



**LOUISIANA DEPARTMENT OF
TRANSPORTATION & DEVELOPMENT**

Bridge Design (Section 25)
Mechanical/Electrical Unit CAD Requirements

July 9, 2021
Revision 1.4

Louisiana Department of Transportation and Development
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This document was typeset in L^AT_EX with 11pt Computer Modern.
PDF set for two-sided printing. Total number of pages: 110.

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Acronyms

AIA American Institute of Architects

BIM Building Information Modeling

CAD Computer-Aided Design

LADOTD Louisiana Department of Transportation and Development

MU/EU Mechanical or Electrical Unit of the LADOTD

NIBS National Institute of Building Sciences

OM operations and maintenance

UDS Uniform Drawing System

XREF Reference files

2D Two-dimensional

3D Three-dimensional

Preface

For ease of use and maintenance the Mechanical or Electrical Unit of the LADOTD (MU/EU) has modified The US Army Corps of Engineers A/E/C Computer-Aided Design Standard Release 6.1, August 2019 edition. See the <https://hdl.handle.net/11681/33829> for a complete copy of this document. Anything not addressed in this document is left to the Computer-Aided Design (CAD) user's discretion.

These standards are to be followed for any plans submitted to the MU/EU that are produced solely in AutoCAD or Microstation. If the CAD files are produced in a Three-dimensional (3D) drafting package such as Autodesk Inventor, Siemens SolidEdge, or Dassault SolidWorks, then only the PDF outputs and neutral 3D model files (arrangements for these models will be made on a per project basis) from those programs will be required. For the Two-dimensional (2D) PDFs produced, only the general guidelines such as lineweights, text sizes, border format, etc. are required to have the same visual appearance as an AutoCAD or Microstation produced file. Especially the layer requirements are omitted from PDF submittals from 3D CAD programs.

Furthermore, if the CAD user chooses they can submit Microstation files conforming to the Department CADConform settings, instead.

CAD submittals required by the MU/EU will be as follows:

CAD Program	Digital File	Signed Plans
AutoCAD	dwg	pdf
Microstation	dgn	pdf
3D Parametric CAD	*	pdf

* Depending on the program, the Department will negotiate what digital files will be required, if any.

Chapter 1

Introduction

1.1 Objectives

The objective these standards is to ensure design intent is consistently, efficiently, and effectively transmitted through the construction phase to operations and maintenance (operations and maintenance (OM)) and back to design for future work.

1.2 Scope

This manual provides guidance and procedures for preparing CAD products. Chapters 2–5 of this manual address topics such as presentation graphics, level/layer assignments, electronic file naming, and standard symbology. Appendix A contains tables on model file level/layer names.

1.6 Target systems

This standard does not target any specific CAD system or software, but does specifically target CAD workflows. To ensure successful translations among CAD applications, certain system-specific characteristics were considered and the standard adjusted accordingly. During the preparation of the standard, several baseline decisions were made:

- The standard must be applicable to the latest release of commercially available CAD packages. AutoCAD and MicroStation were chosen based on their prevalence within the Louisiana Department of Transportation and Development (LADOTD).
- The standard is based on CAD applications that utilize layer/level names and reference files.
- The standard requires every final plotted drawing sheet to have its own separate electronic drawing file.

In addition, the Department recognizes that 3D parametric CAD can more efficiently produce plan sets. If plans are produced with such software, then the level/layer naming is not required. But the final PDF submittal needs to meet the visual requirements herein.

Chapter 2

Drawing File Organization

2.1 Design Area

2.1.1 Available drawing area

The two most extensively used CAD applications are AutoCAD and MicroStation, both provide for a drawing area with nearly infinite range in each positive and negative axis (x,y,z).

2.1.2 File accuracy (units)

CAD systems allow the designer to work in real-world units. The most common units are feet:inches, survey feet:hundredths (or thousandths) of feet, and meters:millimeters.

MicroStation's approach to file accuracy allows the user to set the working units (i.e., real-world units) as the following:

- Master Units = The largest unit that may be referred to when working in the design file (e.g., feet, meters)
- Sub Units = Subdivisions of Master Units (e.g., inches, millimeters).

In AutoCAD, the basic drawing unit for any file is the distance between two fixed Cartesian coordinates. For example, the distance between coordinates (1,1,1) and (1,1,2) is one drawing unit. A drawing unit can correspond to any measurement (e.g., foot, inch, meter, mile, fathom). AutoCAD users may enter the Units display option to set the desired drawing units.

All plans submitted to the Department will be in English Units. The format can be the traditional feet & inches or in cases where accuracy is needed decimal inches.

2.1.3 International Feet versus Survey Feet

Many sites have to contend with the initial question as to whether a particular project is designed using International Feet or Survey Feet. In some states, it is specified by statute that units of measure for grid coordinates have to be either International Feet or Survey Feet. The two units are defined as follows:

- International Feet: 1 foot (ft) = 0.3048000 meters (m)
- U.S. Survey Feet: 1 ft = 0.3048006 m.

Looking at this comparison, the difference between the two (0.0000006 m) may seem insignificant; however, ultimately this difference may cause coordinate values to be off by several feet, resulting in inaccurate design files. In MicroStation, the units.def file does contain a definition for Survey Feet (usually stored in c:\Program Files\Bentley\Workspace\System\data), but it is disabled by default in some earlier versions. To enable, scroll down the units.def file to the section English units (based on U.S. Survey Foot) and delete the # in front of #sf,ft, which will allow for the selection of Survey Feet from the Working Units box the next time MicroStation is started.

Note: If a drawing has already been created using International Feet, changing the Master Units to Survey Feet will not automatically scale all elements in the drawing to Survey Feet. The Department recognizes that surveying companies may use Survey Feet and employees and consultants need to receive files from such entities, and those files may be in those units. It is important that these files are properly scaled to International Feet before CAD work is done using the underlying data. **All CAD files submitted to the MU/EU will be in International Feet, unless authorized by special agreement.**

2.1.4 Origin (global origin)

Positioned within every electronic drawing file is an origin (“global origin” in MicroStation and “origin” in AutoCAD). The origin of a drawing file is important because it serves as the point of reference from which all other elements are located. Origins are typically defined in a drawing file by the Cartesian coordinate system of x, y, and z.

The benefit of standardizing the location of the origin of a drawing is most notable in the use of reference files (see section Reference Files (Reference files (XREF)) in Chapter 2). A standardized origin is also helpful when translating files between CAD applications. The recommended global origin for two-dimensional (2D) files in both AutoCAD and MicroStation drawings is $x = 0$ and $y = 0$. When three-dimensional (3D) files are used, the z-origin should be set to allow for elevations below 0.

2.2 Design, drawing, and sheet models

Inside each CAD file can exist Design/Drawing Models (or Model Space for AutoCAD users) and Sheet Models (or Layout for AutoCAD users).

2.2.1 Model files and sheet files

2.2.1.1 Model files

Note: This model files section contains definitions for both Design Models and Drawing Models.

A model file contains the physical components of a bridge or building (e.g., roadway, bridge, columns, walls, windows, ductwork, piping). Model files are drawn at full scale and typically represent plans, elevations, sections, etc. Model files can be generated either by placing graphics, or from Building Information Modeling (BIM) model extractions/views. Model files are used as components in creating plotted sheet files. The information contained within a model file for a discipline may be referenced by other disciplines to create the particular model files or sheet files for that discipline.

A model file can be considered a work in progress. For instance, a mechanical engineer may reference the architect's floor plan model file to begin development of the HVAC ductwork layout model file. Meanwhile, the architect can continue developing the floor plan to meet new requirements. Any changes to the floor plan would be immediately accessible to the mechanical engineer. The viewing of real-time updates eliminates a great deal of frustration for other disciplines because it allows for on-the-spot rather than after-the-fact modifications.

Design Models are models that are developed, or possibly assembled prior to creation of the Sheet Model (see section 2.3). Design Models contain graphic information in a model file format. For example, it may contain the entire Architectural Floor Plan model file for a building. It is this model file that is used as a reference for creating individual sheet files. Adding annotation to the Design Model should be avoided (annotation should be placed in the Drawing Model).

A Drawing Model is a 2D view/representation with annotation of a 3D Design Model. Drawing Models include items such as plans, sections, elevations, and details referenced to the Sheet Model.

2.2.1.2 Sheet files

A sheet file is synonymous with a plotted CAD drawing file. A sheet file is a selected view or portion of referenced model file(s) within a 1:1 border sheet. The addition of sheet-specific information (e.g., text, dimensions, symbols) completes the construction of the document. In other words, a sheet file is a ready-to-plot CAD file. A design model inside the sheet file contains the model information assembled as it would be displayed on a sheet. This model would have real-world spatial alignment and would be used as the primary model for graphical information to be displayed and presented in the sheet model.

A useful generalization for differentiating between model files and sheet files is stated in Module 1 Drawing Set Organization of the Uniform Drawing System (Uniform Drawing System (UDS)) (National Institute of Building Sciences (NIBS) 2014): “Model files are always referenced by other files, while sheet files are never referenced by other files.” A Sheet Model shows the presentation of model file graphics as they would appear on an individual sheet. This assembly area would contain referenced files.

2.2.2 Template files

Template files shall be used to eliminate extra work maintaining both a seed file and a border file. The template file will contain the sheet border (see Appendix B) and most of the settings required to produce the plan set. It is effectively a combination of the old seed file and border file.

2.2.3 Vector and raster references (XREF)

Reference files (external references or XREF) enable designers to share drawing information electronically, eliminating the need to exchange hard-copy drawings among the design disciplines.

With the use of reference files, the structural engineer need not wait for the architect to complete the architectural floor plans before beginning the structural framing plan model file.

Referencing electronic drawing information makes any changes made later by the architect apparent to the structural designer. This real-time access to the work of others ensures accuracy and consistency within a set of drawings and helps promote concurrent design efforts. No longer does one discipline have to wait until another discipline is nearly finished before they begin their drawings.

Note: Never bind references.

Note: Each reference file shall have a unique, logical name/reference describing what is being referenced (e.g., Floor 1 Plan, Site Plan – Area A).

It is strongly advised to use the AutoCAD geo-reference functionality or equivalent for site layouts, if available.

2.2.4 Raster and vector references

For interoperability, the only raster file types allowed to be referenced are TIF, JPG, and PDF. Vector references will only be PDF. Raster or vector file names shall conform to the model filename convention.

Raster File Type uses:

- GeoReferenced TIF: best for aerial photographic imagery, maps, and drawings where the image is referenced under line work to add more clarity.

- JPG: best for non-aerial photographic imagery used for depicting existing conditions referenced to sheets.
- PDF: best for drafted drawings used as background images.

2.3 Drawing sheet assembly–use of Design Model and Sheet Model (1:1 border sheet)

The following method for drawing sheet assembly should be used. It involves assembling individual model files and a sheet model file containing a border to create final plotted sheets.

Note: Borders will be provided in the template supplied at the beginning of the project. The border will be placed on locked layers to prevent modification. The title block fields are populated through the Sheet Set Manager in AutoCAD.

This method consists of using a sheet file that contains a Design Model and a Sheet Model. The Design/Drawing Model is used to assemble all the individual reference files necessary to display the graphics. This may include references to individual views of Design Models in other files, or even coincident references. The Design Model should also contain real-world graphics such as northing and easting coordinate values of points. The Sheet Model contains a reference to the project border sheet model file (at 1:1), plus a reference to the Drawing Model in the active sheet file, scaled to fit into the Sheet Model.

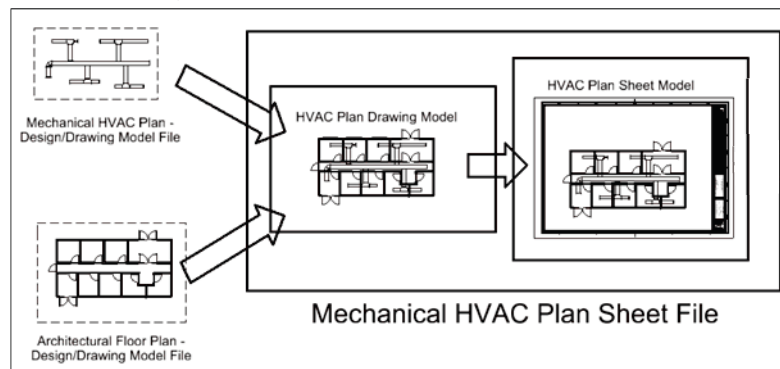


Figure 2.1: Sheet file composition using Design Model and Sheet Model.

Note: With Bentley software, when using Drawing Models, never reference Drawing Models to Design Models, since resymbolization problems occur. Use the built in Sheet Set Manager to create a Sheet Set for each project containing all Sheet Files linked together (template will be provided)

2.4 Electronic drawing file naming conventions

Sheet files and model files will be named according to the guidelines within this section.

A1_site plan.dwg

- A1 = discipline followed by the discipline sheet number
- site plan = drawing type, no underscores between names

Figure 2.2: Model File Naming Format

Discipline	Designator
Architectural	A
Fire Protection	F
Electrical	E
Mechanical	M
Plumbing	P

Table 2.1: Common Discipline Designators

xbase.dwg

- x = either x or b
- base = either base or site

Figure 2.3: Model File Naming Format

HXXXXXXX.dst

- HXXXXXXX = Project Number

Figure 2.4: Sheet Set File Naming Format

2.5 Coordination between sheet file name and sheet identifier

The Bridge Design Technical Memorandum 89 dictates discipline specific information and where it is to appear on the plan sheets, see Appendix B for these procedures and figures.

2.5. COORDINATION BETWEEN SHEET FILE NAME AND SHEET IDENTIFIER 17

The template file with the border shown in this Appendix will be provided by the MU/EU.

18 2.5. COORDINATION BETWEEN SHEET FILE NAME AND SHEET IDENTIFIER

Chapter 3

Graphic Concepts

3.1 Presentation Graphics

The first step in establishing an effective CAD standard is the development of a uniform approach to presentation graphics. Presentation graphics typically consist of drawing elements such as lines, arcs, shapes, text, and their attributes (line color, line width, line style). This chapter presents brief overviews of the characteristics of presentation graphics and the philosophy used to standardize them. For more definition, see the A/E/C Graphics Standard.

3.1.1 Line Styles

Continuous line styles should be used for most lines, unless as listed in Table 3.1. Dashed lines as shown in Table 3.2 can be used and should be named according to the Layer Name they are associated with, see Appendix A. For example, machinery base hidden lines would be on either M-MACH-BASE or M-MACH-BASE-HID, at the CAD user's discretion. The line end style and line join style should be round.


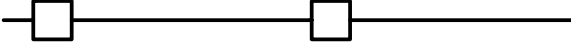















Layer Name	Style	Thickness
C-GRAD-EXST		Fine
C-SITE-FENCE		Wide
C-SSWR-MAIN-PIPE		Wide
C-SSWR-SERV-PIPE		Wide
C-WATR-MAIN-PIPE		Wide
C-WATR-SERV-PIPEE		Wide
E-LITE-CIRC		Wide
G-ANNO-CNTR		Thin
M-NGAS-PIPE		Wide
M-NGAS-PIPE-THIN		Thin
P-DOMW-CPIP		Wide
P-DOMW-HPIP		Wide
P-DOMW-TEMP		Wide
P-DOMW-TRAP		Medium
T-CABL-FIBR		Wide
T-COMM-CIRC		Thin
T-DATA-JACK		Wide

Table 3.1: Line Styles



Designation	Style	Thickness
HID		Thin
DSH		Medium

Table 3.2: Line Styles (Append to Layer Name to Use)

3.1.2 Line Thicknesses

The line thicknesses in this section should be used unless a different thickness adds clarity to the drawing.

Name	Thickness	Screening	Use Cases
Fine	0.1800mm	100	Material indications
Thin	0.2500mm	100	Dimension lines, leaders, extension lines, break lines, grid lines, schedule grid lines, hidden objects, center lines, setback lines, patterning
Medium	0.3500mm	100	Object lines, text, property lines, terminator marks, schedule grid accent lines
Wide	0.5000mm	100	Major object lines, cut lines, section cutting plane lines, property lines, drawing block borders, titles
Extra Wide	0.7000mm	100	Titles, minor title underlining, footprints, match lines, schedule outlines, sheet borders, large titles, object lines requiring special emphasis
Moderate Bold	1.0000mm	100	Major title underlining and separating portions of drawings
Invisible Ink	Object	0	Lines and annotations that will not be printed
Thin Screened	0.2500mm	50	Base Files
Fine	0.1800mm	100	Not Reserved
Fine Screened	0.1800mm	50	Not Reserved
Medium Screened	0.3500mm	50	Not Reserved
Bold	1.4000mm	100	Not Reserved
Extra Bold	2.0000mm	100	Not Reserved
Wide Screened	0.5000mm	50	Not Reserved
Extra Wide Screened	0.7000mm	50	Not Reserved
Moderate Bold Screened	1.0000mm	50	Not Reserved
Bold Screened	1.400mm	50	Not Reserved
Extra Bold Screened	2.0000mm	50	Not Reserved

Table 3.3: Line Thicknesses

3.1.3 Line Color

The line colors in the provided templates should be used as a basis for drafting. Use of colors is encouraged to differentiate different layers. However, the Department prefers a

dark background for CAD work. So, the use of dark colors is discouraged.

3.1.4 Plotting

All CAD should be printed to PDF prior to applying the EOR's stamp to the drawings. The use of specialized plot drivers is discouraged, AutoCAD and Microstation can produce these files directly from the Sheet Set Manager.

3.1.5 Screening

Screening is applied to the layers and provides the level of black applied to the layer based on a number from 0 to 100. Invisible Ink layer with a screening of 0 does not print, for instance.

3.2 Text

The font to be used is TrueType Arial Regular, size 1/8 in for body text and 3/16 in for all title text. Larger text for title sheets is allowed to meet the visual appearance of the Department's title sheet format. Both body text and title text can use the bold, italicized, and underlined forms in any combination to emphasize certain words or phrases where appropriate.

All text will be capitalized as the default option for body text, dimensions, and titles. At the discretion of the Engineer long notes and text sections can be mixed case to allow for clarity.

Chapter 4

Level/Layer Assignments

4.1 Level/Layer naming convention

CAD levels or layers are analogous to overlays in manual drafting systems and serve to separate graphic elements (lines, shapes, text) according to the design discipline they represent (Figure 4.1).

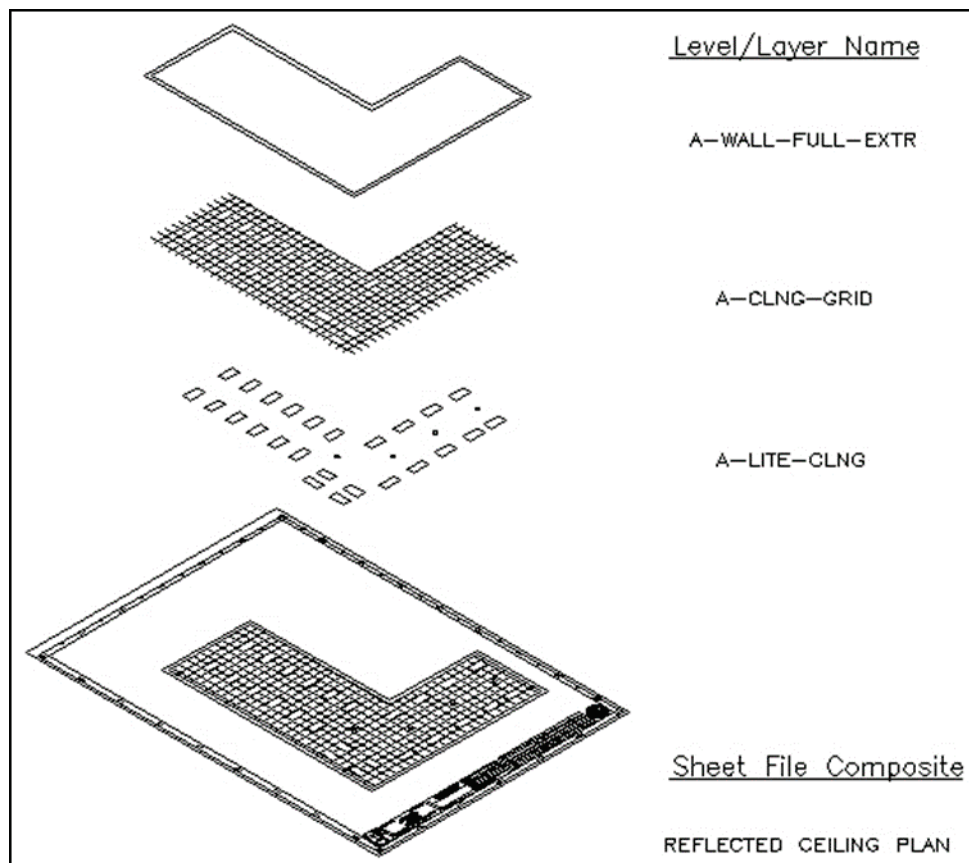


Figure 4.1: Typical levels/layers contained in a sheet file.

The types of information represented by individual levels/layers can be grouped into the two following primary types: model file-specific information, and sheet file-specific information Figure 4.2. Sheet file-specific information can then be broken down into the two following secondary types: design model-specific, and sheet model-specific.

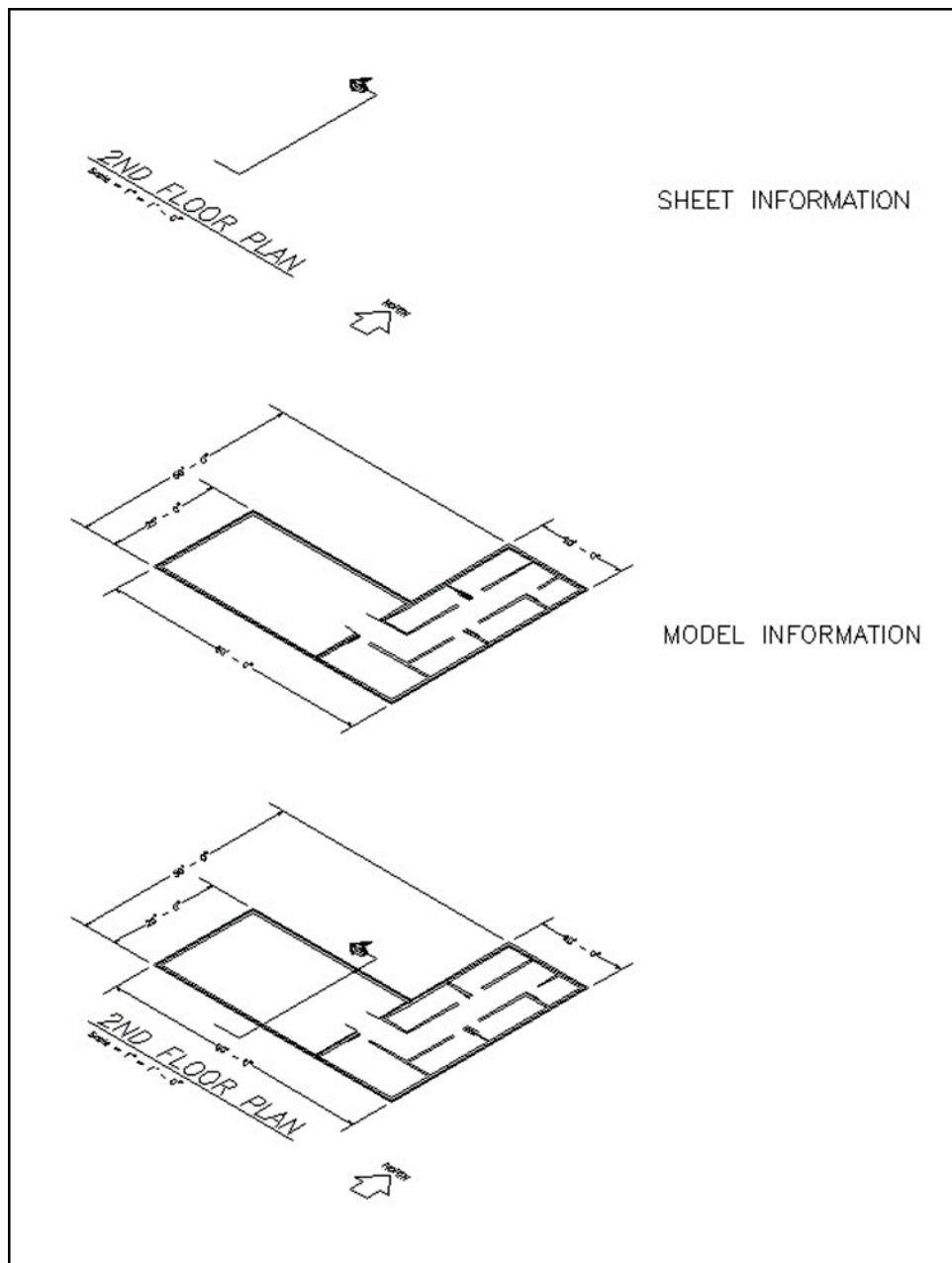


Figure 4.2: Sheet- and model-specific information.

- Model file-specific information represents the physical form of a site, a building, or objects composing a building. This information is often shared between CAD files (drawing model and sheet file) through the use of reference files. Examples include walls, doors, light fixtures, and room numbers. Model file-specific information may be either literal (e.g., walls) or symbolic (e.g., electrical outlets).
- Sheet file-specific information may include notes, annotative symbols, and titles. This

type of information is usually not shared between CAD files or drawings. Drawing models inside a sheet file contain graphic information that would relate to real-world information (e.g., point coordinates) or information that would be sectioned off into multiple sheets (e.g., a floor plan that may take three sheets to present because of its size). Sheet model-specific information would include items specific for the presentation of that sheet. This is one reason that sheet models shall never be used as a reference file to other files.

To use and manipulate model file- and sheet file-specific information effectively, every level/layer must be defined (standardized) by its name and its use.

The reuse of graphic information reduces drawing time and improves project coordination. The level/layer is the basic tool used in CAD for managing graphic information (Figure 4.3). The levels/layers defined within this standard are based on the recommendations set forth in “American Institute of Architects (AIA) CAD Layer Guidelines” (NIBS 2014).

A-WALL-FULL-INTR-DEMO

- A = Discipline Designator
- WALL = Major Designator
- FULL = Minor Group
- INTR = 2nd Minor Group
- DEMO = Optional Status Code

Figure 4.3: Level/layer naming format.

A basic level/layer name consists of a two-character Discipline Designator (e.g., A- for Architectural, E- for Electrical), a four-character Major Group (e.g., A-DOOR for Doors, E-LITE for Lighting), and a four-character Minor Group (e.g., A-WALL-CNTR for wall center lines, E-LITE-CLNG for ceiling lights). For further differentiation, another four-character Minor Group may be used (e.g., A-WALL-FULL-EXTR for exterior full-height walls versus A-WALL-FULL-INTR for interior full-height walls). An optional item to indicate Status or Phase can also be added to every level/layer name (see Status (Phase) levels/layers later in this chapter). Appendix A contains standard layer/level definitions. If additional layers/levels are needed, follow the format above and document the layer/level created with the project submittal as a variance.

4.2 Model files

4.2.1 Level/layer assignment tables

The level/layer assignment tables in Appendix A present the following:

- the levels/layers assigned to each model file
- an AIA format level/layer name for each level/layer
- a detailed description for each level/layer

4.2.2 General levels/layers

At the beginning of Appendix A is a list of levels/layers that are applicable to all disciplines. These General levels/layers are available for use in any model or sheet file. Prior to Release 6.0, these levels/layers were repeated in each discipline’s model file level/layer assignment table with the appropriate Discipline Designator (e.g., A-ANNO-****, C-ANNO-****). Since these are considered General levels/layers, they shall always have the Discipline Designator of G-, regardless of the discipline in which they are used (e.g., G-ANNO-DIMS, G-ANNO-TEXT).

Status (Phase) levels/layers. In some cases, levels/layers may be modified to show the status of a particular item in the drawing (e.g., to be demolished, to be moved, future work). In these cases, levels/layers may have a Status code appended to them as shown in Figure 4.3. See Table 4.1 for the Status (Phase) codes.

Code	Description
ABND	Abandoned
DEMO	Existing to demolish
EXST	Existing to remain
FUTR	Future work
MOVE	Items to be moved
NEW	New work
TEMP	Temporary work
NIC	Not in contract

Table 4.1: Status (Phase) codes.

The use of the Status (Phase) code should be limited, since it can significantly increase the number of levels/layers in a model file. Most items can be shown through referenced model files or changing the line style of items. For instance, in a “New Work” model file, “Existing to Remain” items can be shown through a screened reference file. “Not in Contract” items

and “Future Items” could be shown with a dashed line style. Therefore, it is up to the user to determine whether the use of the Status (Phase) code in level/layer names increases the readability of the model file.

Chapter 5

Standard Symbolology

5.1 Introduction

For the MU/EU the value in strictly adhering to this library of standard items is not necessary. However, it is recommended if possible to use it.

The symbolology library contains the following four types of elements: Lines, Patterns, Symbols, and Objects. The use of such symbolology enhances CAD productivity and provides an excellent opportunity for CAD standardization.

Previous releases of the A/E/C CAD Standard had the symbols limited to six character (maximum) names, due to the limitations of the CAD software at the time. Those naming limitations no longer exist. However, an additional problem with the symbols was that duplicate symbols existed over multiple discipline symbol libraries. Updating symbols became a chore because if changes were made to a symbol that existed in multiple libraries, it was vital that the changes were implemented in all duplicate symbols as well.

To solve this problem for Release 6.0, the A/E/C CAD Standard is following the lead of the U.S. National CAD Standard and incorporating Construction Specifications Institute's MasterFormat numbers into the symbol names. This renaming of the symbols results in symbol libraries where symbols exist only once and are no longer limited to a particular discipline.

5.2 Symbolology resources

5.2.1 Cells/blocks

A cell in MicroStation and a block in AutoCAD are groups of graphical elements that can be manipulated as a single entity. Examples of typical cells/blocks are windows, doors, graphic scale keys, furniture, etc. Symbols are defined as cells/blocks that are representative

of objects (e.g., electrical outlets, smoke detectors). Objects are defined as cells/blocks that are placed at the actual size of the item they are representing no matter the scale of the drawing (e.g., 30 in. by 50 in. desk, 3 ft-0 in. door). Within the electronic deliverables available as part of the A/E/C CAD Standard, the following symbology is provided:

1. MicroStation cells contained in cell libraries (.cel)
2. AutoCAD blocks contained in block libraries (.dwg files) with the block's name and description combined into a single name. The block library only contains the definitions and not the graphics. Blocks are best inserted by selecting them from Design Center.

5.2.2 Line styles

Lines are defined as a graphical representation of linear drawing features (e.g., utility lines, fence lines, contours). Patterns are defined as repeated drawing elements (e.g., lines, dots, circles) within a defined area. Line style definitions determine the particular dash-dot sequence and relative length of dashes, blank spaces, and the characteristics of any included text or shapes. Working with line styles provides a means of distinguishing the purpose of one line from another.

AutoCAD and MicroStation both provide a set of standard line styles, as well as allowing the user to define custom line styles. In AutoCAD, these custom line styles are defined in a line type library file (.lin) and a multiline library file (.mln). In MicroStation, custom line styles are contained in resource files (.rsc).

5.3 Downloadable resources

Documentation and files for the entire symbology library are available for download in the A/E/C Work Structure at the Center's website:

<https://cadbimcenter.erdc.dren.mil/aeccadstandard>

Chapter 6

Conclusion

Standards have been recognized as a vital tool in the development of CAD drawings for the LADOTD. Without standards, CAD drawings would be hard to review, interpret, and file, resulting in excessive time and monetary costs for the LADOTD.

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Appendix A

Level/Layer Naming

A.1 General

Leve/Layer Naming	Level/Layer Description
AIA Format	
General Information	
*-ANNO-DIMS	Witness/extension lines, dimension terminators, dimension tex
*-ANNO-KEYN	Reference keynotes with associated leaders
*-ANNO-LEGN	Legends and symbol keys
*-ANNO-MASK	Text/shape mask for use with photo backgrounds
*-ANNO-MATC	Match lines
*-ANNO-NOTE	General notes and general remarks
*-ANNO-NPLT	Non-plotting graphic information
*-ANNO-PATT	Patterning, shading, and hatching
*-ANNO-RDME	Read-me information
*-ANNO-REDL	Redlines
*-ANNO-REFR	Reference files and raster attachments
*-ANNO-REVC	Revision clouds
*-ANNO-REVS	Revision indicators and tex
*-ANNO-SCHD	Schedules
*-ANNO-SYMB	Miscellaneous symbols
*-ANNO-TEXT	Miscellaneous text
G-ANNO-TTLB	Border and titleblock linework
G-ANNO-TTLB-GRID	Grid lines inside border
* Substitute Discipline letter for asterisk. For example M-ANNO-SYMB, for Mechanical symbols	
Grid Lines	
G-GRID-COOR	X-Y coordinate grid lines
G-GRID-COOR-IDEN	X-Y coordinate grid lines annotation
G-GRID-EXTR	Column grid outside building
G-GRID-IDEN	Column grid tags
Floor Information	
G-PLAN-OTLN	Floor outline/perimeter/building footprint
Coordinate Information	
G-COOR-LALO	Latitude/longitude coordinate grid ticks
G-COOR-LALO-IDEN	Latitude/longitude coordinate text
G-COOR-STAT	State plane coordinate grid ticks
G-COOR-STAT-IDEN	State plane coordinate text
Site Information	
G-SITE-OTLN	Site plan - key map
Demolition (Additional demolition phases may be added as needed)	
G-DEMO-PHS1	Items to be demolished
General Information	See Discipline: General Information for a list of available Annotation layers/levels

A.2 Hazardous Materials

Leve/Layer Naming	Level/Layer Description
AIA Format	
Abatement	
H-ABAT-BARR	Tape barrier
H-ABAT-BARR-STRC	Critical structural barriers
H-ABAT-POLY	Polyethylene sheeting
Buildings	
H-BLDG-IDEN	Annotation
H-BLDG-OTLN	Command posts, information centers
Decontamination	
H-DECN-EQPM	Decontamination equipment
H-DECN-IDEN	Annotation
Disposal Areas	
H-DISP-HAZW	Hazardous waste
H-DISP-IDEN	Annotation
H-DISP-MUNT	Munitions
H-DISP-TANK	Spill containment tanks
Emergency Fixtures	
H-FIXT-EYEW	Emergency eyewashes
H-FIXT-SHWR	Emergency showers
Monitoring Stations	
H-MNST-AIRQ	Air quality
H-MNST-GWTR	Ground water
H-MNST-IDEN	Annotation
H-MNST-LAND	Landfill gas
H-MNST-SOIL	Soil gas
H-MNST-SWTR	Surface water
Pollution Areas	
H-POLL-CONC	Polluted area of concern
H-POLL-IDEN	Annotation
H-POLL-ORIG	Point of pollution origin
H-POLL-POTN	Potential spill, emission, or release source
Sample Points	
H-SAMP-AIRS	Air samples
H-SAMP-BIOL	Biological samples
H-SAMP-BLDG	Building material samples (e.g., asbestos, lead, PCBs, etc.
H-SAMP-GWTR	Ground water samples
H-SAMP-IDEN	Annotation
H-SAMP-MAGN	Magnetometer location points
H-SAMP-SEDI	Sediment samples
H-SAMP-SOIL	Soil samples
H-SAMP-SOLI	Solid material samples
H-SAMP-SWTR	Surface water samples
H-SAMP-WAST	Waste samples
Storage Facilities	
H-STOR-HAZM	Hazardous materials
H-STOR-HAZW	Hazardous waste
H-STOR-IDEN	Annotation
Wells	
H-WELL-INJN	Injection well

Level/Layer Naming	Level/Layer Description
AIA Format	
H-WELL-XTRA	Extraction well
Sections	
H-SECT-IDEN	Component identification numbers
H-SECT-MBND	Material beyond section cut
H-SECT-MCUT	Material cut by section
H-SECT-PATT	Textures and hatch patterns
Detail Information	
H-DETL-GRPH	Graphics, gridlines, non-text items

A.3 Survey/Mapping

Leve/Layer Naming	Level/Layer Description
AIA Format	
Aerial Survey	
V-AERI-BNDY	Aerial photography boundaries
V-AERI-BNDY-NEAT	Neat model boundary
V-AERI-FLYS	Fly station
V-AERI-IDEN	Aerial annotation
V-AERI-INDX	Aerial photo index
V-AERI-PATH	Aerial flight lines/paths
V-AERI-PHOT	Photo center (exposure station)
V-AERI-PNPT	Panel points
Airfields	
V-AFLD-CIRC-CTRL	Control and monitoring circuits
V-AFLD-CIRC-IDEN	Circuit identifier tags, symbol modifier, and text
V-AFLD-CIRC-MULT	Multiple circuits
V-AFLD-CIRC-SERS	Series circuits
V-AFLD-DEVC	Capacitors, voltage regulators, motors, buses, generators, meters, grounds, and markers
V-AFLD-DBNK	Ductbanks
V-AFLD-IDEN	Airfield annotation
V-AFLD-JBOX	Junction boxes, pull boxes, manholes, handholes, pedestals, splices
V-AFLD-LITE-APPR	Approach lights
V-AFLD-LITE-DIST	Distance and arresting gear markers
V-AFLD-LITE-LANE	Hoverlane, taxilane, and helipad lights
V-AFLD-LITE-OBST	Obstruction lights
V-AFLD-LITE-RUNW	Runway lights
V-AFLD-LITE-SIGN	Taxiway guidance signs
V-AFLD-LITE-TAXI	Taxiway lights
V-AFLD-LITE-THRS	Threshold lights
V-AFLD-VALT	Airfield lighting vaults
Alignments	
V-ALGN-DATA	Alignment coordinates and curve data
V-ALGN-LINE	Alignments
V-ALGN-MAJR	Alignment major stationing and tick marks
V-ALGN-MARK	Alignment tick marks
V-ALGN-MINR	Alignment minor stationing and tick marks
V-ALGN-STAT	Alignment stationing
V-ALGN-SYMB	Alignment symbols (PIs)
V-ALGN-TEXT	Alignment text, annotation with associated leaders
Aprons	
V-APRN-CNTR	Apron centerlines
V-APRN-CNTR-IDEN	Apron centerline annotation
V-APRN-GRND	Grounding points
V-APRN-HOLD	Holding position markings
V-APRN-IDEN	Airfield apron - annotation
V-APRN-MOOR	Mooring points
V-APRN-MRKG	Apron markings
V-APRN-OTLN	Airfield apron - outlines
V-APRN-SECU	Security zone markings
V-APRN-SHLD	Shoulders with annotation
V-APRN-SHLD-MRKG	Shoulder stripes

Leve/Layer Naming	Level/Layer Description
AIA Format	
Beacons	
V-BCNS-IDEN	Identifier tags, symbol modifiers, and text
V-BCNS-MISC	Miscellaneous nav aids - windcones and beacons
V-BCNS-STRB	Strobe beacons
Beach Renourishment	
V-BECH-BANK-TOP~	Beach top of bank
V-BECH-BKLN	Beach breakline
V-BECH-BNCH	Beach bench
V-BECH-CNTR	Beach centerline
V-BECH-LIMT	Beach limit lines
V-BECH-OHWM	Ordinary high water marks
V-BECH-OTLN	Beach outline
V-BECH-SLOP-IDEN	Beach slope indicator with annotation
V-BECH-SLOP-TOP~	Beach top of slope
V-BECH-SYMB	Beach symbols
V-BECH-TOE~	Beach toe
V-BECH-TOE~-IDEN	Beach toe annotation
Buildings and Primary Structures	
V-BLDG-DECK	Outdoor decks (attached, no roof overhead)
V-BLDG-DOCK	Loading docks
V-BLDG-FTPT	Building footprints
V-BLDG-IDEN	Building and other stucture annotation
V-BLDG-OVHD	Building overhangs
V-BLDG-PRCH	Porches (attached, roof overhead)
Borings	
V-BORE-GENL-LOCN	General boring X,Y location marker
V-BORE-GENL-NAME	General boring name
V-BORE-GENL-NOTE	General boring notes
V-BORE-GPRO-LOCN	GeoProbe X,Y location marker
V-BORE-GPRO-NAME	GeoProbe boring name
V-BORE-GPRO-NOTE	GeoProbe boring notes
V-BORE-UNDS-LOCN	Undisturbed boring X,Y location marker
V-BORE-UNDS-NAME	Undisturbed boring name
V-BORE-UNDS-NOTE	Undisturbed boring notes
V-BORE-VCOR-LOCN	Vibra-Core X,Y location marker
V-BORE-VCOR-NAME	Vibra-Core name
V-BORE-VCOR-NOTE	Vibra-Core notes
Borrow Areas	
V-BORW-IDEN	Borrow/spoil area annotation
V-BORW-LINE	Borrow/spoil area
Bridges	
V-BRDG-CHRD-LOW~	Low chord
V-BRDG-CNTR	Bridge centerlines
V-BRDG-CTLJ	Control joints
V-BRDG-DECK	Bridge deck
V-BRDG-IDEN	Bridge annotation
V-BRDG-OTLN	Bridge outlines
V-BRDG-RLG~	Bridge railing

Leve/Layer Naming	Level/Layer Description
AIA Format	
Cathodic Protection System	
V-CATH-ANOD	Sacrificial anode system
V-CATH-CURR	Impress current system
V-CATH-IDEN	Identifier tags, symbol modifier, and text
V-CATH-TEST	Test stations
Channels	
V-CHAN-BANK-IDEN	Channel/canal top of bank annotation
V-CHAN-BANK-TOP~	Channel/canal top of bank
V-CHAN-BNCH	Channel/canal bench design feature lines (breaklines form DTMs)
V-CHAN-BWTR	Breakwaters
V-CHAN-CNTR	Channel centerline and survey report lines
V-CHAN-CNTR-IDEN	Channel centerline and survey report lines - annotation
V-CHAN-DACL	De-authorized channel limits, anchorages, etc.
V-CHAN-DACL-IDEN	De-authorized channel limits, anchorages, etc. - annotation
V-CHAN-DOCK	Docks, decks, floats, piers, and mooring facilities
V-CHAN-LIMT	Channel limits, anchorages, turning basins, disposal areas, etc.
V-CHAN-LIMT-IDEN	Channel limits, anchorages, turning basins, disposal areas, etc. - annotation
V-CHAN-NAID	Navigation aids and text
V-CHAN-SLOP-LINE	Channel cut/fill slope (Indicates cut and fill lines)
V-CHAN-SPOL	Spoil limits
V-CHAN-SYMB	Channel/canal symbols
V-CHAN-TEXT	Channel/canal text, annotation with associated leaders
V-CHAN-TOE~	Channel/canal toe
V-CHAN-TOE~-IDEN	Channel/canal toe annotation
V-CHAN-TURN	Turning points
V-CHAN-WIDE	Channel/canal widener
Communications	
V-COMM-ANTN	Antennae
V-COMM-EQPM	Other communications distribution equipment
V-COMM-JBOX	Communication junction boxes, pull boxes, handholes, pedestals, and splices
V-COMM-MHOL	Manholes
V-COMM-OVHD	Overhead communications/telephone lines
V-COMM-OVHD-IDEN	Identifier tags, symbol modifier and text
V-COMM-POLE	Poles
V-COMM-POLE-GUYS	Guying equipment
V-COMM-POLE-IDEN	Identifier tags, symbol modifiers, and text
V-COMM-UGND	Underground communications/telephone lines
V-COMM-UGND-IDEN	Identifier tags, symbol modifier and text
Control Points	
V-CTRL-BMRK	Benchmarks
V-CTRL-GRID	Grid
V-CTRL-HORZ	Horizontal control points
V-CTRL-HVPT	Horizontal/vertical control points
V-CTRL-IDEN	Control point annotation
V-CTRL-TRAV	Transverse points
V-CTRL-VERT	Vertical control points
Ditches or Washes	
V-DTCH-BOTM	Bottom of ditch or wash

Leve/Layer Naming	Level/Layer Description
AIA Format	
V-DTCH-CNTR	Centerline of ditch or wash
V-DTCH-EWAT	Edge of water
V-DTCH-IDEN	Ditches and washes annotation
V-DTCH-TOP~	Top of ditch or wash
Underground Ductbanks (to be used when multiple systems are in one ductbank system)	
V-DBNK-MULT	Ductbank
V-DBNK-MULT-IDEN	Identifier tags, symbol modifier and text
Habitats/Landforms	
V-ECCO-BURR	Burrow
V-ECCO-DENS	Den
V-ECCO-GATR	Gator hole
V-ECCO-HUMK	Hummocks
V-ECCO-IDEN	Habitat annotation
V-ECCO-NEST	Nest, nesting tree
V-ECCO-PRCH	Perch/nesting hole
Fire Protection	
V-FIRE-HYDT	Hydrants and connections
V-FIRE-PIPE	Piping
Flood Hazard Area	
V-FLHA-025Y	25 year mark
V-FLHA-050Y	50 year mark
V-FLHA-100Y	100 year mark
V-FLHA-200Y	200 year mark
V-FLHA-500Y	500 year mark
V-FLHA-IDEN	Flood hazard area annotation
Floodwalls	
V-FLOD-BASE	Floodwall base of wall
V-FLOD-BASE-IDEN	Floodwall base of wall annotation
V-FLOD-CNTR	Floodwall centerline
V-FLOD-CNTR-IDEN	Floodwall centerline annotation
V-FLOD-DRNS	Floodwall toe drain
V-FLOD-DRNS-IDEN	Floodwall toe drain annotation
V-FLOD-PILE	Floodwall sheet piling
V-FLOD-PILE-IDEN	Floodwall sheet piling annotation
V-FLOD-TOE~	Floodwall toe outline
V-FLOD-TOP~	Floodwall top of wall
V-FLOD-TOP~-IDEN	Floodwall top of wall annotation
Liquid Fuel	
V-FUEL-BERM	Berms for retaining fuel in case of major tank/line rupture
V-FUEL-DEFL-PIPE	Defueling piping
V-FUEL-DEVC	Air eliminators, filter strainers, hydrant fill points, line vents, markers, oil/water separators, reducers, regulators, and valves
V-FUEL-FLOW	Flow direction arrows
V-FUEL-IDEN	Identifier tags, symbol modifier, and text
V-FUEL-JBOX	Junction boxes, manholes, handholes, test boxes
V-FUEL-MAIN-PIPE	Main fuel piping
V-FUEL-METR	Meters
V-FUEL-SERV-PIPE	Service piping
V-FUEL-STNS-PUMP	Booster pump stations

Leve/Layer Naming	
AIA Format	Level/Layer Description
V-FUEL-TANK	Fuel tanks
V-FUEL-TRCH	Fuel line trench
V-FUEL-VALT	Hydrant control/vent/valve pits/vaults
Grade Linework	
V-GRAD-AFTR	After dredge depth
V-GRAD-EXST	Existing grade, ground line
V-GRAD-EXST-BASE	Base survey
V-GRAD-EXST-SYR1	Survey year one or area one
V-GRAD-EXST-SYR2	Survey year two or area two
V-GRAD-EXST-SYR3	Survey year three or area three
V-GRAD-EXST-SYR4	Survey year four or area four
V-GRAD-IDEN	Grade annotation
V-GRAD-PRED	Pre-dredge
V-GRAD-SCLN	Stability control line
Grid Lines	
V-GRID-FRAM	Frame
V-GRID-MAJR	Major grid lines
V-GRID-MINR	Minor grid lines
V-GRID-TEXT	Border text, annotation
Geothermal Heat Pump System	
V-GTHP-EQPM	Geothermal heat pump system equipment
V-GTHP-IDEN	Geothermal heat pump annotation
V-GTHP-RETN-PIPE	Geothermal heat pump system return piping
V-GTHP-SUPP-PIPE	Geothermal heat pump system supply piping
High Temperature/Chilled Water System	
V-HTCW-CWTR-MAIN	Main chilled water piping
V-HTCW-CWTR-PLNT	Chilled water plant
V-HTCW-CWTR-SERV	Chilled water service piping
V-HTCW-DEVC	Rigid anchors, anchor guides, rectifiers, reducers, markers, pumps, regulators, tanks, and valves
V-HTCW-HWTR-MAIN	Main high temperature piping
V-HTCW-HWTR-PLNT	High temperature water plant
V-HTCW-HWTR-SERV	High temperature service piping
V-HTCW-IDEN	Identifier tags, symbol modifier, and text
V-HTCW-JBOX	Junction boxes, manholes, handholes, test boxes
V-HTCW-LWTR-MAIN	Main low temperature piping
V-HTCW-LWTR-SERV	Low temperature service piping
V-HTCW-METR	Meters
V-HTCW-RETN-PIPE	Return for all HTCW lines
V-HTCW-STEM-MAIN	Main steam piping
V-HTCW-STEM-SERV	Steam service piping
V-HTCW-STNS-PUMP	Pump stations
V-HTCW-VALT	Valve pits/vaults, steam pits
Hydrosurveys	
V-HYDS-BKLN	Breaklines
V-HYDS-BKLN-COMM	Subsurface utilities communications breakline
V-HYDS-BKLN-DOMW	Subsurface utilities water breakline
V-HYDS-BKLN-ELEC	Subsurface utilities electric breakline
V-HYDS-BKLN-FUEL	Subsurface utilities liquid fuel breakline

Leve/Layer Naming	
AIA Format	Level/Layer Description
V-HYDS-BKLN-NGAS	Subsurface utilities natural gas breakline
V-HYDS-BKLN-SSWR	Subsurface utilities sanitary sewer breakline
V-HYDS-BKLN-STRM	Subsurface utilities storm sewer breakline
V-HYDS-BNDY-EXTR	Surface exterior boundary
V-HYDS-BNDY-INTR	Surface interior boundary
V-HYDS-BORE	Boring locations and text
V-HYDS-COOR	Coordinate grid text annotation
V-HYDS-COOR-LALO	Latitude and longitude grid ticks
V-HYDS-COOR-STAT	State Plane coordinate ticks
V-HYDS-COOR-UTM~	UTM coordinate ticks
V-HYDS-DTMO	DTM obscure area boundary
V-HYDS-DTMP	DTM points
V-HYDS-DTMT	DTM triangles
V-HYDS-MAJR	Major contours
V-HYDS-MAJR-IDEN	Major contours - annotation
V-HYDS-MINR	Minor contours
V-HYDS-MINR-IDEN	Minor contours - annotation
V-HYDS-PERI	Surface perimeter
V-HYDS-SHAP	Inroads generated shapes/lines
V-HYDS-SHOR	Shorelines, land features, and references
V-HYDS-SLOP-FILL	Cut/fill slopes
V-HYDS-SLOP-IDEN	Cut/fill slope, top/toe slope annotation
V-HYDS-SLOP-TOPT	Top/toe slopes
V-HYDS-SOUN	Soundings and overbanks
V-HYDS-SPOT	Spot elevations
V-HYDS-VOID	Surface void region
V-HYDS-WATR	Water level reference (e.g., LWRP, after-grading LWRP, SWP, etc.)
Industrial Waste Water	
V-INDW-DEVC	Grit chambers, flumes, neutralizers, oil/water separators, ejectors, tanks, and valves
V-INDW-FLOW	Flow direction arrows
V-INDW-IDEN	Identifier tags, symbol modifier, and text
V-INDW-JBOX	Junction boxes and manholes
V-INDW-LAGN	Lagoons
V-INDW-MAIN-PIPE	Main industrial waste water piping
V-INDW-METR	Meters
V-INDW-PLNT	Treatment plants
V-INDW-SERV-PIPE	Industrial waste water service piping
V-INDW-SIGN	Surface markers/signs
V-INDW-STNS-LIFT	Lift stations
Irrigation	
V-IRRG-EQPM	Irrigation equipment (e.g., controllers, valves, etc.)
V-IRRG-IDEN	Irrigation annotation
V-IRRG-PIPE	Irrigation piping
V-IRRG-WELL	Irrigation wells
Joints	
V-JNTS-CNSL	Construction joints - longitudinal
V-JNTS-CNST	Construction joints - transverse
V-JNTS-CNTL	Contraction joints - longitudinal

Leve/Layer Naming	Level/Layer Description
AIA Format	
V-JNTS-CNTT	Contraction joints - transverse
V-JNTS-EDGE	Thickened edges
V-JNTS-EXPJ	Expansion joints
V-JNTS-IDEN	Joint annotation
Levees	
V-LEVE-BANK-IDEN	Levee top of bank annotation
V-LEVE-TOPB	Levee top of bank
V-LEVE-BERM	Existing berms
V-LEVE-BNCH	Levee bench design feature lines (breaklines form DTMs)
V-LEVE-BNCH-IDEN	Levee bench annotation
V-LEVE-BRRW	Borrow limits
V-LEVE-CNTR	Levee centerline
V-LEVE-CNTR-IDEN	Levee centerline annotation
V-LEVE-IDEN	Levee annotation
V-LEVE-OTLN	Levee outline
V-LEVE-SLOP	Levee slope indicator with annotation
V-LEVE-STAN	Levee stationing
V-LEVE-TOE~	Levee toe
V-LEVE-TOE~-IDEN	Levee toe annotation
Lights	
V-LITE-EXTR	Exterior lights
V-LITE-IDEN	Light identifier tags, symbol modifiers, and text
Military Ranges	
V-MILR-BATP	Battle positions
V-MILR-CAMS	Range cameras
V-MILR-FOXH	Fox holes and pits
V-MILR-MATS	Moving army targets
V-MILR-MITS	Moving infantry targets
V-MILR-MITS-IDEN	Moving infantry targets annotation
V-MILR-PUTS	Pop up targets
V-MILR-PUTS-IDEN	Pop up targets annotation
V-MILR-SATS	Stationary army targets
V-MILR-SATS-IDEN	Stationary army targets annotation
V-MILR-SITS	Stationary infantry targets
V-MILR-SITS-IDEN	Stationary infantry targets annotation
Natural Gas	
V-NGAS-EQPM	Equipment (pumps, motors, etc.)
V-NGAS-FLOW	Flow direction arrows
V-NGAS-IDEN	Identifier tags, symbol modifier, and text
V-NGAS-INST	Instrumentation (valves, etc.)
V-NGAS-METR	Meters
V-NGAS-MHOL	Manholes
V-NGAS-PIPE	Natural gas piping
V-NGAS-SIGN	Surface markers/signs
V-NGAS-STNS-PUMP	Compressor stations
V-NGAS-STNS-REDC	Reducing stations
V-NGAS-TANK	Tanks
V-NGAS-VALT	Valve/vent pits/vaults

Leve/Layer Naming	Level/Layer Description
AIA Format	
Obstructions	
V-OBST-AIRS	Airspace obstructions
V-OBST-AIRS-IDEN	Airspace obstruction annotation
V-OBST-UWTR	Underwater obstructions (e.g., sunken ship, barge, etc.)
V-OBST-UWTR-IDEN	Underwater obstruction annotation
Overrun Areas	
V-OVRN-CNTR	Centerlines
V-OVRN-CNTR-IDEN	Centerline annotation
V-OVRN-IDEN	Airfield overrun area - annotation
V-OVRN-OTLN	Airfield overrun area - outlines
V-OVRN-SHLD-MRKG	Shoulder markings
Pads (Arm/Disarm/Calibration, etc.)	
V-PADS-CNTR	Centerlines
V-PADS-CNTR-IDEN	Centerline annotation
V-PADS-IDEN	Pads - annotation
V-PADS-OTLN	Pad - outlines
V-PADS-SHLD	Shoulders with annotation
Power	
V-POWR-DEVC	Capacitors, voltage regulators, motors, buses, grounds, and markers
V-POWR-GENR	Generators
V-POWR-IDEN	Power annotation
V-POWR-JBOX	Junction boxes, pull boxes, manholes, handholes, pedestals, splices
V-POWR-METR	Meters
V-POWR-POLE	Power poles
V-POWR-POLE-GUYS	Guying equipment
V-POWR-SBST	Substation equipment
V-POWR-SWCH	Fuse cutouts, pole mounted switches, circuit breakers, gang operated disconnects, reclosers, cubicle
V-POWR-XFMR-PADM	Pad mounted transformers
V-POWR-XFMR-POLM	Pole mounted transformers
Primary Electrical Cables	
V-PRIM-OVHD	Overhead electrical utility lines
V-PRIM-OVHD-IDEN	Identifier tags, symbol modifiers, and text
V-PRIM-UGND	Underground electrical utility lines
V-PRIM-UGND-IDEN	Identifier tags, symbol modifiers, and text
Parking Lots	
V-PRKG-CNTR	Parking lot centerlines
V-PRKG-CNTR-IDEN	Parking lot centerline annotation
V-PRKG-CURB	Curbs and gutters
V-PRKG-DRAN	Drainage slope indications
V-PRKG-FIXT	Parking lot fixtures (e.g., wheel stops, parking meters)
V-PRKG-FLNE	Fire lanes
V-PRKG-IDEN	Parking lot annotation
V-PRKG-MRKG	Pavement markings
V-PRKG-OTLN	Parking lot outlines
V-PRKG-SIGN	Signs
Property	
V-PROP-BRNG	Bearings and distance labels
V-PROP-ESMT	Easements

Leve/Layer Naming	
AIA Format	Level/Layer Description
V-PROP-IDEN	Property annotation
V-PROP-LINE	Property lines (Existing recorded plats)
V-PROP-QTRS	Quarter lines
V-PROP-RWAY	Right of ways
V-PROP-SBCK	Setback lines
V-PROP-SECT	Section lines
V-PROP-SECT-IDEN	Section lines annotation
V-PROP-SUBD	Subdivision (interior) lines
V-PROP-SXTS	Sixteenth lines (40 lines)
V-PROP-TSHP	Township/range lines
V-PROP-TSHP-IDEN	Township/range lines annotation
Pavements	
V-PVMT-ASPH	Pavement pattern - asphalt
V-PVMT-CONC	Pavement pattern - concrete
V-PVMT-GRVL	Pavement pattern - gravel
V-PVMT-IDEN	Road, parking lot, railroad, airfield pavement annotation
V-PVMT-MRKG	Pavement markings
V-PVMT-PATT	Joint patterns, text and dimensions
Railroads	
V-RAIL-CNTR	Railroad track centerlines
V-RAIL-CNTR-IDEN	Railroad track centerline annotation
V-RAIL-EQPM	Railroad equipment (e.g., gates, signals)
V-RAIL-IDEN	Railroad - annotation
V-RAIL-TRAK	Railroad tracks
Rivers	
V-RIVR-BOTM	River bottom
V-RIVR-CNTR	Centerline of river
V-RIVR-EDGE	River edge
V-RIVR-IDEN	Identifier tags, symbol modifiers, and text
V-RIVR-TOPB	Top of river bank
Roads, Streets, and Highways	
V-ROAD-ASPH	Road outlines - asphalt surface
V-ROAD-CNTR	Road centerlines
V-ROAD-CNTR-IDEN	Road centerline annotation
V-ROAD-CONC	Road outlines - concrete surface
V-ROAD-CURB	Curbs and gutters
V-ROAD-GRAL	Guard rails
V-ROAD-GRVL	Road outlines - gravel surface
V-ROAD-IDEN	Road, street, highway annotation
V-ROAD-MRKG	Pavement markings
V-ROAD-OTLN	Road outlines
V-ROAD-PATT	Joint patterns, text and dimensions
V-ROAD-SHLD	Roadway shoulders
V-ROAD-SIGN	Signs
V-ROAD-UPVD	Road outlines - unpaved surface
Riprap and Other Permanent Erosion Control Items	
V-RRAP-BLKT	Natural/synthetic mats, blankets, textiles, and grids used for slope stabilization
V-RRAP-GABN	Gabions

Leve/Layer Naming	
AIA Format	Level/Layer Description
V-RRAP-MATS	Articulated concrete mats
V-RRAP-RVMT	Revetments
V-RRAP-TRET	Soil cement, fiber reinforced soil, and chemical erosion control treatments
V-RRAP-VEGE	Erosion control aquatic vegetation and planted riparian buffers
V-RRAP-WEIR	Weirs
Runways	
V-RUNW-BLST	Blast pad and stopway markings
V-RUNW-CNTR	Centerlines
V-RUNW-CNTR-MRKG	Centerline markings
V-RUNW-DISP	Displaced threshold markings
V-RUNW-DIST	Fixed distance markings
V-RUNW-EDGE	Airfield runway edges
V-RUNW-IDEN	Airfield runway annotation
V-RUNW-SHLD	Shoulder markings
V-RUNW-SIDE	Side stripes
V-RUNW-TDZM	Touchdown zone markers
V-RUNW-THRS	Threshold markers
Secondary Electrical Cables	
V-SECD-OVHD	Overhead electrical utility lines
V-SECD-OVHD-IDEN	Identifier tags, symbol modifiers, and text
V-SECD-UGND	Underground electrical utility lines
V-SECD-UGND-IDEN	Identifier tags, symbol modifiers, and text
Site Features	
V-SITE-EWAT	Edge of water
V-SITE-FENC	Fences and handrails
V-SITE-FLDS	Stump fields
V-SITE-IDEN	Existing site feature/structure annotation
V-SITE-OTLN	Existing site features (play structures, bike racks, benches, recreational equipment)
V-SITE-ROCK	Rock and rock outcroppings, boulders and cobble
V-SITE-SOIL	In-situ areas of bare, denuded, or eroded soil
V-SITE-STRC	Structures (bridges, sheds, foundation pads, footings, etc.)
V-SITE-STRS	Stairs and ramps
V-SITE-VEGE	Existing treelines and vegetation
V-SITE-VEGE-IDEN	Existing treelines and vegetation - identification
V-SITE-WALK	Walks, trails, and bicycle paths
V-SITE-WATR	Water features
Special Systems	
V-SPCL-SYST	Special systems (UMCS, EMCS, etc.)
V-SPCL-SYST-IDEN	Special systems (UMCS, EMCS, etc.) identifier tags, symbol modifier, and text
V-SPCL-TRAF	Traffic signal system
V-SPCL-TRAF-IDEN	Traffic signal identifier tags, symbol modifier, and text
Sanitary Sewer	
V-SSWR-DEVC	Grease traps, grit chambers, flumes, neutralizers, oil/water separators, ejectors, and valves
V-SSWR-FILT	Filtration beds
V-SSWR-FLOW	Flow direction arrows
V-SSWR-IDEN	Identifier tags, symbol modifier, and text
V-SSWR-JBOX	Junction boxes and manholes
V-SSWR-LAGN	Lagoons

Leve/Layer Naming	Level/Layer Description
AIA Format	
V-SSWR-LEAC	Leach field
V-SSWR-MAIN-PIPE	Sanitary sewer piping
V-SSWR-NITF	Nitrification drain fields
V-SSWR-PLNT	Treatment plants
V-SSWR-SERV-PIPE	Sanitary sewer service piping
V-SSWR-SIGN	Surface markers/signs
V-SSWR-STNS-PUMP	Booster pump stations
V-SSWR-TANK	Septic tanks
Storm Sewer	
V-STRM-AFFF	AFFF lagoon/detention pond
V-STRM-CHUT	Chutes and concrete erosion control structures
V-STRM-CULV	Culverts
V-STRM-DEVC	Downspouts, flumes, oil/water separators, and flap gates
V-STRM-FLOW	Flow direction arrows
V-STRM-FMON	Flow monitoring station
V-STRM-HWAL	Headwalls and endwalls
V-STRM-IDEN	Identifier tags, symbol modifier, and text
V-STRM-INLT	Inlets (curb, surface, and catch basins)
V-STRM-MAIN-PIPE	Storm sewer piping
V-STRM-MHOL	Manholes
V-STRM-POND	Retention ponds, lagoons, watersheds, and basins
V-STRM-ROOF	Roof drain line
V-STRM-SERV-PIPE	Storm sewer service piping
V-STRM-SIGN	Surface markers/signs
V-STRM-STNS-PUMP	Pump stations
V-STRM-SUBS-PIPE	Subsurface drain piping
Survey	
V-SURV-DATA	Survey data (benchmarks and horizontal control points or monuments)
V-SURV-IDEN	Survey, baseline, and control line annotation
V-SURV-LINE	Survey, baseline, and control line
V-SURV-SYMB	Survey line symbol (PIs)
Taxiways	
V-TAXI-CNTR	Centerlines
V-TAXI-CNTR-IDEN	Centerline annotation
V-TAXI-CNTR-MRKG	Centerline markings
V-TAXI-EDGE	Edge markings
V-TAXI-HOLD	Holding lines
V-TAXI-IDEN	Taxiway - annotation
V-TAXI-OTLN	Taxiway - outlines
V-TAXI-SHLD	Shoulders with annotation
Topography	
V-TOPO-BKLN	Breaklines
V-TOPO-BKLN-COMM	Subsurface utilities communications breakline
V-TOPO-BKLN-DOMW	Subsurface utilities water breakline
V-TOPO-BKLN-ELEC	Subsurface utilities electric breakline
V-TOPO-BKLN-FUEL	Subsurface utilities liquid fuel breakline
V-TOPO-BKLN-NGAS	Subsurface utilities natural gas breakline
V-TOPO-BKLN-SSWR	Subsurface utilities sanitary sewer breakline

Leve/Layer Naming	Level/Layer Description
AIA Format	
V-TOPO-BKLN-STRM	Subsurface utilities storm sewer breakline
V-TOPO-BNDY-EXTR	Surface exterior boundary
V-TOPO-BNDY-INTR	Surface interior boundary
V-TOPO-BORE	Boring locations and text
V-TOPO-COOR	Coordinate grid text annotation
V-TOPO-COOR-LALO	Latitude and longitude grid ticks
V-TOPO-COOR-STAT	State Plane coordinate ticks
V-TOPO-COOR-UTM~	UTM coordinate ticks
V-TOPO-DTMO	DTM obscure area boundary
V-TOPO-DTMP	DTM points
V-TOPO-DTMT	DTM triangles
V-TOPO-MAJR	Major contours
V-TOPO-MAJR-IDEN	Major contours - annotation
V-TOPO-MINR	Minor contours
V-TOPO-MINR-IDEN	Minor contours - annotation
V-TOPO-PERI	Surface perimeter
V-TOPO-SHAP	Application generated shapes/lines
V-TOPO-SHOR	Shorelines, land features, and references
V-TOPO-SLOP-FILL	Cut/fill slopes
V-TOPO-SLOP-IDEN	Cut/fill slope, top/toe slope annotation
V-TOPO-SLOP-TOPT	Top/toe slopes
V-TOPO-SOUN	Soundings and overbanks
V-TOPO-SPOT	Spot elevations
V-TOPO-VOID	Surface void region
V-TOPO-WATR	Water level reference (e.g., LWRP, after-grading LWRP, SWP, etc.)
Airfield Traffic Areas	
V-TRAF-IDEN	Airfield traffic area annotation
V-TRAF-TYP A	Type A traffic area
V-TRAF-TYP B	Type B traffic area
V-TRAF-TYP C	Type C traffic area
Water Supply	
V-WATR-DEVC	Connectors, faucets, reducers, regulators, vents, intake points, taps, backflow preventers, and valves
V-WATR-HYDT	Flushing hydrants
V-WATR-IDEN	Identifier tags, symbol modifier, and text
V-WATR-MAIN-PIPE	Main domestic water piping
V-WATR-METR	Meters
V-WATR-NPW~-PIPE	Non-potable water piping
V-WATR-SERV-PIPE	Domestic water service piping
V-WATR-SIGN	Surface markers/signs
V-WATR-STNS-PUMP	Booster pump stations
V-WATR-STNS-REDC	Pressure reducing stations
V-WATR-TANK	Water storage tanks
V-WATR-VALT	Valve/vent pits/vaults
V-WATR-WELL	Water well houses
Wetlands	
V-WETL-BOGS	Bogs
V-WETL-FENS	Fens
V-WETL-IDEN	Wetland annotation

Leve/Layer Naming	Level/Layer Description
AIA Format	
V-WETL-MRSH	Fresh water marshes
V-WETL-MRSH-SALT	Tidal saltwater marshes
V-WETL-MRSH-TIDL	Tidal freshwater marsh
V-WETL-PCSN	Pocosins
V-WETL-PHOL	Vernal pools, playas, prairie potholes, wet meadows, and wet prairies
V-WETL-RPRN	Riparian forested wetlands
V-WETL-SLGH	Sloughs
V-WETL-SWMP	Swamps
Sections	
V-SECT-IDEN	Component identification numbers
V-SECT-MBND	Material beyond section cut
V-SECT-MCUT	Material cut by section
V-SECT-PATT	Textures and hatch patterns
General Information	See Discipline: General Information for a list of available Annotation layers/levels

A.4 Geotechnical

Leve/Layer Naming	Level/Layer Description
AIA Format	
Buildings	
B-BLDG-FTPT	Building footprints
B-BLDG-IDEN	Building and other stucture annotation
Geophysical Borings	
B-BORE-CONE	Cone penetrometer test location
B-BORE-HOLE	Geophysical boring locations
B-BORE-IDEN	Geophysical location identification
B-BORE-LINE	Geophysical transect lines
B-BORE-PUSH	Direct push test location
B-BORE-STRK	Geophysical strike line
Consolidation Curve	
B-CONS-DATA	Consolidation curve data
B-CONS-DATA-TEXT	Consolidation curve data text
B-CONS-FRAM	Consolidation curve frame
B-CONS-GRID	Consolidation curve grid
B-CONS-GRID-TEXT	Consolidation curve grid text
Excavations	
B-EXCV-EXST	Existing excavation
B-EXCV-FUTR	Future excavation
B-EXCV-PROP	Proposed excavation
Grouting	
B-GROU-ALGN	Grout hole alignments
B-GROU-HOLE	Borehold made specifically for grouting
B-GROU-PRIM	Primary grout holes
B-GROU-QUAT	Quaternary grout holes
B-GROU-SECD	Secondary grout holes
B-GROU-TERT	Tertiary grout holes
Water Content	
B-H2OC-ATTB-DATA	Water content Atterberg limits
B-H2OC-ATTB-TEXT	Water content Atterberg limits text
B-H2OC-GRID-MAJR	Water content major grid
B-H2OC-GRID-MINR	Water content minor grid
B-H2OC-GRID-TEXT	Water content grid text
B-H2OC-MOIS-DATA	Water content moisture content points and lines
B-H2OC-MOIS-TEXT	Water content moisture content text
Instrumentation	
B-INST-EXTN	Extensometers
B-INST-EXTN-IDEN	Extensometer identification
B-INST-GAGE	Pressure gages
B-INST-GAGE-IDEN	Pressure gage identification
B-INST-INCL	Inclinometers
B-INST-INCL-IDEN	Inclinometer identification
B-INST-SETL	Settlement monuments
B-INST-SETL-IDEN	Settlement monument identification
Joints	
B-JNTS-CNTJ-LONG	Construction joints - longitudinal
B-JNTS-CNTJ-TRAV	Construction joints - transverse
B-JNTS-CTRJ-LONG	Contraction joints - longitudinal

Leve/Layer Naming	Level/Layer Description
AIA Format	
B-JNTS-CTRJ-TRAV	Contraction joints - transverse
B-JNTS-EDGE	Thickened edges
B-JNTS-EXPJ	Expansion joints
Logs	
B-LOGS-FDTA	Field data
B-LOGS-FORM	Bore log form
B-LOGS-FRAM	Frame for boring log and associated test data
B-LOGS-FRAM-TEXT	Text associated with boring log frame
B-LOGS-LDTA	Laboratory data
B-LOGS-PATT	Soil/rock patterns
Monitoring Points	
B-MONP-SEEP	Seepage monitoring point
B-MONP-WEIR	Weirs
Normal Stress	
B-NORM-DATA	Normal stress data
B-NORM-DATA-TEXT	Normal stress data text
B-NORM-GRID-MAJR	Normal stress major grid
B-NORM-GRID-MINR	Normal stress minor grid
B-NORM-GRID-TEXT	Normal stress grid text
Plasticity Chart	
B-PLAS-DATA	Plasticity chart data
B-PLAS-DATA-TEXT	Plasticity chart data text
B-PLAS-FRAM	Plasticity chart frame
B-PLAS-GRID	Plasticity chart grid
B-PLAS-GRID-TEXT	Plasticity chart grid text
Pavements	
B-PVMT-MISM	Mismatched pavement joint
B-PVMT-OTLN-AGSC	Outline - aggregate surface course and gravel
B-PVMT-OTLN-HMAC	Outline - hot mix, asphaltic concrete
B-PVMT-OTLN-PCCP	Outline - Portland cement, concrete pavement
B-PVMT-PATT-AGSC	Pattern - aggregate surface course and gravel
B-PVMT-PATT-HMAC	Pattern - hot mix, asphaltic concrete
B-PVMT-PATT-PCCP	Pattern - Portland cement, concrete pavement
B-PVMT-REIN	Reinforced pavement
Sample Locations	
B-SAMP-AUGR	Auger sample location
B-SAMP-CORE	Core sample location
B-SAMP-DRVE	Drive sample (shelby split spoon) location
B-SAMP-GRAB	Grab sample location
B-SAMP-IDEN	Sample location identification
B-SAMP-PERC	Percolation test hole
B-SAMP-PITS	Test pit sample location
B-SAMP-VERT	Vertical core hole location
B-SAMP-WASH	Wash bored hole location
Shear Strength vs. Normal Stress	
B-SSNS-DATA	Shear strength vs. normal stress data
B-SSNS-DATA-TEXT	Shear strength vs. normal stress data text
B-SSNS-FRAM	Shear strength vs. normal stress frame

Level/Layer Naming	Level/Layer Description
AIA Format	
B-SSNS-GRID	Shear strength vs. normal stress grid
B-SSNS-GRID-TEXT	Shear strength vs. normal stress grid text
Shear Strength	
B-SSTR-1TST-DATA	Shear strength 1 Point Q test data
B-SSTR-1TST-TEXT	Shear strength 1 Point Q test text
B-SSTR-GRID-MAJR	Shear strength major grid
B-SSTR-GRID-MINR	Shear strength minor grid
B-SSTR-GRID-TEXT	Shear strength grid text
B-SSTR-QTST-DATA	Shear strength Q test data
B-SSTR-QTST-TEXT	Shear strength Q test text
B-SSTR-RTST-DATA	Shear strength R test data
B-SSTR-RTST-TEXT	Shear strength R test text
B-SSTR-STST-DATA	Shear strength S test data
B-SSTR-STST-TEXT	Shear strength S test text
B-SSTR-UTST-DATA	Shear strength UCT test data
B-SSTR-UTST-TEXT	Shear strength UCT test text
B-SSTR-VTST-DATA	Shear strength Vane shear test data
B-SSTR-VTST-TEXT	Shear strength Vane shear test text
Tabular Test	
B-TABT-DATA	Tabular test data
B-TABT-DATA-TEXT	Tabular test data text
B-TABT-FRAM	Tabular test data frame
B-TABT-GRID	Tabular test data grid
B-TABT-GRID-TEXT	Tabular test data grid text
Wells	
B-WELL-ASR~	ASR wells
B-WELL-HORZ	Horizontal drain
B-WELL-MONT	Monitoring wells
B-WELL-PIZO	Piezometers
B-WELL-VERT	Vertical drain
Wet Density	
B-WETD-DATA	Wet density data
B-WETD-DATA-TEXT	Wet density data text
B-WETD-GRID-MAJR	Wet density major grid
B-WETD-GRID-MINR	Wet density minor grid
B-WETD-GRID-TEXT	Wet density grid text
Sections	
B-SECT-IDEN	Component identification numbers
B-SECT-MBND	Material beyond section cut
B-SECT-MCUT	Material cut by section
B-SECT-PATT	Textures and hatch patterns
B-SECT-SLOG	Stick log graphics
B-SECT-STRA	Stratigraphy
Detail Information	
B-DETL-GRPH	Graphics, gridlines, non-text items
* = Check to see if a Civil Joint Layout Plan has been developed, to avoid duplication	
General Information See Discipline: General Information for a list of available Annotation layers/levels	

A.5 Civil

Leve/Layer Naming		Level/Layer Description
AIA Format		
Alignments		
C-ALGN-DATA	Alignment coordinates and curve data	
C-ALGN-LINE	Alignments	
C-ALGN-MAJR	Alignment major stationing and tick marks	
C-ALGN-MARK	Alignment tick marks	
C-ALGN-MINR	Alignment minor stationing and tick marks	
C-ALGN-STAT	Alignment stationing and tick marks, alignment PI stations	
C-ALGN-SYMB	Alignment symbols (PIs)	
C-ALGN-TEXT	Alignment text, annotation with associated leaders	
Aprons		
C-APRN-CNTR	Apron centerlines	
C-APRN-CNTR-IDEN	Apron centerline annotation	
C-APRN-GRND	Grounding points	
C-APRN-HOLD	Holding position markings	
C-APRN-IDEN	Airfield apron - annotation	
C-APRN-MOOR	Mooring points	
C-APRN-MRKG	Apron markings	
C-APRN-OTLN	Airfield apron - outlines	
C-APRN-SECU	Security zone markings	
C-APRN-SHLD	Shoulders with annotation	
C-APRN-SHLD-MRKG	Shoulder stripes	
Beach Renourishment		
C-BECH-BANK-TOP~	Beach top of bank	
C-BECH-BKLN	Beach breakline	
C-BECH-BLIN	Beach baseline and control line	
C-BECH-BLIN-IDEN	Beach baseline and control line annotation	
C-BECH-BNCH	Beach bench	
C-BECH-CNTR	Beach centerline	
C-BECH-CNTR-IDEN	Beach centerline annotation	
C-BECH-ELIN	Beach erosion control line	
C-BECH-ELIN-IDEN	Beach erosion control line annotation	
C-BECH-LIMT	Beach limit lines	
C-BECH-OHWM	Ordinary high water marks	
C-BECH-OTLN	Beach outline	
C-BECH-SLOP-IDEN	Beach slope indicator with annotation	
C-BECH-SLOP-TOP~	Beach top of slope	
C-BECH-SYMB	Beach symbols	
C-BECH-TOE~	Beach toe	
C-BECH-TOE~-IDEN	Beach toe annotation	
Buildings and Primary Structures		
C-BLDG-DECK	Outdoor decks (attached, no roof overhead)	
C-BLDG-DOCK	Loading docks	
C-BLDG-FTPT	Building footprints	
C-BLDG-IDEN	Building and other stucture annotation	
C-BLDG-OVHD	Building overhangs	
C-BLDG-PRCH	Porches (attached, roof overhead)	
Borrow Areas		
C-BORW-IDEN	Borrow/spoil area annotation	

Leve/Layer Naming	Level/Layer Description
AIA Format	
C-BORW-LINE	Borrow/spoil area
Bridges	
C-BRDG-CHRD-LOW~	Low chord
C-BRDG-CNTR	Bridge centerlines
C-BRDG-CTLJ	Control joints
C-BRDG-DECK	Bridge deck
C-BRDG-IDEN	Bridge annotation
C-BRDG-OTLN	Bridge outlines
C-BRDG-RLG~	Bridge railing
Channels	
C-CHAN-BANK-IDEN	Channel/canal top of bank annotation
C-CHAN-BANK-TOP~	Channel/canal top of bank
C-CHAN-BNCH	Channel/canal bench design feature lines (breaklines form DTMs)
C-CHAN-BWTR	Breakwaters
C-CHAN-CNTR	Channel centerline and survey report lines
C-CHAN-CNTR-IDEN	Channel centerline and survey report lines - annotation
C-CHAN-DACL	De-authorized channel limits, anchorages, etc.
C-CHAN-DACL-IDEN	De-authorized channel limits, anchorages, etc. - annotation
C-CHAN-DOCK	Docks, decks, floats, piers, and mooring facilities
C-CHAN-LIMIT	Channel limits, anchorages, turning basins, disposal areas, etc.
C-CHAN-LIMIT-IDEN	Channel limits, anchorages, turning basins, disposal areas, etc. - annotation
C-CHAN-NAID	Navigation aids and text
C-CHAN-SLOP-LINE	Channel cut/fill slope (Indicates cut and fill lines)
C-CHAN-SPOL	Spoil limits
C-CHAN-SYMB	Channel/canal symbols
C-CHAN-TEXT	Channel/canal text, annotation with associated leaders
C-CHAN-TOE~	Channel/canal toe
C-CHAN-TOE~-IDEN	Channel/canal toe annotation
C-CHAN-TURN	Turning points
C-CHAN-WIDE	Channel/canal widener
Dredging	
C-DRED-IDEN	Dredging annotation
C-DRED-LIMIT	Dredge limit lines
C-DRED-OHWM	Ordinary high water marks
Ditches or Washes	
C-DTCH-BOTM	Bottom of ditch or wash
C-DTCH-CNTR	Centerline of ditch or wash
C-DTCH-EWAT	Edge of water
C-DTCH-IDEN	Ditches and washes annotation
C-DTCH-TOP~	Top of ditch or wash
Habitats/Landforms	
C-ECCO-BURR	Burrow
C-ECCO-DENS	Den
C-ECCO-GATR	Gator hole
C-ECCO-HUMK	Hummocks
C-ECCO-IDEN	Habitat annotation
C-ECCO-NEST	Nest, nesting tree
C-ECCO-PRCH	Perch/nesting hole

Leve/Layer Naming	Level/Layer Description
AIA Format	
Erosion and Sediment Control (Temporary/Construction)	
C-EROS-CIPR	Culvert inlet protection
C-EROS-CNTE	Construction entrance
C-EROS-DDIV	Drainage divides
C-EROS-DVDK	Diversion dike
C-EROS-IDEN	Erosion and sediment control annotation
C-EROS-INPR	Inlet protection
C-EROS-SILT	Slit fence
C-EROS-SILT-CHCK	Silt check
C-EROS-SILT-TRAP	Silt fence
C-EROS-SSLT	Super slit fence
Fire Protection	
C-FIRE-HYDT	Hydrants and connections
C-FIRE-PIPE	Piping
Flood Hazard Area	
C-FLHA-025Y	25 year mark
C-FLHA-050Y	50 year mark
C-FLHA-100Y	100 year mark
C-FLHA-200Y	200 year mark
C-FLHA-500Y	500 year mark
C-FLHA-IDEN	Flood hazard area annotation
Floodwalls	
C-FLOD-BASE	Floodwall base of wall
C-FLOD-BASE-IDEN	Floodwall base of wall annotation
C-FLOD-CNTR	Floodwall centerline
C-FLOD-CNTR-IDEN	Floodwall centerline annotation
C-FLOD-DRNS	Floodwall toe drain
C-FLOD-DRNS-IDEN	Floodwall toe drain annotation
C-FLOD-PILE	Floodwall sheet piling
C-FLOD-PILE-IDEN	Floodwall sheet piling annotation
C-FLOD-TOE~	Floodwall toe outline
C-FLOD-TOP~	Floodwall top of wall
C-FLOD-TOP~-IDEN	Floodwall top of wall annotation
Liquid Fuel	
C-FUEL-BERM	Berms for retaining fuel in case of major tank/line rupture
C-FUEL-DEFL-PIPE	Defueling piping
C-FUEL-DEVC	Air eliminators, filter strainers, hydrant fill points, line vents, markers, oil/water separators, reducers, regulators, and valves
C-FUEL-FLOW	Flow direction arrows
C-FUEL-IDEN	Identifier tags, symbol modifier, and text
C-FUEL-JBOX	Junction boxes, manholes, handholes, test boxes
C-FUEL-MAIN-PIPE	Main fuel piping
C-FUEL-METR	Meters
C-FUEL-SERV-PIPE	Service piping
C-FUEL-STNS-PUMP	Booster pump stations
C-FUEL-TANK	Fuel tanks
C-FUEL-TRCH	Fuel line trench
C-FUEL-VALT	Hydrant control/valve/vent pits/vaults
Grade Linework	

Leve/Layer Naming		Level/Layer Description
AIA Format		
C-GRAD-ALLOW		Allowable over depth
C-GRAD-BNCH		Bench cut
C-GRAD-DSGN		Design grade (proposed)
C-GRAD-EXCV		Excavation grade
C-GRAD-EXST		Existing grade, ground line
C-GRAD-FNSH		Finished grade
C-GRAD-FNSH-PRP1		Proposed Surface #1
C-GRAD-FNSH-PRP2		Proposed Surface #2
C-GRAD-FNSH-PRP3		Proposed Surface #3
C-GRAD-FNSH-PRP4		Proposed Surface #4
C-GRAD-GTXL		Geotextile placement grade
C-GRAD-IDEN		Grade annotation for cross sections and profiles
C-GRAD-REQD		Required depth
C-GRAD-SCLN		Stability control line
C-GRAD-WATR		Water surface in section view
Grid Lines		
C-GRID-FRAM		Frame
C-GRID-MAJR		Major grid lines
C-GRID-MINR		Minor grid lines
C-GRID-TEXT		Border text, annotation
Heliports		
C-HELI-BLST		Blast pad and stopway markings
C-HELI-CNTR		Centerline markings
C-HELI-DISP		Displaced threshold markings
C-HELI-DIST		Fixed distance markings
C-HELI-IDEN		Heliport numbers and letters
C-HELI-SHLD		Shoulder markings
C-HELI-SIDE		Side stripes
C-HELI-TDZM		Touchdown zone markers
C-HELI-THRS		Threshold markers
Industrial Waste Water		
C-INDW-DEVC		Grit chambers, flumes, neutralizers, oil/water separators, ejectors, tanks, and valves
C-INDW-FLOW		Flow direction arrows
C-INDW-IDEN		Identifier tags, symbol modifier, and text
C-INDW-JBOX		Junction boxes and manholes
C-INDW-LAGN		Lagoons
C-INDW-MAIN-PIPE		Main industrial waste water piping
C-INDW-METR		Meters
C-INDW-PLNT		Treatment plants
C-INDW-SERV-PIPE		Industrial waste water service piping
C-INDW-SIGN		Surface markers/signs
C-INDW-STNS-LIFT		Lift stations
Joints		
C-JNTS-CNSL		Construction joints - longitudinal
C-JNTS-CNST		Construction joints - transverse
C-JNTS-CNTL		Contraction joints - longitudinal
C-JNTS-CNTT		Contraction joints - transverse
C-JNTS-EDGE		Thickened edges

Leve/Layer Naming		Level/Layer Description
AIA Format		
C-JNTS-EXPJ		Expansion joints
C-JNTS-IDEN		Joint annotation
Levees		
C-LEVE-BANK-IDEN		Levee top of bank annotation
C-LEVE-TOPB		Levee top of bank
C-LEVE-BERM		Levee berm outline
C-LEVE-BNCH		Levee bench design feature lines (breaklines form DTMs)
C-LEVE-BNCH-IDEN		Levee bench annotation
C-LEVE-BRRW		Borrow limits
C-LEVE-CNTR		Levee centerline
C-LEVE-CNTR-IDEN		Levee centerline annotation
C-LEVE-IDEN		Levee annotation
C-LEVE-OTLN		Levee outline
C-LEVE-SLOP		Levee slope indicator with annotation
C-LEVE-STAN		Levee stationing
C-LEVE-TOE~		Levee toe
C-LEVE-TOE~-IDEN		Levee toe annotation
Military Ranges		
C-MILR-BATP		Battle positions
C-MILR-CAMS		Range cameras
C-MILR-FOXH		Fox holes and pits
C-MILR-MATS		Moving army targets
C-MILR-MITS		Moving infantry targets
C-MILR-MITS-IDEN		Moving infantry targets annotation
C-MILR-PUTS		Pop up targets
C-MILR-PUTS-IDEN		Pop up targets annotation
C-MILR-SATS		Stationary army targets
C-MILR-SATS-IDEN		Stationary army targets annotation
C-MILR-SITS		Stationary infantry targets
C-MILR-SITS-IDEN		Stationary infantry targets annotation
Natural Gas		
C-NGAS-EQPM		Equipment (pumps, motors, etc.)
C-NGAS-FLOW		Flow direction arrows
C-NGAS-IDEN		Identifier tags, symbol modifier, and text
C-NGAS-INST		Instrumentation (valves, etc.)
C-NGAS-METR		Meters
C-NGAS-MHOL		Manholes
C-NGAS-PIPE		Natural gas piping
C-NGAS-SIGN		Surface markers/signs
C-NGAS-STNS-PUMP		Compressor stations
C-NGAS-STNS-REDC		Reducing stations
C-NGAS-TANK		Tanks
C-NGAS-VALT		Valve/vent pits/vaults
Obstructions		
C-OBST-AIRS		Airspace obstructions
C-OBST-AIRS-IDEN		Obstruction annotation
Overrun Areas		
C-OVRN-CNTR		Centerlines

Leve/Layer Naming	Level/Layer Description
AIA Format	
C-OVRN-CNTR-IDEN	Centerline annotation
C-OVRN-IDEN	Airfield overrun area - annotation
C-OVRN-OTLN	Airfield overrun area - outlines
C-OVRN-SHLD-MRKG	Shoulder markings
Pads (Arm/Disarm/Calibration, etc.)	
C-PADS-CNTR	Centerlines
C-PADS-CNTR-IDEN	Centerline annotation
C-PADS-IDEN	Pads - annotation
C-PADS-OTLN	Pad - outlines
C-PADS-SHLD	Shoulders with annotation
Parking Lots	
C-PRKG-CARS	Graphic illustration of cars
C-PRKG-CNTR	Parking lot centerlines
C-PRKG-CNTR-IDEN	Parking lot centerline annotation
C-PRKG-CURB	Curbs and gutters
C-PRKG-DRAIN	Drainage slope indications
C-PRKG-FIXT	Parking lot fixtures (e.g., wheel stops, parking meters)
C-PRKG-FLNE	Fire lanes
C-PRKG-IDEN	Parking lot annotation
C-PRKG-MRKG	Pavement markings
C-PRKG-OTLN	Parking lot outlines
C-PRKG-SIGN	Signs
Property	
C-PROP-CONS	Construction limits/controls, staging area
C-PROP-ESMT	Easements
C-PROP-IDEN	Property annotation
C-PROP-LINE	Property lines
C-PROP-RWAY	Right of ways
C-PROP-RWAY-ACQU	Right of way to be acquired in perpetuity
C-PROP-SBCK	Setback lines
C-PROP-SECT	Section lines
C-PROP-SECT-IDEN	Section lines annotation
C-PROP-TSHP	Township/range lines
C-PROP-TSHP-IDEN	Township/range lines annotation
Pavements	
C-PVMT-ASPH	Pavement pattern - asphalt
C-PVMT-CONC	Pavement pattern - concrete
C-PVMT-GRVL	Pavement pattern - gravel
C-PVMT-IDEN	Road, parking lot, railroad, airfield pavement annotation
C-PVMT-MRKG	Pavement markings
C-PVMT-PATT	Joint patterns, text and dimensions
Railroads	
C-RAIL-CNTR	Railroad track centerlines
C-RAIL-CNTR-IDEN	Railroad track centerline annotation
C-RAIL-EQPM	Railroad equipment (e.g., gates, signals)
C-RAIL-IDEN	Railroad - annotation
C-RAIL-TRAK	Railroad tracks
Rivers	

Leve/Layer Naming	
AIA Format	Level/Layer Description
C-RIVR-BOTM	River bottom
C-RIVR-CNTR	Centerline of river
C-RIVR-EDGE	River edge
C-RIVR-IDEN	Identifier tags, symbol modifiers, and text
C-RIVR-TOPB	Top of river bank
Roads, Streets, and Highways	
C-ROAD-ASPH	Road outlines - asphalt surface
C-ROAD-CNTR	Road centerlines
C-ROAD-CNTR-IDEN	Road centerline annotation
C-ROAD-CONC	Road outlines - concrete surface
C-ROAD-CURB	Curbs and gutters
C-ROAD-GRAL	Guard rails
C-ROAD-GRVL	Road outlines - gravel surface
C-ROAD-IDEN	Road, street, highway annotation
C-ROAD-MRKG	Pavement markings
C-ROAD-PATT	Joint patterns, text and dimensions
C-ROAD-SHLD	Roadway shoulder
C-ROAD-SIGN	Signs
C-ROAD-UPVD	Road outlines - unpaved surface
Riprap and Other Permanent Erosion Control Items	
C-RRAP-GABN	Gabions
C-RRAP-MATS	Articulated concrete mats
C-RRAP-RVMT	Revetments
C-RRAP-WEIR	Weirs
Runways	
C-RUNW-BLST	Blast pad and stopway markings
C-RUNW-CNTR	Centerlines
C-RUNW-CNTR-MRKG	Centerline markings
C-RUNW-DISP	Displaced threshold markings
C-RUNW-DIST	Fixed distance markings
C-RUNW-EDGE	Airfield runway edges
C-RUNW-IDEN	Airfield runway annotation
C-RUNW-SHLD	Shoulder markings
C-RUNW-SIDE	Side stripes
C-RUNW-TDZM	Touchdown zone markers
C-RUNW-THRS	Threshold markers
Site Features	
C-SITE-BLIN	Site breakline
C-SITE-FENC	Fences and handrails
C-SITE-IDEN	Site feature annotation
C-SITE-STRC	Structures (bridges, sheds, foundation pads, footings, etc.)
C-SITE-STRS	Stairs and ramps
C-SITE-WALK	Walks, trails and bicycle paths
Sanitary Sewer	
C-SSWR-DEVC	Grease traps, grit chambers, flumes, neutralizers, oil/water separators, ejectors, and valves
C-SSWR-FILT	Filtration beds
C-SSWR-FLOW	Flow direction arrows
C-SSWR-IDEN	Identifier tags, symbol modifier, and text

Leve/Layer Naming	
AIA Format	Level/Layer Description
C-SSWR-JBOX	Junction boxes and manholes
C-SSWR-LAGN	Lagoons
C-SSWR-LEAC	Leach field
C-SSWR-MAIN-PIPE	Sanitary sewer piping
C-SSWR-NITF	Nitrification drain fields
C-SSWR-PLNT	Treatment plants
C-SSWR-SERV-PIPE	Sanitary sewer service piping
C-SSWR-SIGN	Surface markers/signs
C-SSWR-STNS-PUMP	Booster pump stations
C-SSWR-TANK	Septic tanks
Storm Sewer	
C-STRM-AFFF	AFFF lagoon/detention pond
C-STRM-CHUT	Chutes and concrete erosion control structures
C-STRM-CULV	Culverts
C-STRM-DEVC	Downspouts, flumes, oil/water separators, and flap gates
C-STRM-FLOW	Flow direction arrows
C-STRM-FMON	Flow monitoring station
C-STRM-HWAL	Headwalls and endwalls
C-STRM-IDEN	Identifier tags, symbol modifier, and text
C-STRM-INLT	Inlets (curb, surface, and catch basins)
C-STRM-MAIN-PIPE	Storm sewer piping
C-STRM-MHOL	Manholes
C-STRM-POND	Retention ponds, lagoons, watersheds, and basins
C-STRM-ROOF	Roof drain line
C-STRM-SERV-PIPE	Storm sewer service piping
C-STRM-SIGN	Surface markers/signs
C-STRM-STNS-PUMP	Pump stations
Sub-Surface Drainage	
C-STRM-SUBS-CHIM	Subsurface chimney drain
C-STRM-SUBS-COLL	Subsurface drain collector
C-STRM-SUBS-DRAN	Subsurface drainage layer
C-STRM-SUBS-FILT	Subsurface drain filter
C-STRM-SUBS-INCP	Subsurface interceptor drain
C-STRM-SUBS-GEOX	Subsurface drain geotextile material and filter fabric
C-STRM-SUBS-PIPE	Subsurface drain piping
C-STRM-SUBS-SEPR	Subsurface drain separation layer
Survey	
C-SURV-DATA	Survey data (benchmarks and horizontal control points or monuments)
C-SURV-IDEN	Survey, baseline, and control line annotation
C-SURV-LINE	Survey, baseline, and control lines
Taxiways	
C-TAXI-CNTR	Centerlines
C-TAXI-CNTR-IDEN	Centerline annotation
C-TAXI-CNTR-MRKG	Centerline markings
C-TAXI-EDGE	Edge markings
C-TAXI-HOLD	Holding lines
C-TAXI-IDEN	Taxiway - annotation
C-TAXI-OTLN	Taxiway - outlines

Leve/Layer Naming	Level/Layer Description
AIA Format	
C-TAXI-SHLD	Shoulders with annotation
Topography	
C-TOPO-BNDY-EXTR	Surface exterior boundary
C-TOPO-BNDY-INTR	Surface interior boundary
C-TOPO-BKLN	Breaklines
C-TOPO-BKLN-COMM	Subsurface utilities communications breakline
C-TOPO-BKLN-DOMW	Subsurface utilities water breakline
C-TOPO-BKLN-ELEC	Subsurface utilities electric breakline
C-TOPO-BKLN-FUEL	Subsurface utilities liquid fuel breakline
C-TOPO-BKLN-NGAS	Subsurface utilities natural gas breakline
C-TOPO-BKLN-SSWR	Subsurface utilities sanitary sewer breakline
C-TOPO-BKLN-STRM	Subsurface utilities storm sewer breakline
C-TOPO-BORE	Boring locations and text
C-TOPO-COOR	Coordinate grid text annotation
C-TOPO-COOR-LALO	Latitude and longitude grid ticks
C-TOPO-COOR-STAT	State Plane coordinate ticks
C-TOPO-COOR-UTM~	UTM coordinate ticks
C-TOPO-DTMO	DTM obscure area boundary
C-TOPO-DTMP	DTM points
C-TOPO-DTMT	DTM triangles
C-TOPO-MAJR	Major contours
C-TOPO-MAJR-IDEN	Major contours - annotation
C-TOPO-MINR	Minor contours
C-TOPO-MINR-IDEN	Minor contours - annotation
C-TOPO-SHAP	Application generated shapes/lines
C-TOPO-SHOR	Shorelines, land features, and references
C-TOPO-SLOP-FILL	Cut/fill slopes
C-TOPO-SLOP-IDEN	Cut/fill slope, top/toe slope annotation
C-TOPO-SLOP-TOPT	Top/toe slopes
C-TOPO-SOUN	Soundings and overbanks
C-TOPO-SPOT	Spot elevations
C-TOPO-SURF-PERI	Surface perimeter
C-TOPO-SURF-PONT	Surface feature points
C-TOPO-SURF-VOID	Surface void region
C-TOPO-WATR	Water level reference (LWRP, after-grading LWRP, SWL, etc.)
Airfield Traffic Areas	
C-TRAF-IDEN	Airfield traffic area annotation
C-TRAF-TYPA	Type A traffic area
C-TRAF-TYPB	Type B traffic area
C-TRAF-TYPC	Type C traffic area
Water Supply	
C-WATR-DEVC	Connectors, faucets, reducers, regulators, vents, intake points, taps, backflow preventers, and valves
C-WATR-HYDT	Flushing hydrants
C-WATR-IDEN	Identifier tags, symbol modifier, and text
C-WATR-MAIN-PIPE	Main domestic water piping
C-WATR-METR	Meters
C-WATR-NPW--PIPE	Non-potable water piping
C-WATR-SERV-PIPE	Domestic water service piping

Leve/Layer Naming	Level/Layer Description
AIA Format	
C-WATR-SIGN	Surface markers/signs
C-WATR-STNS-PUMP	Booster pump stations
C-WATR-STNS-REDC	Pressure reducing stations
C-WATR-TANK	Water storage tanks
C-WATR-VALT	Valve/vent pits/vaults
C-WATR-WELL	Water well houses
Wetlands	
C-WETL-BOGS	Bogs
C-WETL-FENS	Fens
C-WETL-IDEN	Wetland annotation
C-WETL-MRSH	Fresh water marshes
C-WETL-MRSH-SALT	Tidal saltwater marshes
C-WETL-MRSH-TIDL	Tidal freshwater marsh
C-WETL-PCSN	Pocosins
C-WETL-PHOL	Vernal pools, playas, prairie potholes, wet meadows, and wet prairies
C-WETL-RPRN	Riparian forested wetlands
C-WETL-SLGH	Sloughs
C-WETL-SWMP	Swamps
Elevations	
C-ELEV-IDEN	Component identification numbers
C-ELEV-OTLN	Outlines
C-ELEV-PATT	Textures and hatch patterns
C-ELEV-SIGN	Signage
Sections	
C-SECT-IDEN	Component identification numbers
C-SECT-MBND	Material beyond section cut
C-SECT-MCUT	Cuts through road surfaces, buildings, structures, fence lines, etc.
C-SECT-PATT	Textures and hatch patterns
Details	
C-DETL-GRPH	Graphics, gridlines, non-text items
General Information See Discipline: General Information for a list of available Annotation layers/levels	

A.6 Landscape

Leve/Layer Naming	Level/Layer Description
AIA Format	
Irrigation System	
L-IRRG-COVR	Irrigation coverage, spray distribution patterns
L-IRRG-EQPM	Equipment (e.g., controllers, valves, RPBPs, etc.)
L-IRRG-HEAD	Irrigation heads, bubblers, and drip irrigation emitters
L-IRRG-IDEN	Annotation
L-IRRG-PIPE	Piping
L-IRRG-SPKL	Sprinklers
Plant and Landscape Material	
L-PLNT-BEDS	Planting beds (perennial and annual beds)
L-PLNT-BUSH	Bushes and shrubs (e.g., evergreen, deciduous, etc.)
L-PLNT-BUSH-LINE	Bush and shrub line
L-PLNT-CTNR	Containers or planters
L-PLNT-GCVR	Groundcover and vines
L-PLNT-IDEN	Annotation
L-PLNT-MLCH	Mulches - organic and inorganic
L-PLNT-PLNT	Planting plants (e.g., ornamental annuals and perennials)
L-PLNT-SHAD	Shadow areas
L-PLNT-SPRG	Sprigs
L-PLNT-TREE	Trees (e.g., evergreen, deciduous, etc.)
L-PLNT-TREE-LINE	Tree line
L-PLNT-TURF	Lawn areas (turfing limits)
Site Improvements	
L-SITE-BRDG	Bridges (pedestrian)
L-SITE-DECK	Decks
L-SITE-FENC	Fencing
L-SITE-FURN	Furnishings
L-SITE-IDEN	Annotation
L-SITE-PLAY	Play structures
L-SITE-POOL	Pools and spas
L-SITE-ROCK	Boulders and cobble
L-SITE-RTWL	Retaining walls
L-SITE-SPRT	Sports fields
L-SITE-SWLK	Sidewalks and steps
Detail Information	
L-DETL-GRPH	Graphics, gridlines, non-text items
General Information	See Discipline: General Information for a list of available Annotation layers/levels

A.7 Structural

Level/Layer Naming	Level/Layer Description
AIA Format	
Access	
S-ACCS-ADIT	Adits in galleries and passages
S-ACCS-CHAM	Chambers
S-ACCS-EVTR	Elevators
S-ACCS-GLRY	Galleries, cross overs, trenches, etc.
S-ACCS-HTCH	Hatches
S-ACCS-LADD	Ladders and ladder safety devices
S-ACCS-MHOL	Manholes
S-ACCS-MISC	Miscellaneous access
S-ACCS-STRS	Stairs
S-ACCS-STRS-FRMG	Stair framing
S-ACCS-TUNL	Tunnels
Armor	
S-ARMR-CRNR	Corner protection, corner cap casting
S-ARMR-LINR	Protective liner (used for walls, culverts, etc.)
S-ARMR-MISC	Miscellaneous armor
S-ARMR-WALL	Wall armor
Beams	
S-BEAM-CNTR	Beam centerlines
S-BEAM-PRIM	Continuous beam or primary beam of two-way beam system
S-BEAM-RBAR	Beam rebar
S-BEAM-SECD	Girders or secondary beams of two-way beam system
Bracing	
S-BRCG-DIA~	Diagonal bracing
S-BRCG-HORZ	Horizontal bracing
S-BRCG-VERT	Vertical bracing
Bridges	
S-BRDG-ABUT	Abutments
S-BRDG-ABUT-RBAR	Abutment rebar
S-BRDG-BEAR	Bridge bearing
S-BRDG-BEAR-CNTR	Bridge bearing centerlines
S-BRDG-BENT	Bent cap
S-BRDG-BENT-CNTR	Centerline of bents
S-BRDG-BENT-RBAR	Bent cap rebar
S-BRDG-CURB	Curbs/sidewalks on structure
S-BRDG-DIAP	Diaphragms
S-BRDG-DIAP-RBAR	Diaphragm rebar
S-BRDG-DRNS	Drains
S-BRDG-FENC	Fencing rails, fabric, supports, and gates
S-BRDG-FEND	Fenders
S-BRDG-GIRD	Girders
S-BRDG-GIRD-CNTR	Girder centerline
S-BRDG-HEAD	Headers
S-BRDG-PIER	Piers
S-BRDG-STRG	Stringers
Columns	
S-COLS-CNTR	Column centerlines/working lines
S-COLS-POST	Short columns

Leve/Layer Naming	Level/Layer Description
AIA Format	
S-COLS-PRIM	Primary columns
S-COLS-RBAR	Column rebar
S-COLS-SECD	Secondary columns
Decking	
S-DECK-BRDG	Bridge deck
S-DECK-BRDG-RBAR	Bridge deck rebar
S-DECK-FLOR	Floor deck
S-DECK-FLOR-OPNG	Floor deck openings
S-DECK-RBAR	Deck rebar
S-DECK-ROOF	Roof deck
S-DECK-ROOF-OPNG	Roof deck openings
Equipment Pads and Foundations	
S-PADS-EQPM	Equipment pads
Erosion Control	
S-EROS-BARR	Vapor/capillary water barriers
S-EROS-GABN	Gabions
S-EROS-PVMT	Slope paving
S-EROS-RRAP	Riprap, stone protection, jetties, breakwaters
Fasteners & Connections	
S-FSTN-ABLT	Anchor bolts
S-FSTN-MISC	Fasteners and connections (non-specific)
S-FSTN-PL~~	Connection plates (shear plates, gusset plates, etc.)
Foundation	
S-FNDN-ANCH	Anchor piles, blocks, strands, deadmen, soil/rock anchors
S-FNDN-BLRD	Bollards, bollard foundations
S-FNDN-CNTR	Foundation centerlines
S-FNDN-DRNS	Foundation drainage features and objects
S-FNDN-FTNG	Footings
S-FNDN-FTNG-RBAR	Footing rebar
S-FNDN-GRBM	Grade beams
S-FNDN-PCAP	Pile caps
S-FNDN-PEDS	Foundation pedestals/pads
S-FNDN-PIER	Piers, drilled shafts, caissons
S-FNDN-PILE	Piles
S-FNDN-PL~~	Column base plates
S-FNDN-RIBS	Ribbed mat foundation
S-FNDN-TRMT	Foundation treatment (grouting)
S-FNDN-TUNL	Service tunnel/duct banks
Gates	
S-GATE-ANCH	Gate anchorages
S-GATE-ANCH-DEAD	Dead man anchorage
S-GATE-ARMS	Arm
S-GATE-AXIS	Gate axis and centerlines
S-GATE-BLKH	Bulkhead
S-GATE-BLKH-NDLB	Bulkhead needles beam
S-GATE-BLKH-NDLS	Bulkhead needles
S-GATE-CONN	Gate connects, links
S-GATE-DIA~	Diagonals, gussets, sleeve nut

Leve/Layer Naming	Level/Layer Description
AIA Format	
S-GATE-DIA--CHAN	Diagonal channels
S-GATE-DIA--GUST	Diagonal gusset plate
S-GATE-DIA--SUPT	Diagonal gusset plate support
S-GATE-DIAP	Diaphragms
S-GATE-FEND	Gate fenders
S-GATE-FLNG	Flange
S-GATE-FLNG-DNST	Downstream flange
S-GATE-FLNG-GIRD	Girder flange
S-GATE-FLNG-UPST	Upstream flange
S-GATE-GIRD-WEB~	Girder web plates
S-GATE-GUDG	Gudgeon
S-GATE-GUDG-HOOD	Gudgeon hood
S-GATE-GUDG-HUB~	Gudgeon hub
S-GATE-GUDG-PIN~	Gudgeon pin
S-GATE-GUDG-STIF	Gudgeon (hood) stiffener
S-GATE-GUDG-SUPT	Gudgeon (pin) support
S-GATE-HORZ	Horizontal rolled shapes
S-GATE-ICST	Intercostals
S-GATE-JACK	Gate jack
S-GATE-JACK-HORZ	Gate jack - horizontal
S-GATE-JACK-VERT	Gate jack - vertical
S-GATE-LIFT	Lifting mechanism
S-GATE-LTCH	Latching device
S-GATE-LTCH-BOTM	Latching device - bottom
S-GATE-LTCH-TOP~	Latching device - top
S-GATE-LUBE	Lubrication system
S-GATE-MISC	Gates incidental to structure
S-GATE-MITR-ASSY	Miter guide assembly
S-GATE-PIN~	Gate pins
S-GATE-PNTL	Pintle ball, bushing & base
S-GATE-PNTL-CAST	Pintle casting
S-GATE-QOIN	Quoin
S-GATE-QOIN-FLNG	Quoin flange
S-GATE-QOIN-MITR	Quoin, miter
S-GATE-QOIN-STIF	Quoin stiffener
S-GATE-QOIN-TRST	Quoin thrust plate
S-GATE-QOIN-WALL	Quoin, wall
S-GATE-QOIN-WEB~	Quoin web
S-GATE-RAIL	Rails and guides
S-GATE-SEAL	Gate seal
S-GATE-SEAL-HORZ	Gate seal - horizontal
S-GATE-SEAL-VERT	Gate seal - vertical
S-GATE-SHOE	Gate shoe
S-GATE-SKIN	Skin plates
S-GATE-STIF	Stiffener
S-GATE-STIF-LONG	Stiffener - longitudinal
S-GATE-STIF-TRAN	Stiffener - transverse
S-GATE-STOP	Stoplogs

Leve/Layer Naming	Level/Layer Description
AIA Format	
S-GATE-THBL	Thimble
S-GATE-TRST	Thrust plate
S-GATE-TRUN	Trunion
S-GATE-VALV	Valves (general shape)
S-GATE-VERT	Rolled vertical shapes
S-GATE-WALK	Walkway
S-GATE-WALK-FRMG	Walkway - framing
S-GATE-WALK-GRTG	Walkway - grating
S-GATE-WALK-SUPT	Walkway - support
S-GATE-WEB~	Web
Grade Lines	
S-GRLN-SURF-E	Existing ground
S-GRLN-SURF-N	Finished grade
S-WATR-SURF	Water surface
Grids	
S-GRID-HORZ	Grid lines (horizontal)
S-GRID-HORZ-IDEN	Column I.D. tags (horizontal)
S-GRID-VERT	Grid lines (vertical)
S-GRID-VERT-IDEN	Column I.D. tags (vertical)
Hydraulic Features	
S-HYDR-AXIS	Axis of structure
S-HYDR-BAFL	Baffle blocks, splash pads
S-HYDR-BASN	Stilling and settling basins
S-HYDR-CHAN	Channel (Does not include earthen structures)
S-HYDR-COFF	Cofferdam
S-HYDR-COND	Diversiory/bypass conduits and culverts
S-HYDR-DAM~	Dam
S-HYDR-FISH	Fish ladder or passage
S-HYDR-FLUM	Flume
S-HYDR-INTK	Intake, outlet
S-HYDR-NOVR	Non-overflow structures
S-HYDR-PENS	Penstock outline and features
S-HYDR-STRC-POWR	Powerhouse
S-HYDR-SWAY	Spillway
S-HYDR-WEIR	Weirs and sluiceways
Joints	
S-JNTS-CNTJ	Construction/lift joints
S-JNTS-CTLJ	Control/contraction joints (saw cut
S-JNTS-EXPJ	Expansion joints, joint materials (e.g., felt
S-JNTS-STUC	Stucco joints
S-JNTS-WTRS	Waterstops
Joists	
S-JOIS-BRGX	Bridging
S-JOIS-GIRD	Joist girders
S-JOIS-PERI	Perimeter channel or rim joist
S-JOIS-PRIM	Primary joists
S-JOIS-SECD	Secondary joists
S-JOIS-TRIM	Partial length or trimmer floor joist

Leve/Layer Naming	Level/Layer Description
AIA Format	
Fabrications (metal or other specialty)	
S-FABR-EMBD	Embedded metals (framing around openings)
S-FABR-HOIS	Hoist structures
S-FABR-HOOK	Line hooks, lifting hooks, check posts etc.
S-FABR-MOOR	Mooring bits, chocks, rings
S-FABR-PL~~	Plates
S-FABR-TRSH	Trash racks, intake screens
Pipes and Culverts	
S-PIPE-CULV	Precast/manufactured culverts
Platforms	
S-PLAT-FRMG	Platform frame/stringers
S-PLAT-GRTG	Platform grating (add a second minor group to indicate platform # or elev)
S-PLAT-WALK	Platform walkway
Reinforcement	
S-REIN-RBAR	Steel reinforcing, welded wire fabric
S-REIN-TEND-HORZ	Horizontal Tendons
S-REIN-TEND-VERT	Vertical Tendons
Reference Outlines	
S-OTLN-BLDG	Building outline
S-OTLN-FLOR	Floor outline
S-OTLN-OPNG	Openings
S-OTLN-ROOF	Roof
S-OTLN-STRC	Misc. structures
Safety Features	
S-SAFE-FENC	Fencing rails, fabric, supports, and gates
S-SAFE-GRAL	Guardrails
S-SAFE-HRAL	Handrails, railings
S-SAFE-PRPT	Parapet/jersey barrier
S-SAFE-PRPT-RBAR	Parapet/jersey barrier rebar
S-SAFE-WATR	Waterway safety barriers
Signs	
S-SIGN-BUOY	Sign buoys
S-SIGN-EXTN	Extrusions
S-SIGN-FRMG	Framing and connections
S-SIGN-GAGE	Staff gages
S-SIGN-PANL	Sign panels
S-SIGN-SPRT	Supports
S-SIGN-TEXT	Signage text
Slabs	
S-SLAB-APPR	Approach slab
S-SLAB-APPR-RBAR	Approach slab rebar
S-SLAB-EDGE	Edge of slab
S-SLAB-OPNG	Openings (and depressions)
S-SLAB-RBAR	Slab rebar
S-SLAB-SECD	Second pour, slab cap
S-SLAB-SILL	Sill
Stiffeners	
S-STIF-LONG	Stiffeners - longitudinal

Leve/Layer Naming	Level/Layer Description
AIA Format	
S-STIF-TRAV	Stiffeners - transverse
Trusses	
S-TRUS-BRGX	Truss bridging
S-TRUS-PRIM	Primary trusses
S-TRUS-SECD	Secondary trusses
Walls	
S-WALL-ABUT	Abutments
S-WALL-CELL	Cell
S-WALL-COFF	Cutoff wall
S-WALL-CURT	Curtain/breast wall
S-WALL-FULL	Wall going to the top of the structure
S-WALL-GARD	Guard/guide walls
S-WALL-LOAD	Load bearing walls
S-WALL-MONO	Wall monoliths
S-WALL-MSE~	Mechanically stabilized earth (MSE) wall
S-WALL-NONL	Non-load bearing walls
S-WALL-PCST	Pre-cast concrete walls
S-WALL-PRHT	Wall that does not reach to the top of the structure
S-WALL-RBAR	Wall rebar
S-WALL-RTWL	Retaining wall (flood walls, wingwalls, etc.)
S-WALL-SHEA	Shear walls
S-WALL-STUD	Stud walls
Waterway Specialties	
S-WWAY-DLPH	Dolphins (associated with but not part of bridges, locks and guidewalls)
S-WWAY-FEND	Fenders
S-WWAY-MOOR	Mooring cells
Sections	
S-SECT-IDEN	Component identification numbers
S-SECT-MBND	Material beyond section cut
S-SECT-MCUT	Material cut by section
S-SECT-PATT	Textures and hatch patterns
Details	
S-DETL-GRPH	Graphics, gridlines, non-text items
General Information See Discipline: General Information for a list of available Annotation layers/levels	

A.8 Architectural

Leve/Layer Naming	Level/Layer Description
AIA Format	
Area Information	
A-AREA-IDEN	Room numbers, tenant identifications, area calculations
A-AREA-LINE	Architectural area calculation boundary lines
A-AREA-OCCP	Occupant or employee names
A-AREA-PATT	Area cross hatching
Barrier	
A-BARR-AIR~	Air barrier
Ceiling Information	
A-CLNG-ACCS	Access panels
A-CLNG-CTLJ	Ceiling control joints
A-CLNG-GRID	Ceiling grid
A-CLNG-LITE	Specialty ceiling lights not shown on the Electrical Lighting Plan
A-CLNG-OPNG	Openings, ceiling/roof penetrations (see also A-FLOR-OVHD in Floor Plan model file)
A-CLNG-PATT	Ceiling patterns
A-CLNG-SFFT	Soffits
A-CLNG-SUSP	Suspended elements, ceiling mounted specialties (e.g., clocks, fans, etc.)
A-CLNG-TEES	Main tees
Columns	
A-COLS-ENCL	Column enclosures/fire protection
Doors	
A-DOOR-FULL	Full height (to ceiling) door: swing and leaf
A-DOOR-IDEN	Door number and symbol, hardware group, etc.
A-DOOR-PRHT	Partial height door: swing and leaf
A-DOOR-SYMB	Miscellaneous door symbols (e.g., overhead, bifold, pocket, etc.)
Equipment	
A-EQPM-ACCS	Equipment access
A-EQPM-FIXD	Fixed equipment
A-EQPM-IDEN	Equipment identification numbers
A-EQPM-MOVE	Moveable equipment
A-EQPM-OVHD	Overhead, ceiling mounted, or suspended equipment
Floor Information	
A-FLOR-CSWK	Casework (manufactured cabinets)
A-FLOR-EVTR	Elevator cars and equipment
A-FLOR-FIXT	Plumbing fixtures
A-FLOR-FTPT	Floor/building footprint
A-FLOR-HRAL	Stair and balcony handrails, guard rails
A-FLOR-IDEN	Room name, space identification text
A-FLOR-LEVL	Level changes, shafts, ramps, pits, breaks in construction, and depressions
A-FLOR-NUMB	Room/space identification number and symbol
A-FLOR-OVHD	Overhead items (overhangs, etc.)
A-FLOR-PATT	Paving, tile, carpet patterns
A-FLOR-PERI	Room perimeter shape (interior walls)
A-FLOR-RAIS	Access (raised) flooring
A-FLOR-SIGN	Signage
A-FLOR-SPCL	Architectural specialties (e.g., toilet room accessories, display cases)
A-FLOR-STRS	Stair risers/treads, escalators, ladders
A-FLOR-TPTN	Toilet partitions
A-FLOR-WDWK	Architectural woodwork (field built cabinets and counters)

Level/Layer Naming	Level/Layer Description
AIA Format	
Windows	
A-GLAZ-FULL	Full height glazed walls and partitions (see A-WALL-CURT for curtain walls)
A-GLAZ-IDEN	Window number and symbol
A-GLAZ-PRHT	Windows and partial height glazed partitions
A-GLAZ-SILL	Window sills
Roof Information	
A-ROOF-CRKT	Crickets flow arrows flow info
A-ROOF-DRNS	Roof drains
A-ROOF-EXPJ	Expansion joints
A-ROOF-GUTR	Roof internal gutters
A-ROOF-HRAL	Stair handrails, nosings, guard rails
A-ROOF-LEVL	Level changes
A-ROOF-OTLN	Roof perimeter/edge, roof geometry
A-ROOF-PATT	Roof surface patterns, hatching
A-ROOF-PRPT	Parapet walls and wall caps
A-ROOF-SKLT	Skylights
A-ROOF-SPCL	Roof specialties, accessories, access hatches, dormers
A-ROOF-STRS	Stair risers/treads, ladders
A-ROOF-WALK	Roof walkways
Walls	
A-WALL-CAVI	Cavity wall lines
A-WALL-CNTR	Wall centerlines
A-WALL-CURT	Curtain wall mullions and glass
A-WALL-FIRE	Fire wall designators (patterning)
A-WALL-FULL-EXTR	Exterior full height walls
A-WALL-FULL-INTR	Interior full height walls
A-WALL-HEAD	Door and window headers
A-WALL-IDEN	Wall identification/type text or tags
A-WALL-JAMB	Door and window jambs
A-WALL-MESH	Mesh or wire wall
A-WALL-MOVE	Moveable walls/partitions
A-WALL-OPNG-LVRS	Louvers
A-WALL-PATT	Wall insulation, hatching, and fill
A-WALL-PRHT	Partial height walls (do not appear on Reflected Ceiling Plan)
A-WALL-SPCL	Wall-hung/attached specialties (e.g., fixtures, grab bars (incl. handicap), telephone booths)
Elevations	
A-ELEV-IDEN	Component identification numbers
A-ELEV-OTLN	Outlines
A-ELEV-PATT	Textures and hatch patterns
Sections	
A-SECT-IDEN	Component identification numbers
A-SECT-MBND	Material beyond section cut
A-SECT-MCUT	Material cut by section
A-SECT-PATT	Textures and hatch patterns
Detail Information	
A-DETL-GRPH	Graphics, gridlines, non-text items
General Information See Discipline: General Information for a list of available Annotation layers/levels	

A.9 Interiors

Leve/Layer Naming	Level/Layer Description
AIA Format	
Carpet/Carpet Tile	
I-CRPT-ROLL-ACNT	Carpet (roll goods) - accent color
I-CRPT-ROLL-FILD	Carpet (roll goods) - field color
I-CRPT-TILE-ACN1	Carpet tile - accent color
I-CRPT-TILE-ACN2	Carpet tile - accent color
I-CRPT-TILE-FILD	Carpet tile - field color
Equipment	
I-EQPM-ACCS	Equipment access
I-EQPM-CHLD	Child development (play toys, teaching rugs, play forms)
I-EQPM-COPY	Copiers, fax machines, office equipment
I-EQPM-FIXD	Fixed equipment
I-EQPM-IDEN	Equipment identification numbers
I-EQPM-MEDI	Medical (exam beds, dental chairs, etc.)
I-EQPM-MOVE	Moveable equipment
I-EQPM-OVHD	Overhead, ceiling mounted, and suspended equipment
I-EQPM-STOR	Storage equipment
Signage	
I-FLOR-SIGN	Signage
Flooring Items and Materials	
I-FLRG-CONC	Concrete flooring
I-FLRG-MATS	Entrance mat components and frames
I-FLRG-STON	Stone flooring
I-FLRG-TRAN	All floor thresholds and transition moldings
I-FLRG-WOOD	Wood parquet tile or planks
Furnishings	
I-FURN-ACCS	Accessories (vestibule matts, partitions, draperies, clocks, trash cans, lecturns, lamps, etc.)
I-FURN-ADPC	Automated Data Processing Components
I-FURN-ARTW	Artwork
I-FURN-FLOR	Flooring (carpet, rugs, etc.)
I-FURN-FREE	Free-standing furnishings (desks, beds, tables, dressers, credenzas, casegoods)
I-FURN-GRID	Planning grid/modular outline
I-FURN-IDEN	Furniture code identification
I-FURN-PLNT	Plants
I-FURN-SEAT	Seating (chairs, sofas, etc.)
I-FURN-STOR	File cabinets, high density storage, shelving, storage cabinets
Monolithic (Poured or Broadcast) Flooring	
I-MONO-SRFL-ACNT	Seamless resinous flooring - accent color
I-MONO-SRFL-FILD	Seamless resinous flooring - field color
I-MONO-TERR-ACN1	Terrazzo - accent color
I-MONO-TERR-ACN2	Terrazzo - accent color
I-MONO-TERR-FILD	Terrazzo - field color
Resilient Flooring	
I-SHTP-ACNT	Sheet product (vinyl/rubber/linoleum) - accent color
I-SHTP-FILD	Sheet product (vinyl/rubber/linoleum) - field color
System Furniture	
I-SYST-FURN	Furniture
I-SYST-IDEN	Code identification components
I-SYST-IDPL	Code identification panels

Leve/Layer Naming	Level/Layer Description
AIA Format	
I-SYST-LITE	Lighting components
I-SYST-PATT	Patterns
I-SYST-PNLS	Panels
I-SYST-POWR	Power, communication components
I-SYST-STOR	Storage components
I-SYST-WALL	System furniture partition walls
I-SYST-WKSF	Work surface components
Tile	
I-TILE-CERM-ACNT	Ceramic mosaic tile - accent color
I-TILE-CERM-FILD	Ceramic mosaic tile - field color
I-TILE-LINO-ACNT	Linoleum tile - accent color
I-TILE-LINO-FILD	Linoleum tile - field color
I-TILE-PORC-ACN1	Porcelain tile - accent color
I-TILE-PORC-ACN2	Porcelain tile - accent color
I-TILE-PORC-FILD	Porcelain tile - field color
I-TILE-QUAR-ACNT	Quarry tile - accent color
I-TILE-QUAR-FILD	Quarry tile - field color
I-TILE-RUBB-ACNT	Rubber tile - accent color
I-TILE-RUBB-FILD	Rubber tile - field color
I-TILE-TERR-ACN1	Terrazzo tile - accent color
I-TILE-TERR-ACN2	Terrazzo tile - accent color
I-TILE-TERR-ACN3	Terrazzo tile - accent color
I-TILE-TERR-FILD	Terrazzo tile - field color
I-TILE-VNYL-ACN1	Vinyl or Vinyl composition tile - accent color
I-TILE-VNYL-ACN2	Vinyl or Vinyl composition tile - accent color
I-TILE-VNYL-FILD	Vinyl or Vinyl composition tile - field color
Elevations	
I-ELEV-IDEN	Component identification numbers
I-ELEV-OTLN	Outlines
I-ELEV-PATT	Textures and hatch patterns
Detail Information	
I-DETL-GRPH	Graphics, gridlines, non-text items
differentiate colors shall match the color and level of the material.	
General Information See Discipline: General Information for a list of available Annotation layers/levels	

A.10 Fire Protection

Leve/Layer Naming	Level/Layer Description
AIA Format	
Aqueous Film Forming Foam System	
F-AFFF-EQPM	Equipment
F-AFFF-PIPE	Piping
CO2 Sprinkler System	
F-CO2S-EQPM	Equipment
F-CO2S-PIPE	CO2 piping or CO2 discharge nozzle piping
Control Panels	
F-CTRL-PANL	Control panels
Floor Information	
F-FLOR-IDEN	Room name, space identification text (copied from Architectural - Floor Plan model file)
F-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)
Halon System	
F-HALN-EQPM	Equipment
F-HALN-PIPE	Piping
Inert Gas	
F-IGAS-EQPM	Equipment
F-IGAS-PIPE	Piping
Means of Egress Lighting	
F-LITE-EMER	Emergency fixtures
F-LITE-EXIT	Exit fixtures
Egress Requirements	
F-LSFT-EGRE	Egress requirements designator
F-LSFT-OCCP	Occupant load for egress capacity
F-LSFT-TRVL	Maximum travel distances
Fire Protection System	
F-PROT-ALRM-INDC	Indicating appliances
F-PROT-ALRM-MANL	Manual fire alarm pull stations
F-PROT-EXTI	Fire extinguishers
F-PROT-EXTI-CABN	Fire extinguisher cabinets
F-PROT-HOSE	Fire hoses
F-PROT-HOSE-CABN	Fire hose cabinets
F-PROT-RATE-DOOR	Door fire ratings
F-PROT-RATE-WALL	Wall fire ratings
F-PROT-SMOK	Smoke detectors and heat sensors
Smoke/Pressurization Control	
F-SMOK-DMPR	Dampers
Sprinkler System	
F-SPKL-CLHD	Sprinkler - ceiling heads
F-SPKL-OTHD	Sprinkler - other heads
F-SPKL-PIPE	Sprinkler piping
F-SPKL-STAN	Standpipe system
Water Supply and Distribution	
F-WATR-HYDT	Hydrants and connections
F-WATR-PIPE	Piping
F-WATR-PUMP	Fire pumps
Detail Information	
F-DETL-GRPH	Graphics, gridlines, non-text items
General Information	See Discipline: General Information for a list of available Annotation layers/levels

A.11 Plumbing

Leve/Layer Naming	Level/Layer Description
AIA Format	
Domestic Water System	
P-DOMW-CPIP	Cold water piping
P-DOMW-EQPM	Hot and cold water equipment
P-DOMW-EQPM-ACCS	Equipment access doors
P-DOMW-FPIP	Domestic filtered water piping
P-DOMW-HPIP	Hot water piping
P-DOMW-RISR	Hot and cold water risers
Floor Information	
P-FLOR-IDEN	Room name, space identification text (copied from Architectural - Floor Plan model file)
P-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)
Graywater System	
P-GRAY-EQPM	Equipment
P-GRAY-PIPE	Graywater piping
Laboratory Gas Piping	
P-LGAS-DH2O	Distilled water piping
P-LGAS-DIS~	Deionized water piping
P-LGAS-EQPM	Equipment
P-LGAS-H2~~	Hydrogen piping
P-LGAS-HE~~	Helium piping
P-LGAS-NITG	Nitrogen piping
P-LGAS-OXYG	Pure O2 piping
Medical/Dental Gas Piping	
P-MDGS-CAIR	Compressed air
P-MDGS-EQPM	Equipment
P-MDGS-NITG	Nitrogen piping
P-MDGS-NOXG	Nitrous oxide piping
P-MDGS-OXYG	Pure O2 piping
P-MDGS-SAIR	Scavenge air
P-MDGS-VACU	Medical vacuum piping
Penetrations	
P-FLOR-PENE	Floor penetrations
P-ROOF-PENE	Roof penetrations
P-WALL-PENE	Wall penetrations
Sanitary Sewer	
P-SSWR-CNDS	Condensate piping
P-SSWR-EQPM	Equipment (e.g., sand/oil/water separators)
P-SSWR-DRNS	Floor drains, sinks, and cleanouts
P-SSWR-PIPE	Piping
P-SSWR-RISR	Sanitary risers
P-SSWR-VENT	Vent piping
Storm Drainage System	
P-STRM-PIPE	Storm drain piping
P-STRM-DRNS	Roof drains
P-STRM-RISR	Storm drain risers
Diagram Information	
P-DIAG-GRPH	Graphics, gridlines, non-text items
Detail Information	
P-DETL-GRPH	Graphics, gridlines, non-text items

Level/Layer Naming	Level/Layer Description
AIA Format	
General Information	See Discipline: General Information for a list of available Annotation layers/levels

A.12 Mechanical

Leve/Layer Naming	Level/Layer Description
AIA Format	
Industrial Waste Piping	
M-ACID-EQPM	Acid, alkaline, and oil waste equipment
M-ACID-PIPE	Acid, alkaline, and oil waste piping
M-ACID-VENT	Acid, alkaline, and oil waste vent piping
Anti-Freeze	
M-AFRZ-EQPM	Anti-freeze equipment
M-AFRZ-SPLY-PIPE	Anti-freeze supply piping
M-AFRZ-WAST-PIPE	Anti-freeze waste piping
Brine System	
M-BRIN-EQPM	Brine system equipment
M-BRIN-RETN-PIPE	Brine system return piping
M-BRIN-SPLY-PIPE	Brine system supply piping
Chemical Treatment System	
M-CHEM-EQPM	Chemical treatment system equipment
M-CHEM-RETN-PIPE	Chemical treatment system return piping
M-CHEM-SPLY-PIPE	Chemical treatment system supply piping
Compressed Air	
M-CMPA-EQPM	Equipment
M-CMPA-PIPE	Piping
Condenser Water System	
M-CNDW-EQPM	Condenser water system equipment
M-CNDW-RETN-PIPE	Condenser water system return piping
M-CNDW-SPLY-PIPE	Condenser water system supply piping
Controls	
M-CONT-THER	Thermostats
M-CONT-WIRE	Low voltage wiring
Chilled Water System	
M-CWTR-CNDS	Condensate piping
M-CWTR-EQPM	Chilled water equipment
M-CWTR-RETN-PIPE	Chilled water return piping
M-CWTR-SPLY-PIPE	Chilled water supply piping
Culvert Valves	
M-CVAL-BASE	Culvert valve machinery base
M-CVAL-BEAM	Culvert valve beams
M-CVAL-CYLD	Culvert valve machinery cylinder (outline not for details)
M-CVAL-SEAL	Culvert valve seals
M-CVAL-SKIN	Culvert valve skin plate
M-CVAL-STIF	Stiffener plates, angles, etc.
M-CVAL-TRUN	Culvert valve trunnion beam
Dual Temperature System	
M-DUAL-EQPM	Dual temperature system equipment
M-DUAL-RETN-PIPE	Dual temperature system return piping
M-DUAL-SPLY-PIPE	Dual temperature system supply piping
Dust and Fume Collection Systems	
M-DUST-DUCT	Dust and fume ductwork
M-DUST-DUCT-CNTR	Dust and fume ductwork centerlines
M-DUST-EQPM	Dust and fume equipment
M-DUST-GRIL	Dust and fume grilles

Leve/Layer Naming	Level/Layer Description
AIA Format	
Exhaust Air System	
M-EXHS-DUCT	Exhaust ductwork
M-EXHS-DUCT-CNTR	Exhaust ductwork centerlines
M-EXHS-EQPM	Exhaust equipment
M-EXHS-GRIL	Grilles
Floor Information	
M-FLOR-IDEN	Room name, space identification text (copied from Architectural - Floor Plan model file)
M-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)
Fuel Systems	
M-FUEL-DIES-RETN	Diesel fuel return piping
M-FUEL-DIES-SPLY	Diesel fuel supply piping
M-FUEL-DIES-VENT	Diesel fuel vent piping
M-FUEL-EQPM	Equipment
M-FUEL-GGEP-LQPG	Liquid petroleum gas
M-FUEL-OGEP-RETN	Return oil piping
M-FUEL-OGEP-SPLY	Supply oil piping
M-FUEL-OGEP-VENT	Oil piping vent
Glycol System	
M-GLYC-EQPM	Glycol system equipment
M-GLYC-RETN-PIPE	Glycol system return piping
M-GLYC-SPLY-PIPE	Glycol system supply piping
Geothermal Heat Pump System	
M-GTHP-EQPM	Geothermal heat pump system equipment
M-GTHP-RETN-PIPE	Geothermal heat pump system return piping
M-GTHP-SPLY-PIPE	Geothermal heat pump system supply piping
Hydraulic Control Systems (Hydraulic Fluid)	
M-HCSF-CYLD	Hydraulic cylinders
M-HCSF-CYLD-PSTN	Hydraulic cylinder pistons
M-HCSF-CYLD-WEAR	Wear rings
M-HCSF-EQPM	Hydraulic system equipment
M-HCSF-FTTG	Hose and pipe fittings
M-HCSF-HOSE	Hydraulic hoses
M-HCSF-MOTR	Hydraulic motors and actuators
M-HCSF-OTLN	Outlines of machinery, etc. in the vicinity of the hydraulic components
M-HCSF-PUMP	Hydraulic pumps and pump motors
M-HCSF-RETN-PIPE	Hydraulic system return piping
M-HCSF-ROOM	Floor, walls, etc. that hydraulic system attaches to
M-HCSF-SCHM-MISC	Miscellaneous schematic figures (i.e., common location lines)
M-HCSF-SUPT	Pipe supports, hangers, etc.
M-HCSF-SPLY-PIPE	Hydraulic system supply piping
M-HCSF-VALV	Hydraulic valves
M-HCSF-VALV-CONT	Hydraulic directional control valves
M-HCSF-VALV-FLOW	Flow control valves, check valves, etc.
M-HCSF-VALV-PRES	Pressure control valves: relief valves, counterbalance valves, etc.
M-HCSF-VALV-SOFF	Hydraulic shutoff type valves (ball, gate, etc.)
Hydraulic Control Systems (Water)	
M-HCSW-DEVC	Stilling wells, rigid anchors, anchor guides, rectifiers, reducers, markers, meters, regulators, and tank
M-HCSW-EQPM-ACCS	Equipment access doors

Leve/Layer Naming	Level/Layer Description
AIA Format	
M-HCSW-IDEN	Identifier tags, symbol modifiers, and text
M-HCSW-PUMP	Pump station equipment
M-HCSW-PUMP-PIPE	Pump piping (includes fittings and valves)
High Temperature/Chilled Water System	
M-HTCW-CWTR-MAIN	Main chilled water piping
M-HTCW-CWTR-PLNT	Chilled water plant
M-HTCW-CWTR-SERV	Chilled water service piping
M-HTCW-DEVC	Rigid anchors, anchor guides, rectifiers, reducers, markers, pumps, regulators, tanks, and valves
M-HTCW-HWTR-MAIN	Main high temperature piping
M-HTCW-HWTR-PLNT	High temperature water plant
M-HTCW-HWTR-SERV	High temperature service piping
M-HTCW-IDEN	Identifier tags, symbol modifiers, and text
M-HTCW-JBOX	Junction boxes, manholes, handholes, test boxes
M-HTCW-LWTR-MAIN	Main low temperature piping
M-HTCW-LWTR-SERV	Low temperature service piping
M-HTCW-METR	Meters
M-HTCW-RETN-PIPE	Return for all HTCW lines
M-HTCW-STEM-MAIN	Main steam piping
M-HTCW-STEM-SERV	Steam service piping
M-HTCW-STNS-PUMP	Pump stations
M-HTCW-VALT	Valve pits/vaults, steam pits
HVAC System	
M-HVAC-ACCS	Equipment access doors
M-HVAC-CDFF	Ceiling diffusers, registers, and grilles
M-HVAC-DMPR	Fire, smoke, volume dampers
M-HVAC-EQPM	Equipment (non-powered)
M-HVAC-EQPM-EFAN	Equipment with electric fans or motors
M-HVAC-EQPM-EPIP	Equipment with piping and electricity
M-HVAC-EQPM-FLOR	Equipment - floor mounted
M-HVAC-EQPM-SUSP	Equipment - suspended
M-HVAC-FDFF	Floor diffusers, registers, and grilles
M-HVAC-IDEN	Duct sizes and pressure classes
M-HVAC-RDFF	Return air diffusers
M-HVAC-RETN	Return ductwork
M-HVAC-RETN-CNTR	Return ductwork centerlines
M-HVAC-ROOF	Roof mounted HVAC equipment
M-HVAC-SPLY	Supply ductwork
M-HVAC-SPLY-CNTR	Supply ductwork centerlines
M-HVAC-SPLY-HDUC	Supply ductwork - high pressure
M-HVAC-SPLY-LDUC	Supply ductwork - low pressure
M-HVAC-TAGS	Diffuser/register/grille tags and air flow arrows
M-HVAC-WDFF	Wall diffusers, registers, and grilles
Hot Water Heating System	
M-HWTR-EQPM	Hot water heating system equipment
M-HWTR-RETN-PIPE	Hot water heating system return piping
M-HWTR-SPLY-PIPE	Hot water heating system supply piping
Insulating (Transformer) Oil System	
M-INSL-EQPM	Insulating oil equipment

Leve/Layer Naming	Level/Layer Description
AIA Format	
M-INSL-RETN-PIPE	Insulating oil return piping
M-INSL-SPLY-PIPE	Insulating oil supply piping
Lubrication Oil	
M-LUBE-EQPM	Lubrication oil equipment
M-LUBE-RETN-PIPE	Lubrication oil return piping
M-LUBE-SPLY-PIPE	Lubrication oil supply piping
Machine Design	
M-MACH-AXLE	Shafts and axles
M-MACH-BASE	Machinery bases
M-MACH-BEAR	Bearings and couplings
M-MACH-BELT	Wire rope, chains, and belts
M-MACH-BSHG	Bushings, wear plates, shims, and spacers
M-MACH-CLEV	Clevises
M-MACH-COMP	Miscellaneous machinery parts and components
M-MACH-COVR	Machinery covers, cover plates, and guarding
M-MACH-FSTN	Fasteners, nuts, and bolts
M-MACH-GEAR	Gears
M-MACH-KEYS	Keys and keeper plates
M-MACH-LROT	Large rotating machinery (turbine and pump outlines)
M-MACH-MOTR	Machinery motors
M-MACH-PINS	Pins
M-MACH-PULL	Pulleys, drums, and sheaves
M-MACH-RAIL	Rails (e.g., crane rails, rail hoots, splice plates, etc.)
M-MACH-ROLL	Rollers and wheels
M-MACH-ROLL-TRAK	Roller tracks
M-MACH-SEAL	Seals
M-MACH-SHOE	Sliding shoes, skids, etc.
M-MACH-SUPT	Support brackets
M-MACH-SPRG	Springs
Mixed Air System	
M-MAIR-DUCT	Mixed air ductwork
M-MAIR-DUCT-CNTR	Mixed air ductwork centerlines
M-MAIR-EQPM	Mixed air equipment
Material Handling Equipment	
M-MATL-CRAN	Cranes
M-MATL-CRAN-BOOM	Crane boom
M-MATL-HOIS	Hoists
M-MATL-HOOK	Hooks, eyes, and other end attachments
M-MATL-LIFT	Miscellaneous lifting equipment
M-MATL-WIRE	Wire rope, chains, and other hoisting medium
Miter Gates	
M-MITR-BASE	Miter gate machinery base
M-MITR-CLEV	Clevises
M-MITR-CRNG	Cardanic ring
M-MITR-CYLD	Miter gate machinery cylinder (outline not for details)
M-MITR-TRUN	Miter gate machinery trunnion
Makeup Air System	
M-MKUP-DUCT	Makeup air ductwork

Leve/Layer Naming	Level/Layer Description
AIA Format	
M-MKUP-DUCT-CNTR	Makeup air ductwork centerlines
M-MKUP-EQPM	Makeup air equipment
M-MKUP-GRIL	Makeup air grilles
Natural Gas System	
M-NGAS-EQPM	Natural gas equipment
M-NGAS-PIPE	Natural gas piping
Penetrations	
M-FLOR-PENE	Floor penetrations
M-ROOF-PENE	Roof penetrations
M-WALL-PENE	Wall penetrations
Process Piping	
M-PROC-EQPM	Process equipment
M-PROC-RETN-PIPE	Process return piping
M-PROC-SPLY-PIPE	Process supply piping
Relief Air System	
M-RAIR-DUCT	Relief air ductwork
M-RAIR-DUCT-CNTR	Relief air ductwork centerlines
M-RAIR-EQPM	Relief air equipment
M-RAIR-GRIL	Relief air grilles
Energy Recovery System	
M-RCOV-EQPM	Energy recovery system equipment
M-RCOV-RETN-PIPE	Energy recovery system return piping
M-RCOV-SPLY-PIPE	Energy recovery system supply piping
Refrigeration System	
M-REFG-DISC	Refrigeration system discharge
M-REFG-EQPM	Refrigeration system equipment
M-REFG-RETN-PIPE	Refrigeration system return piping
M-REFG-SPLY-PIPE	Refrigeration system supply piping
Raw Water Piping	
M-RWTR-EQPM	Raw water equipment
M-RWTR-RETN-PIPE	Raw water return piping
M-RWTR-SPLY-PIPE	Raw water supply piping
Steam System	
M-STEM-BLBD	Boiler blow down piping
M-STEM-CNDS	Condensate piping
M-STEM-EQPM	Steam system equipment
M-STEM-HPIP	High pressure steam piping
M-STEM-LPIP	Low pressure steam piping
M-STEM-MPIP	Medium pressure steam piping
Transfer Air System	
M-TAIR-DUCT	Transfer air ductwork
M-TAIR-DUCT-CNTR	Transfer air ductwork centerlines
M-TAIR-EQPM	Transfer air equipment
Diagram Information	
M-DIAG-GRPH	Graphics, gridlines, non-text items
Elevations	
M-ELEV-IDEN	Component identification numbers
M-ELEV-OTLN	Outlines

Level/Layer Naming	Level/Layer Description
AIA Format	
M-ELEV-PATT	Textures and hatch patterns
Sections	
M-SECT-IDEN	Component identification numbers
M-SECT-MBND	Material beyond section cut
M-SECT-MCUT	Material cut by section
M-SECT-PATT	Textures and hatch patterns
Detail Information	
M-DETL-GRPH	Graphics, gridlines, non-text items
General Information	See Discipline: General Information for a list of available Annotation layers/levels

A.13 Electrical

Leve/Layer Naming	Level/Layer Description
AIA Format	
Airfields	
E-AFLD-CIRC-CTRL	Control and monitoring circuits
E-AFLD-CIRC-IDEN	Circuit identifier tags, symbol modifier, and text
E-AFLD-CIRC-MULT	Multiple circuits
E-AFLD-CIRC-SERS	Series circuits
E-AFLD-DEVC	Capacitors, voltage regulators, motors, buses, generators, meters, grounds, and markers
E-AFLD-DBNK	Ductbanks
E-AFLD-JBOX	Junction boxes, pull boxes, manholes, handholes, pedestals, splices
E-AFLD-LITE-APPR	Approach lights
E-AFLD-LITE-DIST	Distance and arresting gear markers
E-AFLD-LITE-LANE	Hoverlane, taxilane, and helipad lights
E-AFLD-LITE-OBST	Obstruction lights
E-AFLD-LITE-RUNW	Runway lights
E-AFLD-LITE-SIGN	Taxiway guidance signs
E-AFLD-LITE-TAXI	Taxiway lights
E-AFLD-LITE-THRS	Threshold lights
E-AFLD-VALT	Airfield lighting vaults
Alarm System	
E-ALRM-EQPM	Alarm system equipment
E-ALRM-IDEN	Identifier tags, symbol modifiers, and text
Beacons	
E-BCNS-IDEN	Identifier tags, symbol modifiers, and text
E-BCNS-MISC	Miscellaneous navaids - windcones and beacons
E-BCNS-STRB	Strobe beacons
Bell System	
E-BELL-EQPM	Bell system equipment
E-BELL-IDEN	Identifier tags, symbol modifiers, and text
Cable System	
E-CABL-COAX	Coax cable
E-CABL-FIBR	Fiber optics cable
E-CABL-IDEN	Identifier tags, symbol modifiers, and text
E-CABL-MULT	Multi-conductor cable
E-CABL-TRAY	Cable trays and wireways
Cathodic Protection System	
E-CATH-ANOD	Sacrificial anode system
E-CATH-CURR	Impress current system
E-CATH-IDEN	Identifier tags, symbol modifier, and text
E-CATH-TEST	Test stations
Cable TV System	
E-CATV-EQPM	Cable TV system equipment
E-CATV-IDEN	Identifier tags, symbol modifiers, and text
Closed-Circuit Television System	
E-CCTV-EQPM	Closed-circuit television system equipment
E-CCTV-IDEN	Identifier tags, symbol modifiers, and text
Clock System	
E-CLOK-EQPM	Clock system equipment
E-CLOK-IDEN	Identifier tags, symbol modifiers, and text
Communications	

Level/Layer Naming	Level/Layer Description
AIA Format	
E-COMM-ANTN	Antennae
E-COMM-CIRC	Circuits
E-COMM-CNMB	Communication circuit numbers (e.g., panel/circuit number, wire/conduit size)
E-COMM-EQPM	Other communications distribution equipment
E-COMM-JBOX	Communication junction boxes, pull boxes, handholes, pedestals, and splices
E-COMM-MHOL	Manholes
E-COMM-OVHD	Overhead communications/telephone lines
E-COMM-OVHD-IDEN	Identifier tags, symbol modifier and text
E-COMM-POLE	Poles
E-COMM-POLE-GUYS	Guying equipment
E-COMM-POLE-IDEN	Identifier tags, symbol modifiers, and text
E-COMM-UGND	Underground communications/telephone lines
E-COMM-UGND-IDEN	Identifier tags, symbol modifier and text
Central Dictation System	
E-DICT-EQPM	Central dictation system equipment
E-DICT-IDEN	Identifier tags, symbol modifiers, and text
Underground Ductbanks (to be used when multiple systems are in one ductbank system)	
E-DBNK-MULT	Ductbank
E-DBNK-MULT-IDEN	Identifier tags, symbol modifier and text
Energy Monitoring Control Systems	
E-EMCS-EQPM	Energy monitoring control system equipment
E-EMCS-IDEN	Identifier tags, symbol modifiers, and text
Floor Information	
E-FLOR-IDEN	Room name, space identification text (copied from Architectural - Floor Plan model file)
E-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)
Ground System	
E-GRND-CIRC	Circuits
E-GRND-DIAG	Ground system diagram
E-GRND-EQUI	Equipotential ground system
E-GRND-REFR	Reference ground system
Intercom/PA System	
E-INTC-EQPM	Intercom system equipment
E-INTC-IDEN	Identifier tags, symbol modifiers, and text
Lighting	
E-LITE-CIRC	Lighting circuits (including crosslines and homeruns)
E-LITE-CLNG	Ceiling mounted (surface/pendant) fixtures
E-LITE-CNMB	Lighting circuit numbers (e.g., panel/circuit number, wire/conduit size)
E-LITE-EMER	Emergency fixtures (outline of light (if ceiling mounted) should go on E-LITE-CLNG)
E-LITE-EXIT	Exit fixtures (outline of light (if ceiling mounted) should go on E-LITE-CLNG)
E-LITE-EXTR	Exterior lights
E-LITE-FLOR	Floor mounted fixtures (e.g., stage)
E-LITE-IDEN	Light fixture identifier tags
E-LITE-JBOX	Junction boxes
E-LITE-PANL	Main distribution panels, switchboards, lighting panels
E-LITE-ROOF	Roof lighting
E-LITE-SPCL	Special fixtures
E-LITE-SWCH	Lighting contactors, photoelectric controls, low-voltage lighting controls, etc.
E-LITE-WALL	Wall mounted fixtures

Leve/Layer Naming	Level/Layer Description
AIA Format	
Lightning Protection System	
E-LTNG-COND	Lightning protection conductors
E-LTNG-TERM	Lightning protection terminals
Nurse Call/Paging System	
E-NURS-EQPM	Nurse call/paging system equipment
E-NURS-IDEN	Identifier tags, symbol modifiers, and text
Power	
E-POWR-BUSW	Busways
E-POWR-CIRC	Power circuits (including crosslines and homeruns)
E-POWR-CLNG	Ceiling outlets (receptacles and switches)
E-POWR-CNDT	Conduit
E-POWR-CNMB	Power circuit numbers (e.g., panel/circuit number, wire/conduit size)
E-POWR-DEVC	Capacitors, voltage regulators, motors, buses, grounds, and markers
E-POWR-DSCO	Disconnect switches
E-POWR-FEED	Feeders
E-POWR-GENR	Generators and auxiliary equipment
E-POWR-IDEN	Identifier tags, symbol modifiers, and text
E-POWR-JBOX	Junction boxes, pull boxes, manholes, handholes, pedestals, splices
E-POWR-METR	Meters
E-POWR-MOTR	Motors and utilization equipment
E-POWR-PANL	Panelboards, MCC, backing boards, patch panel racks
E-POWR-POLE	Power poles
E-POWR-POLE-GUYS	Guying equipment
E-POWR-SBST	Substation equipment
E-POWR-SWBD	Switchboards
E-POWR-SWCH	Fuse cutouts, motor starters, contactors, pole mounted switches, circuit breakers, reclosers, cubicle switches
E-POWR-URAC	Underfloor raceways
E-POWR-WALL	Wall/floor outlets (receptacles and switches)
E-POWR-XFMR-PADM	Pad mounted transformers
E-POWR-XFMR-POLM	Pole mounted transformers
Primary Electrical Cables	
E-PRIM-OVHD	Overhead electrical utility lines
E-PRIM-OVHD-IDEN	Identifier tags, symbol modifiers, and text
E-PRIM-UGND	Underground electrical utility lines
E-PRIM-UGND-IDEN	Identifier tags, symbol modifiers, and text
Secondary Electrical Cables	
E-SECD-OVHD	Overhead electrical utility lines
E-SECD-OVHD-IDEN	Identifier tags, symbol modifiers, and text
E-SECD-UGND	Underground electrical utility lines
E-SECD-UGND-IDEN	Identifier tags, symbol modifiers, and text
Security System	
E-SERT-ACCS	Access control system
E-SERT-CLNG	Ceiling mounted sensors
E-SERT-FLOR	Floor mounted sensors
E-SERT-IDEN	Identifier tags, symbol modifiers, and text
E-SERT-UNDR	Buried sensors
E-SERT-WALL	Wall mounted sensors
Sound System	

Level/Layer Naming	Level/Layer Description
AIA Format	
E-SOUN-EQPM	Sound system equipment
E-SOUN-IDEN	Identifier tags, symbol modifiers, and text
Special Systems	
E-SPCL-SYST	Special systems (UMCS, EMCS, etc.)
E-SPCL-SYST-IDEN	Special systems (UMCS, EMCS, etc.) identifier tags, symbol modifier, and text
E-SPCL-TRAF	Traffic signal system
E-SPCL-TRAF-IDEN	Traffic signal identifier tags, symbol modifier, and text
Other Discipline Information	
E-DISC-INFO	Clearances and working space information (NEC code, etc.)
Detail Information	
E-DETL-GRPH	Graphics, gridlines, non-text items
Diagram Information	
E-DIAG-GRPH	Graphics, gridlines, non-text items
E-DIAG-IDEN	Identifier tags, symbol modifiers, and text
General Information	See Discipline: General Information for a list of available Annotation layers/levels

A.14 Telecommunications

Leve/Layer Naming	Level/Layer Description
AIA Format	
Cable System	
T-CABL-COAX	Coax cable
T-CABL-FIBR	Fiber optics cable
T-CABL-IDEN	Cable identifiers
T-CABL-MULT	Multi-conductor cable
T-CABL-TRAY	Cable trays and wireways
Communications	
T-COMM-CIRC	Circuits
T-COMM-CNMB	Circuit numbers
T-COMM-EQPM	Equipment
T-COMM-JBOX	Junction boxes
Equipment	
T-EQPM-COMB	Distribution equipment for both copper and fiber optics
T-EQPM-COPP	Distribution equipment for copper
T-EQPM-FIBR	Distribution equipment for fiber optic
T-EQPM-OTHR	Other telecommunications equipment
T-EQPM-RELA	Relays, resistors, capacitors, and inducers
Floor Information	
T-FLOR-IDEN	Room name, space identification text (copied from Archictural - Floor Plan model file)
T-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)
Jacks	
T-COMB-JACK	Combination telephone and data/LAN jacks
T-DATA-JACK	Data/LAN jacks
T-PHON-JACK	Telephone jacks
Other Discipline Information	
T-DISC-INFO	Information and notes for other disciplines
Diagram Information	
T-DIAG-GRPH	Graphics, gridlines, non-text items
T-DIAG-IDEN	Identifier tags, symbol modifiers, and text
Detail Information	
T-DETL-GRPH	Graphics, gridlines, non-text items

Appendix B

Border Bridge Design Technical Memorandum



Office of Engineering

Project Development Division
 Bridge Design Section
 PO Box 94245 | Baton Rouge,
 LA 70804-9245
 Phone: 225-379-1302

John Bel Edwards, Governor
 Shawn D. Wilson, Ph.D., Secretary

MEMORANDUM

TO: ALL CONSULTANTS
 ALL DESIGNERS

FROM: ZHENGZHENG "JENNY" FU, P.E. *ZBF*
 BRIDGE DESIGN ENGINEER ADMINISTRATOR
 DAVID SMITH, P.E. *DS*
 ROAD DESIGN ENGINEER ADMINISTRATOR

SUBJECT: BRIDGE DESIGN TECHNICAL MEMORANDUM NO. 89 REV. 1 (BDM.89.1)
 NEW PLAN SHEET BORDER AND STANDARD PLAN SHEET BORDER

DATE: April 29, 2020

Revision No. 1 Summary:

An implementation plan was added, and information/clarification was added regarding the location of the new border files.

BDTM 89.1:

Following direction from the Chief Engineer, this BDTM details the publication of new title blocks for use with Louisiana DOTD plan sheets and Louisiana DOTD Standard Plans.

The new Standard Plan border shall be implemented on any ongoing and future revisions to DOTD Standard Plans, and the new plan sheet border shall be implemented on any traditional projects that have not reached 60% Final Plan stage by July 1, 2020.

For alternative delivery projects without traditional milestones and with an NTP date prior to April 29, 2020, follow the policy already in place and use the old title block.

Alternative delivery projects and any engineering contracts with an NTP date of April 29, 2020 and later shall follow the policy set out by this BDTM.

The purpose of the changes to the current title blocks are as follows:

1. Create consistency in the title block format and appearance throughout project plan sets
2. Create a consistent dedicated location on the sheet (within the title block) for the preliminary stamp and the engineer's stamp and signature. Related to this, please note:
 - a. This applies to full-sized plan sheets only. Letter-sized plan sheets will not have a dedicated stamp field within the title block, as it would force the title block to be larger than necessary.
 - b. In the rare case of letter-bid projects that require drawings to expand to "ledger-sized" sheets, the designer shall use the full-sized border, print to 11" x 17" sheets, then stamp the "ledger-sized" sheets with the properly sized engineer's stamp to meet LAPELS rules (1-5/8" or 2").

- c. If an engineer chooses to use a 2” desk seal for full-sized plan sheets, they should still use the dedicated field in the title block. Some of the seal will project out of the title block into the plan sheet, but this should be acceptable.

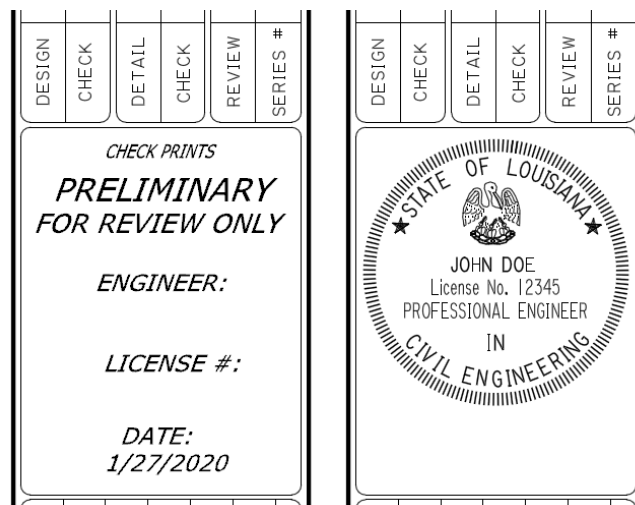
For a side-by-side comparison of the old and new title blocks for full-sized plan sheets and standard plan sheets, see Attachment 1 of this BDTM.

The major changes made to the title blocks includes:

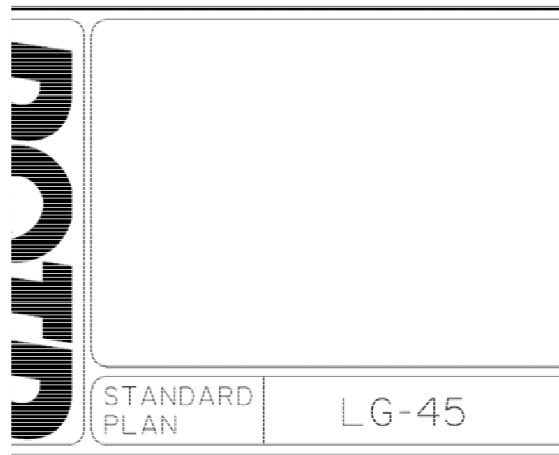
1. The black and white DOTD logo was drafted from the color logo previously being used on plan sheets. The new version will print better, particularly when it comes to photocopies. **Note that for consultant projects, the DOTD logo is to remain in place.** The consulting firm may remove the text below the logo (examples for BRIDGE AND STRUCTURAL DESIGN and ROAD DESIGN shown here) and use that space for their company name and/or logo.



2. There is now a dedicated location with the title block for the placement of either the preliminary stamp or the engineer’s stamp and signature. This not only clears up space for details within the border, but it also eliminates the possibility that a stamped and signed sheet could accidentally be issued with the preliminary stamp still placed somewhere on the sheet.



3. The previous version of the standard plan title block included space for revision descriptions and dates adjacent to the Chief's signature block. Because revisions to standard plans are not tracked or kept in this manner, those lines were removed.
4. On the standard plan title block, underneath the main title field, the sub-title field has been annotated to indicate that this is a standard plan sheet. This field will be used for the shortened title as a unique and easy-to-use identifier of the standard. Examples of this include LG-45, SWBS-100, FR-01, FN-01, and CP-01.



5. For disciplines mechanical, plumbing, electrical and architectural with a need for additional sheet numbering information, a block shall be placed in the bottom right hand corner of the border sheet. The first letter in each block shall be as follows: “M” for Mechanical Sheets, “P” for Plumbing Sheets, “E” for Electrical Sheets and “A” for Architectural Sheets. These letters shall be followed by the discipline's sheet number (for example M1, M2, M3, etc.) and, if required, a second number (for example E1.1, E1.2, E1.3, etc.). See the example below:



6. Official borders are stored on the DOTD S:\ drive for DOTD internal use. Otherwise, the border files can be found on the *Digital Plan Delivery Standards and Workflows* page on the DOTD website, which can be found through: *INSIDE La DOTD>Divisions>Engineering>Digital Plans Delivery*.

New title block data fields and a new preliminary stamp will be required to fit the new title block. These will be available through CADconform in the cell library, and are currently available for download on the *Digital Plan Delivery Standards and Workflows* page on the DOTD website. Consultants will need to re-download the Microstation workspace and replace the CADConform database in order to access the new cells through CADConform.

For help with DOTD borders and CADD Standards, contact the CADD Standards Engineer in the Road Design Section.

Please contact Kelly Kemp (225-379-1809, kelly.kemp@la.gov) if you have questions or comments.

ZZF/DS/abl

Cc: Chris Knotts (Chief Engineer)
Chad Winchester (Chief, Project Development Division)
Edward Wedge (Deputy Engineer Administrator)
Vince Latino (Assistant Secretary of Operations)
David Miller (Chief Maintenance Administrator)
Nick Fagerburg (Bridge Maintenance Administrator)
Michael Vosburg (Director of Construction and Materials)
Brian Owens (Construction Engineer Administrator)
Brian Kendrick (Project Management Director)
Chris Nickel (Pavement and Geotechnical Engineer Administrator)
Jacques Deville (Contracts and Specifications)
Art Aguirre (FHWA)
District Administrators, ADA Engineering, ADA Operations, and District Bridge Engineers and Area Engineers

OLD PLAN SHEET

OLD STANDARD PLAN


NEW PLAN SHEET

NEW STANDARD PLAN


PRELIMINARY
FOR REVIEW ONLY


**Louisiana Department
of Transportation
and Development**

ENGINEER:
LICENSE #:
DATE: 4/1/2020




DESIGNED	CHECKED	PARISH	CONTROL	SECTION	STATE	PROJECT
DESIGNED	CHECKED	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEWED	CHECKED	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEWED	CHECKED	PARISH	CONTROL	SECTION	STATE	PROJECT







< PROJECT NAME >

DATE: _____ REVISION OR CHANGE ORDER DESCRIPTION: _____ BY: _____




DESIGNED	CHECKED	PARISH	CONTROL	SECTION	STATE	PROJECT
DESIGNED	CHECKED	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEWED	CHECKED	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEWED	CHECKED	PARISH	CONTROL	SECTION	STATE	PROJECT






DATE: _____ REVISION DESCRIPTION: _____ BY: _____

APPROVED BY: _____ DATE: _____




DESIGN	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
DESIGN	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEW	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEW	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT




DATE: _____

APPROVED BY: _____



DESIGN	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
DESIGN	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEW	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEW	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT



DATE: _____

APPROVED BY: _____



DESIGN	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
DESIGN	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEW	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEW	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT



DATE: _____

APPROVED BY: _____



DESIGN	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
DESIGN	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEW	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT
REVIEW	CHECK	PARISH	CONTROL	SECTION	STATE	PROJECT



DATE: _____

APPROVED BY: _____

DOTD
ATTACHMENT I
OLD AND NEW TITLE BLOCKS