



Smithsonian

Office of Planning, Design, and Construction

CAD Guidelines

November 2024

Edit indicators:



All changes from the previous version of this document, dated September 2018, are highlighted with a vertical line, as shown here.



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Implementation of CAD

Introduction The Smithsonian Institution (SI) maintains many facilities in the Washington DC area and throughout the United States. Maintenance of CAD (Computer Aided Drafting and Design) drawings for each of these facilities is the responsibility of Smithsonian Office of Planning, Design, and Construction (OPDC), an organization that is responsible for both in-house design efforts and administration of repair, renovation and new construction projects for the museums and other facilities. The purpose of this manual is to define information, procedures, and responsibilities relevant to CAD work completed by A/E consultants in order to assure accurate and consistent work.

OPDC's standards include guidelines for drawing appearance, CAD layering and symbology, and the use of CAD-related software. Each is discussed in a separate section of this document. Refer to the table of contents for specific information on a particular topic.



Electronic Transmission Methods

Introduction Refer to the project Scope of Work to determine which type of transmission method is required for each project submission.

E-mail The size of attachments to e-mails on the Smithsonian network is limited to 3.5 megabytes total. Use of the FTP Site is recommended for larger transmissions.

Dropbox SI utilizes Dropbox for the transfer of large files. Please discuss with the Project Design Manager to obtain shared folder access.

OneDrive SI utilizes OneDrive for the transfer of large files. Please discuss with the Project Design Manager to obtain shared folder access.

Documentation OPDC Project Documentation form and Deliverables Matrix. These forms are similar in nature to the GSA's deliverable requirements. The Project Documentation Form identifies the personnel responsible for the project, versions of software used in its preparation, and any script files, non-AutoCAD entities (Fonts, Linetypes, Blocks, etc.) used in drawing preparation. The Deliverables Matrix identifies each drawing submitted by name, all external references by name, and the plot scale for each drawing. Refer to Appendix A for examples of the forms.



Sheet Drawing Submission Standards

Introduction These drawings serve as the official project record. Each sheet represents one and only one plotted drawing.

File Format All sheet drawing deliverables shall be submitted in both Adobe Acrobat format (.PDF), and in their native software format. Native format may be either AutoCAD or BIM authoring software.

PDF Files: All graphics in PDF files must be measurable/snap-able using markup tools in software such as Adobe Acrobat Professional. All drawing text in PDF files must be searchable. There shall be one PDF file per printed sheet in the set.

AutoCAD: Drawing files shall be AutoCAD 2018 format or earlier.

There shall be one AutoCAD file per printed sheet in the set, and X-refs shall be bound. Depending of scope of the project as single AutoCAD with Multiple Paper Space Tabs may be allowed, discuss with COTR at Project Kick-Off Meeting.

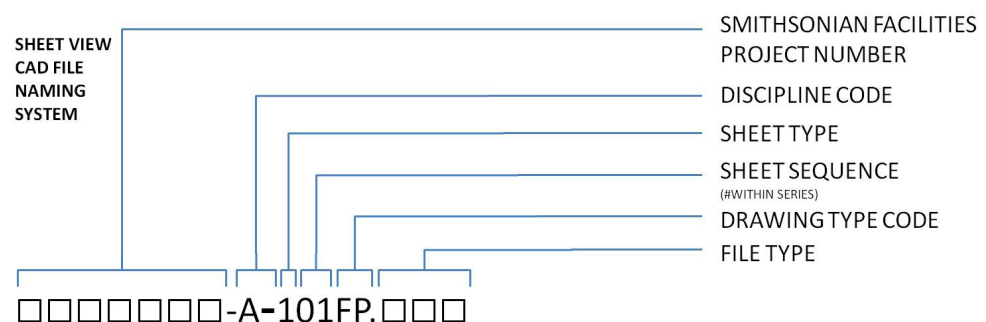
See **SMITHSONIAN BIM GUIDELINES** for all projects that require BIM.

Sheet File Names Sheet drawing files represent the finished construction documents for a project, they are designated following sheet naming conventions that correspond to the drawing number for each sheet.

The naming convention is as follows: [Smithsonian OPDC Project Number][Discipline Code][Sheet Type][Sheet Sequence][Drawing Type Code][.][File Type]

PDF: 1234567-A-101FP.pdf
AutoCAD: 1234567-A-101FP.dwg

Represents the twelfth sheet of architectural elevations in a set of drawings for a project # 1234567.



See Appendix B for a list of sheet sequence numbers, discipline codes, and typical drawing type codes for each discipline.



Sketches and supplemental drawings shall be named in a similar manner.

- Sketch files created during design should be named with the two letter designation SK first, discipline code next, then the next consecutive number of a series:

0403110-SKI014.pdf

(Fourteenth in a series of Interiors sketches)

- Drawings created as part of an addendum, or supplemental drawings, should be named with the two letter designation SD first, discipline code next, then the sheet number that is referred to, and the revision number:

0403110-SDM102.3.pdf

(Supplemental drawing for mechanical sheet 102, revision number 3)

**Sketches and
Supplemental
Drawing File
Names**

Pages must be oriented, when displayed on-screen, in the same direction as the hard-copy would be read.

Page Setups

All PDF files must be created as if being plotted at full size on the same size paper being used for the contract documents. When printed on the appropriate sized paper, all drawing scales shown in the drawing should be accurate when measured with mechanical drafting tools.

**Digital
Signatures**

Acceptable lineweights on drawing deliverables occupy a range from about 0.18 mm to 1.0 mm when plotted full-size.

Only use the highest range of lineweights to indicate major dividing lines such as section-cuts and match lines.

The narrowest lineweights should be used for highly detailed items and column grids.

Within the middle-range, be sure to giving greater weight to new construction when occupying the same plan as existing construction. Give even greater weight to annotations.

On engineering drawings which reuse the partitions, ceiling grids, etc. from the architectural plans, use 50% to 75% shading on the architectural elements, to increase the readability of things like ductwork, piping, etc.



Lineweights The standard Smithsonian title block shall be used on every sheet. The first sheet (cover sheet) in any set of drawings shall be designated the Title / Cover Sheet and will be numbered according to the process outlined in the previous section. It shall contain the OPDC approval block directly above the title block.

All of the title block parameters are block attributes. To edit the attributes, use AutoCAD's DDATTE or AT command. Do not change the text size in the drawing provided (except for the A/E logo and information pertinent to consultants).

Please refer to the Special Conditions for A/E services for logo location and size, as well as the identification code.

All Smithsonian title blocks are available for download at the OPDC website, Smithsonian A/E Information Center.

Standard Cover Sheet & Title Block

One of the following sheet sizes should be used for all projects. The preferred standard is Arch D (24 x 36 in). If a project requires an alternate size, approval must be obtained from the COTR. All title blocks and cover sheets are provided in metric and imperial versions. All drawings in a submission shall be produced in a consistent format and drawing size. Sketches should be one of the Letter or Tabloid formats.

Paper Size	Dimensions	File Name
Arch D (Standard)	24 by 36 inches 610 by 914 mm	Cover: ST-CVR_in.dwg Sheet: ST-TTL_in.dwg Cover: ST-CVR_mm.dwg Sheet: ST-TTL_mm.dwg
Arch E	36 by 48 inches 914 by 1219 mm	Cover: E-CVR_in.dwg Sheet: E-TTL_in.dwg Cover: E-CVR_mm.dwg Sheet: E-TTL_mm.dwg
Arch F (Arch 30)	30 by 42 inches 762 by 1067 mm	Cover: F-CVR_in.dwg Sheet: F-TTL_in.dwg Cover: F-CVR_mm.dwg Sheet: F-TTL_mm.dwg
Tabloid	11 by 17 inches 279 by 432 mm	Vertical: 11x17-V_in.dwg Horizontal: 11x17-H_in.dwg Vertical: 11x17-V_mm.dwg Horizontal: 11x17-H_mm.dwg
Letter	8½ by 11 inches 216 by 279 mm	Portrait: 8x11-P_in.dwg Landscape: 8x11-L_in.dwg Portrait: 8x11-P_mm.dwg Landscape: 8x11-L_mm.dwg

**OPDC Sheet
Sizes** For the purpose of microfilm storage and reduced document reading, all drawing notes shall be given in simple AutoCAD text fonts or True-Type fonts Arial, Times or Verdana. Fonts that are not standard to AutoCAD or True-Type fonts Arial, Times or Verdana are not acceptable for use in OPDC drawings.



**Text Sizes and
Fonts**

Upper-case lettering shall be used on drawings unless lower-case letters are required to conform to other established standards, equipment nomenclature, or marking.

All construction document main titles shall use ***Roman Duplex*** (ROMAND) font or True-Type font Arial. All other lettering shall be ***Roman Simplex*** (ROMANS) font or True-Type fonts Arial, Times or Verdana.

The plotted text strings for main drawing titles shall be no smaller than 6.4 (1/4 inch) mm high. All other lettering shall be a minimum of 3.2 mm (1/8 inch) high with a 2mm (1/16 inch) space between lines of text.

Symbols

Always use the standard symbols listed in Appendix C. Do not redefine these symbols. No substitutions will be permitted.

Background Drawing Submission Standards

Introduction Background drawings are by definition, re-usable. The requirements in this section are intended to be applied to drawings for new buildings. Areas where choices can be made are left up to the discretion of the A/E. For existing buildings, the Smithsonian will provide drawings at project startup. While editing these SI-supplied background drawings, the A/E must maintain the standards in keeping with the way the drawings were received.

File Format All background drawing deliverables shall be submitted in their native software format. These must adhere to the same standards described in the File Format section with the Sheet Drawing Submission Standards described above.

Drawing Setup The origin of every file in the background drawing submission shall be at coordinates (0, 0, 0) located at the lowest left-hand column line intersection that is consistent on each floor of a given building.

Drawings inserted into one another at (0, 0, 0) shall always accurately represent the vertical alignment of floors in the built reality of the building.

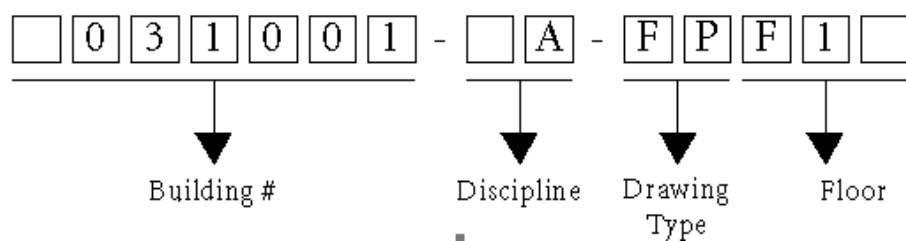
There must be a one-to-one relationship between files and floors.

Areas of a floor that occur at different elevations relative to each other without overlapping should be in the same drawing. Areas that occur as mezzanines, no matter how small, should be relegated to a separate drawing, with the full building column grid included to help with spatial reference.

File Naming Each file name has four components: the full building number (minus the hyphen), a one-to-two-character discipline code, a two-character drawing type code and 2 to 3 characters that identify the floor. For example, a drawing named

031001-A-FPF1.dwg

Represents the first floor architectural background drawing for National Museum of American History (031) – Main Building (001).



See Appendix B for a list of sheet sequence numbers, discipline codes, and typical drawing type codes for each discipline.

Floor identification is dependent on what the occupants of a particular building choose to call the various levels, but certain terms appear regularly. The following are examples of abbreviations already in use at the Smithsonian:

Third Floor:	F3
Basement:	B1
Parking Level 2:	P2
Lower Level:	LL
First Floor Mezzanine:	F1M
Penthouse:	PH

Object Color Avoid changing the color of an object, all objects shall be created with all properties BYLAYER.

Drawing Techniques, Accuracy and Consistency If the CAD drawings are based on well-dimensioned archives, the accuracy shall be +/- 25 mm between major structural elements. Wall thickness shall be to the nearest 10 mm. The tolerance for furniture placement is typically 100 mm. The Smithsonian will specify procedures and accuracy requirements for drawings based on field verification and for new construction drawings.

Do not change the drawing's insertion point, or origin. Temporary changes in the insertion point are permitted as long as the default (0, 0) coordinate is reestablished prior to drawing submission. The insertion point is used as the reference point for connecting various drawing sections together, as well as for merging drawings/reference files from various disciplines.

Prior to submission, all final drawings shall be purged of all the un-referenced line types, blocks, layers, views, shapes, and text styles and all CAD drawings shall be saved and submitted with the zoom display set to drawing "*extents*."

Units Drawings submitted to OPDC may be metric or imperial, which is determined by the COTR on a project-by-project basis. Metric drawings shall have the units set to decimal, with a precision of 0.0. Block insertion units shall be millimeters. Imperial drawings shall have the units set to architectural, with a precision of 1/64." Block insertion units shall be inches.



Blocks Blocks shall be created for all entities that are used repeatedly on a drawing, such as doors, windows, furniture and other plan elements. Blocks should be created with logical insertion points that are consistent with their placement in a drawing, such as the bottom left corner, center of circle or radius, etc.

Blocks should be inserted on the correct layer (i.e. doors should be inserted on layer A-DOOR-).

Any temporary blocks used in drawing creation should be exploded and purged out of the drawings.

When defining new blocks, they shall be defined on layer "0" with the color and line type parameters set to BYLAYER.

Lines and Line Types All entities shall be drawn with the LINE command or POLYLINE command with a "0" thickness and a "0" elevation. Walls are to be drawn with two lines the appropriate distance apart, not as a single polyline with thickness. Line weight will be assigned in plotting.

All lines must properly connect, i.e. corners should meet without overshooting.

Do not duplicate lines. Construction lines should be placed on a separate non-plotting layer.

Always use the AutoCAD default line types found in ACAD.LIN. Any new line types shall be approved by the OPDC Design Manager prior to use.

Dimensions Background Drawings, by definition, contain few dimensions. When dimensions are required by the SOW, they shall be associative.

Dimensions should never be exploded, and text may only be entered manually if the dimension is intended to be an approximate, minimum, or maximum distance.

Layers Layer names must adhere to the most recent version of the AIA Layer Guidelines, as included in the National CAD Standard.

Building elements must be placed on the correct layers. Do not repeat similar information among different layers.

Do not store information on Layer "0."

Plot Style Smithsonian OPDC utilizes "Monochrome.ctb" as the standard.



Standard Base Plans

- * The following requirements refer only to AutoCAD drawings. See Smithsonian OPDC BIM Guidelines for all projects that require BIM.

Introduction FM GeoID maintains drawings that are basically a subset of the Architectural Base Plans, with standardized Layer Naming, Contents of the layers, and Graphics that depict the content. The Standard Base Plans describe the configuration of the facility inventory, and provide a single foundation for the wide range of work on facilities:

- Planning/Design activities, including defining Existing Conditions
- Operations, Maintenance, Security, etc.
- As-Built Drawings
- Display of database information on drawings.

For this reason, the following requirements will be enforced with particular stringency for all new and existing drawings that fall within the category of Standard Base Plans.

Layers The following chart list the layers for site plans and floor plans that are considered the Standard Base Plans. Only these layers are required to meet the specifications of this section. This is not an all-inclusive list, please refer to National CAD Standards for acceptable laying standards.

Site Plan Layers	Description	Linetype	Color
C-BLDG-OTLN	Building Footprints	Continuous	W/7
C-PKNG-OTLN	Parking Lots	Continuous	C/4
C-PKNG-CURB	Parking Curbs and Gutters	Continuous	G/3
C-PROP-LINE	Property Lines (check Benchmarks)	Continuous	Y/2
C-ROAD-OTLN	Roads	Continuous	C/4
C-ROAD-CURB	Curbs	Continuous	M/6
L-PLNT-TREE	Trees	Continuous	83
L-PLNT-GRND	Ground Covers & Vines	Continuous	82
L-PLNT-BEDS	Landscaping Beds	Continuous	M/6
L-PLNT-BUSH	Bushes and Shrubs	Continuous	83
L-PLNT-TURF	Lawn Areas	Continuous	23
L-SITE-BRDG	Bridges	Continuous	22
L-SITE-EWAT	Water features	Continuous	162
L-SITE-FENC	Fencing	Continuous	Y/2
L-SITE-DECK	Decks	Continuous	232
L-SITE-POOL	Pools & Spas	Continuous	162
L-SITE-ROCK	Boulders and cobble	Continuous	R/1
L-SITE-RTWL	Retaining Walls	Continuous	C/4
L-SITE-SPRT	Sports Fields	Continuous	Y/2
L-SITE-WALK	Walks & Steps	Continuous	R/1



Base Plan Layers	Description	Linetype	Color
A-AREA-IDEN	Room Numbers	Continuous	W/7
A-DOOR-FRAM	Door Frames	Continuous	M/6
A-DOOR-FULL	Full-height doors	Continuous	G/3
A-DOOR-GLAZ	Door Glazing	Continuous	B/5
A-DOOR-PRHT	Partial-height doors	Continuous	M/6
A-EXBT	Exhibit	Continuous	R/1
A-EXBT-WALL	Exhibit Wall	Continuous	40
A-FLOR-EVTR	Elevators, wheelchair lifts	Continuous	Y/2
A-FLOR-LEVL	Floor level changes, shafts, ramps	Continuous	M/6
A-FLOR-OTLN	Building / Gross Area Polyline	Continuous	40
A-FLOR-OTLN-RPRM	Room / Space Area Polyline	Continuous	M/6
A-FLOR-OVHD	Overhead items	ACAD_ISO02W100	Gr/8
A-FLOR-SPCL	Architectural specialties (e.g. toilet room accessories, display cases)	Continuous	G/3
A-FLOR-STRS	Stairs, escalators	Continuous	Y/2
A-FLOR-TPTN	Toilet room partitions	Continuous	R/1
A-GLAZ-CURT	Curtain Wall Panels and System	Continuous	B/5
A-GLAZ-PRHT	Window glazing	Continuous	R/1
A-GLAZ-SILL	Window sills	Continuous	B/5
A-ROOF	Parapet walls (for reference on partial floors)	Continuous	Gr/8
A-WALL-CWMG	Curtain wall mullions	Continuous	R/1
A-WALL-FENC	Fence	Continuous	R/1
A-WALL-FNDN	Foundation Wall	Continuous	G/3
A-WALL-FULL-EXTR	Exterior Walls	Continuous	Y/2
A-WALL-FULL-INTR	Full-height Interior Walls	Continuous	G/3
A-WALL-MOVE	Movable partitions	Continuous	B/5
A-WALL-PRHT	Partial-height walls	Continuous	R/1
S-COLS-PRIM	Primary columns	Continuous	M/6
S-COLS-SCND	Secondary columns	Continuous	Y/2
A-AREA-LINE	Lines defining room areas that are not walls	Continuous	C/4
P-SANR-FIXT	Plumbing Fixtures	Continuous	M/6
A-FLOR-HRAL	Handrails	Continuous	R/1
A-FLOR-WDWK	Built-in cabinets and counters	Continuous	G/3
A-WALL-HEAD	Door headers	Continuous	R/1
I-FURN	Furniture	Continuous	B/5
I-FURN-PNLS	Systems Furniture	Continuous	B/5
S-GRID-HORZ	Horizontal column grid lines	ACAD_ISO08W100	B/5
S-GRID-IDEN	Column identifiers	Continuous	R/1
S-GRID-VERT	Vertical column grid lines	ACAD_ISO08W100	B/5



Appendix A: Project and Drawing Documentation Report and Deliverables Matrix

Below are representations of typical Drawing Documentation Report and Deliverables Matrix that would accompany a required electronic deliverable.

PROJECT NAME - PROJECT LOCATION				XXXX
PROJECT AND DRAWING DOCUMENTATION REPORT				BUILDING NO
Building Name:	XXXXX	Smithsonian COTR:	XXXX	
Building Address:	XXXXX	Smithsonian COTR Phone:	XXXX	
A/E Name:	XXXXX			
A/E Address:	XXXXX			
Work Order No.:	XXXXX	CAD software/version:	XXXX	
A/E Contact:	XXXXX	Third party software/version*:	XXXX	
A/E Contact Phon	XXXXX	Virus scanning software/version:	XXXX	
SCRIPT FILES		NON AUTOCAD ENTITIES*		
File name	Description	Fonts	XXXX	
XXXX	XXXX	Linetypes	XXXX	
		Blocks	XXXX	
		Other	XXXX	

* Must be pre-approved in writing by the SI COTR

The undersigned certifies the following:

_____ All documents comply with SF CAD Standards
_____ All electronic files have been scanned, and are virus free

Name _____
Title _____
Signature _____
Date _____

Form created 6/19/01

**PROJECT NAME - PROJECT LOCATION****XXXX****DELIVERABLES MATRIX****BUILDING NO****Building Name:** XXXXX**Smithsonian COTR:** XXXX**Building Address:** XXXXX**Smithsonian COTR Phone:** XXXX**Sheet Size:** XXXX**A/E name:** XXXXX**File Format:** XXXX**Work order no.:** XXXXX**No of Files:** XXXX**A/E contact:** XXXXX**Total File Volume:** XXXX**A/E contact phone:** XXXXX**Date of Submission:** XXXX

SHEET	NO/ Total No.	SHEET TITLE	FILE NAME	XREFS FILE NAMES	PLOT SCALE	SUBJECT
G-001	1/22	COVER SHEET	G-001.dwg		1=1	Plot Sheet
				G-SP.dwg		Vicinity Plan
G-002	2/22	SYMBOLS & ABBREVIATIONS	G-002.dwg		1=1	Plot Sheet
A-101	3/22	EAST ENTRY REMODEL PLAN	A-101.dwg		1=1	Plot Sheet
				A-FP01.dwg		1st Floor plan & demo plan
				A-DT014a.dwg		1/4" Drawings
A-501	4/22	DETAILS	A-501.dwg		1=1	Plot Sheet
				A-DT034a.dwg		3/4" Details
				A-DT112a.dwg		1 1/2" Details
				A-DT300a.dwg		3" Details
A-502	5/22	DETAILS	A-502.dwg		1=1	Plot Sheet
				A-DT014b.dwg		1/4" Details
				A-DT112b.dwg		1 1/2" Details
L-101	6/22	EXISTING SITE CONDITIONS	L-101.dwg		1=1	Plot Sheet
				L-SP.dwg		Exist. Site Information
				L-SH.dwg		Landscape Legend
				G-SH.dwg		Detail Box Background
				C-UPsan.dwg		San. Sewer Plan
				C-UPssw.dwg		Storm Sewer Plan
				C-UPwat.dwg		Water Utility Plan
L-102	7/22	SITE DEMOLITION	L-102.dwg		1=1	Plot Sheet
				L-SP.dwg		Exist. Site Information
				L-DP.dwg		Site Demolition plan
				G-SH.dwg		Detail Box Background
				L-SPa.dwg		Limits of Construction Plan
				L-SHa.dwg		Landscape Notes

**Appendix B:**

Discipline Codes					
Discipline	Designator	Description	Discipline	Designator	Description
General	G-	All General	Landscape	LI	Landscape Irrigation
	GI	General Information		LL	Landscape Lighting
	GC	General Contract		LP	Landscape Planting
	GR	General Resource		LR	Landscape Relocation
Survey / Mapping	V-	All Survey/Mapping		LS	Landscape Site
	VA	Aerial Survey	Structural	S-	All Structural
	VF	Field Survey		SD	Structural Demolition
	VH*	Hydrographic Survey		SS	Structural Site
	VI	Digital Survey		SB	Structural Substructure
	VU	Combined Utilities		SF	Structural Framing
Civil	C-	All Civil		SR*	Structural Reinforcement
	CB*	Civil Beach Re-nourishment		ST*	Superstructure
	CD	Civil Demolition		SC*	Structural Components
	CE*	Civil Ecosystem Restoration	Architectural	A-	All Architectural
	CF*	Civil Flood Control		AS	Architectural Site
	CG	Civil Grading		AD	Architectural Demolition
	CI	Civil Improvements		AE	Architectural Elements
	CN*	Civil Navigation		AI	Architectural Interiors
	CO*	Civil Operation and Maintenance		AF	Architectural Finishes
	CP	Civil Paving		AG	Architectural Graphics
	CH*	Civil Shore Protection		AL**	Life Safety
	CR*	Civil Recreation	Interiors	I-	All Interiors
	CS	Civil Site		ID	Interior Demolition
	CX*	Civil Security		IN	Interior Design
	CT	Civil Transportation		IF	Interior Furnishings
	CU	Civil Utilities		IG	Interior Graphics
Civil Works	W-**	Civil Works	SI Custom	EX**	Exhibits
Utilities	U-	All Other Utilities		AA**	Accessibility
Geotechnical	B-	All Geotechnical		EV**	Elevator
Landscape	L-	All Landscape		GS**	Graphics
	LD	Landscape Demolition	Historic Preservation	SS**	Special – Systems
	LG	Landscape Grading		PH**	Historic Preservation
Note: * = Not in NCS 5.0; **=SI Only Discipline Code			Source: USACE A/E/C CAD Standard Release 5.0		

Discipline Code Table, continued					
Discipline	Designator	Description	Discipline	Designator	Description
Equipment	Q-	All Equipment	Fire Protection	FD**	Fire Protection Demolition
	QA	Athletic Equipment	Electrical	E-	All Electrical
	QB	Bank Equipment		EA*	Elec. Airfield Lighting & Nav-aids
	QC	Dry Cleaning Equipment		ES	Electrical Site
	QD	Detention Equipment		EC*	Electrical Cathodic Protection
	QE	Educational Equipment		EG*	Electrical Grounding
	QF	Food Service Equipment		ED	Electrical Demolition
	QH	Hospital Equipment		EP	Electrical Interior Power
	QL	Laboratory Equipment		EL	Electrical Interior Lighting
	QM	Maintenance Equipment		EI	Electrical Instrumentation
	QP	Parking Lot Equipment		EY	Elec. Interior Auxiliary Systems
	QR	Retail Equipment		ET	Electrical Telecommunications
	QS	Site Equipment	Tele-communications	T-	All Telecommunications
	QT	Theatrical Equipment		TD*	Telecom. Demolition
	QV	Video/Photographic Equip.		TA	Audio Visual
	QY	Security Equipment		TC	Clock and Program
Mechanical	M-	All Mechanical		TI	Intercom
	MS	Mechanical Site		TM	Monitoring
	MD	Mechanical Demolition		TN	Data Networks
	MH	Mechanical HVAC		TS*	Supervisory Control & Data Acquisition (SCADA) systems & equipment
	MP	Mechanical Piping		TT	Telephone
	MI	Mechanical Instrumentation		TY	Security (Access control& Alarms)
	MY*	Mechanical Hydraulic Sys.	Hazardous Materials	H-	Hazardous Materials
Plumbing	P-	All Plumbing		HA	Asbestos
	PS	Plumbing Site		HC	Chemicals
	PD	Plumbing Demolition		HL	Lead
	PP	Plumbing Piping		HP	PCB
	PQ	Plumbing Equipment		HR	Refrigerants
	PL	Plumbing	Shop Drawings	Z-	Contractor/Shop Dwgs.
Fire Protection	F-	All Fire Protection	Operations	O-	Operations
	FA	Fire Detection and Alarm	Others	X-	Other Disciplines
	FX	Fire Suppression			
Note: * = Not in NCS 5.0; **=SI Only Discipline Code			Source: USACE A/E/C CAD Standard Release 5.0		



Discipline Code Table, continued

Discipline	Designator	Description	Discipline	Designator	Description
Process	D-	All Process	Resource	R-	All Resource
	DS	Process Site		RC	Resource Civil
	DD	Process Demolition		RS	Resource Structural
	DL	Process Liquids		RA	Resource Architectural
	DG	Process Gases		RM	Resource Mechanical
	DP	Process Piping		RE	Resource Electrical
	DQ	Process Equipment			
	DE	Process Electrical			
	DI	Process Instrumentation			

Note: * = Not in NCS 5.0; **=SI Only Discipline Code

Source: USACE A/E/C CAD Standard Release 5.0

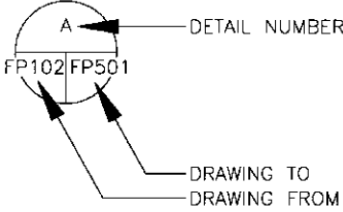
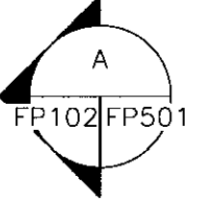

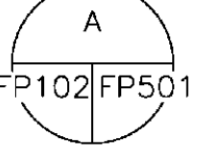
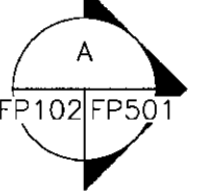

Drawing Type Codes

All Disciplines	Designator	Description	Discipline Specific	Designator	Description
				Structural	
	FP	Floor Plan		MP	Framing Plan
	DP	Demolition Plan		NP	Foundation Plan
				Architectural/Interiors	
	QP	Equipment Plan		EP	Enlarged Plan
	XP	Existing Plan		CP	Ceiling Plan
	RO	Roof Plan		RP	Furniture Plan
	EL	Elevation		NP	Finish Plans
	SC	Section		VP	Evacuation Plan
	DT	Detail		Mechanical	
	SH	Schedule		CP	Control Plan
	3D	Isometric/3D		HP	HVAC - Ductwork Plan
	DG	Diagrams		PP	Piping Plan
Discipline Specific	General		Electrical		
	BS	Border Sheet	CP	Communication	
	KP	Key Plan	GP	Grounding	
	CS	Cover Sheet	LP	Lighting	
	Civil		PP	Power	
	EP	Environmental Plan	Plumbing		
	GP	Grading Plan	PP	Plumbing Plan	
	RP	Road/Topographic Plan	Fire – Protection		
	SV	Survey	KP	Sprinkler Plan	
	UP	Utility Plan	Telecommunications		
			DP	Data	
			TP	Telephone	

Sheet Sequence Numbers			
000	General (Symbols, Legends, Notes)	500	Details
100	Plans (including Reflected Ceiling Plans)	600	Schedules and Diagrams
200	Elevations	700	User Defined (Elevators and Stair plans, details, sections)
300	Sections	800	User Defined (non-architecture)
400	Enlarged Views (plans, sections, elevations)	900	3D Views, Interior Details, Partition Types, Window Types

Appendix C: Required Symbols

The following symbols are available from OPDC Website:
Smithsonian A/E Information Center.

<p>Section Mark Blocks</p> 	<p>Block Name: SEC-L Insertion Point: Center of Circle Scale 1:1</p> 	<p>Block Name: SEC-T Insertion Point: Center of Circle Scale 1:1</p> 
<p>Block Name: SE Insertion Point: Center of Circle Scale 1:1</p> 	<p>Block Name: SEC-R Insertion Point: Center of Circle Scale 1:1</p> 	<p>Block Name: SEC-B Insertion Point: Center of Circle Scale 1:1</p> 



General Notes Call Out Block Name: GNOTEN Insertion Point: Center		Window Call Out Block Name: WINDN Insertion Point: Center	Wall Type Tag Block Name: WALL-T Insertion Point: Center
North Arrow Block Name: NARROW Insertion Point: Center		Revision Call Out Block Name: REV Insertion Point: Center	Door Number Tag Block Name: DOORN Insertion Point: Center
Room Number Tag Block Name: ROOMN Insertion Point: Center			
Drawing Title Block Name: PLAN-T Insertion Point: Center		 FLOOR PLAN SCALE = 1:100	
Detail Title Block Name: DETAIL-T Insertion Point: Center		 DETAIL SCALE = 1:5	
DRAWING SCALES		Scale 1:50 GS50.DWG	
Scale 1:1 GS1.DWG		Scale 1:100 GS100.DWG	
Scale 1:2 GS2.DWG		Scale 1:200 GS200.DWG	
Scale 1:5 GS5.DWG		Scale 1:300 GS300.DWG	
Scale 1:10 GS10.DWG		Scale 1:500 GS500.DWG	
Scale 1:20 GS20.DWG		Scale 1:1000 GS1000.DWG	