



**Department of  
Veterans Affairs**

# **VHA National CAD Standard Application Guide**

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Department of Veterans Affairs  
Veterans Health Administration  
Office of Facilities Management

**FOREWORD**

In order to establish drafting standards for the preparation of design and construction documents using Computer Aided Drafting, VA has adopted the entire National CAD Standard, latest release, and amended by this guide.

For topics not addressed in this Guide, the procedures and standards in VA Program Guides PG-18-3, Design and Construction Procedures; and PG-18-15, A/E Submission Instructions shall be utilized to the maximum extent practicable, commensurate with cost considerations.

Use of this Guide and the National CAD Standard is mandatory for Office of Facilities Management Major, Minor and Design-Build projects. Its use is encouraged for minor and miscellaneous projects at all levels.

The VHA National CAD Standard Application Guide does not apply to National Cemetery Administration projects. Refer to [National Cemetery System Computer-Aided Design and Drafting Standards Manual](#) located in the Technical Information Library (TIL).

Kurt D. Knight  
Director, Facilities Quality Service (181A)

**TABLE OF CONTENTS**

| <b>SECTION</b>   | <b>PAGE</b> |
|--|-------------|
| 1. Introduction.....   | 1           |
| 2. CAD Software .....  | 1           |
| 3. Superseded Documents.....                                   | 1           |
| 4. National CAD Standard Application Guide .....               | 2           |
| 4.1 Adoption of National CAD Standard.....                     | 2           |
| 4.2 Amendments to AIA Layer Guidelines.....                    | 2           |
| 4.3 Amendments to Tri-Services Plotting Guidelines.....        | 2           |
| 4.4 Amendments to CSI Module 1, Drawing Set Organization ..... | 3           |
| Drawing Name Prefix Table.....                                 | 3           |
| Sheet Naming Components .....                                  | 3           |
| Sheet Numbers.....   | 6           |
| File Naming .....  | 6           |
| Example File names and Sheet Numbers (Single Building) .....   | 6           |
| Example File names and Sheet Numbers (Multi-Building).....     | 7           |
| 4.5 Amendments to CSI Module 2, Sheet Organization.....        | 7           |
| Title Block .....  | 7           |
| 4.6 Amendments to CSI Module 3, Schedules .....                | 7           |
| 4.7 Amendments to CSI Module 4, Drafting Conventions.....      | 8           |
| Text.....  | 8           |
| Headings, Titles, Plan Area Labels, Etc. ....                  | 8           |
| Metric Usage.....  | 8           |
| Depiction of Smoke Barriers and Fire-rated Partitions.....     | 8           |
| 4.8 Amendments to CSI Module 5, Terms and Abbreviations .....  | 8           |
| 4.9 Amendments to CSI Module 6, Symbols.....                   | 8           |
| 4.10 Amendments to CSI Module 7, Notations .....               | 9           |
| 4.11 Amendments to CSI Module 8, Code Conventions .....        | 9           |
| 5. STANDARD DETAILS.....                                       | 9           |
| 6. APPENDIX A.....   | 10          |
| Example General Layer List .....                               | 10          |
| Example Survey Layer List.....                                 | 10          |
| Example Civil Layer List.....                                  | 12          |
| Example Architectural Layer List .....                         | 14          |
| Example Structural Layer List .....                            | 14          |
| Example Mechanical Layer List.....                             | 15          |
| Example Fire Protection Layer List .....                       | 16          |
| Example Plumbing Layer List.....                               | 16          |
| Example Inside Steam Distribution Layer List.....              | 16          |
| Example Outdoor Steam Distribution Layer List .....            | 17          |
| Example Electrical Layer List .....                            | 18          |

## 1. INTRODUCTION

The Department of Veterans Affairs, in order to standardize and update and its requirements for CAD documents, is adopting the United States National CAD Standard, Version 3.1. The National CAD Standard is a publication of the Facility Information Council of the National Institute of Building Sciences, and may be obtained from NIBS at the following website: [www.nationalcadstandard.org](http://www.nationalcadstandard.org). The standard is a system for organizing and classifying “drawing centric” building design data, including: a system for naming model files, drawing files, and drawing file layers; a system for organizing the drawing set according to drawing set hierarchy, drawing sheet layout and format, and schedule layout and format; and plotting guidelines.

The VHA National CAD Standard Application Guide establishes the National CAD Standard as the required basis for CAD documents, and defines amendments that consist of selected VA-specific CAD requirements which will be retained on a going-forward basis. It also identifies VA documents in the Technical Information Library (TIL) that it supersedes, and identifies a number of additional VA documents and procedures that have been modified to bring them into alignment with the National CAD Standard and the VHA National CAD Standard Application Guide.

Information about the implementation and application of the National CAD Standard and this Application Guide may be found at <http://www.va.gov/facmgt/standard/>.

The standard VA title block, a template drawing sheet, and a standard AutoCAD.ctb file may be found in the TIL at <http://www.va.gov/facmgt/standard/details.asp>.

## 2. CAD SOFTWARE

The recommended CAD software platform is AutoCAD 2000 or AutoCAD LT 2000 by Autodesk, Inc. More recent AutoCAD releases are acceptable, with downwards compatibility to the 2000 release.

Other CAD software platforms are acceptable if their output files are convertible to .dwg format with an acceptable level of accuracy. Other CAD software platforms may also be acceptable or required in order to match that currently in use at a particular Medical Center. The Medical Center will choose the particular CAD platform required; the Medical Centers are urged to strive to employ a uniform CAD platform.

## 3. SUPERSEDED DOCUMENTS

The following VA CAD-related documents are superseded by this National CAD Standard Application Guide and the National CAD Standard:

| <u>Document</u>       | <u>Section</u>                                 |
|-----------------------|--|
| Program Guide PG-18-3 | Section 6, Topic 2                             |
| Program Guide PG-18-4 | Layer List, Pen Settings, Linetype Assignments |
| Program Guide PG-18-6 | Color, Pen Number, and Pen Weight              |

Program Guide PG-18-15

CADD Deliverable Guidelines (except for materials specific to the National Cemetery Administration)

## **4. NATIONAL CAD STANDARD APPLICATION GUIDE**

### **4.1 Adoption of National CAD Standard**

Basic materials from the National CAD Standard are essential for uniform CAD document organization. The following modules of the National CAD Standard are hereby adopted and made a part of this document by reference:

- Layer Guidelines – American Institute of Architects
- Plotting Guidelines – Tri-Services CADD/GIS Center/US Coast Guard
- Uniform Drawing System – Module 1, Drawing Set Organization - CSI
- Uniform Drawing System – Module 2, Sheet Organization - CSI
- Uniform Drawing System – Module 3, Schedules
- Uniform Drawing System – Module 4, Drafting Conventions
- Uniform Drawing System – Module 5, Terms and Abbreviations
- Uniform Drawing System – Module 6, Symbols

The modules shall be amended as indicated herein.

The following modules of the National CAD Standard though recommended are not adopted:

- Uniform Drawing System – Module 7, Notations
- Uniform Drawing System – Module 8, Code Conventions

### **4.2 Amendments to AIA Layer Guidelines**

The National CAD Standard Application Guide establishes colors for the most commonly used layers. Refer to Appendix A for tables containing this information.

### **4.3 Amendments to Tri-Services Plotting Guidelines**

The National CAD Standard establishes plotting requirements for each color. See Appendix A for layer, color, and pen weight assignments of the most commonly used layers. The colors listed in Appendix are AutoCAD specific, for other CAD software platforms refer to the National CAD Standard, Tri-Services Plotting Guidelines. Note that halftone is equal to a 50% screen with the exception of 251 which is 15% screen.

**An AutoCAD CTB file which complies with the Tri-Services Plotting Guidelines can be obtained from the VA TIL.**

**4.4 Amendments to CSI Module 1, Drawing Set Organization**

VHA Program Guide PG-18-3, Topic 2, Drawings, lists discipline classifications. This National CAD Standard (NCS) Application Guide supersedes PG-18-3, Section 6 of Topic 2, Identification of Drawings. The following table maps the superseded VA classifications to the CSI classifications:

| <b>Drawing Name Prefix Table</b>                          |                          |                             |                    |
|---|--------------------------|-----------------------------|--------------------|
| <b>Drawing Type</b>                                       | <b>Superseded Prefix</b> | <b>NCS Compliant Prefix</b> | <b>Appendix #*</b> |
| Cover & Index of Drawings                                 | X                        | GI                          | UDS 01.35          |
| Critical Path Method                                      | CPM                      | GC                          | UDS 01.35          |
| Site Development  | L                        | GS                          | UDS 01.36          |
| Sub-Surface investigation                                 | B                        | BI                          | UDS 01.10          |
| Asbestos Removal  | ASB                      | HA                          | UDS 01.35          |
| Architectural   | -                        | AS                          | UDS 01.37          |
| Architectural details**                                   | DE                       | AS**                        | UDS 01.17**        |
| Plumbing  | P                        | PL                          | UDS 01.39          |
| Sanitary  | W                        | CU                          | UDS 01.36          |
| Structural  | S                        | SS                          | UDS 01.36          |
| Heating, Ventilating, Air Conditioning, and Refrigeration | H                        | MH                          | UDS 01.40          |
| Steam Generation  | G                        | MP                          | UDS 01.40          |
| Outside Steam Distribution                                | D                        | MS                          | UDS 01.36          |
| Electrical  | E                        | ES                          | UDS 01.40          |
| Fire Protection   | FP                       | FA                          | UDS 01.39          |

\* Appendix located in National CAD Standard Volume 1, Drawing Set Organization  
 \*\* Prefix is dependent on discipline. Detail sheets are type 5 drawings.

The table above contains only information on updates for the superseded prefixes; the following tables contain a more comprehensive list.

| <b>Sheet Naming Components</b> |                              |                           |                           |                    |                               |
|--------------------------------|------------------------------|---------------------------|---------------------------|--------------------|-------------------------------|
| <b>Level 1 Discipline</b>      | <b>Discipline Designator</b> | <b>Level 2 Discipline</b> | <b>Level 2 Designator</b> | <b>Sheet Type*</b> | <b>Sheet Type Designator*</b> |
| General                        | G                            | Information               | I                         | General            | 0                             |
|                                |                              | Contractual               | C                         | Plans              | 1                             |
|                                |                              | Resource                  | R                         | Elevations         | 2                             |
| Hazardous Materials            | H                            | Asbestos                  | A                         | Sections           | 3                             |
|                                |                              | Chemicals                 | C                         | Large-Scale Views  | 4                             |
|                                |                              | Lead                      | L                         | Details            | 5                             |
|                                |                              | PCB                       | P                         | Schedules and      | 6                             |

| Sheet Naming Components |                       |                          |                    |                    |                        |
|-------------------------|-----------------------|--------------------------|--------------------|--------------------|------------------------|
| Level 1 Discipline      | Discipline Designator | Level 2 Discipline       | Level 2 Designator | Sheet Type*        | Sheet Type Designator* |
|                         |                       |                          |                    | Diagrams           |                        |
|                         |                       | Refrigerants             | R                  | User Defined       | 7                      |
| Survey/Mapping          | V                     | Aerial                   | A                  | User Defined       | 8                      |
|                         |                       | Field                    | F                  | 3D Representations | 9                      |
|                         |                       | Digital                  | I                  |                    |                        |
| Geotechnical            | B                     | User Defined             | J & K *            |                    |                        |
| Civil Works             | W                     | User Defined             | J & K *            |                    |                        |
| Civil                   | C                     | Demo                     | D                  |                    |                        |
|                         |                       | Site                     | S                  |                    |                        |
|                         |                       | Grading                  | G                  |                    |                        |
|                         |                       | Paving                   | P                  |                    |                        |
|                         |                       | Improvements             | I                  |                    |                        |
|                         |                       | Transportation           | T                  |                    |                        |
|                         |                       | Utilities                | U                  |                    |                        |
| Landscape               | L                     | Demo                     | D                  |                    |                        |
|                         |                       | Irrigation               | I                  |                    |                        |
|                         |                       | Planting                 | P                  |                    |                        |
| Structural              | S                     | Demo                     | D                  |                    |                        |
|                         |                       | Site                     | S                  |                    |                        |
|                         |                       | Substructure             | B                  |                    |                        |
|                         |                       | Framing                  | F                  |                    |                        |
| Architectural           | A                     | Demo                     | D                  |                    |                        |
|                         |                       | Site                     | S                  |                    |                        |
|                         |                       | Elements                 | E                  |                    |                        |
|                         |                       | Interiors                | I                  |                    |                        |
|                         |                       | Finishes                 | F                  |                    |                        |
|                         |                       | Graphics                 | G                  |                    |                        |
| Interiors               | I                     | Demo                     | D                  |                    |                        |
|                         |                       | Design                   | N                  |                    |                        |
|                         |                       | Furnishings              | F                  |                    |                        |
|                         |                       | Graphics                 | G                  |                    |                        |
| Equipment               | Q                     | Athletic                 | A                  |                    |                        |
|                         |                       | Bank                     | B                  |                    |                        |
|                         |                       | Canteen (Food Services)  | C                  |                    |                        |
|                         |                       | Detention                | D                  |                    |                        |
|                         |                       | Educational              | E                  |                    |                        |
|                         |                       | Food Service (Nutrition) | F                  |                    |                        |
|                         |                       | Hospital                 | H                  |                    |                        |
|                         |                       | Laboratory               | L                  |                    |                        |
|                         |                       | Maintenance              | M                  |                    |                        |
|                         |                       | Parking Lot              | P                  |                    |                        |
|                         |                       | Canteen Retail           | R                  |                    |                        |
|                         |                       | Site                     | S                  |                    |                        |
|                         |                       | Textile Care (Laundry)   | T                  |                    |                        |
|                         |                       | Video                    | V                  |                    |                        |
|                         |                       | Security                 | Y                  |                    |                        |
| Fire Protection         | F                     | Detection & Alarm        | A                  |                    |                        |

| <b>Sheet Naming Components</b> |                              |                           |                           |                    |                               |
|--------------------------------|------------------------------|---------------------------|---------------------------|--------------------|-------------------------------|
| <b>Level 1 Discipline</b>      | <b>Discipline Designator</b> | <b>Level 2 Discipline</b> | <b>Level 2 Designator</b> | <b>Sheet Type*</b> | <b>Sheet Type Designator*</b> |
| Plumbing                       | P                            | Suppression               | X                         |                    |                               |
|                                |                              | Demo                      | D                         |                    |                               |
|                                |                              | Site                      | S                         |                    |                               |
|                                |                              | Piping                    | P                         |                    |                               |
|                                |                              | Equipment                 | Q                         |                    |                               |
| Process                        | D                            | Plumbing                  | L                         |                    |                               |
|                                |                              | Demo                      | D                         |                    |                               |
|                                |                              | Site                      | S                         |                    |                               |
|                                |                              | Liquid                    | L                         |                    |                               |
|                                |                              | Gases                     | G                         |                    |                               |
|                                |                              | Piping                    | P                         |                    |                               |
|                                |                              | Equipment                 | Q                         |                    |                               |
|                                |                              | Electrical                | E                         |                    |                               |
|                                |                              | Instrumentation           | I                         |                    |                               |
|                                |                              | Waters                    | W                         |                    |                               |
|                                |                              | Chemicals                 | C                         |                    |                               |
|                                |                              | Airs                      | A                         |                    |                               |
|                                |                              | Exhaust                   | X                         |                    |                               |
|                                |                              | Drains & Reclaims         | R                         |                    |                               |
|                                |                              | HPM Gases                 | M                         |                    |                               |
| Slurry                         | Y                            |                           |                           |                    |                               |
| Oils                           | O                            |                           |                           |                    |                               |
| Vacuum                         | V                            |                           |                           |                    |                               |
| Mechanical                     | M                            | Demo                      | D                         |                    |                               |
|                                |                              | Site                      | S                         |                    |                               |
|                                |                              | HVAC                      | H                         |                    |                               |
|                                |                              | Piping                    | P                         |                    |                               |
|                                |                              | Instrumentation           | I                         |                    |                               |
| Electrical                     | E                            | Demo                      | D                         |                    |                               |
|                                |                              | Site                      | S                         |                    |                               |
|                                |                              | Power                     | P                         |                    |                               |
|                                |                              | Lighting                  | L                         |                    |                               |
|                                |                              | Instrumentation           | I                         |                    |                               |
|                                |                              | Telecomm                  | T                         |                    |                               |
|                                |                              | Auxiliary System          | Y                         |                    |                               |
|                                |                              | Audio/Visual              | A                         |                    |                               |
| Telecomm                       | T                            | Clock & Program           | C                         |                    |                               |
|                                |                              | Intercom                  | I                         |                    |                               |
|                                |                              | Monitoring                | M                         |                    |                               |
|                                |                              | Data Networks             | N                         |                    |                               |
|                                |                              | Telephone                 | T                         |                    |                               |
|                                |                              | Security                  | Y                         |                    |                               |
|                                |                              | Civil                     | C                         |                    |                               |
|                                |                              | Structural                | S                         |                    |                               |
| Resource                       | R                            | Architectural             | A                         |                    |                               |
|                                |                              | Mechanical                | M                         |                    |                               |
|                                |                              | Electrical                | E                         |                    |                               |
|                                |                              | User Defined              | J & K *                   | User Defined       |                               |
| Other Disciplines              | X                            | User Defined              | J & K *                   |                    |                               |
| Contractor/Shop Drawings       | Z                            | User Defined              | J & K *                   |                    |                               |

| <b>Sheet Naming Components</b> |                              |                           |                           |                    |                               |
|--------------------------------|------------------------------|---------------------------|---------------------------|--------------------|-------------------------------|
| <b>Level 1 Discipline</b>      | <b>Discipline Designator</b> | <b>Level 2 Discipline</b> | <b>Level 2 Designator</b> | <b>Sheet Type*</b> | <b>Sheet Type Designator*</b> |
| Operations                     | O                            | User Defined              | J & K *                   |                    |                               |
|                                |                              |                           |                           |                    |                               |

\*Can be used with all Disciplines

## Sheet Numbers

Project Sheet Numbers, as defined in CSI Module 1, are to be prefixed with the building number. When a drawing reflects work that is associated with several buildings or the station in general, such as detail sheets and exterior utility distribution systems, no building number will precede the discipline designators as defined in CSI Module 1 or in the above table. When sheets are printed they should be organized according to CSI Module 1. If a project contains multiple buildings the drawings will be organized by discipline designator not by building number (i.e. a project contains building 100 and 120, when the drawings are organized all the civil sheets for both buildings are put together, then the architectural sheets for both buildings, etc).

## File Naming

The Department of Veterans Affairs, in order to standardize, update, and organize its CAD documents, requires strict compliance with the file naming conventions specified herein.

The VA requires that project filenames, as defined in CSI Module 1, are to be prefixed with the station number, project number, and the building number, separated by periods. When a drawing reflects work that is associated with several buildings or the station in general, such as detail sheets and exterior utility distribution systems, no building number will precede the discipline designators as defined in CSI Module 1 or in the above table.

| <b>Example File names and Sheet Numbers (Single Building)</b> |                  |                  |                   |                    |
|---|------------------|------------------|-------------------|--------------------|
| <b>Drawing Title</b>  | <b>Station #</b> | <b>Project #</b> | <b>Building #</b> | <b>NCS Sheet #</b> |
| Cover sheet   | 111.             | 2222.            | 333.              | GI001              |
| Index   | 111.             |                  | 333.              | GI002              |
| Asbestos Removal Plan   | 111.             |                  | 333.              | HA101              |
| Asbestos Removal Section                                      | 111.             |                  | 333.              | HA301              |
| Civil Demolition  | 111.             |                  | 333.              | CD101              |
| Civil Site  | 111.             |                  | 333.              | CS101              |
| Architectural Demolition                                      | 111.             |                  | 333.              | AD101              |
| Architectural Plan  | 111.             |                  | 333.              | AS101              |
| Architectural Elevation                                       | 111.             |                  | 333.              | AS201              |
| Architectural Section   | 111.             |                  | 333.              | AS301              |

| <b>Example File names and Sheet Numbers (Multi-Building)</b> |                  |                  |                   |                    |
|--|------------------|------------------|-------------------|--------------------|
| <b>Drawing Title</b>   | <b>Station #</b> | <b>Project #</b> | <b>Building #</b> | <b>NCS Sheet #</b> |
| Cover sheet  | 111.             | 2222.            |                   | GI001              |
| Index  | 111.             |                  |                   | GI002              |
| Asbestos Removal Plan Bldg 333                               | 111.             |                  | 333.              | HA101              |
| Asbestos Removal Plan Bldg 444                               | 111.             |                  | 444.              | HA101              |
| Asbestos Removal Section Bldg 333                            | 111.             |                  | 333.              | HA301              |
| Asbestos Removal Section Bldg 444                            | 111.             |                  | 444.              | HA301              |
| Civil Demolition Site Bldg 333                               | 111.             |                  | 333.              | CD101              |
| Civil Demolition Site Bldg 444                               | 111.             |                  | 444.              | CD101              |
| Civil Site Bldg 333  | 111.             |                  | 333.              | CS101              |
| Civil Site Bldg 444  | 111.             |                  | 444.              | CS101              |
| Architectural Demolition Bldg 333                            | 111.             |                  | 333.              | AD101              |
| Architectural Demolition Bldg 444                            | 111.             |                  | 444.              | AD101              |
| Architectural Floor Plan Bldg 333                            | 111.             |                  | 333.              | AS101              |
| Architectural Floor Plan Bldg 444                            | 111.             |                  | 444.              | AS101              |
| Architectural Elevation Bldg 333                             | 111.             |                  | 333.              | AS201              |
| Architectural Elevation Bldg 444                             | 111.             |                  | 444.              | AS201              |
| Architectural Section Bldg 333                               | 111.             |                  | 333.              | AS301              |
| Architectural Section Bldg 444                               | 111.             |                  | 444.              | AS301              |

Note: A complete drawing sheet index containing the sheet numbers and sheet titles is to be provided as part of specification Section 00851, List of Drawings.

#### **4.5 Amendments to CSI Module 2, Sheet Organization**

##### **Title Block**

The VA requires the use of a Standard Title Block, an Architectural F size (30"x 42"). A drawing file containing the Title Block (referenced), information block, dimension styles, and text styles, along with the Title Block Drawing, can be obtained from the VA TIL. The title block reference can be renamed to accommodate multiple aspects of a project (such as building number).

For Schematic and Design Development-level drawings, and Completion Item drawings, turn on the appropriate title block layer.

For buildings which are to be fully sprinklered, turn on the title block layer containing the text "FULLY SPRINKLERED" on each architectural, structural, HVAC, plumbing, and electrical floor plan.

#### **4.6 Amendments to CSI Module 3, Schedules**

No amendments.

Note that the VA Room Finish Schedule is included in the project manual as part of Master Specification Section 09050, Interior/Exterior Finishes, Materials, and Finish

Schedule, and that Standard Detail 08100, VA Door Schedule, is part of the VA Standard Details. Refer to the Master Specifications which can be accessed at the following link: <http://www.va.gov/facmgt/standard/specifications.asp> and Standard Details which can be accessed at the following link <http://www.va.gov/facmgt/standard/details.asp>.

#### **4.7 Amendments to CSI Module 4, Drafting Conventions**

##### **Text**

Lettering on drawings shall be as follows:

Style name: RomanS (do not use "Standard")  
Font: RomanS  
Width Factor: 1.0  
Min. Height: 1/8" (3/32" is allowed for details)

##### **Headings, Titles, Plan Area Labels, Etc.**

Style name: Bold  
Font: Bold  
Width Factor: 0.8  
Min. Height: 3/16"

##### **Metric Usage**

The primary drawing units for VA drawings are English. When dimensioning place the metric units in brackets beside or below the English unit. However, when VA requires the use of metric units as the primary drawing units, refer to the following documents, which are available in the TIL at [http://www.va.gov/facmgt/standard/metr\\_idx.asp](http://www.va.gov/facmgt/standard/metr_idx.asp):

Metric Implementation (VHA Directive)  
GSA Metric Guide (10-93)  
Metric Guide for Federal Construction (4-93)

##### **Depiction of Smoke Barriers and Fire-rated Partitions**

Indicate all smoke barriers and fire-rated partitions on architectural, heating, ventilating and air-conditioning (HVAC), plumbing, and electrical 1:100 (1/8 in.) scale floor plans.

#### **4.8 Amendments to CSI Module 5, Terms and Abbreviations**

No amendments.

#### **4.9 Amendments to CSI Module 6, Symbols**

All symbols in Module 6 are adopted.

Symbols specific to VA, which are not depicted in Module 6, are included in the VA Standard Details. CAD blocks of these symbols are also available in the TIL in their respective discipline Standard Detail sections.

Note: If using drawing provided in the UDS (Uniform Drawing System) software provided with Volume 2 of the National CAD Standard Version 3, remove any block construction text and convert from Metric to English units (scale down by 25.4).

#### **4.10 Amendments to CSI Module 7, Notations**

This Module has not been formally adopted by VA, however its use is recommended in order to maintain uniformity across a drawing set.

#### **4.11 Amendments to CSI Module 8, Code Conventions**

This Module has not been formally adopted by VA, however its use is recommended in order to maintain uniformity across a drawing set.

### **5. STANDARD DETAILS**

Selected VA Standard Details in the TIL were technically updated and redrawn to be compliant with the National CAD Standard. Other Standard Details were retained in the TIL for legacy purposes, and may be used for information, but were not redrawn to be National CAD Standard -Compliant. Refer to the Standard Details portion of the TIL for more information, at the following link: <http://www.va.gov/facmgt/standard/details.asp>.

Note: Standard Details are to be stripped of the detail title block before insertion into a construction drawing and may only be modified by the responsible consultant as appropriate for a specific project.

6. APPENDIX A

The tables below contain information assigning colors and linetypes to the most commonly used layers. Layers names are based on the AIA CAD Layer Guidelines in Volume 1 of the National CAD Standard. For example new electrical equipment tags the layer name would be E-POWR-IDEN-N, be Color 4, and have a continuous linetype.

The colors listed below are AutoCAD specific, for other CAD software platforms refer to the National CAD Standard, Tri-Services Plotting Guidelines.

Note that halftone (50% screen with the exception of 251 which is 15% screened and used for Civil pavement hatches) is generally used for other disciplines' use of architectural drawings as backgrounds, or for layers for Architectural (Color 8) that show existing physical conditions.

| <b>Example General Layer List</b> |       |           |        |             |           |                                |
|-----------------------------------|-------|-----------|--------|-------------|-----------|--------------------------------|
| Discipline                        | Major | Minor     | Status | Color       | Line Type | Entity Description             |
| *                                 | *     | CNTR      | N      | 2(yellow)   | Center    | New Centerlines                |
| *                                 | *     | CNTR      | E      | 1(red)      | Center    | Exist Centerlines              |
| *                                 | *     | DIMS      | **     | 2 (yellow)  | Cont      | Dimensions                     |
| *                                 | *     | IDEN      | **     | 4 (cyan)    | Cont      | Tags                           |
| *                                 | *     | MATC      | **     | 6 (magenta) | Phantom   | Matchlines                     |
| *                                 | *     | NOTE      | **     | 2 (yellow)  | Cont      | Notes                          |
| *                                 | *     | PATT      | **     | 8           | Cont      | Textures, Shading, Hatch, etc. |
| *                                 | *     | REFR      | **     | 4 (cyan)    | Cont      | External Reference File        |
| *                                 | *     | REVC      | **     | 5 (blue)    | Cont      | Revision Cloud                 |
| *                                 | *     | REVS      | **     | 4 (cyan)    | Cont      | Revision Delta                 |
| *                                 | *     | SYMB      | **     | 4 (cyan)    | Cont      | Reference Symbols              |
| *                                 | *     | TEXT      | **     | 2 (yellow)  | Cont      | Text                           |
| *                                 |       | DETL HEVY | **     | 5 (blue)    | Cont      | Detail Layer Heavy Lines       |
| *                                 |       | DETL MEDM | **     | 4 (cyan)    | Cont      | Detail Layer Medium Lines      |
| *                                 |       | DETL THIN | **     | 2 (yellow)  | Cont      | Detail Layer Thin lines        |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility linetypes

| <b>Example Survey Layer List</b> |       |       |        |           |             |                                   |
|----------------------------------|-------|-------|--------|-----------|-------------|-----------------------------------|
| Discipline                       | Major | Minor | Status | Color     | Line Type   | Entity Description                |
| V                                | BLDG  | ATTD  | E      | 3(green)  | Cont        | Building Attached no Roof (porch) |
| V                                | BLDG  | OTLN  | E      | 3(green)  | Cont        | Building Foot Print               |
| V                                | BLDG  | OVHD  | E      | 17        | Hidden      | Building Overhead (Overhang)      |
| V                                | BNDY  | **    | E      | 1(red)    | Phantom     | Political Boundaries              |
| V                                | BRDG  | **    | E      | 2(yellow) | Cont        | Bridge                            |
| V                                | BRDG  | BENT  | E      | 2(yellow) | Cont        | Bridge, Top of Bent               |
| V                                | BRDG  | CTLJ  | E      | 2(yellow) | Cont        | Bridge, Control Joint             |
| V                                | BRDG  | DECK  | E      | 2(yellow) | Cont        | Bridge, Top of Deck               |
| V                                | BRDG  | RAIL  | E      | 3(green)  | Fencelin e1 | Bridge, Railing                   |
| V                                | BRKL  | BOTB  | E      | 2(yellow) | Cont        | Break/Fault Lines                 |
| V                                | BRLN  | **    | E      | 3(green)  | Hidden      | Building Restriction Line         |

| Example Survey Layer List |       |       |        |           |           |   |
|---------------------------|-------|-------|--------|-----------|-----------|---|
| Discipline                | Major | Minor | Status | Color     | Line Type | Entity Description  |
| V                         | BZNA  | **    | E      | 4(cyan)   | Cont      | Buffer Zone Area  |
| V                         | CHAN  | BWTR  | E      | 17        | Phantom   | Navigable Channels, Breakwaters                                   |
| V                         | CHAN  | DACL  | E      | 17        | Cont      | Navigable Channels, De-authorized Channel Limits, Anchorages, etc |
| V                         | CHAN  | DOCK  | E      | 17        | Cont      | Navigable channels, Decks, Docks, Float, Piers                    |
| V                         | CHAN  | NAID  | E      | 17        | Cont      | Navigable Channels, Navigation Aides                              |
| V                         | COMM  | MHOL  | E      | 3(green)  | ***       | Communication Manholes  |
| V                         | COMM  | OVHD  | E      | 3(green)  | ***       | Communications, Overhead Lines                                    |
| V                         | COMM  | POLE  | E      | 3(green)  | ***       | Communication Box/Pole  |
| V                         | COMM  | UNDR  | E      | 3(green)  | ***       | Communications Underground Lines                                  |
| V                         | CTRL  | **    | E      | 2(yellow) | Cont      | Control Points  |
| V                         | DRIV  | CURB  | E      | 17        | Cont      | Driveways, Curb   |
| V                         | DTCH  | BOTD  | E      | 2(yellow) | Cont      | Ditches or Washes, Bottom   |
| V                         | DTCH  | EWAT  | E      | 3(green)  | Cont      | Ditches or Washes, Edge of Water                                  |
| V                         | DTCH  | TOPD  | E      | 4(cyan)   | Cont      | Ditches or Washes, Top  |
| V                         | ESMT  | **    | E      | 17        | Dashed    | Easements, Contract Limit Line                                    |
| V                         | FLHA  | **    | E      | 3(green)  | Dashed    | Flood Hazard Area   |
| V                         | FUEL  | MHOL  | E      | 4(cyan)   | Cont      | Fuel Gas, Manholes  |
| V                         | FUEL  | PIPE  | E      | 4(cyan)   | ***       | Fuel Gas, Above Ground Pipe                                       |
| V                         | FUEL  | TANK  | E      | 4(cyan)   | Cont      | Fuel Gas, Tank  |
| V                         | FUEL  | UNDR  | E      | 4(cyan)   | ***       | Fuel Gas, Underground   |
| V                         | NGAS  | MHOL  | E      | 4(cyan)   | Cont      | Natural Gas, Manhole  |
| V                         | NGAS  | PIPE  | E      | 4(cyan)   | ***       | Natural Gas, Above Ground Pipe                                    |
| V                         | NGAS  | TANK  | E      | 4(cyan)   | Cont      | Natural Gas, Tank   |
| V                         | NGAS  | UNDR  | E      | 4(cyan)   | ***       | Natural Gas, Underground  |
| V                         | NODE  | **    | E      | 2(yellow) | Cont      | Node (Point)  |
| V                         | NODE  | DASP  | E      | 2(yellow) | Cont      | Node Description for Survey Points                                |
| V                         | NODE  | EASP  | E      | 2(yellow) | Cont      | Node Elevation for Survey Points                                  |
| V                         | NODE  | PASP  | E      | 2(yellow) | Cont      | Node Point Number for Survey Points                               |
| V                         | POWR  | INST  | E      | 12        | Cont      | Power Equipment   |
| V                         | POWR  | MHOL  | E      | 12        | Cont      | Power Manholes  |
| V                         | POWR  | OVHD  | E      | 12        | ***       | Power, Overhead Lines   |
| V                         | POWR  | POLE  | E      | 12        | Cont      | Power Poles   |
| V                         | POWR  | UNDR  | E      | 12        | ***       | Power Under Ground  |
| V                         | PRKG  | CURB  | E      | 3(green)  | Cont      | Parking Lots, Curb  |
| V                         | PRKG  | MRKG  | E      | 3(green)  | Cont      | Parking Lots, Pavement Markings                                   |
| V                         | PRKG  | STRP  | E      | 3(green)  | Cont      | Parking Lots, Striping  |
| V                         | PROP  | LINE  | E      | 2(yellow) | Dash3     | Property Line   |
| V                         | RIVR  | BOTM  | E      | 2(yellow) | Cont      | River Bottom  |
| V                         | RIVR  | EDGE  | E      | 3(green)  | Cont      | River Edge  |
| V                         | RIVR  | TOPB  | E      | 4(cyan)   | Cont      | River, Top of Bank  |
| V                         | ROAD  | **    | E      | 3(green)  | Cont      | Road, Edge  |
| V                         | ROAD  | HTCH  | E      | 251       | Cont      | Road, Hatch   |
| V                         | ROAD  | CURB  | E      | 11        | Cont      | Road, Curb  |
| V                         | ROAD  | MRKG  | E      | 11        | Cont      | Road, Pavement Marking  |

| <b>Example Survey Layer List</b> |              |              |               |              |                  |   |
|----------------------------------|--------------|--------------|---------------|--------------|------------------|---|
| <b>Discipline</b>                | <b>Major</b> | <b>Minor</b> | <b>Status</b> | <b>Color</b> | <b>Line Type</b> | <b>Entity Description</b>                   |
| V                                | RWAY         | **           | E             | 4(Cyan)      | Phantom          | Right of Way                                |
| V                                | SITE         | FENC         | E             | 2(yellow)    | Fence            | Site, Fence                                 |
| V                                | SITE         | ROCK         | E             | 3(green)     | Cont             | Site, Rock                                  |
| V                                | SITE         | RTWL         | E             | 3(green)     | Cont             | Site, Retaining Wall                        |
| V                                | SITE         | SIGN         | E             | 17           | Cont             | Site, Sign                                  |
| V                                | SITE         | VEGE         | E             | 5(blue)      | Cont             | Site, Vegetation, trees, etc                |
| V                                | SSWR         | MHOL         | E             | 17           | Cont             | Sanitary Sewer System,<br>Manholes          |
| V                                | SSWR         | PIPE         | E             | 17           |                  | Sanitary Sewer System, Above<br>Ground Pipe |
| V                                | SSWR         | UNDR         | E             | 17           |                  | Sanitary Sewer System,<br>Underground pipe  |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility linetypes

Note: When using Survey as a background for Civil drawings all layers will be color is 18 and features such as curbing will be linetype Hidden2 unless otherwise noted.

| <b>Example Civil Layer List</b> |              |              |               |              |                  |                                     |
|---------------------------------|--------------|--------------|---------------|--------------|------------------|-------------------------------------|
| <b>Discipline</b>               | <b>Major</b> | <b>Minor</b> | <b>Status</b> | <b>Color</b> | <b>Line Type</b> | <b>Entity Description</b>           |
| C                               | BLDG         | ATTD         | N             | 17           | Cont             | Building Attached no Roof (porch)   |
| C                               | BLDG         | OTLN         | N             | 17           | Cont             | Building Outline (Foot Print)       |
| C                               | BLDG         | OVHD         | N             | 17           | Hidden           | Building Overhead (Overhang)        |
| C                               | BLIN         | **           | N             | 2(yellow)    | Center           | Baseline                            |
| C                               | BLINE        | STAN         | N             | 2(yellow)    | Cont             | Baseline Stationing                 |
| C                               | BRDG         | **           | N             |              | Cont             | Bridge                              |
| C                               | CATV         | **           | N             | 17           | Cctv             | Cable Television Line               |
| C                               | CATV         | POLE         | N             | 17           | Cont             | Cable Television Poles or Box       |
| C                               | CEME         | **           | N             | 4(cyan)      |                  | Cemetery                            |
| C                               | CHAN         | **           | N             | 18           |                  | Navigable Channels                  |
| C                               | COMM         | **           | N             |              | Tele1            | Communication Lines<br>(Telephone)  |
| C                               | CTRL         | **           | N             | 2(yellow)    | Cont             | Control Points                      |
| C                               | CTRL         | BMRK         | N             | 2(yellow)    | Cont             | Control Points, Benchmarks          |
| C                               | CTRL         | HVPT         | N             | 2(yellow)    | Cont             | Control Point, Horizontal /Vertical |
| C                               | DRIV         | **           | N             | 3(green)     | Cont             | Driveways                           |
| C                               | DRIV         | MRKG         | N             | 7(white)     | Cont             | Driveways, Marking                  |
| C                               | DRIV         | SIGN         | N             | 4(cyan)      | Cont             | Driveways, Sign                     |
| C                               | DTCH         | **           | N             | 17           |                  | Ditch                               |
| C                               | EROS         | **           | N             | 1(red)       | Fencelin<br>e2   | Erosion and Sediment Control        |
| C                               | ESMT         | **           | N             | 50           | Phantom          | Easements                           |
| C                               | FENC         | **           | N             | 4(cyan)      | Fence            | Fences                              |
| C                               | FUEL         | **           | N             | 3(green)     | ***              | Fuel Gas Lines                      |
| C                               | LOCN         | **           | N             | 14           | Phantom          | Limits of Construction              |
| C                               | NGAS         | **           | N             | 2(yellow)    | ***              | Natural Gas Line                    |
| C                               | NGAS         | MHOL         | N             | 2(yellow)    | Cont             | Natural Gas Line, Manholes          |
| C                               | PRKG         | **           | N             | 4(cyan)      | Cont             | Parking Lots                        |
| C                               | PRKG         | CURB         | N             | 2(yellow)    | Cont             | Parking Lots Curb                   |
| C                               | PRKG         | SIGN         | N             | 4(cyan)      | Cont             | Parking Lot Signs                   |

| Example Civil Layer List |       |       |        |                |           |                                |
|--------------------------|-------|-------|--------|----------------|-----------|--------------------------------|
| Discipline               | Major | Minor | Status | Color          | Line Type | Entity Description             |
| C                        | PRKG  | STRP  | N      | 4(cyan)        | Cont      | Parking Lot Markings           |
| C                        | POND  | **    | N      | 14             | Cont      | Pond                           |
| C                        | POWR  | **    | N      | 11             | ***       | Power Lines                    |
| C                        | POWR  | MHOL  | N      | 14             | Cont      | Power Manholes                 |
| C                        | PROP  | **    | N      | 14             | Phantom   | Property Line                  |
| C                        | PVMT  | **    | N      | 251            | Cont      | Pavement Hatch                 |
| C                        | RAIL  | **    | N      | 3(green)       | Tracks    | Railroad Tracks                |
| C                        | RIVR  | **    | N      | 6<br>(magenta) | Cont      | River                          |
| C                        | ROAD  | **    | N      | 3(green)       | Cont      | Road                           |
| C                        | ROAD  | CURB  | N      | 3(green)       | Cont      | Road Curbs                     |
| C                        | ROAD  | MRKG  | N      | 5(blue)        | Cont      | Road Markings                  |
| C                        | ROAD  | SIGN  | N      | 4(cyan)        | Cont      | Road Signs                     |
| C                        | ROAD  | STAN  | N      | 2(yellow)      | Cont      | Road Stations                  |
| C                        | RRAP  | **    | N      | 2(yellow)      | Cont      | Riprap                         |
| C                        | SOIL  | **    | N      | 2(yellow)      | Cont      | Soils Report                   |
| C                        | SSWR  | **    | N      | 3(green)       | ***       | Sanitary Sewer                 |
| C                        | SSWR  | MHOL  | N      | 4(cyan)        | Cont      | Sanitary Sewer Manholes        |
| C                        | STEM  | **    | N      | 3(green)       | ***       | Steam System                   |
| C                        | STEM  | MHOL  | N      | 4(cyan)        | Cont      | Steam System Manholes          |
| C                        | STRM  | **    | N      | 2(yellow)      | ***       | Storm sewer                    |
| C                        | STRM  | MHOL  | N      | 4(cyan)        | Cont      | Storm sewer Manhole            |
| C                        | STRM  | PROF  | N      | 5(blue)        | Cont      | Storm sewer Profile            |
| C                        | STRM  | STAN  | N      | 2(yellow)      | Cont      | Storm sewer Stations           |
| C                        | SWLK  | **    | N      | 3(green)       | Cont      | Sidewalk                       |
| C                        | TINN  | **    | N      | 2(yellow)      | Cont      | Triangulated Irregular Network |
| C                        | TOPO  | MAJR  | N      | 6<br>(magenta) | Cont      | Topo Major Lines               |
| C                        | TOPO  | MINR  | N      | 1(red)         | Cont      | Topo Minor Lines               |
| C                        | TOPO  | SPOT  | N      | 2(yellow)      | Cont      | Topo Spot Elevations           |
| C                        | TRAL  | **    | N      | 1(red)         | Cont      | Trails                         |
| C                        | TRAL  | SIGN  | N      | 4(cyan)        | Cont      | Trail Signs                    |
| C                        | WALL  | **    | N      | 4(cyan)        | Cont      | Wall                           |
| C                        | WATR  | **    | N      | 2(yellow)      | ***       | Water                          |
| C                        | WATR  | INST  | N      | 3(green)       | Cont      | Water Instrumentation          |
| C                        | WATR  | WELL  | N      | 3(green)       | Cont      | Water Well                     |
| C                        | WETL  | **    | N      | 2(yellow)      | Cont      | Wetlands                       |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility line types

Note: Survey information brought into civil drawings shall be changed to color 18 and continuous line types changed to Hidden2. Civil demo layers are always 7(white).

| <b>Example Architectural Layer List</b> |              |              |               |                |                  |                            |
|---|--------------|--------------|---------------|----------------|------------------|----------------------------|
| <b>Discipline</b>                       | <b>Major</b> | <b>Minor</b> | <b>Status</b> | <b>Color</b>   | <b>Line Type</b> | <b>Entity Description</b>  |
| A                                       | AREA         | **           | D             | 6<br>(magenta) | Hidden           | Demo Area Outlines         |
| A                                       | CLNG         | **           | D             | 5 (blue)       | Hidden           | Demo Ceiling               |
| A                                       | EQPM         | **           | D             | 5 (blue)       | Hidden           | Demo Equipment             |
| A                                       | FLOR         | **           | D             | 5 (blue)       | Hidden           | Demo Floor Plan            |
| A                                       | FLOR         | FIXT         | D             | 5 (blue)       | Hidden           | Demo Plumbing Fixtures     |
| A                                       | ROOF         | **           | D             | 5 (blue)       | Hidden           | Demo Roof                  |
| A                                       | AREA         | PATT         | D             | 1 (red)        | Cont             | Demo Areas                 |
| A                                       | AREA         | **           | N             | 4 (cyan)       | Cont             | Area Outlines/Calculations |
| A                                       | CLNG         | **           | N             | 4 (cyan)       | Cont             | New Ceiling                |
| A                                       | CLNG         | GRID         | N             | 3 (green)      | Cont             | New Ceiling Grid           |
| A                                       | COLS         | **           | N             | 4 (cyan)       | Cont             | New Columns                |
| A                                       | COLS         | GRID         | N             | 8              | Center           | New Columns Grid           |
| A                                       | CONV         | **           | N             | 3 (green)      | Cont             | New Elevators              |
| A                                       | DOOR         | **           | N             | 2 (yellow)     | Cont             | New Doors                  |
| A                                       | EQPM         | **           | N             | 3 (green)      | Cont             | New Equipment              |
| A                                       | LITE         | **           | N             | 4 (cyan)       | Cont             | New Lights                 |
| A                                       | HVAC         | **           | N             | 4 (cyan)       | Cont             | New HVAC                   |
| A                                       | FLOR         | FIXT         | N             | 4 (cyan)       | Cont             | New Plumbing Fixtures      |
| A                                       | FLOR         | PATT         | N             | 1 (red)        | Cont             | New Floor Patterns         |
| A                                       | FLOR         | LABL         | N             | 4 (cyan)       | Cont             | New Room Labels            |
| A                                       | FURN         | **           | N             | 1 (red)        | Cont             | New Furnishings            |
| A                                       | GLAZ         | **           | N             | 2 (yellow)     | Cont             | New Windows                |
| A                                       | ROOF         | **           | N             | 4 (cyan)       | Cont             | New Roof                   |
| A                                       | STRS         | **           | N             | 2 (yellow)     | Cont             | New Stairs                 |
| A                                       | WALL         | **           | N             | 5 (blue)       | Cont             | New Walls                  |
| A                                       | WALL         | **           | N             | 4 (cyan)       | Varies           | New Walls-Fire Rating      |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility line types

Note: Existing layers for Architectural are Color 8.

| <b>Example Structural Layer List</b> |              |              |               |                |                  |                           |
|--------------------------------------|--------------|--------------|---------------|----------------|------------------|---------------------------|
| <b>Discipline</b>                    | <b>Major</b> | <b>Minor</b> | <b>Status</b> | <b>Color</b>   | <b>Line Type</b> | <b>Entity Description</b> |
| S                                    | BEAM         | **           | N             | 3(green)       | Cont             | New Beams                 |
| S                                    | BRAC         | **           | N             | 4(cyan)        | Cont             | New Bracing               |
| S                                    | COLS         | **           | N             | 2(yellow)      | Cont             | New Columns               |
| S                                    | DECK         | **           | N             | 6<br>(magenta) | Cont             | New Structural Deck       |
| S                                    | FNDN         | **           | N             | 3(green)       | Cont             | New Foundation            |
| S                                    | GRID         | **           | N             | 2(yellow)      | Center           | New Column Grid           |
| S                                    | JNTS         | **           | N             | 2(yellow)      | Cont             | New Joints                |
| S                                    | JOIS         | **           | N             | 6<br>(magenta) | Cont             | New Joists                |
| S                                    | SLAB         | **           | N             | 3(green)       | Cont             | New Slab                  |
| S                                    | STRS         | **           | N             | 4(cyan)        | Cont             | New Stairs                |
| S                                    | TRUS         | **           | N             | 2(yellow)      | Cont             | New Trusses               |
| S                                    | WALL         | **           | N             | 6<br>(magenta) | Cont             | New Walls                 |
| S                                    | *            | ABLT         | N             | 3(green)       | Cont             | New Anchor Bolts          |

| <b>Example Structural Layer List</b> |              |              |               |                |                  |                           |
|--------------------------------------|--------------|--------------|---------------|----------------|------------------|---------------------------|
| <b>Discipline</b>                    | <b>Major</b> | <b>Minor</b> | <b>Status</b> | <b>Color</b>   | <b>Line Type</b> | <b>Entity Description</b> |
| S                                    | *            | METL         | N             | 3(green)       | Cont             | New Misc Metals           |
| S                                    | *            | GRAT         | N             | 3(green)       | Cont             | New Grate                 |
| S                                    | *            | RBAR         | N             | 3(green)       | Cont             | New Rebar                 |
| S                                    | BEAM         | **           | E             | 18             | Cont             | Exist Beams               |
| S                                    | BRAC         | **           | E             | 18             | Cont             | Exist Bracing             |
| S                                    | COLS         | **           | E             | 6<br>(magenta) | Cont             | Exist Columns             |
| S                                    | DECK         | **           | E             | 18             | Cont             | New Structural Deck       |
| S                                    | FNDN         | **           | E             | 18             | Cont             | Exist Foundation          |
| S                                    | GRID         | **           | E             | 18             | Center           | Exist Column Grid         |
| S                                    | JNTS         | **           | E             | 18             | Cont             | Exist Joints              |
| S                                    | JOIS         | **           | E             | 18             | Cont             | Exist Joists              |
| S                                    | SLAB         | **           | E             | 18             | Cont             | Exist Slab                |
| S                                    | STRS         | **           | E             | 18             | Cont             | Exist Stairs              |
| S                                    | TRUS         | **           | E             | 18             | Cont             | Exist Trusses             |
| S                                    | WALL         | **           | E             | 18             | Cont             | Exist Walls               |
| S                                    | *            | ABLT         | E             | 18             | Cont             | Exist Anchor Bolts        |
| S                                    | *            | METL         | E             | 18             | Cont             | Exist Misc Metals         |
| S                                    | *            | GRAT         | E             | 18             | Cont             | Exist Grate               |
| S                                    | *            | RBAR         | E             | 18             | Cont             | Exist Rebar               |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility line types

| <b>Example Mechanical Layer List</b> |              |              |               |                |                  |                             |
|--------------------------------------|--------------|--------------|---------------|----------------|------------------|-----------------------------|
| <b>Discipline</b>                    | <b>Major</b> | <b>Minor</b> | <b>Status</b> | <b>Color</b>   | <b>Line Type</b> | <b>Entity Description</b>   |
| M                                    | HVAC         | CDFF         | D             | 124            | Hidden           | Demo Ceiling Diffusers      |
| M                                    | HVAC         | EQPM         | D             | 214            | Hidden           | Demo HVAC Equipment         |
| M                                    | HVAC         | EXHS         | D             | 84             | Hidden           | Demo Exhaust Air            |
| M                                    | HVAC         | RETN         | D             | 107            | Hidden           | Demo Return Air Ducts       |
| M                                    | HVAC         | SUPP         | D             | 94             | Hidden           | Demo Supply Air Ducts       |
| M                                    | HVAC         | PIPE         | D             | 104            | Hidden           | Demo HVAC Piping            |
| M                                    | MDGS         | PIPE         | D             | 43             | Hidden           | Demo Medical Gas Piping     |
| M                                    | HVAC         | CDFF         | N             | 3 (green)      | Cont             | New Ceiling Diffusers       |
| M                                    | HVAC         | EQPM         | N             | 6<br>(magenta) | Cont             | New HVAC Equipment          |
| M                                    | HVAC         | EXHS         | N             | 87             | Cont             | New Exhaust Air             |
| M                                    | HVAC         | RETN         | N             | 194            | Cont             | New Return Air Ducts        |
| M                                    | HVAC         | SUPP         | N             | 5 (blue)       | Cont             | New Supply Air Ducts        |
| M                                    | HVAC         | PIPE         | N             | 4 (cyan)       | Cont             | New HVAC Piping             |
| M                                    | MDGS         | PIPE         | N             | 12             | Cont             | New Medical Gas Piping      |
| M                                    | HVAC         | CDFF         | E             | 232            | Scenter          | Existing Ceiling Diffusers  |
| M                                    | HVAC         | EQPM         | E             | 238            | Scenter          | Existing HVAC Equipment     |
| M                                    | HVAC         | EXHS         | E             | 62             | Scenter          | Existing Exhaust Air        |
| M                                    | HVAC         | RETN         | E             | 228            | Scenter          | Existing Return Air Ducts   |
| M                                    | HVAC         | SUPP         | E             | 142            | Scenter          | Existing Supply Air Ducts   |
| M                                    | HVAC         | PIPE         | E             | 148            | Scenter          | Existing HVAC Piping        |
| M                                    | MDGS         | PIPE         | E             | 128            | Scenter          | Existing Medical Gas Piping |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility line types

Note: Single line ductwork is the next heaviest pen weight.

| <b>Example Fire Protection Layer List</b> |       |       |        |       |           |                                  |
|---|-------|-------|--------|-------|-----------|----------------------------------|
| Discipline                                | Major | Minor | Status | Color | Line Type | Entity Description               |
| F   | SPRN  | PIPE  | D      | 207   | Hidden    | Demo Sprinkler Piping            |
| F   | SPRN  | CLHD  | D      | 207   | Cont      | Demo Sprinkler Ceiling Heads     |
| F   | SPRN  | PIPE  | N      | 244   | Cont      | New Sprinkler Piping             |
| F   | SPRN  | CLHD  | N      | 244   | Cont      | New Sprinkler Ceiling Heads      |
| F   | SPRN  | PIPE  | E      | 208   | Scenter   | Existing Sprinkler Piping        |
| F   | SPRN  | CLHD  | E      | 208   | Cont      | Existing Sprinkler Ceiling Heads |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility line types

| <b>Example Plumbing Layer List</b> |       |       |        |       |           |                             |
|------------------------------------|-------|-------|--------|-------|-----------|-----------------------------|
| Discipline                         | Major | Minor | Status | Color | Line Type | Entity Description          |
| P                                  | *     | EQPM  | D      | 114   | Hidden    | Demo Plumbing Equipment     |
| P                                  | *     | SUPP  | D      | 173   | Hidden    | Demo Supply Piping          |
| P                                  | SANR  | PIPE  | D      | 27    | Hidden    | Demo Sanitary Piping        |
| P                                  | SANR  | VENT  | D      | 174   | Hidden    | Demo Sanitary Vent          |
| P                                  | *     | EQPM  | N      | 134   | Cont      | New Plumbing Equipment      |
| P                                  | *     | SUPP  | N      | 244   | Cont      | New Supply Piping           |
| P                                  | SANR  | PIPE  | N      | 24    | Cont      | New Sanitary Piping         |
| P                                  | SANR  | VENT  | N      | 173   | Cont      | New Sanitary Vent           |
| P                                  | *     | EQPM  | E      | 208   | Scenter   | Existing Plumbing Equipment |
| P                                  | *     | SUPP  | E      | 142   | Scenter   | Existing Supply Piping      |
| P                                  | SANR  | PIPE  | E      | 28    | Scenter   | Existing Sanitary Piping    |
| P                                  | SANR  | VENT  | E      | 173   | Scenter   | Existing Sanitary Vent      |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility line types

| <b>Example Inside Steam Distribution Layer List</b> |       |       |        |       |           |  |
|---|-------|-------|--------|-------|-----------|--|
| Discipline  | Major | Minor | Status | Color | Line Type | Entity Description                       |
| M   | STEM  | BLBD  | D      |       |           | Demo Steam System Blow down Piping       |
| M   | STEM  | CONP  | D      |       |           | Demo Steam System Condensate Piping      |
| M   | STEM  | EQPM  | D      |       |           | Demo Steam System Equipment              |
| M   | STEM  | HPIP  | D      |       |           | Demo Steam System High Pressure Piping   |
| M   | STEM  | LPIP  | D      |       |           | Demo Steam System Low Pressure Piping    |
| M   | STEM  | MPIP  | D      |       |           | Demo Steam System Medium Pressure Piping |
| M   | STEM  | SYMB  | D      |       |           | Demo Steam System Symbols                |
| M   | STEM  | BLBD  | E      |       |           | Existing Steam System Blow down Piping   |
| M   | STEM  | CONP  | E      |       |           | Existing Steam System Condensate Piping  |
| M   | STEM  | EQPM  | E      |       |           | Existing Steam System Equipment          |

| <b>Example Inside Steam Distribution Layer List</b> |              |              |               |              |                  |  |
|---|--------------|--------------|---------------|--------------|------------------|--|
| <b>Discipline</b>                                   | <b>Major</b> | <b>Minor</b> | <b>Status</b> | <b>Color</b> | <b>Line Type</b> | <b>Entity Description</b>                    |
| M   | STEM         | HPIP         | E             |              |                  | Existing Steam System High Pressure Piping   |
| M   | STEM         | LPIP         | E             |              |                  | Existing Steam System Low Pressure Piping    |
| M   | STEM         | MPIP         | E             |              |                  | Existing Steam System Medium Pressure Piping |
| M   | STEM         | SYMB         | E             |              |                  | Existing Steam System Symbols                |
| M   | STEM         | BLBD         | N             |              |                  | New Steam System Blow down Piping            |
| M   | STEM         | CONP         | N             |              |                  | New Steam System Condensate Piping           |
| M   | STEM         | EQPM         | N             |              |                  | New Steam System Equipment                   |
| M   | STEM         | HPIP         | N             |              |                  | New Steam System High Pressure Piping        |
| M   | STEM         | LPIP         | N             |              |                  | New Steam System Low Pressure Piping         |
| M   | STEM         | MPIP         | N             |              |                  | New Steam System Medium Pressure Piping      |
| M   | STEM         | SYMB         | N             |              |                  | New Steam System Symbols                     |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility line types

| <b>Example Outdoor Steam Distribution Layer List</b> |              |              |               |              |                  |   |
|--|--------------|--------------|---------------|--------------|------------------|---|
| <b>Discipline</b>                                    | <b>Major</b> | <b>Minor</b> | <b>Status</b> | <b>Color</b> | <b>Line Type</b> | <b>Entity Description</b>                 |
| C  | STEM         | INST         | E             |              |                  | Existing Steam System Instrumentation     |
| C  | STEM         | MHOL         | E             |              |                  | Existing Steam System Manholes            |
| C  | STEM         | PIPE         | E             |              |                  | Existing Steam System Above Ground Piping |
| C  | STEM         | STRC         | E             |              |                  | Existing Steam System Structures          |
| C  | STEM         | UNDR         | E             |              |                  | Steam System Underground Piping           |
| C  | STEM         | INST         | N             |              |                  | New Steam System Instrumentation          |
| C  | STEM         | MHOL         | N             |              |                  | New Steam System Manholes                 |
| C  | STEM         | PIPE         | N             |              |                  | New Steam System Above Ground Piping      |
| C  | STEM         | STRC         | N             |              |                  | New Steam System Structures               |
| C  | STEM         | UNDR         | N             |              |                  | New Steam System Underground Piping       |

\*Varies per discipline, \*\*Optional, \*\*\*See National CAD Standard or VA NCS.LIN for utility line types

| <b>Example Electrical Layer List</b> |              |              |               |                |                  |  |
|--------------------------------------|--------------|--------------|---------------|----------------|------------------|--|
| <b>Discipline</b>                    | <b>Major</b> | <b>Minor</b> | <b>Status</b> | <b>Color</b>   | <b>Line Type</b> | <b>Entity Description</b>              |
| E                                    | CABL         | TRAY         | N             | 123            | Cont             | New Cable Tray                         |
| E                                    | COMM         | CIRC         | N             | 201            | Cont             | New Telecom Route/Circuit              |
| E                                    | COMM         | CLNG         | N             | 213            | Cont             | New Telecom Devices-Ceiling            |
| E                                    | COMM         | WALL         | N             | 203            | Cont             | New Telecom Devices-Wall               |
| E                                    | FIRE         | AREA         | N             | 155            | Border2          | New Fire Zone Boundaries               |
| E                                    | FIRE         | CIRC         | N             | 21             | Cont             | New Fire Zone Route/Circuit            |
| E                                    | FIRE         | CLNG         | N             | 33             | Cont             | New Fire Zone Devices-Ceiling          |
| E                                    | FIRE         | WALL         | N             | 23             | Cont             | New Fire Zone Devices-Wall             |
| E                                    | INTC         | CIRC         | N             | 221            | Cont             | New Intercom Route/Circuit             |
| E                                    | INTC         | CLNG         | N             | 233            | Cont             | New Intercom Devices-Ceiling           |
| E                                    | INTC         | WALL         | N             | 223            | Cont             | New Intercom Devices-Wall              |
| E                                    | LITE         | AREA         | N             | 45             | Border2          | New Lighting Branch Circuit Boundaries |
| E                                    | LITE         | CIRC         | N             | 41             | Cont             | New Lighting Route/Circuit             |
| E                                    | LITE         | CLNG         | N             | 53             | Cont             | New Lighting Devices-Ceiling           |
| E                                    | LITE         | WALL         | N             | 43             | Cont             | New Lighting Devices-Wall              |
| E                                    | NURS         | CIRC         | N             | 141            | Cont             | New Nurse Call Route/Circuit           |
| E                                    | NURS         | CLNG         | N             | 153            | Cont             | New Nurse Call Devices-Ceiling         |
| E                                    | NURS         | WALL         | N             | 143            | Cont             | New Nurse Call Devices-Wall            |
| E                                    | POWR         | PANL         | N             | 132            | Cont             | New Power Panels                       |
| E                                    | POWR         | SWB<br>D     | N             | 132            | Cont             | New Power Switchboards                 |
| E                                    | POWR         | AREA         | N             | 105            | Border2          | New Power Branch Circuit Boundaries    |
| E                                    | POWR         | CIRC         | N             | 102            | Cont             | New Power Route/Circuit                |
| E                                    | POWR         | CLNG         | N             | 103            | Cont             | New Power Devices-Ceiling              |
| E                                    | POWR         | WALL         | N             | 93             | Cont             | New Power Devices-Wall                 |
| E                                    | DIAG         | AREA         | N             | 63             | Cont             | New Diagram Zone Boundaries            |
| E                                    | DIAG         | ENCL         | N             | 10             | Phantom<br>2     | New Diagram Equipment Enclosures       |
| E                                    | DIAG         | FLOR         | N             | 20             | Center2          | New Diagram Flr & Bldg Divisions       |
| E                                    | DIAG         | BUSS         | N             | 6<br>(magenta) | Cont             | New Diagram Buss                       |

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