCTION WITH SHARED DISPLAY/CONTROL (VIDEO OR KEYBOARD) ACCESSIBLE TO OPERATOR AT MASTER CONTROL (D.C.S) SYSTEM
- SHARED INSTRUMENT FUNCTION NOT ACCESSIBLE TO OPERATOR AT MASTER CONTROL (D.C.S) SYSTEM
- INSTRUMENT WITH TWO FUNCTIONS IN THE SAME CASE
- HEAT TRACED INSTRUMENT
- PILOT LIGHT (LOCAL)
- CURRENT TO PNEUMATIC TRANSDUCER
- RESET (LOCAL OR REMOTE) (R)
- INSTRUMENT TUBING CHECK VALVE
- HAND VALVE – MANUALLY OPERATED VALVE (HV XXXX)
- LIMIT SWITCH (ZS XXXX)

MISCELLANEOUS SYMBOLS

- TRACED LINE — E = ELECTRIC, O = OIL, S = STEAM (E) (O) (S)
- VESSEL INSULATION TYPE & THICKNESS (IH 1.1/2")
- INSULATED LINE
- FLEXIBLE CONNECTOR (OR)
- EXPANSION BELLOWS
- FURNISHED WITH EQUIPMENT
- VANE TYPE MIST EXTRACTOR (INTERNAL TO VESSEL)
- MESH TYPE MIST EXTRACTOR (INTERNAL TO VESSEL)
- VORTEX BREAKER (INTERNAL TO VESSEL)
- HALF OPEN PIPE INLET DISTRIBUTOR (INTERNAL TO VESSEL)
- LEVEL ELEVATION ABOVE TAN. LINE OR INSIDE BOTTOM OF HORIZONTAL VESSEL OR TANK (LLL 1'–0")
- MINIMUM ELEVATION ABOVE CENTERLINE OF PUMP OR SPECIFIED EQUIPMENT (EL. 1'–0")
- FIRE MONITOR
- HOSE REEL
- FILTER
- FLAME ARRESTOR
- FLUIDIC VENT TIP
- SILENCER
- WELLHEAD CHRISTMAS TREE (SINGLE OR DUAL COMPLETION)
- CHEMICAL INJECTION
- SHOWER
- RAIN CAP
- VENT
- LINE END CLOSURE
- STATIC MIXER
- INSTALLED OFFSHORE BY UNOCAL
- INSTALLED OFFSHORE BY CONTRACTOR

LINE SYMBOLS

- MAJOR PROCESS LINE
- MINOR PROCESS LINE OR UTILITY LINE
- FUTURE PROCESS LINE
- FUTURE EQUIPMENT
- SKID OR PACKAGE LIMIT
- ELECTRICAL/ELECTRONIC SIGNAL
- PNEUMATIC SIGNAL (GAS OR AIR)
- HYDRAULIC SIGNAL
- INSTRUMENT CAPILLARY TUBING
- COMMUNICATION LINK COMPUTER OR MICROPROCESSOR SYSTEM
- NEXT DRAWING (NOT TERMINATING AT BORDER) (EQUIP. REF DWG. REF)
- LINE FROM DRAWING TO NEXT DRAWING (REF. NO. OPTIONAL) (3)
- CONTINUATION OF INSTRUMENT OR ELECTRICAL SIGNALS (INSTR. REF DWG. REF)
- LINE WITH CONTRAFLOW (NOT TERMINATING AT BORDER) (EQUIP. REF DWG. REF)

FIRE & GAS MONITORING SYMBOLS

- HEAT SENSOR/FUSIBLE PLUG (TSE)
- GAS DETECTOR
- OXYGEN DETECTOR
- SMOKE DETECTOR
- FIRE DETECTOR

ANNUNCIATOR, ESD AND FLOW COMPUTATION SYMBOLS

- ELECTRIC TO ESD PANEL IN CONTROL ROOM (ESD PANEL)
- ELECTRIC SIGNAL FROM ESD PANEL IN CONTROL ROOM (ESD PANEL)
- ELECTRONIC SIGNAL TO FLOW COMPUTER IN CONTROL ROOM (FLOW COMP)
- PNEUMATIC SIGNAL TO SDV, DELUGE AND ANNUNCIATOR PANEL IN CONTROL ROOM (SDA PANEL)
- ELECTRIC/ELECTRONIC SIGNAL TO SDV, DELUGE AND ANNUNCIATOR PANEL IN CONTROL ROOM (SDA PANEL)

ABBREVIATION

AC	AIR TO CLOSE
AO	AIR TO OPEN
AS	AIR SUPPLY
A/M	AUTO/MANUAL
CAM	COMPUTER AUTO MANUAL
CC	CORROSION COUPON
CF	CUSTOMER FURNISHED
CI	CHEMICAL INJECTION
CO	CLEAN OUT
CRL	COMPUTER REMOTE LOCAL
CSC	CAR SEALED CLOSED
CSO	CAR SEALED OPEN
ELEV	ELEVATION
ERP	ELECTRIC RESISTANCE PROBE (CORROSION MONITORING PROBE)
ESD	EMERGENCY SHUTDOWN
FC	FAIL CLOSE
F & G	FIRE AND GAS MONITORING PANEL
FO	FAIL OPEN
GS	GAS SUPPLY
HH	HAND HOLE
HOA	HAND / OFF / AUTO
HS	HYDRAULIC SUPPLY
IAS	INSTRUMENT AIR SUPPLY
LAT	LOWEST ASTRONOMICAL TIDE
LC	LOCK CLOSED
LG	LENGTH
LO	LOCK OPEN
LS	LIQUID SEAL
MW	MANWAY
MWL	MEAN WATER LEVEL
MWP	MAXIMUM WORKING PRESSURE
MWT	MAXIMUM WORKING TEMPERATURE
NC	NORMALLY CLOSED
ND	NORMALLY OPEN
NNF	NORMALLY NO FLOW
PP	PERSONNEL PROTECTION
R–S	RUN / STOP
RTD	RESISTANCE TEMPERATURE DETECTOR
SC	SAMPLE CONNECTION
SDA	SDV, DELUGE AND ANNUNCIATOR
SDV	SHUTDOWN VALVE
SD	STEAM OUT
SSV	SURFACE SAFETY VALVE
SSSV	SUB–SURFACE SAFETY VALVE
S/S	SEAM TO SEAM
TC	TURBINE CONTROL
TSO	TIGHT SHUT OFF
T/L	TANGENT LENGTH
T/T	TANGENT TO TANGENT
VB	VACUUM BREAKER
VF	VENDOR FURNISHED
WC	WATER COLUMN
WCP	WELL CONTROL PANEL