

13.0 Appendix B

Layer Guidelines



BOE CADD STANDARDS



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13.1 Layer Guidelines

OVERVIEW

Layers provide a method by which drawing information is logically organized. It also provides a means for global changes or updates to the entities that exist in layers. Layers control various object characteristics. Using layers properly gives control over the drawing files on-screen display and finished plotted product appearance. Using layers efficiently reduces document preparation time and improves design document coordination.

LAYER PROPERTIES

Layers control the following properties:

- On/Off
- Freeze/Thaw
- Lock/Unlock
- Color
- Linetype
- Lineweight
- Transparency
- Plot Style
- Plot/Do Not Plot
- Viewport Overrides
- Description

On/Off and Freeze/Thaw are similar, but not the same. Generally, turning Off and Freezing layers should be avoided.

Except in few situations, individual object properties should never deviate from “ByLayer”.

LAYER “0” AND “DEFPOINTS”

There are two layers with special properties in AutoCAD Layer “0” and “DEFPOINTS”. All block entities used in a symbols library should be created on Layer “0”. This allows the symbol to be inserted into other drawings with dynamic behavior, as it will take on the properties of the active layer on which it is inserted. Nothing else should be placed in Layer “0”. Do Not Set Layer “0” to Off, Frozen, or NoPlot.

“DEFPOINTS” is for any entity that is not intended to plot. Do not create a special “No Plot” layer. Layer “0” and “DEFPOINTS” should maintain color 7 (White).



LAYER NAMING

The Bureau of Engineering (BOE) has adopted the standard created by AIA and the NCS. The majority of layers used are incorporated into a template by discipline located on the Division CADD server and the Bureau of Engineering website; however, situations will arise when the user must create a layer. The following explains the layer naming format to be followed.

Layer names are comprised of data fields, separated by dashes. These fields are populated by coded abbreviations, most of which are logical and easily deciphered by AEC professionals. Each field is designed to contain either one, two or four alphanumeric characters. All letters are CAPITAL.

Example:



This layer name describes Civil roadway linework for a new curb.

There are four defined layer name data fields:

- Discipline Designator
- Major Group
- Minor Group
- Status

Not all data fields are mandatory per NCS guidelines and BOE standards.



Discipline Designator - A mandatory one-letter character code that refers to the category of subject matter contained on a specified layer.

Level 1	Discipline	Level 1	Discipline
A	Architectural	N	<i>Not Used</i>
B	Geotechnical	O	Operations
C	Civil	P	Plumbing
D	Process	Q	Equipment
E	Electrical	R	Resource
F	Fire Protection	S	structural
G	General	T	Telecommunications
H	Hazardous Material	U	<i>Not Used</i>
I	Interiors / Instrumentation (EED only)	V	Survey / Mapping
J	<i>Not Used</i>	W	Energy Distribution
K	<i>Not Used</i>	X	Other Discipline
L	Landscape	Y	<i>Not Used</i>
M	Mechanical	Z	Contractor / Shop Drawings

Note: These Discipline codes should not be deviated from. Other fields offer flexibility, to address use specific needs.

Major Group - A mandatory four-letter character code identifying a major system, such as ROAD, WALL, BLDG, etc. A Major Group can be combined with any prescribed Discipline Designator. Most of the abbreviated codes are easily deciphered without further explanation. If a major group name does not logically require four characters, a tilde “~” is used to maintain the four-character requirement.

The NCS provides a comprehensive list of Major Group codes for reference

Minor Group - A set of four-letter character codes to further define the layer; for example, a Minor Group to further define a ROAD layer would be CURB or WALK. Second, third and fourth minor groups also are optional to further define layers. The BOE has decided to minimize using optional Third & Fourth Minor groups in its layer naming convention. At least one Minor Group code is mandatory for BOE layer naming. If a minor group name does not logically require four characters, a tilde “~” is used to maintain the four-character requirement.

The NCS provides a comprehensive list of Minor Group codes for reference



Status (or Phase) – An optional one-character field that defines the layer Status or Phase. This designator differentiates phases of work and is only needed when phases of work must be differentiated. The most commonly used Status codes are:

Table with 4 columns: Code, Description, Code, Description. Rows include: A Abandoned, D Existing to demolish, E Existing to remain, F Future work, M Items to be moved, N New work, T Temporary work, X Not in contract, and Phase 1-9.

Note: Status codes are not necessary for labels, dimensions, and hatching.

ANNOTATION LAYERS

Annotation is typically associated with the respective Discipline designator and ANNO major group code. Annotation layers contain text, dimensions, notes, sheet borders, section and detail references, match lines, tables, titles, etc.

The following are typical Minor Groups used by BOE to define the ANNO Major Group:

- C-ANNO-BRNG Bearings, distance labels, and survey coordinates
C-ANNO-DIMS Dimensions
C-ANNO-IDEN Identification tags
C-ANNO-LABL Labels
C-ANNO-LEGN Legends, symbol keys
C-ANNO-LOGO Company logo
C-ANNO-MARK Markers, break marks, leaders
C-ANNO-MATC Match lines
C-ANNO-NOTE Notes
C-ANNO-REDL Redlines
C-ANNO-REFR External References (Xref's)



C-ANNO-REVC	Revision clouds and notes
C-ANNO-SCHD	Schedules
C-ANNO-STMP	Professional stamps
C-ANNO-SYMB	Reference symbols
C-ANNO-TABL	Data tables
C-ANNO-TEXT	Text
C-ANNO-TITL	Drawing or detail titles
C-ANNO-TTLB	Border and title block

LAYER COLORS

Layer colors should be assigned using the logic of the actual ‘real world’ colors of the object when possible, for example:

- Potable Water: a shade of blue
- Sewer Water: a shade of brown
- Storm Water: a shade of blue-green
- Recycled Water: a shade of light purple (purple pipe)
- Trees and Vegetation: a shade of green

Users have the flexibility in choosing colors for items that aren’t physically represented in the ‘real world’ or to avoid having all elements the same color such as in electrical systems where the ‘real world’ conditions may all be the same color.

- Most text and dimensioning should be set to Color 7 (white).

CREATING A NEW LAYER

A new layer should only be created after an exhaustive search to find a layer in the existing template. If none is found, follow the conventions described in these guidelines to conceive an appropriate four-character abbreviation and a logical corresponding layer color. See BOE Lineweight and Linetype standards for use in defining other layer properties.

ADDING NEW LAYERS TO THE TEMPLATE



When a user finds they need to create the same layer on multiple projects, the user should communicate that to the Discipline Layer Manager so it can be added to the BOE template file. The Layer Managers also should reach out periodically out to CADD operators and discuss the need for amending the layer templates.

Individual Discipline Layer Templates are managed by the following BOE Divisions:

Discipline	Division	Email
Architectural	ARC	karl.horst@lacity.org
Civil	WCE	mite.ristovski@lacity.org
Electrical	EED	jerry.lagunzad@lacity.org
Geotechnical	GEO	axel.jauregui@lacity.org
Landscape	ARC	karl.horst@lacity.org
Mechanical	EED	jerry.lagunzad@lacity.org
Plumbing	EED	jerry.lagunzad@lacity.org
Process	EED	jerry.lagunzad@lacity.org
Structural	SED	Johnn7.thoi@lacity.org
Survey	SUR	edwin.miller@lacity.org