



US Army Corps
of Engineers®



*The CAD/BIM Technology Center
for Facilities, Infrastructure, and Environment*

A/E/C Computer-Aided Design (CAD) Standard

Release 6.2

Stephen Spangler

July 2024

The U.S. Army Engineer Research and Development Center (ERDC) solves the nation's toughest engineering and environmental challenges. ERDC develops innovative solutions in civil and military engineering, geospatial sciences, water resources, and environmental sciences for the Army, the Department of Defense, civilian agencies, and our nation's public good. Find out more at www.erdclibrary.on.worldcat.org/discovery.

To search for other technical reports published by ERDC, visit the ERDC online library at <http://www.erdclibrary.on.worldcat.org/discovery>.

A/E/C Computer-Aided Design (CAD) Standard

Release 6.2

Stephen Spangler

*US Army Engineer Research and Development Center (ERDC)
Information Technology Laboratory (ITL)
3909 Halls Ferry Road
Vicksburg, MS 39180-6199*

Final Special Report

Distribution Statement A. Approved for public release: distribution is unlimited.

Prepared for Headquarters, US Army Corps of Engineers
Washington, DC 20314-1000

Under Civil Direct Funding

Abstract

The A/E/C Computer-Aided Design (CAD) Standard has been developed by the CAD/Building Information Modeling (BIM) Technology Center for Facilities, Infrastructure, and Environment to eliminate redundant CAD standardization efforts within DoD and the Federal Government. This manual is part of an initiative to develop a nonproprietary CAD standard that incorporates existing industry, national, and international standards and to develop data standards that address the entire life cycle of facilities within DoD.

The material addressed in the A/E/C CAD Standard includes level/layer assignments, digital file naming, and standard symbology. The CAD/BIM Center's primary goal is to develop a CAD standard that is generic enough to operate under various CAD software packages (such as Bentley's MicroStation and Autodesk's AutoCAD) while incorporating existing industry standards when possible.

While this Standard encompasses many CAD concepts and practices, it is not intended to limit the capabilities of other advanced modeling software. Ultimately, a BIM / Civil Information Modeling standard will be developed to standardize the additional capabilities of other software.

DISCLAIMER: The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products. All product names and trademarks cited are the property of their respective owners. The findings of this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.

DESTROY THIS REPORT WHEN NO LONGER NEEDED. DO NOT RETURN IT TO THE ORIGINATOR.

Contents

Abstract.....	ii
Figures and Tables.....	v
Preface.....	vi
1 Introduction.....	1
1.1 Background.....	1
1.2 United States National CAD Standard	2
1.3 Objectives.....	2
1.4 Approach	3
1.5 Scope.....	3
1.6 Target Systems	3
1.7 Design Applications and Other Applications	4
1.8 Coordination with Design Agent.....	4
1.9 Additions/Revisions.....	4
2 CAD File Organization	5
2.1 CAD File settings.....	5
2.1.1 Available Design Area	5
2.1.2 File Accuracy (Units).....	5
2.1.3 International Feet versus Survey Feet.....	5
2.1.4 Origin (Global Origin).....	5
2.2 CAD File Contents	6
2.2.1 Modeling Area	9
2.2.2 Drawing Area	9
2.2.3 Sheet Area	9
2.3 CAD File Types.....	9
2.3.1 Model Files.....	9
2.3.1.1 Border Sheet Model Files.....	10
2.3.1.2 Raster References.....	10
2.3.2 Sheet Files.....	10
2.4 CAD File Naming Conventions	11
2.4.1 Project Code	11
2.4.2 Discipline Designators	11
2.4.3 Model File Naming.....	12
2.4.3.1 Modeling Area File Naming Convention	13
2.4.3.2 Drawing Area File Naming Convention.....	13
2.4.4 Sheet File Naming Convention.....	20
2.4.4.1 Adding a Sheet	26
2.4.4.2 Coordinating Sheet Identifiers	26
3 Graphic Concepts.....	28
3.1 Presentation Graphics.....	28
3.1.1 Line Widths.....	28

3.1.2	Line Types/Styles.....	29
3.1.3	Line Color.....	29
3.1.4	Plotting.....	30
3.1.5	Screening/Dithering	30
3.2	Text.....	31
4	Level/Layer Assignments.....	32
4.1	Level/Layer naming convention	32
4.2	Level/Layer Assignment Tables.....	33
4.2.1	General Levels/Layers.....	34
4.2.2	Status (Phase) Levels/Layers	34
5	Standard Symbology.....	36
5.1	Introduction.....	36
5.2	Symbology Resources	36
5.2.1	Cells/Blocks	36
5.2.2	Line Types/Styles.....	36
5.3	Downloadable Resources.....	37
6	Conclusion.....	38
	Bibliography.....	39
	Appendix: Model File Level/Layer Assignment Tables	41
	Abbreviations.....	108
	Report Documentation Page.....	109

Figures and Tables

Figures

2-1. 2D workflow.	7
2-2. 3D workflow.	8
2-3. Modeling area file naming convention.	13
2-4. Drawing area file naming convention.	14
2-5. Sheet file naming convention.	20
2-6. Supplemental drawing designator.	26
2-7. Typical border sheet title block with sheet identification block.	27
3-1. Predominant line types/styles.	29
4-1. Typical levels/layers contained in a sheet file.	32
4-2. Level/layer naming format.	33
4-3. Level/layer assignment table.	34

Tables

2-1. Discipline designators.	12
2-2. Drawing area file types discipline designators.	15
2-3. Sheet file discipline designators.	21
2-4. Sheet type designators.	25
3-1. Comparison of line widths.	28
3-2. Basic colors.	30
3-3. Screened colors.	31
4-1. Status (Phase) codes.	35

Preface

This study was conducted for Headquarters, US Army Corps of Engineers (HQUSACE), under Civil Direct Funding. The technical monitor was Mr. Jason Fairchild, Headquarters.

The work was performed by the Computer-Aided Design/Building Information Modeling (CAD/BIM) Technology Center of the Software Engineering and Informatics Division (SEID), US Army Engineer Research and Development Center–Information Technology Laboratory (ERDC-ITL). At the time of publication, Mr. Joseph Farrar was chief, CAD/BIM; Mr. Quincy Alexander was division chief; and Dr. Robert M. Wallace was technical director. The acting deputy director of ITL was Ms. Amie J. Burroughs, and the acting director was Dr. Jackie S. Pettway.

The Center acknowledges the support of Mr. Jason Fairchild, HQUSACE. Special thanks go to the following USACE staff for their technical expertise in the development and review of this document: Mr. Roger Fujan, US Army Engineer District, Walla Walla; Mr. Gerald Piotrowski, US Army Engineer District, Louisville; and Mr. Brian Baker, US Army Engineer District, Pittsburgh.

COL Christian Patterson was the commander of ERDC, and Dr. David W. Pittman was the director.

1 Introduction

1.1 Background

The Architecture, Engineering, and Construction (A/E/C) CAD Standard has been developed by the Computer-Aided Design/Building Information Modeling (CAD/BIM) Technology Center for Facilities, Infrastructure, and Environment (hereafter referred to as the Center) to eliminate redundant standardization efforts within the DoD and the Federal Government. This manual is part of an initiative to develop a nonproprietary CAD standard that incorporates existing industry, national, and international standards. Additionally, this standard is intended to support the entire life cycle of facilities within the DoD. This report supersedes *A/E/C CAD Standard, Release 6.1* (ERDC/ITL TR-19-7).

The immediate benefits of CAD standards are the following:

- Consistent CAD products for customers
- Uniform requirements for architecture-engineering deliverables
- Sharing of products and expertise

Recognizing such potential benefits, each of the DoD agencies independently initiated efforts to establish CAD standards in the late 1980s. In 1989, the Air Force Logistics Command released the *Architectural and Engineering Services for Computer-Aided Design and Drafting (CADD) Implementation within Air Force Logistics Command*. Headquarters, US Army Corps of Engineers (USACE), in 1990 published Engineer Manual 1110-1-1807, *Standards Manual for U.S. Army Corps of Engineers Computer-Aided Design and Drafting (CADD) Systems*. In 1993, the Naval Facilities Engineering Command (NAVFAC) distributed its *Policy and Procedures for Electronic Deliverables of Facilities Computer-Aided Design and Drafting (CADD) Systems*.

To consolidate these efforts into a single standard, the Center was tasked to develop standards for the A/E/C disciplines. This manual presents the Center's continuing effort at standardizing CAD requirements for A/E/C design and construction documents.

1.2 United States National CAD Standard

In 1995, the combined resources of the Center, the American Institute of Architects (AIA), the Construction Specifications Institute (CSI), the United States Coast Guard, the Sheet Metal and Air Conditioning Contractors National Association (SMACNA), the General Services Administration (GSA), and the National Institute of Building Sciences (NIBS) Facility Information Council began to develop a single CAD standard for the United States. Working together, these organizations agreed to develop an integrated set of documents that collectively would represent the United States National CAD Standard (NCS).

The two main NCS documents referenced within the A/E/C CAD Standard are the following:

Uniform Drawing System
The Construction Specifications Institute
123 North Pitt Street, Suite 450
Alexandria, VA 22314

AIA CAD Layer Guidelines
The American Institute of Architects
1735 New York Avenue, NW
Washington, DC 20006-5292

Each of these documents is available as part of the NCS. Additional information on the NCS, as well as how to purchase a copy, can be obtained from

National Institute of Building Sciences
1090 Vermont Avenue NW, Suite 700
Washington, DC 20005-4905
<https://www.nibs.org>
<https://www.nationalcadstandard.org/>

1.3 Objectives

The objective of the A/E/C Standards (i.e., A/E/C CAD Standard and A/E/C Graphics Standard) is to aid in the documentation of design intent to be consistently, efficiently, and effectively transmitted through the

construction phase to operations and maintenance (O&M) and back to design for future work.

1.4 Approach

The approach chosen to respond to A/E/C community comments and feedback entailed reviewing their concerns and recommendations. If the comment was from a purely personal preference standpoint, it was disregarded. If the comment proposed an object opportunity for improvement, a workaround was determined on how to best resolve the issue while still maintaining the intent of industry standards. A Frequently Asked Questions (FAQ) page was established to document the interim solutions. This document updates the A/E/C Standards to incorporate those solutions.

The intent of this document is to embrace the National CAD Standard while providing more guidance and clarifying areas of misunderstanding.

This document will not cover every circumstance encountered in drawing production. There may be specialized instances where it will be up to the site to develop internal best practices.

1.5 Scope

This manual provides guidance and procedures for preparing CAD products within the DoD. Chapters 2–5 of this manual address topics such as presentation graphics, level/layer assignments, digital 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, certain 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 DoD.

- The standard is based on CAD applications that utilize level/layer names and external reference files.

1.7 Design Applications and Other Applications

Numerous design applications have been developed to run on top of or alongside basic CAD engines. These applications can be used by designers to generate graphics inside CAD files.

Document management systems that contain attributes or metadata for individual files and have such features as attribute exchange are becoming standard tools for management of digital files. Use of these systems to store searchable metadata for files is encouraged.

1.8 Coordination with Design Agent

With all the complexity and options currently available, it becomes vitally important to coordinate the fundamental aspects of design. Each project should have an initial discussion and agreement between the designer and customer on topics such as: design software, review software, output file format(s), and so on.

1.9 Additions/Revisions

This Standard is intended to be neither static nor all inclusive. Suggestions for improvements are strongly encouraged so that subsequent updates will reflect the input and needs of the users.

Recommendations or suggested additions should be sent by email to CADBIM@usace.army.mil.

2 CAD File Organization

2.1 CAD File settings

2.1.1 Available Design Area

The two most extensively used CAD applications within the DoD, AutoCAD and MicroStation, both provide for a design 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 of survey feet (or thousandths), and meters:millimeters.

2.1.3 International Feet versus Survey Feet

Many sites must 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 must be either international feet or survey feet. The two units are defined as follows:

- International feet: 1 ft = 0.3048000 m.
- US survey feet (SF): 1 SF = 1,200/3,937 m.

Note: *At the time of the revision of this document, the US survey foot is scheduled to be deprecated by the National Institute of Standards and Technology (NIST) and the National Geodetic Survey (NGS). Be sure to check with the issuing agency for required coordinate systems and units.*

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. Also, survey feet and international feet should not be mixed in similar disciplines due to horizontal shifts over large distances.*

2.1.4 Origin (Global Origin)

Positioned within every digital 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 external reference files (see Section 2.3.1.1). A standardized origin is also helpful when translating files between CAD applications. The recommended global origin for files in both AutoCAD and MicroStation drawings is $x = 0$, $y = 0$, and $z = 0$.

2.2 CAD File Contents

CAD files contain various types of designs (2D or 3D) used to generate construction plans. The contents of these files will vary depending on the design authoring software but typically contain the following types of areas: 3D modeling, 2D drawing, and/or the 2D sheets (see Sections 2.2.1, 2.2.2, and 2.2.3). Depending on project requirements, project size, or design authoring software, the CAD files for a project may be organized by file use (e.g., project, discipline, modeling/drawing/sheet area type, file extension, etc.) and contain one or multiple types of areas (Figures 2-1 and 2-2).

Note: *A MicroStation design file (.dgn) may have multiple modeling areas (design models) and multiple drawing areas (drawing models), while an AutoCAD design file (.dwg) will have only one modeling area or drawing area (model SPACE). Both MicroStation and AutoCAD may contain multiple sheet areas (MicroStation: Sheet Models, AutoCAD: Layouts/Paper Spaces).*

Figure 2-1. 2D workflow.

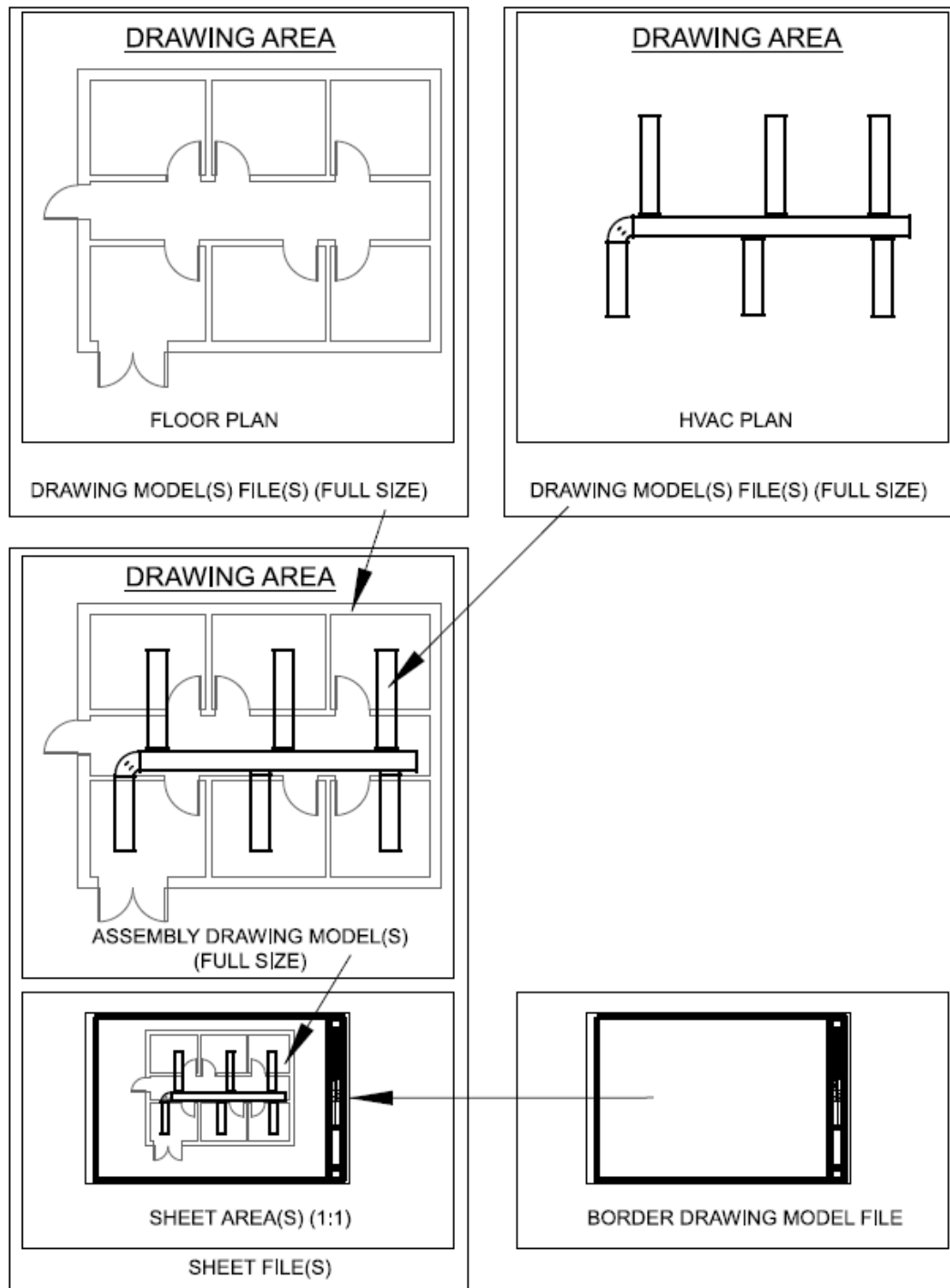
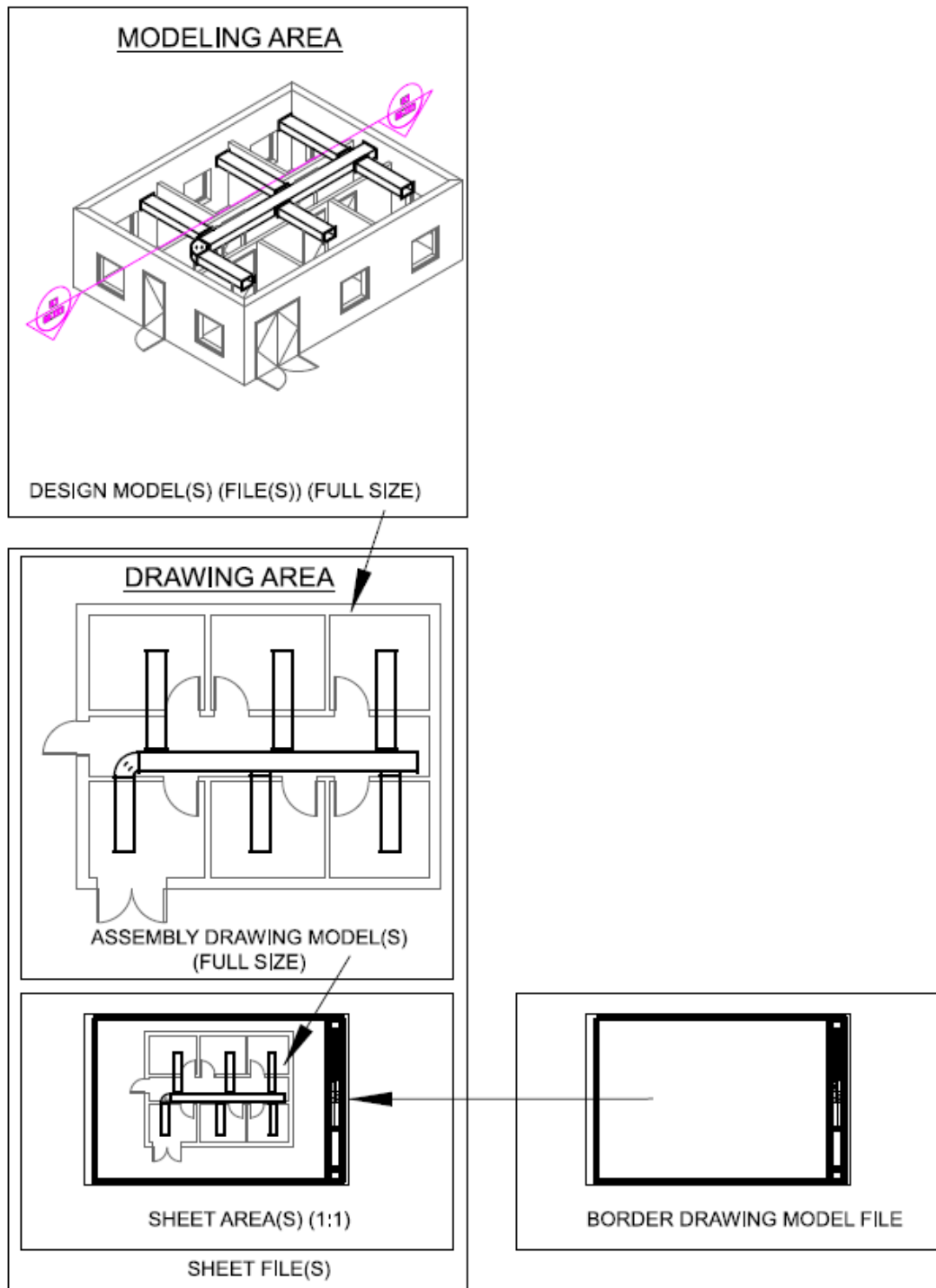


Figure 2-2. 3D workflow.



2.2.1 Modeling Area

The modeling area is where the 3D representation of physical components of a design (e.g., terrains, roads, curbs, columns, walls, windows, ductwork, piping, etc.) are drawn at full size (see Figure 2-2). Annotation is typically used sparingly in the modeling area to avoid text being misinterpreted as drawing content in alternate views.

2.2.2 Drawing Area

The drawing area is where the 2D graphical representation of physical components of a design are drawn at full size along with any annotation items (see Figures 2-1 and 2-2). Drawing areas can be generated either by placing graphics or by cutting views from modeling areas. Drawing areas include items such as plans, sections, elevations, and details.

2.2.3 Sheet Area

The sheet area is where views of the modeling areas and/or drawing areas are assembled to create a digital representation of the full-size plotted sheet. The sheet area contains a reference to the border sheet at 1:1. The addition of sheet-specific information (e.g., sheet annotation, symbols, sheet notes, etc.) completes the construction of the sheet area (see Figures 2-1 and 2-2).

2.3 CAD File Types

A CAD file is a container of the areas documented above. The CAD file types are model files and sheet files. It is important to name files appropriately so that model and sheet files can be easily distinguished.

2.3.1 Model Files

Model files contain modeling areas and/or drawing areas. Model files are developed or assembled prior to creation of sheet files. The components contained within a model file may be referenced by other models. Each reference shall have a unique name or logical description describing what is being referenced.

Referencing digital drawing information makes changes readily apparent to all design disciplines. This real-time access to the work of others

ensures accuracy and consistency within a set of drawings and helps promote concurrent design efforts.

Note: *Never bind/merge external references into the sheet areas since that will duplicate linework and increase the amount of work required to make future revisions.*

2.3.1.1 Border Sheet Model Files

Border sheets are drawing areas in model files externally referenced by all disciplines to create sheet areas. This model file contains border linework, the title block, and project-specific symbols and text. All disciplines shall use the same border sheet within a project (for more information on border sheets, see the *A/E/C Graphics Standard*).

2.3.1.2 Raster References

Although raster imagery is not accurate, it allows for the reader to relate the design linework to real world objects. For interoperability, the most common raster file types referenced are TIF, JPG, and PDF. Raster file names shall conform to the model file naming convention with a model file type of “IG” (e.g., (Project Code)C-IG(User Defined).tif/jpg/pdf).

Raster File Type uses:

- GeoReferenced TIF: Best for aerial photographic imagery, maps, and drawings where the image is referenced under linework to add clarity.
- JPG: Best for nonaerial photographic imagery used for depicting existing conditions referenced to sheets.
- PDF: Best for historic drawings used as background images.

Note: *It is suggested that MrSID files are not directly referenced. The files are extremely large and unwieldy to manage in a CAD/BIM / civil information modeling (CIM) environment. It is recommended that the MrSID image be clipped, resampled, and saved as a georeferenced TIF file. The smaller file size allows the software to open faster and plot more efficiently.*

2.3.2 Sheet Files

A sheet file is a file that contains a sheet area or multiple sheet areas. A sheet file is a ready-to-plot CAD file. Sheet files may also contain drawing

area(s) that have annotation that is appropriate for the sheet area that is referencing it.

2.4 CAD File Naming Conventions

Naming conventions for CAD files allow users to determine the contents of a file without opening it. They also provide a convenient and clear structure for organizing CAD files within a project directory.

Spaces are not allowed in any CAD filename. An underscore () or CamelCase may be used in lieu of a space, or a hyphen (-) may be used as a separator.

2.4.1 Project Code

The CAD file naming conventions require a Project Code (1 to 20 characters) at the beginning of the filename. The Project Code shall be identified at the start of each project to ensure consistent filenames within that project. Some examples of Project Codes include:

- the official agency project number and
- the project number defined by the contract issuing agency CAD manager for their record system.

The purpose of a Project Code is to indicate which project a CAD file is associated with.

When deciding on a standard file naming convention, the user might consider the use of a special character such as an underscore () (as part of the 20-character Project Code) at the beginning of the model filename so that model files are grouped together.

When a project includes multiple structures, features, or options, it is important to identify each file with the appropriate feature. This should be done as a part of the Project Code. For example, a model file for project P123 and building 2 could use a Project Code of _P123-Bldg2.

2.4.2 Discipline Designators

The NCS states that a Discipline Designator “denotes the category of subject matter contained on the specified layer.” However, this denotation leaves this type of designator open ended, resulting in Discipline

Designators that are usually subsets of other disciplines. For example, Distributed Energy (which has the Discipline Designator “W” in the NCS) is typically shown in disciplines such as Mechanical or Electrical. To prevent the use of Discipline Designators where it is unclear what should be included within the “category of subject matter,” only the Discipline Designators shown in Table 2-1 shall be used.

Table 2-1. Discipline designators.

Discipline	Designator
General	G
Hazardous materials	H
Survey/Mapping	V
Geotechnical	B
Civil	C
Landscape	L
Structural	S
Architectural	A
Interiors	I
Fire protection	F
Plumbing	P
Mechanical	M
Electrical	E
Telecommunications	T
Resource	R
Other disciplines	X
Operations	O

2.4.3 Model File Naming

There are two different types of model files: modeling area files and drawing area files. The primary difference between these two types is that modeling areas are typically used to portray 3D and drawing areas are used to portray 2D. The NCS’s model file naming convention primarily focuses on 2D drawing practices and does not provide guidance for modeling area file types.

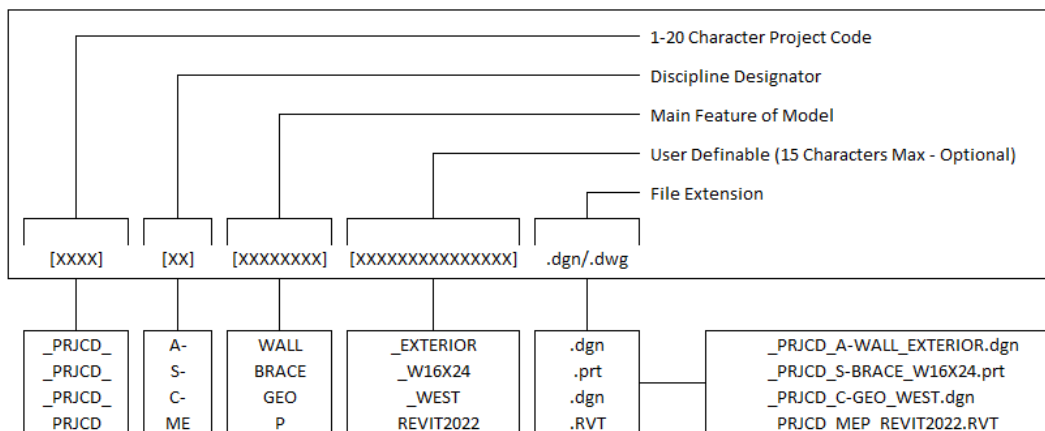
2.4.3.1 Modeling Area File Naming Convention

The modeling area file naming convention (Figure 2-3) has three mandatory fields, and the fourth is optional. All fields must be in the correct sequence.

Following the Project Code field, the first two-character field represents the Discipline Designator. The allowable characters for the Discipline Designator are listed in Table 2-1. The second character of the Discipline Designator field is typically a hyphen (-), but files may contain multiple discipline models so the second character may continue listing disciplines located within the file. If there are more than two disciplines, continue utilizing the main feature field. The next 8-character (maximum) field represents the main modeling feature of the file (e.g., wall, bracing, corridor, etc.). The final optional user-definable 15-character (maximum) field is available to further describe the file contents.

It is recommended that the model area file naming schema be documented and be consistent for each project.

Figure 2-3. Modeling area file naming convention.



Note: Although Revit can contain many different area types within one file, it is recommended that users use the modeling area file naming convention for Revit (.RVT) files.

2.4.3.2 Drawing Area File Naming Convention

The drawing area file naming convention (Figure 2-4) has three mandatory fields, and the fourth is optional. All fields must be in the correct sequence.

Following the Project Code field, the first 2-character field represents the Discipline Designator. The allowable characters for the first character in the Discipline Designator are listed in Table 2-1. The second character of the Discipline Designator field is always a hyphen (-). The next two-character field represents the Drawing Area File Type (NCS Model File Type) (Table 2-2). The final field is a 10-character (maximum) user-definable field.

Figure 2-4. Drawing area file naming convention.

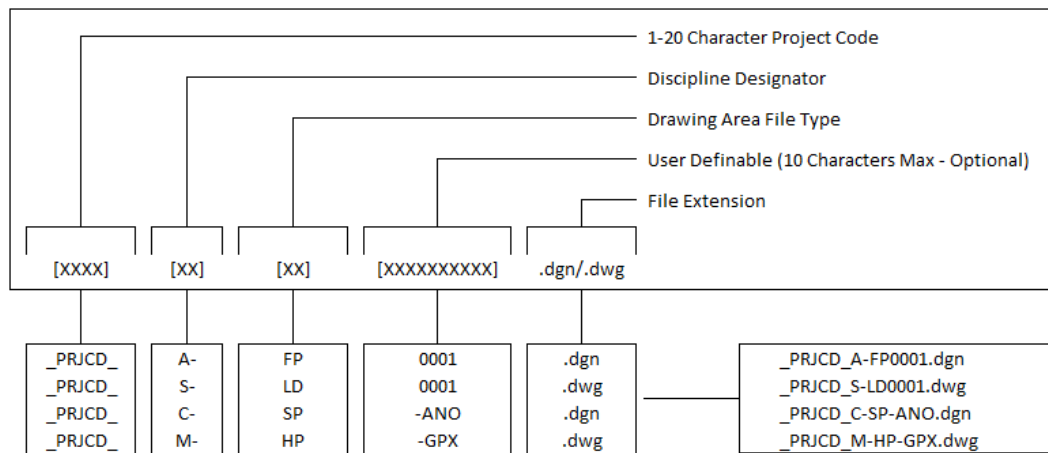


Table 2-2. Drawing area file types discipline designators.

Discipline	Code	Definition
General	BS	Border sheet
General	CS	Cover sheet
General	IG*	Raster imagery (scanned and photographic)
General	KP	Key plan
Hazardous materials	DT	Detail
Hazardous materials	EL*	Elevation
Hazardous materials	IG*	Raster imagery (scanned and photographic)
Hazardous materials	LG*	Legend
Hazardous materials	PP	Pollution prevention plan
Hazardous materials	PR	Profile
Hazardous materials	QP*	Equipment plan
Hazardous materials	SC	Existing section
Hazardous materials	XD*	Existing/Demolition plan
Survey/Mapping	AL	Existing airfield lighting plan
Survey/Mapping	CP	Existing communication system plan
Survey/Mapping	EU	Existing electrical utilities plan
Survey/Mapping	HP	Existing hydrographic survey and mapping plan
Survey/Mapping	HT	Existing HTCW Utilities Plan
Survey/Mapping	IG*	Raster imagery (scanned and photographic)
Survey/Mapping	LG*	Legend
Survey/Mapping	PB	Property boundary
Survey/Mapping	PP*	Plan and profile
Survey/Mapping	PR	Existing profile
Survey/Mapping	SC	Existing section
Survey/Mapping	SV	Survey and mapping plan
Survey/Mapping	UP	Existing utilities plan
Geotechnical	DT	Detail
Geotechnical	IG*	Raster imagery (scanned and photographic)
Geotechnical	JP	Joint layout plan
Geotechnical	LB	Boring log
Geotechnical	LG*	Legend
Geotechnical	PV	Pavement site plan
Geotechnical	SC	Existing section
Geotechnical	SH*	Schedule
Geotechnical	SI	Subsurface investigation plan

Table 2-2 (cont.). Drawing area file types discipline designators.

Discipline	Code	Definition
Civil	AF	Airfield plan
Civil	BR	Beach renourishment plan
Civil	DT	Detail
Civil	EL	Elevation
Civil	ER	Eco-restoration plan
Civil	FC	Flood control plan
Civil	GP	Grading plan
Civil	IG*	Raster imagery (scanned and photographic)
Civil	IP*	Installation plan / base map
Civil	JP	Joint layout plan
Civil	KP*	Staking plan
Civil	LG*	Legend
Civil	NG	Navigation/dredging plan
Civil	PL*	Project location map
Civil	PP*	Plan and profile
Civil	PR	Profile
Civil	SC	Section
Civil	SH*	Schedule
Civil	SP	Site plan
Civil	TS	Transportation site plan
Civil	UP	Utilities plan
Civil	XD*	Existing/demolition plan
Landscape	DT	Detail
Landscape	EL*	Elevation
Landscape	IG*	Raster imagery (scanned and photographic)
Landscape	IP	Irrigation plan
Landscape	LG*	Legend
Landscape	LP	Landscape plan
Landscape	SC*	Section
Landscape	SH*	Schedule
Landscape	XD*	Existing/demolition plan
Structural	3D	Isometric/3D
Structural	BP	Bridge plan
Structural	CP*	Column plan
Structural	CW	Misc. small civil works structures

Table 2-2 (cont.). Drawing area file types discipline designators.

Discipline	Code	Definition
Structural	DT	Detail
Structural	EL	Elevation
Structural	EP	Enlarged plan
Structural	FC	Flood control structures
Structural	FN	Foundation plan
Structural	FR	Framing plan
Structural	IG*	Raster imagery (scanned and photographic)
Structural	LD	Locks and dams plan
Structural	LG	Legend
Structural	SC	Section
Structural	SH*	Schedule
Structural	XD*	Existing/demolition plan
Architectural	3D*	Isometric/3D
Architectural	AC	Area calculations/occupancy plan
Architectural	CP	Reflected ceiling plan
Architectural	DT	Detail
Architectural	EL	Elevation
Architectural	EP*	Enlarged plan
Architectural	FP	Floor plan
Architectural	IG*	Raster imagery (scanned and photographic)
Architectural	LG*	Legend
Architectural	QP	Equipment plan
Architectural	RP	Roof plan
Architectural	SC	Section
Architectural	SH*	Schedule
Architectural	XD*	Existing/demolition plan
Interiors	3D*	Isometric/3D
Interiors	DT	Detail
Interiors	EL	Elevation
Interiors	EP*	Enlarged plan
Interiors	FL	Floor patterns
Interiors	IG*	Raster imagery (scanned and photographic)
Interiors	LG*	Legend
Interiors	QP*	Equipment plan
Interiors	RP	Furniture plan

Table 2-2 (cont.). Drawing area file types discipline designators.

Discipline	Code	Definition
Interiors	SC*	Section
Interiors	SH*	Schedule
Interiors	SP	Signage placement plan
Interiors	WP	System furniture plan
Interiors	XD*	Existing/demolition plan
Fire protection	3D*	Isometric/3D
Fire protection	DG*	Diagram
Fire protection	DT	Detail
Fire protection	FA	Fire alarm/detection plan
Fire protection	FP	Fire suppression plan
Fire protection	IG*	Raster imagery (scanned and photographic)
Fire protection	LG*	Legend
Fire protection	LP	Life safety plan
Fire protection	SC*	Section
Fire protection	SH*	Schedule
Fire protection	XD*	Existing/demolition plan
Plumbing	3D*	Isometric/3D
Plumbing	DG	Diagram
Plumbing	DT	Detail
Plumbing	EL*	Elevation
Plumbing	EP*	Enlarged plan
Plumbing	IG*	Raster imagery (scanned and photographic)
Plumbing	LG*	Legend
Plumbing	PP	Piping plan
Plumbing	QP*	Equipment plan
Plumbing	SH*	Schedule
Plumbing	XD*	Existing/demolition plan
Mechanical	3D*	Isometric/3D
Mechanical	DG	Diagram
Mechanical	DT	Detail
Mechanical	EL	Elevation
Mechanical	EP*	Enlarged plan
Mechanical	HP	HVAC plan
Mechanical	HS	Hydraulic systems
Mechanical	HT	HTCW utilities plan

Table 2-2 (cont.). Drawing area file types discipline designators.

Discipline	Code	Definition
Mechanical	IG*	Raster imagery (scanned and photographic)
Mechanical	LG*	Legend
Mechanical	MD	Machine design plan
Mechanical	MH	Material handling plan
Mechanical	QP*	Equipment plan
Mechanical	SC	Section
Mechanical	SH*	Schedule
Mechanical	SP	Specialty piping plan
Mechanical	XD*	Existing/demolition plan
Electrical	AL	Airfield lighting plan
Electrical	AP*	Auxiliary power plan
Electrical	CP	Exterior communication systems plan
Electrical	DG	Diagram
Electrical	DT	Detail
Electrical	EU	Electrical utilities plan
Electrical	GP	Grounding system plan
Electrical	IG*	Raster imagery (scanned and photographic)
Electrical	LG*	Legend
Electrical	LP	Lighting plan
Electrical	PP	Power plan
Electrical	PS*	Panel schedule
Electrical	QP*	Equipment plan
Electrical	SH*	Schedule
Electrical	SS	Special systems plan
Electrical	XD*	Existing/demolition plan
Telecommunications	DG	Diagram
Telecommunications	DT	Detail
Telecommunications	IG*	Raster imagery (scanned and photographic)
Telecommunications	LG*	Legend
Telecommunications	QP*	Equipment plan
Telecommunications	SH*	Schedule
Telecommunications	TP	Telephone/data plan
Telecommunications	XD*	Existing/demolition plan

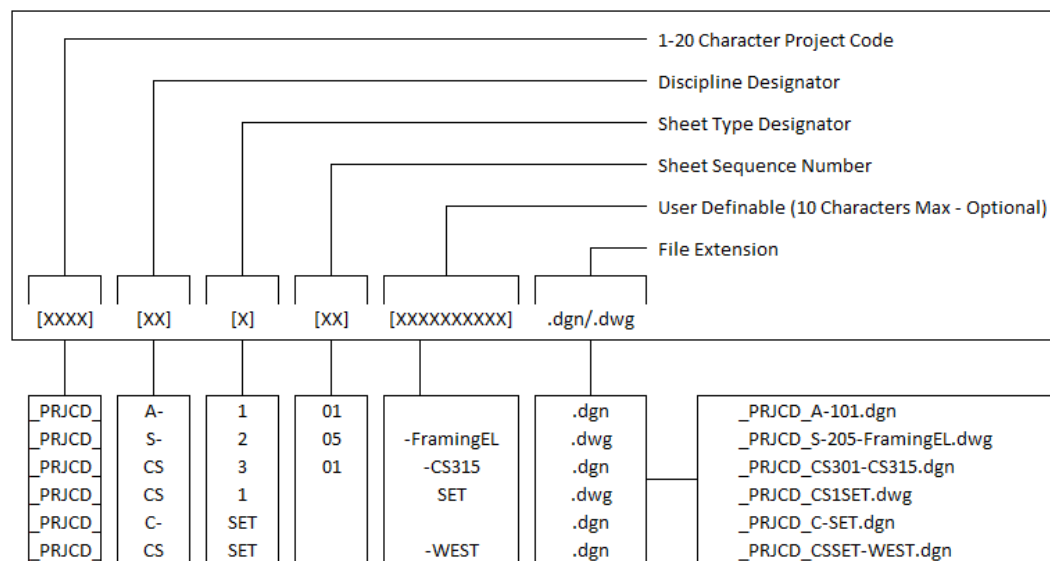
* = No Model File Table available in Appendix A.

2.4.4 Sheet File Naming Convention

The sheet file naming convention (Figure 2-5) contains four mandatory fields, and the fifth is optional. All fields must be in the correct sequence.

Following the project code, the next 2 characters are the Discipline Designator with either a hyphen or an alphabetical designator (Table 2-3). The next character is the Sheet Type Designator (Table 2-4) followed by a 2-character Sheet Sequence Number (01–99). Sheet Sequence Numbers do not need to be sequential. This allows for future insertion of sheets during design. The final field is a 10-character (maximum) user-definable field.

Figure 2-5. Sheet file naming convention.



When multiple sheets are in the same file, the word “SET” may replace either the Sheet Sequence Number (for all sheets under a specific sheet type designator) or the Sheet Type Designator and Sheet Sequence Number (for all sheets under a specific Sheet Type Designator). Alternately, the first and last sheet in a file may be listed as part of the user-definable field. The sheet filename shall coincide with the sheet identifiers that it contains.

Table 2-3. Sheet file discipline designators.

Discipline	Designator	Description	Content
General	G-	All general	All or any portion of subjects in the following Discipline Designators
General	GI	General information	Drawing index, code summary, symbol legend, orientation maps
General	GC	General contract	Phasing, schedules, contractor staging areas, fencing, haul routes, erosion control, temporary and special requirements
General	GR	General resource	Photographs, soil borings
Hazardous materials	H-	All hazardous materials	All or any portion of subjects in the following Discipline Designators
Hazardous materials	HA	Asbestos	Asbestos abatement, identification, containment
Hazardous materials	HC	Chemicals	Toxic chemicals handling, removal, storage
Hazardous materials	HL	Lead	Lead piping, paint removal
Hazardous materials	HP	PCB	PCB containment and removal
Hazardous materials	HR	Refrigerants	Ozone depleting refrigerants
Survey/mapping	V	All survey/mapping	All or any portion of subjects in the following Discipline Designators
Survey/mapping	VA	Aerial survey	Aerial surveyed points and features
Survey/mapping	VB	Boundary	Boundary survey
Survey/mapping	VC	Computed points	Computed points and features
Survey/mapping	VF	Field survey	Field surveyed points and features
Survey/mapping	VH*	Hydrographic survey	Hydrographic surveyed points and features
Survey/mapping	VI	Digital survey	Digitized points and features
Survey/mapping	VN	Node points	Node points and features
Survey/mapping	VS	Staked points	Staked points and features
Survey/mapping	VU	Combined utilities	
Survey/mapping	VL	Land	Land/property/American Land Title Assoc. (ALTA) survey
Geotechnical	B-	All geotechnical	All or any portion of subjects in the following Discipline Designators
Geotechnical	BB*	Boring logs	Boring logs
Geotechnical	BS*	Stratigraphy	Stratigraphy profiles
Civil	CD	Civil demolition	Structure removal and site clearing
Civil	C-	All Civil	All or any portion of subjects in the following Discipline Designators
Civil	CS	Civil site	Plats, topographic, dimension control
Civil	CG	Civil grading	Excavation, grading, drainage, erosion control, retention ponds

Table 2-3 (cont.). Sheet file discipline designators.

Discipline	Designator	Description	Content
Civil	CT	Civil transportation	Waterways, wharves, docks, trams, railways, airfields, people movers
Civil	CP	Civil paving	Roads, driveways, parking lots
Civil	CU	Civil utilities	Water, sanitary sewer, storm sewer, power, communications, natural gas, steam systems
Civil	CI	Civil improvements	Pavers, flagstone, exterior tile, furnishings, retaining walls, water features
Civil	CB*	Civil beach renourishment	Beach disposal and renourishment
Civil	CE*	Civil ecosystem restoration	Environmental restoration
Civil	CF*	Civil flood control	Levees, spillways, pump stations
Civil	CH*	Civil shore protection	Erosion protection structures on shoreline
Civil	CN*	Civil navigation	Navigation, harbors, dredging
Civil	CO*	Civil operation and maintenance	Repair and upgrade to O&M structures
Civil	CR*	Civil recreation	Recreation facilities
Civil	CX*	Civil security	Security-related work
Landscape	LD	Landscape demolition	Protection and removal of existing landscape
Landscape	L-	All Landscape	All or any portion of subjects in the following Discipline Designators
Landscape	LS	Landscape site	All site hardscape and callouts
Landscape	LG	Landscape grading	Proposed contours and spot grades
Landscape	LI	Landscape irrigation	Mainlines, valves, controllers, pumps, etc.
Landscape	LL	Landscape lighting	-
Landscape	LP	Landscape planting	Landscape planting
Landscape	LR	Landscape relocation	Vegetation relocation information
Structural	SD	Structural demolition	Protection and removal
Structural	S-	All Structural	All or any portion of subjects in the following Discipline Designators
Structural	SS	Structural site	-
Structural	SB	Structural substructure	Foundations, piers, slabs, retaining walls
Structural	SF	Structural framing	Floors and roofs
Structural	SC*	Structural components	Gates, armor, bulkheads, railings
Structural	SR*	Structural reinforcement	Concrete reinforcement and anchors

Table 2-3 (cont.). Sheet file discipline designators.

Discipline	Designator	Description	Content
Structural	ST*	Structural superstructure	Walls, decks, abutments, gates, weirs
Architectural	AD	Architectural demolition	Protection and removal
Architectural	A-	All Architectural	All or any portion of subjects in the following Discipline Designators
Architectural	AS	Architectural site	-
Architectural	AE	Architectural elements	General architectural
Architectural	AI	Architectural interiors	-
Architectural	AG	Architectural graphics	-
Architectural	AF	Architectural finishes	-
Interiors	ID	Interior demolition	Protection and removal
Interiors	I-	All Interiors	All or any portion of subjects in the following Discipline Designators
Interiors	IN	Interior design	-
Interiors	IF	Interior furnishings	-
Interiors	IG	Interior graphics	Murals and visuals
Fire Protection	FD*	Fire protection demolition	Protection and removal
Fire Protection	F-	All Fire protection	All or any portion of subjects in the following Discipline Designators
Fire Protection	FA	Fire protection detection and alarm	-
Fire Protection	FX	Fire protection suppression	Fire extinguishing systems and equipment
Plumbing	PD	Plumbing demolition	Protection, termination, removal
Plumbing	P-	All Plumbing	All or any portion of subjects in the following Discipline Designators
Plumbing	PS	Plumbing site	Extensions and connections to Civil Utilities
Plumbing	PL	Plumbing fixtures	Domestic water, sanitary and storm drainage, fixtures
Plumbing	PP	Plumbing piping	Piping, valves, insulation
Plumbing	PQ	Plumbing equipment	Pumps and tanks
Mechanical	MD	Mechanical demolition	Protection, termination, removal
Mechanical	M-	All Mechanical	All or any portion of subjects in the following Discipline Designators
Mechanical	MS	Mechanical site	Utility tunnels and piping between facilities
Mechanical	MH	Mechanical HVAC	Ductwork, air devices, equipment

Table 2-3 (cont.). Sheet file discipline designators.

Discipline	Designator	Description	Content
Mechanical	MI	Mechanical instrumentation	Instrumentation and controls
Mechanical	MP	Mechanical piping	Chilled and heating water, steam
Mechanical	MY*	Mechanical hydraulic systems	Pump stations, spillways, slide gates
Mechanical	MW*	Mechanical distributed energy	
Electrical	ED	Electrical demolition	Protection, termination, removal
Electrical	E-	All Electrical	All or any portion of subjects in the following Discipline Designators
Electrical	ES	Electrical site	Exterior electrical systems (power, lighting, auxiliary)
Electrical	EI	Electrical instrumentation	Controls, relays, instrumentation, measurement devices
Electrical	EL	Electrical interior lighting	Interior lighting
Electrical	EP	Electrical interior power	Interior power
Electrical	ET	Electrical telecommunications	Telephone, network, voice, and data cables
Electrical	EY	Electrical interior auxiliary systems	Alarms, nurse call, security, CCTV, PA, music, clock, program
Electrical	EA*	Electrical airfield lighting and navaids	Visual air navigation systems
Electrical	EC*	Electrical cathodic protection	Cathodic protection systems
Electrical	EG*	Electrical grounding	Grounding, lightning protection devices
Electrical	EW*	Electrical distributed energy	-
Telecommunications	TD*	Telecommunications demolition	Protection, termination, removal
Telecommunications	T-	All Telecommunications	All or any portion of subjects in the following Discipline Designators
Telecommunications	TA	Audio visual	Cable, music, CCTV systems
Telecommunications	TC	Clock and program	Time generators and bell program systems
Telecommunications	TI	Intercom	Intercom and public address systems
Telecommunications	TM	Monitoring	Monitoring and alarm systems
Telecommunications	TN	Data networks	Network cabling and equipment
Telecommunications	TT	Telephone	Telephone systems, wiring, equipment
Telecommunications	TY	Security	Access controls and alarm systems

Table 2-3 (cont.). Sheet file discipline designators.

Discipline	Designator	Description	Content
Telecommunications	TS*	SCADA	Supervisory control and data acquisition (SCADA) systems and equipment
Resource	R-	All resource	All or any portion of subjects in the following Designators
Resource	RC	Resource civil	Surveyor's information and existing civil drawings
Resource	RS	Resource structural	Existing facility structural drawings
Resource	RA	Resource architectural	Existing facility architectural drawings
Resource	RM	Resource mechanical	Existing facility mechanical drawings
Resource	RE	Resource electrical	Existing facility electrical drawings
Resource	RR	Resource real estate	Real estate drawings
Resource	RG*	Resource green	LEED drawings
Other disciplines	X	—	—
Operations	O	—	—

* = Not in NCS 6.0

Table 2-4. Sheet type designators.

Sheet Type	Designator
General (symbols legend, notes, etc.)	0
Plans (horizontal views and combination plan and profile)	1
Elevations and profiles (vertical views)	2
Sections (sectional views, cross sections, etc.)	3
Large scale views (Scaled up reproductions of plans, elevations, or sections that are not details)	4
Details	5
Schedules and diagrams	6
User defined	7
User defined	8
3D representations (isometrics, perspectives, photographs)	9

Note: *If the sheet sequence number goes above 99 sheets for a particular discipline, the user might want to consider using alphabetical Designators in the Discipline Designator to further subdivide the discipline (Table 2-3).*

Note: *In the NCS, user-defined “Level 2 Discipline Designators” (two alphabetical characters) in the Discipline Designator are allowed “to differentiate among multiple buildings on a ‘campus’ or among multiple*

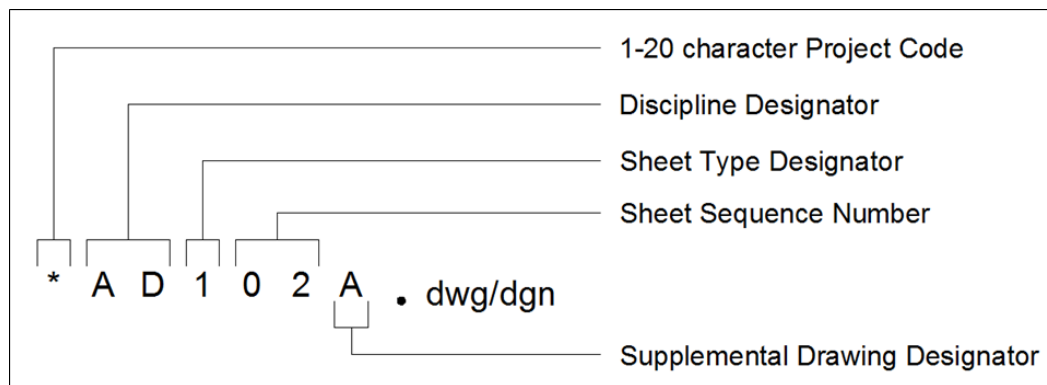
features on a large civil works project.” The A/E/C CAD Standard limits the Discipline Designator field to strictly those listed in Table 2-3 for sheets. The Project Code field (see Section 2.4.1) in conjunction with the title block “BLDG ID” field (see “Border Sheets” section in the A/E/C Graphics Standard) preempts the need for this functionality.

Note: Occasionally, more than one Sheet Type (e.g., plan, elevation, detail) will be represented in one sheet file. If this is the case, the dominant Sheet Type determines the Sheet Type Designator.

2.4.4.1 Adding a Sheet

If a sheet needs to be added between two sequential sheets, a Supplemental Drawing Designator may be appended to the end of a sheet file name as part of the user-definable field (Figure 2-6). For example, if two sheets need to be added between sheets ERDC8000A-104 and ERDC8000A-105, then the sheet file names for the inserted sheets would be ERDC8000A104A and ERDC8000A104B.

Figure 2-6. Supplemental drawing designator.



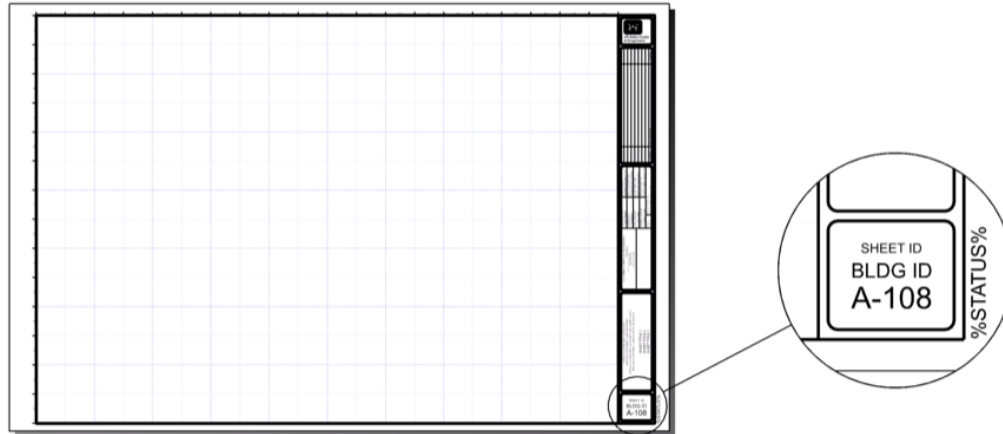
If time permits, sheet files should be resequenced and named appropriately before advertisement. After advertisement, all sheet additions and deletions shall be documented as an amendment or modification per contract language. See the *A/E/C Graphics Standards* for more information.

2.4.4.2 Coordinating Sheet Identifiers

The sheet identifier (shown in the sheet identification block, reference bubbles, notes, etc.) shall consist of the discipline designator, sheet type designator, and the sheet sequence number (Figure 2-7).

The sequence of the discipline designators in a drawing set shall follow the order as shown in Table 2-3 (except for general notes, abbreviations, and legends that will precede all other sheets in a discipline).

Figure 2-7. Typical border sheet title block with sheet identification block.



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 Widths

Commercial CAD systems provide an extensive variety of line widths to substantially improve drawing readability. For the majority of A/E/C drawings, the eight line widths defined in Table 3-1 are considered sufficient and should not be expanded unless an appreciable improvement in drawing clarity or contrast can be realized. Table 3-1 lists information about the various allowed line widths.

Table 3-1. Comparison of line widths.

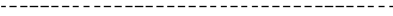
Line Thickness	mm	in.	MicroStation Line Weight	Typical Use
Fine	0.18	0.007	wt = 0	Patterning and material indications
Thin	0.25	0.010	wt = 1	Dimension lines, leaders, extension lines, break lines, grid lines, schedule grid lines, hidden objects, center lines, setback lines
Medium	0.35	0.014	wt = 2	Forward/back object lines, property lines, terminator marks, schedule grid accent lines
Wide	0.50	0.020	wt = 3	Major object lines, cut lines, section cutting plane lines, property lines, drawing block borders
Extra wide	0.70	0.028	wt = 5	Minor title underlining, footprints, match lines, schedule outlines, sheet borders, object lines requiring special emphasis
XX Wide	1.00	0.040	wt = 7	Major title underlining and separating portions of drawings
XXX Wide	1.40	0.055	wt = 10	Border sheet outlines and cover sheet line work
XXXX Wide	2.00	0.079	wt = 15	Border sheet outlines and cover sheet line work

Note: *The NCS does offer an Extra Fine (0.13 mm) line width. However, the legibility on printouts becomes more difficult when the line width goes below the Fine (0.18 mm) line width. The NCS even states “Use of Extra Fine line widths should be avoided if the drawing will be plotted half-size.”*

3.1.2 Line Types/Styles

The predominant line types/styles used in this standard are shown in Figure 3-1 and are available as line types/styles for AutoCAD and MicroStation (except for “Continuous”). Additional custom line style files for MicroStation and AutoCAD are available on the Center’s website at <https://cadbimcenter.erdcdren.mil>.

Figure 3-1. Predominant line types/styles.

	0 or Continuous
	014200-906 MS1 Dot
	014200-907 MS2 Medium Dash
	014200-908 MS3 Long Dash
	014200-909 MS4 Dot Dash
	014200-910 MS5 Short Dash
	014200-911 MS6 Dash Dot Dot
	014200-912 MS7 Long Dash Short Dash
	014200-913 Hidden Line
	014200-914 Center Line

Note: *For consistency and interoperability, use of the IGDS default Bentley line styles 1–7 shall be avoided.*

3.1.3 Line Color

The primary reason to use color in CAD drawings is to improve the clarity of the drawing on a computer monitor or plot. The variety of colors available in a CAD application depends on the capabilities of the computer monitor, its video card or plotter, and the user’s ability to see them.

Colors within the model file tables are not listed by their AutoCAD or MicroStation color numbers, but instead by their red-green-blue (RGB) values. Using RGB values instead of CAD package color numbers will allow for universal representation of colors no matter which (CAD) software application is being used. Table 3-2 lists the basic colors used predominantly throughout the model files. Additionally, the level/layer

colors have been defined to reflect industry field marking color standards where applicable.

Table 3-2. Basic colors.

Color	RGB Values		
	Red	Green	Blue
Blue	0	0	255
Gray	128	128	128
Green	0	255	0
Red	255	0	0
Yellow	255	255	0
Magenta	255	0	255
Cyan	0	255	255
White	255	255	255

Note: For AutoCAD, use color “White” or for Bentley use color 0 (zero) for all colors set to 255,255,255 to enable white/black color switching based on background color.

3.1.4 Plotting

Plotted documents are controlled by various files within the CAD application (pen tables, plot drivers, design scripts, feature tables, etc.). These files set the display of objects (i.e., line thickness, color, etc.) within the plotted document. Agencies should ensure that consistent drawings are produced from a digital file regardless of the type of printer or plotter used. Each agency may develop plot settings (derived from the A/E/C Standards) needed to convey the design intent (i.e., screening, color plotting, etc.).

Note: For consistency/interoperability, it is recommended that plots first be sent to a common format, such as PDF, before paper plotting.

3.1.5 Screening/Dithering

Screening is the varying of the intensity of grayscale linework. Dithering is the process in which the density and pattern of black and white dots are varied to simulate different shades of gray. Both allow users to distinguish different aspects of a drawing when it is plotted.

For example, the existing items to remain on a demolition plan can be assigned with a set screening percentage. When plotted, those items will be displayed at a lighter shade compared to items slated for demolition. This will allow the viewer to immediately identify the emphasized demolition items on the plotted document.

Table 3-3 lists colors recommended to be used for screening along with a recommended screening percentage. Optionally, when variations in screening are not important, a single screening can be applied to all screened graphics.

Screening can be accomplished with various techniques, but the screen percentages should be the same as Table 3-3. Document any methods used and provide appropriate supporting files.

Table 3-3. Screened colors.

Color No.	Screen Percent	Red Grayscale Ratio	Green Grayscale Ratio	Blue Grayscale Ratio
250	60	102	102	102
251	50	128	128	128
252	40	153	153	153
253	30	179	179	179
254	20	204	204	204

Note: *The AutoCAD vs. MicroStation color numbers have been combined to avoid confusion when creating a screened effect in either software. See AutoCAD and MicroStation help documentation for more information on how to perform screening.*

3.2 Text

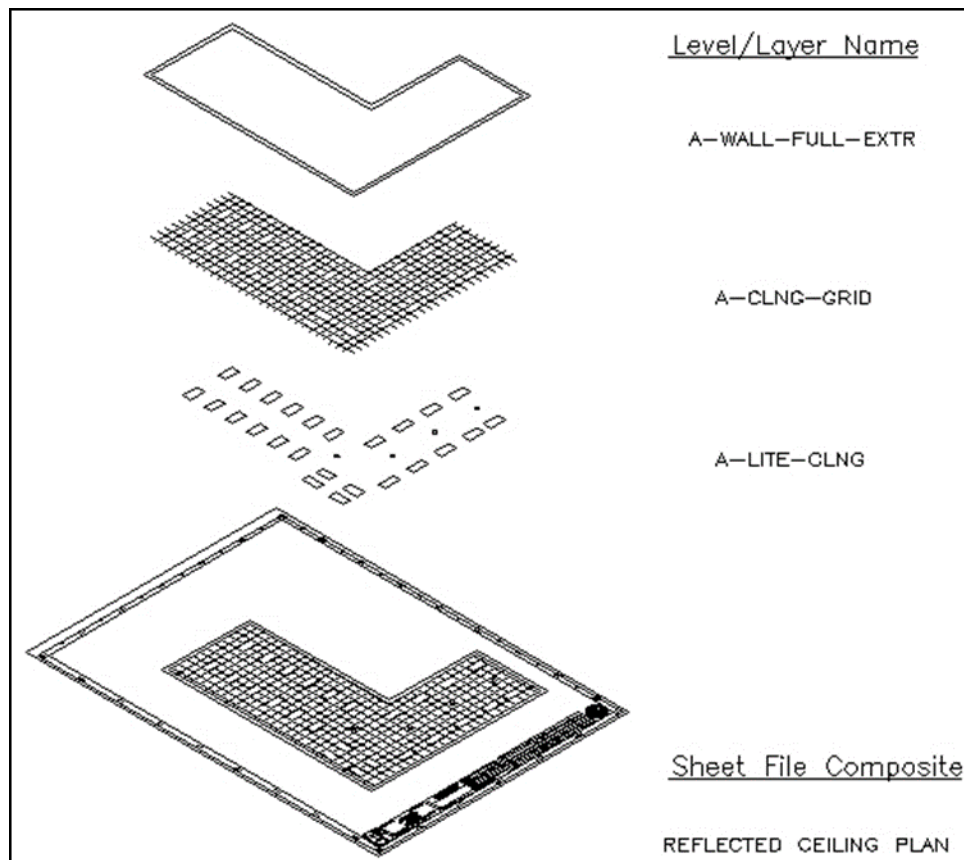
Since projects designed in CAD are planned for use many years into the future and files will be used by many different individuals, use of any nonstandard or proprietary fonts is not allowed. This includes fonts for symbology, logos, business titles, and so on. To improve the direct translation of fonts between applications, only Arial TrueType font is allowed in the construction drawing set (for more information on text, see the *A/E/C Graphics Standard*).

4 Level/Layer Assignments

4.1 Level/Layer naming convention

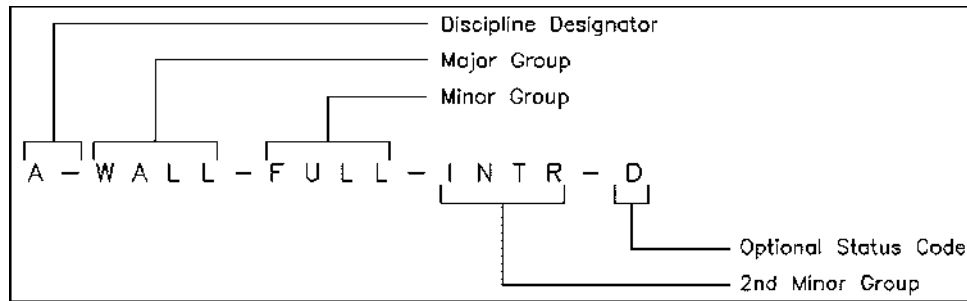
CAD levels or layers are analogous to overlays in manual drafting systems and serve to separate graphic elements (lines, shapes, text) according to the design discipline they represent (Figure 4-1).

Figure 4-1. Typical levels/layers contained in a sheet file.



The level/layer is the basic tool used in CAD for managing graphic information (Figure 4-2). The levels/layers defined within this standard are based on the recommendations set forth in “AIA CAD Layer Guidelines” (NIBS 2014).

Figure 4-2. Level/layer naming format.



A basic level/layer name consists of a two-character Discipline Designator where the second character must be a hyphen (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). Between all groups, a hyphen must be placed.

Since BIM/CIM processes capture most of the information that is defined in a CAD layer name, the Minor Groups may become redundant and unnecessary when those processes are used.

The Appendix contains standard level/layer 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 Level/Layer Assignment Tables

The level/layer assignment tables in the Appendix present the following (Figure 4-3 shows an excerpt):

- 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
- The recommended presentation graphics associated with each level/layer. This includes the line style, line width, and color. (Note: the recommended presentation graphics may be changed to aid in drawing clarity (e.g., to show hidden objects). However, the recommended

- presentation graphics shall be adhered to as much as possible to maintain drawing consistency).
- The various model files in which levels/layers may be used

Figure 4-3. Level/layer assignment table.

Discipline: Architectural													
Model File Layers/Levels													
Level/Layer Naming		Graphic Defaults			Model File Types								
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Floor Plan	Reflected Ceiling Plan	Roof Plan	Equipment Plan	Area Calculations/Occupancy Plan	Elevations	Sections	Details	
General Information See Discipline: General (page A3) for a list of available Annotation layers/levels													
Area Information													
A-AREA-IDEN	Room numbers, tenant identifications, area calculations	0	0.35	255,255,0					X				
A-AREA-LINE	Architectural area calculation boundary lines	0	0.50	0,255,255					X				
A-AREA-OCCP	Occupant or employee names	0	0.35	255,255,0					X				
A-AREA-PATT	Area cross hatching	0	0.18	128,128,128					X				
Barrier													
A-BARR-AIR	Air barrier	0	0.25	0,0,255		X							
Ceiling Information													
A-CLNG-ACCS	Access panels	0	0.35	255,0,255		X							
A-CLNG-CTLJ	Ceiling control joints	0	0.35	255,255,0		X							
A-CLNG-GRID	Ceiling grid	0	0.25	255,0,0		X							
A-CLNG-LITE	Specialty ceiling lights not shown on the Electrical Lighting Plan	0	0.50	0,255,255		X							
A-CLNG-OPNG	Openings, ceiling/roof penetrations (see also A-FLOR-OVHD in Floor Plan model file)	0	0.18	128,128,128		X							
A-CLNG-PATT	Ceiling patterns	0	0.18	128,128,128		X							
A-CLNG-SFFT	Soffits	0	0.25	255,255,0		X							
A-CLNG-SUSP	Suspended elements, ceiling mounted specialties (e.g., clocks, fans, etc.)	0	0.18	0,0,255		X							
A-CLNG-TEES	Main tees	0	0.18	0,0,255		X							

4.2.1 General Levels/Layers

At the beginning of the Appendix 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. 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).

4.2.2 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, a Status code may be appended to them as shown in Figure 4-2. See Table 4-1 for the Status (Phase) codes.

Table 4-1. Status (Phase) codes.

Code	Description
A	Abandoned
D	Existing to demolish
E	Existing to remain
F	Future work
M	Items to be moved
N	New work
T	Temporary work
X	Not in contract
1-9	Phase numbers
QA	Subsurface Utility Engineering (SUE) Quality Level A: Precise
QB	SUE Quality Level B: Approximate
QC	SUE Quality Level C: Educated guess
QD	SUE Quality Level D: Possible existence

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.

5 Standard Symbolology

5.1 Introduction

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

Note: *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 digital deliverables available as part of the *A/E/C CAD Standard*, the following symbolology is provided:

- MicroStation cells contained in cell libraries (.cel)
- 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.

5.2.2 Line Types/Styles

Line types/styles are defined as a graphical representation of linear drawing features (e.g., utility lines, fence lines, contours). Linear patterns are defined as repeated drawing elements (e.g., lines, dots, circles) along a linear path. Line-style definitions determine the dash-dot sequence and

relative length of dashes, blank spaces, and the characteristics of any included text or shapes.

5.3 Downloadable Resources

Documentation and files for the entire symbology library are available for download from the Center's website: <https://cadbimcenter.erdcdren.mil>.

6 Conclusion

Standards have been recognized as a vital tool in the development of CAD drawings for DoD. Without standards, CAD drawings would be difficult to review, interpret, organize, and archive, resulting in excessive time and monetary costs for DoD. With these factors in mind, the A/E/C CAD Standard has been an important document for DoD since the early 1990s by serving as the standard for creating CAD files.

Bibliography

- Air Force Logistics Command. 1989. *Architectural and Engineering Services for CADD Implementation within Air Force Logistics Command*. Ohio: Wright-Patterson Air Force Base.
- American Institute of Architects. 2000. *Architectural Graphic Standards*. 10th ed. New York: John Wiley and Sons.
- American Society of Mechanical Engineers. 1995a. *Decimal Inch Drawing Sheet Size and Format*. ASME Y14.1-1995. New York.
- American Society of Mechanical Engineers. 1995b. *Metric Drawing Sheet Size and Format*. ASME Y14.1M-1995. New York.
- American Society of Plumbing Engineers. 1998. *Data Book Volume 1: Fundamentals of Plumbing Engineering*. Chicago.
- ANSI (American National Standards Institute). 1972. *Graphic Symbols for Electrical Wiring and Layout Diagrams used in Architect and Building Construction*. ANSI Y32.9-1972. New York: Institute of Electrical and Electronics Engineers.
- ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.). 2005. *Graphic Symbols for Heating, Ventilating, Air-Conditioning, and Refrigerating Systems*. ANSI/ASHRAE Standard 134-2005. Atlanta, GA.
- Department of Commerce / Department of Defense. 2013. *U.S. Chart no. 1: Symbols, Abbreviations and Terms Used on Paper and Electronic Navigational Charts*. 12th ed. Washington, DC: Department of Commerce.
- Headquarters, US Army Corps of Engineers. 1990. *Standards Manual for U.S. Army Corps of Engineers Computer-Aided Design and Drafting (CADD) Systems*. Engineer Manual 1110-1-1807. Washington, DC.
- Institute of Electrical and Electronics Engineers. 1975. *Graphic Symbols for Electrical and Electronics Diagrams*. IEEE Std 315-1975. New York.
- ISO (International Organization for Standardization). 1982. *Technical Drawings—General Principles of Presentation*. ISO 128. Geneva, Switzerland.
- ISO (International Organization for Standardization). 1998. *Technical Product Documentation—Organization and Naming of Layers for CAD—Part 2: Concepts, Format and Codes used in Construction Documentation*. ISO 13567-2. Geneva, Switzerland.
- National Fire Protection Association. 2012. *Standard for Fire Safety and Emergency Symbols*. NFPA 170. Quincy, MA.

NAVFAC (Naval Facilities Engineering Command). 1993. *Policy and Procedures for Electronic Deliverables of Facilities Computer-Aided Design and Drafting (CADD) Systems*. MIL-HNDBK-1006/7. Alexandria, VA.

NIBS (National Institute of Building Sciences). 2014. *United States National CAD Standard*. Washington, DC.

Sheet Metal and Air Conditioning Contractors' National Association. 1995. *HVAC Duct Construction Standards-Metal and Flexible*. 2nd ed. Chantilly, VA

Appendix A: : Model File Level/Layer Assignment Tables

This appendix provides the model file level/layer assignment tables:

General	A3
Hazardous Materials.....	A4
Survey/Mapping.....	A6
Geotechnical.....	A22
Civil	A26
Landscape	A38
Structural	A39
Architectural	A46
Interiors.....	A49
Fire Protection	A51
Plumbing.....	A53
Mechanical	A55
Electrical	A63
Telecommunications.....	A67

Discipline: General
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults		
		Line Style	Line Width (mm)	RGB Value
AIA Format	Level/Layer Description			
General Information				
G-ANNO-DIMS	Witness/extension lines, dimension terminators, dimension text	0	0.35	255,0,0
G-ANNO-KEYN	Reference keynotes with associated leaders	0	0.35	255,255,255
G-ANNO-LEGN	Legends and symbol keys	0	0.35	255,255,255
G-ANNO-MASK	Text/shape mask for use with photo backgrounds	0	0.18	82,165,124
G-ANNO-MATC	Match lines	014200-914 Center Line	0.70	255,0,255
G-ANNO-NOTE	General notes and general remarks	0	0.35	255,200,0
G-ANNO-NPLT	Non-plotting graphic information	0	0.18	0,0,255
G-ANNO-PATT	Patterning, shading, and hatching	0	0.18	128,128,128
G-ANNO-RDME	Read-me information	0	0.18	0,0,255
G-ANNO-REDL	Redlines	0	0.18	255,0,0
G-ANNO-REFR	Reference files and raster attachments	0	0.35	255,255,255
G-ANNO-REVC	Revision clouds	0	0.35	0,255,255
G-ANNO-REVS	Revision indicators and text	0	0.35	0,255,255
G-ANNO-SCHD	Schedules	0	0.35	255,255,255
G-ANNO-SYMB	Miscellaneous symbols	0	0.35	255,0,255
G-ANNO-TEXT	Miscellaneous text	0	0.35	255,255,255
G-ANNO-TTLB	Border and titleblock linework	0	0.35	255,255,255
G-ANNO-TTLB-GRID	Grid lines inside border	014200-912 MS7 Long Dash Short Dash	0.18	0,0,255
Grid Lines				
G-GRID-COOR	X-Y coordinate grid lines	0	0.25	255,255,255
G-GRID-COOR-IDEN	X-Y coordinate grid lines annotation	0	0.25	255,255,255
G-GRID-EXTR	Column grid outside building	014200-914 Center Line	0.18	0,0,255
G-GRID-IDEN	Column grid tags	0	0.25	255,0,0
Floor Information				
G-PLAN-OTLN	Floor outline/perimeter/building footprint	0	0.35	255,0,255
Coordinate Information				
G-COOR-LALO	Latitude/longitude coordinate grid ticks	0	0.25	255,200,0
G-COOR-LALO-IDEN	Latitude/longitude coordinate text	0	0.25	255,200,0
G-COOR-STAT	State plane coordinate grid ticks	014200-908 MS3 Long Dash	0.25	255,200,0
G-COOR-STAT-IDEN	State plane coordinate text	0	0.25	255,200,0
Site Information				
G-SITE-OTLN	Site plan - key map	0	0.35	255,0,255
Demolition (Additional demolition phases may be added as needed)				
G-DEMO-PHS1	Items to be demolished	024100-901 Demolition Line	0.50	255,120,0
Details				
G-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255

Discipline: Hazardous Materials

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types		
		Line Style	Line Width (mm)	RGB Value	Pollution Prevention Plan	Sections	Details
AIA Format	Level/Layer Description						
General Information	See Discipline: General (page A3) for a list of available Annotation layers/levels						
Abatement							
H-ABAT-BARR	Tape barrier	0	0.50	255,200,0	X		
H-ABAT-BARR-STRC	Critical structural barriers	0	0.35	0,0,255	X		
H-ABAT-POLY	Polyethylene sheeting	014200-907 MS2 Medium Dash	0.50	0,255,0	X		
Buildings							
H-BLDG-IDEN	Annotation	0	0.35	255,200,0	X		
H-BLDG-OTLN	Command posts, information centers	0	0.35	255,200,0	X		
Decontamination							
H-DECN-EQPM	Decontamination equipment	0	0.25	255,0,0	X		
H-DECN-IDEN	Annotation	0	0.35	255,0,255	X		
Disposal Areas							
H-DISP-HAZW	Hazardous waste	0	0.18	0,0,255	X		
H-DISP-IDEN	Annotation	0	0.35	255,0,255	X		
H-DISP-MUNT	Munitions	0	0.18	0,0,255	X		
H-DISP-TANK	Spill containment tanks	0	0.35	255,0,255	X		
Emergency Fixtures							
H-FIXT-EYEW	Emergency eyewashes	0	0.25	0,255,0	X		
H-FIXT-SHWR	Emergency showers	0	0.25	0,255,0	X		
Monitoring Stations							
H-MNST-AIRQ	Air quality	0	0.25	0,255,0	X		
H-MNST-GWTR	Ground water	0	0.25	0,255,0	X		
H-MNST-IDEN	Annotation	0	0.25	0,255,0	X		
H-MNST-LAND	Landfill gas	0	0.25	0,255,0	X		
H-MNST-SOIL	Soil gas	0	0.25	0,255,0	X		
H-MNST-SWTR	Surface water	0	0.25	0,255,0	X		
Pollution Areas							
H-POLL-CONC	Polluted area of concern	0	0.35	255,200,0	X		
H-POLL-IDEN	Annotation	0	0.35	255,200,0	X		
H-POLL-ORIG	Point of pollution origin	0	0.35	255,200,0	X		
H-POLL-POTN	Potential spill, emission, or release source	0	0.35	255,200,0	X		
Sample Points							
H-SAMP-AIRS	Air samples	0	0.25	255,0,0	X		
H-SAMP-BIOL	Biological samples	0	0.25	255,0,0	X		
H-SAMP-BLDG	Building material samples (e.g., asbestos, lead, PCBs, etc.)	0	0.25	255,0,0	X		
H-SAMP-GWTR	Ground water samples	0	0.25	255,0,0	X		
H-SAMP-IDEN	Annotation	0	0.25	255,0,0	X		
H-SAMP-MAGN	Magnetometer location points	0	0.25	255,0,0	X		
H-SAMP-SEDI	Sediment samples	0	0.25	255,0,0	X		
H-SAMP-SOIL	Soil samples	0	0.25	255,0,0	X		
H-SAMP-SOLI	Solid material samples	0	0.25	255,0,0	X		
H-SAMP-SWTR	Surface water samples	0	0.25	255,0,0	X		
H-SAMP-WAST	Waste samples	0	0.25	255,0,0	X		
Storage Facilities							
H-STOR-HAZM	Hazardous materials	0	0.35	255,0,255	X		
H-STOR-HAZW	Hazardous waste	0	0.35	255,0,255	X		

Discipline: Hazardous Materials

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types		
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Pollution Prevention Plan	Sections	Details
H-STOR-IDEN	Annotation	0	0.35	255,0,255	X		
Wells							
H-WELL-INJN	Injection well	0	0.25	0,0,255	X		
H-WELL-XTRA	Extraction well	0	0.25	0,0,255	X		
Sections							
H-SECT-IDEN	Component identification numbers	0	0.35	255,200,0		X	
H-SECT-MBND	Material beyond section cut	0	0.18	0,0,255		X	
H-SECT-MCUT	Material cut by section	0	0.50	0,255,255		X	
H-SECT-PATT	Textures and hatch patterns	0	0.18	128,128,128		X	
Detail Information							
H-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255			X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming	Level/Layer Description	Graphic Defaults			Model File Types									
		Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
AIA Format	Level/Layer Description													
General Information See Discipline: General (page A3) for a list of available Annotation layers/levels														
Aerial Survey														
V-AERI-BNDY	Aerial photography boundaries	0	0.35	255,0,255	X									
V-AERI-BNDY-NEAT	Neat model boundary	0	0.35	255,200,0	X									
V-AERI-FLYS	Fly station	0	0.35	255,0,255	X									X
V-AERI-IDEN	Aerial annotation	0	0.35	255,200,0	X									
V-AERI-INDX	Aerial photo index	0	0.70	255,255,255	X									
V-AERI-PATH	Aerial flight lines/paths	014200-911 MS6 Dash Dot Dot	0.35	165,41,0	X									
V-AERI-PHOT	Photo center (exposure station)	0	0.35	165,41,0	X									
V-AERI-PNPT	Panel points	0	0.35	255,0,255	X									X
Airfields														
V-AFLD-CIRC-CTRL	Control and monitoring circuits	0	0.35	145,82,165								X		
V-AFLD-CIRC-IDEN	Circuit identifier tags, symbol modifier, and text	0	0.25	255,200,0								X		
V-AFLD-CIRC-MULT	Multiple circuits	0	0.35	145,82,165								X		
V-AFLD-CIRC-SERS	Series circuits	0	0.35	145,82,165								X		
V-AFLD-DEVC	Capacitors, voltage regulators, motors, buses, generators, meters, grounds, and markers	0	0.35	145,82,165								X		
V-AFLD-DBNK	Ductbanks	337100-909 Duct Bank	0.25	145,82,165								X		
V-AFLD-IDEN	Airfield annotation	0	0.35	255,200,0								X		
V-AFLD-JBOX	Junction boxes, pull boxes, manholes, handholes, pedestals, splices	0	0.35	145,82,165								X		
V-AFLD-LITE-APPR	Approach lights	0	0.35	145,82,165								X		
V-AFLD-LITE-DIST	Distance and arresting gear markers	0	0.35	145,82,165								X		
V-AFLD-LITE-LANE	Hoverlane, taxilane, and helipad lights	0	0.35	145,82,165								X		
V-AFLD-LITE-OBST	Obstruction lights	0	0.35	145,82,165								X		
V-AFLD-LITE-RUNW	Runway lights	0	0.35	145,82,165								X		
V-AFLD-LITE-SIGN	Taxiway guidance signs	0	0.35	145,82,165								X		
V-AFLD-LITE-TAXI	Taxiway lights	0	0.35	145,82,165								X		
V-AFLD-LITE-THRS	Threshold lights	0	0.35	145,82,165								X		
V-AFLD-VALT	Airfield lighting vaults	0	0.35	145,82,165								X		
Alignments														
V-ALGN-DATA	Alignment coordinates and curve data	0	0.25	0,255,0	X	X				X	X		X	X
V-ALGN-LINE	Alignments	014200-909 MS4 Dot Dash	0.25	255,200,0	X	X				X	X		X	X
V-ALGN-MAJR	Alignment major stationing and tick marks	0	0.25	255,0,0	X	X				X	X		X	X
V-ALGN-MARK	Alignment tick marks	0	0.25	0,255,0	X	X				X	X		X	X
V-ALGN-MINR	Alignment minor stationing and tick marks	0	0.18	255,0,255	X	X				X	X		X	X
V-ALGN-STAT	Alignment stationing	0	0.25	0,255,0	X	X				X	X		X	X
V-ALGN-SYMB	Alignment symbols (PIs)	0	0.25	255,0,255	X	X				X	X		X	X
V-ALGN-TEXT	Alignment text, annotation with associated leaders	0	0.25	255,200,0	X	X				X	X		X	X
Aprons														
V-APRN-CNTR	Apron centerlines	014200-914 Center Line	0.18	255,0,0	X									
V-APRN-CNTR-IDEN	Apron centerline annotation	0	0.25	255,200,0	X									
V-APRN-GRND	Grounding points	0	0.25	255,200,0	X									

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-APRN-HOLD	Holding position markings	0	0.18	255,0,0	X									
V-APRN-IDEN	Airfield apron - annotation	0	0.25	255,200,0	X								X	X
V-APRN-MOOR	Mooring points	0	0.25	255,200,0	X									
V-APRN-MRKG	Apron markings	0	0.35	0,255,255	X									
V-APRN-OTLN	Airfield apron - outlines	0	0.35	0,255,255	X								X	X
V-APRN-SECU	Security zone markings	0	0.18	255,0,0	X									
V-APRN-SHLD	Shoulders with annotation	0	0.25	255,200,0	X									
V-APRN-SHLD-MRKG	Shoulder stripes	0	0.25	255,200,0	X									
Beacons														
V-BCNS-IDEN	Identifier tags, symbol modifiers, and text	0	0.25	255,200,0								X		
V-BCNS-MISC	Miscellaneous nav aids - windcones and beacons	0	0.35	145,82,165								X		
V-BCNS-STRB	Strobe beacons	0	0.35	145,82,165								X		
Beach Renourishment														
V-BECH-BANK-TOP~	Beach top of bank	0	0.18	255,0,255	X									X
V-BECH-BKLN	Beach breakline	014200-907 MS2 Medium Dash	0.25	0,0,255	X									X
V-BECH-BNCH	Beach bench	014200-911 MS6 Dash Dot Dot	0.25	165,41,0	X									X
V-BECH-CNTR	Beach centerline	014200-914 Center Line	0.18	0,0,255	X									X
V-BECH-LIMT	Beach limit lines	0	0.35	0,255,255	X									X
V-BECH-OHWM	Ordinary high water marks	0	0.25	255,200,0	X									X
V-BECH-OTLN	Beach outline	0	0.18	255,200,0	X									X
V-BECH-SLOP-IDEN	Beach slope indicator with annotation	0	0.18	255,255,255	X									X
V-BECH-SLOP-TOP~	Beach top of slope	014200-907 MS2 Medium Dash	0.25	165,41,0	X									X
V-BECH-SYMB	Beach symbols	0	0.18	255,0,255	X									X
V-BECH-TOE~	Beach toe	014200-908 MS3 Long Dash	0.35	0,0,255	X									X
V-BECH-TOE~-IDEN	Beach toe annotation	0	0.18	255,255,255	X									X
Buildings and Primary Structures														
V-BLDG-DECK	Outdoor decks (attached, no roof overhead)	0	0.35	0,255,255	X		X						X	X
V-BLDG-DOCK	Loading docks	0	0.35	0,255,255	X		X						X	X
V-BLDG-FTPT	Building footprints	0	0.50	255,255,255	X		X						X	X
V-BLDG-IDEN	Building and other stucture annotation	0	0.25	255,200,0	X		X						X	X
V-BLDG-OVHD	Building overhangs	0	0.35	0,255,255	X		X						X	X
V-BLDG-PRCH	Porches (attached, roof overhead)	0	0.35	0,255,255	X		X						X	X
Borings														
V-BORE-GENL-LOCN	General boring X,Y location marker	0	0.35	255,0,255	X	X								
V-BORE-GENL-NAME	General boring name	0	0.35	255,0,255	X	X								
V-BORE-GENL-NOTE	General boring notes	0	0.35	255,0,255	X	X								
V-BORE-GPRO-LOCN	GeoProbe X,Y location marker	0	0.35	255,0,255	X	X								
V-BORE-GPRO-NAME	GeoProbe boring name	0	0.35	255,0,255	X	X								

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-BORE-GPRO-NOTE	GeoProbe boring notes	0	0.35	255,0,255	X	X								
V-BORE-UNDS-LOCN	Undisturbed boring X,Y location marker	0	0.35	255,0,255	X	X								
V-BORE-UNDS-NAME	Undisturbed boring name	0	0.35	255,0,255	X	X								
V-BORE-UNDS-NOTE	Undisturbed boring notes	0	0.35	255,0,255	X	X								
V-BORE-VCOR-LOCN	Vibra-Core X,Y location marker	0	0.35	255,0,255	X	X								
V-BORE-VCOR-NAME	Vibra-Core name	0	0.35	255,0,255	X	X								
V-BORE-VCOR-NOTE	Vibra-Core notes	0	0.35	255,0,255	X	X								
Borrow Areas														
V-BORW-IDEN	Borrow/spoil area annotation	0	0.25	255,200,0	X	X								
V-BORW-LINE	Borrow/spoil area	014200-907 MS2 Medium Dash	0.25	255,200,0	X	X								
Bridges														
V-BRDG-CHRD-LOW~	Low chord	0	0.35	0,255,255									X	
V-BRDG-CNTR	Bridge centerlines	014200-914 Center Line	0.18	255,0,0	X									
V-BRDG-CTLJ	Control joints	0	0.18	0,255,255	X									
V-BRDG-DECK	Bridge deck	0	0.35	0,255,255	X								X	
V-BRDG-IDEN	Bridge annotation	0	0.25	255,200,0	X									
V-BRDG-OTLN	Bridge outlines	0	0.35	0,255,255	X									
V-BRDG-RLG~	Bridge railing	0	0.18	0,255,255	X								X	
Cathodic Protection System														
V-CATH-ANOD	Sacrificial anode system	0	0.35	105,0,0				X						
V-CATH-CURR	Impress current system	0	0.35	105,0,0				X						
V-CATH-IDEN	Identifier tags, symbol modifier, and text	0	0.25	255,200,0				X						
V-CATH-TEST	Test stations	0	0.35	105,0,0				X						
Channels														
V-CHAN-BANK-IDEN	Channel/canal top of bank annotation	0	0.25	255,200,0		X							X	X
V-CHAN-BANK-TOP~	Channel/canal top of bank	0	0.25	255,200,0		X							X	X
V-CHAN-BNCH	Channel/canal bench design feature lines (breaklines form DTMs)	0	0.25	255,200,0		X							X	X
V-CHAN-BWTR	Breakwaters	0	0.25	255,0,255	X	X								X
V-CHAN-CNTR	Channel centerline and survey report lines	014200-914 Center Line	0.18	0,0,255	X	X								X
V-CHAN-CNTR-IDEN	Channel centerline and survey report lines - annotation	0	0.25	0,0,255	X	X								X
V-CHAN-DACL	De-authorized channel limits, anchorages, etc.	0	0.25	0,255,0	X	X								X
V-CHAN-DACL-IDEN	De-authorized channel limits, anchorages, etc. - annotation	0	0.25	0,255,0	X	X								X
V-CHAN-DOCK	Docks, decks, floats, piers, and mooring facilities	0	0.25	255,0,255	X	X							X	X
V-CHAN-LIMIT	Channel limits, anchorages, turning basins, disposal areas, etc.	0	0.25	255,0,255	X	X							X	X
V-CHAN-LIMIT-IDEN	Channel limits, anchorages, turning basins, disposal areas, etc. - annotation	0	0.25	255,0,255	X	X							X	X
V-CHAN-NAID	Navigation aids and text	0	0.25	255,200,0	X	X								X
V-CHAN-SLOP-LINE	Channel cut/fill slope (Indicates cut and fill lines)	0	0.25	255,200,0	X	X								X
V-CHAN-SPOL	Spoil limits	0	0.35	0,255,255	X	X								X
V-CHAN-SYMB	Channel/canal symbols	0	0.25	255,0,255	X	X								X
V-CHAN-TEXT	Channel/canal text, annotation with associated leaders	0	0.25	255,200,0	X	X								X
V-CHAN-TOE~	Channel/canal toe	014200-908 MS3 Long Dash	0.35	0,0,255	X	X							X	X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Level/Layer Description	Graphic Defaults			Model File Types									
			Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
AIA Format		Level/Layer Description													
V-CHAN-TOE~IDEN		Channel/canal toe annotation	0	0.25	255,0,255	X	X								X
V-CHAN-TURN		Turning points	0	0.25	255,200,0	X	X								X
V-CHAN-WIDE		Channel/canal widener	014200-908 MS3 Long Dash	0.35	0,255,255	X	X								X
Communications															
V-COMM-ANTN		Antennae	0	0.35	255,63,0	X		X		X				X	X
V-COMM-EQPM		Other communications distribution equipment	0	0.35	255,63,0				X						
V-COMM-JBOX		Communication junction boxes, pull boxes, handholes, pedestals, and splices	0	0.35	255,63,0				X						
V-COMM-MHOL		Manholes	0	0.35	255,63,0				X						
V-COMM-OVHD		Overhead communications/telephone lines	271500-905 Communication	0.35	255,63,0	X		X		X				X	X
V-COMM-OVHD-IDEN		Identifier tags, symbol modifier and text	0	0.25	255,200,0	X		X		X				X	X
V-COMM-POLE		Poles	0	0.35	255,63,0	X		X		X				X	X
V-COMM-POLE-GUYS		Guying equipment	0	0.35	255,63,0	X		X		X				X	X
V-COMM-POLE-IDEN		Identifier tags, symbol modifiers, and text	0	0.25	255,200,0	X		X		X				X	X
V-COMM-UGND		Underground communications/telephone lines	271500-905 Communication	0.35	255,63,0	X		X		X				X	X
V-COMM-UGND-IDEN		Identifier tags, symbol modifier and text	0	0.25	255,200,0	X		X		X				X	X
Control Points															
V-CTRL-BMRK		Benchmarks	0	0.35	255,0,255	X	X								X
V-CTRL-GRID		Grid	0	0.25	0,255,0	X	X								X
V-CTRL-HORZ		Horizontal control points	0	0.35	255,0,255	X	X								X
V-CTRL-HVPT		Horizontal/vertical control points	0	0.35	255,0,255	X	X								X
V-CTRL-IDEN		Control point annotation	0	0.35	255,200,0	X	X								X
V-CTRL-TRAV		Transverse points	0	0.35	255,0,255	X	X								X
V-CTRL-VERT		Vertical control points	0	0.35	255,0,255	X	X								X
Ditches or Washes															
V-DTCH-BOTM		Bottom of ditch or wash	334000-901 Ditch	0.18	0,0,255	X								X	X
V-DTCH-CNTR		Centerline of ditch or wash	014200-914 Center Line	0.18	0,0,255	X								X	X
V-DTCH-EWAT		Edge of water	0	0.18	0,255,255	X								X	X
V-DTCH-IDEN		Ditches and washes annotation	0	0.25	0,255,0	X								X	X
V-DTCH-TOP~		Top of ditch or wash	0	0.18	0,255,0	X								X	X
Underground Ductbanks (to be used when multiple systems are in one ductbank system)															
V-DBNK-MULT		Ductbank	337100-909 Duct Bank	0.35	105,0,0	X		X	X	X				X	X
V-DBNK-MULT-IDEN		Identifier tags, symbol modifier and text	0	0.25	255,200,0	X		X	X	X				X	X
Habitats/Landforms															
V-ECCO-BURR		Burrow	0	0.35	0,255,255	X									
V-ECCO-DENS		Den	0	0.35	0,255,255	X									
V-ECCO-GATR		Gator hole	014200-907 MS2 Medium Dash	0.25	255,0,255	X									
V-ECCO-HUMK		Hummocks	0	0.25	255,0,255	X									
V-ECCO-IDEN		Habitat annotation	0	0.25	255,200,0	X									

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-ECCO-NEST	Nest, nesting tree	0	0.35	0,255,255	X									
V-ECCO-PRCH	Perch/nesting hole	0	0.35	0,255,255	X									
Fire Protection														
V-FIRE-HYDT	Hydrants and connections	0	0.25	255,0,0	X		X			X				
V-FIRE-PIPE	Piping	331100-907 Fire Protection Water Supply	0.25	255,0,0						X				
Flood Hazard Area														
V-FLHA-025Y	25 year mark	014200-911 MS6 Dash Dot Dot	0.25	255,0,255	X									
V-FLHA-050Y	50 year mark	014200-908 MS3 Long Dash	0.25	255,200,0	X									
V-FLHA-100Y	100 year mark	0	0.25	255,0,255	X									
V-FLHA-200Y	200 year mark	014200-907 MS2 Medium Dash	0.25	255,200,0	X									
V-FLHA-500Y	500 year mark	014200-912 MS7 Long Dash Short Dash	0.25	255,0,255	X									
V-FLHA-IDEN	Flood hazard area annotation	0	0.25	255,200,0	X									
Floodwalls														
V-FLOD-BASE	Floodwall base of wall	0	0.35	255,63,0	X									
V-FLOD-BASE-IDEN	Floodwall base of wall annotation	0	0.25	255,63,0	X									
V-FLOD-CNTR	Floodwall centerline	014200-914 Center Line	0.18	255,63,0	X									X
V-FLOD-CNTR-IDEN	Floodwall centerline annotation	0	0.25	255,63,0	X									X
V-FLOD-DRNS	Floodwall toe drain	0	0.25	255,0,255	X							X	X	
V-FLOD-DRNS-IDEN	Floodwall toe drain annotation	0	0.25	255,0,255	X							X	X	
V-FLOD-PILE	Floodwall sheet piling	0	0.35	165,41,0	X							X	X	
V-FLOD-PILE-IDEN	Floodwall sheet piling annotation	0	0.25	165,41,0	X							X	X	
V-FLOD-TOE~	Floodwall toe outline	0	0.25	0,255,255	X							X	X	
V-FLOD-TOP~	Floodwall top of wall	0	0.35	255,200,0	X							X	X	
V-FLOD-TOP~-IDEN	Floodwall top of wall annotation	0	0.25	255,63,0	X							X	X	
Liquid Fuel														
V-FUEL-BERM	Berms for retaining fuel in case of major tank/line rupture	0	0.25	255,200,0						X				
V-FUEL-DEFL-PIPE	Defueling piping	0	0.25	255,200,0						X				
V-FUEL-DEVC	Air eliminators, filter strainers, hydrant fill points, line vents, markers, oil/water separators, reducers, regulators, and valves	0	0.25	255,200,0						X				
V-FUEL-FLOW	Flow direction arrows	0	0.25	255,200,0						X				
V-FUEL-IDEN	Identifier tags, symbol modifier, and text	0	0.25	255,200,0	X		X			X		X	X	
V-FUEL-JBOX	Junction boxes, manholes, handholes, test boxes	0	0.25	255,200,0	X		X			X				
V-FUEL-MAIN-PIPE	Main fuel piping	231100-908 Gas - Liquefied Petroleum	0.25	255,200,0	X		X			X			X	X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-FUEL-METR	Meters	0	0.25	255,200,0						X				
V-FUEL-SERV-PIPE	Service piping	0	0.25	255,200,0						X				
V-FUEL-STNS-PUMF	Booster pump stations	0	0.25	255,200,0						X				
V-FUEL-TANK	Fuel tanks	0	0.25	255,200,0	X		X			X				
V-FUEL-TRCH	Fuel line trench	0	0.25	255,200,0						X				
V-FUEL-VALT	Hydrant control/vent/valve pits/vaults	0	0.25	255,200,0						X				
Grade Linework														
V-GRAD-AFTR	After dredge depth	0	0.35	255,200,0		X							X	X
V-GRAD-EXST	Existing grade, ground line	014200-908 MS3 Long Dash	0.35	255,0,255									X	X
V-GRAD-EXST-BASE	Base survey	014200-907 MS2 Medium Dash	0.18	165,41,0		X							X	X
V-GRAD-EXST-SYR1	Survey year one or area one	014200-909 MS4 Dot Dash	0.18	255,0,255									X	X
V-GRAD-EXST-SYR2	Survey year two or area two	014200-906 MS1 Dot	0.18	255,200,0									X	X
V-GRAD-EXST-SYR3	Survey year three or area three	014200-911 MS6 Dash Dot Dot	0.18	0,255,0									X	X
V-GRAD-EXST-SYR4	Survey year four or area four	014200-908 MS3 Long Dash	0.18	82,165,124									X	X
V-GRAD-IDEN	Grade annotation	0	0.25	255,200,0		X							X	X
V-GRAD-PRED	Pre-dredge	0	0.35	255,200,0		X							X	X
V-GRAD-SCLN	Stability control line	014200-912 MS7 Long Dash Short Dash	0.35	0,0,255									X	X
Grid Lines														
V-GRID-FRAM	Frame	0	0.35	0,255,255									X	X
V-GRID-MAJR	Major grid lines	014200-906 MS1 Dot	0.25	128,128,128									X	X
V-GRID-MINR	Minor grid lines	014200-906 MS1 Dot	0.18	128,128,128									X	X
V-GRID-TEXT	Border text, annotation	0	0.25	255,200,0									X	X
Geothermal Heat Pump System														
V-GTHP-EQPM	Geothermal heat pump system equipment	0	0.25	0,76,76							X			
V-GTHP-IDEN	Geothermal heat pump annotation	0	0.35	255,200,0							X			
V-GTHP-RETN-PIPE	Geothermal heat pump system return piping	0	0.35	0,76,76							X			
V-GTHP-SUPP-PIPE	Geothermal heat pump system supply piping	0	0.35	0,76,76							X			
High Temperature/Chilled Water System														
V-HTCW-CWTR-MAIN	Main chilled water piping	0	0.25	0,0,255							X			
V-HTCW-CWTR-PLNT	Chilled water plant	0	0.25	0,0,255							X			
V-HTCW-CWTR-SERV	Chilled water service piping	0	0.18	0,0,255							X			
V-HTCW-DEVC	Rigid anchors, anchor guides, rectifiers, reducers, markers, pumps, regulators, tanks, and valves	0	0.25	255,0,255							X			
V-HTCW-HWTR-MAIN	Main high temperature piping	0	0.25	255,0,0							X			

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
		Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
AIA Format	Level/Layer Description													
V-HTCW-HWTR-PLNT	High temperature water plant	0	0.25	255,0,0						X				
V-HTCW-HWTR-SERV	High temperature service piping	0	0.18	255,0,0						X				
V-HTCW-IDEN	Identifier tags, symbol modifier, and text	0	0.25	255,200,0	X		X			X			X	X
V-HTCW-JBOX	Junction boxes, manholes, handholes, test boxes	0	0.18	255,0,255	X		X			X				
V-HTCW-LWTR-MAIN	Main low temperature piping	0	0.25	255,200,0						X				
V-HTCW-LWTR-SERV	Low temperature service piping	0	0.18	255,200,0						X				
V-HTCW-METR	Meters	0	0.25	255,0,255						X				
V-HTCW-RETN-PIPE	Return for all HTCW lines	0	0.18	255,0,255						X				
V-HTCW-STEM-MAIN	Main steam piping	0	0.25	255,127,191	X		X			X			X	X
V-HTCW-STEM-SERV	Steam service piping	0	0.18	255,127,191						X				
V-HTCW-STNS-PUMP	Pump stations	0	0.25	255,0,255						X				
V-HTCW-VALT	Valve pits/vaults, steam pits	0	0.18	255,0,255						X				
Hydrosurveys														
V-HYDS-BKLN	Breaklines	014200-909 MS4 Dot Dash	0.35	255,255,255	X	X								X
V-HYDS-BKLN-COMM	Subsurface utilities communications breakline	271500-905 Communication	0.35	255,255,255	X	X								X
V-HYDS-BKLN-DOMW	Subsurface utilities water breakline	331100-903 Water Line	0.35	255,255,255	X	X								X
V-HYDS-BKLN-ELEC	Subsurface utilities electric breakline	337100-901 Electrical Primary	0.35	255,255,255	X	X								X
V-HYDS-BKLN-FUEL	Subsurface utilities liquid fuel breakline	231100-908 Gas - Liquefied Petroleum	0.35	255,255,255	X	X								X
V-HYDS-BKLN-NGAS	Subsurface utilities natural gas breakline	231100-909 Gas - Low Pressure	0.35	255,255,255	X	X								X
V-HYDS-BKLN-SSWR	Subsurface utilities sanitary sewer breakline	221300-905 Sanitary Waste	0.35	255,255,255	X	X								X
V-HYDS-BKLN-STRM	Subsurface utilities storm sewer breakline	221400-901 Drain - Storm	0.35	255,255,255	X	X								X
V-HYDS-BNDY-EXTR	Surface exterior boundary	0	0.18	0,255,0	X	X								X
V-HYDS-BNDY-INTR	Surface interior boundary	014200-907 MS2 Medium Dash	0.18	255,0,0	X	X								X
V-HYDS-BORE	Boring locations and text	0	0.25	255,0,255	X	X								X
V-HYDS-COOR	Coordinate grid text annotation	0	0.25	0,165,124	X	X								X
V-HYDS-COOR-LALO	Latitude and longitude grid ticks	0	0.18	0,255,0	X	X								X
V-HYDS-COOR-STAT	State Plane coordinate ticks	0	0.18	0,255,0	X	X								X
V-HYDS-COOR-UTM	UTM coordinate ticks	0	0.18	0,255,0	X	X								X
V-HYDS-DTMO	DTM obscure area boundary	0	0.25	255,0,255	X	X								X
V-HYDS-DTMP	DTM points	0	0.25	255,0,255	X	X								X
V-HYDS-DTMT	DTM triangles	0	0.25	165,41,0	X	X								X
V-HYDS-MAJR	Major contours	0	0.25	255,200,0	X	X								X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-HYDS-MAJR-IDEN	Major contours - annotation	0	0.25	255,200,0	X	X								X
V-HYDS-MINR	Minor contours	0	0.18	0,255,0	X	X								X
V-HYDS-MINR-IDEN	Minor contours - annotation	0	0.18	0,255,0	X	X								X
V-HYDS-PERI	Surface perimeter	0	0.18	0,255,0	X	X								X
V-HYDS-SHAP	Inroads generated shapes/lines	0	0.18	255,0,0										X
V-HYDS-SHOR	Shorelines, land features, and references	0	0.25	0,255,255	X	X								X
V-HYDS-SLOP-FILL	Cut/fill slopes	0	0.25	255,200,0	X	X								X
V-HYDS-SLOP-IDEN	Cut/fill slope, top/toe slope annotation	0	0.25	255,200,0	X									X
V-HYDS-SLOP-TOPT	Top/toe slopes	0	0.25	255,0,255	X									X
V-HYDS-SOUN	Soundings and overbanks	0	0.18	255,255,255		X								X
V-HYDS-SPOT	Spot elevations	0	0.25	255,200,0	X	X								X
V-HYDS-VOID	Surface void region	0	0.18	255,0,0	X	X								X
V-HYDS-WATR	Water level reference (e.g., LWRP, after-grading LWRP, SWP, etc.)	0	0.35	255,255,255	X	X								X
Industrial Waste Water										X				
V-INDW-DEVC	Grit chambers, flumes, neutralizers, oil/water separators, ejectors, tanks, and valves	0	0.25	255,63,0						X				
V-INDW-FLOW	Flow direction arrows	0	0.25	255,63,0						X				
V-INDW-IDEN	Identifier tags, symbol modifier, and text	0	0.25	255,200,0	X		X			X		X	X	
V-INDW-JBOX	Junction boxes and manholes	0	0.25	255,63,0	X		X			X				
V-INDW-LAGN	Lagoons	0	0.25	255,63,0	X		X			X				
V-INDW-MAIN-PIPE	Main industrial waste water piping	402300-905 Industrial Waste	0.25	255,63,0	X		X			X		X	X	
V-INDW-METR	Meters	0	0.25	255,63,0						X				
V-INDW-PLNT	Treatment plants	0	0.25	255,63,0						X				
V-INDW-SERV-PIPE	Industrial waste water service piping	0	0.25	255,63,0						X				
V-INDW-SIGN	Surface markers/signs	0	0.25	255,63,0						X				
V-INDW-STNS-LIFT	Lift stations	0	0.25	255,63,0	X		X			X				
Irrigation														
V-IRRG-EQPM	Irrigation equipment (e.g., controllers, valves, etc.)	0	0.25	124,0,165	X	X				X				
V-IRRG-IDEN	Irrigation annotation	0	0.25	255,200,0	X	X				X		X	X	
V-IRRG-PIPE	Irrigation piping	0	0.25	124,0,165	X	X				X		X	X	
V-IRRG-WELL	Irrigation wells	0	0.18	124,0,165						X				
Joints														
V-JNTS-CNSL	Construction joints - longitudinal	0	0.25	255,0,255	X									
V-JNTS-CNST	Construction joints - transverse	0	0.25	255,0,255	X									
V-JNTS-CNTL	Contraction joints - longitudinal	0	0.25	255,200,0	X									
V-JNTS-CNTT	Contraction joints - transverse	0	0.25	255,200,0	X									
V-JNTS-EDGE	Thickened edges	0	0.25	0,255,255	X									
V-JNTS-EXP.	Expansion joints	0	0.25	165,0,0	X									
V-JNTS-IDEN	Joint annotation	0	0.25	255,200,0	X									
Levees														
V-LEVE-BANK-IDEN	Levee top of bank annotation	0	0.25	255,63,0	X									X
V-LEVE-TOPB	Levee top of bank	0	0.25	255,63,0	X									X
V-LEVE-BERM	Existing berms	0	0.25	255,0,255	X									X
V-LEVE-BNCH	Levee bench design feature lines (breaklines form DTMs)	0	0.25	255,63,0	X									X
V-LEVE-BNCH-IDEN	Levee bench annotation	0	0.18	255,200,0	X									X
V-LEVE-BRRW	Borrow limits	0	0.35	0,255,255	X									X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
		Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HCTW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
AIA Format	Level/Layer Description													
V-LEVE-CNTR	Levee centerline	014200-914 Center Line	0.18	255,63,0	X									X
V-LEVE-CNTR-IDEN	Levee centerline annotation	0	0.25	255,63,0	X									X
V-LEVE-IDEN	Levee annotation	0	0.25	255,200,0	X									X
V-LEVE-OTLN	Levee outline	0	0.35	0,255,255	X									X
V-LEVE-SLOP	Levee slope indicator with annotation	0	0.25	255,200,0	X									X
V-LEVE-STAN	Levee stationing	0	0.25	255,200,0	X									X
V-LEVE-TOE~	Levee toe	014200-907 MS2 Medium Dash	0.25	255,63,0	X									X
V-LEVE-TOE~-IDEN	Levee toe annotation	0	0.18	255,63,0	X									X
Lights														
V-LITE-EXTR	Exterior lights	0	0.35	255,0,0			X	X						
V-LITE-IDEN	Light identifier tags, symbol modifiers, and text	0	0.25	255,200,0			X	X						
Military Ranges														
V-MILR-BATP	Battle positions	0	0.35	0,255,255	X									
V-MILR-CAMS	Range cameras	0	0.25	255,0,255	X									
V-MILR-FOXH	Fox holes and pits	0	0.25	255,0,255	X									
V-MILR-MATS	Moving army targets	0	0.35	0,255,255	X									
V-MILR-MITS	Moving infantry targets	0	0.35	0,255,255	X									
V-MILR-MITS-IDEN	Moving infantry targets annotation	0	0.25	255,200,0	X									
V-MILR-PUTS	Pop up targets	0	0.35	0,255,255	X									
V-MILR-PUTS-IDEN	Pop up targets annotation	0	0.25	255,200,0	X									
V-MILR-SATS	Stationary army targets	0	0.35	0,255,255	X									
V-MILR-SATS-IDEN	Stationary army targets annotation	0	0.25	255,200,0	X									
V-MILR-SITS	Stationary infantry targets	0	0.35	0,255,255	X									
V-MILR-SITS-IDEN	Stationary infantry targets annotation	0	0.25	255,200,0	X									
Natural Gas														
V-NGAS-EQPM	Equipment (pumps, motors, etc.)	0	0.25	255,200,0						X				
V-NGAS-FLOW	Flow direction arrows	0	0.25	255,200,0						X				
V-NGAS-IDEN	Identifier tags, symbol modifier, and text	0	0.25	255,200,0	X		X			X			X	X
V-NGAS-INST	Instrumentation (valves, etc.)	0	0.25	255,200,0						X				
V-NGAS-METR	Meters	0	0.25	255,200,0						X				
V-NGAS-MHOL	Manholes	0	0.25	255,200,0	X		X			X			X	X
V-NGAS-PIPE	Natural gas piping	231100-909 Gas - Low Pressure	0.25	255,200,0	X		X			X			X	X
V-NGAS-SIGN	Surface markers/signs	0	0.25	255,200,0						X				
V-NGAS-STNS-PUMP	Compressor stations	0	0.25	255,200,0						X				
V-NGAS-STNS-REDC	Reducing stations	0	0.25	255,200,0						X				
V-NGAS-TANK	Tanks	0	0.18	255,200,0	X		X			X				
V-NGAS-VALT	Valve/vent pits/vaults	0	0.25	255,200,0						X				
Obstructions														
V-OBST-AIRS	Airspace obstructions	0	0.25	0,255,0										X
V-OBST-AIRS-IDEN	Airspace obstruction annotation	0	0.25	255,200,0										X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-OBST-UWTR	Underwater obstructions (e.g., sunken ship, barge, etc.)	014200-907 MS2 Medium Dash	0.25	255,0,0		X								X
V-OBST-UWTR-IDEN	Underwater obstruction annotation	0	0.25	255,200,0		X								X
Overrun Areas														
V-OVRN-CNTR	Centerlines	014200-914 Center Line	0.18	255,0,0										X
V-OVRN-CNTR-IDEN	Centerline annotation	0	0.25	255,200,0										X
V-OVRN-IDEN	Airfield overrun area - annotation	0	0.25	255,200,0									X	X
V-OVRN-OTLN	Airfield overrun area - outlines	0	0.25	0,255,255									X	X
V-OVRN-SHLD-MRKG	Shoulder markings	0	0.25	0,255,255									X	X
Pads (Arm/Disarm/Calibration, etc.)														
V-PADS-CNTR	Centerlines	014200-914 Center Line	0.18	255,0,0										X
V-PADS-CNTR-IDEN	Centerline annotation	0	0.25	255,200,0										X
V-PADS-IDEN	Pads - annotation	0	0.25	255,200,0									X	X
V-PADS-OTLN	Pad - outlines	0	0.25	0,255,255									X	X
V-PADS-SHLD	Shoulders with annotation	0	0.18	255,200,0										X
Power														
V-POWR-DEVC	Capacitors, voltage regulators, motors, buses, grounds, and markers	0	0.35	105,0,0				X						
V-POWR-GENR	Generators	0	0.35	105,0,0				X						
V-POWR-IDEN	Power annotation	0	0.25	255,200,0	X		X	X						
V-POWR-JBOX	Junction boxes, pull boxes, manholes, handholes, pedestals, splices	0	0.35	105,0,0				X						
V-POWR-METR	Meters	0	0.35	105,0,0				X						
V-POWR-POLE	Power poles	0	0.35	105,0,0	X		X	X						
V-POWR-POLE-GUYS	Guying equipment	0	0.35	105,0,0				X						
V-POWR-SBST	Substation equipment	0	0.35	105,0,0				X						
V-POWR-SWCH	Fuse cutouts, pole mounted switches, circuit breakers, gang operated disconnects, reclosers, cubicle	0	0.35	105,0,0				X						
V-POWR-XFMR-PADM	Pad mounted transformers	0	0.35	105,0,0				X						
V-POWR-XFMR-POLM	Pole mounted transformers	0	0.35	105,0,0				X						
Primary Electrical Cables														
V-PRIM-OVHD	Overhead electrical utility lines	337100-901 Electrical Primary	0.35	105,0,0	X		X	X					X	X
V-PRIM-OVHD-IDEN	Identifier tags, symbol modifiers, and text	0	0.25	255,200,0	X		X	X					X	X
V-PRIM-UGND	Underground electrical utility lines	337100-901 Electrical Primary	0.35	105,0,0	X		X	X					X	X
V-PRIM-UGND-IDEN	Identifier tags, symbol modifiers, and text	0	0.25	255,200,0	X		X	X					X	X
Parking Lots														
V-PRKG-CNTR	Parking lot centerlines	014200-914 Center Line	0.18	255,0,0	X		X							
V-PRKG-CNTR-IDEN	Parking lot centerline annotation	0	0.18	255,0,0	X		X							
V-PRKG-CURB	Curbs and gutters	0	0.25	0,255,0	X		X							
V-PRKG-DRAIN	Drainage slope indications	0	0.25	255,0,0	X		X							
V-PRKG-FIXT	Parking lot fixtures (e.g., wheel stops, parking meters)	0	0.25	127,255,127	X		X						X	X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-PRKG-FLNE	Fire lanes	0	0.18	255,0,0	X		X						X	X
V-PRKG-IDEN	Parking lot annotation	0	0.25	255,0,255	X		X						X	X
V-PRKG-MRKG	Pavement markings	0	0.25	255,200,0	X		X							
V-PRKG-OTLN	Parking lot outlines	0	0.35	0,255,255	X		X							
V-PRKG-SIGN	Signs	0	0.25	255,200,0	X		X							
Property														
V-PROP-BRNG	Bearings and distance labels	0	0.35	255,0,255	X		X							X
V-PROP-ESMT	Easements	014200-903 Construction Easement	0.50	255,255,255	X		X							X
V-PROP-IDEN	Property annotation	0	0.25	255,0,255	X		X							X
V-PROP-LINE	Property lines (Existing recorded plats)	014200-905 Property Line	0.35	255,200,0	X		X							X
V-PROP-QTRS	Quarter lines	014200-906 MS1 Dot	0.35	255,0,255	X		X							X
V-PROP-RWAY	Right of ways	011400-901 Right of Way	0.50	255,255,255	X		X							X
V-PROP-SBCK	Setback lines	014200-908 MS3 Long Dash	0.18	255,255,255	X		X							X
V-PROP-SECT	Section lines	014200-912 MS7 Long Dash Short Dash	0.35	255,0,255	X		X							X
V-PROP-SECT-IDEN	Section lines annotation	0	0.25	255,0,255	X		X							X
V-PROP-SUBD	Subdivision (interior) lines	0	0.25	255,0,0	X		X							X
V-PROP-SXTS	Sixteenth lines (40 lines)	014200-915 Phantom Line	0.35	255,0,255	X		X							X
V-PROP-TSHP	Township/range lines	014200-909 MS4 Dot Dash	0.35	255,0,255	X		X							X
V-PROP-TSHP-IDEN	Township/range lines annotation	0	0.25	255,0,255	X		X							X
Pavements														
V-PVMT-ASPH	Pavement pattern - asphalt	0	0.18	128,128,128	X									
V-PVMT-CONC	Pavement pattern - concrete	0	0.18	128,128,128	X									
V-PVMT-GRVL	Pavement pattern - gravel	0	0.18	128,128,128	X									
V-PVMT-IDEN	Road, parking lot, railroad, airfield pavement annotation	0	0.25	255,200,0	X								X	X
V-PVMT-MRKG	Pavement markings	0	0.35	255,200,0	X									
V-PVMT-PATT	Joint patterns, text and dimensions	0	0.18	128,128,128	X									
Railroads														
V-RAIL-CNTR	Railroad track centerlines	014200-914 Center Line	0.18	255,0,0	X		X						X	X
V-RAIL-CNTR-IDEN	Railroad track centerline annotation	0	0.25	255,0,0	X		X						X	X
V-RAIL-EQPM	Railroad equipment (e.g., gates, signals)	0	0.25	127,255,127	X		X						X	X
V-RAIL-IDEN	Railroad - annotation	0	0.25	255,200,0	X		X						X	X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-RAIL-TRAK	Railroad tracks	347200-901 Railroad	0.25	255,200,0	X		X						X	X
Rivers														
V-RIVR-BOTM	River bottom	0	0.25	0,0,255	X	X							X	X
V-RIVR-CNTR	Centerline of river	014200-914 Center Line	0.18	255,0,0	X	X							X	X
V-RIVR-EDGE	River edge	0	0.35	0,0,255	X	X							X	X
V-RIVR-IDEN	Identifier tags, symbol modifiers, and text	0	0.25	255,200,0	X	X							X	X
V-RIVR-TOPB	Top of river bank	0	0.25	0,0,255	X	X							X	X
Roads, Streets, and Highways														
V-ROAD-ASPH	Road outlines - asphalt surface	0	0.18	128,128,128	X		X							X
V-ROAD-CNTR	Road centerlines	014200-914 Center Line	0.18	255,0,0	X		X							X
V-ROAD-CNTR-IDEN	Road centerline annotation	0	0.18	255,0,0	X		X							X
V-ROAD-CONC	Road outlines - concrete surface	0	0.18	255,255,255	X		X							X
V-ROAD-CURB	Curbs and gutters	0	0.25	255,0,255	X		X							X
V-ROAD-GRAL	Guard rails	347100-901 Guardrail	0.25	255,0,255	X		X							X
V-ROAD-GRVL	Road outlines - gravel surface	0	0.18	255,63,0	X		X							X
V-ROAD-IDEN	Road, street, highway annotation	0	0.25	255,0,255	X		X						X	X
V-ROAD-MRKG	Pavement markings	0	0.25	255,200,0	X		X							X
V-ROAD-OTLN	Road outlines	0	0.25	0,255,255	X		X							X
V-ROAD-PATT	Joint patterns, text and dimensions	0	0.18	128,128,128	X									X
V-ROAD-SHLD	Roadway shoulders	0	0.25	255,0,255	X		X							X
V-ROAD-SIGN	Signs	0	0.18	255,0,0	X									X
V-ROAD-UPVD	Road outlines - unpaved surface	0	0.18	0,255,0	X									X
Riprap and Other Permanent Erosion Control Items														
V-RRAP-BLKT	Natural/synthetic mats, blankets, textiles, and grids used for slope stabilization	0	0.18	255,0,0	X	X								
V-RRAP-GABN	Gabions	0	0.18	255,0,0	X	X								
V-RRAP-MATS	Articulated concrete mats	0	0.18	0,255,0	X	X								
V-RRAP-RVMT	Revetments	0	0.18	255,0,0	X	X								
V-RRAP-TRET	Soil cement, fiber reinforced soil, and chemical erosion control treatments	0	0.18	0,255,0	X	X								
V-RRAP-VEGE	Erosion control aquatic vegetation and planted riparian buffers	014200-911 MS6 Dash Dot Dot	0.18	255,0,0	X	X								
V-RRAP-WEIR	Weirs	0	0.18	0,255,0	X	X								
Runways														
V-RUNW-BLST	Blast pad and stopway markings	0	0.25	255,0,0	X								X	X
V-RUNW-CNTR	Centerlines	014200-914 Center Line	0.18	255,0,0	X									
V-RUNW-CNTR-MRKG	Centerline markings	0	0.25	255,0,0	X									
V-RUNW-DISP	Displaced threshold markings	0	0.25	255,0,0	X									
V-RUNW-DIST	Fixed distance markings	0	0.25	255,0,0	X									
V-RUNW-EDGE	Airfield runway edges	0	0.25	255,0,255	X									
V-RUNW-IDEN	Airfield runway annotation	0	0.25	255,200,0	X								X	X
V-RUNW-SHLD	Shoulder markings	0	0.25	255,0,255	X									

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Type:									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-RUNW-SIDE	Side stripes	0	0.25	0,255,255	X									
V-RUNW-TDZM	Touchdown zone markers	0	0.25	255,0,255	X									
V-RUNW-THRS	Threshold markers	0	0.25	255,0,255	X									
Secondary Electrical Cables														
V-SECD-OVHD	Overhead electrical utility lines	337100-902 Electrical Secondary	0.35	105,0,0	X		X	X					X	X
V-SECD-OVHD-IDEN	Identifier tags, symbol modifiers, and text	0	0.25	255,200,0	X		X	X					X	X
V-SECD-UGND	Underground electrical utility lines	337100-902 Electrical Secondary	0.35	105,0,0	X		X	X					X	X
V-SECD-UGND-IDEN	Identifier tags, symbol modifiers, and text	0	0.25	255,200,0	X		X	X					X	X
Site Features														
V-SITE-EWAT	Edge of water	0	0.35	0,41,165	X		X							
V-SITE-FENC	Fences and handrails	323100-901 Fence	0.25	255,0,255	X		X							
V-SITE-FLDS	Stump fields	0	0.25	255,0,0		X								
V-SITE-IDEN	Existing site feature/structure annotation	0	0.25	255,0,255	X	X	X						X	X
V-SITE-OTLN	Existing site features (play structures, bike racks, benches, recreational equipment)	0	0.50	0,255,255	X		X						X	X
V-SITE-ROCK	Rock and rock outcroppings, boulders and cobble	0	0.25	255,0,0	X		X							
V-SITE-SOIL	In-situ areas of bare, denuded, or eroded soil	0	0.25	255,0,0	X	X								
V-SITE-STRC	Structures (bridges, sheds, foundation pads, footings, etc.)	0	0.25	165,41,0	X		X						X	X
V-SITE-STRS	Stairs and ramps	0	0.25	255,0,255	X		X							
V-SITE-VEGE	Existing treelines and vegetation	329300-901 Tree Line	0.35	41,165,0	X		X							
V-SITE-VEGE-IDEN	Existing treelines and vegetation - identification	0	0.35	41,165,0	X		X							
V-SITE-WALK	Walks, trails, and bicycle paths	0	0.25	255,200,0	X		X							
V-SITE-WATR	Water features	0	0.35	0,41,165	X		X							
Special Systems														
V-SPCL-SYST	Special systems (UMCS, EMCS, etc.)	0	0.35	105,0,0				X						X
V-SPCL-SYST-IDEN	Special systems (UMCS, EMCS, etc.) identifier tags, symbol modifier, and text	0	0.25	255,200,0				X						X
V-SPCL-TRAF	Traffic signal system	0	0.35	105,0,0				X						X
V-SPCL-TRAF-IDEN	Traffic signal identifier tags, symbol modifier, and text	0	0.25	255,200,0				X						X
Sanitary Sewer														
V-SSWR-DEVC	Grease traps, grit chambers, flumes, neutralizers, oil/water separators, ejectors, and valves	0	0.25	0,255,0						X				
V-SSWR-FILT	Filtration beds	0	0.25	0,255,0				X						X
V-SSWR-FLOW	Flow direction arrows	0	0.25	0,255,0				X						X
V-SSWR-IDEN	Identifier tags, symbol modifier, and text	0	0.25	255,200,0	X		X			X			X	X
V-SSWR-JBOX	Junction boxes and manholes	0	0.25	0,255,0	X		X			X				X
V-SSWR-LAGN	Lagoons	0	0.25	0,255,0	X		X			X				X
V-SSWR-LEAC	Leach field	0	0.25	0,255,0				X						X
V-SSWR-MAIN-PIPE	Sanitary sewer piping	221300-905 Sanitary Waste	0.25	0,255,0	X		X			X			X	X
V-SSWR-NITF	Nitrification drain fields	0	0.25	0,255,0	X		X			X				X
V-SSWR-PLNT	Treatment plants	0	0.25	0,255,0	X		X			X				X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
		Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HVCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
AIA Format	Level/Layer Description													
V-SSWR-SERV-PIPE	Sanitary sewer service piping	0	0.25	0.255,0						X				X
V-SSWR-SIGN	Surface markers/signs	0	0.25	0.255,0						X				X
V-SSWR-STNS-PUMP	Booster pump stations	0	0.25	0.255,0	X		X			X				X
V-SSWR-TANK	Septic tanks	0	0.25	0.255,0	X		X			X				X
Storm Sewer														
V-STRM-AFFF	AFFF lagoon/detention pond	0	0.25	0.255,0						X				X
V-STRM-CHUT	Chutes and concrete erosion control structures	0	0.25	0.255,0						X				X
V-STRM-CULV	Culverts	334200-901 Culvert	0.25	0.255,0	X		X			X				X
V-STRM-DEVC	Downspouts, flumes, oil/water separators, and flap gates	0	0.25	0.255,0						X				X
V-STRM-FLOW	Flow direction arrows	0	0.25	0.255,0						X				X
V-STRM-FMON	Flow monitoring station	0	0.25	0.255,0						X				X
V-STRM-HWAL	Headwalls and endwalls	0	0.35	0.255,0	X		X			X				X
V-STRM-IDEN	Identifier tags, symbol modifier, and text	0	0.25	0.255,0	X		X			X			X	X
V-STRM-INLT	Inlets (curb, surface, and catch basins)	0	0.25	0.255,0	X		X			X				X
V-STRM-MAIN-PIPE	Storm sewer piping	221400-901 Drain - Storm	0.25	0.255,0	X		X			X			X	X
V-STRM-MHOL	Manholes	0	0.25	0.255,0	X		X			X				X
V-STRM-POND	Retention ponds, lagoons, watersheds, and basins	0	0.25	0.255,0	X		X			X				X
V-STRM-ROOF	Roof drain line	0	0.25	0.255,0						X				X
V-STRM-SERV-PIPE	Storm sewer service piping	0	0.25	0.255,0	X		X			X				X
V-STRM-SIGN	Surface markers/signs	0	0.25	0.255,0						X				X
V-STRM-STNS-PUMP	Pump stations	0	0.25	0.255,0						X				X
V-STRM-SUBS-PIPE	Subsurface drain piping	0	0.25	0.255,0						X				X
Survey														
V-SURV-DATA	Survey data (benchmarks and horizontal control points or monuments)	0	0.25	255,0,255	X	X	X							X
V-SURV-IDEN	Survey, baseline, and control line annotation	0	0.25	255,0,255	X	X	X							X
V-SURV-LINE	Survey, baseline, and control line	014200-907 MS2 Medium Dash	0.25	0,255,255	X	X	X							X
V-SURV-SYMB	Survey line symbol (PIs)	0	0.35	255,200,0	X	X	X							X
Taxiways														
V-TAXI-CNTR	Centerlines	014200-914 Center Line	0.18	255,0,0	X									
V-TAXI-CNTR-IDEN	Centerline annotation	0	0.25	255,200,0	X									
V-TAXI-CNTR-MRKG	Centerline markings	0	0.18	255,0,0	X									
V-TAXI-EDGE	Edge markings	0	0.25	0.255,255	X									
V-TAXI-HOLD	Holding lines	0	0.25	255,200,0	X									
V-TAXI-IDEN	Taxiway - annotation	0	0.25	255,200,0	X								X	X
V-TAXI-OTLN	Taxiway - outlines	0	0.25	0.255,255	X								X	X
V-TAXI-SHLD	Shoulders with annotation	0	0.25	255,200,0	X									
Topography														
V-TOPO-BKLN	Breaklines	014200-909 MS4 Dot Dash	0.35	255,255,255	X	X								X
V-TOPO-BKLN-COMM	Subsurface utilities communications breakline	271500-905 Communication	0.35	255,255,255	X	X								X

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-TOPO-BKLN-DOMW	Subsurface utilities water breakline	331100-903 Water Line	0.35	255,255,255	X	X								X
V-TOPO-BKLN-ELEC	Subsurface utilities electric breakline	337100-901 Electrical Primary	0.35	255,255,255	X	X								X
V-TOPO-BKLN-FUEL	Subsurface utilities liquid fuel breakline	231100-908 Gas - Liquefied Petroleum	0.35	255,255,255	X	X								X
V-TOPO-BKLN-NGAS	Subsurface utilities natural gas breakline	231100-909 Gas - Low Pressure	0.35	255,255,255	X	X								X
V-TOPO-BKLN-SSWR	Subsurface utilities sanitary sewer breakline	221300-905 Sanitary Waste	0.35	255,255,255	X	X								X
V-TOPO-BKLN-STRM	Subsurface utilities storm sewer breakline	221400-901 Drain - Storm	0.35	255,255,255	X	X								X
V-TOPO-BNDY-EXTR	Surface exterior boundary	0	0.18	0,255,0	X	X								X
V-TOPO-BNDY-INTR	Surface interior boundary	014200-907 MS2 Medium Dash	0.18	255,0,0	X	X								X
V-TOPO-BORE	Boring locations and text	0	0.25	255,0,255	X	X								X
V-TOPO-COOR	Coordinate grid text annotation	0	0.25	0,165,124	X	X								X
V-TOPO-COOR-LALO	Latitude and longitude grid ticks	0	0.18	0,255,0	X	X								X
V-TOPO-COOR-STAT	State Plane coordinate ticks	0	0.18	0,255,0	X	X								X
V-TOPO-COOR-UTM	UTM coordinate ticks	0	0.18	0,255,0	X	X								X
V-TOPO-DTMO	DTM obscure area boundary	0	0.25	255,0,255	X	X								X
V-TOPO-DTMP	DTM points	0	0.25	255,0,255	X	X								X
V-TOPO-DTMT	DTM triangles	0	0.25	165,41,0	X	X								X
V-TOPO-MAJR	Major contours	014200-908 MS3 Long Dash	0.25	129,0,0	X	X								X
V-TOPO-MAJR-IDEN	Major contours - annotation	0	0.25	255,200,0	X	X								X
V-TOPO-MINR	Minor contours	014200-907 MS2 Medium Dash	0.18	150,150,150	X	X								X
V-TOPO-MINR-IDEN	Minor contours - annotation	0	0.18	0,255,0	X	X								X
V-TOPO-PERI	Surface perimeter	0	0.18	0,255,0	X	X								X
V-TOPO-SHAP	Application generated shapes/lines	0	0.18	255,0,0										X
V-TOPO-SHOR	Shorelines, land features, and references	0	0.25	0,255,255	X	X								X
V-TOPO-SLOP-FILL	Cut/fill slopes	0	0.25	255,200,0	X	X								X
V-TOPO-SLOP-IDEN	Cut/fill slope, top/toe slope annotation	0	0.25	255,200,0	X									X
V-TOPO-SLOP-TOP	Top/toe slopes	0	0.25	255,0,255	X									X
V-TOPO-SOUN	Soundings and overbanks	0	0.18	255,255,255		X								X
V-TOPO-SPOT	Spot elevations	0	0.25	255,200,0	X	X								X
V-TOPO-VOID	Surface void region	0	0.18	255,0,0	X	X								X
V-TOPO-WATR	Water level reference (e.g., LWRP, after-grading LWRP, SWP, etc.)	0	0.35	255,255,255	X	X								X
Airfield Traffic Areas														

Discipline: Survey/Mapping

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Survey and Mapping Plan	Existing Hydrographic Survey & Mapping Plan	Property Boundary	Existing Electrical Utilities Plan	Existing Communication System Plan	Existing Utilities Plan	Existing HTCW Utilities Plan	Existing Airfield Lighting Plan	Existing Profiles	Existing X-Sections
V-TRAF-IDEN	Airfield traffic area annotation	0	0.25	255,200,0	X									
V-TRAF-TYPA	Type A traffic area	014200-909 MS4 Dot Dash	0.35	0,255,255	X									
V-TRAF-TYPB	Type B traffic area	014200-911 MS6 Dash Dot Dot	0.35	0,255,255	X									
V-TRAF-TYPC	Type C traffic area	014200-906 MS1 Dot	0.35	0,255,255	X									
Water Supply														
V-WATR-DEVC	Connectors, faucets, reducers, regulators, vents, intake points, taps, backflow preventers, and valves	0	0.25	0,255,255						X				
V-WATR-HYDT	Flushing hydrants	0	0.25	0,255,255						X				
V-WATR-IDEN	Identifier tags, symbol modifier, and text	0	0.25	255,200,0	X		X			X			X	X
V-WATR-MAIN-PIPE	Main domestic water piping	331100-903 Water Line	0.25	0,255,255	X		X			X				
V-WATR-METR	Meters	0	0.25	0,255,255						X				
V-WATR-NPW~-PIPE	Non-potable water piping	402300-906 Non-Potable Water	0.25	0,255,255						X				
V-WATR-SERV-PIPE	Domestic water service piping	0	0.25	0,255,255						X			X	X
V-WATR-SIGN	Surface markers/signs	0	0.25	0,255,255						X				
V-WATR-STNS-PUMP	Booster pump stations	0	0.25	0,255,255						X				
V-WATR-STNS-REDC	Pressure reducing stations	0	0.25	0,255,255						X				
V-WATR-TANK	Water storage tanks	0	0.25	0,255,255	X		X			X				
V-WATR-VALT	Valve/vent pits/vaults	0	0.25	0,255,255	X		X			X				
V-WATR-WELL	Water well houses	0	0.25	0,255,255						X				
Wetlands														
V-WETL-BOGS	Bogs	0	0.25	255,0,255	X									X
V-WETL-FENS	Fens	0	0.25	255,200,0	X									X
V-WETL-IDEN	Wetland annotation	0	0.25	255,200,0	X									X
V-WETL-MRSH	Fresh water marshes	0	0.25	0,41,165	X									X
V-WETL-MRSH-SALT	Tidal saltwater marshes	0	0.25	0,41,165	X									X
V-WETL-MRSH-TIDL	Tidal freshwater marsh	0	0.25	0,41,165	X									X
V-WETL-PCSN	Pocosins	0	0.25	255,0,255	X									X
V-WETL-PHOL	Vernal pools, playas, prairie potholes, wet meadows, and wet prairies	0	0.25	255,0,255	X									X
V-WETL-RPRN	Riparian forested wetlands	0	0.25	0,41,165	X									X
V-WETL-SLGH	Sloughs	0	0.25	0,41,165	X									X
V-WETL-SWMP	Swamps	0	0.25	0,41,165	X									X
Sections														
V-SECT-IDEN	Component identification numbers	0	0.35	255,200,0										X
V-SECT-MBND	Material beyond section cut	0	0.18	0,0,255										X
V-SECT-MCUT	Material cut by section	0	0.50	0,255,255										X
V-SECT-PATT	Textures and hatch patterns	0	0.18	128,128,128										X

Discipline: Geotechnical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types					
		Line Style	Line Width (mm)	RGB Value	Subsurface Investigation Plan	Boring Log	Joint Layout Plan *	Pavement Site Plan	Sections	Details
AIA Format	Level/Layer Description									
General Information	See Discipline: General (page A3) for a list of available Annotation layers/levels									
Buildings										
B-BLDG-FTPT	Building footprints	0	0.50	255,255,255	X		X	X		
B-BLDG-IDEN	Building and other stucture annotation	0	0.25	255,200,0	X		X	X		
Geophysical Borings										
B-BORE-CONE	Cone penetrometer test location	0	0.35	0,41,165	X					
B-BORE-HOLE	Geophysical boring locations	0	0.35	0,41,165	X					
B-BORE-IDEN	Geophysical location identification	0	0.35	255,200,0	X					
B-BORE-LINE	Geophysical transect lines	0	0.50	0,255,255	X					
B-BORE-PUSH	Direct push test location	0	0.35	0,41,165	X					
B-BORE-STRK	Geophysical strike line	0	0.35	0,41,165	X					
Consolidation Curve										
B-CONS-DATA	Consolidation curve data	0	0.25	255,0,255	X					
B-CONS-DATA-TEXT	Consolidation curve data text	0	0.25	255,0,255	X					
B-CONS-FRAM	Consolidation curve frame	0	0.50	0,255,255	X					
B-CONS-GRID	Consolidation curve grid	0	0.25	255,0,0	X					
B-CONS-GRID-TEXT	Consolidation curve grid text	0	0.25	255,200,0	X					
Excavations										
B-EXCV-EXST	Existing excavation	014200-907 MS2 Medium Dash	0.25	255,0,0	X		X	X		
B-EXCV-FUTR	Future excavation	014200-906 MS1 Dot	0.35	0,0,255	X		X	X		
B-EXCV-PROP	Proposed excavation	0	0.35	0,255,0	X		X	X		
Grouting										
B-GROU-ALGN	Grout hole alignments	014200-909 MS4 Dot Dash	0.25	255,200,0	X					
B-GROU-HOLE	Borehold made specifically for grouting	0	0.35	128,128,128	X					
B-GROU-PRIM	Primary grout holes	0	0.35	0,255,0	X					
B-GROU-QUAT	Quaternary grout holes	0	0.35	0,255,255	X					
B-GROU-SECD	Secondary grout holes	0	0.35	255,0,0	X					
B-GROU-TERT	Tertiary grout holes	0	0.35	0,0,255	X					
Water Content										
B-H2OC-ATTB-DATA	Water content Atterberg limits	0	0.25	0,255,0	X					
B-H2OC-ATTB-TEXT	Water content Atterberg limits text	0	0.25	0,255,0	X					
B-H2OC-GRID-MAJR	Water content major grid	0	0.25	255,0,0	X					
B-H2OC-GRID-MINR	Water content minor grid	014200-906 MS1 Dot	0.18	128,128,128	X					
B-H2OC-GRID-TEXT	Water content grid text	0	0.25	255,200,0	X					
B-H2OC-MOIS-DATA	Water content moisture content points and lines	0	0.25	255,0,255	X					
B-H2OC-MOIS-TEXT	Water content moisture content text	0	0.25	255,0,255	X					
Instrumentation										
B-INST-EXTN	Extensometers	0	0.35	191,0,255	X					
B-INST-EXTN-IDEN	Extensometer identification	0	0.35	191,0,255	X					
B-INST-GAGE	Pressure gages	0	0.35	191,0,255	X					
B-INST-GAGE-IDEN	Pressure gage identification	0	0.35	191,0,255	X					
B-INST-INCL	Inclinometers	0	0.35	191,0,255	X					

Discipline: Geotechnical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types					
		Line Style	Line Width (mm)	RGB Value	Subsurface Investigation Plan	Boring Log	Joint Layout Plan *	Pavement Site Plan	Sections	Details
AIA Format	Level/Layer Description									
B-INST-INCL-IDEN	Inclinometer identification	0	0.35	191,0,255	X					
B-INST-SETL	Settlement monuments	0	0.35	191,0,255	X					
B-INST-SETL-IDEN	Settlement monument identification	0	0.35	191,0,255	X					
Joints										
B-JNTS-CNTJ-LONG	Construction joints - longitudinal	0	0.35	255,0,255			X			
B-JNTS-CNTJ-TRAV	Construction joints - transverse	0	0.35	255,0,255			X			
B-JNTS-CTRJ-LONG	Contraction joints - longitudinal	0	0.35	255,200,0			X			
B-JNTS-CTRJ-TRAV	Contraction joints - transverse	0	0.35	255,200,0			X			
B-JNTS-EDGE	Thickened edges	0	2.00	0,255,255			X			
B-JNTS-EXPJ	Expansion joints	0	0.35	165,0,0			X			
Logs										
B-LOGS-FDTA	Field data	0	0.25	0,255,0		X				
B-LOGS-FORM	Bore log form	0	0.35	255,255,255		X				
B-LOGS-FRAM	Frame for boring log and associated test data	0	0.50	0,255,255		X				
B-LOGS-FRAM-TEXT	Text associated with boring log frame	0	0.25	255,200,0		X				
B-LOGS-LDTA	Laboratory data	0	0.25	255,0,0		X				
B-LOGS-PATT	Soil/rock patterns	0	0.18	128,128,128		X				
Monitoring Points										
B-MONP-SEEP	Seepage monitoring point	0	0.35	0,0,255	X					
B-MONP-WEIR	Weirs	0	0.35	0,255,255	X					
Normal Stress										
B-NORM-DATA	Normal stress data	0	0.25	255,0,255	X					
B-NORM-DATA-TEXT	Normal stress data text	0	0.25	255,0,255	X					
B-NORM-GRID-MAJR	Normal stress major grid	0	0.25	255,0,0	X					
B-NORM-GRID-MINR	Normal stress minor grid	014200-906 MS1 Dot	0.18	128,128,128	X					
B-NORM-GRID-TEXT	Normal stress grid text	0	0.25	255,200,0	X					
Plasticity Chart										
B-PLAS-DATA	Plasticity chart data	0	0.25	255,0,255	X					
B-PLAS-DATA-TEXT	Plasticity chart data text	0	0.25	255,0,255	X					
B-PLAS-FRAM	Plasticity chart frame	0	0.50	0,255,255	X					
B-PLAS-GRID	Plasticity chart grid	0	0.35	255,255,255	X					
B-PLAS-GRID-TEXT	Plasticity chart grid text	0	0.35	255,255,255	X					
Pavements										
B-PVMT-MISM	Mismatched pavement joint	0	0.35	255,0,255				X		
B-PVMT-OTLN-AGSC	Outline - aggregate surface course and gravel	0	0.35	95,63,127				X		
B-PVMT-OTLN-HMAC	Outline - hot mix, asphaltic concrete	0	0.35	255,0,255				X		
B-PVMT-OTLN-PCCP	Outline - Portland cement, concrete pavement	0	0.35	255,200,0				X		
B-PVMT-PATT-AGSC	Pattern - aggregate surface course and gravel	0	0.18	128,128,128				X		
B-PVMT-PATT-HMAC	Pattern - hot mix, asphaltic concrete	0	0.18	128,128,128				X		
B-PVMT-PATT-PCCP	Pattern - Portland cement, concrete pavement	0	0.18	128,128,128				X		
B-PVMT-REIN	Reinforced pavement	0	0.35	255,0,255				X		
Sample Locations										
B-SAMP-AUGR	Auger sample location	0	0.35	76,38,38	X					
B-SAMP-CORE	Core sample location	0	0.35	76,38,38	X					
B-SAMP-DRVE	Drive sample (shelby split spoon) location	0	0.35	76,38,38	X					
B-SAMP-GRAB	Grab sample location	0	0.35	76,38,38	X					

Discipline: Geotechnical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types					
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Subsurface Investigation Plan	Boring Log	Joint Layout Plan *	Pavement Site Plan	Sections	Details
B-SAMP-IDEN	Sample location identification	0	0.35	255,200,0	X					
B-SAMP-PERC	Percolation test hole	0	0.50	103,165,82	X					
B-SAMP-PITS	Test pit sample location	0	0.50	103,165,82	X					
B-SAMP-VERT	Vertical core hole location	0	0.35	0,165,124	X					
B-SAMP-WASH	Wash bored hole location	0	0.35	0,165,124	X					
Shear Strength vs. Normal Stress										
B-SSNS-DATA	Shear strength vs. normal stress data	0	0.25	255,0,255	X					
B-SSNS-DATA-TEXT	Shear strength vs. normal stress data text	0	0.25	255,0,255	X					
B-SSNS-FRAM	Shear strength vs. normal stress frame	0	0.50	0,255,255	X					
B-SSNS-GRID	Shear strength vs. normal stress grid	0	0.25	255,0,0	X					
B-SSNS-GRID-TEXT	Shear strength vs. normal stress grid text	0	0.35	255,200,0	X					
Shear Strength										
B-SSTR-1TST-DATA	Shear strength 1 Point Q test data	0	0.25	0,255,255	X					
B-SSTR-1TST-TEXT	Shear strength 1 Point Q test text	0	0.25	0,255,255	X					
B-SSTR-GRID-MAJR	Shear strength major grid	0	0.25	255,0,0	X					
B-SSTR-GRID-MINR	Shear strength minor grid	014200-906 MS1 Dot	0.18	128,128,128	X					
B-SSTR-GRID-TEXT	Shear strength grid text	0	0.25	255,200,0	X					
B-SSTR-QTST-DATA	Shear strength Q test data	0	0.25	255,0,255	X					
B-SSTR-QTST-TEXT	Shear strength Q test text	0	0.25	255,0,255	X					
B-SSTR-RTST-DATA	Shear strength R test data	0	0.25	255,200,0	X					
B-SSTR-RTST-TEXT	Shear strength R test text	0	0.25	255,200,0	X					
B-SSTR-STST-DATA	Shear strength S test data	0	0.25	0,0,255	X					
B-SSTR-STST-TEXT	Shear strength S test text	0	0.25	0,0,255	X					
B-SSTR-UTST-DATA	Shear strength UCT test data	0	0.25	0,255,0	X					
B-SSTR-UTST-TEXT	Shear strength UCT test text	0	0.25	0,255,0	X					
B-SSTR-VTST-DATA	Shear strength Vane shear test data	0	0.25	255,255,255	X					
B-SSTR-VTST-TEXT	Shear strength Vane shear test text	0	0.25	255,255,255	X					
Tabular Test										
B-TABT-DATA	Tabular test data	0	0.25	255,0,255	X					
B-TABT-DATA-TEXT	Tabular test data text	0	0.25	255,0,255	X					
B-TABT-FRAM	Tabular test data frame	0	0.50	0,255,255	X					
B-TABT-GRID	Tabular test data grid	0	0.25	255,0,0	X					
B-TABT-GRID-TEXT	Tabular test data grid text	0	0.35	255,200,0	X					
Wells										
B-WELL-ASR~	ASR wells	0	0.35	41,165,0	X					
B-WELL-HORZ	Horizontal drain	0	0.35	41,165,0	X					
B-WELL-MONT	Monitoring wells	0	0.35	41,165,0	X					
B-WELL-PIZO	Piezometers	0	0.35	41,165,0	X					
B-WELL-VERT	Vertical drain	0	0.35	41,165,0	X					
Wet Density										
B-WETD-DATA	Wet density data	0	0.25	255,0,255	X					
B-WETD-DATA-TEXT	Wet density data text	0	0.25	255,0,255	X					
B-WETD-GRID-MAJR	Wet density major grid	0	0.25	255,0,0	X					
B-WETD-GRID-MINR	Wet density minor grid	014200-906 MS1 Dot	0.18	128,128,128	X					
B-WETD-GRID-TEXT	Wet density grid text	0	0.25	255,200,0	X					

Discipline: Geotechnical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types					
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Subsurface Investigation Plan	Boring Log	Joint Layout Plan *	Pavement Site Plan	Sections	Details
Sections										
B-SECT-IDEN	Component identification numbers	0	0.35	255,200,0					X	
B-SECT-MBND	Material beyond section cut	0	0.18	0,0,255					X	
B-SECT-MCUT	Material cut by section	0	0.35	255,255,255					X	
B-SECT-PATT	Textures and hatch patterns	0	0.18	128,128,128					X	
B-SECT-SLOG	Stick log graphics	0	0.35	0,255,0					X	
B-SECT-STRA	Stratigraphy	0	0.18	128,128,128					X	
Detail Information										
B-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255						X

* = Check to see if a Civil Joint Layout Plan has been developed, to avoid duplication

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
		Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections
AIA Format	Level/Layer Description																
General Information		See Discipline: General (page A3) for a list of available Annotation layers/levels															
Alignments																	
C-ALGN-DATA	Alignment coordinates and curve data	0	0.35	0,255,0	X	X			X		X		X	X	X		
C-ALGN-LINE	Alignments	014200-909 MS4 Dot Dash	0.35	255,200,0	X	X	X	X	X	X	X		X	X	X		
C-ALGN-MAJR	Alignment major stationing and tick marks	0	0.35	255,0,0	X	X			X		X		X	X			
C-ALGN-MARK	Alignment tick marks	0	0.35	0,255,0	X	X				X			X	X	X		
C-ALGN-MINR	Alignment minor stationing and tick marks	0	0.18	255,0,255	X	X			X		X		X	X			
C-ALGN-STAT	Alignment stationing and tick marks, alignment PI stations	0	0.35	0,255,0	X	X			X		X		X	X	X		
C-ALGN-SYMB	Alignment symbols (PIs)	0	0.35	255,0,255	X	X			X		X		X	X	X		
C-ALGN-TEXT	Alignment text, annotation with associated leaders	0	0.35	255,200,0	X	X	X	X	X	X	X		X	X	X		
Aprons																	
C-APRN-CNTR	Apron centerlines	014200-914 Center Line	0.25	255,0,0									X				
C-APRN-CNTR-IDEN	Apron centerline annotation	0	0.35	255,200,0									X				
C-APRN-GRND	Grounding points	0	0.35	255,200,0									X				
C-APRN-HOLD	Holding position markings	0	0.25	255,0,0									X				
C-APRN-IDEN	Airfield apron - annotation	0	0.35	255,200,0									X		X		X
C-APRN-MOOR	Mooring points	0	0.35	255,200,0									X				
C-APRN-MRKG	Apron markings	0	0.50	0,255,255									X				
C-APRN-OTLN	Airfield apron - outlines	0	0.50	0,255,255									X		X		X
C-APRN-SECU	Security zone markings	0	0.25	255,0,0									X				
C-APRN-SHLD	Shoulders with annotation	0	0.35	255,200,0									X				
C-APRN-SHLD-MRKG	Shoulder stripes	0	0.35	255,200,0									X				
Beach Renourishment																	
C-BECH-BANK-TOP~	Beach top of bank	0	0.25	255,0,255			X	X									
C-BECH-BKLN	Beach breakline	014200-907 MS2 Medium Dash	0.35	0,0,255			X	X									
C-BECH-BLIN	Beach baseline and control line	0	0.50	0,255,255			X	X									
C-BECH-BLIN-IDEN	Beach baseline and control line annotation	0	0.25	0,255,255			X	X									
C-BECH-BNCH	Beach bench	014200-911 MS6 Dash Dot Dot	0.35	165,41,0			X	X									
C-BECH-CNTR	Beach centerline	014200-914 Center Line	0.25	0,0,255			X	X									
C-BECH-CNTR-IDEN	Beach centerline annotation	0	0.25	255,0,255			X	X									
C-BECH-ELIN	Beach erosion control line	0	0.50	0,255,255			X	X									
C-BECH-ELIN-IDEN	Beach erosion control line annotation	0	0.25	255,0,255			X	X									
C-BECH-LIMT	Beach limit lines	0	0.50	0,255,255			X	X									
C-BECH-OHWM	Ordinary high water marks	0	0.35	255,200,0			X	X									
C-BECH-OTLN	Beach outline	0	0.25	255,200,0			X	X									
C-BECH-SLOP-IDEN	Beach slope indicator with annotation	0	0.25	255,255,255			X	X									
C-BECH-SLOP-TOP~	Beach top of slope	014200-907 MS2 Medium Dash	0.35	165,41,0			X	X									
C-BECH-SYMB	Beach symbols	0	0.18	255,0,255			X	X									
C-BECH-TOE~	Beach toe	014200-908 MS3 Long Dash	0.50	0,0,255			X	X									
C-BECH-TOE~IDEN	Beach toe annotation	0	0.25	255,255,255			X	X									

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
		Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections
AIA Format	Level/Layer Description																
Buildings and Primary Structures																	
C-BLDG-DECK	Outdoor decks (attached, no roof overhead)	0	0.50	0,255,255	X	X	X	X	X	X							
C-BLDG-DOCK	Loading docks	0	0.50	0,255,255	X	X	X	X	X	X							
C-BLDG-FTPT	Building footprints	0	0.70	255,255,255	X	X	X	X	X	X					X		X
C-BLDG-IDEN	Building and other structure annotation	0	0.35	255,200,0	X	X	X	X	X	X					X		X
C-BLDG-OVHD	Building overhangs	0	0.50	0,255,255	X	X	X	X	X	X							
C-BLDG-PRCH	Porches (attached, roof overhead)	0	0.50	0,255,255	X	X	X	X	X	X							
Borrow Areas																	
C-BORW-IDEN	Borrow/spoil area annotation	0	0.35	255,200,0	X	X		X	X	X							
C-BORW-LINE	Borrow/spoil area	014200-907 MS2 Medium Dash	0.35	255,200,0	X	X		X	X	X							
Bridges																	
C-BRDG-CHRD-LOW~	Low chord	0	0.50	0,255,255											X		X
C-BRDG-CNTR	Bridge centerlines	014200-914 Center Line	0.25	255,0,0	X				X	X	X						
C-BRDG-CTLJ	Control joints	0	0.25	0,255,255	X				X	X	X						
C-BRDG-DECK	Bridge deck	0	0.50	0,255,255	X				X	X	X				X		X
C-BRDG-IDEN	Bridge annotation	0	0.35	255,200,0	X				X	X	X						
C-BRDG-OTLN	Bridge outlines	0	0.50	0,255,255	X				X	X	X						
C-BRDG-RLG~	Bridge railing	0	0.25	0,255,255	X				X	X	X				X		X
Channels																	
C-CHAN-BANK-IDEN	Channel/canal top of bank annotation	0	0.35	255,200,0	X				X	X							
C-CHAN-BANK-TOP~	Channel/canal top of bank	0	0.35	255,200,0	X				X	X					X		X
C-CHAN-BNCH	Channel/canal bench design feature lines (breaklines form DTMs)	0	0.35	255,200,0	X				X	X					X		X
C-CHAN-BWTR	Breakwaters	0	0.35	255,0,255	X				X	X							
C-CHAN-CNTR	Channel centerline and survey report lines	014200-914 Center Line	0.25	0,0,255	X				X	X					X		X
C-CHAN-CNTR-IDEN	Channel centerline and survey report lines - annotation	0	0.35	0,0,255	X				X	X							
C-CHAN-DACL	De-authorized channel limits, anchorages, etc.	0	0.35	0,255,0	X				X	X							
C-CHAN-DACL-IDEN	De-authorized channel limits, anchorages, etc. - annotation	0	0.35	0,255,0	X				X	X							
C-CHAN-DOCK	Docks, decks, floats, piers, and mooring facilities	0	0.35	255,0,255	X				X	X							
C-CHAN-LIMIT	Channel limits, anchorages, turning basins, disposal areas, etc.	0	0.35	255,0,255	X				X	X							
C-CHAN-LIMIT-IDEN	Channel limits, anchorages, turning basins, disposal areas, etc. - annotation	0	0.35	255,0,255	X				X	X							
C-CHAN-NAID	Navigation aids and text	0	0.35	255,255,255	X			X	X	X							
C-CHAN-SLOP-LINE	Channel cut/fill slope (Indicates cut and fill lines)	0	0.35	255,200,0	X				X	X							
C-CHAN-SPOL	Spoil limits	0	0.50	0,255,255	X				X	X							
C-CHAN-SYMB	Channel/canal symbols	0	0.35	255,0,255	X				X	X							
C-CHAN-TEXT	Channel/canal text, annotation with associated leaders	0	0.35	255,200,0	X				X	X							
C-CHAN-TOE~	Channel/canal toe	014200-908 MS3 Long Dash	0.50	0,0,255	X				X	X					X		X
C-CHAN-TOE~-IDEN	Channel/canal toe annotation	0	0.35	255,0,255	X				X	X							
C-CHAN-TURN	Turning points	0	0.35	255,200,0	X				X	X							
C-CHAN-WIDE	Channel/canal widener	014200-908 MS3 Long Dash	0.50	0,255,255	X				X	X							
Dredging																	
C-DRED-IDEN	Dredging annotation	0	0.35	255,200,0	X			X	X	X							
C-DRED-LIMIT	Dredge limit lines	0	0.50	0,255,255	X			X	X	X							
C-DRED-OHWM	Ordinary high water marks	0	0.35	255,200,0	X			X	X	X							
Ditches or Washes																	

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types													
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections	Details
C-DTCH-BOTM	Bottom of ditch or wash	334000-901 Ditch	0.25	0,0,255	X					X								
C-DTCH-CNTR	Centerline of ditch or wash	014200-914 Center Line	0.25	0,0,255	X					X								
C-DTCH-EWAT	Edge of water	0	0.25	0,255,255	X					X								
C-DTCH-IDEN	Ditches and washes annotation	0	0.35	0,255,0	X					X								
C-DTCH-TOP~	Top of ditch or wash	0	0.25	0,255,0	X					X								
Habitats/Landforms							X											
C-ECCO-BURR	Burrow	0	0.50	0,255,255			X											
C-ECCO-DENS	Den	0	0.50	0,255,255			X											
C-ECCO-GATR	Gator hole	014200-907 MS2 Medium Dash	0.35	255,0,255			X											
C-ECCO-HUMK	Hummocks	0	0.35	255,0,255			X											
C-ECCO-IDEN	Habitat annotation	0	0.35	255,200,0			X											
C-ECCO-NEST	Nest, nesting tree	0	0.50	0,255,255			X											
C-ECCO-PRCH	Perch/nesting hole	0	0.50	0,255,255			X											
Erosion and Sediment Control (Temporary/Construction)																		
C-EROS-CIPR	Culvert inlet protection	0	0.25	0,255,0	X	X				X								
C-EROS-CNTE	Construction entrance	0	0.35	255,0,255	X	X				X								
C-EROS-DDIV	Drainage divides	0	0.50	0,255,255	X	X				X								
C-EROS-DVDK	Diversion dike	0	0.50	0,255,255	X	X				X								
C-EROS-IDEN	Erosion and sediment control annotation	0	0.35	0,255,0	X	X				X								
C-EROS-INPR	Inlet protection	0	0.25	0,255,0	X	X				X								
C-EROS-SILT	Silt fence	015700-901 Silt Fence	0.35	255,200,0	X	X				X								
C-EROS-SILT-CHCK	Silt check	0	0.35	255,200,0	X	X				X								
C-EROS-SILT-TRAP	Silt trap	0	0.35	255,200,0	X	X				X								
C-EROS-SSLT	Super silt fence	015700-902 Super Silt Fence	0.35	255,200,0	X	X				X								
Fire Protection																		
C-FIRE-HYDT	Hydrants and connections	0	0.35	255,0,0	X				X	X				X	X		X	
C-FIRE-PIPE	Piping	331100-907 Fire Protection Water Supply	0.35	255,0,0					X	X				X				
Flood Hazard Area																		
C-FLHA-025Y	25 year mark	014200-911 MS6 Dash Dot Dot	0.35	255,0,255	X					X								
C-FLHA-050Y	50 year mark	014200-908 MS3 Long Dash	0.35	255,200,0	X					X								
C-FLHA-100Y	100 year mark	0	0.35	255,0,255	X					X								
C-FLHA-200Y	200 year mark	014200-907 MS2 Medium Dash	0.35	255,200,0	X					X								
C-FLHA-500Y	500 year mark	014200-912 MS7 Long Dash Short Dash	0.35	255,0,255	X					X								

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
		Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections
AIA Format	Level/Layer Description																
C-FLHA-IDEN	Flood hazard area annotation	0	0.35	255,200,0	X					X							
Floodwalls																	
C-FLOD-BASE	Floodwall base of wall	0	0.50	255,63,0	X					X							
C-FLOD-BASE-IDEN	Floodwall base of wall annotation	0	0.35	255,63,0	X					X							
C-FLOD-CNTR	Floodwall centerline	014200-914 Center Line	0.25	255,63,0	X					X							X
C-FLOD-CNTR-IDEN	Floodwall centerline annotation	0	0.35	255,63,0	X					X							X
C-FLOD-DRNS	Floodwall toe drain	0	0.35	255,0,255	X					X					X		X
C-FLOD-DRNS-IDEN	Floodwall toe drain annotation	0	0.35	255,0,255	X					X					X		X
C-FLOD-PILE	Floodwall sheet piling	0	0.50	165,41,0	X					X					X		X
C-FLOD-PILE-IDEN	Floodwall sheet piling annotation	0	0.35	165,41,0	X					X					X		X
C-FLOD-TOE~	Floodwall toe outline	0	0.35	0,255,255	X					X					X		X
C-FLOD-TOP~	Floodwall top of wall	0	0.50	255,200,0	X					X					X		X
C-FLOD-TOP~-IDEN	Floodwall top of wall annotation	0	0.35	255,63,0	X					X					X		X
Liquid Fuel																	
C-FUEL-BERM	Berms for retaining fuel in case of major tank/line rupture	0	0.35	255,200,0										X			
C-FUEL-DEFL-PIPE	Defueling piping	0	0.35	255,200,0										X			
C-FUEL-DEVC	Air eliminators, filter strainers, hydrant fill points, line vents, markers, oil/water separators, reducers, regulators, and valves	0	0.35	255,200,0										X			
C-FUEL-FLOW	Flow direction arrows	0	0.35	255,200,0										X			
C-FUEL-IDEN	Identifier tags, symbol modifier, and text	0	0.35	255,200,0	X				X					X	X		X
C-FUEL-JBOX	Junction boxes, manholes, handholes, test boxes	0	0.35	255,200,0										X			
C-FUEL-MAIN-PIPE	Main fuel piping	231100-908 Gas - Liquefied Petroleum	0.35	255,200,0	X				X					X	X		X
C-FUEL-METR	Meters	0	0.35	255,200,0										X			
C-FUEL-SERV-PIPE	Service piping	0	0.35	255,200,0										X			
C-FUEL-STNS-PUMP	Booster pump stations	0	0.35	255,200,0										X			
C-FUEL-TANK	Fuel tanks	0	0.35	255,200,0	X				X					X	X		X
C-FUEL-TRCH	Fuel line trench	0	0.35	255,200,0										X			
C-FUEL-VALT	Hydrant control/valve/vent pits/vaults	0	0.35	255,200,0	X				X					X	X		X
Grade Linework																	
C-GRAD-ALOW	Allowable over depth	0	0.35	255,0,255					X								X
C-GRAD-BNCH	Bench cut	0	0.35	255,0,255											X		X
C-GRAD-DSGN	Design grade (proposed)	0	0.35	0,255,0	X		X	X	X	X					X		X
C-GRAD-EXCV	Excavation grade	0	0.50	0,255,255											X		X
C-GRAD-EXST	Existing grade, ground line	014200-908 MS3 Long Dash	0.35	255,0,255	X		X	X	X	X					X		X
C-GRAD-FNSH	Finished grade	0	0.50	0,255,255	X				X	X					X		X
C-GRAD-FNSH-PRP1	Proposed Surface #1	0	0.35	128,128,128	X				X	X					X		X
C-GRAD-FNSH-PRP2	Proposed Surface #2	0	0.35	128,128,128	X				X	X					X		X
C-GRAD-FNSH-PRP3	Proposed Surface #3	0	0.35	128,128,128	X				X	X					X		X
C-GRAD-FNSH-PRP4	Proposed Surface #4	0	0.35	128,128,128	X				X	X					X		X
C-GRAD-GTXL	Geotextile placement grade	0	0.25	255,0,0	X				X	X					X		X
C-GRAD-IDEN	Grade annotation for cross sections and profiles	0	0.35	255,200,0	X				X	X					X		X
C-GRAD-REQD	Required depth	0	0.35	255,0,255					X								X
C-GRAD-SCLN	Stability control line	014200-912 MS7 Long Dash Short Dash	0.50	0,0,255	X				X	X					X		X

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types																
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections	Details			
					X					X	X						X			X	
C-GRAD-WATR	Water surface in section view	0	0.35	255,200,0	X																
Grid Lines																					
C-GRID-FRAM	Frame	0	0.50	0,255,255											X		X				
C-GRID-MAJR	Major grid lines	014200-906 MS1 Dot	0.35	128,128,128											X		X				
C-GRID-MINR	Minor grid lines	014200-906 MS1 Dot	0.18	128,128,128											X		X				
C-GRID-TEXT	Border text, annotation	014200-906 MS1 Dot	0.35	255,200,0											X		X				
Heliports																					
C-HELI-BLST	Blast pad and stopway markings	0	0.35	255,0,0									X		X		X				
C-HELI-CNTR	Centerline markings	0	0.35	255,0,0									X								
C-HELI-DISP	Displaced threshold markings	0	0.35	255,0,0									X								
C-HELI-DIST	Fixed distance markings	0	0.35	255,0,0									X								
C-HELI-IDEN	Heliport numbers and letters	0	0.35	255,200,0									X		X		X				
C-HELI-SHLD	Shoulder markings	0	0.35	255,0,255									X								
C-HELI-SIDE	Side stripes	0	0.50	0,255,255									X								
C-HELI-TDZM	Touchdown zone markers	0	0.35	255,0,255									X								
C-HELI-THRS	Threshold markers	0	0.35	255,0,255									X								
Industrial Waste Water																					
C-INDW-DEVC	Grit chambers, flumes, neutralizers, oil/water separators, ejectors, tanks, and valves	0	0.35	255,63,0									X								
C-INDW-FLOW	Flow direction arrows	0	0.35	255,63,0									X								
C-INDW-IDEN	Identifier tags, symbol modifier, and text	0	0.35	255,200,0	X				X	X			X	X			X				
C-INDW-JBOX	Junction boxes and manholes	0	0.35	255,63,0									X								
C-INDW-LAGN	Lagoons	0	0.35	255,63,0									X								
C-INDW-MAIN-PIPE	Main industrial waste water piping	402300-905 Industrial Waste	0.35	255,63,0	X				X				X	X			X				
C-INDW-METR	Meters	0	0.35	255,63,0									X								
C-INDW-PLNT	Treatment plants	0	0.35	255,63,0									X								
C-INDW-SERV-PIPE	Industrial waste water service piping	0	0.35	255,63,0									X								
C-INDW-SIGN	Surface markers/signs	0	0.35	255,63,0									X								
C-INDW-STNS-LIFT	Lift stations	0	0.35	255,63,0									X								
Joints																					
C-JNTS-CNSL	Construction joints - longitudinal	0	0.35	255,0,255								X									
C-JNTS-CNST	Construction joints - transverse	0	0.35	255,0,255								X									
C-JNTS-CNTL	Contraction joints - longitudinal	0	0.35	255,200,0								X									
C-JNTS-CNTT	Contraction joints - transverse	0	0.35	255,200,0								X									
C-JNTS-EDGE	Thickened edges	0	0.35	0,255,255								X									
C-JNTS-EXPJ	Expansion joints	0	0.35	165,0,0								X									
C-JNTS-IDEN	Joint annotation	0	0.35	255,200,0								X									
Levees																					
C-LEVE-BANK-IDEN	Levee top of bank annotation	0	0.25	255,63,0	X				X	X											
C-LEVE-TOPB	Levee top of bank	0	0.35	255,200,0	X				X	X					X		X				
C-LEVE-BERM	Levee berm outline	0	0.35	255,0,255	X				X	X					X		X				
C-LEVE-BNCH	Levee bench design feature lines (breaklines form DTMs)	0	0.35	255,63,0	X				X	X					X		X				
C-LEVE-BNCH-IDEN	Levee bench annotation	0	0.25	255,200,0	X				X	X							X				
C-LEVE-BRRW	Borrow limits	0	0.50	0,255,255	X				X	X							X				
C-LEVE-CNTR	Levee centerline	014200-914 Center Line	0.25	255,63,0	X				X	X					X		X				
C-LEVE-CNTR-IDEN	Levee centerline annotation	0	0.35	255,63,0	X				X	X							X				
C-LEVE-IDEN	Levee annotation	0	0.35	255,200,0	X				X	X							X				

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
		Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections
AIA Format	Level/Layer Description																
C-LEVE-OTLN	Levee outline	0	0.50	0,255,255	X				X	X							X
C-LEVE-SLOP	Levee slope indicator with annotation	0	0.35	255,200,0	X				X	X							X
C-LEVE-STAN	Levee stationing	0	0.35	255,200,0	X				X	X							X
C-LEVE-TOE~	Levee toe	014200-907 MS2 Medium Dash	0.35	255,63,0	X				X	X					X		X
C-LEVE-TOE~IDEN	Levee toe annotation	0	0.25	255,63,0	X				X	X							X
Military Ranges																	
C-MILR-BATP	Battle positions	0	0.50	0,255,255	X												
C-MILR-CAMS	Range cameras	0	0.35	255,0,255	X												
C-MILR-FOXH	Fox holes and pits	0	0.35	255,0,255	X												
C-MILR-MATS	Moving army targets	0	0.50	0,255,255	X												
C-MILR-MITS	Moving infantry targets	0	0.50	0,255,255	X												
C-MILR-MITS-IDEN	Moving infantry targets annotation	0	0.35	255,200,0	X												
C-MILR-PUTS	Pop up targets	0	0.50	0,255,255	X												
C-MILR-PUTS-IDEN	Pop up targets annotation	0	0.35	255,200,0	X												
C-MILR-SATS	Stationary army targets	0	0.50	0,255,255	X												
C-MILR-SATS-IDEN	Stationary army targets annotation	0	0.35	255,200,0	X												
C-MILR-SITS	Stationary infantry targets	0	0.50	0,255,255	X												
C-MILR-SITS-IDEN	Stationary infantry targets annotation	0	0.35	255,200,0	X												
Natural Gas																	
C-NGAS-EQPM	Equipment (pumps, motors, etc.)	0	0.35	255,200,0										X			
C-NGAS-FLOW	Flow direction arrows	0	0.35	255,200,0										X			
C-NGAS-IDEN	Identifier tags, symbol modifier, and text	0	0.35	255,200,0	X				X					X	X		X
C-NGAS-INST	Instrumentation (valves, etc.)	0	0.35	255,200,0										X			
C-NGAS-METR	Meters	0	0.35	255,200,0										X			
C-NGAS-MHOL	Manholes	0	0.35	255,200,0	X				X					X	X		X
C-NGAS-PIPE	Natural gas piping	231100-909 Gas - Low Pressure	0.35	255,200,0	X				X					X	X		X
C-NGAS-SIGN	Surface markers/signs	0	0.35	255,200,0										X			
C-NGAS-STNS-PUMP	Compressor stations	0	0.35	255,200,0										X			
C-NGAS-STNS-REDC	Reducing stations	0	0.35	255,200,0										X			
C-NGAS-TANK	Tanks	0	0.25	255,200,0	X									X			
C-NGAS-VALT	Valve/vent pits/vaults	0	0.35	255,200,0	X				X					X	X		X
Obstructions																	
C-OBST-AIRS	Airspace obstructions	0	0.35	0,255,0										X			
C-OBST-AIRS-IDEN	Obstruction annotation	0	0.35	255,200,0										X			
Overrun Areas																	
C-OVRN-CNTR	Centerlines	014200-914 Center Line	0.25	255,0,0									X				
C-OVRN-CNTR-IDEN	Centerline annotation	0	0.35	255,200,0									X				
C-OVRN-IDEN	Airfield overrun area - annotation	0	0.35	255,200,0									X		X		X
C-OVRN-OTLN	Airfield overrun area - outlines	0	0.35	0,255,255									X		X		X
C-OVRN-SHLD-MRKG	Shoulder markings	0	0.35	0,255,255									X				
Pads (Arm/Disarm/Calibration, etc.)																	
C-PADS-CNTR	Centerlines	014200-914 Center Line	0.25	255,0,0									X				
C-PADS-CNTR-IDEN	Centerline annotation	0	0.35	255,200,0									X				
C-PADS-IDEN	Pads - annotation	0	0.35	255,200,0									X		X		X
C-PADS-OTLN	Pad - outlines	0	0.35	0,255,255									X		X		X
C-PADS-SHLD	Shoulders with annotation	0	0.25	255,200,0									X				

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
		Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections
AIA Format	Level/Layer Description																
Parking Lots																	
C-PRKG-CARS	Graphic illustration of cars	0	0.35	255,200,0	X					X	X						
C-PRKG-CNTR	Parking lot centerlines	014200-914 Center Line	0.25	255,0,0	X					X	X						
C-PRKG-CNTR-IDEN	Parking lot centerline annotation	0	0.25	255,0,0	X					X	X						
C-PRKG-CURB	Curbs and gutters	0	0.35	0,255,0	X					X	X						
C-PRKG-DRAIN	Drainage slope indications	0	0.35	255,0,0	X					X	X						
C-PRKG-FIXT	Parking lot fixtures (e.g., wheel stops, parking meters)	0	0.35	127,255,127	X					X	X						
C-PRKG-FLNE	Fire lanes	0	0.25	255,0,0	X					X	X						
C-PRKG-IDEN	Parking lot annotation	0	0.35	255,0,255	X					X	X				X		X
C-PRKG-MRKG	Pavement markings	0	0.35	255,200,0	X					X	X						
C-PRKG-OTLN	Parking lot outlines	0	0.50	0,255,255	X					X	X				X		X
C-PRKG-SIGN	Signs	0	0.35	255,200,0	X					X	X						
Property																	
C-PROP-CONS	Construction limits/controls, staging area	014200-902 Construction Contract Limit	0.70	255,255,255	X				X	X							X
C-PROP-ESMT	Easements	014200-903 Construction Easement	0.70	255,255,255	X				X	X							X
C-PROP-IDEN	Property annotation	0	0.35	255,0,255	X				X	X							X
C-PROP-LINE	Property lines	014200-905 Property Line	0.50	255,200,0	X				X	X							X
C-PROP-RWAY	Right of ways	011400-901 Right of Way	0.70	255,255,255	X				X	X							X
C-PROP-RWAY-ACQU	Right of way to be acquired in perpetuity	0	0.70	255,255,255	X				X	X							X
C-PROP-SBCK	Setback lines	014200-908 MS3 Long Dash	0.25	255,255,255	X				X	X							X
C-PROP-SECT	Section lines	014200-912 MS7 Long Dash Short Dash	0.50	255,0,255	X				X	X							X
C-PROP-SECT-IDEN	Section lines annotation	0	0.35	255,0,255	X				X	X							X
C-PROP-TSHP	Township/range lines	014200-909 MS4 Dot Dash	0.50	255,0,255	X				X	X							
C-PROP-TSHP-IDEN	Township/range lines annotation	0	0.35	255,0,255	X				X	X							
Pavements																	
C-PVMT-ASPH	Pavement pattern - asphalt	0	0.18	128,128,128	X				X	X	X		X				
C-PVMT-CONC	Pavement pattern - concrete	0	0.18	128,128,128	X				X	X	X		X				
C-PVMT-GRVL	Pavement pattern - gravel	0	0.18	128,128,128	X				X	X	X		X				
C-PVMT-IDEN	Road, parking lot, railroad, airfield pavement annotation	0	0.25	255,200,0	X				X	X			X		X		X
C-PVMT-MRKG	Pavement markings	0	0.35	255,200,0	X				X	X	X						
C-PVMT-PATT	Joint patterns, text and dimensions	0	0.18	128,128,128	X				X	X		X					
Railroads																	
C-RAIL-CNTR	Railroad track centerlines	014200-914 Center Line	0.25	255,0,0							X						
C-RAIL-CNTR-IDEN	Railroad track centerline annotation	0	0.35	255,0,0							X						
C-RAIL-EQPM	Railroad equipment (e.g., gates, signals)	0	0.35	127,255,127							X						
C-RAIL-IDEN	Railroad - annotation	0	0.35	255,0,255							X				X		X

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types													
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections	Details
C-RAIL-TRAK	Railroad tracks	347200-901 Railroad	0.35	255,200,0							X				X		X	
Rivers																		
C-RIVR-BOTM	River bottom	0	0.35	0,0,255	X				X	X					X	X	X	
C-RIVR-CNTR	Centerline of river	014200-914 Center Line	0.25	255,0,0	X				X	X					X	X	X	
C-RIVR-EDGE	River edge	0	0.50	0,0,255	X				X	X					X	X	X	
C-RIVR-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0	X				X	X					X	X	X	
C-RIVR-TOPB	Top of river bank	0	0.35	0,0,255	X				X	X					X	X	X	
Roads, Streets, and Highways																		
C-ROAD-ASPH	Road outlines - asphalt surface	0	0.25	128,128,128	X					X	X				X		X	
C-ROAD-CNTR	Road centerlines	014200-914 Center Line	0.25	255,0,0	X					X	X						X	
C-ROAD-CNTR-IDEN	Road centerline annotation	0	0.25	255,0,0	X					X	X				X		X	
C-ROAD-CONC	Road outlines - concrete surface	0	0.25	255,255,255	X					X	X				X		X	
C-ROAD-CURB	Curbs and gutters	0	0.35	255,0,255	X					X	X				X		X	
C-ROAD-GRAL	Guard rails	347100-901 Guardrail	0.35	255,0,255	X					X	X				X		X	
C-ROAD-GRVL	Road outlines - gravel surface	0	0.25	255,63,0	X					X	X				X		X	
C-ROAD-IDEN	Road, street, highway annotation	0	0.35	255,0,255	X					X	X				X		X	
C-ROAD-MRKG	Pavement markings	0	0.35	255,200,0	X					X	X							
C-ROAD-PATT	Joint patterns, text and dimensions	0	0.18	128,128,128	X					X	X							
C-ROAD-SHLD	Roadway shoulder	0	0.35	255,0,255	X					X	X							
C-ROAD-SIGN	Signs	0	0.25	255,0,0	X					X	X							
C-ROAD-UPVD	Road outlines - unpaved surface	0	0.25	0,255,0	X					X	X				X		X	
Riprap and Other Permanent Erosion Control Items																		
C-RRAP-GABN	Gabions	0	0.25	255,0,0	X			X	X	X								
C-RRAP-MATS	Articulated concrete mats	0	0.25	0,255,0	X			X	X	X								
C-RRAP-RVMT	Revetments	0	0.25	255,0,0	X			X	X	X								
C-RRAP-WEIR	Weirs	0	0.25	0,255,0	X			X	X	X								
Runways																		
C-RUNW-BLST	Blast pad and stopway markings	0	0.35	255,0,0									X		X		X	
C-RUNW-CNTR	Centerlines	014200-914 Center Line	0.25	255,0,0									X					
C-RUNW-CNTR-MRKG	Centerline markings	0	0.35	255,0,0									X					
C-RUNW-DISP	Displaced threshold markings	0	0.35	255,0,0									X					
C-RUNW-DIST	Fixed distance markings	0	0.35	255,0,0									X					
C-RUNW-EDGE	Airfield runway edges	0	0.35	255,0,255									X					
C-RUNW-IDEN	Airfield runway annotation	0	0.35	255,200,0									X		X		X	
C-RUNW-SHLD	Shoulder markings	0	0.35	255,0,255									X					
C-RUNW-SIDE	Side stripes	0	0.35	0,255,255									X					
C-RUNW-TDZM	Touchdown zone markers	0	0.35	255,0,255									X					
C-RUNW-THRS	Threshold markers	0	0.35	255,0,255									X					
Site Features																		
C-SITE-BLIN	Site breakline	014200-907 MS2 Medium Dash	0.35	0,255,0	X					X								
C-SITE-FENC	Fences and handrails	323100-901 Fence	0.35	255,0,255	X					X								
C-SITE-IDEN	Site feature annotation	0	0.35	255,0,255	X					X					X		X	
C-SITE-STRC	Structures (bridges, sheds, foundation pads, footings, etc.)	0	0.35	165,41,0	X					X								
C-SITE-STRS	Stairs and ramps	0	0.35	255,0,255	X					X								

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
		Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections
AIA Format	Level/Layer Description																
C-SITE-WALK	Walks, trails and bicycle paths	0	0.35	255,200,0	X					X							
Sanitary Sewer																	
C-SSWR-DEVC	Grease traps, grit chambers, flumes, neutralizers, oil/water separators, ejectors, and valves	0	0.35	0,255,0	X									X	X		X
C-SSWR-FILT	Filtration beds	0	0.35	0,255,0										X	X		X
C-SSWR-FLOW	Flow direction arrows	0	0.35	0,255,0										X	X		X
C-SSWR-IDEN	Identifier tags, symbol modifier, and text	0	0.35	255,200,0	X				X	X				X	X		X
C-SSWR-JBOX	Junction boxes and manholes	0	0.35	0,255,0	X									X	X		X
C-SSWR-LAGN	Lagoons	0	0.35	0,255,0										X	X		X
C-SSWR-LEAC	Leach field	0	0.35	0,255,0										X	X		X
C-SSWR-MAIN-PIPE	Sanitary sewer piping	221300-905 Sanitary Waste	0.35	0,255,0	X				X	X				X	X		X
C-SSWR-NITF	Nitrification drain fields	0	0.35	0,255,0										X	X		X
C-SSWR-PLNT	Treatment plants	0	0.35	0,255,0										X	X		X
C-SSWR-SERV-PIPE	Sanitary sewer service piping	0	0.35	0,255,0										X	X		X
C-SSWR-SIGN	Surface markers/signs	0	0.35	0,255,0										X	X		X
C-SSWR-STNS-PUMP	Booster pump stations	0	0.35	0,255,0										X	X		X
C-SSWR-TANK	Septic tanks	0	0.35	0,255,0	X				X	X				X	X		X
Storm Sewer																	
C-STRM-AFFF	AFFF lagoon/detention pond	0	0.35	0,255,0										X	X		X
C-STRM-CHUT	Chutes and concrete erosion control structures	0	0.35	0,255,0										X	X		X
C-STRM-CULV	Culverts	334200-901 Culvert	0.35	0,255,0	X			X	X	X				X	X		X
C-STRM-DEVC	Downspouts, flumes, oil/water separators, and flap gates	0	0.35	0,255,0	X			X	X	X				X	X		X
C-STRM-FLOW	Flow direction arrows	0	0.35	0,255,0										X	X		X
C-STRM-FMON	Flow monitoring station	0	0.35	0,255,0										X	X		X
C-STRM-HWAL	Headwalls and endwalls	0	0.50	0,255,0	X			X	X	X				X	X		X
C-STRM-IDEN	Identifier tags, symbol modifier, and text	0	0.35	255,200,0	X			X	X	X				X	X		X
C-STRM-INLT	Inlets (curb, surface, and catch basins)	0	0.35	0,255,0										X	X		X
C-STRM-MAIN-PIPE	Storm sewer piping	221400-901 Drain - Storm	0.35	0,255,0	X			X	X	X				X	X		X
C-STRM-MHOL	Manholes	0	0.35	0,255,0	X									X	X		X
C-STRM-POND	Retention ponds, lagoons, watersheds, and basins	0	0.35	0,255,0										X	X		X
C-STRM-ROOF	Roof drain line	0	0.35	0,255,0										X	X		X
C-STRM-SERV-PIPE	Storm sewer service piping	0	0.35	0,255,0										X	X		X
C-STRM-SIGN	Surface markers/signs	0	0.35	0,255,0										X	X		X
C-STRM-STNS-PUMP	Pump stations	0	0.35	0,255,0	X					X				X	X		X
Sub-Surface Drainage																	
C-STRM-SUBS-CHIM	Subsurface chimney drain	0	0.35	0,255,0	X									X	X		X
C-STRM-SUBS-COLL	Subsurface drain collector	0	0.35	0,255,0	X									X	X		X
C-STRM-SUBS-DRAN	Subsurface drainage layer	0	0.35	0,255,0	X									X	X		X
C-STRM-SUBS-FILT	Subsurface drain filter	0	0.25	0,255,0	X									X	X		X
C-STRM-SUBS-INCP	Subsurface interceptor drain	0	0.35	0,255,0	X									X	X		X
C-STRM-SUBS-GEOX	Subsurface drain geotextile material and filter fabric	0	0.50	0,255,0	X									X	X		X
C-STRM-SUBS-PIPE	Subsurface drain piping	0	0.35	0,255,0	X									X	X		X
C-STRM-SUBS-SEPR	Subsurface drain separation layer	0	0.35	0,255,0	X									X	X		X
Survey																	
C-SURV-DATA	Survey data (benchmarks and horizontal control points or monuments)	0	0.35	255,0,255	X			X	X	X							
C-SURV-IDEN	Survey, baseline, and control line annotation	0	0.35	255,0,255	X			X	X	X							
C-SURV-LINE	Survey, baseline, and control lines	014200-907 MS2 Medium Dash	0.35	0,255,255	X			X	X	X							

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
		Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections
AIA Format	Level/Layer Description																
Taxiways																	
C-TAXI-CNTR	Centerlines	014200-914 Center Line	0.25	255,0,0									X				
C-TAXI-CNTR-IDEN	Centerline annotation	0	0.35	255,200,0									X				
C-TAXI-CNTR-MRKG	Centerline markings	0	0.25	255,0,0									X				
C-TAXI-EDGE	Edge markings	0	0.35	0,255,255									X				
C-TAXI-HOLD	Holding lines	0	0.35	255,200,0									X				
C-TAXI-IDEN	Taxiway - annotation	0	0.35	255,200,0									X				
C-TAXI-OTLN	Taxiway - outlines	0	0.35	0,255,255									X		X		X
C-TAXI-SHLC	Shoulders with annotation	0	0.35	255,200,0									X		X		X
Topography																	
C-TOPO-BNDY-EXTR	Surface exterior boundary	0	0.18	0,255,0	X	X	X		X	X	X		X				
C-TOPO-BNDY-INTR	Surface interior boundary	014200-907 MS2 Medium Dash	0.18	255,0,0	X	X	X		X	X	X		X				
C-TOPO-BKLN	Breaklines	014200-909 MS4 Dot Dash	0.50	255,255,255	X	X		X	X	X							
C-TOPO-BKLN-COMM	Subsurface utilities communications breakline	271500-905 Communication	0.50	255,255,255	X			X	X	X							
C-TOPO-BKLN-DOMW	Subsurface utilities water breakline	331100-903 Water Line	0.50	255,255,255	X			X	X	X							
C-TOPO-BKLN-ELEC	Subsurface utilities electric breakline	337100-901 Electrical Primary	0.50	255,255,255	X			X	X	X							
C-TOPO-BKLN-FUEL	Subsurface utilities liquid fuel breakline	231100-908 Gas - Liquefied Petroleum	0.50	255,255,255	X			X	X	X							
C-TOPO-BKLN-NGAS	Subsurface utilities natural gas breakline	231100-909 Gas - Low Pressure	0.50	255,255,255	X			X	X	X							
C-TOPO-BKLN-SSWR	Subsurface utilities sanitary sewer breakline	221300-905 Sanitary Waste	0.50	255,255,255	X			X	X	X							
C-TOPO-BKLN-STRM	Subsurface utilities storm sewer breakline	221400-901 Drain - Storm	0.50	255,255,255	X			X	X	X							
C-TOPO-BORE	Boring locations and text	0	0.35	255,0,255	X	X	X	X	X	X							
C-TOPO-COOR	Coordinate grid text annotation	0	0.35	0,165,124	X	X			X	X							
C-TOPO-COOR-LALO	Latitude and longitude grid ticks	0	0.25	0,255,0	X	X			X	X							
C-TOPO-COOR-STAT	State Plane coordinate ticks	0	0.25	0,255,0	X	X			X	X							
C-TOPO-COOR-UTM	UTM coordinate ticks	0	0.25	0,255,0	X	X			X	X							
C-TOPO-DTMO	DTM obscure area boundary	0	0.35	255,0,255	X	X	X		X	X	X		X				
C-TOPO-DTMP	DTM points	0	0.35	255,0,255	X	X	X		X	X	X		X				
C-TOPO-DTMT	DTM triangles	0	0.35	165,41,0	X	X	X		X	X	X		X				
C-TOPO-MAJR	Major contours	0	0.35	255,200,0	X	X	X	X	X	X							
C-TOPO-MAJR-IDEN	Major contours - annotation	0	0.35	255,200,0	X	X	X	X	X	X							
C-TOPO-MINR	Minor contours	0	0.25	0,255,0	X	X	X	X	X	X							
C-TOPO-MINR-IDEN	Minor contours - annotation	0	0.25	0,255,0	X	X	X	X	X	X							
C-TOPO-SHAP	Application generated shapes/lines	0	0.25	255,0,0	X	X	X	X	X	X	X	X	X	X			
C-TOPO-SHOR	Shorelines, land features, and references	0	0.35	0,255,255	X			X	X	X							

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
		Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections
AIA Format	Level/Layer Description																
C-TOPO-SLOP-FILL	Cut/fill slopes	0	0.35	255,200,0	X	X		X	X	X							
C-TOPO-SLOP-IDEN	Cut/fill slope, top/toe slope annotation	0	0.35	255,200,0	X	X		X	X	X							
C-TOPO-SLOP-TOPT	Top/toe slopes	0	0.35	255,0,255	X	X	X	X	X	X							
C-TOPO-SOUN	Soundings and overbanks	0	0.18	255,255,255	X			X	X	X							
C-TOPO-SPOT	Spot elevations	0	0.35	255,200,0	X	X	X	X				X					
C-TOPO-SURF-PERI	Surface perimeter	0	0.18	0,255,0	X	X	X		X	X	X		X				
C-TOPO-SURF-PONT	Surface feature points	0	0.25	255,255,255	X	X	X		X	X	X		X				
C-TOPO-SURF-VOID	Surface void region	0	0.18	255,0,0	X	X	X	X	X	X	X		X				
C-TOPO-WATR	Water level reference (LWRP, after-grading LWRP, SWL, etc.)	014200-908 MS3 Long Dash	0.50	255,255,255	X			X	X	X							
Airfield Traffic Areas																	
C-TRAF-IDEN	Airfield traffic area annotation	0	0.35	255,200,0									X				
C-TRAF-TYPA	Type A traffic area	014200-909 MS4 Dot Dash	0.50	0,255,255									X				
C-TRAF-TYPB	Type B traffic area	014200-911 MS6 Dash Dot Dot	0.50	0,255,255									X				
C-TRAF-TYPC	Type C traffic area	014200-906 MS1 Dot	0.50	0,255,255									X				
Water Supply																	
C-WATR-DEVC	Connectors, faucets, reducers, regulators, vents, intake points, taps, backflow preventers, and valves	0	0.35	0,255,255					X	X				X			
C-WATR-HYDT	Flushing hydrants	0	0.35	0,255,255					X	X				X			
C-WATR-IDEN	Identifier tags, symbol modifier, and text	0	0.35	255,200,0	X				X	X				X	X		X
C-WATR-MAIN-PIPE	Main domestic water piping	331100-903 Water Line	0.35	0,255,255	X				X	X				X	X		X
C-WATR-METR	Meters	0	0.35	0,255,255					X	X				X			
C-WATR-NPW~-PIPE	Non-potable water piping	402300-906 Non-Potable Water	0.35	0,255,255					X	X				X			
C-WATR-SERV-PIPE	Domestic water service piping	0	0.35	0,255,255					X	X				X			
C-WATR-SIGN	Surface markers/signs	0	0.35	0,255,255					X	X				X			
C-WATR-STNS-PUMP	Booster pump stations	0	0.35	0,255,255	X				X					X			
C-WATR-STNS-REDC	Pressure reducing stations	0	0.35	0,255,255	X				X					X			
C-WATR-TANK	Water storage tanks	0	0.35	0,255,255	X				X					X			
C-WATR-VALT	Valve/vent pits/vaults	0	0.35	0,255,255	X				X	X				X	X		X
C-WATR-WELL	Water well houses	0	0.35	0,255,255	X				X					X			
Wetlands																	
C-WETL-BOGS	Bogs	0	0.35	255,0,255			X										
C-WETL-FENS	Fens	0	0.35	255,200,0			X										
C-WETL-IDEN	Wetland annotation	0	0.35	255,200,0			X										
C-WETL-MRSH	Fresh water marshes	0	0.35	0,41,165			X										
C-WETL-MRSH-SALT	Tidal saltwater marshes	0	0.35	0,41,165			X										
C-WETL-MRSH-TIDL	Tidal freshwater marsh	0	0.35	0,41,165			X										
C-WETL-PCSN	Pocosins	0	0.35	255,0,255			X										
C-WETL-PHOL	Vernal pools, playas, prairie potholes, wet meadows, and wet prairies	0	0.35	255,0,255			X										
C-WETL-RPRN	Riparian forested wetlands	0	0.35	0,41,165			X										
C-WETL-SLGH	Sloughs	0	0.35	0,41,165			X										
C-WETL-SWMP	Swamps	0	0.35	0,41,165			X										
Elevations																	
C-ELEV-IDEN	Component identification numbers	0	0.35	255,200,0	X			X		X						X	
C-ELEV-OTLN	Outlines	0	0.35	255,0,255	X			X		X						X	

Discipline: Civil
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types													
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Site Plan	Grading Plan	Eco-Restoration Plan	Beach Renourishment Plan	Navigation/Dredging Plan	Flood Control Plan	Transportation Site Plan	Joint Layout Plan	Airfield Plan	Utilities Plan	Profiles	Elevations	X-Sections	Details
C-ELEV-PATT	Textures and hatch patterns	0	0.18	128,128,128	X			X		X						X		
C-ELEV-SIGN	Signage	0	0.35	255,0,0	X			X		X						X		
Sections																		
C-SECT-IDEN	Component identification numbers	0	0.35	255,200,0													X	
C-SECT-MBND	Material beyond section cut	0	0.18	0,0,255													X	
C-SECT-MCUT	Cuts through road surfaces, buildings, structures, fence lines, etc.	0	0.35	255,255,255													X	
C-SECT-PATT	Textures and hatch patterns	0	0.18	128,128,128													X	
Details																		
C-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255														X

Discipline: Landscape
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types		
		Line Style	Line Width (mm)	RGB Value	Landscape Plan	Irrigation Plan	Details
AIA Format	Level/Layer Description						
General Information		See Discipline: General (page A3) for a list of available Annotation layers/levels					
Irrigation System							
L-IRRG-COVR	Irrigation coverage, spray distribution patterns	0	0.18	124,0,165		X	
L-IRRG-EQPM	Equipment (e.g., controllers, valves, RPBP's, etc.)	0	0.35	124,0,165		X	
L-IRRG-HEAD	Irrigation heads, bubblers, and drip irrigation emitters	0	0.25	124,0,165		X	
L-IRRG-IDEN	Annotation	0	0.35	255,200,0		X	
L-IRRG-PIPE	Piping	328100-901 Lawn Sprinkler	0.35	124,0,165		X	
L-IRRG-SPKL	Sprinklers	0	0.35	124,0,165		X	
Plant and Landscape Material							
L-PLNT-BEDS	Planting beds (perennial and annual beds)	0	0.35	255,0,255	X		
L-PLNT-BUSH	Bushes and shrubs (e.g., evergreen, deciduous, etc.)	0	0.50	103,165,82	X		
L-PLNT-BUSH-LINE	Bush and shrub line	0	0.50	103,165,82	X		
L-PLNT-CTNR	Containers or planters	0	0.25	255,0,0	X		
L-PLNT-GCVR	Groundcover and vines	0	0.35	41,165,0	X		
L-PLNT-IDEN	Annotation	0	0.35	255,0,255	X		
L-PLNT-MLCH	Mulches - organic and inorganic	0	0.25	0,255,0	X		
L-PLNT-PLNT	Planting plants (e.g., ornamental annuals and perennials)	0	0.50	103,165,82	X		
L-PLNT-SHAD	Shadow areas	0	0.18	0,0,255	X		
L-PLNT-SPRG	Sprigs	0	0.25	0,255,0	X		
L-PLNT-TREE	Trees (e.g., evergreen, deciduous, etc.)	0	0.50	103,165,82	X		
L-PLNT-TREE-LINE	Tree line	329300-901 Tree Line	0.50	103,165,82	X		
L-PLNT-TURF	Lawn areas (turfing limits)	0	0.50	165,103,82	X		
Site Improvements							
L-SITE-BRDG	Bridges (pedestrian)	0	0.35	165,41,0	X		
L-SITE-DECK	Decks	0	0.35	165,0,82	X		
L-SITE-FENC	Fencing	323100-901 Fence	0.35	255,200,0	X		
L-SITE-FURN	Furnishings	0	0.50	0,255,255	X		
L-SITE-IDEN	Annotation	0	0.35	255,0,255	X		
L-SITE-PLAY	Play structures	0	0.35	255,200,0	X		
L-SITE-POOL	Pools and spas	0	0.35	0,41,165	X		
L-SITE-ROCK	Boulders and cobble	0	0.25	255,0,0	X		
L-SITE-RTWL	Retaining walls	0	0.50	0,255,255	X		
L-SITE-SPRT	Sports fields	0	0.35	255,200,0	X		
L-SITE-SWLK	Sidewalks and steps	0	0.35	255,255,255	X		
Detail Information							
L-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255			X

Discipline: Structural
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types																	
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Vertical Const			Bridges			Hydraulic Structures				Flood Control/Misc. Small Civil Works Structures	Sections	Details					
					Foundation Plan	Framing Plan	Column Plan	Substructure	Decks	Superstructure	Locks	Dams	Hydraulic Steel Structures									
General Information		See Discipline: General (page A3) for a list of available Annotation layers/levels																				
Access																						
S-ACCS-ADIT	Adits in galleries and passages	0	0.35	255,159,127							X	X		X								
S-ACCS-CHAM	Chambers	0	0.35	165,41,0							X	X		X								
S-ACCS-EVTR	Elevators	0	0.35	0,165,165		X																
S-ACCS-GLRY	Galleries, cross overs, trenches, etc.	0	0.35	255,127,0	X						X			X								
S-ACCS-HTCH	Hatches	0	0.25	165,82,0	X				X				X	X								
S-ACCS-LADD	Ladders and ladder safety devices	0	0.35	0,41,165	X	X		X	X	X	X	X		X								
S-ACCS-MHOL	Manholes	0	0.35	103,165,82				X	X					X								
S-ACCS-MISC	Miscellaneous access	0	0.35	103,165,82				X	X					X								
S-ACCS-STRS	Stairs	0	0.35	82,165,165	X			X		X	X	X		X								
S-ACCS-STRS-FRMG	Stair framing	0	0.35	63,127,127		X		X		X	X	X		X								
S-ACCS-TUNL	Tunnels	0	0.35	165,124,0	X			X			X	X		X								
Armor																						
S-ARMR-CRNR	Corner protection, corner cap casting	0	0.25	82,145,165							X											
S-ARMR-LINR	Protective liner (used for walls, culverts, etc.)	0	0.25	0,165,124							X											
S-ARMR-MISC	Miscellaneous armor	0	0.25	82,145,165							X											
S-ARMR-WALL	Wall armor	0	0.25	82,145,165							X											
Beams																						
S-BEAM-CNTR	Beam centerlines	014200-914 Center Line	0.25	127,0,127		X				X	X	X	X	X								
S-BEAM-PRIM	Continuous beam or primary beam of two-way beam system	0	0.50	255,127,255		X				X	X	X	X	X								
S-BEAM-RBAR	Beam rebar	0	0.70	0,0,255		X				X	X	X	X	X								
S-BEAM-SECD	Girders or secondary beams of two-way beam system	0	0.35	165,0,165		X				X	X	X	X	X								
Bracing																						
S-BRCG-DIA~	Diagonal bracing	0	0.35	127,159,255		X				X		X	X									
S-BRCG-HORZ	Horizontal bracing	0	0.35	127,159,255		X				X		X	X									
S-BRCG-VERT	Vertical bracing	0	0.35	0,95,127		X				X		X	X									
Bridges																						
S-BRDG-ABUT	Abutments	0	0.50	103,165,82				X														
S-BRDG-ABUT-RBAR	Abutment rebar	0	0.70	0,0,255				X														
S-BRDG-BEAR	Bridge bearing	0	0.35	0,82,165				X		X												
S-BRDG-BEAR-CNTR	Bridge bearing centerlines	014200-914 Center Line	0.25	127,0,127				X		X												
S-BRDG-BENT	Bent cap	0	0.35	0,255,0				X														
S-BRDG-BENT-CNTR	Centerline of bents	014200-914 Center Line	0.25	127,0,127				X														
S-BRDG-BENT-RBAR	Bent cap rebar	0	0.70	0,0,255				X														
S-BRDG-CURB	Curbs/sidewalks on structure	0	0.35	255,200,0						X												
S-BRDG-DIAP	Diaphragms	0	0.35	0,0,255						X												
S-BRDG-DIAP-RBAR	Diaphragm rebar	0	0.70	0,0,255						X												
S-BRDG-DRNS	Drains	0	0.25	165,41,0					X	X												
S-BRDG-FENC	Fencing rails, fabric, supports, and gates	0	0.25	0,255,0						X												
S-BRDG-FEND	Fenders	0	0.35	95,127,63						X												
S-BRDG-GIRD	Girders	0	0.35	127,255,0						X												

Discipline: Structural
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Vertical Const			Bridges			Hydraulic Structures				Flood Control/Misc. Small Civil Works Structures	Sections	Details
					Foundation Plan	Framing Plan	Column Plan	Substructure	Decks	Superstructure	Locks	Dams	Hydraulic Steel Structures				
S-BRDG-GIRD-CNTR	Girder centerline	014200-914 Center Line	0.25	127,0,127						X							
S-BRDG-HEAD	Headers	0	0.35	0,165,82						X							
S-BRDG-PIER	Piers	0	0.50	103,165,82				X									
S-BRDG-STRG	Stringers	0	0.35	165,0,165						X							
Columns																	
S-COLS-CNTR	Column centerlines/working lines	014200-914 Center Line	0.25	255,191,0				X	X								
S-COLS-POST	Short columns	0	0.35	47,76,38				X									
S-COLS-PRIM	Primary columns	0	0.35	0,255,0				X	X								
S-COLS-RBAR	Column rebar	0	0.70	0,0,255				X	X								
S-COLS-SECD	Secondary columns	0	0.35	31,127,0				X	X								
Decking																	
S-DECK-BRDG	Bridge deck	0	0.35	165,41,0					X								
S-DECK-BRDG-RBAR	Bridge deck rebar	0	0.70	0,0,255					X								
S-DECK-FLOR	Floor deck	0	0.25	127,255,159		X											
S-DECK-FLOR-OPNG	Floor deck openings	014200-907 MS2 Medium Dash	0.25	255,0,0		X											
S-DECK-RBAR	Deck rebar	0	0.70	0,0,255		X											
S-DECK-ROOF	Roof deck	0	0.25	124,165,0		X											
S-DECK-ROOF-OPNG	Roof deck openings	0	0.25	255,0,0		X											
Equipment Pads and Foundations																	
S-PADS-EQPM	Equipment pads	0	0.35	255,159,127	X						X	X					
Erosion Control																	
S-EROS-BARR	Vapor/capillary water barriers	0	0.25	165,82,124	X						X	X		X			
S-EROS-GABN	Gabions	0	0.25	255,127,159							X	X		X			
S-EROS-PVMT	Slope paving	0	0.25	255,127,159							X	X		X			
S-EROS-RRAP	Riprap, stone protection, jetties, breakwaters	0	0.25	165,0,82							X	X		X			
Fasteners & Connections																	
S-FSTN-ABLT	Anchor bolts	0	0.25	255,127,0	X	X		X	X	X	X	X	X	X			
S-FSTN-MISC	Fasteners and connections (non-specific)	0	0.25	165,82,82		X		X	X	X	X	X	X	X			
S-FSTN-PL~~	Connection plates (shear plates, gusset plates, etc.)	0	0.25	165,82,82		X		X	X	X	X	X	X	X			
Foundation																	
S-FNDN-ANCH	Anchor piles, blocks, strands, deadmen, soil/rock anchors	0	0.35	165,124,0	X			X			X	X		X			
S-FNDN-BLRD	Bollards, bollard foundations	0	0.35	165,124,0	X			X			X	X		X			
S-FNDN-CNTR	Foundation centerlines	014200-914 Center Line	0.25	127,95,0	X			X			X	X		X			
S-FNDN-DRNS	Foundation drainage features and objects	0	0.25	165,145,82	X			X			X	X		X			
S-FNDN-FTNG	Footings	0	0.35	165,124,0	X			X			X	X		X			
S-FNDN-FTNG-RBAR	Footing rebar	0	0.70	0,0,255	X			X			X	X		X			
S-FNDN-GRBM	Grade beams	0	0.50	165,165,0	X												
S-FNDN-PCAP	Pile caps	0	0.35	165,165,0							X	X		X			
S-FNDN-PEDS	Foundation pedestals/pads	0	0.35	255,223,127	X			X			X	X		X			
S-FNDN-PIER	Piers, drilled shafts, caissons	0	0.50	82,165,0	X						X	X		X			
S-FNDN-PILE	Piles	0	0.35	255,191,0	X			X			X	X		X			

Discipline: Structural
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types											
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Vertical Const			Bridges			Hydraulic Structures				Sections	Details
					Foundation Plan	Framing Plan	Column Plan	Substructure	Decks	Superstructure	Locks	Dams	Hydraulic Steel Structures	Flood Control/Misc. Small Civil Works Structures		
S-FNDN-PL~~	Column base plates	0	0.25	165,82,82	X			X			X	X		X		
S-FNDN-RIBS	Ribbed mat foundation	0	0.35	165,165,0	X						X	X		X		
S-FNDN-TRMT	Foundation treatment (grouting)	0	0.35	255,255,127	X			X			X	X		X		
S-FNDN-TUNL	Service tunnel/duct banks	0	0.35	165,124,0	X						X	X		X		
Gates																
S-GATE-ANCH	Gate anchorages	0	0.25	255,127,0									X	X		
S-GATE-ANCH-DEAD	Dead man anchorage	0	0.25	255,127,0									X			
S-GATE-ARMS	Arm	0	0.35	127,159,255									X			
S-GATE-AXIS	Gate axis and centerlines	014200-914 Center Line	0.25	127,0,127		X				X	X	X	X	X		
S-GATE-BLKH	Bulkhead	0	0.35	0,0,255									X			
S-GATE-BLKH-NDLB	Bulkhead needles beam	0	0.35	165,0,165									X			
S-GATE-BLKH-NDLS	Bulkhead needles	0	0.35	165,82,82									X			
S-GATE-CONN	Gate connects, links	0	0.35	255,127,0									X	X		
S-GATE-DIA~	Diagonals, gussets, sleeve nut	0	0.35	165,82,82									X			
S-GATE-DIA~-CHAN	Diagonal channels	0	0.35	165,82,82									X			
S-GATE-DIA~-GUST	Diagonal gusset plate	0	0.35	165,82,82									X			
S-GATE-DIA~-SUPT	Diagonal gusset plate support	0	0.35	165,82,82									X			
S-GATE-DIAP	Diaphragms	0	0.35	0,0,255									X			
S-GATE-FEND	Gate fenders	0	0.35	95,127,63									X			
S-GATE-FLNG	Flange	0	0.35	0,0,255									X			
S-GATE-FLNG-DNST	Downstream flange	0	0.35	0,0,255									X			
S-GATE-FLNG-GIRD	Girder flange	0	0.35	255,127,0									X			
S-GATE-FLNG-UPST	Upstream flange	0	0.35	0,0,255									X			
S-GATE-GIRD-WEB~	Girder web plates	0	0.35	0,41,165									X			
S-GATE-GUDG	Gudgeon	0	0.35	255,0,255									X			
S-GATE-GUDG-HOOD	Gudgeon hood	0	0.35	255,0,255									X			
S-GATE-GUDG-HUB~	Gudgeon hub	0	0.35	255,0,255									X			
S-GATE-GUDG-PIN~	Gudgeon pin	0	0.35	255,0,255									X			
S-GATE-GUDG-STIF	Gudgeon (hood) stiffener	0	0.35	255,0,255									X			
S-GATE-GUDG-SUPT	Gudgeon (pin) support	0	0.35	255,0,255									X			
S-GATE-HORZ	Horizontal rolled shapes	0	0.35	255,127,255									X			
S-GATE-ICST	Intercostals	0	0.35	0,165,165									X			
S-GATE-JACK	Gate jack	0	0.35	0,0,255									X			
S-GATE-JACK-HORZ	Gate jack - horizontal	0	0.35	0,0,255									X			
S-GATE-JACK-VERT	Gate jack - vertical	0	0.35	0,0,255									X			
S-GATE-LIFT	Lifting mechanism	0	0.35	0,124,165									X	X		
S-GATE-LTCH	Latching device	0	0.35	0,0,255									X			
S-GATE-LTCH-BOTM	Latching device - bottom	0	0.35	0,0,255									X			
S-GATE-LTCH-TOP~	Latching device - top	0	0.35	0,0,255									X			
S-GATE-LUBE	Lubrication system	0	0.25	0,0,255									X			
S-GATE-MISC	Gates incidental to structure	0	0.25	0,0,255							X	X		X		
S-GATE-MITR-ASSY	Miter guide assembly	0	0.35	0,82,165									X			
S-GATE-PIN~	Gate pins	0	0.25	255,127,0									X			
S-GATE-PNTL	Pintle ball, bushing & base	0	0.35	255,127,0									X			
S-GATE-PNTL-CAST	Pintle casting	0	0.35	124,165,0									X			
S-GATE-QOIN	Quoin	0	0.35	0,82,165									X			

Discipline: Structural
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types											
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Vertical Const			Bridges			Hydraulic Structures			Flood Control/Misc. Small Civil Works Structures	Sections	Details
					Foundation Plan	Framing Plan	Column Plan	Substructure	Decks	Superstructure	Locks	Dams	Hydraulic Steel Structures			
S-GATE-QOIN-FLNG	Quoin flange	0	0.35	0,82,165									X			
S-GATE-QOIN-MITR	Quion, miter	0	0.35	0,82,165									X			
S-GATE-QOIN-STIF	Quoin stiffener	0	0.35	0,82,165									X			
S-GATE-QOIN-TRST	Quoin thrust plate	0	0.35	0,82,165									X			
S-GATE-QOIN-WALL	Quoin, wall	0	0.35	0,82,165									X			
S-GATE-QOIN-WEB~	Quoin web	0	0.35	0,82,165									X			
S-GATE-RAIL	Rails and guides	0	0.35	0,82,165									X	X		
S-GATE-SEAL	Gate seal	0	0.35	165,0,82										X		
S-GATE-SEAL-HORZ	Gate seal - horizontal	0	0.35	165,0,82										X		
S-GATE-SEAL-VERT	Gate seal - vertical	0	0.35	165,0,82										X		
S-GATE-SHOE	Gate shoe	0	0.35	0,124,165										X		
S-GATE-SKIN	Skin plates	0	0.25	0,124,165										X		
S-GATE-STIF	Stiffener	0	0.35	0,0,255										X		
S-GATE-STIF-LONG	Stiffener - longitudinal	0	0.35	0,0,255										X		
S-GATE-STIF-TRAN	Stiffener - transverse	0	0.35	0,0,255										X		
S-GATE-STOP	Stoplogs	0	0.35	165,124,0										X	X	
S-GATE-THBL	Thimble	0	0.25	255,127,159										X	X	
S-GATE-TRST	Thrust plate	0	0.25	0,165,124										X		
S-GATE-TRUN	Trunion	0	0.35	255,0,255										X		
S-GATE-VALV	Valves (general shape)	0	0.35	124,0,165										X		
S-GATE-VERT	Rolled vertical shapes	0	0.35	0,95,127										X		
S-GATE-WALK	Walkway	0	0.35	0,165,165										X		
S-GATE-WALK-FRMG	Walkway - framing	0	0.35	0,165,165										X		
S-GATE-WALK-GRTG	Walkway - grating	0	0.35	0,165,165										X		
S-GATE-WALK-SUPT	Walkway - support	0	0.35	0,165,165										X		
S-GATE-WEB~	Web	0	0.35	0,41,165										X		
Grade Lines																
S-GRLN-SURF-E	Existing ground	014200-908 MS3 Long Dash	0.25	255,191,127	X			X			X	X		X		
S-GRLN-SURF-N	Finished grade	0	0.35	165,82,0	X			X			X	X		X		
S-WATR-SURF	Water surface	0	0.25	127,159,255	X			X			X	X		X		
Grids																
S-GRID-HORZ	Grid lines (horizontal)	014200-912 MS7 Long Dash Short Dash	0.18	255,0,255			X		X	X	X	X	X	X		
S-GRID-HORZ-IDEN	Column I.D. tags (horizontal)	0	0.25	255,0,255			X		X	X	X	X	X			
S-GRID-VERT	Grid lines (vertical)	014200-912 MS7 Long Dash Short Dash	0.18	255,0,255			X		X	X	X	X	X	X		
S-GRID-VERT-IDEN	Column I.D. tags (vertical)	0	0.25	255,0,255			X		X	X	X	X	X			
Hydraulic Features																
S-HYDR-AXIS	Axis of structure	014200-909 MS4 Dot Dash	0.18	124,0,165								X				

Model File Layers/Levels

Vertical Const			Bridges			Hydraulic Structures					
Foundation Plan	Framing Plan	Column Plan	Substructure	Decks	Superstructure	Locks	Dams	Hydraulic Steel Structures	Flood Control/Misc. Small Civil Works Structures	Sections	Details
						X	X		X		
							X		X		
						X	X		X		
						X	X		X		
							X		X		
							X		X		
						X	X		X		
							X		X		
							X		X		
						X	X		X		
							X		X		
							X		X		
							X		X		
							X		X		
X	X			X	X	X	X		X		
X	X			X		X	X		X		
X	X			X	X	X	X		X		
	X										
X				X		X	X		X		
	X										
	X										
	X										
	X										
X	X		X	X	X	X	X	X	X		
					X	X	X	X	X		
						X	X		X		
						X	X		X		
X	X		X	X	X	X	X	X	X		
							X		X		
									X		
	X		X	X		X	X	X	X		
			X	X	X	X	X	X	X		
X	X	X	X	X	X	X	X		X		
				X	X			X			
				X	X			X			

Discipline: Structural

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types											
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Vertical Const			Bridges			Hydraulic Structures			Flood Control/Misc. Small Civil Works Structures	Sections	Details
					Foundation Plan	Framing Plan	Column Plan	Substructure	Decks	Superstructure	Locks	Dams	Hydraulic Steel Structures			
S-OTLN-BLDG	Building outline	014200-911 MS6 Dash Dot Dot	0.25	0,0,255	X	X	X				X	X		X		
S-OTLN-FLOOR	Floor outline	014200-911 MS6 Dash Dot Dot	0.25	0,0,255	X	X	X				X	X				
S-OTLN-OPNG	Openings	014200-911 MS6 Dash Dot Dot	0.25	0,0,255	X	X	X				X	X	X	X		
S-OTLN-ROOF	Roof	014200-911 MS6 Dash Dot Dot	0.25	0,0,255	X	X	X									
S-OTLN-STRC	Misc. structures	014200-911 MS6 Dash Dot Dot	0.25	0,0,255	X			X	X	X	X	X	X	X		
Safety Features																
S-SAFE-FENC	Fencing rails, fabric, supports, and gates	0	0.25	0,255,0					X		X	X		X		
S-SAFE-GRAL	Guardrails	0	0.35	124,165,0					X	X	X	X		X		
S-SAFE-HRAL	Handrails, railings	0	0.25	0,255,0					X	X	X	X	X	X		
S-SAFE-PRPT	Parapet/jersey barrier	0	0.50	0,255,0					X	X	X			X		
S-SAFE-PRPT-RBAR	Parapet/jersey barrier rebar	0	0.70	0,0,255					X	X	X			X		
S-SAFE-WATR	Waterway safety barriers	0	0.35	0,255,0					X		X	X		X		
Signs																
S-SIGN-BUOY	Sign buoys	0	0.35	165,0,41								X				
S-SIGN-EXTN	Extrusions	0	0.35	165,0,165		X										
S-SIGN-FRMG	Framing and connections	0	0.35	0,255,0		X										
S-SIGN-GAGE	Staff gages	0	0.35	165,0,82							X	X				
S-SIGN-PANL	Sign panels	0	0.35	165,0,82		X				X	X					
S-SIGN-SPRT	Supports	0	0.35	0,0,255		X										
S-SIGN-TEXT	Signage text	0	0.35	165,0,124		X										
Slabs																
S-SLAB-APPR	Approach slab	0	0.35	255,223,127						X						
S-SLAB-APPR-RBAR	Approach slab rebar	0	0.70	0,0,255						X						
S-SLAB-EDGE	Edge of slab	0	0.35	255,223,127	X				X	X	X	X		X		
S-SLAB-OPNG	Openings (and depressions)	014200-907 MS2 Medium Dash	0.25	255,0,0	X				X	X	X	X		X		
S-SLAB-RBAR	Slab rebar	0	0.70	0,0,255	X				X	X	X	X		X		
S-SLAB-SECD	Second pour, slab cap	0	0.35	255,223,127	X				X	X	X	X		X		
S-SLAB-SILL	Sill	0	0.35	255,223,127	X				X	X	X	X		X		
Stiffeners																
S-STIF-LONG	Stiffeners - longitudinal	0	0.35	0,255,0		X				X			X			
S-STIF-TRAV	Stiffeners - transverse	0	0.35	0,255,0		X				X			X			
Trusses																
S-TRUS-BRGX	Truss bridging	0	0.35	41,165,0		X				X		X				
S-TRUS-PRIM	Primary trusses	0	0.50	0,255,255		X				X		X				

Discipline: Structural

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types											
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Vertical Const			Bridges			Hydraulic Structures			Flood Control/Misc. Small Civil Works Structures	Sections	Details
					Foundation Plan	Framing Plan	Column Plan	Substructure	Decks	Superstructure	Locks	Dams	Hydraulic Steel Structures			
S-TRUS-SECD	Secondary trusses	0	0.35	255,0,255		X				X		X				
Walls																
S-WALL-ABUT	Abutments	0	0.35	103,165,82				X				X		X		
S-WALL-CELL	Cell	0	0.35	165,165,82							X					
S-WALL-COFF	Cutoff wall	0	0.35	255,127,0				X			X	X		X		
S-WALL-CURT	Curtain/breast wall	0	0.35	82,165,0				X				X		X		
S-WALL-FULL	Wall going to the top of the structure	0	0.35	0,255,0		X					X			X		
S-WALL-GARD	Guard/guide walls	0	0.35	82,165,0							X	X		X		
S-WALL-LOAD	Load bearing walls	0	0.35	0,255,0	X	X										
S-WALL-MONO	Wall monoliths	0	0.35	0,255,0							X	X				
S-WALL-MSE~	Mechanically stabilized earth (MSE) wall	0	0.35	82,165,0				X								
S-WALL-NONL	Non-load bearing walls	0	0.35	82,165,0	X	X										
S-WALL-PCST	Pre-cast concrete walls	0	0.35	0,76,57	X	X										
S-WALL-PRHT	Wall that does not reach to the top of the structure	0	0.35	82,165,0		X					X			X		
S-WALL-RBAR	Wall rebar	0	0.70	0,0,255							X	X		X		
S-WALL-RTWL	Retaining wall (flood walls, wingwalls, etc.)	0	0.35	82,165,0				X				X		X		
S-WALL-SHEA	Shear walls	0	0.35	127,255,159	X	X										
S-WALL-STUD	Stud walls	0	0.35	165,124,0	X	X										
Waterway Specialties																
S-WWAY-DLPH	Dolphins (associated with but not part of bridges, locks and guidewalls)	0	0.35	0,165,124				X			X	X		X		
S-WWAY-FEND	Fenders	0	0.35	95,127,63				X			X	X		X		
S-WWAY-MOOR	Mooring cells	0	0.35	0,124,165				X			X	X		X		
Sections																
S-SECT-IDEN	Component identification numbers	0	0.35	255,200,0											X	
S-SECT-MBND	Material beyond section cut	0	0.18	0,0,255											X	
S-SECT-MCUT	Material cut by section	0	0.35	255,255,255											X	
S-SECT-PATT	Textures and hatch patterns	0	0.18	128,128,128											X	
Details																
S-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255												X

Discipline: Architectural

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types							
		Line Style	Line Width (mm)	RGB Value	Floor Plan	Reflected Ceiling Plan	Roof Plan	Equipment Plan	Area Calculations/Occupancy Plan	Elevations	Sections	Details
AIA Format	Level/Layer Description											
General Information	See Discipline: General (page A3) for a list of available Annotation layers/levels											
Area Information												
A-AREA-IDEN	Room numbers, tenant identifications, area calculations	0	0.35	255,200,0					X			
A-AREA-LINE	Architectural area calculation boundary lines	0	0.50	0,255,255					X			
A-AREA-OCCP	Occupant or employee names	0	0.35	255,200,0					X			
A-AREA-PATT	Area cross hatching	0	0.18	128,128,128					X			
Barrier												
A-BARR-AIR~	Air barrier	0	0.25	0,0,255	X							
Ceiling Information												
A-CLNG-ACCS	Access panels	0	0.35	255,0,255		X						
A-CLNG-CTLJ	Ceiling control joints	0	0.35	255,200,0		X						
A-CLNG-GRID	Ceiling grid	0	0.25	255,0,0		X						
A-CLNG-LITE	Specialty ceiling lights not shown on the Electrical Lighting Plan	0	0.50	0,255,255		X						
A-CLNG-OPNG	Openings, ceiling/roof penetrations (see also A-FLOR-OVHD in Floor Plan model file)	0	0.18	128,128,128		X						
A-CLNG-PATT	Ceiling patterns	0	0.18	128,128,128		X						
A-CLNG-SFFT	Soffits	0	0.25	255,200,0		X						
A-CLNG-SUSP	Suspended elements, ceiling mounted specialties (e.g., clocks, fans, etc.)	0	0.18	0,0,255		X						
A-CLNG-TEES	Main tees	0	0.18	0,0,255		X						
Columns												
A-COLS-ENCL	Column enclosures/fire protection	0	0.50	0,255,255	X							
Doors												
A-DOOR-FULL	Full height (to ceiling) door: swing and leaf	0	0.25	0,255,0	X							
A-DOOR-IDEN	Door number and symbol, hardware group, etc.	0	0.25	0,255,0	X							
A-DOOR-PRHT	Partial height door: swing and leaf	0	0.35	255,0,255	X							
A-DOOR-SYMB	Miscellaneous door symbols (e.g., overhead, bifold, pocket, etc.)	0	0.25	255,0,0	X							
Equipment												
A-EQPM-ACCS	Equipment access	0	0.35	255,0,255				X				
A-EQPM-FIXD	Fixed equipment	0	0.50	0,255,255				X				
A-EQPM-IDEN	Equipment identification numbers	0	0.35	255,0,255				X				
A-EQPM-MOVE	Moveable equipment	0	0.35	255,0,255				X				
A-EQPM-OVHD	Overhead, ceiling mounted, or suspended equipment	0	0.35	255,0,255				X				
Floor Information												
A-FLOR-CSWK	Casework (manufactured cabinets)	0	0.25	0,255,0	X							
A-FLOR-EVTR	Elevator cars and equipment	0	0.35	255,200,0	X							
A-FLOR-FIXT	Plumbing fixtures	0	0.25	223,127,255	X							
A-FLOR-FTPT	Floor/building footprint	0	0.70	0,255,255	X							
A-FLOR-HRAL	Stair and balcony handrails, guard rails	0	0.25	255,0,0	X							
A-FLOR-IDEN	Room name, space identification text	0	0.35	0,255,0	X							
A-FLOR-LEVL	Level changes, shafts, ramps, pits, breaks in construction, and depressions	0	0.35	255,0,255	X							
A-FLOR-NUMB	Room/space identification number and symbol	0	0.35	0,255,0	X							
A-FLOR-OVHD	Overhead items (overhangs, etc.)	014200-907 MS2 Medium Dash	0.18	128,128,128	X							
A-FLOR-PATT	Paving, tile, carpet patterns	0	0.18	128,128,128	X							
A-FLOR-PERI	Room perimeter shape (interior walls)	0	0.35	255,200,0	X							
A-FLOR-RAIS	Access (raised) flooring	0	0.25	0,255,0	X							
A-FLOR-SIGN	Signage	0	0.25	255,0,0	X							

Discipline: Architectural

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types							
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Floor Plan	Reflected Ceiling Plan	Roof Plan	Equipment Plan	Area Calculations/Occupancy Plan	Elevations	Sections	Details
A-FLOR-SPCL	Architectural specialties (e.g., toilet room accessories, display cases)	0	0.25	0,255,0	X							
A-FLOR-STRS	Stair risers/treads, escalators, ladders	0	0.25	255,0,0	X							
A-FLOR-TPTN	Toilet partitions	0	0.25	255,0,0	X							
A-FLOR-WDWK	Architectural woodwork (field built cabinets and counters)	0	0.25	0,255,0	X							
Windows												
A-GLAZ-FULL	Full height glazed walls and partitions (see A-WALL-CURT for curtain walls)	0	0.25	255,0,0	X							
A-GLAZ-IDEN	Window number and symbol	0	0.35	0,255,0	X							
A-GLAZ-PRHT	Windows and partial height glazed partitions	0	0.25	255,0,0	X							
A-GLAZ-SILL	Window sills	0	0.18	0,0,255	X							
Roof Information												
A-ROOF-CRKT	Crickets flow arrows flow info	0	0.25	255,0,0			X					
A-ROOF-DRNS	Roof drains	0	0.25	255,0,0			X					
A-ROOF-EXPJ	Expansion joints	0	0.18	0,0,255			X					
A-ROOF-GUTR	Roof internal gutters	0	0.18	128,128,128			X					
A-ROOF-HRAL	Stair handrails, nosings, guard rails	0	0.18	0,0,255			X					
A-ROOF-LEVL	Level changes	0	0.18	0,0,255			X					
A-ROOF-OTLN	Roof perimeter/edge, roof geometry	0	0.35	255,0,255			X					
A-ROOF-PATT	Roof surface patterns, hatching	0	0.18	128,128,128			X					
A-ROOF-PRPT	Parapet walls and wall caps	0	0.35	255,200,0			X					
A-ROOF-SKLT	Skylights	014200-907 MS2 Medium Dash	0.18	128,128,128			X					
A-ROOF-SPCL	Roof specialties, accessories, access hatches, dormers	0	0.25	0,255,0			X					
A-ROOF-STRS	Stair risers/treads, ladders	0	0.18	0,0,255			X					
A-ROOF-WALK	Roof walkways	0	0.25	0,255,0			X					
Walls												
A-WALL-CAVI	Cavity wall lines	0	0.18	128,128,128	X							
A-WALL-CNTR	Wall centerlines	014200-914 Center Line	0.25	0,0,255	X							
A-WALL-CURT	Curtain wall mullions and glass	0	0.25	255,0,0	X							
A-WALL-FIRE	Fire wall designators (patterning)	0	0.35	255,200,0	X							
A-WALL-FULL-EXTR	Exterior full height walls	0	0.35	255,200,0	X							
A-WALL-FULL-INTR	Interior full height walls	0	0.25	0,255,0	X							
A-WALL-HEAD	Door and window headers	0	0.25	255,0,0	X							
A-WALL-IDEN	Wall identification/type text or tags	0	0.35	0,255,0	X							
A-WALL-JAMB	Door and window jambs	0	0.25	255,0,0	X							
A-WALL-MESH	Mesh or wire wall	0	0.18	0,0,255	X							
A-WALL-MOVE	Moveable walls/partitions	0	0.18	0,0,255	X							
A-WALL-OPNG-LVRS	Louvers	0	0.25	255,0,0	X							
A-WALL-PATT	Wall insulation, hatching, and fill	0	0.18	128,128,128	X							
A-WALL-PRHT	Partial height walls (do not appear on Reflected Ceiling Plan)	0	0.25	255,0,0	X							
A-WALL-SPCL	Wall-hung/attached specialties (e.g., fixtures, grab bars (incl. handicap), telephone booths)	0	0.25	255,0,0	X							
Elevations												
A-ELEV-IDEN	Component identification numbers	0	0.35	255,200,0						X		
A-ELEV-OTLN	Outlines	0	0.50	0,255,255						X		
A-ELEV-PATT	Textures and hatch patterns	0	0.18	128,128,128						X		
Sections												

Discipline: Architectural
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types							
		Line Style	Line Width (mm)	RGB Value	Floor Plan	Reflected Ceiling Plan	Roof Plan	Equipment Plan	Area Calculations/Occupancy Plan	Elevations	Sections	Details
AIA Format	Level/Layer Description											
A-SECT-IDEN	Component identification numbers	0	0.35	255,200,0							X	
A-SECT-MBND	Material beyond section cut	0	0.18	0,0,255							X	
A-SECT-MCUT	Material cut by section	0	0.35	255,255,255							X	
A-SECT-PATT	Textures and hatch patterns	0	0.18	128,128,128							X	
Detail Information												
A-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255								X

Discipline: Interiors
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types					
		Line Style	Line Width (mm)	RGB Value	Furniture Plan	System Furniture Plan	Signage Placement Plan	Floor Patterns	Elevations	Details
AIA Format	Level/Layer Description									
General Information		See Discipline: General (page A3) for a list of available Annotation layers/levels								
Carpet/Carpet Tile										
I-CRPT-ROLL-ACNT	Carpet (roll goods) - accent color	0	0.35	255,0,0				X		
I-CRPT-ROLL-FILD	Carpet (roll goods) - field color	0	0.35	191,255,0				X		
I-CRPT-TILE-ACN1	Carpet tile - accent color	0	0.35	28,0,38				X		
I-CRPT-TILE-ACN2	Carpet tile - accent color	0	0.35	76,0,38				X		
I-CRPT-TILE-FILD	Carpet tile - field color	0	0.35	95,0,127				X		
Equipment										
I-EQPM-ACCS	Equipment access	014200-907 MS2 Medium Dash	0.18	128,128,128	X					
I-EQPM-CHLD	Child development (play toys, teaching rugs, play forms)	0	0.35	255,200,0	X					
I-EQPM-COPY	Copiers, fax machines, office equipment	0	0.35	255,200,0	X					
I-EQPM-FIXD	Fixed equipment	0	0.18	0,0,255	X					
I-EQPM-IDEN	Equipment identification numbers	0	0.25	255,0,0	X					
I-EQPM-MEDI	Medical (exam beds, dental chairs, etc.)	0	0.35	255,200,0	X					
I-EQPM-MOVE	Moveable equipment	014200-907 MS2 Medium Dash	0.18	0,0,255	X					
I-EQPM-OVHD	Overhead, ceiling mounted, and suspended equipment	0	0.25	0,255,0	X					
I-EQPM-STOR	Storage equipment	0	0.35	255,200,0	X					
Signage										
I-FLOR-SIGN	Signage	0	0.35	255,0,255			X			
Flooring Items and Materials										
I-FLRG-CONC	Concrete flooring	0	0.35	128,128,128				X		
I-FLRG-MATS	Entrance mat components and frames	0	0.35	0,255,255				X		
I-FLRG-STON	Stone flooring	0	0.35	82,124,165				X		
I-FLRG-TRAN	All floor thresholds and transition moldings	0	0.35	0,0,255				X		
I-FLRG-WOOD	Wood parquet tile or planks	0	0.35	165,41,0				X		
Furnishings										
I-FURN-ACCS	Accessories (vestibule mats, partitions, draperies, clocks, trash cans, lecturns, lamps, etc.)	0	0.25	255,0,0	X					
I-FURN-ADPC	Automated Data Processing Components	0	0.35	255,200,0	X					
I-FURN-ARTW	Artwork	0	0.35	255,200,0	X					
I-FURN-FLOR	Flooring (carpet, rugs, etc.)	0	0.35	255,200,0	X					
I-FURN-FREE	Free-standing furnishings (desks, beds, tables, dressers, credenzas, casegoods)	0	0.35	255,0,255	X					
I-FURN-GRID	Planning grid/modular outline	0	0.50	0,255,255	X					
I-FURN-IDEN	Furniture code identification	0	0.25	0,255,0	X					
I-FURN-PLNT	Plants	0	0.25	0,255,0	X					
I-FURN-SEAT	Seating (chairs, sofas, etc.)	0	0.35	255,200,0	X					
I-FURN-STOR	File cabinets, high density storage, shelving, storage cabinets	0	0.35	255,200,0	X					
Monolithic (Poured or Broadcast) Flooring										
I-MONO-SRFL-ACNT	Seamless resinous flooring - accent color	0	0.35	145,82,165				X		
I-MONO-SRFL-FILD	Seamless resinous flooring - field color	0	0.35	192,192,192				X		
I-MONO-TERR-ACN1	Terrazzo - accent color	0	0.35	0,95,127				X		
I-MONO-TERR-ACN2	Terrazzo - accent color	0	0.35	66,76,38				X		
I-MONO-TERR-FILD	Terrazzo - field color	0	0.35	88,19,28				X		
Resilient Flooring										
I-SHTP-ACNT	Sheet product (vinyl/rubber/linoleum) - accent color	0	0.35	127,0,255				X		

Discipline: Interiors
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types					
		Line Style	Line Width (mm)	RGB Value	Furniture Plan	System Furniture Plan	Signage Placement Plan	Floor Patterns	Elevations	Details
AIA Format	Level/Layer Description									
I-SHTP-FILD	Sheet product (vinyl/rubber/linoleum) - field color	0	0.35	255,127,159				X		
System Furniture										
I-SYST-FURN	Furniture	0	0.35	255,200,0		X				
I-SYST-IDEN	Code identification components	0	0.25	255,0,0		X				
I-SYST-IDPL	Code identification panels	0	0.25	255,0,0		X				
I-SYST-LITE	Lighting components	0	0.50	0,255,255		X				
I-SYST-PATT	Patterns	0	0.18	128,128,128		X				
I-SYST-PNLS	Panels	0	0.35	255,200,0		X				
I-SYST-POWR	Power, communication components	0	0.50	0,255,255		X				
I-SYST-STOR	Storage components	0	0.35	255,200,0		X				
I-SYST-WALL	System furniture partition walls	0	0.35	255,200,0		X				
I-SYST-WKSF	Work surface components	0	0.35	255,200,0		X				
Tile										
I-TILE-CERM-ACNT	Ceramic mosaic tile - accent color	0	0.35	82,124,165				X		
I-TILE-CERM-FILD	Ceramic mosaic tile - field color	0	0.35	0,127,95				X		
I-TILE-LINO-ACNT	Linoleum tile - accent color	0	0.35	76,0,38				X		
I-TILE-LINO-FILD	Linoleum tile - field color	0	0.35	191,255,0				X		
I-TILE-PORC-ACN1	Porcelain tile - accent color	0	0.35	19,38,0				X		
I-TILE-PORC-ACN2	Porcelain tile - accent color	0	0.35	192,192,192				X		
I-TILE-PORC-FILD	Porcelain tile - field color	0	0.35	0,38,28				X		
I-TILE-QUAR-ACNT	Quarry tile - accent color	0	0.35	255,200,0				X		
I-TILE-QUAR-FILD	Quarry tile - field color	0	0.35	255,127,0				X		
I-TILE-RUBB-ACNT	Rubber tile - accent color	0	0.35	88,19,88				X		
I-TILE-RUBB-FILD	Rubber tile - field color	0	0.35	255,63,0				X		
I-TILE-TERR-ACN1	Terrazzo tile - accent color	0	0.35	0,95,127				X		
I-TILE-TERR-ACN2	Terrazzo tile - accent color	0	0.35	66,76,38				X		
I-TILE-TERR-ACN3	Terrazzo tile - accent color	0	0.35	255,127,223				X		
I-TILE-TERR-FILD	Terrazzo tile - field color	0	0.35	88,19,28				X		
I-TILE-VNYL-ACN1	Vinyl or Vinyl composition tile - accent color	0	0.35	145,82,165				X		
I-TILE-VNYL-ACN2	Vinyl or Vinyl composition tile - accent color	0	0.35	63,127,95				X		
I-TILE-VNYL-FILD	Vinyl or Vinyl composition tile - field color	0	0.35	23,38,19				X		
Elevations										
I-ELEV-IDEN	Component identification numbers	0	0.25	255,0,0					X	
I-ELEV-OTLN	Outlines	0	0.50	0,255,255					X	
I-ELEV-PATT	Textures and hatch patterns	0	0.18	0,0,255					X	
Detail Information										
I-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255						X

Patterning used within each material to differentiate colors shall match the color and level of the material.

Discipline: Fire Protection

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types			
		Line Style	Line Width (mm)	RGB Value	Life Safety Plan	Fire Suppression Plan	Fire Alarm/Detection Plan	Details
AIA Format	Level/Layer Description							
General Information	See Discipline: General (page A3) for a list of available Annotation layers/levels							
Aqueous Film Forming Foam System								
F-AFFF-EQPM	Equipment	0	0.35	255,0,0		X		
F-AFFF-PIPE	Piping	0	0.35	255,0,0		X		
CO2 Sprinkler System								
F-CO2S-EQPM	Equipment	0	0.35	255,0,0		X		
F-CO2S-PIPE	CO2 piping or CO2 discharge nozzle piping	0	0.35	255,0,0		X		
Control Panels								
F-CTRL-PANL	Control panels	0	0.50	165,103,82	X		X	
Floor Information								
F-FLOR-IDEN	Room name, space identification text (copied from Architectural - Floor Plan model file)	0	0.25	0,255,0	X	X	X	
F-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)	0	0.25	0,255,0	X	X	X	
Halon System								
F-HALN-EQPM	Equipment	0	0.35	255,0,0		X		
F-HALN-PIPE	Piping	0	0.35	255,0,0		X		
Inert Gas								
F-IGAS-EQPM	Equipment	0	0.35	255,0,0		X		
F-IGAS-PIPE	Piping	0	0.35	255,0,0		X		
Means of Egress Lighting								
F-LITE-EMER	Emergency fixtures	0	0.50	165,103,82	X			
F-LITE-EXIT	Exit fixtures	0	0.50	145,82,165	X			
Egress Requirements								
F-LSFT-EGRE	Egress requirements designator	0	0.35	255,0,255	X			
F-LSFT-OCCP	Occupant load for egress capacity	0	0.35	255,0,255	X			
F-LSFT-TRVL	Maximum travel distances	0	0.35	255,0,255	X			
Fire Protection System								
F-PROT-ALRM-INDC	Indicating appliances	0	0.50	103,165,82			X	
F-PROT-ALRM-MANL	Manual fire alarm pull stations	0	0.50	165,103,82	X		X	
F-PROT-EXTI	Fire extinguishers	0	0.35	255,200,0	X			
F-PROT-EXTI-CABN	Fire extinguisher cabinets	0	0.35	255,200,0	X			
F-PROT-HOSE	Fire hoses	0	0.35	255,200,0	X			
F-PROT-HOSE-CABN	Fire hose cabinets	0	0.35	255,200,0	X			
F-PROT-RATE-DOOR	Door fire ratings	0	0.50	0,255,255	X			
F-PROT-RATE-WALL	Wall fire ratings	0	0.50	0,255,255	X			
F-PROT-SMOK	Smoke detectors and heat sensors	0	0.50	165,103,82			X	
Smoke/Pressurization Control								
F-SMOK-DMPR	Dampers	0	0.35	165,41,0	X		X	
Sprinkler System								
F-SPKL-CLHD	Sprinkler - ceiling heads	0	0.35	255,0,0		X		
F-SPKL-OTHD	Sprinkler - other heads	0	0.35	255,0,0		X		
F-SPKL-PIPE	Sprinkler piping	211300-901 Fire Protection - Supply	0.50	255,0,0		X		
F-SPKL-STAN	Standpipe system	0	0.35	255,0,0		X		
Water Supply and Distribution								
F-WATR-HYDT	Hydrants and connections	0	0.35	255,0,0		X		

Discipline: Fire Protection
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types			
		Line Style	Line Width (mm)	RGB Value	Life Safety Plan	Fire Suppression Plan	Fire Alarm/Detection Plan	Details
AIA Format	Level/Layer Description							
F-WATR-PIPE	Piping	331100-907 Fire Protection Water Supply	0.50	255,0,0		X		
F-WATR-PUMP	Fire pumps	0	0.35	255,0,0		X		
Detail Information								
F-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255				X

Discipline: Plumbing
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types		
		Line Style	Line Width (mm)	RGB Value	Piping Plan	Riser Diagrams	Details
AIA Format	Level/Layer Description						
General Information	See Discipline: General (page A3) for a list of available Annotation layers/levels						
Domestic Water System							
P-DOMW-CPIP	Cold water piping	221100-901 Domestic Water - Cold	0.50	0,255,255	X		
P-DOMW-EQPM	Hot and cold water equipment	0	0.70	0,255,255	X		
P-DOMW-EQPM-ACCS	Equipment access doors	0	0.35	0,255,255	X		
P-DOMW-FPIP	Domestic filtered water piping	0	0.50	0,255,255	X		
P-DOMW-HPIP	Hot water piping	221100-905 Domestic Water - Hot - Supply	0.50	0,255,255	X		
P-DOMW-RISR	Hot and cold water risers	014200-907 MS2 Medium Dash	0.25	0,255,255	X		
Floor Information							
P-FLOR-IDEN	Room name, space identification text (copied from Architectural - Floor Plan model file)	0	0.25	0,255,0	X		
P-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)	0	0.25	0,255,0	X		
Graywater System							
P-GRAY-EQPM	Equipment	0	0.70	124,0,165	X		
P-GRAY-PIPE	Graywater piping	221300-903 Gray Water	0.50	124,0,165	X		
Laboratory Gas Piping							
P-LGAS-DH2O	Distilled water piping	226700-902 Water - Distilled	0.50	255,63,0	X		
P-LGAS-DIS~	Deionized water piping	226700-901 Water - Deionized	0.50	255,63,0	X		
P-LGAS-EQPM	Equipment	0	0.70	255,63,0	X		
P-LGAS-H2~~	Hydrogen piping	401600-905 Hydrogen	0.50	255,63,0	X		
P-LGAS-HE~~	Helium piping	401600-902 Helium	0.50	255,63,0	X		
P-LGAS-NITG	Nitrogen piping	401600-907 Nitrogen	0.50	255,63,0	X		
P-LGAS-OXYG	Pure O2 piping	401600-906 Oxygen	0.50	255,63,0	X		
Medical/Dental Gas Piping							
P-MDGS-CAIR	Compressed air	221500-901 Air - Compressed	0.50	0,0,255	X		
P-MDGS-EQPM	Equipment	0	0.70	255,200,0	X		
P-MDGS-NITG	Nitrogen piping	401600-907 Nitrogen	0.50	255,200,0	X		

Discipline: Plumbing
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types		
		Line Style	Line Width (mm)	RGB Value	Piping Plan	Riser Diagrams	Details
AIA Format	Level/Layer Description						
P-MDGS-NOXG	Nitrous oxide piping	401600-904 Nitrous Oxide	0.50	255,200,0	X		
P-MDGS-OXYG	Pure O2 piping	401600-906 Oxygen	0.50	255,200,0	X		
P-MDGS-SAIR	Scavenge air	0	0.50	255,200,0	X		
P-MDGS-VACU	Medical vacuum piping	226200-901 Vacuum - Air	0.50	0,0,255	X		
Penetrations							
P-FLOR-PENE	Floor penetrations	014200-907 MS2 Medium Dash	0.25	0,255,0	X		
P-ROOF-PENE	Roof penetrations	014200-907 MS2 Medium Dash	0.25	255,0,0	X		
P-WALL-PENE	Wall penetrations	014200-907 MS2 Medium Dash	0.25	255,200,0	X		
Sanitary Sewer							
P-SSWR-CNDS	Condensate piping	0	0.50	255,127,191	X		
P-SSWR-EQPM	Equipment (e.g., sand/oil/water separators)	0	0.70	0,255,0	X		
P-SSWR-DRNS	Floor drains, sinks, and cleanouts	0	0.35	0,255,0	X		
P-SSWR-PIPE	Piping	221300-905 Sanitary Waste	0.50	0,255,0	X		
P-SSWR-RISR	Sanitary risers	014200-907 MS2 Medium Dash	0.50	0,255,0	X		
P-SSWR-VENT	Vent piping	221300-904 Vent	0.50	0,255,0	X		
Storm Drainage System							
P-STRM-PIPE	Storm drain piping	221400-901 Drain - Storm	0.50	0,255,0	X		
P-STRM-DRNS	Roof drains	0	0.50	0,255,0	X		
P-STRM-RISR	Storm drain risers	014200-907 MS2 Medium Dash	0.50	0,255,0	X		
Diagram Information							
P-DIAG-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255		X	
Detail Information							
P-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255			X

Discipline: Mechanical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	HVAC Plan	Specialty Piping and Equipment	Hydraulic Systems	HTCW Utilities Plan	Material Handling	Machine Design	Control Diagrams	Elevations	Sections	Details
General Information		See Discipline: General (page A3) for a list of available Annotation layers/levels												
Industrial Waste Piping														
M-ACID-EQPM	Acid, alkaline, and oil waste equipment	0	0.35	255,63,0		X								
M-ACID-PIPE	Acid, alkaline, and oil waste piping	402500-901 Waste - Acid	0.50	255,63,0		X								
M-ACID-VENT	Acid, alkaline, and oil waste vent piping	014200-907 MS2 Medium Dash	0.50	255,63,0		X								
Anti-Freeze														
M-AFRZ-EQPM	Anti-freeze equipment	0	0.35	255,63,0		X	X							
M-AFRZ-SPLY-PIPE	Anti-freeze supply piping	0	0.50	255,63,0		X	X							
M-AFRZ-WAST-PIPE	Anti-freeze waste piping	0	0.50	255,63,0		X	X							
Brine System														
M-BRIN-EQPM	Brine system equipment	0	0.35	0,255,0		X								
M-BRIN-RETN-PIPE	Brine system return piping	232100-901 Brine - Return	0.50	0,255,0		X								
M-BRIN-SPLY-PIPE	Brine system supply piping	232100-902 Brine - Supply	0.50	0,255,0		X								
Chemical Treatment System														
M-CHEM-EQPM	Chemical treatment system equipment	0	0.35	255,63,0	X									
M-CHEM-RETN-PIPE	Chemical treatment system return piping	0	0.50	255,63,0	X									
M-CHEM-SPLY-PIPE	Chemical treatment system supply piping	0	0.50	255,63,0	X									
Compressed Air														
M-CMPA-EQPM	Equipment	0	0.70	0,0,255		X								
M-CMPA-PIPE	Piping	221500-901 Air Compressed	0.50	0,0,255		X								
Condenser Water System														
M-CNDW-EQPM	Condenser water system equipment	0	0.35	0,255,0	X									
M-CNDW-RETN-PIPE	Condenser water system return piping	232200-901 Condenser Water - Return	0.50	0,255,0	X									
M-CNDW-SPLY-PIPE	Condenser water system supply piping	232200-902 Condenser Water - Supply	0.50	0,255,0	X									
Controls														
M-CONT-THER	Thermostats	0	0.25	255,0,0	X		X							
M-CONT-WIRE	Low voltage wiring	014200-907 MS2 Medium Dash	0.25	255,0,0	X									
Chilled Water System														
M-CWTR-CNDS	Condensate piping	232200-904 Condensate - Drain	0.50	255,127,191	X									
M-CWTR-EQPM	Chilled water equipment	0	0.35	0,0,255	X									

Discipline: Mechanical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
		Line Style	Line Width (mm)	RGB Value	HVAC Plan	Specialty Piping and Equipment	Hydraulic Systems	HTCW Utilities Plan	Material Handling	Machine Design	Control Diagrams	Elevations	Sections	Details
AIA Format	Level/Layer Description													
M-CWTR-RETN-PIPE	Chilled water return piping	331100-901 Chilled Water - Return	0.50	0,0,255	X									
M-CWTR-SPLY-PIPE	Chilled water supply piping	331100-902 Chilled Water - Supply	0.50	0,0,255	X									
Culvert Valves														
M-CVAL-BASE	Culvert valve machinery base	0	0.35	255,200,0			X							
M-CVAL-BEAM	Culvert valve beams	0	0.35	255,200,0			X							
M-CVAL-CYLD	Culvert valve machinery cylinder (outline not for details)	0	0.35	63,255,0			X							
M-CVAL-SEAL	Culvert valve seals	0	0.35	0,255,0			X							
M-CVAL-SKIN	Culvert valve skin plate	0	0.35	255,0,0			X							
M-CVAL-STIF	Stiffener plates, angles, etc.	0	0.35	0,255,255			X							
M-CVAL-TRUN	Culvert valve trunnion beam	0	0.35	255,0,255			X							
Dual Temperature System														
M-DUAL-EQPM	Dual temperature system equipment	0	0.35	255,0,255	X									
M-DUAL-RETN-PIPE	Dual temperature system return piping	232100-903 Dual Temperature - Return	0.50	255,0,255	X									
M-DUAL-SPLY-PIPE	Dual temperature system supply piping	232100-904 Dual Temperature - Supply	0.50	255,0,255	X									
Dust and Fume Collection Systems														
M-DUST-DUCT	Dust and fume ductwork	0	0.50	145,82,165	X									
M-DUST-DUCT-CNTR	Dust and fume ductwork centerlines	014200-914 Center Line	0.25	0,0,255	X									
M-DUST-EQPM	Dust and fume equipment	0	0.35	145,82,165	X									
M-DUST-GRIL	Dust and fume grilles	0	0.35	145,82,165	X									
Exhaust Air System														
M-EXHS-DUCT	Exhaust ductwork	0	0.50	103,165,82	X		X							
M-EXHS-DUCT-CNTR	Exhaust ductwork centerlines	014200-914 Center Line	0.25	0,0,255	X		X							
M-EXHS-EQPM	Exhaust equipment	0	0.35	103,165,82	X		X							
M-EXHS-GRIL	Grilles	0	0.35	103,165,82	X		X							
Floor Information														
M-FLOR-IDEN	Room name, space identification text (copied from Architectural - Floor Plan model file)	0	0.25	0,255,0	X	X	X							
M-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)	0	0.25	0,255,0	X	X	X							
Fuel Systems														
M-FUEL-DIES-RETN	Diesel fuel return piping	0	0.50	255,200,0			X							
M-FUEL-DIES-SPLY	Diesel fuel supply piping	0	0.50	255,200,0			X							
M-FUEL-DIES-VENT	Diesel fuel vent piping	0	0.50	255,200,0			X							
M-FUEL-EQPM	Equipment	0	0.70	255,200,0		X	X							

Discipline: Mechanical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	HVAC Plan	Specialty Piping and Equipment	Hydraulic Systems	HTCW Utilities Plan	Material Handling	Machine Design	Control Diagrams	Elevations	Sections	Details
M-FUEL-GGEP-LQPG	Liquid petroleum gas	231100-908 Gas - Liquefied Petroleum	0.50	255,200,0		X	X							
M-FUEL-OGEP-RETN	Return oil piping	231100-904 Fuel Oil Return	0.50	255,200,0		X	X							
M-FUEL-OGEP-SPLY	Supply oil piping	231100-905 Fuel Oil Supply	0.50	255,200,0		X	X							
M-FUEL-OGEP-VENT	Oil piping vent	231100-906 Fuel Oil Tank	0.50	255,200,0		X								
Glycol System														
M-GLYC-EQPM	Glycol system equipment	0	0.35	165,165,0	X	X								
M-GLYC-RETN-PIPE	Glycol system return piping	232100-905 Glycol Return	0.50	165,165,0	X	X								
M-GLYC-SPLY-PIPE	Glycol system supply piping	232100-906 Glycol - Supply	0.50	165,165,0	X	X								
Geothermal Heat Pump System														
M-GTHP-EQPM	Geothermal heat pump system equipment	0	0.35	0,76,76	X			X						
M-GTHP-RETN-PIPE	Geothermal heat pump system return piping	0	0.50	0,76,76	X			X						
M-GTHP-SPLY-PIPE	Geothermal heat pump system supply piping	0	0.50	0,76,76	X			X						
Hydraulic Control Systems (Hydraulic Fluid)														
M-HCSF-CYLD	Hydraulic cylinders	0	0.35	255,63,0			X							
M-HCSF-CYLD-PSTN	Hydraulic cylinder pistons	0	0.35	255,63,0			X							
M-HCSF-CYLD-WEAR	Wear rings	0	0.35	255,63,0			X							
M-HCSF-EQPM	Hydraulic system equipment	0	0.35	255,63,0		X	X							
M-HCSF-FTTG	Hose and pipe fittings	0	0.35	255,63,0			X							
M-HCSF-HOSE	Hydraulic hoses	0	0.35	255,63,0			X							
M-HCSF-MOTR	Hydraulic motors and actuators	0	0.35	255,63,0			X							
M-HCSF-OTLN	Outlines of machinery, etc. in the vicinity of the hydraulic components	0	0.35	255,63,0			X							
M-HCSF-PUMP	Hydraulic pumps and pump motors	0	0.35	255,63,0			X							
M-HCSF-RETN-PIPE	Hydraulic system return piping	0	0.50	255,63,0		X	X							
M-HCSF-ROOM	Floor, walls, etc. that hydraulic system attaches to	0	0.35	255,63,0			X							
M-HCSF-SCHM-MISC	Miscellaneous schematic figures (i.e., common location lines)	0	0.35	255,63,0			X							
M-HCSF-SUPT	Pipe supports, hangers, etc.	0	0.35	255,63,0			X							
M-HCSF-SPLY-PIPE	Hydraulic system supply piping	0	0.50	255,63,0		X	X							
M-HCSF-VALV	Hydraulic valves	0	0.35	255,63,0			X							
M-HCSF-VALV-CONT	Hydraulic directional control valves	0	0.35	255,63,0			X							
M-HCSF-VALV-FLOW	Flow control valves, check valves, etc.	0	0.35	255,63,0			X							
M-HCSF-VALV-PRES	Pressure control valves: relief valves, counterbalance valves, etc.	0	0.35	255,63,0			X							
M-HCSF-VALV-SOFF	Hydraulic shutoff type valves (ball, gate, etc.)	0	0.35	255,63,0			X							
Hydraulic Control Systems (Water)														
M-HCSW-DEVC	Stilling wells, rigid anchors, anchor guides, rectifiers, reducers, markers, meters, regulators, and tanks	0	0.35	0,0,255			X							
M-HCSW-EQPM-ACCS	Equipment access doors	0	0.25	0,0,255			X							
M-HCSW-IDEN	Identifier tags, symbol modifiers, and text	0	0.25	255,200,0			X							
M-HCSW-PUMP	Pump station equipment	0	0.35	0,0,255			X							
M-HCSW-PUMP-PIPE	Pump piping (includes fittings and valves)	0	0.50	0,0,255			X							
High Temperature/Chilled Water System														

Discipline: Mechanical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	HVAC Plan	Specialty Piping and Equipment	Hydraulic Systems	HTCW Utilities Plan	Material Handling	Machine Design	Control Diagrams	Elevations	Sections	Details
M-HTCW-CWTR-MAIN	Main chilled water piping	0	0.35	0,0,255	X			X						
M-HTCW-CWTR-PLNT	Chilled water plant	0	0.35	0,0,255	X			X						
M-HTCW-CWTR-SERV	Chilled water service piping	0	0.25	0,0,255	X		X	X						
M-HTCW-DEVC	Rigid anchors, anchor guides, rectifiers, reducers, markers, pumps, regulators, tanks, and valves	0	0.35	255,0,255	X			X						
M-HTCW-HWTR-MAIN	Main high temperature piping	0	0.35	255,0,0	X			X						
M-HTCW-HWTR-PLNT	High temperature water plant	0	0.35	255,0,0	X			X						
M-HTCW-HWTR-SERV	High temperature service piping	0	0.25	255,0,0	X			X						
M-HTCW-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0	X			X						
M-HTCW-JBOX	Junction boxes, manholes, handholes, test boxes	0	0.25	255,0,255	X			X						
M-HTCW-LWTR-MAIN	Main low temperature piping	0	0.35	255,200,0	X			X						
M-HTCW-LWTR-SERV	Low temperature service piping	0	0.25	255,200,0	X		X	X						
M-HTCW-METR	Meters	0	0.35	255,0,255	X			X						
M-HTCW-RETN-PIPE	Return for all HTCW lines	0	0.18	255,0,255	X			X						
M-HTCW-STEM-MAIN	Main steam piping	0	0.35	255,127,191	X			X						
M-HTCW-STEM-SERV	Steam service piping	0	0.25	255,127,191	X		X	X						
M-HTCW-STNS-PUMP	Pump stations	0	0.35	255,0,255	X			X						
M-HTCW-VALT	Valve pits/vaults, steam pits	0	0.25	255,0,255	X			X						
HVAC System														
M-HVAC-ACCS	Equipment access doors	0	0.25	0,255,0	X		X							
M-HVAC-CDFF	Ceiling diffusers, registers, and grilles	0	0.35	255,63,0	X		X							
M-HVAC-DMPR	Fire, smoke, volume dampers	0	0.25	255,0,0	X		X							
M-HVAC-EQPM	Equipment (non-powered)	0	0.35	255,200,0	X		X							
M-HVAC-EQPM-EFAN	Equipment with electric fans or motors	0	0.35	255,200,0	X		X							
M-HVAC-EQPM-EPIP	Equipment with piping and electricity	0	0.35	255,200,0	X		X							
M-HVAC-EQPM-FLOR	Equipment - floor mounted	0	0.35	255,200,0	X		X							
M-HVAC-EQPM-SUSP	Equipment - suspended	0	0.35	255,200,0	X		X							
M-HVAC-FDFF	Floor diffusers, registers, and grilles	0	0.35	0,41,165	X		X							
M-HVAC-IDEN	Duct sizes and pressure classes	0	0.35	255,0,255	X		X							
M-HVAC-RDFF	Return air diffusers	0	0.35	165,103,82	X		X							
M-HVAC-RETN	Return ductwork	0	0.50	165,103,82	X		X							
M-HVAC-RETN-CNTR	Return ductwork centerlines	014200-914 Center Line	0.25	0,0,255	X		X							
M-HVAC-ROOF	Roof mounted HVAC equipment	0	0.35	255,200,0	X		X							
M-HVAC-SPLY	Supply ductwork	0	0.50	0,255,255	X		X							
M-HVAC-SPLY-CNTR	Supply ductwork centerlines	014200-914 Center Line	0.25	0,0,255	X		X							
M-HVAC-SPLY-HDUC	Supply ductwork - high pressure	0	0.50	0,255,255	X		X							
M-HVAC-SPLY-LDUC	Supply ductwork - low pressure	0	0.50	0,255,255	X		X							
M-HVAC-TAGS	Diffuser/register/grille tags and air flow arrows	0	0.35	255,0,255	X		X							
M-HVAC-WDFF	Wall diffusers, registers, and grilles	0	0.35	255,200,0	X		X							
Hot Water Heating System														
M-HWTR-EQPM	Hot water heating system equipment	0	0.35	255,63,0	X		X							
M-HWTR-RETN-PIPE	Hot water heating system return piping	232100-909 Hot Water - Low Temp - Return	0.50	255,63,0	X		X							

Discipline: Mechanical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
		Line Style	Line Width (mm)	RGB Value	HVAC Plan	Specialty Piping and Equipment	Hydraulic Systems	HTCW Utilities Plan	Material Handling	Machine Design	Control Diagrams	Elevations	Sections	Details
AIA Format	Level/Layer Description													
M-HWTR-SPLY-PIPE	Hot water heating system supply piping	232100-910 Hot Water - Low Temp - Supply	0.50	255,63,0	X		X							
Insulating (Transformer) Oil System														
M-INSL-EQPM	Insulating oil equipment	0	0.35	255,63,0		X								
M-INSL-RETN-PIPE	Insulating oil return piping	0	0.50	255,63,0		X								
M-INSL-SPLY-PIPE	Insulating oil supply piping	0	0.50	255,63,0		X								
Lubrication Oil														
M-LUBE-EQPM	Lubrication oil equipment	0	0.35	255,63,0		X	X							
M-LUBE-RETN-PIPE	Lubrication oil return piping	0	0.50	255,63,0		X	X							
M-LUBE-SPLY-PIPE	Lubrication oil supply piping	0	0.50	255,63,0		X	X							
Machine Design														
M-MACH-AXLE	Shafts and axles	0	0.35	255,200,0			X			X				
M-MACH-BASE	Machinery bases	0	0.35	255,200,0			X			X				
M-MACH-BEAR	Bearings and couplings	0	0.35	255,200,0			X			X				
M-MACH-BELT	Wire rope, chains, and belts	0	0.35	165,41,0			X			X				
M-MACH-BSHG	Bushings, wear plates, shims, and spacers	0	0.35	255,200,0			X			X				
M-MACH-CLEV	Clevises	0	0.35	165,41,0			X			X				
M-MACH-COMP	Miscellaneous machinery parts and components	0	0.35	255,200,0			X			X				
M-MACH-COVR	Machinery covers, cover plates, and guarding	0	0.35	0,255,255			X			X				
M-MACH-FSTN	Fasteners, nuts, and bolts	0	0.35	255,200,0			X			X				
M-MACH-GEAR	Gears	0	0.35	255,0,255			X			X				
M-MACH-KEYS	Keys and keeper plates	0	0.35	165,41,0			X			X				
M-MACH-LROT	Large rotating machinery (turbine and pump outlines)	0	0.35	255,0,255			X			X				
M-MACH-MOTR	Machinery motors	0	0.35	255,0,255			X			X				
M-MACH-PINS	Pins	0	0.35	165,41,0			X			X				
M-MACH-PULL	Pulleys, drums, and sheaves	0	0.35	165,41,0			X			X				
M-MACH-RAIL	Rails (e.g., crane rails, rail hoots, splice plates, etc.)	0	0.35	165,41,0			X			X				
M-MACH-ROLL	Rollers and wheels	0	0.35	165,41,0			X			X				
M-MACH-ROLL-TRAK	Roller tracks	0	0.35	165,41,0			X			X				
M-MACH-SEAL	Seals	0	0.35	165,41,0			X			X				
M-MACH-SHOE	Sliding shoes, skids, etc.	0	0.35	165,41,0			X			X				
M-MACH-SUPT	Support brackets	0	0.35	255,200,0			X			X				
M-MACH-SPRG	Springs	0	0.35	165,41,0			X			X				
Mixed Air System														
M-MAIR-DUCT	Mixed air ductwork	0	0.50	255,255,255	X									
M-MAIR-DUCT-CNTR	Mixed air ductwork centerlines	014200-914 Center Line	0.25	0,0,255	X									
M-MAIR-EQPM	Mixed air equipment	0	0.35	255,255,255	X									
Material Handling Equipment														
M-MATL-CRAN	Cranes	0	0.35	255,200,0			X			X				
M-MATL-CRAN-BOOM	Crane boom	0	0.35	255,200,0			X			X				
M-MATL-HOIS	Hoists	0	0.35	255,200,0			X			X				
M-MATL-HOOK	Hooks, eyes, and other end attachments	0	0.35	255,200,0			X			X				
M-MATL-LIFT	Miscellaneous lifting equipment	0	0.35	255,0,255			X			X				
M-MATL-WIRE	Wire rope, chains, and other hoisting medium	0	0.35	255,0,255			X			X				

Discipline: Mechanical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	HVAC Plan	Specialty Piping and Equipment	Hydraulic Systems	HTCW Utilities Plan	Material Handling	Machine Design	Control Diagrams	Elevations	Sections	Details
Miter Gates														
M-MITR-BASE	Miter gate machinery base	0	0.35	255,200,0			X							
M-MITR-CLEV	Clevises	0	0.35	165,41,0			X							
M-MITR-CRNG	Cardanic ring	0	0.35	0,255,0			X							
M-MITR-CYLD	Miter gate machinery cylinder (outline not for details)	0	0.35	63,255,0			X							
M-MITR-TRUN	Miter gate machinery trunnion	0	0.35	255,0,0			X							
Makeup Air System														
M-MKUP-DUCT	Makeup air ductwork	0	0.50	255,200,0	X									
M-MKUP-DUCT-CNTR	Makeup air ductwork centerlines	014200-914 Center Line	0.25	0,0,255	X									
M-MKUP-EQPM	Makeup air equipment	0	0.35	255,200,0	X									
M-MKUP-GRIL	Makeup air grilles	0	0.35	255,200,0	X									
Natural Gas System														
M-NGAS-EQPM	Natural gas equipment	0	0.35	255,200,0		X	X							
M-NGAS-PIPE	Natural gas piping	231100-909 Gas - Low Pressure	0.35	255,200,0		X	X							
Penetrations														
M-FLOR-PENE	Floor penetrations	014200-907 MS2 Medium Dash	0.25	0,255,0	X	X	X							
M-ROOF-PENE	Roof penetrations	014200-907 MS2 Medium Dash	0.25	255,0,0	X	X	X							
M-WALL-PENE	Wall penetrations	014200-907 MS2 Medium Dash	0.25	255,200,0	X	X	X							
Process Piping														
M-PROC-EQPM	Process equipment	0	0.35	255,63,0		X								
M-PROC-RETN-PIPE	Process return piping	0	0.50	255,63,0		X								
M-PROC-SPLY-PIPE	Process supply piping	0	0.50	255,63,0		X								
Relief Air System														
M-RAIR-DUCT	Relief air ductwork	0	0.50	255,0,0	X									
M-RAIR-DUCT-CNTR	Relief air ductwork centerlines	014200-914 Center Line	0.25	0,0,255	X									
M-RAIR-EQPM	Relief air equipment	0	0.35	255,0,0	X									
M-RAIR-GRIL	Relief air grilles	0	0.35	255,0,0	X									
Energy Recovery System														
M-RCOV-EQPM	Energy recovery system equipment	0	0.35	145,82,165	X									
M-RCOV-RETN-PIPE	Energy recovery system return piping	0	0.50	145,82,165	X									
M-RCOV-SPLY-PIPE	Energy recovery system supply piping	0	0.50	145,82,165	X									
Refrigeration System														
M-REFG-DISC	Refrigeration system discharge	232300-902 Refrigerant - Discharge	0.50	255,63,0	X									

Discipline: Mechanical

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types									
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	HVAC Plan	Specialty Piping and Equipment	Hydraulic Systems	HTCW Utilities Plan	Material Handling	Machine Design	Control Diagrams	Elevations	Sections	Details
M-REFG-EQPM	Refrigeration system equipment	0	0.35	255,63,0	X									
M-REFG-RETN-PIPE	Refrigeration system return piping	232300-905 Refrigerant - Suction	0.50	255,63,0	X									
M-REFG-SPLY-PIPE	Refrigeration system supply piping	232300-904 Refrigerant - Liquid	0.50	255,63,0	X									
Raw Water Piping														
M-RWTR-EQPM	Raw water equipment	0	0.35	79,127,63		X	X							
M-RWTR-RETN-PIPE	Raw water return piping	0	0.50	79,127,63		X	X							
M-RWTR-SPLY-PIPE	Raw water supply piping	0	0.50	79,127,63		X	X							
Steam System														
M-STEM-BLBD	Boiler blow down piping	235200-901 Boiler Blow Down	0.50	255,127,191	X									
M-STEM-CNDS	Condensate piping	232200-904 Condensate - Drain	0.50	255,127,191	X									
M-STEM-EQPM	Steam system equipment	0	0.35	255,127,191	X									
M-STEM-HPIP	High pressure steam piping	232200-909 Steam - High Pressure	0.50	255,127,191	X									
M-STEM-LPIP	Low pressure steam piping	232200-910 Steam - Low Pressure	0.50	255,127,191	X									
M-STEM-MPIP	Medium pressure steam piping	232200-911 Steam - Medium Pressure	0.50	255,127,191	X									
Transfer Air System														
M-TAIR-DUCT	Transfer air ductwork	0	0.50	191,0,255	X									
M-TAIR-DUCT-CNTR	Transfer air ductwork centerlines	014200-914 Center Line	0.25	0,0,255	X									
M-TAIR-EQPM	Transfer air equipment	0	0.35	191,0,255	X									
Diagram Information														
M-DIAG-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255							X			
Elevations														
M-ELEV-IDEN	Component identification numbers	0	0.35	255,200,0								X		
M-ELEV-OTLN	Outlines	0	0.35	255,0,255								X		
M-ELEV-PATT	Textures and hatch patterns	0	0.18	128,128,128								X		
Sections														
M-SECT-IDEN	Component identification numbers	0	0.35	255,200,0									X	
M-SECT-MBND	Material beyond section cut	0	0.18	0,0,255									X	
M-SECT-MCUT	Material cut by section	0	0.50	0,255,255									X	
M-SECT-PATT	Textures and hatch patterns	0	0.18	128,128,128									X	

Discipline: Mechanical
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types												
AIA Format	Level/Layer Description				Line Style	Line Width (mm)	RGB Value	HVAC Plan	Specialty Piping and Equipment	Hydraulic Systems	HTCW Utilities Plan	Material Handling	Machine Design	Control Diagrams	Elevations	Sections	Details
Detail Information																	
M-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255												X	

Discipline: Electrical
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types								
		Line Style	Line Width (mm)	RGB Value	Lighting Plan	Power Plan	Special Systems Plan	Grounding System Plan	Electrical Utilities Plan	Exterior Communication Systems Plan	Airfield Lighting Plan	Details	Riser/One-Line Diagrams
AIA Format	Level/Layer Description												
General Information	See Discipline: General (page A3) for a list of available Annotation layers/levels												
Airfields													
E-AFLD-CIRC-CTRL	Control and monitoring circuits	0	0.50	145,82,165							X		
E-AFLD-CIRC-IDEN	Circuit identifier tags, symbol modifier, and text	0	0.35	255,200,0							X		
E-AFLD-CIRC-MULT	Multiple circuits	0	0.50	145,82,165							X		
E-AFLD-CIRC-SERS	Series circuits	0	0.50	145,82,165							X		
E-AFLD-DEVC	Capacitors, voltage regulators, motors, buses, generators, meters, grounds, and markers	0	0.50	145,82,165							X		
E-AFLD-DBNK	Ductbanks	337100-909 Duct Bank	0.50	145,82,165							X		
E-AFLD-JBOX	Junction boxes, pull boxes, manholes, handholes, pedestals, splices	0	0.50	145,82,165							X		
E-AFLD-LITE-APPR	Approach lights	0	0.50	145,82,165							X		
E-AFLD-LITE-DIST	Distance and arresting gear markers	0	0.50	145,82,165							X		
E-AFLD-LITE-LANE	Hoverlane, taxilane, and helipad lights	0	0.50	145,82,165							X		
E-AFLD-LITE-OBST	Obstruction lights	0	0.50	145,82,165							X		
E-AFLD-LITE-RUNW	Runway lights	0	0.50	145,82,165							X		
E-AFLD-LITE-SIGN	Taxiway guidance signs	0	0.50	145,82,165							X		
E-AFLD-LITE-TAXI	Taxiway lights	0	0.50	145,82,165							X		
E-AFLD-LITE-THRS	Threshold lights	0	0.50	145,82,165							X		
E-AFLD-VALT	Airfield lighting vaults	0	0.50	145,82,165							X		
Alarm System													
E-ALRM-EQPM	Alarm system equipment	0	0.50	255,63,0			X						
E-ALRM-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Beacons													
E-BCNS-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0							X		
E-BCNS-MISC	Miscellaneous nav aids - windcones and beacons	0	0.50	145,82,165							X		
E-BCNS-STRB	Strobe beacons	0	0.50	145,82,165							X		
Bell System													
E-BELL-EQPM	Bell system equipment	0	0.50	255,63,0			X						
E-BELL-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Cable System													
E-CABL-COAX	Coax cable	014200-907 MS2 Medium Dash	0.50	255,63,0			X						
E-CABL-FIBR	Fiber optics cable	271500-908 Fiberoptics	0.50	255,63,0			X						
E-CABL-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
E-CABL-MULT	Multi-conductor cable	0	0.50	255,63,0			X						
E-CABL-TRAY	Cable trays and wireways	260500-907 Wireway	0.50	255,63,0		X	X						
Cathodic Protection System													
E-CATH-ANOD	Sacrificial anode system	0	0.50	105,0,0					X				
E-CATH-CURR	Impress current system	0	0.50	105,0,0					X				
E-CATH-IDEN	Identifier tags, symbol modifier, and text	0	0.35	255,200,0					X				
E-CATH-TEST	Test stations	0	0.50	105,0,0					X				
Cable TV System													
E-CATV-EQPM	Cable TV system equipment	271500-920 Cable TV	0.50	255,63,0			X						

Discipline: Electrical
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types								
AIA Format	Level/Layer Description	Line Style	Line Width (mm)	RGB Value	Lighting Plan	Power Plan	Special Systems Plan	Grounding System Plan	Electrical Utilities Plan	Exterior Communication Systems Plan	Airfield Lighting Plan	Details	Riser/One-Line Diagrams
E-CATV-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Closed-Circuit Television System													
E-CCTV-EQPM	Closed-circuit television system equipment	271500-921 Closed Circuit TV	0.50	255,63,0			X						
E-CCTV-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Clock System													
E-CLOCK-EQPM	Clock system equipment	0	0.50	255,63,0			X						
E-CLOCK-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Communications													
E-COMM-ANTN	Antennae	0	0.50	255,63,0					X				
E-COMM-CIRC	Circuits	0	0.50	255,63,0					X				
E-COMM-CNMB	Communication circuit numbers (e.g., panel/circuit number, wire/conduit size)	0	0.35	255,200,0					X				
E-COMM-EQPM	Other communications distribution equipment	0	0.50	255,63,0					X				
E-COMM-JBOX	Communication junction boxes, pull boxes, handholes, pedestals, and splices	0	0.50	255,63,0					X				
E-COMM-MHOL	Manholes	0	0.50	255,63,0					X				
E-COMM-OVHD	Overhead communications/telephone lines	271500-905 Communication	0.50	255,63,0					X				
E-COMM-OVHD-IDEN	Identifier tags, symbol modifier and text	0	0.35	255,200,0					X				
E-COMM-POLE	Poles	0	0.50	255,63,0					X				
E-COMM-POLE-GUYS	Guying equipment	0	0.50	255,63,0					X				
E-COMM-POLE-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0					X				
E-COMM-UGND	Underground communications/telephone lines	271500-905 Communication	0.50	255,63,0					X				
E-COMM-UGND-IDEN	Identifier tags, symbol modifier and text	0	0.35	255,200,0					X				
Central Dictation System													
E-DICT-EQPM	Central dictation system equipment	0	0.50	255,63,0			X						
E-DICT-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Underground Ductbanks (to be used when multiple systems are in one ductbank system)													
E-DBNK-MULT	Ductbank	337100-909 Duct Bank	0.50	105,0,0					X	X			
E-DBNK-MULT-IDEN	Identifier tags, symbol modifier and text	0	0.35	255,200,0					X	X			
Energy Monitoring Control Systems													
E-EMCS-EQPM	Energy monitoring control system equipment	0	0.50	105,0,0			X						
E-EMCS-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Floor Information													
E-FLOR-IDEN	Room name, space identification text (copied from Architectural - Floor Plan model file)	0	0.25	0,255,0									
E-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)	0	0.25	0,255,0									
Ground System													
E-GRND-CIRC	Circuits	0	0.50	105,0,0				X					
E-GRND-DIAG	Ground system diagram	0	0.50	105,0,0				X					
E-GRND-EQUI	Equipotential ground system	0	0.50	105,0,0				X					
E-GRND-REFR	Reference ground system	0	0.50	105,0,0				X					
Intercom/PA System													
E-INTC-EQPM	Intercom system equipment	0	0.50	255,63,0			X						
E-INTC-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Lighting													

Discipline: Electrical
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types								
		Line Style	Line Width (mm)	RGB Value	Lighting Plan	Power Plan	Special Systems Plan	Grounding System Plan	Electrical Utilities Plan	Exterior Communication Systems Plan	Airfield Lighting Plan	Details	Riser/One-Line Diagrams
AIA Format	Level/Layer Description												
E-LITE-CIRC	Lighting circuits (including crosslines and homeruns)	0	0.50	255,0,0	X								
E-LITE-CLNG	Ceiling mounted (surface/pendant) fixtures	0	0.50	255,0,0	X								
E-LITE-CNMB	Lighting circuit numbers (e.g., panel/circuit number, wire/conduit size)	0	0.35	255,200,0	X								
E-LITE-EMER	Emergency fixtures (outline of light (if ceiling mounted) should go on E-LITE-CLNG)	0	0.50	255,0,0	X								
E-LITE-EXIT	Exit fixtures (outline of light (if ceiling mounted) should go on E-LITE-CLNG)	0	0.50	255,0,0									
E-LITE-EXTR	Exterior lights	0	0.50	255,0,0					X				
E-LITE-FLOR	Floor mounted fixtures (e.g., stage)	0	0.50	255,0,0	X								
E-LITE-IDEN	Light fixture identifier tags	0	0.35	255,200,0	X				X				
E-LITE-JBOX	Junction boxes	0	0.50	255,0,0	X								
E-LITE-PANL	Main distribution panels, switchboards, lighting panels	0	0.50	255,0,0	X								
E-LITE-ROOF	Roof lighting	0	0.50	255,0,0	X								
E-LITE-SPCL	Special fixtures	0	0.50	255,0,0	X								
E-LITE-SWCH	Lighting contactors, photoelectric controls, low-voltage lighting controls, etc.	0	0.50	255,0,0	X								
E-LITE-WALL	Wall mounted fixtures	0	0.50	255,0,0	X								
Lightning Protection System								X					
E-LTNG-COND	Lightning protection conductors	0	0.50	105,0,0				X					
E-LTNG-TERM	Lightning protection terminals	0	0.35	255,200,0				X					
Nurse Call/Paging System													
E-NURS-EQPM	Nurse call/paging system equipment	0	0.50	255,63,0			X						
E-NURS-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Power													
E-POWR-BUSW	Busways	260500-901 Busway	0.50	105,0,0		X							
E-POWR-CIRC	Power circuits (including crosslines and homeruns)	0	0.50	105,0,0		X							
E-POWR-CLNG	Ceiling outlets (receptacles and switches)	0	0.50	105,0,0		X							
E-POWR-CNDT	Conduit	0	0.50	105,0,0		X							
E-POWR-CNMB	Power circuit numbers (e.g., panel/circuit number, wire/conduit size)	0	0.35	255,200,0		X							
E-POWR-DEVC	Capacitors, voltage regulators, motors, buses, grounds, and markers	0	0.50	105,0,0					X				
E-POWR-DSCO	Disconnect switches	0	0.50	105,0,0		X			X				
E-POWR-FEED	Feeders	0	0.50	105,0,0		X							
E-POWR-GENR	Generators and auxiliary equipment	0	0.50	105,0,0		X							
E-POWR-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0		X			X				
E-POWR-JBOX	Junction boxes, pull boxes, manholes, handholes, pedestals, splices	0	0.50	105,0,0		X	X		X				
E-POWR-METR	Meters	0	0.50	105,0,0		X			X				
E-POWR-MOTR	Motors and utilization equipment	0	0.50	105,0,0		X							
E-POWR-PANL	Panelboards, MCC, backing boards, patch panel racks	0	0.50	105,0,0		X							
E-POWR-POLE	Power poles	0	0.50	105,0,0									
E-POWR-POLE-GUYS	Guying equipment	0	0.50	105,0,0					X				
E-POWR-SBST	Substation equipment	0	0.50	105,0,0					X				
E-POWR-SWBD	Switchboards	0	0.50	105,0,0		X	X						
E-POWR-SWCH	Fuse cutouts, motor starters, contactors, pole mounted switches, circuit breakers, reclosers, cubicle switches	0	0.50	105,0,0		X			X				
E-POWR-URAC	Underfloor raceways	014200-908 MS3 Long Dash	0.50	105,0,0		X							
E-POWR-WALL	Wall/floor outlets (receptacles and switches)	0	0.50	105,0,0		X							
E-POWR-XFMR-PADM	Pad mounted transformers	0	0.50	105,0,0					X				
E-POWR-XFMR-POLM	Pole mounted transformers	0	0.50	105,0,0					X				
Primary Electrical Cables													

Discipline: Electrical
Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types								
		Line Style	Line Width (mm)	RGB Value	Lighting Plan	Power Plan	Special Systems Plan	Grounding System Plan	Electrical Utilities Plan	Exterior Communication Systems Plan	Airfield Lighting Plan	Details	Riser/One-Line Diagrams
AIA Format	Level/Layer Description												
E-PRIM-OVHD	Overhead electrical utility lines	337100-901 Electrical Primary	0.50	105,0,0					X				
E-PRIM-OVHD-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0					X				
E-PRIM-UGND	Underground electrical utility lines	337100-901 Electrical Primary	0.50	105,0,0					X				
E-PRIM-UGND-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	0,255,255					X				
Secondary Electrical Cables													
E-SECD-OVHD	Overhead electrical utility lines	337100-902 Electrical Secondary	0.50	105,0,0					X				
E-SECD-OVHD-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0					X				
E-SECD-UGND	Underground electrical utility lines	337100-902 Electrical Secondary	0.50	105,0,0					X				
E-SECD-UGND-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0					X				
Security System													
E-SERT-ACCS	Access control system	0	0.50	255,63,0			X						
E-SERT-CLNG	Ceiling mounted sensors	0	0.50	255,63,0			X						
E-SERT-FLOR	Floor mounted sensors	0	0.50	255,63,0			X						
E-SERT-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
E-SERT-UNDR	Buried sensors	0	0.50	255,63,0			X						
E-SERT-WALL	Wall mounted sensors	0	0.50	255,63,0			X						
Sound System													
E-SOUN-EQPM	Sound system equipment	0	0.50	255,63,0			X						
E-SOUN-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0			X						
Special Systems													
E-SPCL-SYST	Special systems (UMCS, EMCS, etc.)	0	0.50	105,0,0					X				
E-SPCL-SYST-IDEN	Special systems (UMCS, EMCS, etc.) identifier tags, symbol modifier, and text	0	0.35	255,200,0					X				
E-SPCL-TRAF	Traffic signal system	0	0.50	105,0,0					X				
E-SPCL-TRAF-IDEN	Traffic signal identifier tags, symbol modifier, and text	0	0.35	255,200,0					X				
Other Discipline Information													
E-DISC-INFO	Clearances and working space information (NEC code, etc.)	0	0.25	0,255,0	X	X	X		X	X	X	X	X
Detail Information													
E-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255								X	
Diagram Information													
E-DIAG-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255									X
E-DIAG-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0									X

Discipline: Telecommunications

Model File Layers/Levels

Level/Layer Naming		Graphic Defaults			Model File Types		
		Line Style	Line Width (mm)	RGB Value	Telephone/Data Plan	Riser Diagrams	Details
AIA Format	Level/Layer Description						
General Information	See Discipline: General (page A3) for a list of available Annotation layers/levels						
Cable System							
T-CABL-COAX	Coax cable	014200-907 MS2 Medium Dash	0.50	255,63,0	X		
T-CABL-FIBR	Fiber optics cable	271500-908 Fiberoptics	0.50	255,63,0	X		
T-CABL-IDEN	Cable identifiers	0	0.35	255,200,0	X		
T-CABL-MULT	Multi-conductor cable	0	0.50	255,63,0	X		
T-CABL-TRAY	Cable trays and wireways	0	0.50	255,63,0	X		
Communications							
T-COMM-CIRC	Circuits	0	0.50	255,63,0	X		
T-COMM-CNMB	Circuit numbers	0	0.50	255,63,0	X		
T-COMM-EQPM	Equipment	0	0.50	255,63,0	X		
T-COMM-JBOX	Junction boxes	0	0.50	255,63,0	X		
Equipment							
T-EQPM-COMB	Distribution equipment for both copper and fiber optics	0	0.50	255,63,0	X		
T-EQPM-COPP	Distribution equipment for copper	0	0.50	255,63,0	X		
T-EQPM-FIBR	Distribution equipment for fiber optic	0	0.50	255,63,0	X		
T-EQPM-OTHR	Other telecommunications equipment	0	0.50	255,63,0	X		
T-EQPM-RELA	Relays, resistors, capacitors, and inducers	0	0.50	255,63,0	X		
Floor Information							
T-FLOR-IDEN	Room name, space identification text (copied from Archictural - Floor Plan model file)	0	0.25	0,255,0	X		
T-FLOR-NUMB	Room/space identification number and symbol (copied from Architectural - Floor Plan model file)	0	0.25	0,255,0	X		
Jacks							
T-COMB-JACK	Combination telephone and data/LAN jacks	0	0.50	255,63,0	X		
T-DATA-JACK	Data/LAN jacks	0	0.50	255,63,0	X		
T-PHON-JACK	Telephone jacks	0	0.50	255,63,0	X		
Other Discipline Information							
T-DISC-INFO	Information and notes for other disciplines	0	0.35	255,255,255	X	X	
Diagram Information							
T-DIAG-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255		X	
T-DIAG-IDEN	Identifier tags, symbol modifiers, and text	0	0.35	255,200,0		X	
Detail Information							
T-DETL-GRPH	Graphics, gridlines, non-text items	0	0.35	255,255,255			X

This page intentionally left blank.

Abbreviations

A/E/C	Architecture/Engineering/Construction
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
AIA	American Institute of Architects
BIM	Building Information Modeling
CAD	Computer-aided design
CADD	Computer-Aided Design and Drafting
CIM	Civil Information Modeling
CSI	Construction Specifications Institute
ERDC	Engineer Research and Development Center
FAQ	Frequently Asked Questions
GSA	General Services Administration
HQUSACE	Headquarters, US Army Corps of Engineers
ITL	Information Technology Laboratory
NAVFAC	Naval Facilities Engineering Command
NCS	National CAD Standard
NIBS	National Institute of Building Sciences
O&M	Operations and Maintenance
RGB	Red-green-blue
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
USACE	US Army Corps of Engineers

REPORT DOCUMENTATION PAGE

1. REPORT DATE July 2024	2. REPORT TYPE Final Special Report (SR)	3. DATES COVERED	
		START DATE FY22	END DATE FY24
4. TITLE AND SUBTITLE A/E/C Computer-Aided Design (CAD) Standard: Release 6.2			
5a. CONTRACT NUMBER	5b. GRANT NUMBER	5c. PROGRAM ELEMENT	
5d. PROJECT NUMBER	5e. TASK NUMBER	5f. WORK UNIT NUMBER	
6. AUTHOR(S) Stephen Spangler			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) US Army Engineer Research and Development Center (ERDC) Information Technology Laboratory 3909 Halls Ferry Road Vicksburg, MS 39180-6199			8. PERFORMING ORGANIZATION REPORT NUMBER ERDC/ITL SR-24-3
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)	11. SPONSOR/MONITOR'S REPORT NUMBER(S)
12. DISTRIBUTION/AVAILABILITY STATEMENT Distribution Statement A. Approved for public release: distribution is unlimited.			
13. SUPPLEMENTARY NOTES Civil Direct Funding			
14. ABSTRACT The A/E/C Computer-Aided Design (CAD) Standard has been developed by the CAD/Building Information Modeling (BIM) Technology Center for Facilities, Infrastructure, and Environment to eliminate redundant CAD standardization efforts within DoD and the Federal Government. This manual is part of an initiative to develop a nonproprietary CAD standard that incorporates existing industry, national, and international standards and to develop data standards that address the entire life cycle of facilities within DoD. The material addressed in the A/E/C CAD Standard includes level/layer assignments, digital file naming, and standard symbology. The CAD/BIM Center's primary goal is to develop a CAD standard that is generic enough to operate under various CAD software packages (such as Bentley's MicroStation and Autodesk's AutoCAD) while incorporating existing industry standards when possible. While this Standard encompasses many CAD concepts and practices, it is not intended to limit the capabilities of other advanced modeling software. Ultimately, a BIM / Civil Information Modeling standard will be developed to standardize the additional capabilities of other software.			
15. SUBJECT TERMS Building information modeling; Computer-aided design; Computer graphics; Engineering design			
16. SECURITY CLASSIFICATION OF:		17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified	SAR 117
19a. NAME OF RESPONSIBLE PERSON		19b. TELEPHONE NUMBER (include area code)	