# CITY OF BAINBRIDGE ISLAND
# PUBLIC WORKS
# ENGINEERING

# CAD Standards Guidelines

**City of Bainbridge Island**
**Public Works Engineering Department**

**February 29, 2008**

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## Introduction

The City of Bainbridge Island is constructing a Geographic Information System (GIS) to track legal boundaries, survey control, and constructed features such as utilities and roadway improvements. This information will be used by city personnel, other government agency personnel, developers, engineers, business owners/operators and citizens for planning, design and maintenance purposes. Two of the main sources of information for GIS are the surveys of existing conditions and the drawings of record supplied to the City after features are constructed.

The City of Bainbridge Island requires that survey and engineering consultants performing surveys for the City and constructing improvements in the City provide accurate drawings (Record Drawings) documenting improvements.

The purpose of this document is to provide the surveying and engineering consultants with the appropriate guidelines for Record Drawings created for the City of Bainbridge Island.

Compliance with agreed upon project control and data management conventions is important to the City and public in terms of quality control and return on investment. The success of this compliance/cooperation will influence the continuation of the present program of contracting with private surveying firms for City projects.

Record Drawings shall be prepared and certified by a Professional Engineer and/or Professional Land Surveyor currently licensed in the State of Washington.

It is anticipated that all of these standards will be reviewed and revised over time as the variety and complexity of drawings produced increases. Therefore, periodic updates to these standards are anticipated and the latest version should be requested before starting a new project.

## City Datum

All project plans shall be accurately located in Washington State Plane Coordinates, North Zone NAD 83/91 (HARN) and the horizontal coordinates shall be tied to two (2) City of Bainbridge Island Horizontal Control Monuments.

In addition, vertical control shall be tied to at least one City of Bainbridge Island Vertical Control Datum monument (NAVD 88).

The City is working towards establishment of a survey control network based on the Washington State Reference Network which is referenced to NAD83(CORS96) Epoch 2002.00.

## General Information

**The City of Bainbridge Island, Department of Public Works Engineering has adopted the United States National CAD Standard Version 4.0 for preparing CAD drawings.**

Drawing files provided to the City in a digital format shall be compatible with the version of AutoCAD presently being used by the City. All final data files shall be provided to the City on CD-ROM. Preliminary files can be electronically transmitted to the City Project Manager via email or ftp site.

These standards are flexible enough to handle all types of AutoCAD drawing needs, but specific enough to provide uniformity between drawings. They provide the ability to create entity or layer selection sets during drawing production.

These standards are provided to allow data to be exchanged with the City's GIS, which is based on the Washington State Plane Coordinate System. Therefore, it is imperative that all survey and design data files be convertible to this coordinate system. This requirement allows information from either system to be combined for comparison or planning.

These standards include layer definition and assignment, symbol or block naming and placement, along with customized linetypes and abbreviation conventions. Information on the use of layouts and model space in plan preparation is also presented (see Appendix B).

The layering convention includes default settings for: layer names, color assignments, linetypes, and plot styles. Plot styles (see Appendix E) are directly related to the default line weight and screening in the plotted drawings for surveyed TOPO and proposed designed TOPO. Layer settings shall be retained for each unique layout printing. The layers and their settings are contained in the template "COBI-NCS-Named Plot Styles.dwt" provided by the City and can be viewed in the Layer Property Manager. All possible layers have not been created, but enough are provided to present the concepts.

The symbol naming convention allows symbols to be separated by discipline. The Symbol Table (see appendix G) shows what each block looks like. This standard allows new symbols to be defined provided they are created on layer 0 and their color, line type and plot style are defined as BYBLOCK and line weight is "default".

City of Bainbridge Island customized line types are defined in the standard AutoCAD format using plotted dimensions to be constant with default AutoCAD settings (see Appendix F). The abbreviations have been provided to improve consistency. It is anticipated that all of these standards will be reviewed and revised over time as the variety and complexity of drawings produced increases. Therefore, periodic updates to these standards are anticipated and the latest version should be requested before starting a new project.

## Getting Started

In addition to this document defining the COBI standards, the City will provide a CD containing the following data:

- *COBI-Plot Styles* folder
    - COBI.stb
- *COBI-Support* folder
    - COBI.lin
    - COBI-Shapes.shx
- *COBI-Symbols* folder
    - *MODEL SPACE* folder containing symbol blocks organized by type
    - *MODEL SPACE COMBINED* folder for use with Description Keys
    - *PAPER SPACE* folder containing symbols for paper space
- COBI-Templates folder
    - *COBI Basic Design Drawings* folder
    - *COBI Drawing Template(incl. Civil 3D)*
    - *COBI Title Blocks* folder

For a complete description of the folders and the files they contain, see Appendix C and G.

Move the files to the appropriate locations for the version of AutoCAD that you are using. (ie. For "Support" folder => C:\Documents and Settings\USER\Application Data\Autodesk\AutoCAD Map 3D 2008\R17.1\enu\Support)

To create a base map DWG file from scratch, first start a new DWG by using the template (.dwt) file COBI-NCS-Named Plot Styles.dwt. Using the SAVE AS, save the file to the appropriate directory. The template has most all the layers, blocks, plot styles, point style, label styles, etc., that will be required to create the base map. The template was derived from the AutoCAD 2008 Civil 3D NCS template.

Complete descriptions of templates, standard drawing layouts, title blocks, survey control data tables, plot styles and color palette, line types and symbols can be found in the appendix.

## Overview of Standard Digital CAD Files

The following is intended to highlight the major items covered by these standards.

1. All files will be delivered in a DWG format compatible with the version of AutoCAD currently being used by the City. The actual delivered files depend on the nature of the project and the CAD software used, and will be determined at the Pre-project planning meeting with the City Surveyor.

2. All base maps will be developed in the Washington State Plane Coordinate System, North Zone using two existing monument designated by and/or approved by the City Surveyor. Refer to section "Control Ties Must Be Documented".

3. Subject to Project Manager requirements, the typical Civil project should consist of the following base files (Note: Example file naming convention from National CAD Standards, V 4.0 for model files where ##### = work order number) :

    a. **A cover drawing (#####C-SPCOVR.dwg)** developed from COBI template "COBI-GEN-SHTS.dwt" containing Legend, Vicinity Map and Engineers stamp sheet for project specification. See Appendix Drawing C, Sheet 1.
    b. **Design drawings (#####C-SPROAD.dwg)** consisting of construction drawing files with a layout for each sheet. Choose from templates noted in 4. below and shown in Appendix Drawing C, Sheets 1-4.
    c. **A base drawing (#####VFXPBASE.dwg)** consisting of all existing TOPO (lines, symbols, & text), contours and points. See Appendix Drawing B, Sheets 1-2.
    d. **A Survey Control and Traverse drawing (#####VFXPCTRL.dwg)** showing the control (horizontal and vertical) and traverse points set and used for the survey. Each point must include point number, northing, easting and elevations. Differences from provided COBI control points must be documented
    e. **Profile drawings (#####C-ELROAD.dwg)** based on a specific line (CL, RT, LT etc) and a 1 to 1 scale ratio. A second profile with traditional scale factors for horizontal and vertical may be used. However, the 1 to 1 will be provided for future use. See Appendix Drawing C, Sheet 1.
    f. **Cross-section drawings (#####C-SCROAD.dwg)** (when required) consist of cross sections along the various profiles. As with profiles one set of all cross sections will be provided with a scale ratio of 1 to 1 for current or future use. A second file may be used in the project. See Appendix Drawing C, Sheet 1.

4. The typical project construction drawing file is constructed by:
    a. Creating a new drawing file using the appropriate COBI template file:

        1) **COBI-Gen-Shts.dwt** - Used for Cover, Index, Legend, Vicinity Map and Signature sheet for Specifications.
        2) **COBI ANSI D 22X34 LAND STB 2004 Block.dwg-** contains the standard D size COBI title block which can be inserted into your drawing's paper space.
        3) Other title blocks are available as well:
            - COBI ANSI D 24X36 LAND STB 2004 Block.dwg
            - COBI ANSI A LAND STB 2004 Block.dwg
            - COBI ANSI A PORT STB 2004 Block.dwg
            - COBI ANSI B 11X17 LAND STB 2004 Block.dwg
            - COBI ANSI B 11X17 PORT STB 2004 Block.dwg

    b. In the model space tab, Xreference the needed drawing files using overlay on the appropriate layer set to "XR-##-(BASE, ETC)". The use of overlay allows others to xref the original files and/or your drawing file without creating overlapping nested files.
    c. Place new design entities on appropriate layers in model space.
    d. North arrows should be in model space and should show up in the same viewport as the drawing data on the sheet.
    e. Use paper space containing the standard title block, viewports for plan and profiles, to place non-topo entities such as notes, scale bars, etc. Layout name will be the same as the drawing number.
    f. Once first sheet is set up with appropriate viewports, etc., lock viewports. Edit title block attributes which apply to overall project. Then copy the layout to second layout and rename appropriately.

5. All drawing files will:
    a. The COBI standard for plot styles is Named Plot Styles (stb) and not Color-Dependent Plot styles (ctb). Use "COBI.stb" for **named plot styles**.

    *Tip - CONVERTPSTYLES converts a currently open drawing from color-dependent plot styles (ctb) to named plot styles (stb), or from named plot styles to color-dependent plot styles, depending on which plot style method the drawing is currently using. For example, a drawing using color-dependent plot styles assigns plot properties to objects and layers by color. In other words, all objects with the same color have the same plot properties. CONVERTPSTYLES converts thedrawing to use named plot styles that can be applied to objects or layers independent of color assignment. In other words, all objects with the same color can have different plot properties. When you convert a drawing, CONVERTPSTYLES sets the PSTYLEMODE system variable to the appropriate setting (1 = named, 0 = color-dependent).*

b. Have an "LTSCALE=1" and all Layouts will have a "PSLTSCALE=1"
c. Use only Layer, Block, and Linetype naming conventions defined in this standard or approved in advance by the COBI Public Works Engineering Department.

   *Tip – Use AutoCAD's DesignCenter and open the file* COBI-NCS-Named Plot Styles.dwt.. *Drag and drop desired objects (layers, blocks, etc) into your current drawing. Dragging the desired items into your drawing assigns the default properties per the City of Bainbridge Island CAD Standard.*

d. Use only standard AutoCAD fonts ".shx", and Hatch Patterns files.
e. Entity properties will be assigned "BYLAYER" except as specifically noted in this standard.
f. The "Standard" Text Style, will be defined using AutoCAD Font "ROMANS.shx" with height=0 and width factor=1.
g. Normally all text, notes and dimensions pertaining to existing features will appear in model space. All text, notes and dimensions pertaining to new features should only appear in Layout/Paper Space.
h. Only linetypes defined in AutoCAD "ACAD.LIN" and "COBI.LIN" will be used.
i. City Standard templates will be used whenever possible.

*Tip – Layouts can be imported from drawing files or template files. Right-click on any layout tab and select "From template…", select the desired City standard drawing or template file, then select the desired layout.*

## Drawing standards

The following standards must be followed, unless prior approval is obtained from the City:

1. Third party fonts, hatch patterns, and linetypes shall not be used in drawing files submitted to the City.

2. Custom objects generated by other software, such as Land Desktop, shall be converted to a format readable by standard AutoCAD without the use of plug-ins such as Autodesk's Object Enablers (i.e., Land Desktop AECC contours must be converted to polylines).

3. Files must be complete and usable without having to download any files not included in the standard AutoCAD release.

4. Survey point data files containing the final edited point data submitted to the City in a PNEZD comma delimited ASCII digital format shall include the following:
    - Point numbers will numerically designate survey points. Points will be sequentially numbered.
    - Horizontal coordinates shall be shown to 4 decimal places.
    - Elevations shall be shown to the nearest hundredth of a foot.
    - Descriptions: If City descriptor codes are not used in the project, then the AutoCAD Descriptor Key translator table shall be provided to the City.

    Points in the drawing shall be grouped on layers by topographic feature per the following layer name syntax:

    VF-NODE-XXXX-XXXX-C

    Where VF and NODE are fixed
    XXXX = optional codes to define points
    C = your company identifier code

5. All linework, symbols and text will follow current City of Bainbridge Island layering standards.

6. Use the following guidelines for text:

- Only standard text fonts supplied with AutoCAD will be used. Text Style names will be the same and the Text Font used to create the Style. Text height will not be defined in the Text style definitions. Roman, Standard and Complex are the City default text styles/fonts.

- All text will be placed on separate layers per the drafting standards.

- All text describing *existing* entities will be placed in Model Space. Text height will be such that when viewed through a 1=20 scaled viewport, it will no smaller than 0.08 inches and no greater than 0.10 inches high.

- Street names will be placed in Model Space will be on layer "XX-ROAD-NAME" where "XX" is "C-" or "VF". Text height will be such that when viewed through a 1=20 scaled viewport it will be 0.17 inches high. Street names in Model Space are normally frozen during printing.

- An attempt shall be made to orient existing feature text annotation (asphalt, grass, fence etc.) so it is in the general direction of the project centerline stationing.

- Utility line text annotation is included in the line via use of City of Bainbridge Island linetypes.

7. All survey base drawing files shall be tied to the City's GIS mapping control monument system. This will be accomplished by inserting the City of Bainbridge Island standard block "TB-SURVY-2" on layer VF-ANNO-CORD. The block will be scaled such that it is readily visible when the base drawing is opened. A leader/line will be provided from the inserted block to the control monument(s).

8. The surveyor shall provide a complete print-out of the coordinate file that lists or describes all points surveyed in project datum as specified by the City's Project Manager, and in station and offset left or right format whenever possible.

9. Separate AutoCAD files will be provided for:

- Surveyed base map consisting of linework, blocks, symbols and text representing existing topography and utilities.
- Point data per item 2 above.
- Contours on appropriate layer

## AutoDesk Land Desktop / Civil 3D

The COBI Survey Department has made the transition to AutoCAD Civil 3D as civil and survey functionality is being phased out of Land Desktop. There are compatibiltity issues between the latest Civil 3D and the older versions of Land Desktop. Communication between COBI and the Consultant is necessary to minimize difficulties in transferring drawings.

Following are some suggestions when using Land Desktop or Civil 3D:

**Description Keys**

Descriptions keys used by COBI Surveying are provided in the drawing template and can be used if the Consultant is using Civil 3D. A list of the description keys is also provided as an example in a Microsoft Excel file for those not using Civil 3D.

**Symbols**

The City of Bainbridge Island symbols have been created with the intention of inserting them at a one-to-one scale factor. **You should temporarily set your drawing scale in Land Desktop to "1" before performing an operation that automatically inserts symbols.**

Land Desktop limits you to one path for specifying where the blocks are found when inserting points with symbols. This path is found under the Land Desktop Points menu, Point Settings…, the Insert tab, in the Search Path for Symbol Block Drawing Files field. All City of Bainbridge Island blocks have been copied from the individual folders found on the city-supplied CD into a single folder called "MODEL SPACE COMBINED" for this particular use.

## Control Ties Must Be Documented

The following standards are designed to utilize a single continuous base map for each project drawn in real world coordinates where one drawing unit equals one foot and the local coordinate system origin is tied to the state plane coordinate system by the information provided in the "TB-SURVY-2" attributes for the project control monument. This allows different survey base maps to be combined by inserting each into a drawing using the information provided by the "TB-SURVY-2" block of the respective project control points

## Survey Control and Traverse Drawing

In addition to documenting the control ties as stated above, final submittal must include a drawing showing the control (horizontal and vertical) and traverse points set and used for the survey. Each point must include point number, northing, easting and elevations. Differences from provided COBI control points must be documented

## COBI Standard Layer Names Definition and Assignment

The City of Bainbridge Island's layering standard is necessary to provide a baseline for coordination between the City's GIS and other agencies and departments. It is important to adhere to this standard to facilitate use of this information. The basis of this standard is the National CAD Standards Version 4.0 layer naming convention, which readily identifies groups of similar entities within the drawing.

**Layer Name Syntax (from NCS)**

"The layer name format is organized as a hierarchy. This arrangement allows users to select from anumber of options for naming layers according to the level of detailed information desired. Layer names consist of distinct data fields separated from one another by dashes. A detailed list of abbreviations, or field codes, is prescribed to define the content of layers. Most field codes are mnemonic English abbreviations of construction terminology that are easy to remember.

"There are four defined layer name data fields: Discipline Designator, Major Group, two Minor Groups, and Status. The Discipline Designator and Major Group fields are mandatory. The Minor Group and Status fields are optional. Each data field is separated from adjacent fields by a dash ("-") for clarity.

"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**

Please see the standards document from the National Institute of Building Sciences for more information.

The following table shows the standard layer names, the color-linetype-plot style assignments, and descriptions for those layers that are contained in the COBI-NCS-Named Plot Styles.dwt drawing template that is provided. These layers are a combination of those chosen by COBI to be our standard and those chosen by AutoCAD to be ued in their Civil 3D template.

Any new layer names must follow the format as set out in the National Cad Standards Version 4.0 document.

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| 0 | white | Continuous | Pen 102N | 0 |
| B | cyan | Continuous | Pen 102N | Geotechnical data |
| B-SURV-BORE | 23 | Continuous | Pen 102N | Geotechnical data: surveyed borehole locations |
| B-SURV-ROCK | 23 | Continuous | Pen 102N | Geotechnical data: surveyed rock outcrops |
| B-SURV-SOIL | 23 | Continuous | Pen 102N | Geotechnical data: surveyed soil data |
| C-ANNO | white | Continuous | Pen 102N | C-ANNO |
| C-ANNO-DIMS | white | Continuous | Pen 101N | Dimensions |
| C-ANNO-IDEN | white | Continuous | Pen 101N | Identification tags |
| C-ANNO-KEYN | white | Continuous | Pen 101N | Keynotes |
| C-ANNO-LABL | white | Continuous | Pen 101N | Labels |
| C-ANNO-LEGN | white | Continuous | Pen 101N | Legends |
| C-ANNO-LOGO | white | Continuous | Pen 101N | Company logo |
| C-ANNO-MARK | white | Continuous | Pen 101N | Markers, break marks, leaders |
| C-ANNO-MATC | white | DASHED | Pen 102N | Match line |
| C-ANNO-MATC-HTCH | white | Continuous | Pen 102N | Match line hatch |
| C-ANNO-MATC-TEXT | cyan | Continuous | Pen 102N | Match line text |
| C-ANNO-NOTE | white | Continuous | Pen 101N | Notes |
| C-ANNO-NPLT | white | Continuous | Pen 101N | Non-plotting graphic information |
| C-ANNO-PROS | white | Continuous | Pen 101N | Date/Time/File name stamp |
| C-ANNO-RDME | yellow | Continuous | Pen 101N | Read-me layer (not plotted) |
| C-ANNO-REDL | white | Continuous | Pen 101N | Redlines |
| C-ANNO-REFR | white | Continuous | Pen 101N | Reference, external files |
| C-ANNO-REVC | white | Continuous | Pen 101N | Revision Clouds |
| C-ANNO-REVS | white | Continuous | Pen 101N | Revisions |
| C-ANNO-SCHD | white | Continuous | Pen 101N | Schedules |
| C-ANNO-STMP | white | Continuous | Pen 101N | Professional stamps |
| C-ANNO-SYMB | white | Continuous | Pen 101N | Refeerence symbols |
| C-ANNO-TABL | red | Continuous | Pen 102N | Civil: Table |
| C-ANNO-TABL-PATT | white | Continuous | Pen 102N | Civil: Table Hatch |
| C-ANNO-TABL-TEXT | cyan | Continuous | Pen 102N | Civil: Table Text |
| C-ANNO-TABL-TITL | cyan | Continuous | Pen 102N | Civil: Table Title |
| C-ANNO-TABL-TTBL | blue | Continuous | Pen 102N | Civil: Table Borders |
| C-ANNO-TEXT | white | Continuous | Pen 101N | Text |
| C-ANNO-TITL | white | Continuous | Pen 101N | Drawing or detail lines |
| C-ANNO-TTLB | white | Continuous | Pen 101N | Border and Title block |
| C-ANNO-VFRM | 131 | Continuous | Pen 102N | C-ANNO-VFRM |
| C-ANNO-VFRM-TEXT | yellow | Continuous | Pen 102N | C-ANNO-VFRM-TEXT |
| C-ESMT-ROAD | 23 | Continuous | Pen 102N | Easements: roadway |
| C-PROP-BNDY | cyan | Continuous | Pen 102N | Property: boundary |
| C-PROP-BRNG | green | Continuous | Pen 102N | Property: bearing |
| C-PROP-LINE | 230 | Continuous | Pen 102N | Property: parcel lines |
| C-PROP-LOTS | magenta | Continuous | Pen 102N | Property: lots |
| C-PROP-PATT | 131 | Continuous | Pen 102N | Property: parcel hatching |
| C-PROP-RSRV | 94 | Continuous | Pen 102N | Property: reserved |
| C-PROP-TABL | green | Continuous | Pen 102N | C-PROP-TABL |
| C-PROP-TEXT | green | Continuous | Pen 102N | Property: label |
| C-ROAD-ASSM | 40 | Continuous | Pen 102N | Roadways: assemblies and subassemblies |
| C-ROAD-ASSM-BLIN | red | Continuous | Pen 102N | Roadways: assembly baseline |
| C-ROAD-ASSM-OFFS | red | Continuous | Pen 102N | Roadways: assembly offset |
| C-ROAD-ASSM-TEXT | white | Continuous | Pen 102N | Roadways: assembly text |
| C-ROAD-BRNG | red | Continuous | Pen 102N | Roadways: bearings |
| C-ROAD-CNTR | red | CENTER2 | Pen 102N | Roadways: centerline |
| C-ROAD-CNTR-N | green | Continuous | Pen 102N | Roadways: centerline, NEW |
| C-ROAD-CORR | blue | Continuous | Pen 102N | Roadways: corridor |
| C-ROAD-CORR-BNDY | red | CENTER2 | Pen 102N | Roadways: corridor boundary |
| C-ROAD-CORR-PATT | 141 | Continuous | Pen 102N | Roadways: corridor patterns |
| C-ROAD-CORR-SCTN | 141 | Continuous | Pen 102N | Roadways: corridor section |
| C-ROAD-CURV | blue | Continuous | Pen 102N | Roadways: curves |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| C-ROAD-FEAT | 182 | Continuous | Pen 102N | Roadways: feature line |
| C-ROAD-LABL | green | Continuous | Pen 102N | Roadways: labels |
| C-ROAD-LINE | red | Continuous | Pen 102N | Roadways: tangent lines |
| C-ROAD-LINE-EXTN | 252 | HIDDEN | Pen 102N | Roadways: PVI extention lines |
| C-ROAD-LINK | 150 | Continuous | Pen 102N | Roadways: corridor and section links |
| C-ROAD-LINK-TEXT | white | Continuous | Pen 102N | Roadways: corridor and section link text |
| C-ROAD-MARK | 212 | Continuous | Pen 102N | Roadways: corridor and section marks |
| C-ROAD-PROF | red | DASHED | Pen 102N | Roadways: profiles |
| C-ROAD-PROF-ASMC | green | Continuous | Pen 102N | Roadways: profile assymetrical curves |
| C-ROAD-PROF-CURV | blue | Continuous | Pen 102N | Roadways: profile vertical curves |
| C-ROAD-PROF-DIAG | cyan | Continuous | Pen 102N | Roadways: profile band diagrams |
| C-ROAD-PROF-GRID | cyan | Continuous | Pen 102N | Roadways: profile grid |
| C-ROAD-PROF-GRID-GEOM | blue | Continuous | Pen 102N | Roadways: profile gridline @ geometry points |
| C-ROAD-PROF-GRID-MAJR | 8 | Continuous | Pen 102N | Roadways: profile gridline @ major stations |
| C-ROAD-PROF-GRID-MINR | 8 | Continuous | Pen 102N | Roadways: profile gridline @ minor stations |
| C-ROAD-PROF-LINE | red | Continuous | Pen 102N | Roadways: profile vertical lines |
| C-ROAD-PROF-LINE-EXTN | 252 | HIDDEN | Pen 102N | Roadways: centerline extention |
| C-ROAD-PROF-LTOF | yellow | Continuous | Pen 102N | Roadways: profile left offset sample lines |
| C-ROAD-PROF-N | cyan | Continuous | Pen 102N | Roadways: profile new |
| C-ROAD-PROF-NEW | cyan | Continuous | Pen 102N | Roadways: profile new |
| C-ROAD-PROF-PARB | white | Continuous | Pen 102N | Roadways: profile parabolic curves |
| C-ROAD-PROF-PNTS | 252 | HIDDEN | Pen 102N | Roadways: profile geometry points |
| C-ROAD-PROF-RTOF | red | Continuous | Pen 102N | Roadways: profile right offset sample lines |
| C-ROAD-PROF-STAN-GEOM | yellow | Continuous | Pen 102N | Roadways: profile geometry point labels |
| C-ROAD-PROF-STAN-MAJR | yellow | Continuous | Pen 102N | Roadways: profile major station labels |
| C-ROAD-PROF-STAN-MINR | yellow | Continuous | Pen 102N | Roadways: profile minor station labels |
| C-ROAD-PROF-TEXT | yellow | Continuous | Pen 102N | Roadways: profile text |
| C-ROAD-PROF-TICK | white | Continuous | Pen 102N | Roadways: profile tick marks |
| C-ROAD-PROF-TITL | yellow | Continuous | Pen 102N | Roadways: profile label |
| C-ROAD-PROF-TTLB | blue | Continuous | Pen 102N | Roadways: profile label |
| C-ROAD-SAMP | 131 | HIDDEN | Pen 102N | Roadways: sample lines |
| C-ROAD-SAMP-TEXT | yellow | Continuous | Pen 102N | Roadways: sample lines text |
| C-ROAD-SCTN | white | Continuous | Pen 102N | Roadways: grade in sections |
| C-ROAD-SCTN-DIAG | 212 | Continuous | Pen 102N | Roadways: section diagram |
| C-ROAD-SCTN-GRID | white | Continuous | Pen 102N | Roadways: section grid |
| C-ROAD-SCTN-LABL | green | Continuous | Pen 102N | Roadways: section labels |
| C-ROAD-SCTN-N | cyan | Continuous | Pen 102N | Roadways: section, NEW |
| C-ROAD-SCTN-SHET | white | Continuous | Pen 102N | Roadways: grade in section sheets |
| C-ROAD-SCTN-TABL | red | Continuous | Pen 102N | Roadweays: Section table |
| C-ROAD-SCTN-TEXT | green | Continuous | Pen 102N | Roadways: section text |
| C-ROAD-SCTN-TICK | white | Continuous | Pen 102N | Roadways: section tick marks |
| C-ROAD-SCTN-TITL | green | Continuous | Pen 102N | Roadways: section title |
| C-ROAD-SCTN-TTLB | blue | Continuous | Pen 102N | Roadways: section border |
| C-ROAD-SHAP | 32 | Continuous | Pen 102N | Roadways: corridor and section shapes |
| C-ROAD-SHAP-PATT | white | Continuous | Pen 102N | Roadways: corridor and section shapes hatching |
| C-ROAD-SHAP-TABL | white | Continuous | Pen 102N | C-ROAD-SHAP-TABL |
| C-ROAD-SPIR | green | Continuous | Pen 102N | Roadways: spirals |
| C-ROAD-STAN | yellow | Continuous | Pen 102N | Roadways: stationing |
| C-ROAD-STAN-MAJR | yellow | Continuous | Pen 102N | Roadways: major stationing labels |
| C-ROAD-STAN-MINR | yellow | Continuous | Pen 102N | Roadways: minor stationing labels |
| C-ROAD-TABL | red | Continuous | Pen 102N | Roadways: table |
| C-ROAD-TEXT | yellow | Continuous | Pen 102N | Roadways: text |
| C-SSWR-CNTR | 200 | Continuous | Pen 102N | Sanitary Sewer: centerline |
| C-SSWR-PIPE | 200 | Continuous | Pen 102N | Sanitary Sewer: piping |
| C-SSWR-PIPE-PATT | white | Continuous | Pen 102N | Sanitary Sewer: piping, hatching |
| C-SSWR-PROF | 200 | Continuous | Pen 102N | Sanitary Sewer: profile |
| C-SSWR-STRC | 200 | Continuous | Pen 102N | Sanitary Sewer: structures |
| C-SSWR-STRC-PATT | 200 | Continuous | Pen 102N | Sanitary Sewer: structures, hatching |
| C-SSWR-TEXT | white | Continuous | Pen 102N | Sanitary Sewer: text |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| C-STRM | 170 | Continuous | Pen 102N | C-STRM |
| C-STRM-CNTR | 170 | CENTER2 | Pen 102N | Storm Sewer: centerline |
| C-STRM-PIPE | 170 | Continuous | Pen 102N | Storm Sewer: piping |
| C-STRM-PIPE-PATT | white | Continuous | Pen 102N | Storm Sewer: piping, hatching |
| C-STRM-PROF | 170 | Continuous | Pen 102N | Storm Sewer: profile |
| C-STRM-STRC | 170 | Continuous | Pen 102N | Storm Sewer: structures |
| C-STRM-STRC-PATT | white | Continuous | Pen 102N | Storm Sewer: structures, hatching |
| C-STRM-TABL | red | Continuous | Pen 102N | Storm Sewer: table |
| C-STRM-TEXT | white | Continuous | Pen 102N | Storm Sewer: text |
| C-TINN | 182 | Continuous | Pen 102N | Triangulated irregular network |
| C-TINN-BNDY | 110 | Continuous | Pen 102N | Triangulated irregular network: boundary |
| C-TINN-VIEW | 252 | Continuous | Pen 102N | Triangulated irregular network: triangle view |
| C-TOPO-CONT-TEXT | white | Continuous | Pen 102N | Topography: contour labels |
| C-TOPO-CONT-TEXT-N | red | Continuous | Pen 102N | Topography: contours labels, NEW |
| C-TOPO-FEAT | green | Continuous | Pen 102N | Topography: feature |
| C-TOPO-GRAD | 94 | Continuous | Pen 102N | Topography: grading |
| C-TOPO-GRAD-CUT | red | Continuous | Pen 102N | Topography: grading cut material |
| C-TOPO-GRAD-FILL | 94 | Continuous | Pen 102N | Topography: grading fill material |
| C-TOPO-GRID | 94 | Continuous | Pen 102N | Topography: grid |
| C-TOPO-MAJR | 9 | Continuous | Pen 102N | Topography: major gridlines |
| C-TOPO-MAJR-N | green | Continuous | Pen 102N | Topography: major contours, NEW |
| C-TOPO-MINR | 8 | Continuous | Pen 102N | Topography: minor gridlines |
| C-TOPO-MINR-N | yellow | Continuous | Pen 102N | Topography: minor contours, NEW |
| C-TOPO-TABL | white | Continuous | Pen 102N | Topography: table |
| C-TOPO-TEXT | white | Continuous | Pen 102N | Topography: text |
| C-TOPO-USER | 40 | Continuous | Pen 102N | Topography: user contours |
| C-TOPO-WDRP | 141 | Continuous | Pen 102N | Topography: water drop |
| C-TOPO-WSHD | 141 | Continuous | Pen 102N | Topography: watershed |
| C-TOPO-WSHD-TEXT | white | Continuous | Pen 102N | Topography: watershed text |
| Defpoints | white | Continuous | Pen 102N | Defpoints |
| V-CTRL-CALC | white | Continuous | Pen 102N | Survey Control: Calculated |
| V-CTRL-HCPT | 50 | Continuous | Pen 102N | Survey Control points: horizontal. |
| V-CTRL-LINE-DIRC | magenta | Continuous | Pen 102N | Survey Control points: traverse lines |
| V-CTRL-LINE-NETW | yellow | Continuous | Pen 102N | Survey Control points: traverse network |
| V-CTRL-LINE-SHOT | 177 | Continuous | Pen 102N | Survey Control points: traverse sideshot |
| V-CTRL-NODE-KNOW | green | Continuous | Pen 102N | Survey Control points: known points |
| V-CTRL-NODE-SHOT | yellow | Continuous | Pen 102N | Survey Control points: sideshots |
| V-CTRL-NODE-UNKN | red | Continuous | Pen 102N | Survey Control points: unknown points |
| V-CTRL-STA~ | white | Continuous | Pen 102N | Survey Control: stationing points |
| V-CTRL-TRAV | cyan | Continuous | Pen 102N | Survey Control points: traverse |
| V-CTRL-TRAV-ERRO | green | Continuous | Pen 102N | Survey Control points: traverse errors |
| V-CTRL-VCPT | cyan | Continuous | Pen 102N | Survey Conrtol points: vertical. |
| V-TOPO-CONT-TEXT | white | Continuous | Pen 102N | Topography: contour labels |
| V-TOPO-FEAT | green | Continuous | Pen 102N | Topography: feature |
| V-TOPO-FLOW | 120 | Continuous | Pen 102N | Flow direction arrows |
| V-TOPO-GRAD | 94 | Continuous | Pen 102N | Topography: grading |
| V-TOPO-GRAD-CUT | red | Continuous | Pen 102N | Topography: grading cut material |
| V-TOPO-GRAD-FILL | 94 | Continuous | Pen 102N | Topography: grading fill material |
| V-TOPO-MAJR | 39 | Continuous | Pen 102N | Topography: major gridlines |
| V-TOPO-MINR | 35 | Continuous | Pen 102N | Topography: minor gridlines |
| V-TOPO-TEXT | white | Continuous | Pen 102N | Topography: text |
| V-TOPO-USER | 40 | Continuous | Pen 102N | Topography: user contours |
| V-TOPO-WDRP | 141 | Continuous | Pen 102N | Topography: water drop |
| V-TOPO-WSHD | 141 | Continuous | Pen 102N | Topography: watershed |
| V-TOPO-WSHD-TEXT | white | Continuous | Pen 102N | Topography: watershed text |
| V-UNDF-NODE-COBI | cyan | Continuous | Pen 102N | Undefined desciptor code points |
| VA-AERL-PHOT | white | Continuous | Pen 102N | Aerial photos |
| VA-CTRL-ACTL | yellow | Continuous | Pen 102N | Survey Control: aerial horizontal and vertical control points |
| VA-CTRL-FLYS | yellow | Continuous | Pen 102N | Survey Control points aerial station |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| VF-ANNO-BRNG | white | Continuous | Pen 101N | Bearing and distance labels |
| VF-ANNO-CORD | 150 | Continuous | Pen 101N | Coordinate system data & info (state plane, local) |
| VF-ANNO-DATM | 150 | Continuous | Pen 101N | survey datum symbol in model space |
| VF-ANNO-GRID | 255 | Continuous | Pen 101N | Grid lines in model space |
| VF-ANNO-META | yellow | Continuous | Pen 101N | Drawing infromation for other drafting techs |
| VF-ANNO-TABL | 255 | Continuous | Pen 101N | Tables |
| VF-ANNO-VP01 | 150 | Continuous | Pen 101N | Viewport 1 |
| VF-BCST-CITY | 20 | Continuous | Pen 102N | City Telemetry facilities |
| VF-BLDG-DECK | 141 | Continuous | Pen 102N | Buildings & primary structures:outdoor decks (attached no roof) |
| VF-BLDG-DIMS | 141 | Continuous | Pen 102N | Buildings: dimensions |
| VF-BLDG-OTLN | 141 | Continuous | Pen 102N | Survey Buildings: outline |
| VF-BLDG-PRCH | 141 | Continuous | Pen 102N | Buildings & primary structures: porch (attached, roof overhead) |
| VF-BLDG-SBST | 141 | Continuous | Pen 102N | Buildings: Substation |
| VF-BLDG-TEXT | 141 | Continuous | Pen 102N | Buildings: text |
| VF-BRDG-BENT | 21 | Continuous | Pen 102N | Bridge: top of bent |
| VF-BRDG-CNTR | 21 | Continuous | Pen 102N | Bridge: centerline |
| VF-BRDG-DECK | 21 | Continuous | Pen 102N | Bridge: deck |
| VF-BRDG-DIMS | 21 | Continuous | Pen 102N | Bridge: dimensions |
| VF-BRDG-RAIL | 21 | Continuous | Pen 102N | Bridge: railing |
| VF-BRKL-BOTB | 61 | Continuous | Pen 102N | Break/fault lines: bottom of bank |
| VF-BRKL-FLOW | 61 | Continuous | Pen 102N | Break/fault lines: flowline (lowest point of ditch) |
| VF-BRKL-TOPB | 61 | Continuous | Pen 102N | Break/fault lines: top of bank |
| VF-CATV | 40 | Continuous | Pen 102N | Cable TV: |
| VF-CATV-MHOL | 40 | Continuous | Pen 102N | Cable TV: manhole |
| VF-CATV-OVHD | 40 | -COBI-TV-OH | Pen 102N | Cable TV: overhead line |
| VF-CATV-POLE | 40 | Continuous | Pen 102N | Cable TV: pole |
| VF-CATV-UGND | 40 | -COBI-TV-UG | Pen 102N | Cable TV: undergroound line |
| VF-CATV-UGND-LOCA | 40 | -COBI-TV-LO | Pen 102N | Cable TV: undergroound line, locator service |
| VF-COMM-ABND | 30 | Continuous | Pen 102N | Communications: Abandoned lines |
| VF-COMM-DIMS | 30 | Continuous | Pen 102N | Communications: dimensions |
| VF-COMM-EQPM | 30 | Continuous | Pen 102N | Communications: equipment |
| VF-COMM-FIBR-LOCA | 30 | -COBI-FO-LO | Pen 102N | Communications: lines, underground |
| VF-COMM-MHOL | 30 | Continuous | Pen 102N | Communications: manholes |
| VF-COMM-OVHD | 30 | -COBI-TEL-OH | Pen 102N | Communications: lines,overhead |
| VF-COMM-POLE | 30 | Continuous | Pen 102N | Communications: poles/boxes/towers |
| VF-COMM-TELP-LOCA | 30 | -COBI-TEL-LO | Pen 102N | Communications: lines, underground |
| VF-COMM-TEXT | 30 | Continuous | Pen 102N | Communications: text |
| VF-COMM-VALT | 30 | Continuous | Pen 102N | Communications: poles/boxes/towers |
| VF-CTRL-ACTL | yellow | Continuous | Pen 102N | Survey Control: aerial horizontal and vertical control points |
| VF-CTRL-BLIN | yellow | Continuous | Pen 102N | Survey Control: baseline |
| VF-CTRL-BMRK | yellow | Continuous | Pen 102N | Survey Control points: benchmark. |
| VF-CTRL-BNDY | yellow | Continuous | Pen 102N | Survey Control: boundary line points |
| VF-CTRL-ESMT | yellow | Continuous | Pen 102N | Survey Control: Easements |
| VF-CTRL-FLYS | yellow | Continuous | Pen 102N | Survey Control points aerial station |
| VF-CTRL-MON~ | magenta | Continuous | Pen 102N | Survey Control: Monuments |
| VF-CTRL-MRKR | yellow | Continuous | Pen 102N | Survey Control: Marker |
| VF-CTRL-PROP | yellow | Continuous | Pen 102N | Survey Control: property corner points |
| VF-CTRL-SECT-CRNR | yellow | Continuous | Pen 102N | Survey Control: section corner points |
| VF-CTRL-SECT-QTRS | yellow | Continuous | Pen 102N | Survey Control: Quarter corners |
| VF-CTRL-SECT-SXTS | yellow | Continuous | Pen 102N | Survey Control: Sixteenth corners |
| VF-CTRL-WITP | yellow | Continuous | Pen 102N | Survey Control: Witness Corner points |
| VF-DETL | 150 | Continuous | Pen 102N | Line and text for all detail drrawings |
| VF-DFLD | 64 | Continuous | Pen 102N | Septic drainfield and tank |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| VF-DIAG-ACCD | 10 | Continuous | Pen 102N | Survey: Accident Diagrams |
| VF-DIAG-ACDT | 10 | Continuous | Pen 102N | Survey field: Traffic Accident diagrams |
| VF-DRIV-ASPH | 41 | Continuous | Pen 102N | Driveways: asphalt surface |
| VF-DRIV-CNTR | 41 | Continuous | Pen 102N | Driveways: centerline |
| VF-DRIV-CONC | 41 | Continuous | Pen 102N | Driveways: concrete surface |
| VF-DRIV-CURB | 41 | Continuous | Pen 102N | Driveways: curb |
| VF-DRIV-CURB-BACK | 41 | Continuous | Pen 102N | Driveways: curb back |
| VF-DRIV-CURB-FACE | 41 | Continuous | Pen 102N | Driveways: curb face |
| VF-DRIV-FLNE | 41 | Continuous | Pen 102N | Driveways: fire lane |
| VF-DRIV-FLNE-MRKG | 41 | Continuous | Pen 102N | Driveways: fire lane markings |
| VF-DRIV-FLNE-SIGN | 41 | Continuous | Pen 102N | Driveways: fire lane signage |
| VF-DRIV-GRVL | 41 | Continuous | Pen 102N | Driveways: gravel |
| VF-DRIV-MRKG | 41 | Continuous | Pen 102N | Driveways: pavement markings |
| VF-DRIV-SIGN | 41 | Continuous | Pen 102N | Driveways: signage |
| VF-DRIV-UPVD | 41 | Continuous | Pen 102N | Driveways: unpaved surface |
| VF-DTCH-BOTD | 111 | -COBI-TOPO-TOE | Pen 102N | Ditches or washes: bottom |
| VF-DTCH-CNTR | 111 | -COBI-DITCH-1 | Pen 102N | Ditches or washes: centerline |
| VF-DTCH-CREK | 161 | -COBI-DITCH2-1 | Pen 102N | Ditches or washes: Creek |
| VF-DTCH-DIKE | 161 | Continuous | Pen 102N | Dike |
| VF-DTCH-EWAT | 161 | Continuous | Pen 102N | Ditches or washes: edge of water |
| VF-DTCH-SWAL | 42 | -COBI-TOPO-SWALE | Pen 102N | Ditches or washes: swale limits |
| VF-DTCH-TOPD | 111 | -COBI-TOPO-TOP | Pen 102N | Ditches or washes: top |
| VF-EROS | 162 | Continuous | Pen 102N | Erosion control data |
| VF-EROS-RRAP | 35 | Continuous | Pen 102N | Erosion control: riprap and rock retaining walls |
| VF-FUEL | 211 | Continuous | Pen 102N | Fuel features |
| VF-GAS~-PRO~ | yellow | Continuous | Pen 102N | Propane gas features |
| VF-IRRG | white | Continuous | Pen 102N | Irrigation system |
| VF-LAND-FARM | 60 | Continuous | Pen 102N | Farm related data |
| VF-NODE | red | Continuous | Pen 100N | Survey Node |
| VF-NODE-ABUT | red | Continuous | Pen 100N | Survey Node: abutment |
| VF-NODE-BARR | white | Continuous | Pen 100N | Survey Node: Barrier |
| VF-NODE-BHED-COMP | white | Continuous | Pen 100N | Survey Node: Composite bulkhead |
| VF-NODE-BHED-CONC | white | Continuous | Pen 100N | Survey Node: concrete bulkhead |
| VF-NODE-BHED-ROCK | white | Continuous | Pen 100N | Survey Node: Rock bulkhead |
| VF-NODE-BHED-STEL | white | Continuous | Pen 100N | Survey Node: Steel bulkhead |
| VF-NODE-BHED-WOOD | white | Continuous | Pen 100N | Survey Node: wood bulkhead |
| VF-NODE-BLDG | 141 | Continuous | Pen 100N | Survey Node: building points |
| VF-NODE-BLRD | white | Continuous | Pen 100N | Survey Node: Bollard |
| VF-NODE-BORE | white | Continuous | Pen 100N | Survey Node: borehole |
| VF-NODE-BRDG | red | Continuous | Pen 100N | Survey Node: bridge |
| VF-NODE-BRKL | 61 | Continuous | Pen 100N | Survey Node: breaklines |
| VF-NODE-BRKL-TOEB | 61 | Continuous | Pen 100N | Survey Node: Toe of slope |
| VF-NODE-BRKL-TOPB | 61 | Continuous | Pen 100N | Survey Node: Top of slope |
| VF-NODE-BROW | red | Continuous | Pen 100N | Survey Node: brush row points |
| VF-NODE-BRSH | red | Continuous | Pen 100N | Survey Node: brush |
| VF-NODE-CATV | 40 | Continuous | Pen 100N | Survey Node: Cable TV |
| VF-NODE-CNTL | red | Continuous | Pen 100N | Survey Node: centerline |
| VF-NODE-CNTL-CRWN | red | Continuous | Pen 100N | Survey Node: centerline no stripe |
| VF-NODE-CNTL-DBLY | red | Continuous | Pen 100N | Survey Node: centerline double yellow stripe |
| VF-NODE-CNTL-SNGY | red | Continuous | Pen 100N | Survey Node: centerline single yellow stripe |
| VF-NODE-COMM | white | Continuous | Pen 100N | Survey Node: telephone communications |
| VF-NODE-COMM-MHOL | red | Continuous | Pen 100N | Survey Node: Communications manhole |
| VF-NODE-CREK-CTLN | 161 | Continuous | Pen 100N | Survey Node: creek centerline |
| VF-NODE-CREK-EDGE | 161 | Continuous | Pen 100N | Survey Node: creek edge |
| VF-NODE-CSLB | white | Continuous | Pen 100N | Survey node: concrete slab |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| VF-NODE-CURB | white | Continuous | Pen 100N | Survey node: curb general |
| VF-NODE-CURB-FLOW | red | Continuous | Pen 100N | Survey Node: curb flowline |
| VF-NODE-CURB-TOPB | red | Continuous | Pen 100N | Survey Node: curb top back |
| VF-NODE-CURB-TOPF | red | Continuous | Pen 100N | Survey Node: curb top face |
| VF-NODE-DAM~ | white | Continuous | Pen 100N | Survey node: dam |
| VF-NODE-DECK | red | Continuous | Pen 100N | Survey Node: deck |
| VF-NODE-DOCK | 17 | Continuous | Pen 100N | Survey Node: dock |
| VF-NODE-DRIV | 41 | Continuous | Pen 100N | Survey Node: driveway |
| VF-NODE-DTCH | 111 | Continuous | Pen 100N | Survey node: ditch general |
| VF-NODE-DTCH-CTLN | 111 | Continuous | Pen 100N | Survey Node: ditch centerline |
| VF-NODE-DTCH-TOEB | 111 | Continuous | Pen 100N | Survey Node: ditch toe of bank |
| VF-NODE-DTCH-TOPB | 111 | Continuous | Pen 100N | Survey Node: ditch top of bank |
| VF-NODE-EXPJ | red | Continuous | Pen 100N | Survey Node: expansion joint |
| VF-NODE-FARM | white | Continuous | Pen 100N | Survey node: farm |
| VF-NODE-FENC | red | Continuous | Pen 100N | Survey Node: fence chainlink |
| VF-NODE-FLAG | white | Continuous | Pen 100N | Survey Node: flagpole |
| VF-NODE-FLOW | white | Continuous | Pen 100N | Survey Node: flow line |
| VF-NODE-GASP | yellow | Continuous | Pen 100N | Survey Node: gas pipe |
| VF-NODE-GRAL | white | Continuous | Pen 100N | Survey Node: guard rail |
| VF-NODE-GRND-ASPH | 61 | Continuous | Pen 100N | Survey Node: Ground shot on asphalt |
| VF-NODE-GRND-CONC | 61 | Continuous | Pen 100N | Survey Node: ground shot on concrete |
| VF-NODE-GRND-DIRT | 61 | Continuous | Pen 100N | Survey Node: Ground points on dirt |
| VF-NODE-GRND-GRVL | 61 | Continuous | Pen 100N | Survey Node: ground shot on gravel |
| VF-NODE-HCAP | white | Continuous | Pen 100N | Survey Node: Handicap ramp |
| VF-NODE-LNDS | red | Continuous | Pen 100N | Survey Node: Landscaping |
| VF-NODE-LOCA-CATV | 40 | Continuous | Pen 100N | Survey Node: locator service cable tv |
| VF-NODE-LOCA-CULV | red | Continuous | Pen 100N | Survey Node: locator service storm water culvert |
| VF-NODE-LOCA-FIBR | red | Continuous | Pen 100N | Survey Node: locator service fiber optic |
| VF-NODE-LOCA-POWR | red | Continuous | Pen 100N | Survey Node: locator service power |
| VF-NODE-LOCA-SSWR | 113 | Continuous | Pen 100N | Survey Node: locator service sanitary sewer |
| VF-NODE-LOCA-STRM | green | Continuous | Pen 100N | Survey Node: locator service storm water |
| VF-NODE-LOCA-TELP | red | Continuous | Pen 100N | Survey Node: locator service telephone |
| VF-NODE-LOCA-WATR | 151 | Continuous | Pen 100N | Survey Node: locator service water |
| VF-NODE-MBOX | white | Continuous | Pen 100N | Survey Node: Mail box |
| VF-NODE-NGAS | yellow | Continuous | Pen 100N | Survey Node: gas line & appurtenances points. |
| VF-NODE-NMOT-BIKE | white | Continuous | Pen 100N | Survey Node: Non-motorized bike |
| VF-NODE-NMOT-PATH | white | Continuous | Pen 100N | Survey Node: Non-motorized path |
| VF-NODE-NMOT-TRAL | white | Continuous | Pen 100N | Survey Node: Non-motorized trail |
| VF-NODE-PGAS | yellow | Continuous | Pen 100N | Survey Node: Propane gas |
| VF-NODE-POND | blue | Continuous | Pen 100N | Survey Node: edge of pond |
| VF-NODE-POWR | red | Continuous | Pen 100N | Survey Node: Power points |
| VF-NODE-POWR-JBOX | white | Continuous | Pen 100N | Survey Node: Power junction box |
| VF-NODE-POWR-LINE | white | Continuous | Pen 100N | Survey Node: Power line overhead |
| VF-NODE-POWR-LITE | white | Continuous | Pen 100N | Survey Node: Power street light |
| VF-NODE-POWR-METR | white | Continuous | Pen 100N | Survey Node: Power service meter |
| VF-NODE-POWR-MHOL | red | Continuous | Pen 100N | Survey Node: Power manhole |
| VF-NODE-POWR-POLE | red | Continuous | Pen 100N | Survey Node: pole points (power, telephone, etc.). |
| VF-NODE-POWR-XFRM | white | Continuous | Pen 100N | Survey Node: Power transformer box |
| VF-NODE-PRKG | 105 | Continuous | Pen 100N | Survey Node: parking general |
| VF-NODE-ROAD-CNTR | 105 | Continuous | Pen 100N | Survey Node: Road center |
| VF-NODE-ROAD-CURB | 241 | Continuous | Pen 100N | Survey Node: curb points |
| VF-NODE-ROAD-EDGE | 105 | Continuous | Pen 100N | Survey Node: Road edge |
| VF-NODE-ROAD-SHOL | 161 | Continuous | Pen 100N | Survey Node: Road shoulder edge |
| VF-NODE-ROCK | white | Continuous | Pen 100N | Survey Node: Rock outcrops |
| VF-NODE-RRAP | red | Continuous | Pen 100N | Survey Node: riprap |
| VF-NODE-RTWL | red | Continuous | Pen 100N | Survey Node: Retaining wall |
| VF-NODE-SEPT | white | Continuous | Pen 100N | Survey Node: septic |
| VF-NODE-SHOR | white | Continuous | Pen 100N | Survey Node: shoreline |
| VF-NODE-SIGL | 32 | Continuous | Pen 100N | Survey Node: signal pole |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| VF-NODE-SIGN | 122 | Continuous | Pen 100N | Survey Node:  sign. |
| VF-NODE-SITE-LITE | white | Continuous | Pen 100N | Survey Node: Private lighting system |
| VF-NODE-SLAB-CONC | 21 | Continuous | Pen 100N | Generic concrete or slab |
| VF-NODE-SLID | white | Continuous | Pen 100N | Survey Node: slump or slide |
| VF-NODE-SSWR | 113 | Continuous | Pen 100N | Survey Node:  sanitary sewer and appurtenances points. |
| VF-NODE-SSWR-CLOT | 113 | Continuous | Pen 100N | Survey Node:sanitary sewer cleanout |
| VF-NODE-SSWR-LIFT | 113 | Continuous | Pen 100N | Survey Node:sanitary sewer lift station |
| VF-NODE-SSWR-MHOL | 113 | Continuous | Pen 100N | Survey Node:  Sanitary sewer manhole |
| VF-NODE-STRM | green | Continuous | Pen 100N | Survey Node:  storm sewer and appurtenances points. |
| VF-NODE-STRM-CBAS | green | Continuous | Pen 100N | Survey Node:  storm catch basin |
| VF-NODE-STRM-CULV | green | Continuous | Pen 100N | Survey Node:  storm culvert |
| VF-NODE-STRM-MHOL | green | Continuous | Pen 100N | Survey Node:  Storm manhole |
| VF-NODE-STRP-ARRW | red | Continuous | Pen 100N | Survey Node:  Pavement striping arrow |
| VF-NODE-STRP-BIKE | red | Continuous | Pen 100N | Survey Node:  Pavement striping bike lane |
| VF-NODE-STRP-BUSS | red | Continuous | Pen 100N | Survey Node:  Pavement striping bus lane |
| VF-NODE-STRP-CHNL | white | Continuous | Pen 100N | Survey Node:  Pavement striping channeling |
| VF-NODE-STRP-CRSS | red | Continuous | Pen 100N | Survey Node:  Pavement striping crosswalk |
| VF-NODE-STRP-FOGL | red | Continuous | Pen 100N | Survey Node:  Pavement striping fog line |
| VF-NODE-STRP-HCAP | red | Continuous | Pen 100N | Survey Node:  Pavement striping handicap |
| VF-NODE-STRP-LANE | red | Continuous | Pen 100N | Survey Node:  Pavement striping lane |
| VF-NODE-STRP-MISC | white | Continuous | Pen 100N | Survey Node:  pavement striping miscellaneous |
| VF-NODE-STRP-PARK | red | Continuous | Pen 100N | Survey Node:  Pavement striping parking |
| VF-NODE-STRP-STOP | red | Continuous | Pen 100N | Survey Node:  Pavement striping stop |
| VF-NODE-SWAL | red | Continuous | Pen 100N | Survey Node:  swale |
| VF-NODE-SWLK | 121 | Continuous | Pen 100N | Survey Node:  sidewalk |
| VF-NODE-TANK | white | Continuous | Pen 100N | Survey Node:  water tank |
| VF-NODE-TCON | 62 | Continuous | Pen 100N | Survey Node:  evergreen trees |
| VF-NODE-TDEC | 62 | Continuous | Pen 100N | Survey Node:  deciduous trees |
| VF-NODE-TELP-MHOL | white | Continuous | Pen 100N | Survey Node:  telephone communications manhole |
| VF-NODE-TEXT | yellow | Continuous | Pen 100N | Survey Node: text |
| VF-NODE-TIDE | 17 | Continuous | Pen 100N | Survey Node: tidal level |
| VF-NODE-TROW | red | Continuous | Pen 100N | Survey Node:  tree row |
| VF-NODE-UKNW | cyan | Continuous | Pen 100N | Survey Node: unknown object |
| VF-NODE-VALT | white | Continuous | Pen 100N | Survey Node:  vault |
| VF-NODE-VEGE | 62 | Continuous | Pen 100N | Survey Node:  vegetation |
| VF-NODE-VENT | white | Continuous | Pen 100N | Survey Node: vent |
| VF-NODE-WALK | white | Continuous | Pen 100N | Survey Node: sidewalk |
| VF-NODE-WALL | white | Continuous | Pen 100N | Survey Node: wall |
| VF-NODE-WALL-CONC | white | Continuous | Pen 100N | Survey Node:  wall concrete |
| VF-NODE-WALL-TOE~ | white | Continuous | Pen 100N | Survey Node:  wall toe |
| VF-NODE-WALL-TOP~ | white | Continuous | Pen 100N | Survey Node:  wall top |
| VF-NODE-WATR | 151 | Continuous | Pen 100N | Survey Node:  water line and appurtenances points. |
| VF-NODE-WATR-FAUC | 151 | Continuous | Pen 100N | Survey Node:  water faucet |
| VF-NODE-WATR-FHYD | 151 | Continuous | Pen 100N | Survey Node:  fire hydrant |
| VF-NODE-WATR-IRRG | 151 | Continuous | Pen 100N | Survey Node:  irrigation system |
| VF-NODE-WATR-MHOL | 151 | Continuous | Pen 100N | Survey Node:  Water manhole |
| VF-NODE-WATR-PUMP | 151 | Continuous | Pen 100N | Survey Node:  water pump |
| VF-NODE-WATR-VALV | 151 | Continuous | Pen 100N | Survey Node:  water valve |
| VF-NODE-WATR-WMBX | 151 | Continuous | Pen 100N | Survey Node:  water service meter box |
| VF-NODE-WELL | red | Continuous | Pen 100N | Survey Node:  Water well |
| VF-NODE-WETL | 121 | Continuous | Pen 100N | Survey Node:  wetland |
| VF-PLNT-TCON | 94 | Continuous | Pen 102N | Trees: Conifer |
| VF-PLNT-TDEC | 71 | Continuous | Pen 102N | Trees: Deciduous |
| VF-POND | 151 | Continuous | Pen 102N | Ponds |
| VF-POND-DAM~ | 161 | Continuous | Pen 102N | Survey Node:  edge of pond |
| VF-POWR | red | Continuous | Pen 102N | Power |
| VF-POWR-CABN | red | Continuous | Pen 102N | Power: cabinets |
| VF-POWR-FENC | red | -COBI-FN-G | Pen 102N | Power: Fences |
| VF-POWR-INST | red | Continuous | Pen 102N | Power: instrumentation |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| VF-POWR-METR | red | Continuous | Pen 102N | Power: meters |
| VF-POWR-MHOL | red | Continuous | Pen 102N | Power: cabinets |
| VF-POWR-OVHD | red | -COBI-PWR-OH | Pen 102N | Power: overhead lines |
| VF-POWR-POLE | red | Continuous | Pen 102N | Power: pole & guys |
| VF-POWR-STRC | red | Continuous | Pen 102N | Power: structures |
| VF-POWR-UGND | red | -COBI-PWR-LO | Pen 102N | Power: locator service underground |
| VF-POWR-VALT | red | Continuous | Pen 102N | Power: vaults |
| VF-POWR-XFRM | red | Continuous | Pen 102N | Power: Transformers |
| VF-PRKG | 105 | Continuous | Pen 102N | Parking lots |
| VF-PRKG-ASPH | 105 | -COBI-EPK-AS | Pen 102N | Parking lots: asphalt |
| VF-PRKG-CNTR | 105 | Continuous | Pen 102N | Parking lots: center |
| VF-PRKG-CONC | 105 | -COBI-EPK-CO | Pen 102N | Parking lots: concrete |
| VF-PRKG-CURB | 105 | Continuous | Pen 102N | Parking lots: curb |
| VF-PRKG-DRAN | 105 | Continuous | Pen 102N | Parking lots: drainage slope indications |
| VF-PRKG-EDGE | 105 | -COBI-EPK-EPK | Pen 102N | Parking lots |
| VF-PRKG-FLIN | 105 | Continuous | Pen 102N | Parking lots: fire lane |
| VF-PRKG-GRVL | 105 | -COBI-EPK-GR | Pen 102N | Parking lots: gravel |
| VF-PRKG-MRKG | 105 | Continuous | Pen 102N | Parking lots: pavement markings |
| VF-PRKG-STRP | 105 | Continuous | Pen 102N | Parking lots: striping |
| VF-PRKG-UPVD | 105 | Continuous | Pen 102N | Parking lots: unpaved surface |
| VF-PROP-LINE | blue | Continuous | Pen 104N | Private Property line |
| VF-PROP-PLAT | 245 | Continuous | Pen 104N | Plat data ( use optional field for name or number |
| VF-PROP-TEXT | blue | Continuous | Pen 102N | Private Property line text |
| VF-ROAD-ASPH | 105 | -COBI-ER-1 | Pen 102N | Survey Road: Asphalt |
| VF-ROAD-CNTR | 105 | CENTER | Pen 102N | Survey Road: centerline |
| VF-ROAD-CNTR-BTTN | 105 | -COBI-CL-BT | Pen 102N | Survey Road: centerline from buttons |
| VF-ROAD-CNTR-CRWN | 105 | -COBI-CL-CR | Pen 102N | Survey Road: centerline from road crown |
| VF-ROAD-CNTR-DBLY | 105 | -COBI-CL-DY | Pen 102N | Survey Road: centerline from double yellow stripe |
| VF-ROAD-CNTR-SNGY | 105 | -COBI-CL-SY | Pen 102N | Survey Road: centerline from single yellow stripe |
| VF-ROAD-CONC | 105 | -COBI-ER-1 | Pen 102N | Survey Road: Concrete |
| VF-ROAD-CURB | 241 | Continuous | Pen 102N | Survey Road: curbs |
| VF-ROAD-CURB-BACK | 241 | Continuous | Pen 102N | Survey Road: top back of curb |
| VF-ROAD-CURB-FACE | 241 | Continuous | Pen 102N | Survey Road: top face of curb |
| VF-ROAD-CURB-FLOW | 241 | -COBI-FLOW-FLOW | Pen 102N | Survey Road: curb flowline |
| VF-ROAD-DTUR | 105 | Continuous | Pen 102N | Survey Road:  detour plans, routes and temporary signs |
| VF-ROAD-FLIN | 105 | Continuous | Pen 102N | Survey Road: Fire Lane |
| VF-ROAD-FLOW | 105 | -COBI-FLOW-FLOW | Pen 102N | Survey Road: centerline |
| VF-ROAD-GRAL | white | -COBI-GUARD RAIL-1 | Pen 102N | Guard rail |
| VF-ROAD-GRVL | 105 | -COBI-ER-1 | Pen 102N | Survey Road: Gravel |
| VF-ROAD-LITE-CABL | 52 | Continuous | Pen 102N | Street light power cable |
| VF-ROAD-LITE-CABN | 52 | Continuous | Pen 102N | Street light cabinet |
| VF-ROAD-LITE-POLE | 52 | Continuous | Pen 102N | Street light pole |
| VF-ROAD-MRKG | 105 | Continuous | Pen 102N | Survey Road: Misc pavement markings |
| VF-ROAD-MRKG-BIKE | 105 | -COBI-STRIP-DROP-BIKE20 | Pen 102N | Survey Road: Bike line |
| VF-ROAD-MRKG-BUS~ | 105 | -COBI- | Pen 102N | Survey Road: Bus line |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| | | STRIP-BUS20 | | |
| VF-ROAD-MRKG-FOG~ | 105 | -COBI-STRIP-FOG | Pen 102N | Survey Road: Fog line |
| VF-ROAD-NAME | 223 | Continuous | Pen 102N | Road name |
| VF-ROAD-SCUT | 105 | ZIGZAG | Pen 102N | Roadway: sawcut |
| VF-ROAD-SHOL-DIRT | 161 | -COBI-ES-ES | Pen 102N | Road shoulder edge dirt |
| VF-ROAD-SHOL-GRVL | 161 | -COBI-ES-GR | Pen 102N | Road shoulder edge gravel |
| VF-ROAD-SIGL | 32 | Continuous | Pen 102N | Traffic Signals |
| VF-ROAD-SIGN | 122 | Continuous | Pen 102N | Survey Node: sign. |
| VF-ROAD-SURF-ASPH | 105 | Continuous | Pen 102N | Survey Road: centerline |
| VF-ROAD-SURF-CONC | 105 | Continuous | Pen 102N | Survey Road: centerline |
| VF-ROAD-SURF-GRVL | 105 | Continuous | Pen 102N | Survey Road: centerline |
| VF-ROAD-TCNT | 105 | Continuous | Pen 102N | Survey Road: Traffic count data |
| VF-ROAD-UPVD | 105 | Continuous | Pen 102N | Survey Road: unpaved |
| VF-SECT | 222 | Continuous | Pen 102N | Survey Control: section lines |
| VF-SECT-QTRS | 230 | Continuous | Pen 102N | Survey Control: quarter section lines |
| VF-SECT-SXTS | 221 | Continuous | Pen 102N | Survey Control: sixteenth section lines |
| VF-SECT-TEXT | 222 | Continuous | Pen 102N | Survey Control: section text |
| VF-SITE-BHED-CONC | 43 | Continuous | Pen 102N | Site: Bulkhead - concrete |
| VF-SITE-BHED-WOOD | 43 | Continuous | Pen 102N | Site: Bulkhead - wood |
| VF-SITE-BLRD | green | Continuous | Pen 102N | Site: Bollard |
| VF-SITE-FNCE | 33 | -COBI-FN-G | Pen 102N | Survey Site: fences |
| VF-SITE-LFG~ | 211 | Continuous | Pen 102N | Site:landfill gas collection |
| VF-SITE-LITE | 51 | Continuous | Pen 102N | Site:lPrivate lighting system other than street lighting |
| VF-SITE-LSCP | 91 | Continuous | Pen 102N | Site: landscape data (trees, shrubs, etc) |
| VF-SITE-MBOX | 212 | Continuous | Pen 102N | Site: mailbox |
| VF-SITE-TRAN | 201 | Continuous | Pen 102N | Survey Site: transit facilities |
| VF-SITE-VEGE | 80 | Continuous | Pen 102N | Survey Site: vegetation, trees, shrubs |
| VF-SLAB-CONC | 21 | Continuous | Pen 102N | Generic concrete or slab |
| VF-SSWR | 113 | Continuous | Pen 102N | Sanitary Sewer: |
| VF-SSWR-MHOL | 113 | Continuous | Pen 102N | Sanitary Sewer: manhole |
| VF-SSWR-PIPE | 113 | -COBI-SS-FM | Pen 102N | Sanitary Sewer: pipe |
| VF-SSWR-PIPE-LOCA | 113 | -COBI-SS-LO | Pen 102N | Sanitary Sewer: locator service pipe location |
| VF-SSWR-STRC | 113 | Continuous | Pen 102N | Sanitary Sewer: structures |
| VF-STRM-CNTR | green | CENTER2 | Pen 102N | Storm Sewer: centerline |
| VF-STRM-CULV-LOCA | green | -COBI-SD-CULV | Pen 102N | Storm Sewer: locator service storm culvert pipe |
| VF-STRM-PIPE | green | -COBI-SD-36 | Pen 102N | Storm Sewer: piping |
| VF-STRM-PIPE-LOCA | green | -COBI-SD-LO | Pen 102N | Storm Sewer: locator service storm water pipe |
| VF-STRM-PIPE-PATT | green | Continuous | Pen 102N | Storm Sewer: piping, hatching |
| VF-STRM-PROF | green | Continuous | Pen 102N | Storm Sewer: profile |
| VF-STRM-STRC | green | Continuous | Pen 102N | Storm Sewer: structures |
| VF-STRM-STRC-PATT | green | Continuous | Pen 102N | Storm Sewer: structures, hatching |
| VF-STRM-TABL | green | Continuous | Pen 102N | Storm Sewer: table |
| VF-STRM-TEXT | green | Continuous | Pen 102N | Storm Sewer: text |
| VF-SURV-FIGR | 170 | Continuous | Pen 102N | Survey Figure |
| VF-SURV-LABL | 122 | Continuous | Pen 102N | Survey: text |
| VF-SURV-LINE | 130 | Continuous | Pen 102N | Survey: lines |
| VF-SURV-NTWK | 170 | Continuous | Pen 102N | Survey: Network |
| VF-SWLK | 121 | Continuous | Pen 102N | Sidewalk |
| VF-TINN | 182 | Continuous | Pen 102N | Triangulated irregular network |
| VF-TINN-BNDY | 110 | Continuous | Pen 102N | Triangulated irregular network: boundary |
| VF-TINN-PROF | 110 | Continuous | Pen 102N | Triangulated irregular network: profile |
| VF-TINN-TEXT | 110 | Continuous | Pen 102N | Triangulated irregular network: text |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| VF-TINN-VIEW | 252 | Continuous | Pen 102N | Triangulated irregular network: triangle view |
| VF-TOPO-GRAD-CUTS | yellow | Continuous | Pen 102N | Survey Control points: cut limits |
| VF-TOPO-GRAD-FILL | 152 | Continuous | Pen 102N | Survey Control points: fill limits |
| VF-TOPO-WSHD | 10 | Continuous | Pen 102N | Survey: Field derived drainage basin limits and data |
| VF-TOPO-WSHD-LINE | green | Continuous | Pen 102N | Survey field: Drainage Basin boundary limits |
| VF-TOPO-WSHD-TEXT | green | Continuous | Pen 102N | Survey field: Drainage Basin boundary text |
| VF-TRAL | 44 | Continuous | Pen 102N | Trail |
| VF-WALL-RETW | 122 | Continuous | Pen 102N | Wall: retaining wall |
| VF-WATR | 151 | Continuous | Pen 102N | Water supply: |
| VF-WATR-FLIN | 151 | -COBI-WTRFL-3DI | Pen 102N | Water supply: fire line pipes |
| VF-WATR-MAIN | 151 | -COBI-WTR-8DI | Pen 102N | Water supply: main supply pipes |
| VF-WATR-METR | 151 | Continuous | Pen 102N | Water supply: meters |
| VF-WATR-MHOL | 151 | Continuous | Pen 102N | Water supply: manholes |
| VF-WATR-PIPE | 151 | -COBI-WTR-6PVC | Pen 102N | Water supply: pipes |
| VF-WATR-PIPE-LOCA | 151 | -COBI-WTR-LO | Pen 102N | Water supply: pipes locator service |
| VF-WATR-PUMP | 151 | Continuous | Pen 102N | Water supply: Pumps |
| VF-WATR-STCR | 151 | Continuous | Pen 102N | Water supply: structures |
| VF-WATR-TANK | 151 | Continuous | Pen 102N | Water supply: storage tank |
| VF-WATR-VALT | 151 | Continuous | Pen 102N | Water supply: vault |
| VF-WATR-VALV | 151 | Continuous | Pen 102N | Water supply: Valves |
| VF-WATR-WELL | 151 | Continuous | Pen 102N | Water supply: water well |
| VF-WETL | 121 | Continuous | Pen 102N | Wetland |
| VF-WWAY-DOCK | 17 | Continuous | Pen 102N | Dock |
| VF-WWAY-LINE | 121 | Continuous | Pen 102N | Shoreline |
| VF-WWAY-MHWA | 160 | Continuous | Pen 102N | Mean high water data & symbols |
| VF-WWAY-TIDE | 140 | Continuous | Pen 102N | Tidal level |
| VJ | yellow | Continuous | Pen 102N | Data of information pertaining to city GIS system |
| VJ-BNDY-CITY | cyan | Continuous | Pen 102N | Boundaries of city owned properties |
| VJ-BNDY-ZIPC | 61 | Continuous | Pen 102N | Zipcode boundary |
| VJ-BRLN | 170 | Continuous | Pen 102N | Building restriction line |
| VJ-BZNA | 50 | Continuous | Pen 102N | Buffer zone area |
| VJ-CTRL-ACTL | yellow | Continuous | Pen 102N | Survey Control: aerial horizontal and vertical control points |
| VJ-CTRL-BMRK | yellow | Continuous | Pen 102N | Survey Control points: benchmark. |
| VJ-CTRL-BNDY | yellow | Continuous | Pen 102N | Survey Control: boundary line points |
| VJ-CTRL-ESMT | yellow | Continuous | Pen 102N | Survey Control: Easements |
| VJ-CTRL-FLYS | yellow | Continuous | Pen 102N | Survey Control points aerial station |
| VJ-CTRL-MON~ | yellow | Continuous | Pen 102N | Survey Control: Monuments |
| VJ-CTRL-MRKR | yellow | Continuous | Pen 102N | Survey Control: Marker |
| VJ-CTRL-PROP | yellow | Continuous | Pen 102N | Survey Control: property corner points |
| VJ-CTRL-SECT-CRNR | yellow | Continuous | Pen 102N | Survey Control: section corner points |
| VJ-CTRL-SECT-QTRS | yellow | Continuous | Pen 102N | Survey Control: Quarter corners |
| VJ-CTRL-SECT-SXTS | yellow | Continuous | Pen 102N | Survey Control: Sixteenth corners |
| VJ-CTRL-WITP | yellow | Continuous | Pen 102N | Survey Control: Witness Corner points |
| VJ-FHLA | 190 | Continuous | Pen 102N | Flood hazard area |
| VJ-POND | 151 | Continuous | Pen 102N | Ponds |
| VJ-PROP-BLDG-SBCK | 190 | Continuous | Pen 102N | Building setbacks |
| VJ-PROP-LINE | blue | Continuous | Pen 103N | Private Property line |
| VJ-PROP-PLAT | 245 | Continuous | Pen 103N | Plat data ( use optional field for name or number |
| VJ-PROP-TEXT | blue | Continuous | Pen 102N | Private Property line text |
| VJ-RWAY | 132 | -COBI-RW-RW | Pen 104N | Right of Way |
| VJ-RWAY-CNTR | 132 | -COBI-CL-ROW | Pen 104N | Right of Way centerline |
| VJ-SECT | 222 | Continuous | Pen 104N | Survey Control: section lines |
| VJ-SECT-QTRS | 230 | Continuous | Pen 104N | Survey Control: quarter section lines |
| VJ-SECT-SXTS | 221 | Continuous | Pen 104N | Survey Control: sixteenth section lines |

| Name | Color | Linetype | Plot Style | Description |
|---|---|---|---|---|
| VJ-SECT-TEXT | 222 | Continuous | Pen 102N | Survey Control: section text |
| VJ-TOPO-WSHD | 10 | Continuous | Pen 102N | Survey: COBI GIS derived drainage basin limits and data |
| VJ-TRAL | 44 | Continuous | Pen 102N | Trail |
| VJ-WWAY-LINE | 121 | Continuous | Pen 102N | Shoreline |
| VK-BNDY | 192 | Continuous | Pen 105N | Municipal boundaries |
| VK-CENS | 61 | Continuous | Pen 105N | 10 Year census boundaries and data |
| VK-CTRL-BMRK | yellow | Continuous | Pen 105N | Survey Control points: benchmark. |
| VK-CTRL-BNDY | yellow | Continuous | Pen 105N | Survey Control: boundary line points |
| VK-CTRL-ESMT | yellow | Continuous | Pen 105N | Survey Control: Easements |
| VK-CTRL-MON~ | yellow | Continuous | Pen 105N | Survey Control: Monuments |
| VK-CTRL-MRKR | yellow | Continuous | Pen 105N | Survey Control: Marker |
| VK-CTRL-PROP | yellow | Continuous | Pen 105N | Survey Control: property corner points |
| VK-CTRL-SECT-CRNR | yellow | Continuous | Pen 105N | Survey Control: section corner points |
| VK-CTRL-SECT-QTRS | yellow | Continuous | Pen 105N | Survey Control: Quarter corners |
| VK-CTRL-SECT-SXTS | yellow | Continuous | Pen 105N | Survey Control: Sixteenth corners |
| VK-CTRL-WITP | yellow | Continuous | Pen 105N | Survey Control: Witness Corner points |
| VK-ESMT | 230 | Continuous | Pen 105N | Easements |
| VK-ESMT-ACCS | 230 | Continuous | Pen 105N | Easements: access(pedestrian only;private access) |
| VK-ESMT-CATV | 230 | Continuous | Pen 105N | Easements: utility-cable tv |
| VK-ESMT-CONS | 230 | Continuous | Pen 105N | Easements: conservation |
| VK-ESMT-CSTG | 230 | Continuous | Pen 105N | Easements: construction / grading |
| VK-ESMT-ELEC | 230 | Continuous | Pen 105N | Easements: utility - electrical |
| VK-ESMT-FDPL | 230 | Continuous | Pen 105N | Easements: flood plain |
| VK-ESMT-INEG | 230 | Continuous | Pen 105N | Easements: ingress / egress (vehicles; private access) |
| VK-ESMT-LSCP | 230 | Continuous | Pen 105N | Easements: landscape |
| VK-ESMT-NGAS | 230 | Continuous | Pen 105N | Easements: natural gas line |
| VK-ESMT-PHON | 230 | Continuous | Pen 105N | Easements: telephone |
| VK-ESMT-ROAD | 230 | Continuous | Pen 105N | Easements: roadway |
| VK-ESMT-ROAD-PERM | 230 | Continuous | Pen 105N | Easements: roadway, permanent |
| VK-ESMT-ROAD-TEMP | 230 | Continuous | Pen 105N | Easements: roadway, temporary |
| VK-ESMT-RWAY | 230 | Continuous | Pen 105N | Easements: right-of-way (public access) |
| VK-ESMT-SGHT | 230 | Continuous | Pen 105N | Easements: sight distance |
| VK-ESMT-SSWR | 230 | Continuous | Pen 105N | Easements: sanitary sewer |
| VK-ESMT-STRM | 230 | Continuous | Pen 105N | Easements: storm sewer |
| VK-ESMT-SWMT | 230 | Continuous | Pen 105N | Easements: storm water management |
| VK-ESMT-TRAL | 230 | Continuous | Pen 105N | Easements: trail or path (public access) |
| VK-ESMT-UTIL | 230 | Continuous | Pen 105N | Easements: utilities |
| VK-ESMT-WATR | 230 | Continuous | Pen 105N | Easements: water supply |
| VK-PROP-BLDG-SBCK | 190 | Continuous | Pen 107N | Building setbacks |
| VK-PROP-LINE | blue | Continuous | Pen 107N | Private Property line |
| VK-PROP-PLAT | 245 | Continuous | Pen 107N | Plat data ( use optional field for name or number |
| VK-PROP-TEXT | blue | Continuous | Pen 107N | Private Property line text |
| VK-RWAY | 132 | -COBI-RW-RW | Pen 107N | Right of Way |
| VK-RWAY-CNTR | 132 | -COBI-CL-ROW | Pen 107N | Right of Way |
| VK-SECT | 222 | Continuous | Pen 107N | Survey Control: section lines |
| VK-SECT-QTRS | 230 | Continuous | Pen 107N | Survey Control: quarter section lines |
| VK-SECT-SXTS | 221 | Continuous | Pen 107N | Survey Control: sixteenth section lines |
| VK-SECT-TEXT | 222 | Continuous | Pen 107N | Survey Control: section text |
| VK-WWAY-LINE | 121 | Continuous | Pen 105N | Shoreline |

## COBI Color Standard

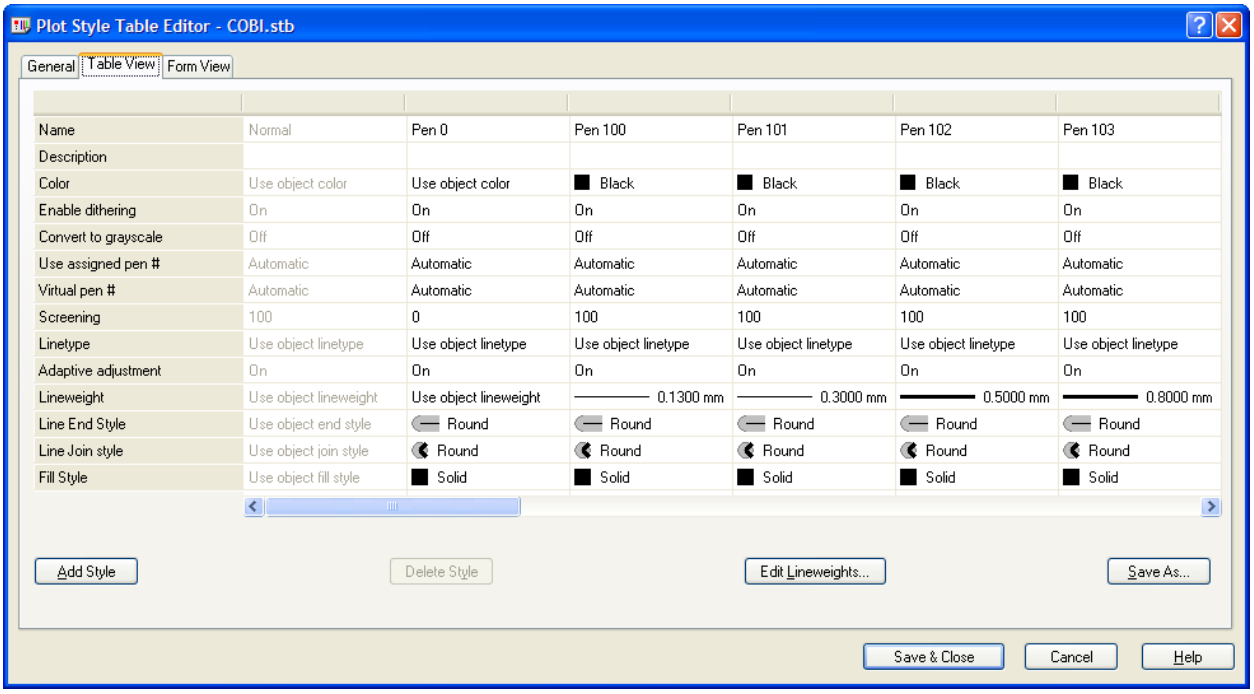
The suggested/default colors provide two functions. The first and probably the most important is to separate different types of entities by color so they can be differentiated on the monitor during drawing production. The second is merely the need for a starting point from which to start and to return to. This concept applies to base maps in model space more than anywhere. The model space base drawing is what other users and systems will use. Therefore, the standard provides a base to start from for these users and systems. This layer property is retained, as are the other default properties, in the COBI-Default.las file. The user can save this file under another name and then modify it to their specific usage. The COBI-Default.las file is not to be modified.

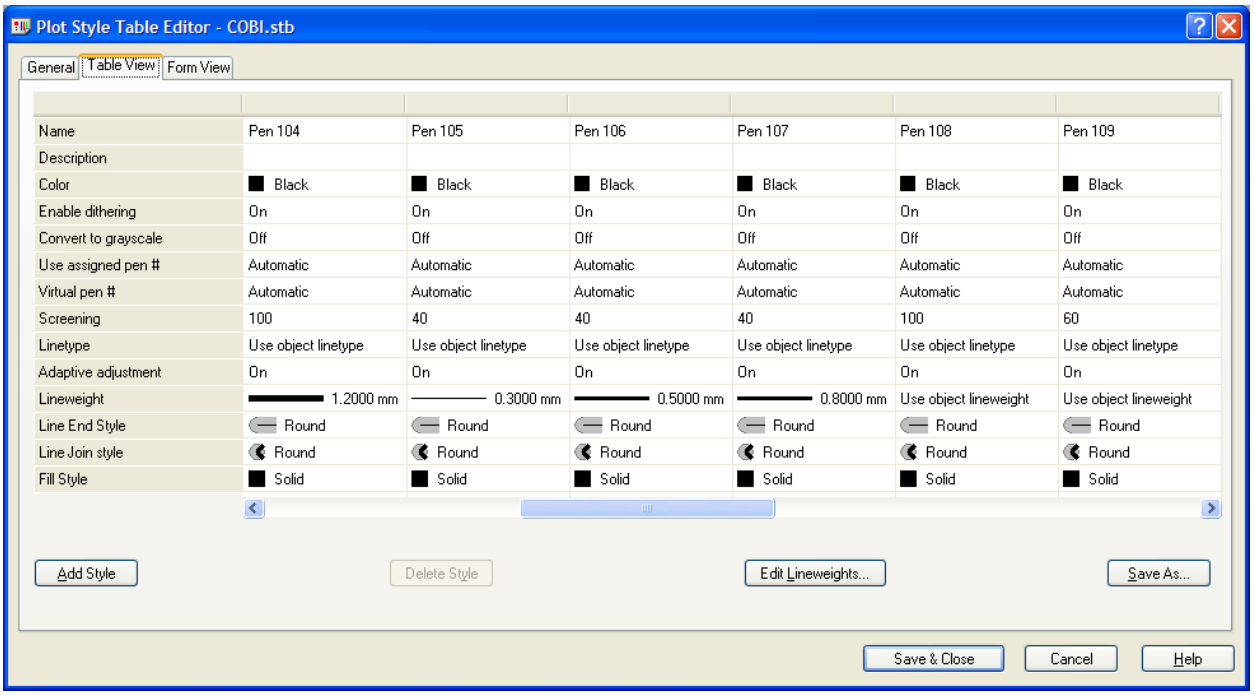
## COBI Plot Style Standard

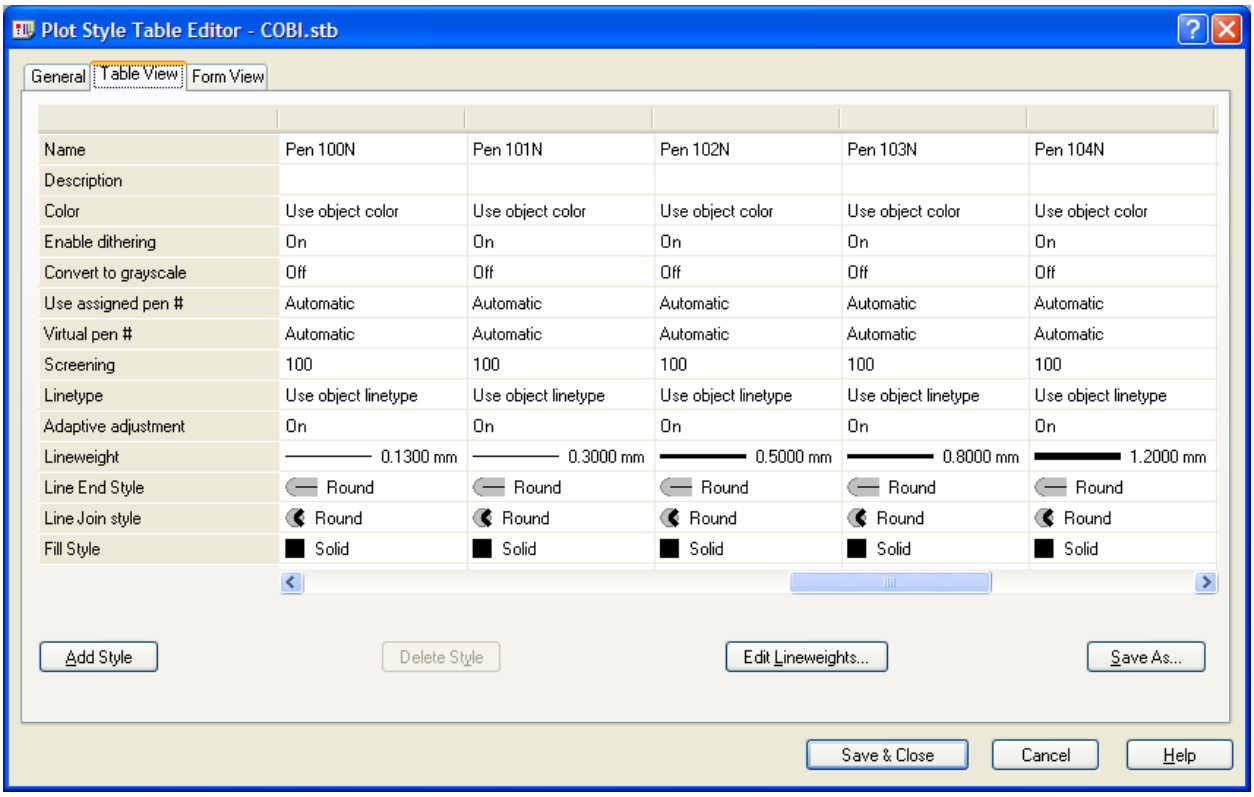
With the advent of Named Plot Styles (stb's) the plotted line weight no longer needs to be controlled by the layer or entity color. As always, the intent of a drawing is normally clarified with the use of different line weights. Different drawings and layouts may have different objectives (intents) and therefore the same entity may need to appear different in each of the drawings. For example, new curb and gutter and electrical conduit may appear differently in the electrical drawing than they would in the drawing used to construct the curb and gutter. However, it is required that they both be shown in each drawing. Thus the City of Bainbridge Island CAD Standard is based on this same idea. As has always been the industry standard to show this distinction by the use of 3 or 4 line weights and the use of screened (normally representing existing entities) and solid line intensity. This relationship of line weight and intensity is shown in the COBI.STB plot style table shown in this section.

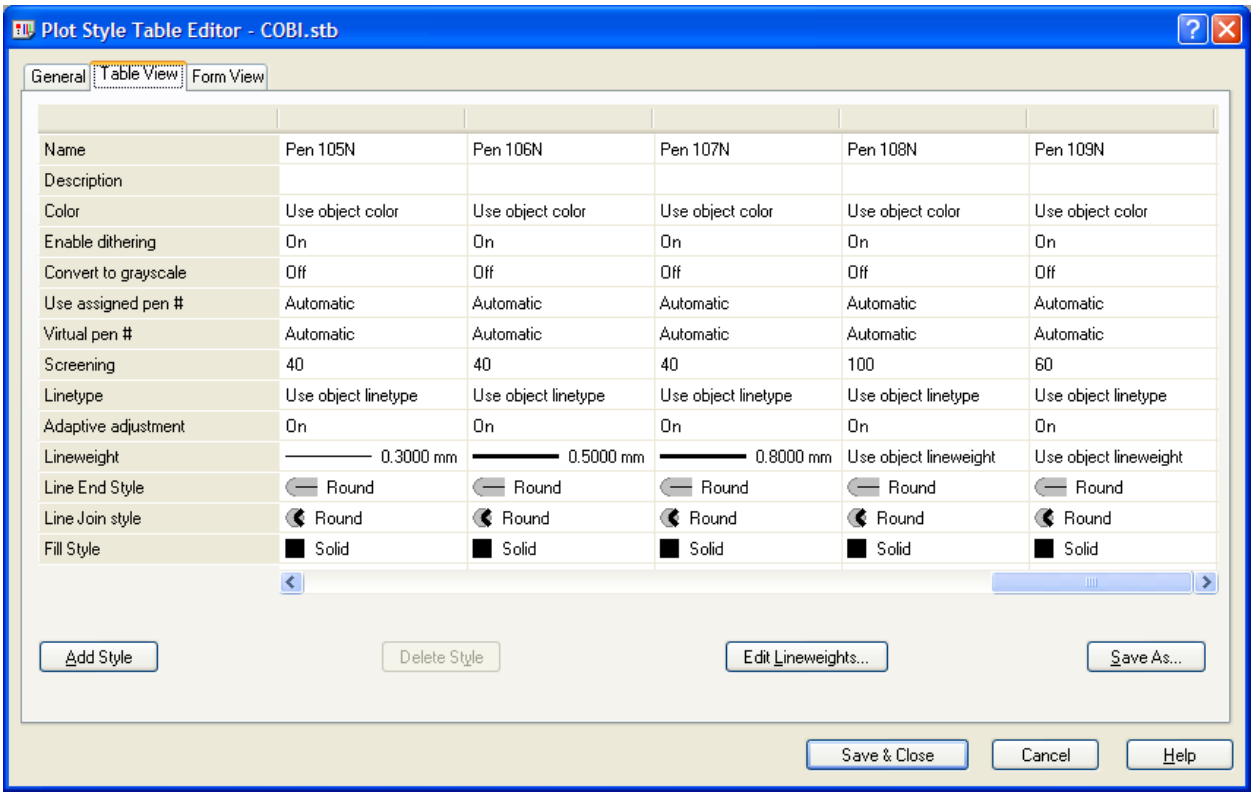
*Tip – Print the attached sheet "City of Bainbridge Island Plot Styles (COBI.STB) & 255 Color Palette" on your in-house printer/plotter used for draft and/or final production. This will give you an accurate preview of the colors and shades of gray that you have to print with.*

## COBI.STB


Plot Style Table Editor - COBI.stb
General
Table View
Form View
Name | Normal | Pen 0 | Pen 100 | Pen 101 | Pen 102 | Pen 103
Description
Color | Use object color | Use object color | Black | Black | Black | Black
Enable dithering | On | On | On | On | On | On
Convert to grayscale | Off | Off | Off | Off | Off | Off
Use assigned pen # | Automatic | Automatic | Automatic | Automatic | Automatic | Automatic
Virtual pen # | Automatic | Automatic | Automatic | Automatic | Automatic | Automatic
Screening | 100 | 0 | 100 | 100 | 100 | 100
Linetype | Use object linetype | Use object linetype | Use object linetype | Use object linetype | Use object linetype | Use object linetype
Adaptive adjustment | On | On | On | On | On | On
Lineweight | Use object lineweight | Use object lineweight | 0.1300 mm | 0.3000 mm | 0.5000 mm | 0.8000 mm
Line End Style | Use object end style | Round | Round | Round | Round | Round
Line Join style | Use object join style | Round | Round | Round | Round | Round
Fill Style | Use object fill style | Solid | Solid | Solid | Solid | Solid
Add Style
Delete Style
Edit Lineweights...
Save As...
Save & Close
Cancel
Help


Plot Style Table Editor - COBI.stb
General
Table View
Form View
Name | Pen 104 | Pen 105 | Pen 106 | Pen 107 | Pen 108 | Pen 109
Description
Color | Black | Black | Black | Black | Black | Black
Enable dithering | On | On | On | On | On | On
Convert to grayscale | Off | Off | Off | Off | Off | Off
Use assigned pen # | Automatic | Automatic | Automatic | Automatic | Automatic | Automatic
Virtual pen # | Automatic | Automatic | Automatic | Automatic | Automatic | Automatic
Screening | 100 | 40 | 40 | 40 | 100 | 60
Linetype | Use object linetype | Use object linetype | Use object linetype | Use object linetype | Use object linetype | Use object linetype
Adaptive adjustment | On | On | On | On | On | On
Lineweight | 1.2000 mm | 0.3000 mm | 0.5000 mm | 0.8000 mm | Use object lineweight | Use object lineweight
Line End Style | Round | Round | Round | Round | Round | Round
Line Join style | Round | Round | Round | Round | Round | Round
Fill Style | Solid | Solid | Solid | Solid | Solid | Solid
Add Style
Delete Style
Edit Lineweights...
Save As...
Save & Close
Cancel
Help


Plot Style Table Editor - COBI.stb
General
Table View
Form View
Name
Pen 100N
Pen 101N
Pen 102N
Pen 103N
Pen 104N
Description
Color
Use object color
Enable dithering
On
Convert to grayscale
Off
Use assigned pen #
Automatic
Virtual pen #
Automatic
Screening
100
Linetype
Use object linetype
Adaptive adjustment
On
Lineweight
0.1300 mm
0.3000 mm
0.5000 mm
0.8000 mm
1.2000 mm
Line End Style
Round
Line Join style
Round
Fill Style
Solid
Add Style
Delete Style
Edit Lineweights...
Save As...
Save & Close
Cancel
Help


Plot Style Table Editor - COBI.stb
General
Table View
Form View
Name
Pen 105N
Pen 106N
Pen 107N
Pen 108N
Pen 109N
Description
Color
Use object color
Enable dithering
On
Convert to grayscale
Off
Use assigned pen #
Automatic
Virtual pen #
Automatic
Screening
40
100
60
Linetype
Use object linetype
Adaptive adjustment
On
Lineweight
0.3000 mm
0.5000 mm
0.8000 mm
Use object lineweight
Line End Style
Round
Line Join style
Round
Fill Style
Solid
Add Style
Delete Style
Edit Lineweights...
Save As...
Save & Close
Cancel
Help

## COBI Standard AutoCAD Linetypes

All custom line types created for the City of Bainbridge Island CAD Standards are contained in the COBI-Support\COBI.LIN file. These line type definitions are consistent with those in AutoCAD's ACAD.LIN file and thus no longer require LTSCALE and PSLTSCALE settings different than the default AutoCAD settings (LTSCALE=1, PSLTSCALE=1). With this system, the line types will appear the same in all scaled viewports.

The line types were developed using the following standards:

- The overall appearance of the plotted line was determined by its appearance and clarity within a 20 scale viewport using the default plot style of the layer which would normally contain the line type. This scale being the standard for all non-architectural dwgs within the City of Bainbridge Island system. Note - all other scales must be approved by the City Project Manager.
- The standard line type name consists of three fields separated by a hyphen. The first field consists of "-COBI-",.The second field is a short abbreviation/description of the line's intended use or discipline (see table below). The third field indicates the annotation used in annotated line types. In non-annotated line types this field is used as a short, more definitive description. The optional forth field can be used for further clarification. For example, REV would indicate the line appears the opposite of a line type with the same name (only on directional lines). The use of HF is intended to indicate a line type which repeats in approximately half the distance as the line with the same name.
- Romans text style and Romans text font were use in all annotated line types. Therefore, a text style called ROMANS using a text font of ROMANS must be defined in the drawing before loading the City of Bainbridge Island line types.
- Text in annotated line types is intended to have a height of 0.1" in all viewports. The same line type is used for existing and new lines.

By setting the LTSCALE=20 in the model space base map the lines will appear as they will within the standard 20 scale viewport and make the line type text easy to read. However, since the LTSCALE variable is a drawing standard variable and not controlled by the layout the LTSCALE=20 requires one to change the LTSCALE factor after entering the layout or model space. Therefore, it is suggested that the base map be xrefed into the construction drawing file where the layout LTSCALE=1. This will eliminate the need to change the LTSCALE before plotting.

**Linetype Second Field Abbreviations Table**

| Second Field Abbreviation | Description |
|---|---|
| CD | Conduit (unknown Owner or Contents) |
| CL | Centerline lines |
| CNT | Contour Lines |
| CUT | Cut Limit |
| DITCH | Ditch Line |
| DRV | Edge of Driveway |
| EL | Generic Electrical lines |
| EPK | Edge of parking |
| ER | Edge of Road |
| ES | Edge of Shoulder |
| FILL | Fill Limit |
| FLOW | Gutter flow line |
| FN | Fence Line |
| FO | Fiber Optic Lines |
| FUEL | Fuel lines |
| G | Gas Line |
| GRID | Profile Grid Lines |
| GUARD | Guard Rail |
| IR | Irrigation Line |
| LFG | Landfill Gas Collection Line |
| PWR | Power Lines (Commercial Power Service i.e. PUD etc) |
| RW | Right-of-Way |
| SD | Storm Drainage Main |
| Section lines | Controlled by standard layers |
| SIG | Signal Cable |
| SL | Street Light |
| SS | Sanitary Sewer Main |
| STRIP | Striping Lines |
| TEL | Telephone |
| TLM | Telemetry Cable |
| TV | Cable Television |
| TID | Tidal lines |
| TOPO | Topographic lines |
| UT | Generic Utility Line |
| WTR | Water Main |
| WTRSV | Water Service |
| WTRFL | Fire Lines |

Refer to the Appendix for a complete listing of City of Bainbridge Island linetypes.

## COBI Standard Symbols

Block names are the same as the file name that they are stored in. They start with a two-character prefix followed by a hyphen. This allows all of the blocks to be sorted by discipline and improves readability. The System allows for new symbols to be defined provided that they are created on layer zero and their color, plot style and linetype are defined BYBLOCK. The attached City of Bainbridge Island Standard Symbols Blocks lists all of the currently defined blocks. The table shows a not-to-scale icon of the symbol, its file name, a description of what the symbol is intended to represent, whether the symbol is typically found in model or paper space and examples of the layers the symbol might be found on. The symbols library has been sorted by function and then stored in the COBI-Symbols Directory.

**Block/Symbol Name Table**

| 2-Character Block Prefix | Block Prefix Description |
|---|---|
| AC- | Accidents Diagrams |
| CH- | Non-Striped Channelization |
| EE- | Electrical Diagram Symbols |
| LD- | Landscaping and Vegetation |
| LT- | Light, Street Light or Other Light |
| ME- | Mechanical Diagram Symbols |
| NT- | Note Or Call Out Symbol |
| PV- | Pavement Or Curb And Gutter |
| RR- | Railroads |
| SF- | Surface Features Not Otherwise Specified |
| SG- | Signals |
| SH- | Sheet, Legends, North Arrow, Title Blocks, Etc |
| SN- | Signs |
| SP- | Striping |
| SV- | Survey, Section Lines |
| TB- | Data Table |
| TR- | Transit |
| UT- | Utilities |
| WD- | Wiring Diagram Component |
| WL- | Wall, Rockeries, Guardrails |

Refer to the Appendix for a complete listing of City of Bainbridge Island symbols.

## COBI Standard Abbreviation List

The following City of Bainbridge Island Abbreviations List includes the common abbreviations used in our AutoCAD drawings. These abbreviations should be used only if necessary to conserve space on the drawing. Some of the abbreviations come from the National CAD Standards, Version 4.0 list, but there are many more that can be found there. The abbreviations found here do not conflict with those found in the National CAD Standards, Version 4.0 list.

| Abbreviation | Description |
|---|---|
| **A** | |
| AB | Anchor Bolt |
| ABAN | Abandoned |
| ABBRV | Abbreviation |
| ABUT | Abutment |
| ADDM | Addendum, Addition |
| ADJ | Adjust |
| AFF | Above Finished Floor |
| AFG | Above Finish Grade |
| ALT | Alternate |
| ALY | ALLEY |
| AMEND | Amendment |
| AP | Angle Point |
| APPROX | Approximately |
| APWA | American Public Works Association |
| ARCH | Architect |
| ARV | Air Relief Valve |
| ASPH | Asphalt |
| AUX | Auxiliary |
| AVE | Avenue |
| AVG | Average |
| AWG | American Wire Gauge |
| **B** | |
| B | Black, Beam |
| BC | Back of Curb |
| BITUM | Bituminous |
| BK | Back |
| BL | Baseline, Blue, Building Line |
| BLDG | Building |
| BLK | Block |
| BLVD | Boulevard |
| BM | Bench Mark |
| BOL | Bollard |
| BOT | Bottom |
| BOW | Back of Walk |
| BRDG | Bridge |
| BRG | Bearing |
| BRK | Break |
| BTWN | Between |
| **C** | |
| C | Conductor, Channel, Column, Celsius |

| Abbreviation | Description |
|---|---|
| CL | Centerline |
| CAP | Capacity, capacitor |
| CB | Catch Basin, cement base |
| CB1 | Catch Basin Type 1 |
| CB2 | Catch Basin Type 2 |
| CC | Closing Corner, Concrete Curb, cubic centimeter |
| C TO C | Center to Center |
| CCd | Control Conduit |
| CCG | Concrete Curb & Gutter |
| CCGS | Concrete Curb, Gutter & S/W |
| CCL | Creek Center Line |
| CND | Conduit |
| C&G | Curb and Gutter |
| CHG | Charge |
| CHK | Check |
| CI | Cast Iron, Curb Inlet |
| CICL | Cast Iron Concrete Lined |
| CIP | Cast in Place, cast iron pipe |
| CIR | Circuit, Circle |
| CJ | Construction Joint, control joint |
| CL | Centerline, class, close |
| CLASS | Classification |
| CLF | Chain Link Fence, current limiting fuse |
| CLR | Clearance, Clear, color, cooler |
| CLY | Clay |
| CMP | Corrugated Metal Pipe |
| CMU | Concrete Masonry Unit |
| CND | Conduit |
| CNR | Corner |
| CNTY | County |
| CO | Clean Out, cased opening, cutout |
| COAX | Coaxial Cable |
| COBI | City of Bainbridge Island |
| COL | Column |
| COM | Common |
| COMM | Communicate |
| CONC | Concrete |
| CONN | Connection |
| CONSTR | Construct, Construction |
| CONT | Continued, Continuous, Control |
| COORD | Coordinate |

| Abbreviation | Description |
|---|---|
| COR | Change order request |
| CORR | Corrugated, corridor, correct |
| CRK | Creek |
| CRN | Crown of Road |
| CS | Combined SS & SD System, cast stone |
| CT | Court, Community Transit, count, ceramic tile, current transformer |
| CTR | Center, contour, cooling tower return |
| CTRE | Tree (conifer) |
| CU | Cubic, copper |
| CULV | Culvert |
| CYL | Cylinder |
| **D** | |
| D | Depth, Dipole |
| DB | Direct Burial Cable, database, dry bulb |
| D/L | Daylight |
| D/W | Driveway |
| DBL | Double |
| DCL | Ditch CL |
| DE | DE-Energize |
| DEG | Degree |
| DET | Detail or Detector |
| DI | Ductile Iron |
| DIA | Diameter |
| DIAPH | Diaphragm |
| DIP | Ductile Iron Pipe |
| DIR | Direction |
| DN | Down |
| DR | Drain, door, drive |
| DS | Down Spout, disconnect switch |
| DWG | Drawing |
| **E** | |
| E | East |
| EA | Each |
| ECb | Buried Electrical Cable |
| ECC | Eccentric |
| EF | Each Face |
| EJB | Electric Junction Box |
| EL | Easement Line, Elevation, each layer |
| ELB | Elbow |
| ELEC | Electrical |
| ELEV | Elevation |
| EMB | Embankment |
| EMH | Electrical Manhole |
| ENCL | Enclose |
| ENG | Engine |
| ENGR | Engineer |
| EO | Edge of, electrical outlet |
| EOA | Edge of Asphalt |
| EOC | Edge of Concrete |
| EOD | Edge of Dirt |
| EOG | Edge of Gravel |
| EOS | Edge of Slab |
| EP | Edge of Pavement, electrical panel |
| EQ | Equal |
| EQUIP | Equipment |
| EV | Electrical Vault |
| EVC | End Vertical Curve |

| Abbreviation | Description |
|---|---|
| EVP | Emergency Vehicle Pre-Emption |
| EW | Each Way |
| EX | Existing, Example |
| EXC | Excavation |
| EXIST | Existing |
| EXP | Expansion, exposed |
| EXP JT | Expansion Joint |
| EXT | Exterior, external, extinguisher |
| EXTN | Extension |
| EXTRU | Extrusion |
| **F** | |
| F | Fahrenheit, female, fireline |
| FAB | Fabricate |
| FDTN | Foundation |
| FF | Far Face, finish face |
| FF EL | Finished Floor elevation |
| FG | Finish Grade |
| FH | Fire Hydrant |
| FIG | Figure |
| FIN | Finish, Finished |
| FL | Fog Line, Flash, Flashing, Floor |
| FLD | Field |
| FLEX | Flexible |
| FLG | Flange |
| FLL | Flow line |
| FLTR | Filter |
| FM | From, Force Main |
| FN | Fence |
| FOC | Face of Curb, face of concrete |
| FOG | Fog Line |
| FOW | Face of Wall |
| FP | Full Penetration, Flag Pole |
| FRWY | Freeway |
| FT | Feet/Foot |
| FTG | Footing |
| FWD | Forward |
| FWPS | Finished Water Pump Station |
| **G** | |
| G | Gas Line, ground |
| GA | Gauge |
| GALV | Galvanized |
| GAR | Garage |
| GB | Green W/Black Tracer, Grade Break |
| GDR | Guard Rail |
| GDWY | Gravel Driveway |
| GE | Grate Elevation |
| GEN | Generator, general |
| GI | Galvanized Iron |
| GL | Glass, Gutter Line, ground level |
| GLV | Globe Valve |
| GM | Gas Meter, silty gravel |
| GND | Ground |
| GOVT | Government |
| GR | Gross |
| GRD | Ground, Grade |
| GV | Gate Valve, gravity vent |
| GVL | Gravel |
| GVT | Gas Vault |

| Abbreviation | Description |
|---|---|
| **H** | |
| H | Height, High |
| HB | Hose bibb |
| H-T | Hub & Tack |
| HCP | Handicap Parking Symbol |
| HD | Head |
| HDG | Hot Dipped Galvanized |
| HI | Height of Instrument |
| HORIZ | Horizontal |
| HPS | High Pressure Sodium, High Pressure Steam |
| HSB | High Strength Bolt |
| HSE | House |
| HT | Height of Target, height |
| HTS | Heights |
| HW | Hot Water |
| HWY | Highway |
| HYDR | Hydraulic |
| **I** | |
| I | Iron, interstate |
| ID | Inside Diameter, identification, inside dimension |
| IDENT | Identification |
| IE | Invert Elevation |
| IF | Inside Face |
| IL | Inlet |
| ILLUM | Illuminate |
| IMSA | International Municipal Signal Assoc. |
| IN | Inch/Inches |
| INCL | Include |
| INCR | Increase, increment |
| IND | Indicator, independent, industrial |
| INDUCT | Inductance |
| INST | Instrument |
| INSTL | Install |
| INSUL | Insulation |
| INT | Intersection, Internal. interior |
| INV | Invert, Inverse |
| INV EL | Invert Elevation |
| IP | Iron Pipe |
| IS | Island |
| ITE | Institute of Transportation Engineering |
| **J** | |
| JB | Junction Box, Jersey Barrier |
| J-BOX | Junction box |
| JCT | Junction |
| JNX | Junction |
| JT | Joint |
| **K** | |
| KG | Kilogram |
| KHZ | Kilohertz |
| KM | Kilometer |
| KV | Kilovolt |
| KW | Kilowatt |
| KWH | Kilowatt Hour |
| **L** | |
| L | Length of Arc, Traffic Detection Loop |

| Abbreviation | Description |
|---|---|
| LAB | Laboratory |
| LAT | Lateral, Latitude |
| LBS | Pounds |
| LEN | Length |
| LF | Linear Foot/Feet |
| LIM | Limit |
| LK | Lake |
| LOC | Locate |
| LONG | Longitudinal, Longitude |
| LP | Lamp, Light Pole, liquid petroleum |
| LT | Left, Light |
| LUMIN | Luminaire |
| LWR | Lower |
| **M** | |
| M | Meter, Mile |
| M/L | Monument Line |
| MA | Traffic Detection Magnetometer |
| MACH | Machine |
| MAINT | Maintenance |
| MATL | Material |
| MAX | Maximum |
| MB | Mailbox |
| MC | Meander Corner |
| MECH | Mechanical |
| MED | Medium |
| MER | Meridian |
| MFR | Manufacture |
| MH | Manhole |
| MHHW | Mean Higher High Water |
| MHT | Mean High Tide |
| MHW | Mean High Water |
| MIC | Monument In Case |
| MID | Middle |
| MIL | Military |
| MIN | Minimum, Minute, Minor |
| MISC | Miscellaneous |
| MJ | Mechanical Joint |
| MKR | Marker |
| ML | Match Line |
| MLLW | Mean Lower Low Water |
| MLCSP | Mortar lined & Coated Steel Pipe |
| MLTCS | Mortar Lined Tape Coated Steel Pipe |
| MLECSP | Mortar Lined Epoxy Coated Steel Pipe |
| MLT | Mean Low Tide |
| MLW | Mean Low Water |
| MOD | Modification |
| MON | Monument |
| MPOC | Midpoint On Curve |
| MSNRY | Masonry |
| MT | Mean Tide |
| MUTCD | Manual On Uniform Traffic Control Devices |
| **N** | |
| N | North |
| NA | Not Applicable |
| NAUT | Nautical |
| NEG | Negative |
| NEMA | National Electrical Manufacturers |

| Abbreviation | Description |
|---|---|
| | Association |
| NEUT | Neutral |
| NF | Near Face |
| NIC | Not in Contract |
| NO | Number |
| NOM | Nominal |
| NTS | Not To Scale |
| **O** | |
| O | Orange, oxygen |
| O-XING | Overhead Crossing |
| OB | Orange with Black Tracer |
| OC | On Center |
| OD | Outside Diameter, outside dimension |
| OF | Outside Face |
| OH | Overhead, overhang |
| OL | Overlap Phase, overload |
| OHP | Overhead Power |
| OHW | Ordinary High Water |
| OPNG | Opening |
| OPP | Opposite |
| OPR | Operate |
| OPT | Optic, optional, optimum |
| ORIG | Original |
| OT | Overhead Telephone |
| OZ | Ounce |
| **P** | |
| P | Pole, Power |
| P/C | Pre-cast |
| P/L | Property Line |
| P/S | Pre-stressed |
| P/T | Post Tensioned |
| PAR | Parallel, Parcel |
| PC | Point of Curve,piece, Portland cement |
| PCC | Point of Compound Curve, precast concrete |
| PD | Perforated Drain Line |
| PE | Plain End |
| PED | Pedestrian, Pedestal |
| PERM | Permanent |
| PERP | Perpendicular |
| PH | Phase |
| PI | Point of Intersection |
| PKWY | Parkway |
| PL | Property line, Plain Bar, Plate, Plug |
| PLAS | Plastic, plaster |
| PLC | Place |
| PLSS | Public Land Survey System |
| POA | Pole Orientation Angle |
| POC | Point On Curve, Point of Vertical Curve |
| POS | Positive, Position |
| PPB | Pedestrian Push Button |
| PPBP | Pedestrian Push Button Post |
| PR | Pair, pipe rail |
| PRC | Point of Reverse Curve |
| PROJ | Project |
| PROP | Property |
| PRV | Pressure Reducing Valve, pr3essure relief valve |

| Abbreviation | Description |
|---|---|
| PSI | Pounds per Square Inch |
| PT | Point of Tangency, Point |
| PUD | Public Utility District of Kitsap County |
| PV | Power Vault, paved |
| PVC | Polyvinyl Chloride |
| PVMT | Pavement |
| PVRC | Point of Vertical Reverse Curve |
| PVT | Point of Vertical Tangency |
| PWR | Power |
| **Q** | |
| Q | Quadruple, heat transfer, rate of flow |
| QC | Quarter Corner, quality control |
| QT | Quart |
| QTR | Quarter |
| QTY | Quantity |
| QUAD | Quadrant, Quadrangle |
| QUAL | Quality |
| **R** | |
| R | Radius, range |
| R-C | Rebar & Cap |
| R/W | Right-of-Way |
| RA | Raised, return air |
| RB | Red with Black Tracer |
| RC | Reinforced Concrete |
| RCCP | Reinforced Concrete Culvert Pipe |
| RCKY | Rockery |
| RCP | Reinforced Concrete Pipe |
| RD | Road, Round, roof drain |
| RECD | Received |
| RECT | Rectangle |
| REF | Reference |
| REG | Regular |
| REINF | Reinforced |
| REM | Remove, Removed |
| REPL | Replace, Replaced |
| REQ | Required |
| RET | Retaining, return |
| RETW | Retaining Wall |
| RIV | River |
| RLD | Rolled |
| RMC | Rigid Metal Conduit |
| ROW | Right of Way |
| RPT | Report |
| RR | Railroad |
| RRC | Railroad Crossing |
| RRCS | Railroad Crossing Signal |
| RRG | Railroad Crossing Gate |
| RT | Right |
| **S** | |
| S | South, Slab, Slope |
| S/L | Survey Line |
| S/W | Sidewalk |
| SAN | Sanitary |
| SB | Soil Boring, splash block |
| SC | Section Corner |
| SCb | Shielded Cable |
| SCC | Closing Corner |
| SCEN | Section Center |

| Abbreviation | Description |
|---|---|
| SCHED | Schedule |
| SD | Storm Drain |
| SDMH | Storm Drain Manhole |
| SE | Spot Elevation, Southeast |
| SEC | Second |
| SECT | Section |
| SEG | Segment |
| SEP | Separate |
| SERV | Service |
| SEP TNK | Septic Tank |
| SEW | Sewage |
| SHLD | Shielded |
| SHLDR | Shoulder |
| SHT | Sheet, shaft |
| SIG | Signal |
| SIM | Similar |
| SL | Sea Level, Span Length, Section Line |
| SLJB | Street Lighting Junction Box |
| SLP | Slope |
| SLS | Stainless Steel |
| SLV | Sleeve |
| SM | Small, silty sand |
| SN | Sign |
| SOV | Shut-off Valve |
| SP | 1 Shielded Pair, Single Cable, Span Wire, Spiral Space, Specific, sump pit, stand pipe |
| SPA | Space/Spaces |
| SPC | Shielded Individual Single Cable |
| SPCb | Shielded, Twisted pairs in a Single Cable |
| SPEC | Specifications |
| SQ | Square |
| SS | Sanitary Sewer |
| SSCO | Sanitary Sewer Cleanout |
| SSMH | Sanitary Sewer Manhole |
| SSXC | Sixteenth Corner |
| ST | Straight, Street, Straight Bar, stairs |
| STA | Station |
| STAG | Staggered |
| STD | Standards |
| STIR | Stirrup |
| STL | Steel |
| STLT | Street Light |
| STP | Lane Stripes |
| STPS | Steps |
| STR | Stream, straight |
| SUB | Substitute |
| SURF | Surface |
| SURV | Survey |
| SVL | Survey Line |
| SW | Switch, Sidewalk |
| SWPP | AKA TESCP |
| SYM | Symmetrical, Symbol |
| SYS | System |
| **T** | |
| T | Top, Tangent |
| T&B | Top & Bottom |
| TAB | Tabulate |

| Abbreviation | Description |
|---|---|
| TAN | Tangent |
| TB | Thrust Block |
| TBM | Temporary Benchmark |
| TCB | Buried Telephone Cable |
| TEBO | Telephone Booth |
| TESC | Temp Erosion & Sedimentation Control |
| TK | Thick |
| TEL | Telephone |
| TEMP | Temporary, temperature |
| TJB | Telephone Junction Box |
| TMH | Telephone Manhole, Top of manhole |
| TOC | Top of Curve, Top of Curb, Table of Contents, Top of Concrete |
| TOC WALL | Top of Concrete Wall |
| TOE | Concave Slope Break |
| TOP | Convex Slope Break |
| TOPO | Topography |
| TOS | Top Of Slab |
| TOW | Top of Wall |
| TP | Twisted Pairs, Test Pit |
| TPOL | Traffic signal Pole |
| TR | Traffic, Telephone Riser |
| TRAN | Transition |
| TRJB | Traffic Control Junction Box |
| TS | Test Station |
| TSD | Traffic Sign Double Post |
| TSS | Traffic Sign Single Post |
| TUN | Tunnel |
| TV | Television, TV Vault |
| TWST | Twisted |
| TYP | Typical |
| **U** | |
| UDS | Utility Duct System |
| UG | Underground |
| UGND | Underground |
| UGPC | Underground Power Cable |
| UGTS | Underground Telephone Cable |
| UNGD | Underground |
| UNO | Unless Noted Otherwise |
| UP | Utility Pole |
| UPA | Utility Pole Anchor |
| UTIL | Utility |
| **V** | |
| V | Valve, Voltage |
| VAR | Varies, Variable |
| VB | Valve Box, Vapor Barrier |
| VEH | Vehicle |
| VERT | Vertical |
| VLT | Vault |
| VP | Vent Pipe |
| VPC | Vertical Curve PC |
| VPCC | Vertical Curve PCC |
| VPI | Vertical Curve PI |
| VPRC | Vertical Curve PRC |
| VPT | Vertical Curve PT |
| **W** | |
| W | West, Width, Water Line, White, waste, wide, watt |

| Abbreviation | Description |
|---|---|
| W/ | With |
| WB | White with Black Tracer |
| WC | Witness Corner, water closet |
| WCR | Wheel Chair Ramp |
| WGV | Water Gate Valve |
| WHSE | Warehouse |
| WK | Walk |
| WL | Water Line |
| WM | Water Meter, Water Main |
| W/O | Without |
| WO | Work Order, where occurs |
| WP | Work Point, Water Pump |
| WSDOT | Wash St Dept of Transportation |

| Abbreviation | Description |
|---|---|
| WT | Watts, Weight, Water Table |
| WV | Water Valve |
| WW | Wing Wall |
| **X** | |
| X-BM | Cross Beam |
| X-RD | Cross Road |
| XFOC | Extruded Face of Curb |
| **Y** | |
| Y | Yellow |
| YD | Yard, yard drain, yard drainage pipe |

# Appendix

Table of Contents

The following data can be requested from the Engineering Department on digital media.