

Layers & Linetypes

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OVERVIEW - SECTION 12.0

All current layers follow the United States National CAD Standard's Naming Convention and all new layers, as needed, shall as well. Also included is a list of major and minor abbreviations for layer naming conventions and layers (not ALL inclusive).

LAYERS

The layer name format is organized as a hierarchy and is based on the United States National CAD Standard (NCS). This arrangement allows users to select only the layers they want to see by utilizing layer *Filters*.

Layer names consist of distinct data fields separated from one another by dashes. These fields are: *Discipline Designator*, *Major Group*, *Minor Groups* (up to two), and *Status*. The Discipline Designator and Major Groups are mandatory. The Minor and Status Groups are optional.

The complete U.S. NCS layer name format, showing the Discipline Designator, the Major Group, two Minor Groups, and the Status fields.

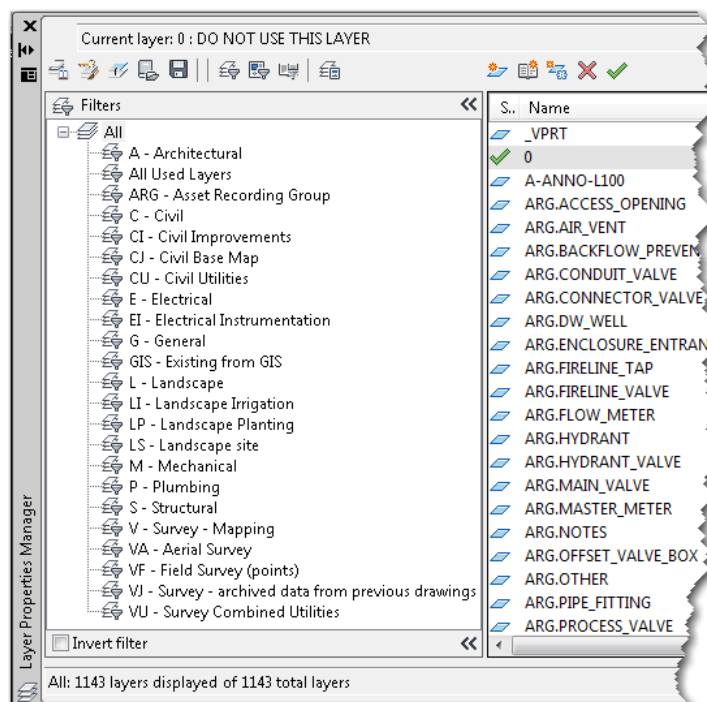
A I - W A L L - F U L L - D I M S - N

ATTENTION

If a new layer needs to be created, it **MUST** comply with the layer naming format defined in this section, including a [layer description](#). Please refer to the NCS for a complete list of layers. If the desired layer is not found contact the DW CAD Manager.

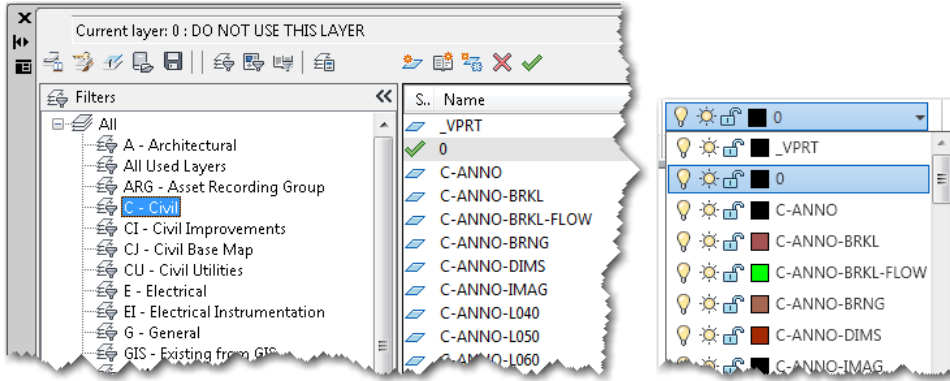
FILTERS

Located in the *Layer Properties Manager*, **Filters** organize all layers according to their Discipline Designators:



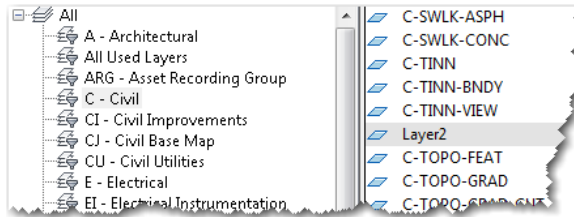
NOTE: All Denver Water templates contain predefined Filters.

By selecting the desired filter, the layers list will display only the layers prefixed with the corresponding Discipline Designator (A, ARG, C, etc.), with the exception of _VPRT and 0:



NOTE: Layers being used in XREF's will automatically be added to the corresponding filters.

When a new layer is created the generic name (i.e. Layer1, Layer2, etc.) will automatically be included in all filters until it is properly renamed:



LAYER FIELDS

The following lists represent NCS compliant Layer Fields (*Discipline Designators, Status (Phase), Major and Minor* abbreviation) found in Denver Water's templates.

Please note that the Major and Minor abbreviations, as well as layers, are no longer provided in this document but can be found in the provided spreadsheets at:

<http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CADStandards/>

Discipline Designators

A	Architectural
ARG	Asset Recording Group
C	Civil
CI	Civil Improvements
CJ	Civil Base Map
CU	Civil Utilities
DW	Denver Water (and Total Service area)
E	Electrical
EI	Electrical Instrumentation
G	General
GIS	Existing from GIS
L	Landscape
LI	Landscape Irrigation
LP	Landscape Planting
LS	Landscape Site
M	Mechanical
MS	Mechanical Site
P	Plumbing
S	Structural
SS	Structural Site
V	Survey / Mapping
VA	Survey / Mapping Aerial
VF	Survey / Mapping Field (points)
VJ	Archived data from previous drawings
VU	Survey / Mapping Combined Utilities

Status (Phase)

D	Existing to demolish
DW	Denver Water (and Total Service area)
E	Existing
F	Future work
ITAL	Italicized (applies to text styles)
SHAD	Shadow area (applies to text styles)
T	Temporary work

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TEMPLATE LAYERS

DW's templates are preloaded with standard layers per discipline (see Discipline Designators). A spreadsheet has been created that lists each layer Name and also included is its Color, Linetype, Plot and Description. This was created to ease the process of updating layers within the Standards, it will be kept current and it will be available in spreadsheet format for download here:

<http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CADStandards/>

All layers' colors listed are based on the **DW Engineering.ctb** for plotting [see [Section 16.1 – Plot Styles \(CTBs\)](#)].

Common layers

These layers will exist in every drawing

Name	Color	Linetype	Plot	Description
_VPRT	251	Continuous	NO	General: Viewport
0	7	Continuous	YES	DO NOT USE THIS LAYER
Defpoints	7	Continuous	NO	DO NOT USE THIS LAYER

A – Architectural

Use these layers for architecturally based information
(found in the AEC template)

ARG – Asset Recording Group

These layers are ONLY for use with the As-Built tools for posting DW's GIS
[see [Section 18.0 – As-Builts](#)]
(found in the C3D template)

C - Civil

All proposed civil work, not related to water, shall go on these layers
(found in the C3D template)

CI - Civil Improvements

These layers are to be used in instances where existing utility information has been obtained from a source other than survey or GIS. They are not to be used for proposed work; however use in profiles is permissible
(found in the C3D template)

CJ - Civil Base Map

For use with DW's large Base Map projects **ONLY**
(found in the C3D template)

CU - Civil Utilities

Use these layers for all proposed waterline features
(found in the C3D template)

E - Electrical

Use these layers for all electrical work larger than instrumentation
(found in the AEC template)

EI - Electrical Instrumentation

Use these layers for all electrical instrumentation work
(found in the AEC template)

G – General

Common symbols (such as section lines, match lines, etc.) and nearly everything placed in Paper Space will be put on these layers
(found in the AEC and C3D templates)

G – General Details

All Detail symbols and lines will be put on these layers for use with the Engineering Standards and CPCS

(found in the Details template)

GIS - Existing from GIS

Internal use **ONLY**. Utilize these layers when existing information is pulled from DW's GIS system

(found in the C3D template)

L – Landscape

For use with basic landscape annotation and features

(found in the C3D template)

LI – Landscape Irrigation

For use with irrigation landscape features

(found in the C3D template)

LP – Landscape Planting

For use with landscape plant features

(found in the C3D template)

LS – Landscape Site

For use with landscape site features

(found in the C3D template)

M – Mechanical

Use these layers for all mechanical information

(found in the AEC template)

P – Plumbing

Use these layers for all plumbing information

(found in the AEC template)

S – Structural

Use these layers for all structurally based information

(found in the AEC template)

V – Survey / Mapping

All existing survey information not related to utilities shall go on these layers

(found in the C3D template)

VA - Survey / Mapping Aerial

All existing aerial survey information shall go on these layers

(found in the C3D template)

VF - Survey / Mapping Field (points)

Utilize these layers for survey points collected in the field only

(AutoCAD cogo points)

(found in the C3D template)

VJ - Survey - archived data from previous drawings

These layers are to be used when existing features have been pulled from other/older projects, i.e.: not recently surveyed

(found in the C3D template)

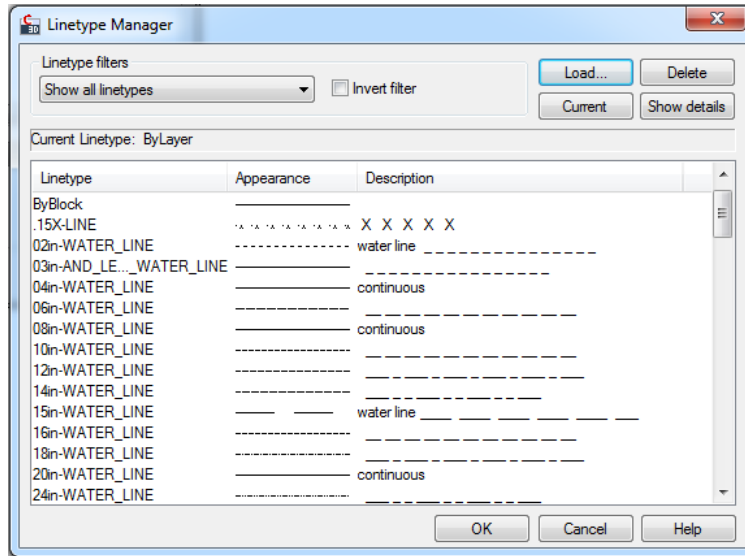
VU - Survey / Mapping Combined Utilities

All existing utility information shall go on these layers

(found in the C3D template)

LINETYPES

Linetypes are used to help distinguish objects of different types within plan sets; all layers within DW's templates have been assigned appropriate linetypes.



NOTE: Do not bring old linetypes, from previous projects, into new drawings unless approved

Tip: .LIN file location

The *DW_LINETYPES.LIN* file is located:
DW CAD\DW Linetypes

MAIN EXTENSIONS LINETYPES

-----	03in-AND_LESS_WATER_LINE
_____	04in-WATER_LINE
-----	06in-WATER_LINE
-----	08in-WATER_LINE
-----	10in-WATER_LINE
-----	12in-WATER_LINE
-----	14in-WATER_LINE
-----	15in-WATER_LINE
-----	16in-WATER_LINE
-----	18in-WATER_LINE
-----	20in-WATER_LINE
-----	24in-WATER_LINE
· X · X · X · X · X · X ·	.15X-LINE
-----	CONDUIT
_____	FIRE HYDRANT LINE
_____	FIRELINE
-----	CASING
_____	DOMESTIC WATER

EASEMENTS AND LICENSES LINETYPES

_____	CENTER2
-----	DASHED2
· · · · ·	DIVIDE2
· · · · ·	DWDROW
_____	DWDPROP
- x - - - x - - - x - - -	FENCELINE3
-----	SEC_16TH
_____	SEC_64TH
_____	SEC_FULL
-----	SEC_QUARTER
· · · · ·	RIVER2

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