CALIFORNIA STATE UNIVERSITY
FULLERTON

Computer Assisted Drafting and Design Standards

California State University, Fullerton
Office of Design and Construction
Revised: May 18, 2012

Index

1. Introduction

The California State University Fullerton CAD standards are a blend of our local campus CAD standards and the most relevant and current version of the CAD standards set out by the Chancellor's Office. In this standard, the reader will find the most current conventions applied to features found in AutoCAD 2007. Every attempt will be made to keep this standard current as newer versions of AutoCAD become available. In addition we will attempt to incorporate changes in AutoCAD plotting and block functionality as it emerges and evolves.

Although nothing in the CSUF CAD standard precludes any consultant from using other CAD software, all submitted drawings shall adhere to the standards set forth in this document. More specifically, all submitted drawings shall be in AutoCAD DWG format, and meet the drawing standards set out below.

2. Deliverables

The files and information contained in this section shall comprise the electronic data deliverables. Other information and extraneous files shall be excluded from the deliverable package unless otherwise directed by the University.

- All deliverables shall be provided on Windows formatted CD-ROM
- All file shall be directly copied to CD-ROM. Compression or archive utilities shall NOT be used.
- All drawing files shall be saved in AutoCAD version 2007 only. No other formats or versions are acceptable. **Drawings prepared in Autodesk vertical applications** (Architectural Desktop, Map 3D, etc.) **which incorporate program-specific objects shall be submitted with appropriate object enabler files**.
- All AutoCAD drawings shall have all externally referenced files bound using the Insert bind type to keep all layers intact.
- All projects which utilize 3-dimensional models shall include a copy of the final 3D model in its native file format.

The submitting consultant or organization shall be responsible for archiving the electronic data until final written acceptance from the University has been issued.

2.1 FILE ORGANIZATION

The contractor shall supply AutoCAD drawings on CD or DVD with the following organizational folders:

CAD Drawings -- This folder shall contain the actual plotted drawings, including title blocks and model space drawings, used in the production of the plotted drawing sheets.

Resource Files – Contains incidental files required for the plotting and correct representation of the AutoCAD drawing. These files may include CTB files, non-standard font files (SHX or TTF), customized LIN files, etc.

Documentation – Contains the transmittal sheet file, list of drawing files, list of non-standard fonts and custom files needed to reproduce the original AutoCAD file.

3D Model – Contains the final 3D model file in its native file format.

2.2 REQUIRED FILES, SHEETS and PRINTS

PDF Files

The contractor shall supply Adobe Portable Document File (PDF) versions of all of the plotted sheets included in the drawing set. These should be set to print on the original paper size and orientation.

Hard Copies

The contractor shall provide one full-size (and/or reduced size at the discretion of the University) hard copy (bond paper) of each furnished drawing with each submittal. A hard copy of the documentation for the drawing set shall also be provided with each submittal on the size and type of media specified by the University.

CAD Files

CAD drawing files **shall be identical** to the hard copy, or paper version, submittals provided by the contractor. **CAD drawings which do not match the hard copy sheets will be rejected.**

The drawings shall be on the same size format for each project. Maximum overall sheet size shall not exceed 42" x 30" (size E1). Only standard unreduced sheet sizes will be accepted without prior approval of the University. Standard architectural paper sizes are as follows:

A Size sheet = 8-1/2" x 11"
B Size sheet = 11" x 17"
C Size sheet = 18" x 24"
D Size sheet = 24" x 36"
E Size sheet = 30" x 42"

Transmittal Sheet

A printed transmittal sheet shall accompany the media containing, at a minimum, the following information:

- Information included on the external label of each, diskette, etc.; total number of disks being delivered; and a list of the file names and file descriptions on each disk.
- If a 3-dimensional model is included, the name of the software used to create it, the website address of the software publisher and the version of the software used.

2.3. DOCUMENTATION

Complete drawing documentation listing all drawing files which make up the project shall be provided for each drawing. This documentation shall be provided in both paper and digital formats. When several views or viewing settings (LTSCALE, PSLTSCALE, Layer Manager, etc.), are utilized, such information shall also be included in the drawing file documentation.

CD-ROM Labeling

All CDs are to be labeled as follows:

PROJECT:	Title of the project.
SUBMITTAL:	Project submittal phase (i.e. 50% schematic, etc.)
DATE:	The date when the submittal was delivered to the campus for final acceptance.
AUTOCAD VERSION:	AutoCAD version
COMPANY INFO:	Name, Telephone and Email Address of Consultant
CD-ROM NUMBER:	Number of CD ROM, labeled as X of Y. If a single CD is used, label as 1 of 1.

File Description List

Each CD is to be accompanied by a list of all included files, and a file description for each file on a letter-size hard copy printout and an included text file in Microsoft Word format. The file description list shall be included in the **Documentation** folder listed above. Each list is to include the following information:

A. Project Information

Date
Campus, Project, Building Number
Consulting Firm
Address, Phone Number, FAX and Email Address
Project Manager

B. Listing of Files Included in Submittal (example)

Drawing Name	Sheet Title
26-01-S-FO-S201.DWG	1st Level Foundation Plan
26-02-S-FR-S202.DWG	2nd Level Framing Plan
26-02-S-FR-S203.DWG	3rd Level Framing Plan
26-01-A-FP-A201.DWG	1st Level Floor Plan
XTTL.DWG	Title Block

Other Required Data

In the **CAD Files** folder include ALL drawing files included in the hard copy submittal, including any, title blocks, raster graphic files, logos, linked spreadsheets or word processing files, and any other files necessary to create a complete document set. Raster graphics files (JPG, TIF, etc.) shall be stored in the same folder as the drawings that utilize them.

In the **Resource Files** folder, include all files, both graphic and non-graphic, required for accessing, using and plotting the project submittal drawings, including (but not limited to) Color Tables (CTB), Linetype Files (LIN), Shape Files (SHX), Layer Manager Files (LAY), Sheet Set Files (DST), and Font Files (SHX, TTF). Any object enabler files that are required to read any AutoCAD proxy objects should also be included.

2D vs. 3D Drawing Files

Construction drawings may incorporate 3D or 2D geometry as desired. A room identification/numbering floor plan shall be provided in 2D plan view format with all redundant linework and geometry removed.

Text Files

File Description text and any other text documents shall be delivered in Microsoft Word format. Specifications (when provided) shall be provided in Microsoft Word and/or Adobe Acrobat PDF format.

3.0 Drawing Standards

3.1 DRAWING FILES

AutoCAD drawings produced for the University shall take advantage of Paper Space and Model Space. Model Space contains the physical components of a project. Model space objects are drawn at full scale and typically represent plans, elevations, sections, etc. All graphic representations of the project or facility and all related dimensions, symbols, blocks, etc. shall be constructed in Model Space; they may be referenced from another file.

Paper Space shall be used for the sheet border, title block, consultant’s stamp, logos and all other non-scaled components of the plotted drawing sheet. General notes and other large blocks of text shall also be placed in Paper Space and plotted at 1:1.

See also 3.5 Drawing Formats & Graphics

3.2 FILE INFORMATION

All information included in hard copy submittals shall be included in electronic data deliverables. If blocks are used in the documents, they shall be consistent as possible throughout the drawing set. For example, if fixture “A” is used in a block form, then all locations where fixture ‘A” is shown shall be of the same block. Dynamic blocks shall be used wherever possible.

3.3 CAD DRAWING STANDARDS

All CAD digital files shall be submitted in AutoCAD version 2007 only **DWG** file format. DXF format and AutoCAD PLT files will ***not*** be accepted. Before a file is placed on the delivery media, the following procedures shall be performed:

a. Remove all extraneous graphics outside the border area. Set the active parameters to a standard setting or those in the provided prototype file.
b. Purge drawing file of unused and unnecessary layers, linetypes, blocks, etc.
c. Include all files, both graphic and non-graphic, required for the project (e.g., color tables, pen tables, font libraries, block libraries, user command files, plot control files ((i.e. CTB or PC-2 format)), etc.).
d. Ascertain that all support files such as those listed above are in the same directory and that references to those files do not include device or directory specifications.
e. Include any standard sheets (i.e., abbreviation sheets, standard symbol sheets, etc.) necessary for a complete project.
f. Place all drawings within **standard CSUF title blocks**, and complete all information included in the attribute text. It shall be the consultant’s responsibility to obtain the CSUF title blocks from the Design and Construction Office. The consultant may create and use his/her own version of the CSUF title blocks **only upon prior approval** of the Design and Construction Office.
g. Ascertain that layering **shall be consistent** across all drawings within a project
h Ascertain that colors for each layer **shall be consistent** across all drawings in a project
i. Ascertain that all drawing objects shall be drawn with the color **BYLAYER**. Objects drawn with individual colors (rather than by layer) shall **not** be included in the drawing set.
j. Ascertain that the drawing uses a **color table** connection to plotted line widths, not a **style table** connection.
k. Ascertain that solid hatch is created by only using AutoCAD **SOLID** hatch pattern, or with the **SOLID** command. Using dense hatch patterns to create solid fill shall **not** be permitted in the drawing set.
l. Ascertain that all objects on the drawing are drawn with the individual linetype scale set at **1**. Objects with individually scaled linetypes shall **not** be included in the drawing set.
m. Ascertain that all blocks have been created on the **0** layer, then inserted on their correct layer in the drawing. All blocks shall have the color and linetype BYBLOCK.

n. Ascertain that any raster file included in a drawing shall be placed on its own layer.
o. Ascertain that the world coordinate system shall correspond to the California Coordinate System **NAD83** for all civil, map and campus plan drawings (including Campus Master Plans) All vertical data shall be based on the North American Vertical Datum of 1988 (NAVD88). All coordinate information is based on the California State Plane Coordinate System Zone VI. All units are U.S. Survey Feet. Where necessary for compositing drawings on a sheet, a user coordinate system named “PLAN VIEW” shall be established. If possible, all drawings shall have two reference points, which shall correspond to the NAD83 system.

3.4 BLOCKS

Common symbols, doors, sinks, toilets, windows, equipment, etc., shall be blocks. Consultants shall use predefined symbols and blocks when such are provided by the university.

Entities to be shown as blocks:

Plumbing & bath fixtures (toilets, urinals, lavatories, tubs, grab bars, accessories, mirrors, etc.)
Electrical devices & hardware (lighting fixtures, switches, outlets, panels, etc.)
Mechanical (HVAC) equipment (supply diffusers, return grilles, thermostats, air handlers chillers, pumps boilers, heat exchangers, etc.)
Doors
Windows
Equipment: Type I and II
Furniture
Drawing symbols (callouts, section arrows, North arrows, scale bars, etc.)
Door and window schedule marks, room number indicators, other common symbols

3.5 DIMENSIONING

All dimensions shown in the project submittals shall be fully associative. Dimension definition points should be located with an appropriate Object Snap (End Point, Mid Point, etc.) or otherwise located precisely on the project geometry. Manual editing of dimension text or otherwise overriding actual dimensions is NOT acceptable in submittals to the university. Evidence of such overrides shall be grounds for rejection of the submittal drawings.

3.6 FILL AND HATCH PATTERNS

Solid hatch shall be created by only using AutoCAD “SOLID” hatch pattern, or with the SOLID command. Using dense hatch patterns to create solid fill shall not be permitted in the drawing set. Hatches shall be associative where possible and shall be retained (not exploded) as drawn. Any custom hatch patterns employed in the submittal drawings shall be provided to the University in the submittal drawing support files.

3.7 LINE WEIGHTS, COLORS AND PEN ASSIGNMENTS

The line weight and pen assignments for submittal CAD drawings shall be at the discretion of the consultant. All drawing entities shall be placed on their appropriate layers, and their display color and line type shall be that of BYLAYER. Placing entities of different colors on the same layer shall only be allowed when expressly permitted by representatives of the University.

All submittal drawings shall utilize color dependent plot styles (not name dependent plot styles) where the object color is translated to a particular line weight and density. The consultant shall provide the appropriate color table translation file (CTB) to the University with the submittal drawings. It is the responsibility of the consultant to assure that the University is able to recreate the hard copy files using the submitted CAD drawings and their respective support files.

3.8 CAD DRAWING FILE CONTENT

All submittals shall incorporate good drafting practices and organize information clearly and systematically. Graphic elements representing a physical component of the project (i.e., lines indicating a wall, or a block indicating a light fixture) shall be shown only one time in the submittals.

Prototype drawing files and symbols shall be utilized as provided by the Office of Design and Construction web site:

http://cpm.fullerton.edu/Download/Default.aspx

These include typical title sheets and formatted drawing files. When these files contain attributes, all relevant attribute fields are to be filled out.

3.9 DRAWING FORMATS AND GRAPHICS

AutoCAD drawings produced by the consultant shall take advantage of model space and paper space.

Model space shall contain the physical components of a project drawn at full scale and typically represent plans, elevations, sections, etc.

Paper space shall contain the sheet border, title block, consultant’s stamp, logos and all other components of the master drawing sheet. The title block shall contain the correct submittal phase of the sheet set. Sheet layouts shall be located in paper space.

A layout is synonymous to a plotted CAD file. Layouts are plotted at full scale (1=1), since the model file files are seen in layout at a particular scale ratio. In other words, a layout is a ready-to-plot CAD file.

All graphic representations of the project or facility and all related notes, dimensions symbols, etc. shall be constructed in model space.

3.10 DRAWING SUBMMITTAL PHASES

The submittal phase of the drawing set shall be clearly identified in three separate locations:

1) the drawing title block
2) the documentation accompanying the drawing set
3) the CD label(s) for the drawing set.

4. Graphics Concepts

4.1 LINETYPES and LINE STYLES

The line types/styles are used to distinguish entities and improve clarity both on the computer monitor and the plotted drawing. The line types/styles shall be standard AutoCAD line types unless specifically noted and included in the submittal package as separate LIN files.

4.2 SCREENING (Half-toning)

Screened images are created through a process called half-toning in which the density and pattern of black and white dots are varied to simulate different shades of gray. Varying the intensity of gray scales allows users to distinguish different aspects of a drawing when it is plotted. For example, an area on a site designated for demolition can be assigned a color that has been assigned a screening percentage. When plotted, the area will be shown at a lighter shade compared to other elements in the drawing. This will allow the contractor to immediately identify the demolition area on the drawing.

4.3 TEXT SYTLES (Fonts)

Any font (either TrueType or AutoCAD SHX) not supplied in the original AutoCAD installation package **must** be supplied with the drawing set submitted by the consultant.

4.4 GRAPHIC REPRESENTATIONS

All graphic entities shall be comprised of representational and geometrically accurate entities, e.g. a circle shall be represented by circle entity and NOT a visually equivalent collection of line segments. Continuous linear elements such as contour lines, or curb lines, shall be constructed with polylines. Items shown in a dashed line type shall be created with the LINETYPE feature and NOT by individual line elements.

4.5 RASTER GRAPHICS

Raster files shall not be used to represent the project geometry. Existing building plans or other drawings shall not be scanned and inserted as raster files. Raster files may be used to incorporate existing condition photos, scanned copies of correspondence or similar applications. Any raster file included in a drawing shall be placed on its own layer.

5.0 Layering

All drawings shall incorporate the standard AIA long format layers as specified in the National CAD Standard Version 3.1. Blank drawings containing these layers are available to contractors through the CSUF Office of Design and Construction Web Site.

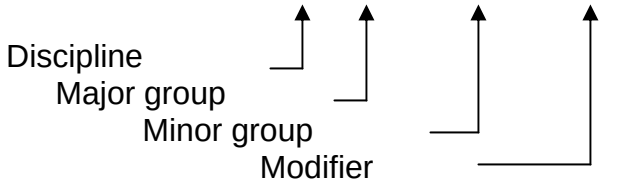
In accordance with the AIA layering standard, all layering names and information within shall adhere to the following guidelines. Only applicable layers are to be used. Blank layers shall be purged from the CAD drawing before creating the final deliverable CAD files. If external reference files are used, refer to section 3.6 for additional direction.

Graphic representations of related items shall be located on a single layer even when indicated on different drawings. For example, full height walls could be properly drawn on the layer A-WALL or A-WALL-FULL, but not both.

Graphic symbols connected to text and notes, (leader lines, arrowheads, etc.) shall be located on the same layer as the corresponding text.

Layer names will be limited to 13 characters subdivided into 4 sections including: Discipline, Major group, Minor group, and Modifier as shown below. Layer names of 5 or 9 characters may be used when appropriate and consistent with layer naming guidelines.

13-CHARACTER LAYER NAME = X-XXXX -XXXX -XXXX



Discipline headings shall define the layer's discipline as follows:

A = Architectural
C = Civil
E = Electrical
F = Fire Protection
L = Landscape
M = Mechanical
P = Plumbing
Q = Communications
S = Structural

Major group headings shall define assemblies, construction systems or major categories such as walls, doors, ceilings, lights, power, sewer, water, storm drains, etc. Refer to Appendix 2.

Minor group headings shall further define the major group headings such as full height wall, partial height wall, emergency lighting or general lighting. Refer to Appendix 3.

The optional Modifier heading shall further define the minor group heading such as full height wall existing and full height wall demolished. Refer to Appendix 4.

Modifiers and user definer characters are options provided for extended clarification. Most layers on small projects will only require five (5) character major/minor format.

6. CAD Drawing Layering and Plotting Standards

All drawings shall incorporate the standard AIA long format layers as specified in the National CAD Standard Version 3.1. Blank drawings containing these layers are available to contractors through the CSUF Office of Design and Construction Web Site.

The colors and line weights specified in the CSU CAD standards are suggestions only. The consultant may make use of any combination of colors and lineweights to produce plotted drawings **SO LONG AS A COLOR TABLE TRANSLATION FILE (AutoCAD CTB) IS SUPPLIED ALONG WITH THE FINISHED DRAWINGS.**

The primary measure of our quality control efforts is based on our ability to recreate the consultant's hard copy plots. The absence of color table translation files and other plotting information will cause significant delay our quality control testing and significant delay in final payment to the consultant.

Drawing objects shall be correctly located on their respective layers. Paper Space layers shall be named with the prefix 'PS'. Paper Space objects shall be confined to these layers, while Model Space objects shall be confined to Mode Space layers.

7. Drawing File Naming Conventions

Naming conventions for electronic drawing files allow CADD users to determine the contents of a drawing without actually displaying the file. They also provide a convenient and clear structure for organizing drawing files within project directories. The standard naming conventions provided make use of long file names supported since the inception of the Windows 95 operating system. Note that these long file names shall pertain to the **finished plotted drawings only**. External referenced drawing names shall begin with the letter **X,** while the remainder of the file name shall be at the discretion of the consultant.

XX	X	XXX	XX	XX
Building or campus quadrant number	Discipline	Sheet Number	Drawing type code	Floor or Room Number

Drawing file names shall be divided into five groups of characters as follows:

The first two characters will designate the campus building identification number, or the campus quadrant number as identified in the CSUF Space and Facilities Database. Preceding 0's (zeros) shall be used where the building number has fewer than two digits.

The second single character will designate the discipline according to the names shown in Tables 1.

The third group of characters will designate the Sheet Number as shown on the final drawing set.

The fourth group of characters will name the drawing type according to the names shown in Table 2.

The fifth group of characters will designate the floor or room number of the drawn area. Preceding zeros shall be used where fewer than two characters are needed to name the floor or room identification numbers according to the University Space and Facilities Database.

Table 1
Discipline Codes/Designators

Discipline	Character
General	G
Fire Life Safety	F
Civil	C
Landscape	L
Architectural	A
Interiors	I
Structural	S
Mechanical	M
Plumbing	P
Electrical	E
Telecommunications	T
Equipment	Q
Hazardous Materials	H
Resource	R
Other Disciplines	X
Contractor/Shop Drawings	Z

Table 2 Drawing Type Codes		
Discipline	Code	Definition
All Disciplines		
	FP	Floor Plan
	SP	Site Plan
	DP	Demolition Plan
	QP	Equipment Plan
	XP	Existing Plan
	EL	Elevation
	SC	Section
	DT	Detail
	SH	Schedule
	3D	Isometric/3D
	DG	Diagram
Architectural (A-)		
	CP	Ceiling Plan
	EP	Enlarged Plan
	NP	Finished Plan
	RP	Furniture Plan
Civil (C-)		
	NV	Environmental Plan
	GP	Grading Plan
	RP	Road/Topographic Plan
	SV	Survey Plan
	UP	Utility Plan
Electrical (E-)		
	CP	Communications Plan
	GR	Grounding Plan
	LP	Lighting Plan
	PP	Power Plan

Table 2 (Continued) Drawing Type Codes		
Discipline	Code	Definition
Fire Protection (F-)		
	FA	Fire Alarm Plan
	VP	Evacuation Plan
	KP	Sprinkler Plan
Interiors (I-)		
	CP	Ceiling Plan
	EP	Enlarged Plan
	NP	Finish Plan
	RP	Furniture Plan
Mechanical (M-)		
	CP	Control Plan
	HP	HVAC Ductwork Plan
	PI	Piping Plan
Plumbing (P-)		
	PB	Plumbing Plan
Structural (S-)		
	FR	Framing Plan
	FO	Foundation Plan
Telecommunication (T-)		
	DP	Data Plan
	TP	Telephone Plan

This numbering system is designed to cause each file name to be unique. This should help prevent confusion on the part of the consultant and CSUF staff when adding drawings to the campus CAD drawing database.

8. Ownership

The University's rights to ownership of the digital data and other deliverables developed by the contractor under the contract are clearly defined in the contract provisions. The University has a legal right to demand unrestricted ownership to all data, designs, and materials for which the University has paid 100 percent of the development cost.

Refer to **Project Architect/Engineer Agreement Rider A, Section 9.0: Ownership and Use of Documents** for details regarding the ownership and use of the drawing files and data provided to the University.

9. Files included on the Design and Construction Web site:

1. Prototype layer drawing files containing suggested AIA layers and CSU color assignments. A single drawing includes all layers required for all disciplines, while individual blank drawing files are available for each discipline.

2. Layer Manager LAY file containing suggested CSUF layer/color relationships for final submittal drawings

3. CSUF Title blocks in B, C, D and E size formats

Appendix 1
LAYER GUIDELINES BY DISCIPLINE

These CAD Layer guidelines are of necessity both specific and open ended. The modular nature of guidelines allows for tremendous flexibility in delineating the myriad components of the campus infrastructure.

The following discipline specific guidelines delineate the acceptable format of layer names for common project types. It should be noted that the naming structure is consistent across all disciplines and common elements would be named identically in all disciplines. The organization of layer names by discipline is merely a convenience to aid in finding the appropriate layer. The layer names comprise a single comprehensive system.

For example: A-DOOR is the only acceptable layer for indicating a door in all disciplines (Electrical Plans, Plumbing Plans etc). By the same logic E-LITE-EXIT is the only acceptable layer for indicating an exit light in an architectural drawing.
These disciplines' specific layers shall be used whenever possible. Additional layer names may be added to plans where the current naming system does not adequately convey the purpose of the layer in question.
Acceptable expansions shall utilize the Major Group Headings (see 5.0), Minor Group Abbreviations (see 5.2), and Modifiers (see 5.3) as provided, as well as the format shown above.

The color and linetype assignments for the layers are provided to support CSU personnel in producing consistent hard copy output from the electronic submittals. Consultants are solely responsible for the production and appearance of their hard copy submittals.

1. ARCHITECTURAL LAYER GUIDELINES

Layer	Description	Notes

Drawing Information Layers

A-PARE-****	Occupancy Plan & Area Designations Information
A-PCLG-****	Ceiling Plan Information
A-PDEM-****	Demolition Plan Information
A-PEQP-****	Equipment Plan Information
A-PFLR-****	Floor Plan Information
A-PLGS-****	Large Scale Floor Plan Information
A-PROF-****	Roof Plan Information
A-DETL-****	Detail Drawings Information
A-ELEV-****	Elevation Drawings
A-SECT-****	Section Drawings
A-****-DIMS	Dimensions
A-****-IDEN	Repetitive Annotation (Room Numbers; Equipment Numbers)
A-****-KEYN	ConDoc Key Notes
A-****-NOTE	Notes and Call-outs
A-****-PATT	Patterns, Cross Hatching, & Poche
A-****-SYMB	Symbols, Bubbles, and Targets
A-****-SCHD	Schedules and Tables of Text
A-****-TEXT	General Notes and Specifications

Building Information Layers

A-WALL	Walls
A-WALL-CNTR	Wall Center Lines
A-WALL-FULL	Full Height Walls
A-WALL-PRHT	Partial Height Walls
A-WALL-WHED	Window Headers
A-WALL-DHED	Door Headers
A-WALL-JAMB	Door & Window Jambs
A-WALL-PATT	Wall Insulation, Hatch Patterns & Fill
A-CLNG-OVHD	Ceiling Elements, Soffits, and Bulkheads
A-CLNG-GRID	Ceiling Grid (T-Bar Ceiling)
A-DOOR	Doors
A-DOOR-IDEN	Door Number, Hardware Group, etc.
A-GLAZ	Windows, Window Walls, Curtain Walls, Glazed Partitions
A-GLAZ-SILL	Window Sills
A-GLAZ-IDEN	Window Numbers
A-FLOR	Floor Information
A-FLOR-LEVL	Level Changes, Ramps, Pits, & Depressions
A-FLOR-STRS	Stairs, Escalators, and Ladders
A-FLOR-HRAL	Stair and Balcony Handrails and Guardrails
A-FLOR-TPTN	Toilet Partitions
A-FLOR-SPCL	Architectural Specialties
A-EQPM	Equipment
A-EQPM-FIXD	Fixed Equipment (CSU Type 1)

Building Information Layers (continued)

Layer	Description	Notes
A-EQPM-IDEN	Equipment Identification Numbers	
A-EQPM-MOVE	Moveable Equipment (CSU Type 2)	
A-FURN	Furniture	
A-FURN-IDEN	Furniture Identification Numbers	
A-ROOF	Roof Information	
A-ROOF-LEVL	Level Changes	
A-ROOF-OTLN	Roof Perimeter/Edge, Roof Geometry	
A-ROOF-STRS	Stair Treads and Ladders	

2. STRUCTURAL LAYER GUIDELINES

Drawing Information Layers

S-PCOL-****	Column Plan Information
S-PFND-****	Foundation Plan Information
S-PSFR-****	Structural Framing Plan Information
S-DETL-****	Detail Drawings Information
S-ELEV-****	Elevation Drawings Information
S-SECT-****	Section Drawings Information
S-****-DIMS	Dimensions
S-****-KEYN	ConDoc Key Notes
S-****-NOTE	Notes, Call-outs, & Key Notes
S-****-SYMB	Symbols, Bubbles, & Targets
S-****-SCHD	Schedules and Tables of Text
S-****-TEXT	General Notes & Specifications

Building Information Layers

S-ABLT	Anchor Bolts & Hold-Downs	
S-COLS	Structural Columns	
S-COLS-RBAR	Reinforcing Bars	
S-COLS-WELD-SYMB	Welding Symbols	
S-FNDN-FTNG	Footings	
S-FNDN-GRBM	Grade Beams	
S-FNDN-PIER	Piers	
S-FNDN-RBAR	Reinforcing Bars	
S-FNDN-WELD-SYMB	Welding Symbols	
S-FRAM	Framing	The drawing may be further segregated with sub-layers if needed
S-FRAM-BEAM	Beams	
S-FRAM-BEAM-PRIM	Primary Beams	
S-FRAM-BEAM-SCND	Secondary Beams	
S-FRAM-DECK	Structural Decking	
S-FRAM-JOIS	Joists	
S-FRAM-RBAR	Reinforcing Bars	
S-FRAM-WELD-SYMB	Welding Symbols	
S-GRID	Column Grid	
S-GRID-IDEN	Column Grid Tags	

Building Information Layers (continued)

Layer	Description	Notes
S-JNTS-CNST	Construction Joints	
S-JNTS-CTRL	Control Joints	
S-SLAB	Concrete Slabs	
S-SLAB-OTLN	Slab Outline	
S-SLAB-RBAR	Concrete Slab Reinforcing	
S-WALL	Structural Bearing & Sheer Walls	

3. MECHANICAL LAYER GUIDELINES

Drawing Information Layers

M-DETL-****	Detail Drawings Information	
M-ELEV-****	Elevation Drawings Information	
M-PCON-****	Mechanical Controls Plan Information	
M-PHVA-****	HVAC Plan Information	
M-PLGS-****	Large Scale HVAC Plan Information	
M-PPIP-****	Piping Plan Information	
M-PROF-****	Mechanical Roof Plan Information	
M-PSTM-****	Steam Piping Plan Information	
M-PWCH-****	Chilled Water Piping Plan Information	
M-PWHT-****	Hot Water Piping Plan Information	
M-SECT-****	Section Drawings Information	
M-****-DIMS	Dimensions	
M-****-KEYN	ConDoc Key Notes	
M-****-NOTE	Notes, Call-outs, & Key Notes	
M-****-SCHD	Schedules and Tables of Text	
M-****-SYMB	Symbols, Bubbles, & Targets	
M-****-TEXT	General Notes and Specifications	

Building Information Layers

M-CDFF-RETN	Ceiling Return Diffusers	
M-CDFF-SUPP	Ceiling Supply Diffusers	
M-CONT	Controls & Instrumentation	
M-CONT-THER	Thermostats	
M-CONT-WIRE	Low Voltage Wiring	
M-CWRT-FIXT	Chilled Water Above Ground Elements (Manholes, etc.)	
M-CWRT-NOTE	Chilled Water Notes	
M-CWTR	Chilled Water System	
M-CWTR-EQPM	Chilled Water Equipment .	
M-CWTR-PIPE	Chilled Water Pipe	When layers are used to segregate supply & return minor group PIPE may NOT be used.
M-CWTR-RTRN	Chilled Water Return Lines	
M-CWTR-SUPL	Chilled Water Supply Lines	
M-DUAL-EQPM	Dual Temperature System Equipment	
M-DUAL-PIPE	Dual Temperature System Pipe	
M-DUCT-EXHT	HVAC System Exhaust Ductwork	
M-DUCT-OTHR	HVAC System Other Ductwork	

Building Information Layers (continued)

Layer	Description	Notes
M-DUCT-RETN	HVAC System Return Ductwork	
M-DUCT-SUPP	HVAC System Supply Ductwork	
M-ENER-SYST	Energy Management Systems	
M-EXHS-DUCT	Exhaust System Ductwork	
M-EXHS-EQPM	Exhaust System Equipment	
M-HOTW	Hot Water (Space Heating) System	
M-HOTW-EQPM	Hot Water Equipment	
M-HOTW-FIXT	Hot Water Above Ground Elements (Manholes, etc.)	
M-HOTW-PIPE	Hot Water Pipe	When layers are used to
M-HOTW-RTRN	Hot Water Return Lines	segregate supply & return
M-HOTW-SUPL	Hot Water Supply Lines	minor group PIPE may NOT
M-HVAC-EQPM	HVAC Equipment	be used.
M-ODFF	Other Diffusers	
M-REFG-EQPM	Refrigeration System Equipment	
M-REFG-PIPE	Refrigeration System Piping	
M-SPCL-****	Special Systems	
M-STEM-EQPM	Steam System Equipment	
M-STEM-HPIP	High Pressure Steam Piping	
M-STEM-LPIP	Low Pressure Steam Piping	
M-STEM-MPIP	Medium Pressure Steam Piping	
M-VENT-DUCT	Industrial or Laboratory Venting	
M-VENT-EQPM	Industrial or Laboratory Venting Equipment	

4. PLUMBING LAYER GUIDELINES

Drawing Information Layers

P-DETL-****	Detail Drawings Information
P-ELEV-****	Elevation Drawings Information
P-PPLM -****	Plumbing Plan Information
P-RISR -****	Plumbing Riser Diagram Information
P-SECT-****	Section Drawings Information
P-****-DIMS	Dimensions
P-****-KEYN	ConDoc Key Notes
P-****-NOTE	Notes, Call outs, and Key Notes
P-****-SCHD	Schedules and Tables of Text
P-****-SYMB	Symbols, Bubbles, and Targets
P-****-TEXT	General Notes and Specifications

Building Information Layers

P-ACID	Acid, Alkaline, and Oil Waste System
P-ACID-EQPM	Acid, Alkaline, and Oil Waste System Equipment
P-ACID-PIPE	Acid, Alkaline, and Oil Waste System Piping
P-DOMW	Domestic Hot & Cold Water System
P-DOMW-EQPM	Domestic Hot and Cold Water Equipment

Building Information Layers (continued)

Layer	Description	Notes
P-DOMW-PIPE	Domestic Hot and Cold Water Piping	Piping material may be added as an optional modifier
P-LABS-EQPM	Laboratory Gas System	
P-LABS-PIPE	Laboratory Gas Piping Laboratory Equipment	
P-NGAS	Natural Gas System	
P-NGAS-EQPM	Natural Gas System Equipment	
P-NGAS-PIPE	Natural Gas System Piping	Piping material may be added as an optional modifier
P-SSWR	Sanitary Sewer System	
P-SSWR-EQPM	Sanitary Sewer Equipment (Manholes, Clean-outs, etc.)	
P-SSWR-FTXT	Sanitary Sewer Fixtures	
P-SSWR-PIPE	Sanitary Sewer Piping	Piping material may be added as an optional modifier
P-SSWR-TEXT	Sanitary Sewer Text	
P-SSWR-VENT	Sanitary Sewer Vent Piping	
P-STRM	Storm Drainage System	
P-STRM-FIXT	Storm Drainage Surface Features (Catch Basins, Manholes)	
P-STRM-PIPE	Storm Drain Piping	Piping material may be added as an optional modifier
P-STRM-RFDR	Roof Drains	
P-STRM-TEXT	Storm Drain Text	

5. FIRE PROTECTION SYSTEMS LAYER GUIDELINES

Drawing Information Layers

F-DETL-****	Detail Drawings Information
F-PFPE-****	Fire Protection Equipment Plan
F-PSPR-****	Sprinkler Plan
F-RISR-****	Sprinkler Riser Program
F-SECT-****	Section Drawings Information
F-****-DIMS	Dimensions
F-****-NOTE	Notes, Call outs, and Key Notes
F-****-SCHD	Schedules and Tables of Text
F-****-SYMB	Symbols, Bubbles, and Targets
F-****-TEXT	General Notes and Specifications
F-CO2S	CO2 (Carbon Dioxide) System
F-CO2S-EQPM	CO2 (Carbon Dioxide) System Equipment
F-CO2S-PIPE	CO2 (Carbon Dioxide) System Piping
F-HALN-EQPM	Halon Equipment
F-HALN-PIPE	Halon System Piping
F-HALN-SPHD	Halon Spray Heads
F-PROT-ALRM	Fire Protection Alarm System
F-PROT-EQPM	Fire System Equipment (Fire Hose Cabinet, Extinguishers)
F-PROT-SMOK	Smoke Detectors or Heat Sensors
F-SPRN-PIPE	Fire Protection Sprinkler Piping
F-SPRN-SPHD	Fire Protection Sprinkler Heads
F-STAN-EQIP	Fire Protection Standpipe Equipment
F-STAN-PIPE	Fire Protection Standpipe Piping

6. ELECTRICAL LAYER GUIDELINES

Layer	Description	Notes

Drawing Information Layers

E-DETL-****	Detail Drawings Information
E-PAUX-****	Auxiliary Systems Plan Information
E-PCOM-****	Auxiliary Systems Plan Information
E-PLIT-****	Lighting Plan Information
E-PPOW-****	Power Plan Information
E-RISR-****	Electrical Riser Diagrams
E-SECT-****	Section Drawings Information
E-****-DIMS	Dimensions
E-****-NOTE	Notes, Call outs, and Key Notes
E-****-SCHD	Schedules and Tables of Text
E-****-SYMB	Symbols, Bubbles, and Targets
E-****-TEXT	General Notes and Specifications

Building Information Layers

E-CTRL	Electrical Control Systems
E-CTRL-EQPM	Control System Equipment & Devices
E-CTRL-WIRE	Control System Wiring
E-GRND	Electrical Ground System
E-LITE	Lighting System
E-LITE-CLNG	Ceiling Mounted Lighting
E-LITE-EMER	Emergency Lighting
E-LITE-EXIT	Exit Lighting
E-LITE-FLOR	Floor Lighting
E-LITE-IDEN	Luminaire Identification and Text
E-LITE-NUMB	Lighting Circuit Numbers
E-LITE-ROOF	Roof Mounted Lighting
E-LITE-SITE	Site Lighting Fixtures
E-LITE-SWCH	Lighting Switches
E-LITE-WIRE	Wiring and Conduit
E-POWR	Electrical Power System
E-POWR-CABL	Cable Trays
E-POWR-CLNG	Ceiling Receptacles and Devices
E-POWR-EQPM	Power Equipment
E-POWR-FLOR	Floor Mounted Outlets
E-POWR-NUMB	Power Circuit Numbers
E-POWR-WALL	Wall Outlets & Receptacles
E-POWR-WIRE	Power Wiring and Conduit
E-PROT-WIRE	Fire Protection System Wiring
E-WKLP-INFO	Clearances and work space req. (NEC Codes etc.)
Q-COMM	Communication System Information
Q-COMM-CATV	Cable Television System
Q-COMM-EQPM	Communication Equipment
Q-COMM-MHOL	Communications Manhole
Q-COMM-NOTE	Communication System Notes

Building Information Layers (continued)

Layer	Description	Notes
Q-COMM-WIRE	Wiring Cables, Duct Banks & Conduits	

7. CIVIL LAYER GUIDELINES

Drawing Information Layers

C-PGRD-****	Grading Plan Information	
C-PPAV-****	Paving Plan Information	
C-DETL-****	Detail Drawings Information	
C-SECT-****	Section Drawings Information	
C-****-NOTE	Notes, Call outs, and Key Notes	
C-****-TEXT	General Notes and Specifications	
C-****-SYMB	Symbols, Bubbles, and Targets	
C-****-DIMS	Dimensions	
C-****-SCHD	Schedules and Tables of Text	

Building/Site Information Layers

C-BLDG-EXST	Footprint of Existing Buildings	Use appropriate utility layers for site utility information; see Sections 5.14 and 5.16 for details.
C-BLDG-DEMO	Footprint of Existing Building to be Demolished	
C-BLDG-PROP	Footprint of Proposed Buildings	
C-BLDG-EXST-HTCH	Existing Building Hatch	
C-BLDG-PROP-HTCH	Proposed Building Hatch	
C-PKNG	Parking Lots	
C-PKNG-STRP	Parking Lot Striping	
C-PKNG-CARS	Graphic Illustration of Cars	
C-PKNG-CURB	Curbs	
C-ROAD	Roads	
C-ROAD-CNTR	Road Center Lines	
C-ROAD-CURB	Curbs and Wheel Stops	
C-ROAD-BRDG	Roadway Bridges	
C-ROAD-IDEN	Road and Street Names	
C-ROAD-PROP	Proposed Road	
C-ROAD-DEMO	Existing Road to be Demolished	
C-STRM-CULV	Culverts, Headwalls, Drainage Inlets	
C-STRM-DTCH	Drainage Ditches	

8. BOUNDARY SURVEY LAYER GUIDELINES

Drawing Information Layers

C-PBND-****	Boundary Plan Information
C-****-NOTE	Notes, Call outs, and Key Notes
C-****-TEXT	General Notes and Specifications
C-****-SYMB	Symbols, Bubbles, and Targets
C-****-DIMS	Dimensions

Project Information Layers

Layer	Description	Notes
C-GRID	Grid Lines (California Coordinates)	
C-GRID-NOTE	Grid Coordinates and Notes	
C-PROP	Property Line (Campus Boundary)	
C-PROP-NOTE	Property Line Notes	
C-PROP-BNCH	Property Survey Benchmarks	
C-PROP-ESMT	Easements	
C-PROP-DIMS	Boundary and Distance Notations	
C-PROP-ESMT	Easements, Right of Ways, Setback Lines	
C-PROP-BRNG	Bearings and Distance Labels	

9. TOPOGRAPHIC LAYER GUIDELINES

Drawing Information Layers

C-PTOP-****	Topographic Plan Information
C-DETL-****	Detail Drawings Information
C-SECT-****	Section Drawings Information
C-****-NOTE	Notes, Call outs, and Key Notes
C-****-TEXT	General Notes and Specifications
C-****-SYMB	Symbols, Bubbles, and Targets
C-****-DIMS	Dimensions
C-****-SCHD	Schedules and Tables of Text

Project Information Layers

C-BLDG	Building Outline
C-BLDG-ELEV	Building Elevations
C-GRID	Grid Lines (California Coordinates)
C-GRID-NOTE	Grid Coordinates and Notes
C-PKNG	Parking Lots
C-PKNG-NOTE	Parking Lot Notes
C-PKNG-TEXT	Parking Lot Text
C-PROP	Property Line (Campus Boundary)
C-PROP-ESMT	Easements
C-PROP-NOTE	Property Line Notes
C-ROAD	Roads and Streets
C-ROAD-BRDG	Roadway Bridges
C-ROAD-CURB	Curb Lines
C-ROAD-NOTE	Road and Street Names
C-TOPO-DEMO	Existing Contour Lines to be Changed
C-TOPO-MACL	Major Depressed Contour Lines (Wet lands)
C-TOPO-MAJR	Major Contour Lines
C-TOPO-MAJR-TEXT	Major Contour Lines Text (Elevation)
C-TOPO-MICL	Minor Depressed Contour Lines (Wet lands)
C-TOPO-MINR	Minor Contour Lines
C-TOPO-MINR-TEXT	Minor Contour Lines Text (Elevation)

C-TOPO-SPOT	Spot Elevations (Tick Marks & Text)

Project Information Layers (continued)

Layer	Description	Notes
L-SITE-WATR	Site Water Features, Rivers, Streams, Ponds, and Coastlines	
L-SITE-WATR-NOTE	Names and Notes	
L-WALK	Pedestrian Walks	
L-WALK-BRDG	Pedestrian Bridges	

10. LANDSCAPE LAYER GUIDELINES

Drawing Information Layers

L-DETL-****	Detail Drawings Information
L-PIRR-****	Landscape Irrigation Plan Information
L-PPLA-****	Landscape Planting Plan Information
L-PSTR-****	Structural Plan Information
L-SECT-****	Section Drawings Information
L-****-DIMS	Dimensions
L-****-NOTE	Notes, Call outs, and Key Notes
L-****-SCHD	Schedules and Tables of Text
L-****-SYMB	Symbols, Bubbles, and Targets
L-****-TEXT	General Notes and Specifications

Project Information Layers

L-IRRG-COVR	Irrigation Coverage
L-IRRG-CTRL	Irrigation Controller
L-IRRG-EQPM	Irrigation Equipment
L-IRRG-HEAD	Irrigation Heads
L-IRRG-LTRL	Irrigation Lateral Line Piping
L-IRRG-MAIN	Pressurized Main Irrigation Lines
L-IRRG-VALV	Irrigation Valves
L-IRRIG-BKFL	Irrigation Backflow Devices
L-IRRIG-PUMP	Irrigation Booster Pumps
L-PLNT-BEDS	Landscape Planting Beds
L-PLNT-DEMO	Existing Plants to be Demolished
L-PLNT-EXST	Existing Plants to Remain
L-PLNT-GRCV	Ground Covers and Vines
L-PLNT-SHRB	Shrubs
L-PLNT-TREE	Trees
L-PLNT-TURF	Turf Areas
L-SITE-BRDG	Pedestrian Bridges
L-SITE-DECK	Decks
L-SITE-FENC	Fencing
L-SITE-POOL	Pools and Spas
L-SITE-WALL	Walls
L-WALK	Walks, Steps, and Sidewalks
L-WALK-PATT	Patterns and Cross Hatching

11. CAMPUS MASTER PLAN LAYER GUIDELINES

Layer	Description	Notes

Drawing Information Layers

C-PMST-SYMB	Symbols, Arrows, Graphic Scales, etc.	
C-PMST-LEGN	Legend of Building Names & Numbers	
C-PMST-NOTE	Notes	
C-PMST-****	Other Campus Master Plan Information	
C-SHDB-LGND	Building Legend (in Paper Space)	
C-SHDB-NOTE	Master Plan Notes (in Paper Space)	

Campus Information Layers

C-BLDG-EXST	Footprint of Existing Buildings	
C-BLDG-EXST-HTCH	Existing Building Hatch Pattern	
C-BLDG-EXST-NOTE	Existing Building Number	
C-BLDG-PROP	Footprint of Proposed Buildings	
C-BLDG-PROP-HTCH	Proposed Building Hatch Pattern	
C-BLDG-PROP-NOTE	Proposed Building Number	
C-BLDG-TEMP	Footprint of Existing Temporary Building	
C-BLDG-TEMP-NOTE	Existing Temporary Building Number	
C-PKNG-EXST	Parking Lots	
C-PKNG-EXST-NOTE	Parking Lot Notes	
C-PKNG-EXST-TEXT	Parking Space Numbering	
C-PKNG-PROP	Proposed Parking Lot	
C-PKNG-PROP-NOTE	Proposed Parking Lot Notes	
C-ROAD	Roads and Streets	
C-ROAD-BRDG	Roadway Bridges	
C-ROAD-CURB	Curb Lines	
C-ROAD-GUTR	Roadway Gutters	
C-ROAD-NOTE	Road and Street Names	
L-SITE-WATR	Site Water Features; Rivers, Streams, Ponds and Coastlines	
L-SITE-WATR-NOTE	Names and Notes	
L-WALK	Pedestrian Walks	
L-WALK-BRDG	Pedestrian Bridges	

12. UTILITY INFRASTRUCTURE LAYER GUIDELINES

Drawing Information Layers

C-DETL-****	Detail Drawings Information	
C-ELEV-****	Elevation Drawings Information	
C-PUTL-****	Site Utility Plan Information	
C-SECT-****	Section Drawings Information	
C-****-DIMS	Dimensions	
C-****-NOTE	Notes, Call-outs, and Key Notes	
C-****-SCHD	Schedules and Tables of Text	
C-****-SYMB	Symbols, Bubbles, and Targets	

C-****-TEXT General Notes and Specifications

Topographic Plan Information

All topographic plan data shall be contained in a separate drawing file, and included in the utility plans via external reference

Utility Information Layers

Layer	Description	Notes
P-DOMW	Domestic Water System	
P-DOMW-ELEV	Domestic Water Elevations	
P-DOMW-MHOL	Domestic Water Manholes	
P-DOMW-NOTE	Domestic Water Notes	
P-DOMW-PIPE	Domestic Water Pipe	
P-GSWR	Grey Water System	
P-GSWR-ELEV	Grey Water Elevations	
P-GSWR-EQPM	Grey Water Equipment	
P-GSWR-MHOL	Grey Water Manholes	
P-GSWR-NOTE	Grey Water Notes	
P-GSWR-PIPE	Grey Water Pipe	
P-SSWR	Sanitary Sewer System	
P-SSWR-ELEV	Sanitary Sewer Elevations	
P-SSWR-EQPM	Sanitary Sewer Equipment	
P-SSWR-MHOL	Sanitary Sewer Manholes	
P-SSWR-NOTE	Sanitary Sewer Notes	
P-SSWR-PIPE	Sanitary Sewer Pipe	
P-STRM	Storm Drain System	
P-STRM-ELEV	Strom Drain Elevations	
P-STRM-EQPM	Storm Drain Equipment	
P-STRM-MHOL	Storm Drain Manholes	
P-STRM-NOTE	Storm Drain Notes	
P-STRM-PIPE	Storm Drain Pipe	
M-HOTW	Hot Water System	
M-HOTW-FIXT	Hot Water Surface Features e.g. Manholes	
M-HOTW-EQPM	Hot Water Equipment	
M-HOTW-NOTE	Hot Water Notes	
M-HOTW-PIPE	Hot Water Piping	When layers are used to segregate supply & return, minor group PIPE may NOT be used.
M-HOTW-RTRN	Hot Water Return Lines	
M-HOTW-SUPL	Hot Water Supply Lines	
M-CWRT	Chilled Water System	
M-CWRT-FIXT	Chilled Water Surface Features e.g. Manholes	
M-CWRT-EQPM	Chilled Water Equipment	
M-CWRT-NOTE	Chilled Water Notes	
M-CWRT-PIPE	Chilled Water Piping	When layers are used to segregate supply & return, minor group PIPE may NOT be used.
M-CWRT-RTRN	Chilled Water Return Lines	
M-CWRT-SUPL	Chilled Water Supply Lines	
M-NGAS	Natural Gas System	
M-NGAS-EQPM	Natural Gas Equipment	
M-NGAS-PIPE	Natural Gas Pipe	
M-NGAS-NOTE	Natural Gas Notes	
M-NGAS-MHOL	Natural Gas Manholes	

Q-COMM	Communication System Information

Utility Information Layers (continued)

Layer	Description	Notes
Q-COMM-MHOL	Communications Manhole	
Q-COMM-EQPM	Communication Equipment	
Q-COMM-NOTE	Communication System Notes	
Q-COMM-WIRE	Wiring Cables, Duct Banks & Conduits	

Appendix 2
MAJOR GROUP ABBREVIATIONS

Major groups shall comply with the following abbreviations:

ABLT	Anchor Bolts
ACID	Acid, Alkaline, and Oil Waste Systems
ALRM	Alarm System
AREA	Area Calculations & Occupancy Information
AUXL	Auxiliary Systems
BELL	Bell System
BLDG	Building Foot Print
BRIN	Brine System
CCTV	Closed Circuit Television
CHIM	Prefabricated Chimneys
CLNG	Ceiling Information
CLOK	Clock System
CMPA	Compressed Air System
CO2S	CO2 System
COLS	Columns
COMM	Telephone & Communication System
CTRL	Control & Instrumentation System
CWTR	Chilled Water System
DATA	Data System
DETL	Details
DIMS	Dimensions
DOMW	Domestic Hot & Cold Water System
DOOR	Doors
DUST	Dust & Fume Collection System
ELEV	Interior & Exterior Elevations
ENER	Energy Management System
EQPM	Equipment
EXHS	Exhaust System
FIRE	Fire Protection or Alarm System
FIXT	Fixtures
FLOR	Floor Information
FNDN	Foundation
FRAM	Framing Plan (Beams & Joists)
FUEL	Fuel System Piping
FURN	Furniture
GLAZ	Windows & Curtain Walls
GRID	Column Grid
GRND	Grounding System
GSWR	Grey Water System
HALN	Halon System
HOTW	Hot Water Heating System
HVAC	Heating, Ventilation and Air Conditioning System
INTC	Intercom System
IRRG	Irrigation System

MAJOR GROUP ABBREVIATIONS (continued)

LEGN	Legend of Symbols
LITE	Lighting System
LLIN	Single Line Diagram
LTNG	Lightning Protection System
MACH	Machine Shop Equipment
MDGS	Medical Gas System
METL	Miscellaneous Metal
NGAS	Natural Gas System
NOTE	Notes, Call Outs, & Keynotes
NURS	Nurse Call System
PGNG	Paging System
PKNG	Parking
PLNT	Planting
POWR	Power
PROC	Processing System
PROP	Property Line
PROT	Fire Protection System
REFG	Refrigeration System
ROAD	Roads
ROOF	Roof
SCHD	Schedules and Tables
SECT	Sections
SERT	Security System
SHBD	Sheet Border & Title Block Line Work
SITE	Site Improvements
SLAB	Slab
SOUN	Sound or Public Address System
SPCL	Special System
SPRN	Fire Protection Sprinkler System
SSWR	Sanitary Sewer
STAN	Fire Protection Standpipe System
STEM	Steam Systems
STRM	Storm Drain System
SYMB	Symbols, Bubbles, and Targets
TEST	Test Equipment
TOPO	Existing and Proposed Contour Lines & Elevations
TVAN	Television Antenna System
WALK	Walks and Steps

PLAN INFORMATION MAJOR GROUP ABBREVIATIONS

PARE	Area Calculation Plan Information
PBND	Boundary Plan Information
PCLG	Ceiling Plan Information
PCOL	Column Plan Information
PCOM	Communications Plan Information
PCON	Controls Plan Information
PDEM	Demolition Plan Information
PEQM	Equipment Plan Information
PFLR	Floor Plan Information
PFND	Foundation Plan Information
PHVA	HVAC Plan Information
PIRR	Irrigation Plan Information
PLGS	Large Scale Plan Information
PLIT	Lighting Plan Information
PMCH	Mechanical Plan Information
PPIP	Piping Plan Information
PPLA	Planting Plan Information
PPLM	Plumbing Plan Information
PROF	Roof Plan Information
PSFR	Structural Framing Plan Information
PSPR	Sprinkler Plan Information
PSTR	Structural Plan Information
PSYS	System Plan Information
PUTL	Site Utility Plan Information

Appendix 3
MINOR GROUP ABBREVIATIONS

Minor groups shall comply with the following abbreviations; additional names may be used if they are noted

CPIP	Compressed Air Piping
CTRL	Controls
CURB	Curbs
DECK	Decking or Decks
DEMO	Existing to be Removed
DEVC	Devices
DHED	Door Header
DIAG	Diagram
DIMS	Dimensions
DRAN	Drainage System or Indication
DUCT	Duct Work
EDGE	Edge of Perimeter
ELEV	Elevation or Elevated Surface
EMER	Emergency
EQPM	Equipment
EQUI	Equipotential System
ESMT	Easements, Right-Of-Way & Set Backs
EVTR	Elevator Equipment
EXIT	Exit Signs or Routing
EXST	Existing To Remain
FEED	Feeders
FENC	Fencing
FILE	File Cabinets
FIXD	Fixed
FIXT	Fixtures
FLDR	Floor Drains
FLOR	Floor Located
FNSH	Finishes
FREE	Free Standing or Self Supporting
FULL	Full Height
FURN	Furniture
GGEP	Fuel Gas General Piping
GPRP	Fuel Gas Process Piping
GRCV	Ground Cover and Vines
GRID	Grid
GUTR	Gutters
HAZW	Hazardous Waste Materials
HPIP	High Pressure Piping
HRAL	Stair & Balcony Hand/Guardrails
IDEN	Identification Tag
INTR	Elements on the Interior of Building
ISLD	Islands
JAMB	Door and Window Jambs
JOIN	Joints
JOIS	Joists

MINOR GROUP ABBREVIATIONS (continued)

LEVL	Elevation Changes
LOGO	Office or Project Logo
LPIP	Low Pressure Piping
MACL	Major Depressed Contour Lines
MAJR	Major (i.e. Contours)
MBND	Material Beyond Section Cut
MCUT	Material Cut By Section
MHOL	Manholes
MICL	Minor Depressed Contour Lines
MILL	Millwork and Cabinetry
MINR	Minor (i.e. Contours)
MOVE	Movable Elements
NEWW	New or Proposed Work
NICN	Not In Contract
NOTE	Notes, Call-Outs & Keynotes
NPLT	Non-plot Information & Construction Lines
NUMB	Numbering for Systems, Circuits & Branches
OCCP	Occupant or Employee Name
ODFF	HVAC Diffusers
OGEP	Fuel Oil General Piping
OPEN	Open
OPRP	Fuel Oil Process Piping
OTLN	Outline
OVHD	Overhead
PACL	Proposed Major Contour Lines
PANL	Panel or Equipment Boards
PATT	Cross-Hatching and Poche´
PEQP	Process Air Equipment
PICL	Proposed Minor Contour Lines
PILE	Piles or Drilled Piers
PIPE	Piping
PLAY	Playground
PLOT	Plotting Targets & Windows
PNLS	Panel System
POLE	Pole
POOL	Pools and Spas
POWR	System Power Designation
PPIP	Process Air Piping
PRHT	Partial Height
PROP	Proposed
RAIS	Raised Floors Or Platform
RBAR	Reinforcing Bars
RDME	Non Plotting Read Me Information
REFR	Reference System
RFDR	Roof Drains
RFEQ	Roof Top Exhaust Equipment
RISR	Riser Diagram or Plan

MINOR GROUP ABBREVIATIONS (continued)

ROOF	Roof Located
RTRN	Return Lines
RTWL	Retaining Wall
SCHD	Schedules and Tables
SHRB	Shrubs
SIGN	Signage
SILL	Window Sills
SITE	Site Located
SIZE	Size (pipe or other equipment note)
SMOK	Smoke Detectors or Heat Sensors
SPCL	Specialties and Accessories
SPHD	Sprinkler Head
SPOT	Spot Elevations
SPRT	Sport Area or Equipment
STOR	Storage Equipment or Containers
STRP	Striping
STRS	Stairs, Escalators and Ladders
SUPL	Supply Lines
SUSP	Suspended Elements or Equipment
SWBD	Switch Boards
SWCH	Switches
SYMB	Symbols, Bubbles and Targets
TEXT	General Notes & Specifications
THER	Thermostats
TPTN	Toilet Partitions
TREE	Trees
TTLB	Title Block Sheet Name and Number
TURF	Turf Area
UCPT	Under Carpet Wiring
UNDR	Underground
URAC	Underground Raceways
WALL	Walls or Wall Located Objects
WATR	Water Features
WHED	Window Header
WIRE	Wiring
WKSN	Work Stations

Appendix 4
MODIFIER EXAMPLES

The following are examples of modifiers which may be used. The nature of such names means that individual discretion can be used, but all names must be confined to four letters.

ACPI	Asbestos Concrete
CAIR	Cast Iron
DUIR	Ductile Iron
GALV	Galvanized
NOTE	Notes and Text
PATT	Hatch Patterns
PVCL	Polyvinyl Chloride