Division of Capital Asset Management

D·C·A·M

Building for the Commonwealth

CAD Standards

February 2008

FOREWORD

Each year, the Division of Capital Asset Management (DCAM) manages several hundred million dollars worth of projects. These include architectural and engineering activities, construction management, maintenance, surveys, studies and needs analyses, and other projects in keeping with the mission of DCAM

> "…to serve the citizens of the Commonwealth by providing professional and comprehensive services to state agencies in the fields of public-building design, construction, maintenance and real estate."

Data for these projects are collected in graphic and tabular form, most typically using Computer Aided Design and Drafting (CAD) technologies. Complementary technological tools; Geographic Information Systems (GIS) software, total stations for surveys, and data base technologies, are also used in data generation and collection. These data are utilized immediately in project related activities, e.g. planning, design, and construction of state facilities, and are also used for a variety of post construction activities, including maintenance, space management, renovations, and management analyses, to name but a few. Post construction, the data are used to support diverse activities of state agencies to which project data are delivered.

Recognizing the need for consistency and data compatibility among a variety of data developers, project applications and post construction activities, in early 2007 a CAD Standards Committee was formed within DCAM. The committee was charged with developing a set of CAD standards that would reflect DCAM data management needs, and that would be compatible as far as possible with National CAD Standards. The DCAM standards would be complementary to the "DCAM Standard Specifications", the DCAM "Designers Procedures Manual", the DCAM "Cost Estimating Manual" and any and all other DCAM documents and regulations promulgated by DCAM. The DCAM CAD standards Manual is not a specification of what software products are to be utilized in DCAM projects, but rather a specification of how graphic and tabular data are to be delivered to DCAM. The DCAM CAD Standards have been developed with a view to compatibility with and complementarities to emerging technologies, specifically Building Information Model (BIM) software.

Early on, the committee determined that an essential method of ensuring data consistency and compatibility among the various data providers would be for DCAM to develop a CAD "seed file". This file, a digital version of DCAM's CAD standards, would be provided to DCAM consultants for use in DCAM projects. The file would automatically set up the consultants' computers according to the standard, thus insuring all consultants' file deliveries would be consistent and compatible, irrespective of the source and or discipline.

For a detailed description of the Seed file and Titleblock provided **please refer to Sections 4.0 through 4.4.**

The CAD Standards Committee was comprised of representatives from the following DCAM offices

- Facilities Maintenance and Management
- Leasing
- Planning, Design and Construction
- Real Estate Management

Additionally, comments were solicited from DCAM staff with particular expertise in functional and/or application areas, e.g. surveying, project management systems (PMAS) and Courts, and client agencies currently using CAD. Input was also solicited from representatives of the local architectural/engineering/construction (A/E/C) community. As far as possible, all points of view have been considered in developing the DCAM CAD Standards.

To assist in the preparation of the standards and the seed file, DCAM retained the services of Microdesk, Inc., of Waltham, Massachusetts. Microdesk was selected based on its prior consultancy experience in similar projects, and its capabilities as an application software provider for the full gamut of disciplines utilized in DCAM projects.

It is expected that full implementation of these standards will be completed within eighteen months of initial publication. This is deemed sufficient time for DCAM, the architectural, engineering, and construction communities, and DCAM client agencies to adapt to these standards.

It is recognized that the disciplines associated with DCAM activities are constantly changing. Periodically, this manual and associated seed files will be revised to reflect such changes. It is the goal of DCAM to maintain a set of CAD Standards that are timely, current, and which reflect the state of the art in technology, data management, and current managerial techniques in design, construction and post construction activities.

For the Committee,

Michael Costello, Office of Facilities Maintenance and Management, Chair
David Berkowitz, Office of Planning, Design and Construction
Luciana Burdi, Office of Planning, Design and Construction
Jim Cassidy, Office of Facilities Maintenance and Management
AnPing Chi, Office of Facilities Maintenance and Management
Hope Davis, Office of Facilities Maintenance and Management
Mel Klayman, Office of Facilities Maintenance and Management
Schuyler Larrabee, Office of Planning, Design and Construction
Lisa Musiker, Office of Real Estate Management
Brian Novak, Office of Planning, Design and Construction
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PURPOSE

The DCAM CAD Standards Manual establishes requirements and procedures for the preparation and submission of CAD based drawings throughout the project life cycle. Adherence to this standard insures that both DCAM internal staff and consultants involved, will receive and produce graphic and tabular data in a consistent format. This consistency will improve the compatibility of these drawings internally and the efficient exchange of data between DCAM consultants, and client agencies.

The role of an individual assigned to the project determines the level of understanding required of the CAD Standards. For CAD operators, designers, and supervisors a thorough knowledge of CAD related elements associated with a project is crucial. The project manager however only requires a general knowledge of the CAD Standards and the means by which they are employed to create a project. Both levels of knowledge will be possible through the use of this manual.

The CAD system adopted by DCAM is Autodesk Autocad.
Throughout this manual terminology and references will be made that are unique to this Autodesk Application.
This manual is intended to be used in conjunction with The Designers Procedures Manual (which replaces Form 9) effective June 2005 and the Standard for Digital Plan Submittals to Municipalities (Version 1.0) issued by The Office of Geographic and Environmental Information (MASSGIS) effective January 2006

Presently, this manual does not include requirements for compliance with the MassGIS Standard for Digital Plan Submittals. When the requirements for compliance are determined, this manual will be updated to include those requirements.

ABOUT THIS DOCUMENT…

The chapters within this manual describe how DCAM uses CAD and how to configure AutoCAD to support DCAM's CAD Standard, which it has adopted.

The appendices, which follow, support the chapters in several ways. In addition, appendices have been provided to support CAD related subject matter.

1.0 ACCESSING THE CAD STANDARDS

The DCAM CAD Standards consists of a series of support files. All support files are distributed in a folder called “DCAM_Standards”. The standards folder can be found in the DCAM Knowledge Center,

The “DCAM_Standards” folder contains the DCAM Seed file, DCAM Titleblock, DCAM Cover Sheet and a pdf version of the DCAM CAD Standard Manual.

1.1 USING THE STANDARDS FILES

The Standards directory contains two primary types of files: files that do not require ongoing user interaction to utilize and files that do require ongoing user interaction to utilize. The first type refers to files used as AutoCAD support files, which only need to be copied once to the proper support folders. The second type refers to files such as Borders and Title Sheets along with their associated revision blocks. These files do require some user interaction to utilize in a drawing.

2.0 PROJECT DIRECTORY STRUCTURE AND FILE NAMING CONVENTION

This chapter provides a structure for the development of CAD projects. Adherence to this structure will insure that DCAM receives maximum benefit from its CAD implementation.

The two primary goals of this structure are first to promote effective and efficient coordination between functional groups and second to develop CAD projects in a way that will facilitate the use of the electronic information beyond the initial contract.

2.1 PROJECT INFORMATION DELIVERY

The repository for all project drawings and project related data will be the in house DCAM Project Management and Accounting system called PMAS.

2.2 DIRECTORY STRUCTURE

Within the Projects folder, individual project folders will be created using the Project Number. Each project folder shall contain a series of sub-folders as listed below.

DWG Folder

The DWG folder is used to store all design (model) drawing files.

Rules of the Drawing Folder:

- Additional folders may not be created in the Dwg folder.

DWG_SHEETS Folder

The DWG_SHEETS folder is used to store all Plot Sheet drawings. These drawings consist of a series of external references. All drawings in a set shall have a corresponding plot sheet drawing in this folder. Each of the drawings may contain multiple layouts within a single file. The stipulations of this are:

- Only consecutive drawings may be stored on multiple paper-space tabs in a single drawing.
- The tabs must be named for the sheet and the tabs must be in sequence in the drawing file.

Please refer to Section 2.3 FILE NAMING CONVENTION for information on naming DWGsheet drawings.

Rules of the DWG_SHEETS Folder:

- Additional folders may not be created in the Sheets folder.
- Only DWG sheet drawings shall be stored in the DWG_Sheets folder.

PDF Folder

At each milestone PDF files are created and placed in this folder. (e.g. Sketch, Preliminary, Revision Number)

- Sub-folders may be created in the PDF folder representing each milestone

SCRATCH Folder

The Scratch folder shall contain temporary design data. This folder is to be used to store temporary drawings and other design information.

Rules of the Scratch Folder:

- Sub-folders may be created in the Scratch folder.
- The Scratch folder will not be archived with the project.

FROMOTHERPROJECTS Folder

The Fromotherprojects folder will contain drawings and data that have been taken from other projects that relate to the current project.

Rules of the Fromotherprojects folder

- Subfolders may be created in the Fromotherprojects folder.
- The Fromotherprojects folder will be archived with the project number.

IMAGES Folder

The Photos folder is provided to store digital photographs relevant to the project. Photos to be referenced by drawing files should be referenced from this folder.

Rules of the Images folder:

- Subfolders may be created in the Images folder.
- The Images folder will be archived with the project.

MANAGEMENTDOCS Folder

The Management docs folder stores non-drawing related project data. This folder should store spreadsheets, word documents, e-mails and other types of non-drawing information that relate to the project.

Rules of the Management docs folder:

- Subfolders may be created in the Managementdocs folder.
  I.e. Word-Files, Sent-Out (Text and PDF), and Email

RECEIVED Folder

The Received folder is to contain design information received from outside sources such as consultants. The folder is intended to provide a storage container for dated information. Even though the received information may be design files that will be stored in the discipline root as model files, the received folder can contain a dated archive of these files to identify when the data was received and exactly what the submittal contained on that date.

Rules of the Received folder:

- Subfolders may be created in the Received folder.
- Subfolders shall have the date as a prefix as follows: YY/MM/DD

RELEASED Folder

The Released folder is to contain design information released to outside sources such as consultants. The folder is intended to provide a storage container for dated information. Even though the released information may be design files that will be stored in the discipline root as model files, the released folder can contain a dated archive of these files to identify when the data was released and exactly what the submittal contained on that date.

Rules of the Released folder:

- Subfolders may be created in the Released folder.
- Subfolders shall have the date as a prefix as follows: YY/MM/DD

ALTERNATE SCHEMES Folder

The Alternate Schemes folder is an area intended to store various schemes of a design component. It provides the designer an area in which to make trial changes to a design. If a scheme is created and chosen as the final, the scheme drawings shall be moved to the MODEL folder.

Rules of the Alternate Schemes folder:

- Subfolders may be created in the Schemes folder

2.3 FILE NAMING CONVENTION

Model Files: (DWG Folder)

Model files are working drawing files containing actual design geometry. These drawings will be named by providing the discipline code followed by the Project Number; a plan type and a user defined description of the drawings contents. Please refer to the tables below for the plan type codes. Once defined, a model file's name shall not change through the life cycle of the project. This restriction is required due to the nature of externally referencing Model files.

The filename will take the form of:

PN D-FP-User Description.dwg

PN =	Project Number
***D** =	The Discipline Code
**FP =	Model File Plan Type
User Description =	User defined description of the files contents

- * Allowable discipline codes are: A, C, E, F, G, I, L, M, P & S
- **** Please refer to the Charts below for the abbreviations used for each of the Model File Plan Types

MODEL FILE PLAN TYPES	
TS	Border Sheet
KP	Key Plan
CP	Reflected Ceiling Plan
DT	Detail
EL	Elevation
FP	Floor Plan
LG	Legend
QP	Equipment Plan
SH	Schedule
XD	Existing/Demolition Plan

MODEL FILE PLAN TYPES	
FN	Furniture Plan
PP	Piping Plan
FP	Fire Protection Plan
HP	HVAC Plan
FA	Fire Alarm Plan
EP	Electrical Power Plan
LP	Lighting Plan
TP	Telephone/Data Plan

DWG file name example: 0001-A06-FP01-First Floor Plan.dwg

Model File Plan Type vs. Drawing Type:
A model file plan type is used in the model file naming convention to distinguish what type of drawing it is. The alpha character used in the drawing numbering convention denotes a drawing type.

DWG Sheet Files:

DWG Sheets are drawing files that consist of an externally referenced border sheet, an inserted drawing-info block and a single or multiple externally referenced model files. All DWG sheet drawings will be created in the DWG folder. The file names for DWG sheets will be the Project Number and discipline code and with the sheet number range appended to the end. The DWG sheet filename shall not have a user description appended to it (alternate if discipline code is used).

The filename will take the form of:

DPN-SHT (single sheet) (0001-A06-FP01.dwg)
DPN-SHT_SHT.dwg (sheets 1 through 4 in a single drawing file) (0001- A06-FP001-FP004.dwg)

PN =	Project Number
D =	Discipline Code (Refer to chart on Previous Page)
0001_004 =	Starting Sheet Number to Ending Sheet Number (assumes multiple sheets stored in Layout Tabs in a single drawing file).

2.4 SUBMISSIONS

All submissions shall conform to the CAD Standard. The CAD portions of the Certified Study, including but not limited to Surveys, Geotechnical Plans, and Existing Conditions Drawings, as well as Schematic, Design Development, and sixty (60%) per cent complete design submissions shall be submitted to the Project Manager. At his or her discretion, the Project Manager shall load these preliminary submissions into PMAS.

Electronic versions of Bid Documents and Bid Documents Addenda shall conform to the DCAM CAD Standard. Bid Documents and associated Addenda shall be stored in PMAS.

Upon the completion of construction, Record Drawings shall be prepared by the designer(s) and submitted to the Project Manager. The CAD version of this submittal shall conform to the DCAM CAD Standard, and shall be stored in PMAS.

2.5 ELECTRONIC DELIVERABLES

Electronic files and documentation are due with the final submission (and any required interim submission) for each project.
This includes studies, data, or graphics, which may or may not include drawings. Final submissions that do not include all files and documentation are incomplete DCAM strongly emphasizes the importance of final record drawings. These drawings will be used in the management of DCAM buildings by DCAM and by client Facilities Management departments. State buildings typically have significant changes in their configuration over their life span. Accurate record drawings are of vital importance in these building management and alteration processes.

For a specification chart for the Designer Records Turnover Requirements, see Chart.

2.5.1 DESIGNER RECORDS TURNOVER ELECTRONIC REQUIREMENTS

1. <u>Record Drawings</u>, shall be submitted as follows:

TIFF files of dated/Stamped Record Drawings on the Media specified on **section 2.5.2**
Total number of required Set = **3** (DCAM Distribution: 1 to DCAM's Distribution Manager and 2 to client agency.

AutoCAD files (.dwg format) of record drawings
Total number of required Set = **3** (DCAM Distribution: 1 to DCAM's Distribution Manager and 2 to client agency.

2. <u>As-Builts Sketches</u>, shall be submitted as follows:

TIFF files of dated/Stamped Record Drawings on the Media specified on **section 2.5.2**
(May be included on CD with Record Drawings)
Total number of required Set = **3** (DCAM Distribution: 1 to DCAM's Distribution Manager and 2 to client agency.

AutoCAD files (.dwg format) **(When available as AutoCAD files)**
(May be included on CD with Record Drawings)
Total number of required Set = **3** (DCAM Distribution: 1 to DCAM's Distribution Manager and 2 to client agency.

2.5.2 MEDIA FORMAT REQUIREMENTS

A copy of all electronic files and documentation shall be delivered to DCAM's offices on CD-R, DVD-R, or DVD+R. Media used shall be in a format that can be read and processed by DCAM supported hardware and software. Media jewel cases shall be labeled with the information below. Label the media themselves to contain as a minimum: date, DCAM project name/number, CAMIS project number and building name/number.

2.5.3 QUALITY CONTROL

The Designer/Contractor is responsible for the quality control of their submissions. DCAM will visually and electronically check these submissions to verify compliance. High quality of drawings is essential, Drawings must be cleaned up before submittal in the matter that lines in corners shall connect, blocks on unnecessary locations shall be deleted or purged. DCAM will reject and require correction of any required deliverables or formats that do not meet requirements.

2.5.4 CAD STANDARDS ELECTRONIC SUBMITTALS CHECK LIST

1. For final deliverables, verify that all entities outside the drawing limits are deleted.

2. Remove all extraneous graphics outside border area. PURGE all blocks, layers, attributes, etc. not referenced in the drawing. Avoid nested blocks

3. Name files as specified in **Section 2.3** of this Manual.

4. Verify that all xrefs (dwgs and images) are attached without drive or directory specifications. Don't include paths in xref

5. Xrefs shall be bound when submitted.

6. Check that all unused layout tabs are deleted.

7. Drawing submissions shall have revision stamps in the titleblock (ex: As builts, record drawing, etc)

8. Objects shall be assigned the appropriate layer based on DCAM's standards on the **appendix I**

9. Object color, linetype and lineweight shall be set to BYLAYER NOTE: (Please avoid at all costs the use of light yellow and light blue as colors.

10. Text in tables schedules shall be editable.

11. Rooms, spaces and boundaries shall be drawn using polylines to allow easy extraction of information. Please refer to **Section 3.11** for data extraction.

NOTE:

* Survey drawings submitted by the consultant to **Programming Department** shall be on the correct layers and symbology and contour lines as well as space assignments shall be drawn as polylines. All drawings are to be submitted in Both dwg CAD format and a version in TIFF image format.

* All drawings submitted to the **Office of Leasing and State Planning** shall include USF Stamp in Titleblock, see DCAM Standards.dwg
All Drawings submitted to **Facilities Management Department** shall be in both dwg CAD format as well as a version in TIFF image format.

2.6 PAPER FORMAT DELIVERABLES

All deliverables must be submitted and received in a timely manner. A transmittal letter shall accompany each electronic deliverables submission. The letter shall be signed by the appropriate Designer/contractor and state the total number of CDs or DVDs submitted and date of submission.

NOTE: According to the Design phase, (Schematic, Design Development or Construction Documents) the requirements will be defined as specified in APPENDIX VI.

DCAM Standard Sheet Size is 30” x 42”

2.6.1 DESIGNER RECORDS TURNOVER PAPER REQUIREMENTS

1. Record Drawings, shall be submitted as follows:

Paper Copy (White bond paper/black lines/ paper size 30” x 42”)
Total number of required Set = **3** (DCAM Distribution: 1 to DCAM’s Distribution Manager and 2 to client Agency.
Note: All record drawings must be dated and stamped RECORD DRAWING, directly above the title box

2. As-Builts Sketches, shall be submitted as follows:

Paper Copy (White bond paper/black lines)
Total number of required Set = **3** (DCAM Distribution: 1 to DCAM’s Distribution Manager and 2 to client Agency.

DESIGNER
RECORDS TURNOVER REQUIREMENTS

DOCUMENT TYPE	REQUIRED FORMATS	TOTAL NUMBER OF REQUIRED SETS	DCAM DISTRIBUTION DCAM Records Mgr	Client Agency
Record Drawings NOTE: All record drawings must be dated and stamped RECORD DRAWING directly above the title box)	Paper Copy (white bond paper /black lines/ paper size 30" x 42")	3	1	2
	TIFF files of dated/stamped Record Drawings on CD	3	1	2
	AutoCAD Files (.dwg format) of Record Drawings on CD	3	1	2
As-built Sketches	Paper Copy (white bond paper /black lines)	3	1	2
	TIFF files on CD (may be included on CD with Record Drawings)	3	1	2
	When available as AutoCAD Files (.dwg format) (may be included on CD with Record Drawings)	3	1	2
Contract Specification and Addenda	*PDF on CD	3	1	2
Technical Submittals (Approved ONLY)	PDFs on CD	2		2
O&M Manuals including Extended Guarantees and Warranties	*PDF on CD	3	1	2
Calculations	*PDF on CD	2	1	1

* Bookmark index to sections/chapters.

3.0 CAD PRACTICES AND PROCEDURES

CAD drawing files must be consistently formatted in order to provide an effective method of data dissemination and retrieval. To that end, this Standard will guide the user in the requirements of layer naming, graphic symbology, lettering styles, drawing units and other features.

3.1.1 LAYERING SCHEME DEFINITION

All layers contained in drawings have been defined using the National CAD Standards. All disciplines use a layer standard that is similar. The major components of a standard layer name are defined as follows:

DISCIPLINE.STATUS-MAJOR-MINOR-DESC

DISCIPLINE

"A"	Architectural
"C"	Civil
"E"	Electrical
"F"	Fire Protection
"G"	General
"H"	HVAC
"M"	Mechanical
"P"	Plumbing
"S"	Structural
"X"	Other Disciplines

STATUS = Indication of the information's current status

"D"	Existing to be Demolished
"R"	Existing to Remain
"L"	Existing to be Relocated
"F"	Future Work
"N"	New Work
"T"	Temporary Work

MAJOR = Major grouping of features that have common characteristics

MINOR = Sub grouping of Major category

DESC = Extended description of layers for clarity

EXAMPLE

M-N-HVAC-____-IDEN

M (Mechanical) = Discipline, **N** (New work) = Status, **HVAC** = Major Group, **_____** = no minor, **IDEN** (Annotation) = Extended Description

NOTE: the layer information shall reflect survey information collected in the course of site plan development, stake outs, etc, for DCAM projects

All drawing files shall be produced using DCAM layer names and layer name formats.
Note: Not every layer will be used in every project.
See Appendix I. When submitting drawings, no objects will be on layer 0 (zero) unless otherwise specified. Layers in the Appendix have been assigned Departmental Activity color coded and shall be read as follows

L = Leasing Data	Color Coded	
S = Study and Planning Data	Color Coded	
SU = Survey Data	Color Coded	
C = Design/Construction Data	Color Coded	

3.2 ENTITY AND LAYER LINETYPES

Standard DCAM linetypes have been created for use with all design documents. These linetypes have been assigned to their respective layers in the "DCAM Seed file.dwg" drawing, which has been supplied within these standards. Additional linetypes have been created for special circumstances when the lettering within a linetype needs to be rotated or when the pattern of the linetype needs to be scaled down. As a general rule, all entities should have their linetype assigned "bylayer" and not "byentity". One exception occurs with certain standard symbols that contain entities that have their linetype assigned "byblock". Another exception occurs when there is a need to assign one of the "short" or "rotated" variations of a linetype to a particular entity.

To verify the correct linetype scaling settings for a DWG_SHEETS drawing, which utilizes one or more Layouts, first type "PSLTSCALE" at the command prompt and make sure that the value is set to "1". This sets all linetypes to be scaled to the paper space viewport scale factor. In addition, the "LTSCALE" should be set to "1". Verify this setting in the same way by typing "LTSCALE" at the command prompt and making sure that the value is set to "1".
Working drawings, which reside in the DWG folder should have the LTSCALE set to the appropriate drawing scale.

3.3 ENTITY AND LAYER COLORS

All entities will be drawn on the specified layers and must have color assigned "by layer" not "by entity". Layer color assignments are included in the layer definitions provided.

3.4 COORDINATE SYSTEMS

In an effort to organize, consolidate, and standardize the information generated and consumed by all divisions within the agency, Coordinate Systems must be used in all projects. The objective of this requirement is to make the data files easier for users to identify and integrate in planning and design. Survey data for site plans shall be tied to the Massachusetts State Plane Coordinate System and should so indicate. The Designer and/or Responsible Engineer must be capable of delivering survey data in whatever formats are specified by DCAM: .dwg, shape files, etc.
.

3.5 SYMBOLOGY

A symbol is defined as a prearranged group of geometry that can be inserted, at scale, into a drawing. The AutoCAD term for a symbol by this definition is "block". There are two types of symbols provided in this standard: Scaleable and Non-Scaleable symbols.

3.5.1 DIGITAL INSERTION OF SCALEABLE SYMBOLS

Scaleable: Scaleable symbols are created with the intent that they will appear the same size when plotted at different scales.

1. For ease of use, the insertion scale factor of each scalable symbol will depend on the output plot scale; Example: If the scale of the viewport is 1:30 (decimal units), then each symbol inserted in the drawing will be scaled up 30x. In the case of a drawing created at 1/8"=1'-0" (architectural units), the symbol will be inserted with a scale of 96x. For architectural units, the drawing scale will be multiplied by 12 based on the fact that architectural units correspond to inches.

2. Symbols are created on Layer "0", and will automatically take on the characteristics of the layer they are inserted on. All symbols shall be inserted on the layer identified in this standard.

3.5.2 DIGITAL INSERTION ON NON-SCALEABLE SYMBOLS

Non-Scaleable: Non-Scaleable symbols are created with the intent that they will appear true size at all plotting scales.

1. These symbols will be inserted with a scale of 1.

2. Symbols will be created on Layer "0", and will take on the characteristics of the layer they are inserted on. All symbols shall be inserted on the layer identified in this standard.

3.5.3 CREATING SYMBOLS

1. Symbols must be documented, and be supplied to the CAD manager or CAD Committee in digital format as a single AutoCAD drawing file along with an accompanying plot of the symbol and the "Request to Change Standards Form" which is contained in Appendix v.

2. Symbols must be created on Layer "0". Other layers may be present in the drawing for supplemental information such as text with the symbol.

3. Colors should always be set to "bylayer" and linetypes should be set to "bylayer" whenever possible.

4. Text within the symbol should be sized appropriately so that it is legible upon plotting.

5. The symbol should be drawn so that the insertion point is located appropriately. After using the "wblock" command, the resultant drawing file should be edited to have the "base" of the drawing set to 0,0,0. This can be implemented and checked by using the AutoCAD "base" command. The 0,0,0 coordinate in the drawing file should be the location of the insertion point for the block.

6. Symbol drawings should be purged of all unused blocks, linetypes, text styles, delete any extraneous layer filters and run an audit to find and fix any errors.

3.6 PLOTTED LINEWEIGHTS

The colors used in the layer definition provided in this document correspond to plotted pen weights. All plotted submittals shall be provided using these pen weight assignments.

AutoCAD products make use of a CTB file to assign pen weights to object colors. Many variables within the CTB file remain common throughout the pen assignments. Constant variables within the CTB file will be defined as follows:

VARIABLE	VALUE
COLOR	USE OBJECT COLOR
DITHER	AUTOMATIC
VIRTUAL PEN NUMBER	AUTOMATIC
LINETYPE	USE OBJECT LINETYPE
ADAPTIVE	NO
LINE END STYLE	USE OBJECT END STYLE
LINE JOIN STYLE	USE OBJECT JOIN STYLE
FILL STYLE	USE OBJECT FILL STYLE

3.7 TEXT STYLES AND HEIGHTS

To promote consistency in preparing AutoCAD drawings as well as prevent the use of "third-party" AutoCAD font files only fonts distributed with the Autodesk products or standard Windows fonts shall be used. The CAD Manager or CAD Committee must approve the inclusion of any additional fonts.

Text styles have been created and provided with the Seed file. To use standard text styles, simply open AutoCAD Design Center (hit control key and 2 or type adcenter) and navigate to the folder which contains the file "DCAM Seed file.dwg", as shown in **figure 3.7.1**

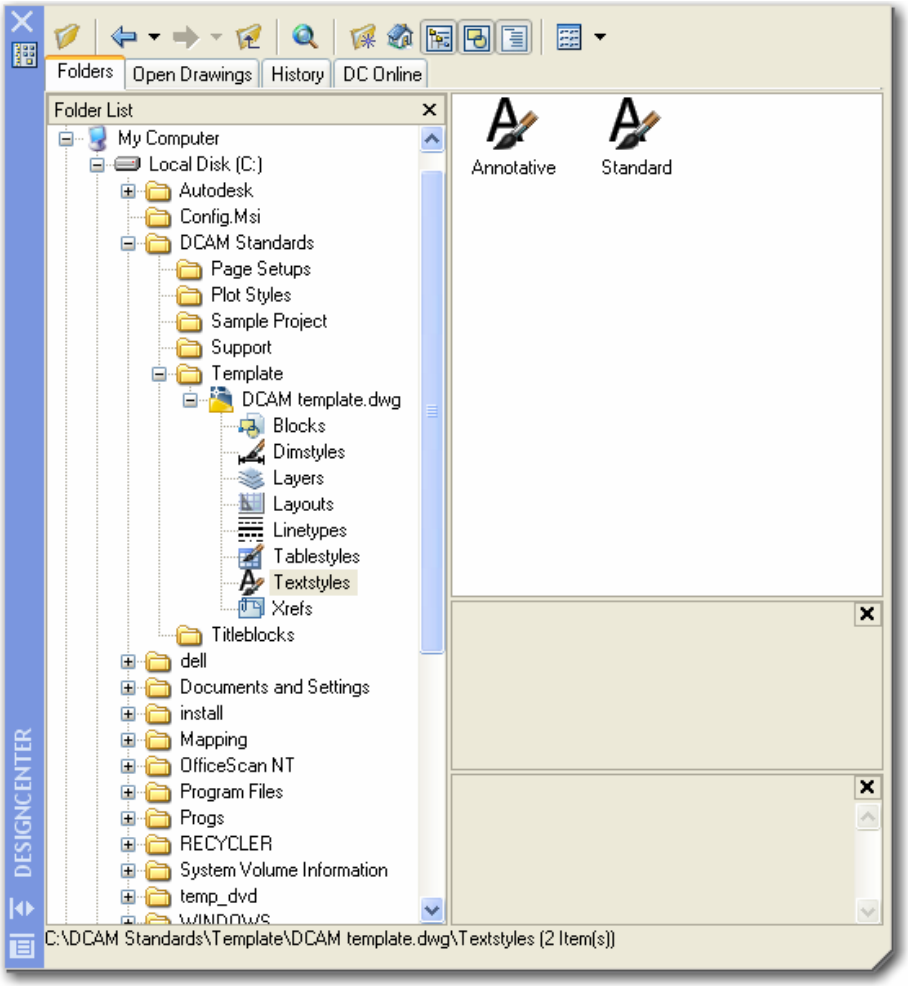


Figure 3.7.1

Drag and drop the desired text styles into your current drawing. The text styles have been named in conjunction with text height and plotting scale. For example, if you are going to plot at a scale of 1/8”=1’-0” and want to create text which will plot at an actual size of 1/10th of an inch, the appropriate text style would be “1-8in –1ft_1-10th”.

The width factor should be set to 1.0 and Oblique Angle should be set to zero for all text styles. Standard text heights are defined as follows:

USE	PLOTTED HEIGHT
Major Titles	3/16”
Sub Titles	1/8”
Notes, Dimensions, etc	3/32”

Note: All consultants’ logos have to be created, or edited to match, DCAM standard fonts.

3.8 DIMENSION STYLES

As with the text styles, dimension styles have been provided with this document in an attempt to promote consistency throughout the creation of contract drawings.

The dimension styles are contained in the “DCAM template.dwt” file and can be dragged and dropped into a current drawing by using AutoCAD’s DesignCenter in the same manner as the text styles (shown in figure 1.1). Similar to the text styles, the dimension styles have been named in conjunction with the final plotting scale. For example, if you are working at a scale of 1”=16’ select the style “1-16in – 1ft”.

All Dimstyles have been created to use the text style “DIM_Romans”. This font has been defined with the Romans.shx font. The height shall be defined as zero. The height of the dimension text will be a multiple of the DimScale system variable and the final plotted height. The Width Factor shall remain one and the Oblique Angle shall remain zero. In addition all colors should be set to bylayer. All precision settings are open to drawing specific changes.

3.9 EXTERNAL REFERENCE FILES

All external reference files will be attached to drawings as “Overlays”. By adhering to this process, all users will be able to use drawings within their own disciplines as well as drawings from other disciplines without concern for cyclical references and other potential problems. All external reference files shall be referenced by use of “Relative Path”, as shown in figure 1.3 below

Type xref and attach dwg, as shown in **figure 3.9.1.**

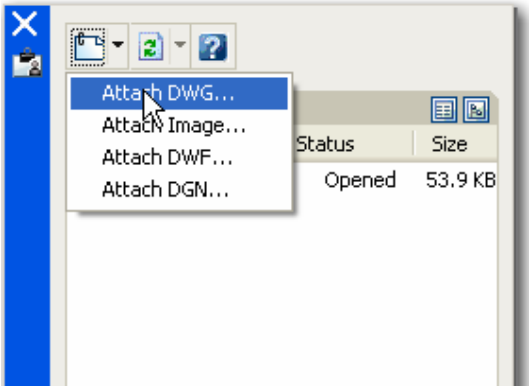


Figure 3.9.1

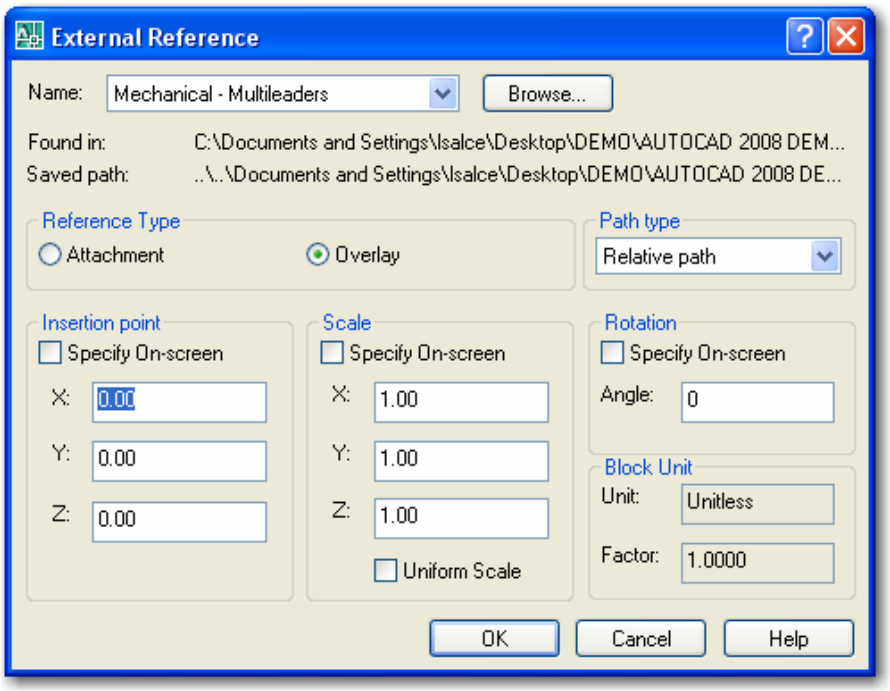


Figure 1.9.2

NOTE:
All submitted drawings from consultants should be bound as inserts.
To bind an xref select the xref drawing or drawings from the xref manager and click on bind, as shown below on **figure 3.9.3**

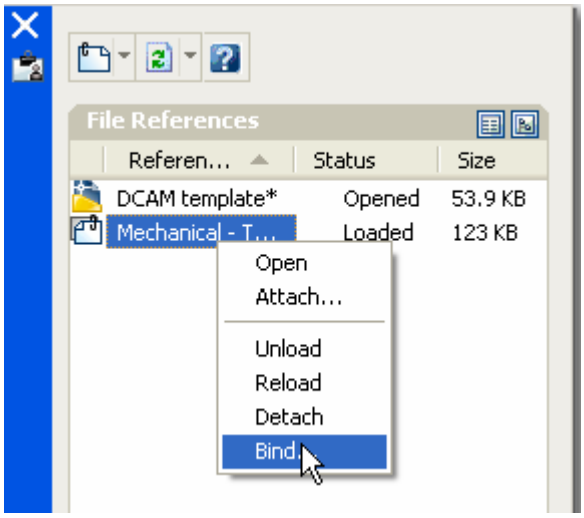


Figure 3.9.3

Then select Insert from the window dialog box, as shown in **figure 3.9.4**

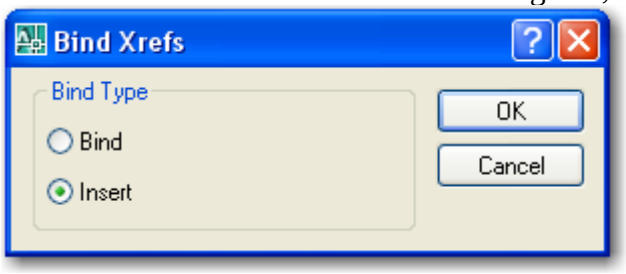


Figure 3.9.4

Binding an xref converts DWG references (xrefs) to standard local block definitions. If you bind an xref into the current drawing, the xref and all its dependent named objects become a part of the current drawing. Use XBIND to add individual xref-dependent named objects, such as blocks, text styles, dimension styles, layers, and linetypes, to the local definition table. The two methods of binding xrefs to the current drawing are Bind and Insert. Bind alters the definition table names of an xref when it is inserted. Insert does not alter the definition table names of an xref when it is inserted. To bind a nested xref, you must also select the parent xref.

Bind

Binds the selected DWG reference to the current drawing. Xref-dependent named objects are changed from blockname|definitionname to blockname$n$definitionname syntax. In this manner, unique named objects are created for all xref-dependent definition tables bound to the current drawing.

For example, if you have an xref named FLOOR1 containing a layer named WALL, after binding the xref, the xref-dependent layer FLOOR1|WALL becomes a locally defined layer named FLOOR1$0$WALL. The number in n is automatically incremented if a local named object with the same name already exists. In this example, if FLOOR1$0$WALL already existed in the drawing, the xref-dependent layer FLOOR1|WALL would be renamed FLOOR1$1$WALL.

Insert

Binds the DWG reference to the current drawing in a way similar to detaching and inserting the reference drawing. Rather than being renamed using blockname$n$definitionname syntax, xref-dependent named objects are stripped of the xref name. As with inserting drawings, no name-incrementing occurs if a local named object shares the same name as a bound xref-dependent named object. The bound xref-dependent named object assumes the properties of the locally defined named object.

For example, if you have an xref named FLOOR1 containing a layer named WALL, after binding with the Insert option, the xref-dependent layer FLOOR1|WALL becomes the locally defined layer WALL.

3.10 POLYLINES

As required per all departments at DCAM, when creating linework to define objects such as rooms, spaces, contour lines, etc, polylines should be used as well as regular lines. Polylines should be used to represent all programmatic elements, including but not limited to closed spaces, e.g. rooms, circulation areas, building envelope, etc., and be on a separate layer(s) depending upon the facility being designed. These features should also be represented as non polylined line work on their own layer(s).

A polyline is a connected sequence of line segments created as a single object. You can create straight line segments, arc segments, or a combination of the two. Multisegmented lines provide editing capabilities unavailable for single lines. For example, you can adjust their width and curvature. After you've created a polyline, you can edit it with PEDIT or use EXPLODE to convert it to individual line and arc segments.

To create a polyline type PLINE in the command line or click on the Draw Menu, as shown in **Figure 3.10.1**

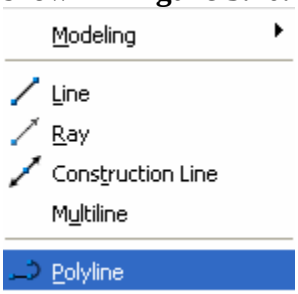


Figure 3.10.1

To convert an existing group or set of lines to Polylines, type PEDIT in the command line and choose select polyline as shown in **figure 3.10.2**

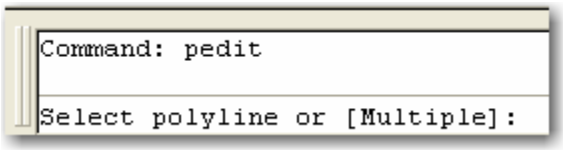


Figure 3.10.2

Then choose Join as shown in **figure 3.10.3**, and then select all lines to be joined into a polyline and hit enter and then enter again to complete the command.

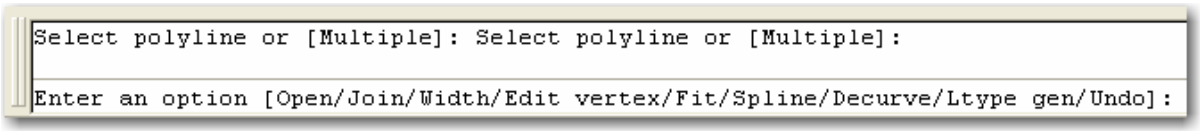


Figure 3.10.3

If you want to draw a filled circle (to represent the section or end view of a piece of concrete reinforcing bar, for example), use the DONUT command and specify an inside diameter of 0.
There's no such object as a "Donut" in the AutoCAD drawing database. Instead, the DONUT command draws an LwPolyline or Polyline object composed of two semi-circular arcs that form a circle. The difference between the inside diameter and outside diameter that you specify when drawing a donut determines the thickness of the arc segments. (You can confirm that I'm not making all this up by drawing a donut and then using the LIST command to list its properties.)

You can snap to the center of a donut (i.e., polyline arc segments) using the center object snap mode.

The DONUT command is available from the Draw menu, as shown in **figure 3.10.4**, or you can enter it by typing DONUT, DO

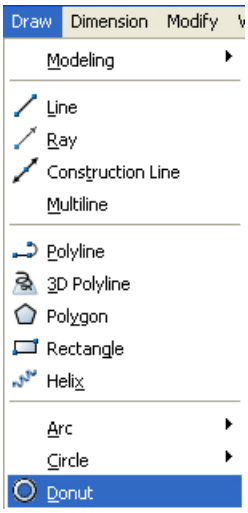


Figure 3.10.4

3.11 DATA EXTRACTION (Area and Information extraction)

To extract information such as square footage of a room directly into a table or to an excel spreadsheet, boundaries defined by polylines should be created as shown in **figure 3.11.1**

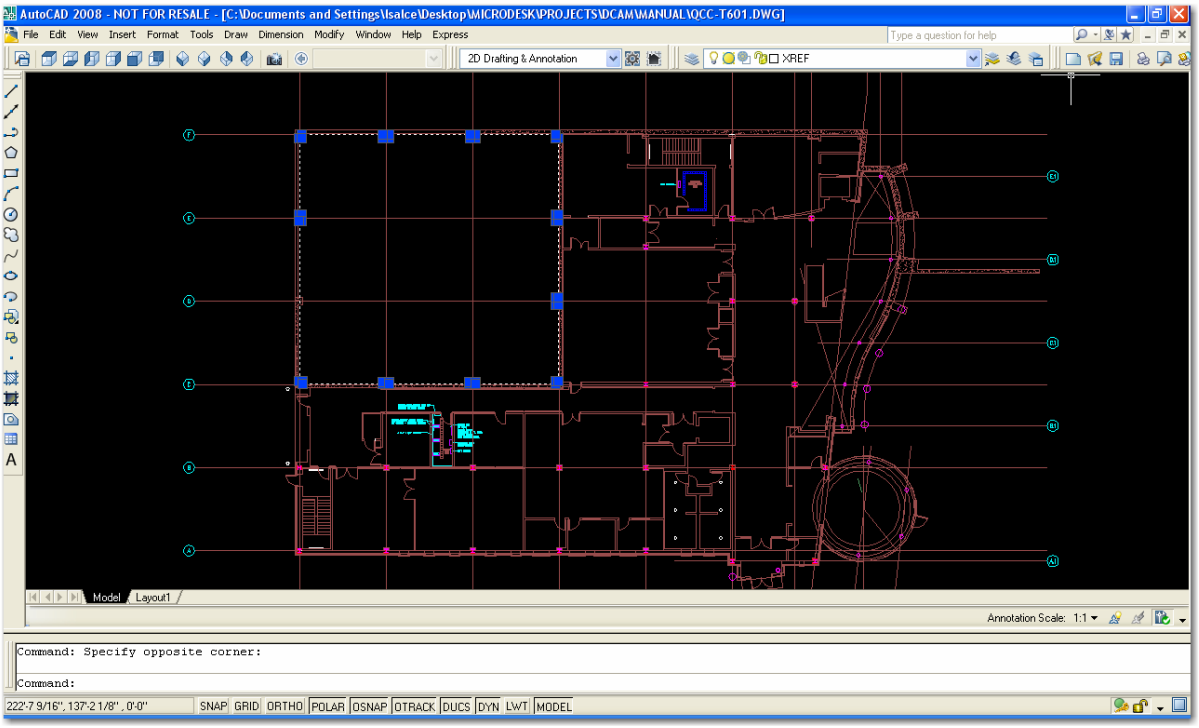


Figure 3.11.1

To begin extracting go to your Tools menu and click on the Data Extraction option as shown below in **figure 3.11.2**, or type the command EATTEXT.

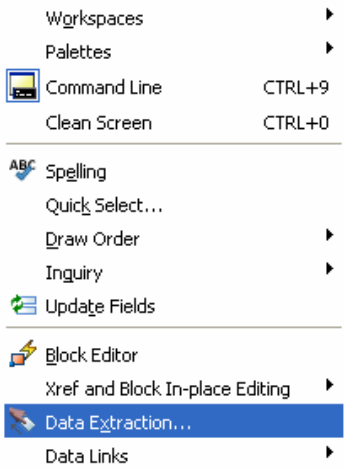


Figure 3.11.2

In the Data Extraction window dialog box select Create a new data extraction and then hit next as shown in figure **3.11.3**

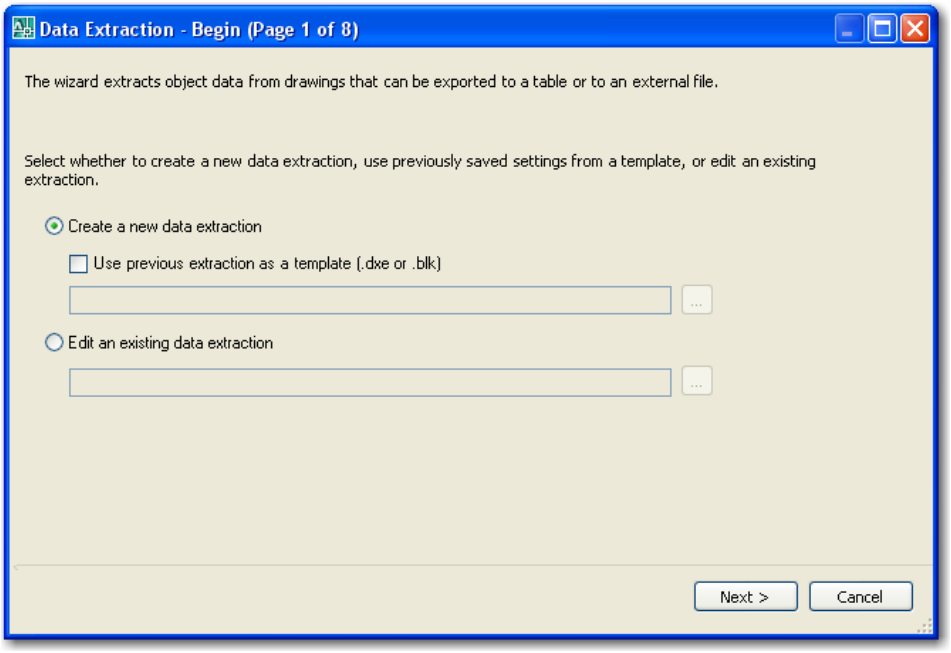


Figure 3.11.3

When prompted to save the data extraction choose a location where to save the data extraction settings, which can then be used for a future similar extraction.

Then choose the folder or drawing option on the right to get the source drawings from where the data is going to be extracted, as shown in **figure 3.11.4**

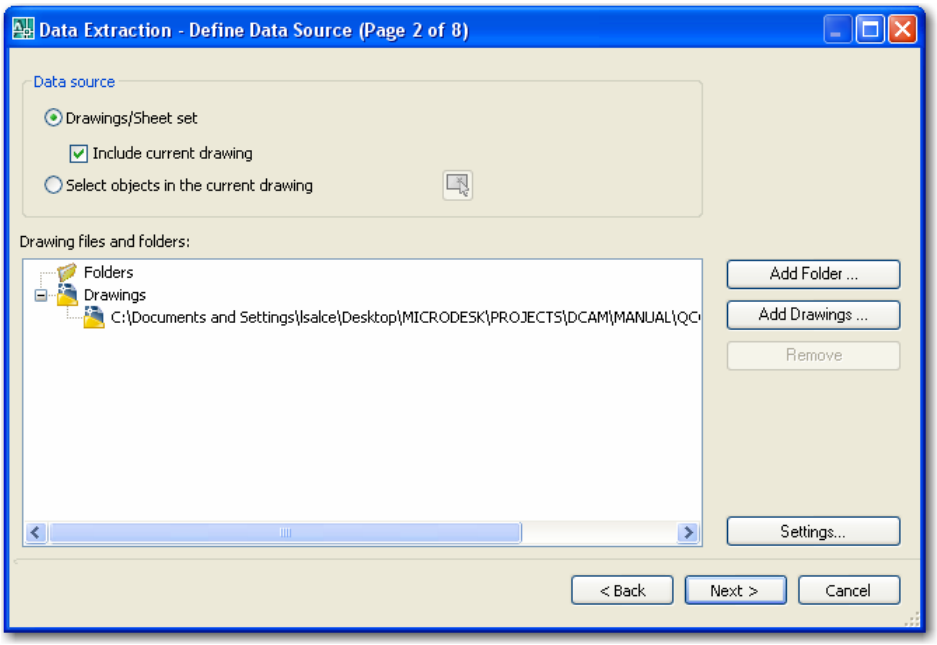


Figure 3.11.4

Next, on the left side check for the object or object category to be scanned through (ex: 2d Polyline), and then hit next as shown in **figure 3.11.5**

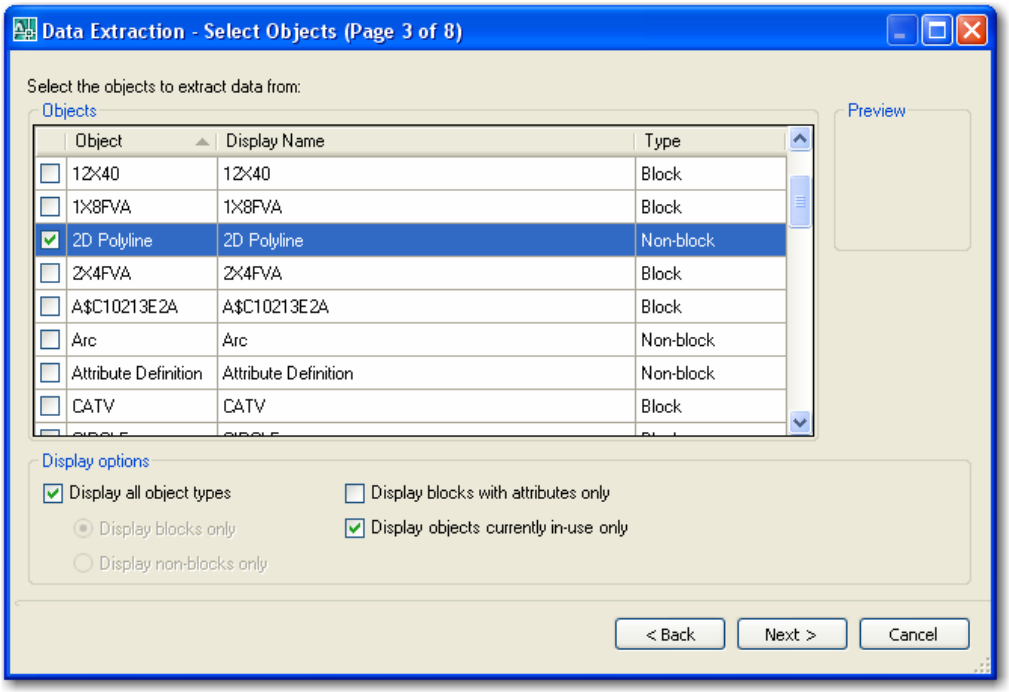


Figure 3.11.5

Next, out of the properties shown for the category previously selected (2d Polyline), Choose the ones that are going to be extracted, (ex: Area, Comments, etc), as shown below in **figure 3.11.6.**

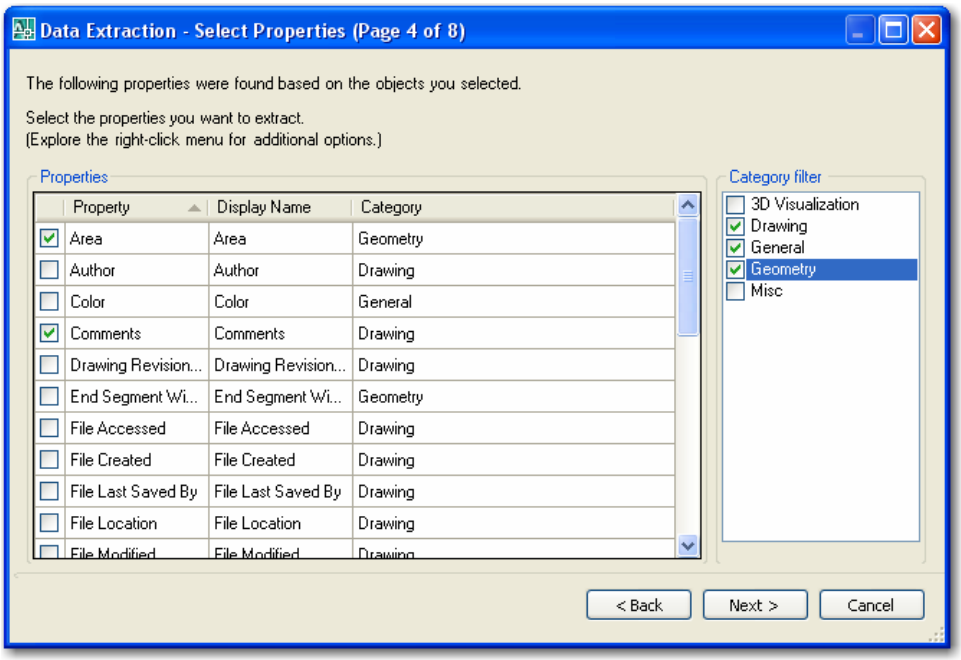


Figure 3.11.6

Next, in the preview window for the extracted table, you can reorder the columns by clicking and holding the header, and by right clicking on the header you can rename, sort, hide or add a column, hit next, as shown in **figure 3.11.7**

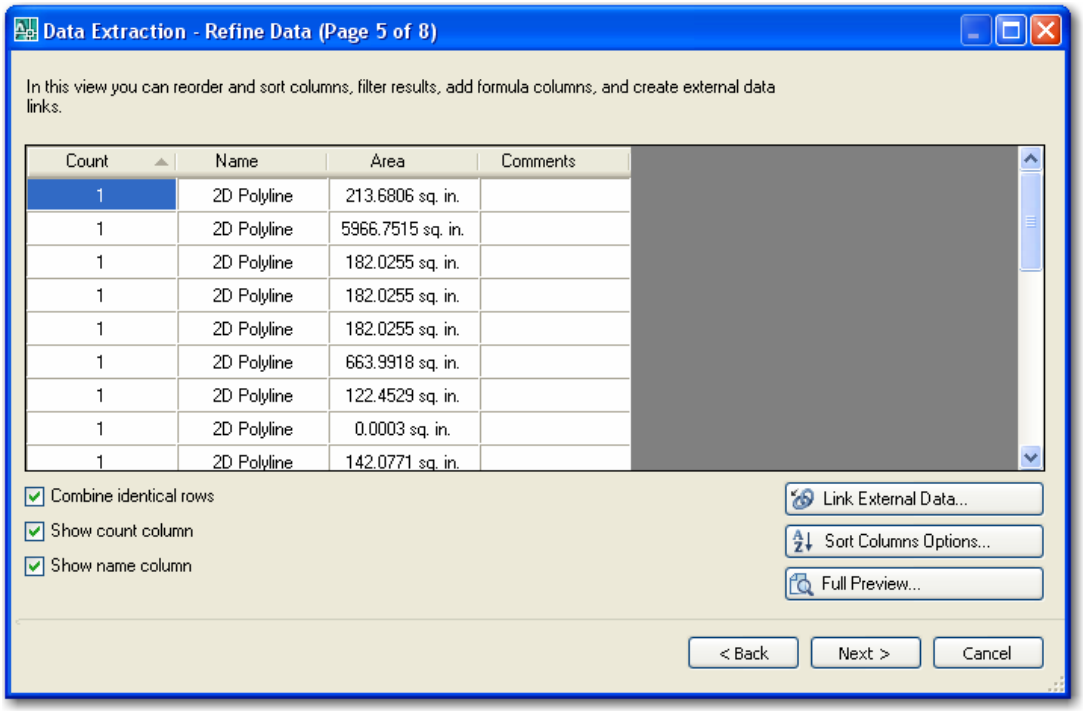


Figure 3.11.7

Next, check the box for insert data extraction table into drawing and if an Excel spreadsheet is wanted check Output data to external file and check on the browse location to save that Excel file, as shown below in **figure 3.11.8**, then click next.

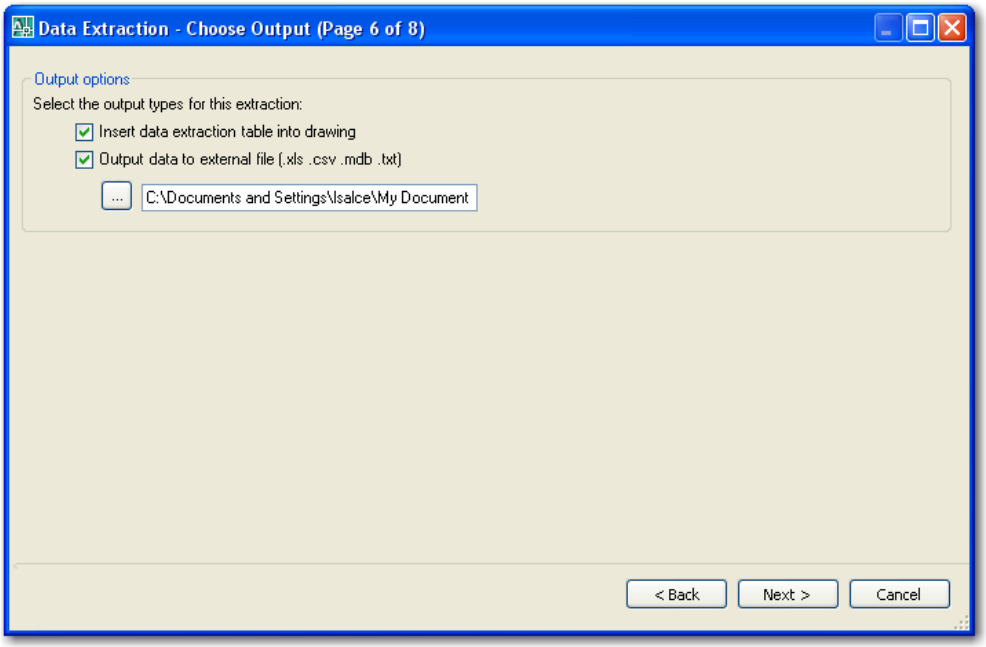


Figure 3.11.8

Next, choose a table style if already defined or simply use the default standard and in here you can change the settings of how the table will be displayed, as shown in **figure 3.11.9**, hit next.

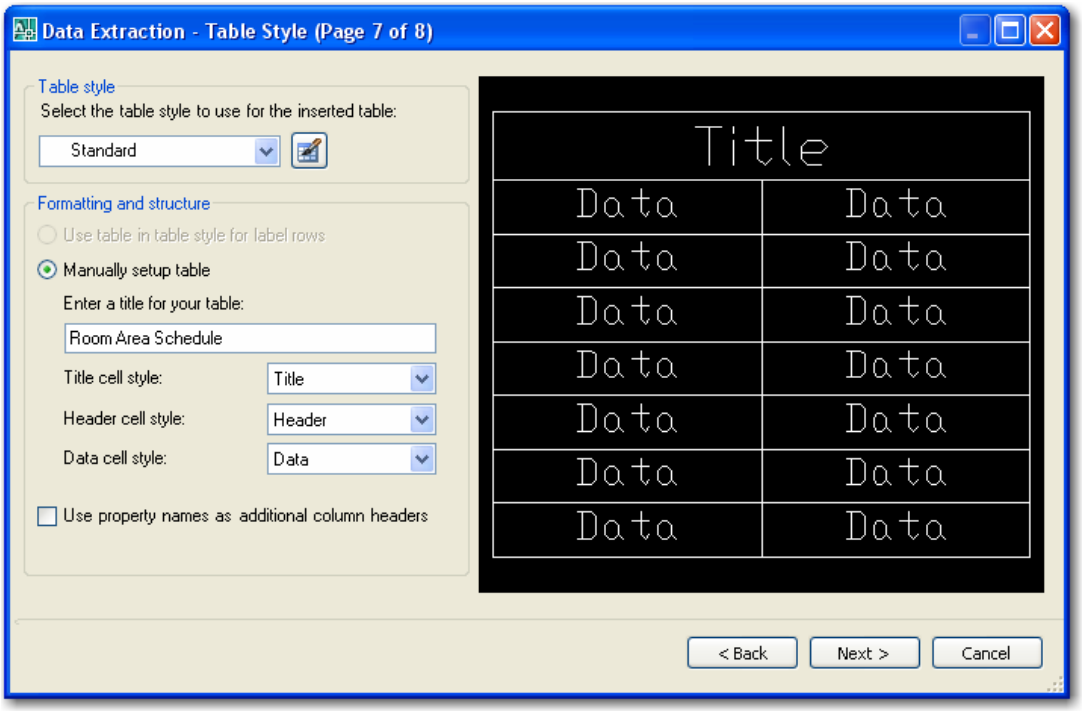


Figure 3.11.9

Finally, hit finish, to complete, as shown in **figure 3.11.10**. Then click to insert the newly extracted table in your drawing.

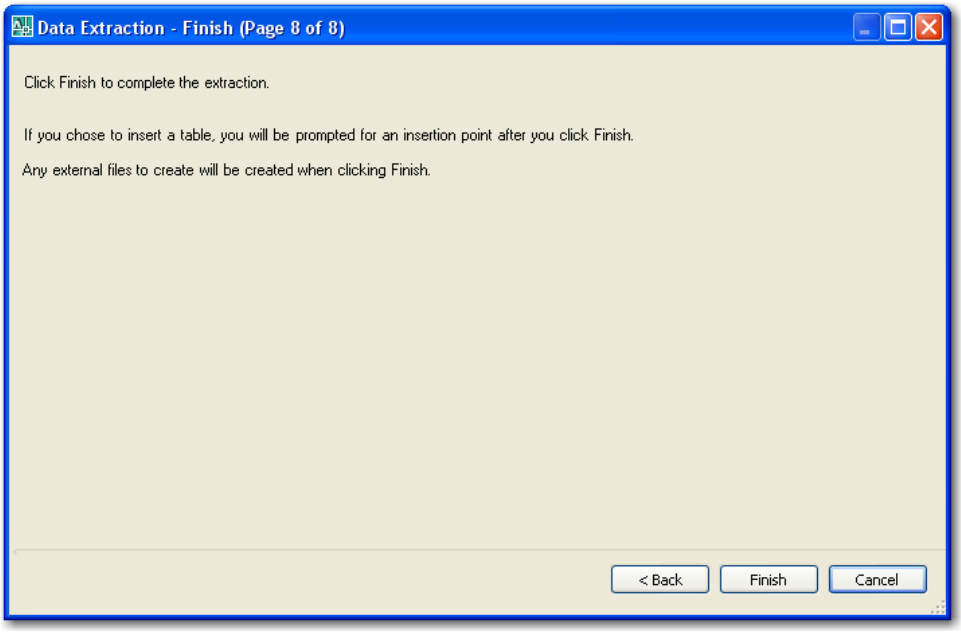


Figure 3.11.10

4.0 SEED FILE

To ensure data consistency and compatibility among the various data providers DCAM developed a CAD "seed file". This file, a digital version of DCAM's CAD standards, would be provided to DCAM consultants for use in DCAM projects. The file would automatically set up the consultants' CAD environment according to the standard, thus insuring all consultants' file deliveries would be consistent and compatible, irrespective of the source and or discipline.
To use the seed file on future projects just open the provided **DCAM Seed file.dwg**, as shown in **figure 4.0.1**

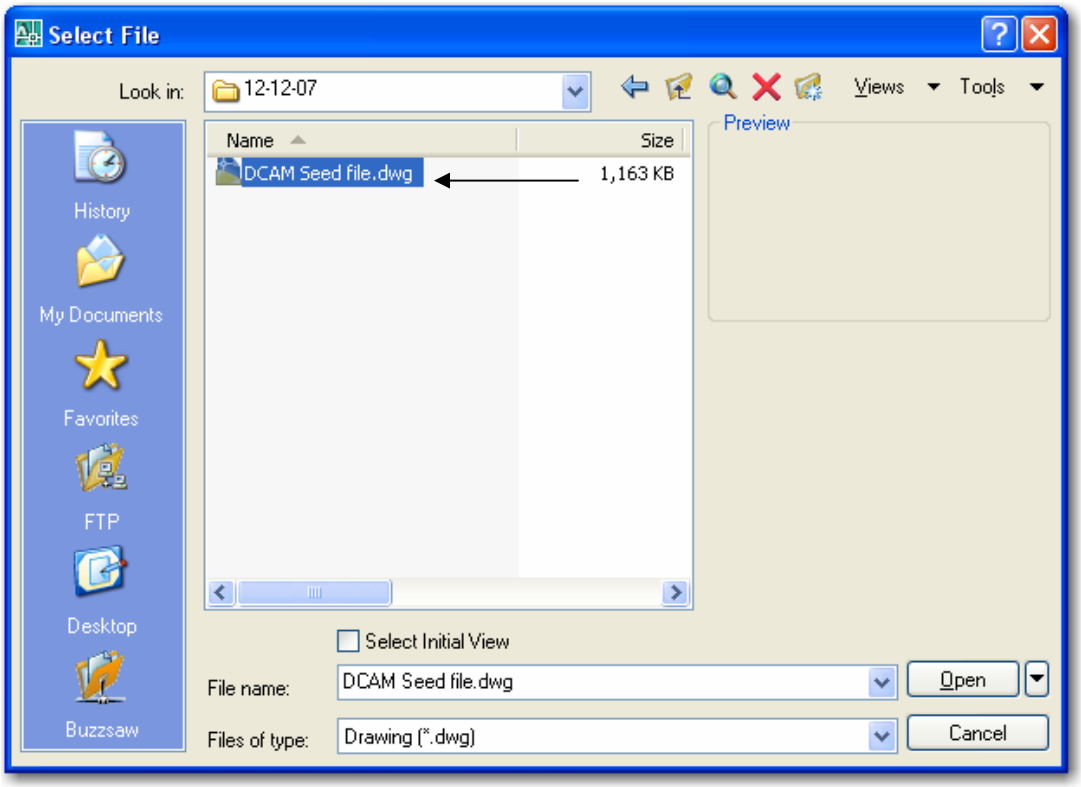


Figure 4.0.1

Pick the appropriate layer group filter and start the drafting process.

The "Seed file" includes all layers to be used based on group filter (Design and Construction, Survey, Planning, Leasing and their respective layer requirements. **Please refer to Section 4.1** for use of layer group filters.

As an important addition to the Seed file a separate file will be provided. "The DCAM titleblock". For a better description and the instructions on how to use it, **Please refer to Section 4.2**

4.1 ACCESING LAYERS BY GROUP FILTERS

To display layers based on a DCAM Department or Discipline, just do the following.

1. Type LAYER on the command line or in the layer tool bar just click on the icon LAYER PROPERTIES MANAGER, as shown in **figure 4.1.1.**

Figure 4.1.1

2. Once in the layer properties manager window, Select any group filter from the list on the left (DCAM Department or Discipline) and then hit ok, as shown in **figure 4.1.2.**

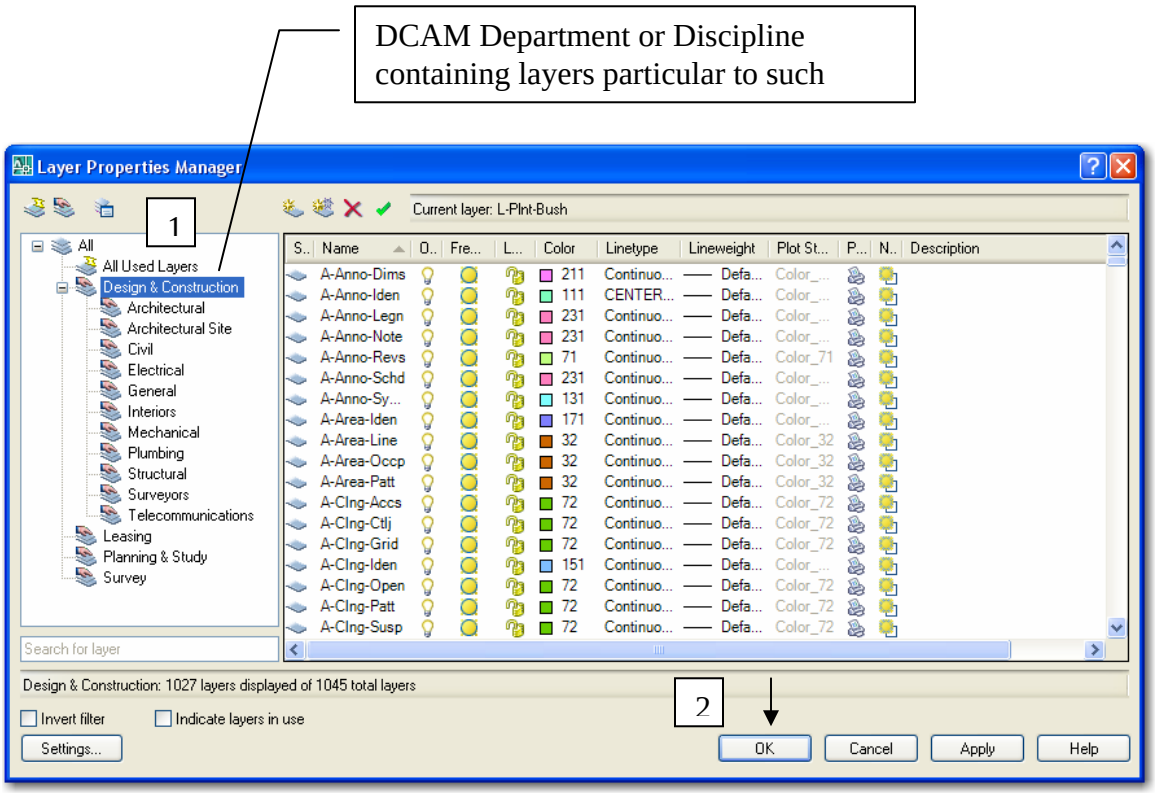


Figure 2.1.2

3. Now you can select layers as usual when needed and only the ones included in the group filters by DCAM department and Disciplines will only display per group selection, as shown in **figure 4.1.3.**

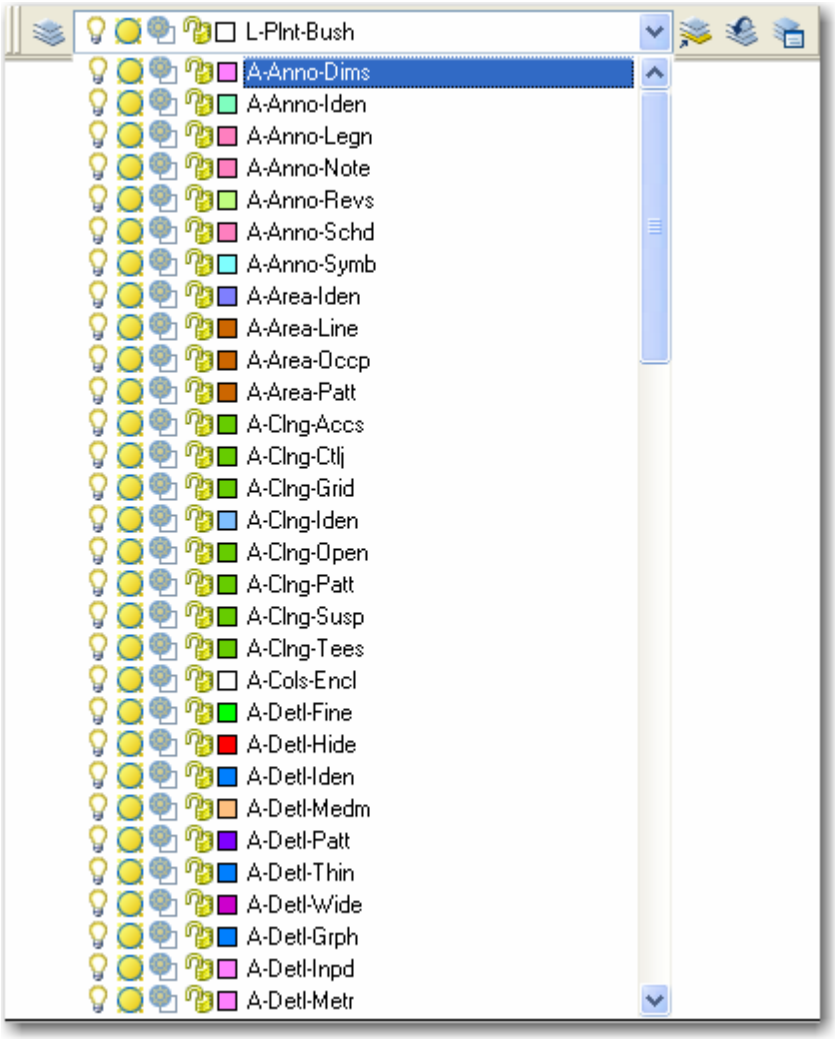


Figure 4.1.3

4.2 TITLEBLOCKS

All drawings shall be ¼” scale unless approved by DCAM.

Drawings shall be submitted on a standard DCAM 30” x 42” sheet with a standard DCAM title block, as shown in **figure 4.2.1.**

NOTE: Any other sheet size will be unacceptable.

Second Sheet will be the list of drawings and legends, with additional pages if necessary.

The date on which the drawings were submitted to DCAM shall be inserted in the title box of all schematic design drawings.

A small-scale, legible key plan adjacent to the title box on all drawings showing section, detail or partial plan locations, when the floor plan to which the sections, detail or partial plans apply, shall be included on another sheet. The key plan shall indicate the drawing number of the sheet where the section was taken.

Drawing submissions shall have revision stamps in the titleblock (ex: As builts, record drawing, etc)

General Dimensions and Notes shall be indicated. **Please refer to page 34** for a detailed explanation of the DCAM Titleblock.

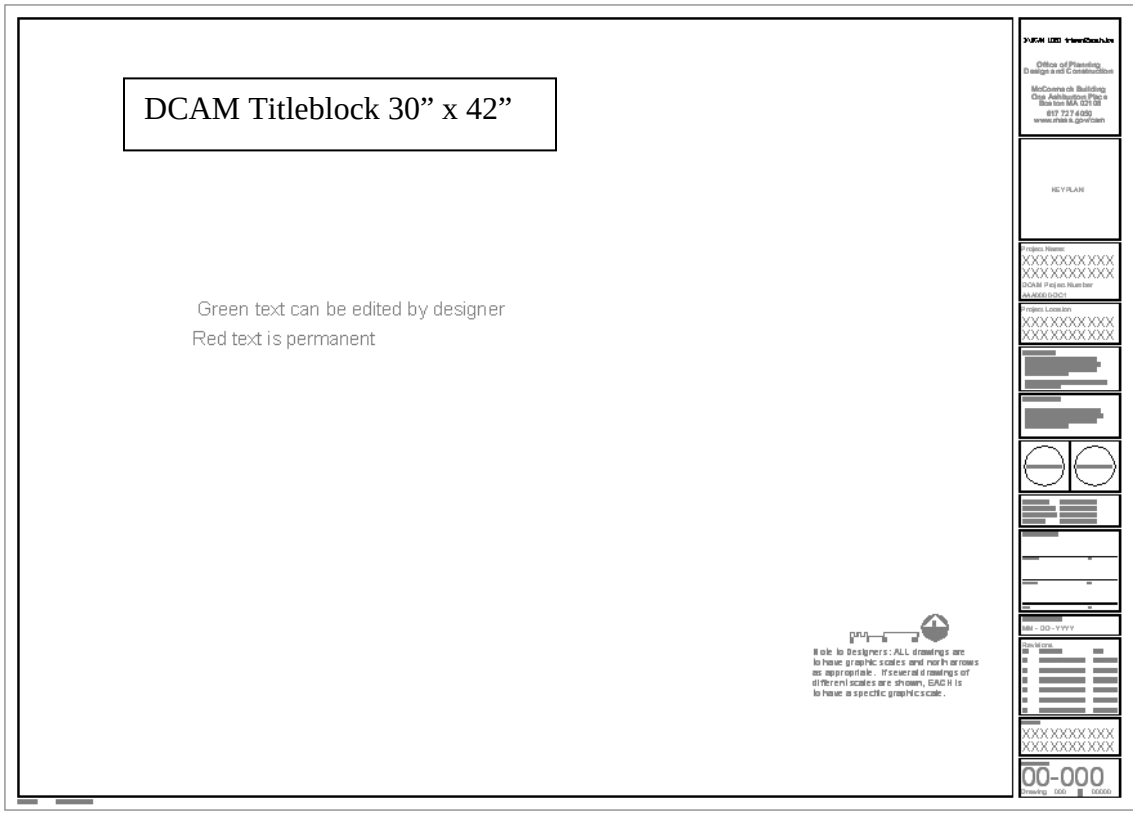


Figure 4.2.1

DCAM Logo and Information

Insert Keyplan Here

Enter Project Name and Number

Enter Project Location

Enter the principal designer's name and phone number, logo, address website address and in-house project number

Enter Project Consultant's Information

Paste professional stamp here

Enter Site number, CAMIS number, Building Number and Secretariat

Signatures and Dates

Enter Original Issue Date

Enter Revision date, Number and Description

Enter Plan Name

Enter Plan Number

4.3 LOADING THE DCAM TITLEBLOCK INTO SEED FILE

To load DCAM's titleblock please do the following

1. Open your DCAM Seed file and click on the Layout tab (e.g. 30 x 42) where the titleblock is as shown below in **figure 4.3.1.**

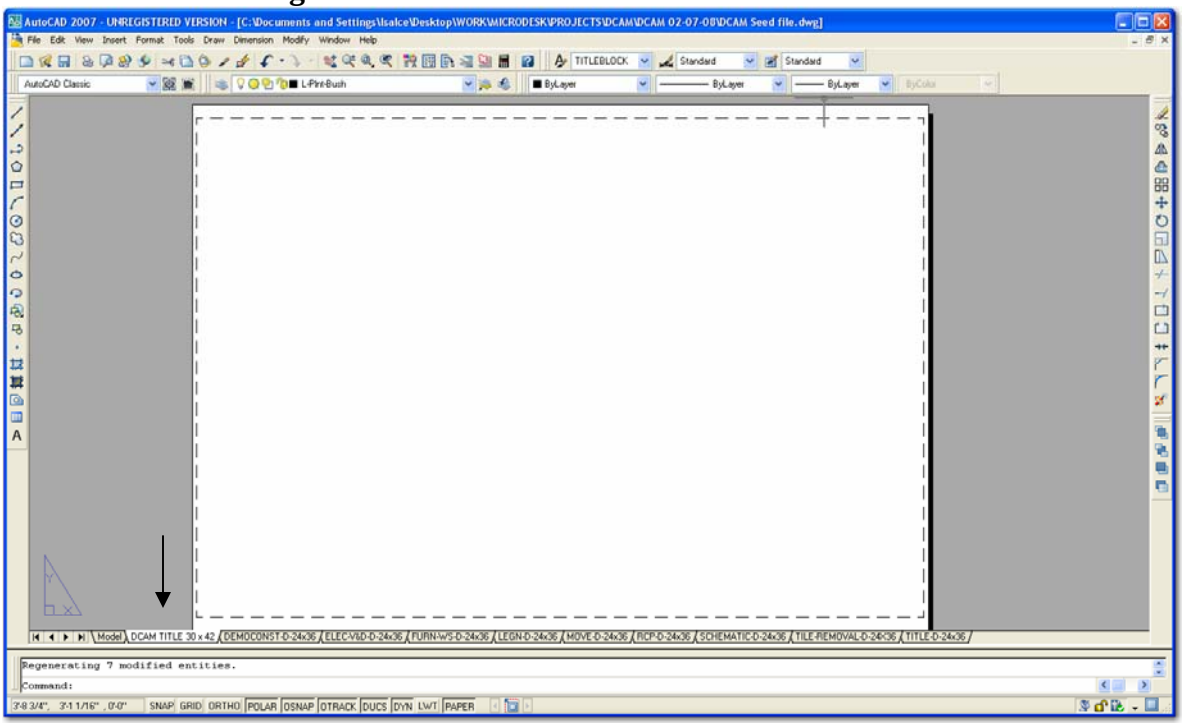


Figure 3.3.1

2. Type Xref in the command line or go to the Insert menu and click on External References, as shown in **figure 4.3.2**

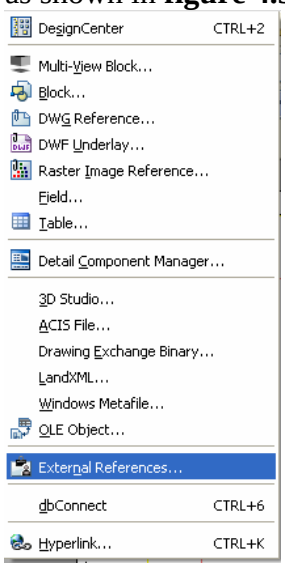


Figure 4.3.2

3. In the Xref Manager, click on the Titleblock Xref drawing (e.g. DCAM Title Block), as shown in **figure 4.3.3.**

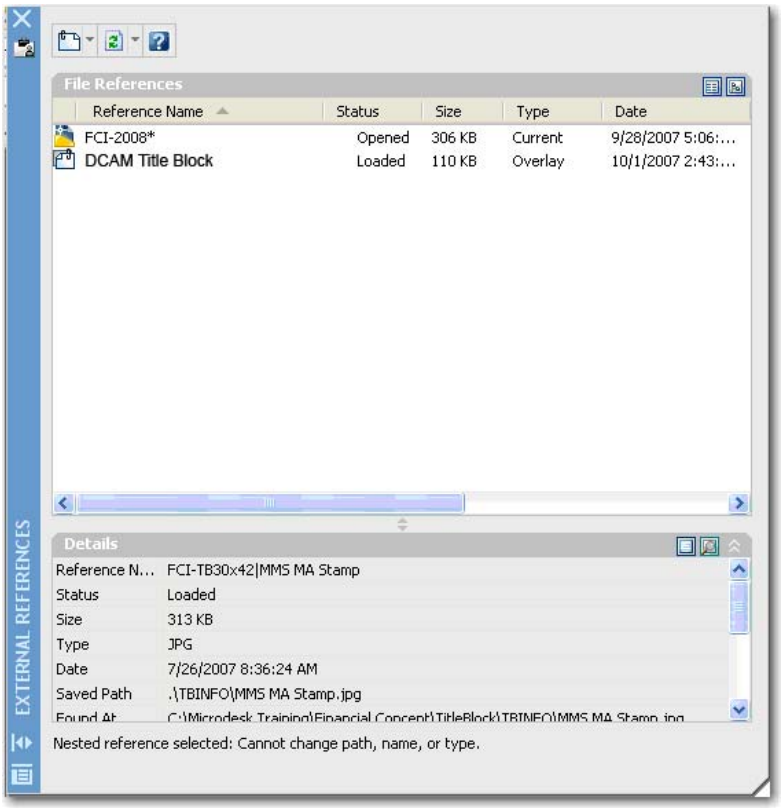


Figure 4.3.3

4. In the Details portion of the window, under Found At, click on the right side of the path line to bring up the box, as shown in **figure 4.3.4**

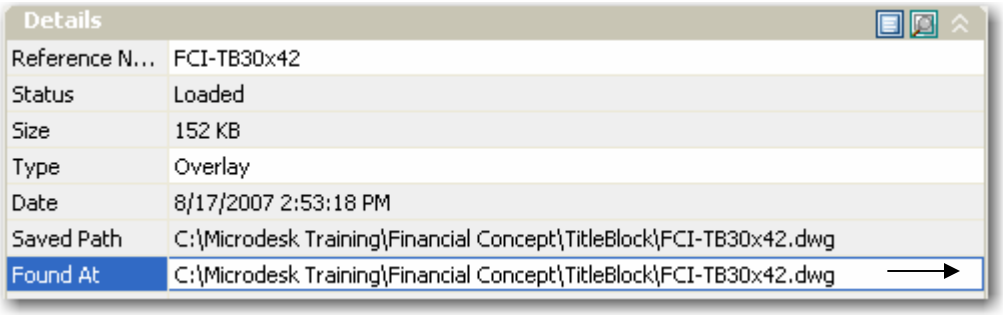


Figure 4.3.4

5. In the Select new path window, browse to the correspondent new location from where it will be now referring to, as shown in **figure 4.3.5.**

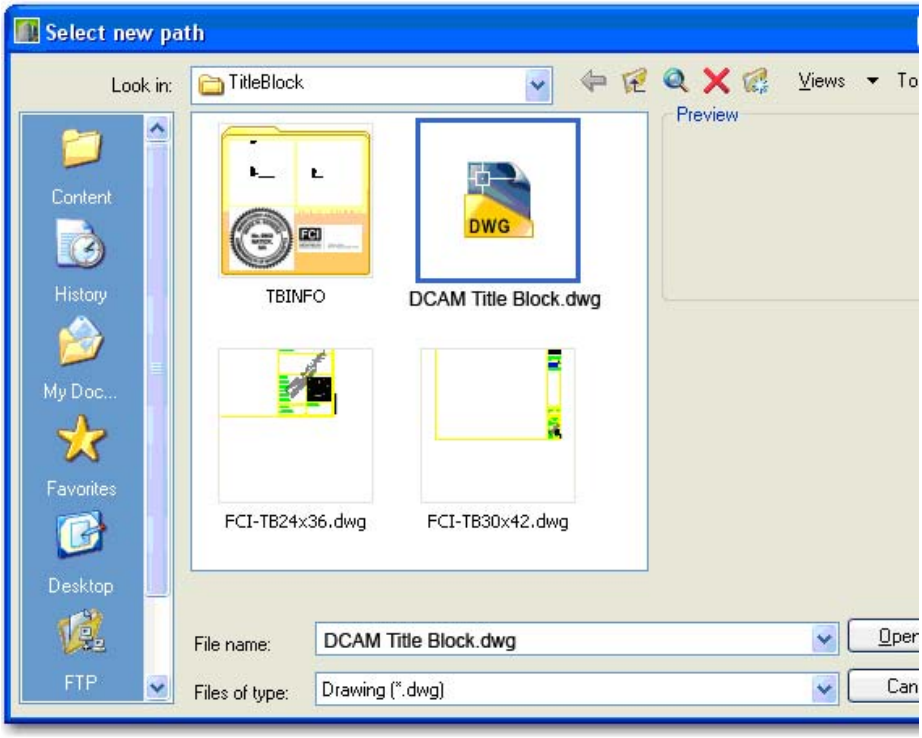


Figure 4.3.5

6. To reload all XRefs just click on the reload button in the Xref window as shown below, in **figure 4.3.6**

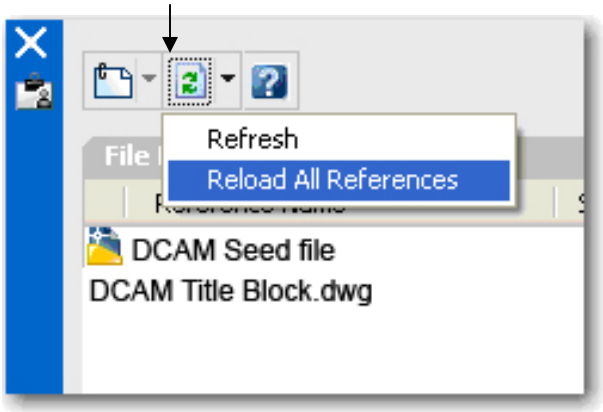


Figure 4.3.6

4.4 DCAM STANDARD COVER SHEET.

A standard cover sheet has been provided, as shown in **figure 4.4.1** to be used along with the Seed file and the DCAM titleblock. To use it you have the choice of either following the steps described on **Section 4.3** to reload an external reference file, or It has also been provided as a separate file to be manipulated accordingly.

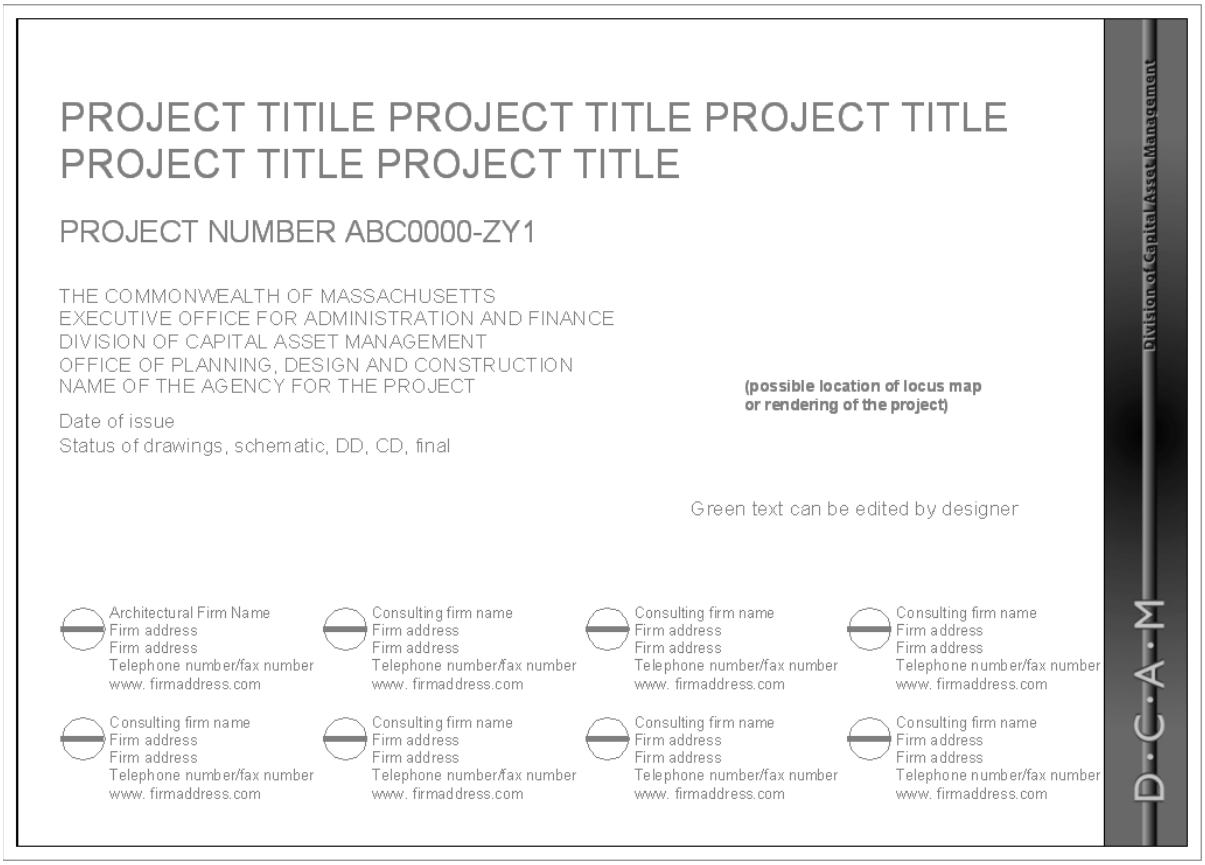


Figure 4.4.1

5.0 CAD PRACTICES AND PROCEDURES

In order to plot successfully using this standard, some configuration of the AutoCAD environment will be necessary. This configuration will only need to be done once and will streamline plotting moving forward.

5.1 AUTOCAD 2008 CONFIGURATION (Plotting by Layout)

AutoCAD 2008 options must be modified to insure proper placement of the border in the paper space layout environment.

To make the required modifications, choose the Tools pull-down menu and select Options at the bottom. From the Options dialog, select the Display tab. In the Display tab, make the necessary configuration changes to the Layout Elements portion as shown in **Figure 5.1.1.**

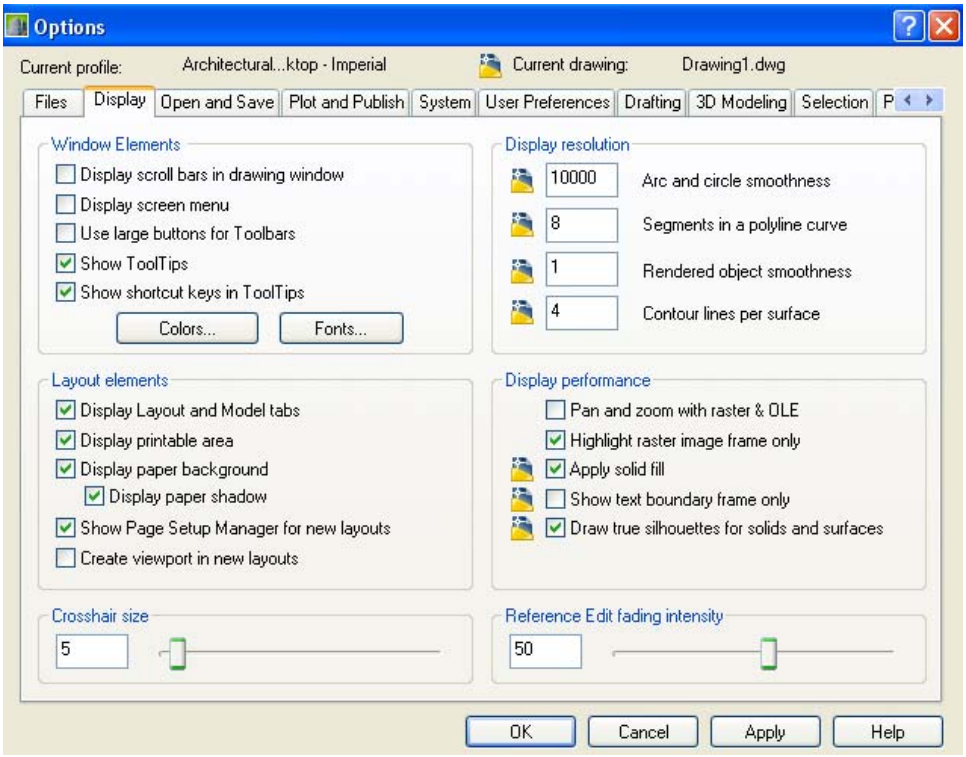


Figure 5.1.1

The setting changes made in the Options dialog affects the workstation and will not need to be changed in future sessions.

5.2 TEMPLATE DRAWING SETUP

For proper plotting and consistency, the CAD Standard makes use of a template drawing file. Supplied with this standard is a template named “DCAM Seed file.dwg” in which the unit type is set to Architectural. To install either of this template drawings, copy them to the “Template” directory in your Autocad environment install directory.

Both templates are essentially blank drawings saved with the extension “.dwt” which have been started from scratch, been assigned a unit type and which makes use of a CTB file. If you currently have a drawing template ensure that your template has “Use Color Dependant Plot Styles” by clicking on the Plot Style Table Settings button shown in **Figure 5.2.1**, under the Options Dialog Box. You can access the Options Dialog box by clicking “Format”, then “Options”, then toggled in the Plot and Publish tab of the Options dialog box as shown in **Figure 5.2.2**

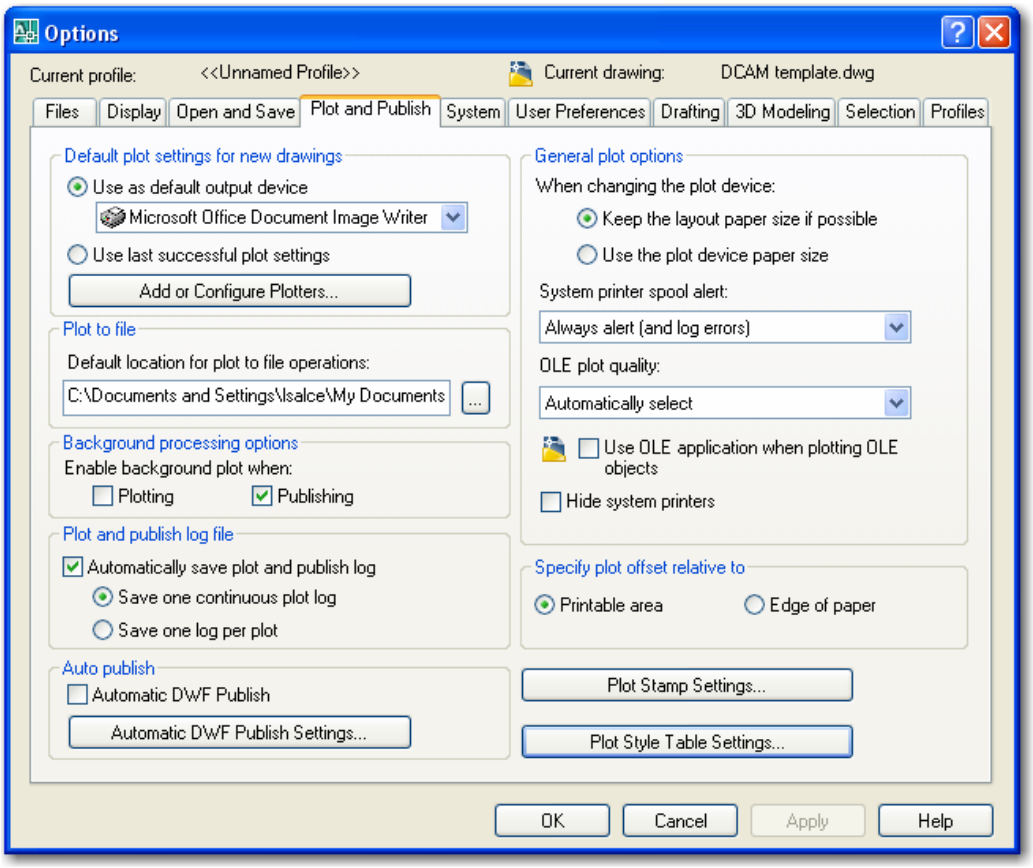


Figure 5.2.1

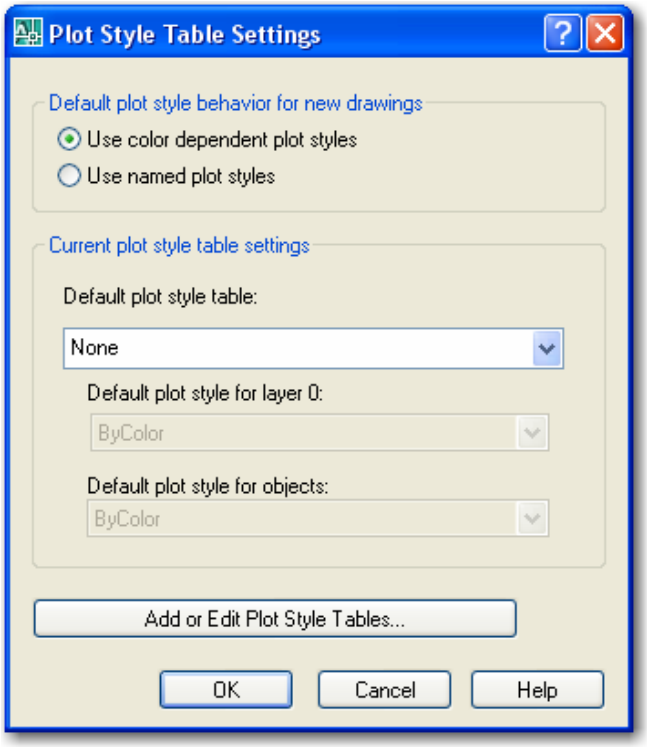


Figure 5.2.2

5.3 PAGE SETUPS

Page Setups enable the user to save specific settings within the AutoCAD plotting environment. The Page Setups created for the in-house designers make use of PC3 files as well as configuration changes. PC3 files are typically copied to the "Plotters" folder under the root AutoCAD installation directory. For specific instructions on how to recreate this in your plotting environment refer to **Appendix IV** supplied with this document.

6.0 PLOT SETUP

All drawings shall be plotted from a paper space layout tab. The tab will be named the same as the sheet number being plotted. Full size and half size sheets may be plotted from a single layout by utilizing page setups. Multiple layouts are not to be used for full size and half size sheets. Multiple layouts may be used for the plotting of multiple sequential sheets.

To prepare the layout space for plotting, select a layout tab located at the bottom of your drawing environment as shown in **Figure 6.0.1**

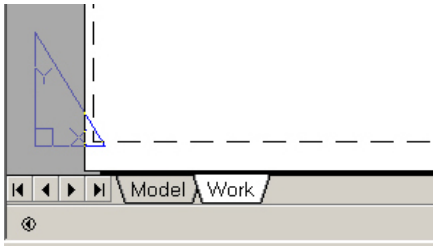


Figure 6.0.1

If the Page Setup dialog is not displayed automatically by selecting the layout tab, right click on the layout tab and choose Page Setup from the menu. A Page Setup dialog will be displayed similar to that shown in **Figure 6.0.2**

From the Page Setup Manager select the Import button to navigate to the Page Setups drawing.

.

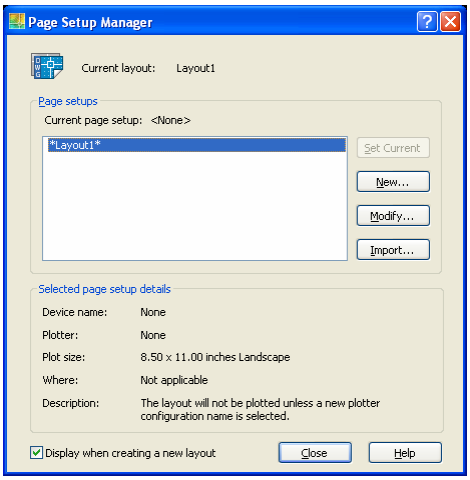


Figure 6.0.2

Next, navigate to the Page Setups drawing and select the Open button as shown in **Figure 6.0.3**

"Location where you have drawing with defined layouts"

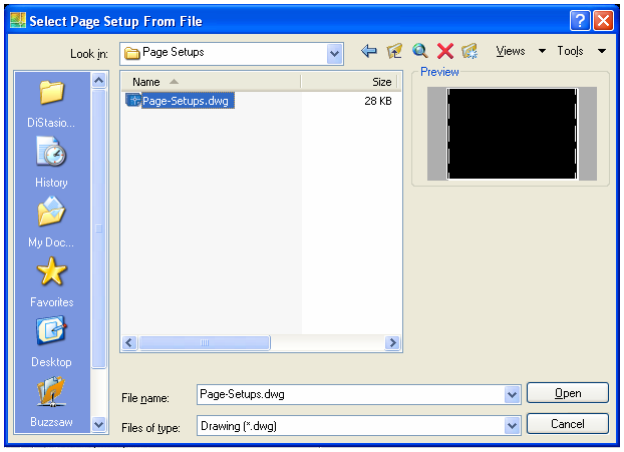


Figure 6.0.3

You will now select a Page Setup as shown in *Figure 5-4*. The Page Setup name will denote the device name as well as the plot size. Once a selection has been made select OK to return to the Page Setup Manager as shown in **Figure 6.0.4**

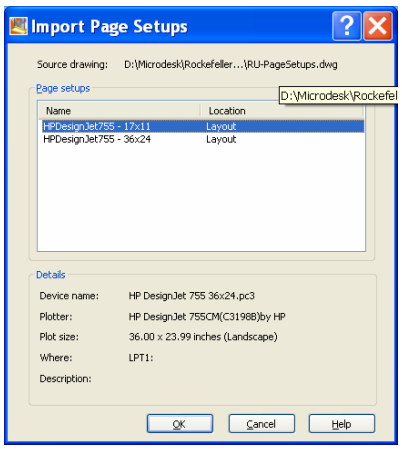


Figure 6.0.4

Now that the display has returned to the Page Setup Dialog box, select the appropriate Page Setup and click Set Current. See **Figure 6.0.5**

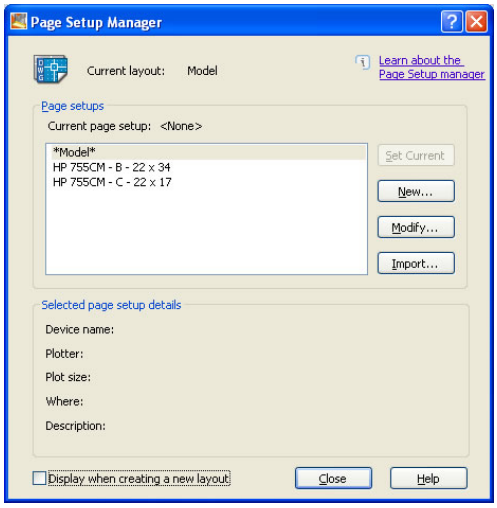


Figure 6.0.5

7.0 DISTRIBUTION FILES

Associated with this document are several support files, which contain the settings and standards, described in this document. Internally all workstations have been configured to access these files.

8.0 UPDATE AND REVISION PROCEDURES

The dynamic nature of CAD technology and the engineering process dictates that this document will change over time. Changes to this document will be made by following strict procedures and guidelines.

Changes may be made based on errors and omissions, as well as to enhance or update the standards based on changes in the CAD environment. All requested changes to this document must be accompanied by a request to change standards form provided in **Appendix IV**. The request to change standard form must be provided to the CAD Manager or CAD Committee. All requests to change standard forms will be reviewed on a periodic basis. If the change is approved, it will be incorporated into the next version of this document and all support files will be modified.

Updates to this document and the related support files will be made as required.

9.0 CONTACT AND SUPPORT INFORMATION

Questions regarding the standards provided within this document should be directed to the CAD Manager or CAD Standards Committee.

10.0 CONCLUSION

This document is a comprehensive standard for the creation of CAD drawings created or submitted to DCAM. All drawings submitted must adhere to the conventions documented here.

11.0 BIBLIOGRAPHY

Designers Procedures Manual
Commonwealth of Massachussets
Division of Capital Asset Management
June 2005

Standard for Digital Plan Submittals
to Municipalities (Version 1.0) issued by
THE OFFICE OF GEOGRAPHIC AND
ENVIRONMENTAL INFORMATION
(MASSGIS) january 2006

National CAD Standard
Version 3.1
Introduction and Amendments to Industry
Publications
Published by the National Institute of Building Sciences
CAD Layer Guidelines
Published by the American Institute of Architects
Uniform Drawing System (UDS)—Modules 1–8
Published by the Construction Specifications Institute
Tri-Service Plotting Guidelines
Published by Tri-Service and the Coast Guard

http://www.nationalcadstandard.org/story_071405.php
http://www.nationalcadstandard.org/
http://user.dtcc.edu/~cripps/courses/aet_content/cadinfo/cad_layername.html
http://www.csinet.org/s_csi/sec.asp?TRACKID=KEDPCNNEYHB29VLD5CE7BGUB9HFN866G&CID=126&DID=6041

APPENDIX I

LAYER SCHEME

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
ARCHITECTURAL LAYERS											
A		ANNO	DIMS		211	Continuous	Dimension, dimension text	L	S	SU	C
A		ANNO	IDEN		111	Center2	Plan grid bubbles		S	SU	C
A		ANNO	LEGN		231	Continuous	Display Theme Legends		S	SU	C
A		ANNO	NOTE		231	Continuous	Notes, leaders, etc.	L	S	SU	C
A		ANNO	REVS		71	Continuous	Revisions		S	SU	C
A		ANNO	SCHD		231	Continuous	Schedule tables		S	SU	C
A		ANNO	SYMB		131	Continuous	Annotation Marks, Miscellaneous symbols		S	SU	C
A		AREA	IDEN		171	Continuous	Room Tags, Room numbers, tenant identification, area calculations		S	SU	C
A		AREA	LINE		32	Continuous	Architectural area calculation boundary lines		S	SU	C
A		AREA	OCCP		32	Continuous	Occupant or employee names			SU	C
A		AREA	PATT		32	Continuous	Area cross hatching			SU	C
A		CLNG	ACCS		72	Continuous	Access panels				C
A		CLNG	CTLJ		72	Continuous	Ceiling control joints		S		C
A		CLNG	GRID		72	Continuous	Ceiling grid		S		C
A		CLNG	IDEN		151	Continuous	Ceiling tags		S		C
A		CLNG	OPEN		72	Continuous	Openings, ceiling/roof penetrations		S		C
A		CLNG	PATT		72	Continuous	Ceiling patterns		S		C
A		CLNG	SUSP		72	Continuous	Suspended elements, ceiling mounted specialties (e.g., clocks, fans)		S		C
A		CLNG	TEES		72	Continuous	Main tees				C
A		COLS	ENCL		72	Continuous	Column enclosure/fire protector		S		C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
A		DETL	FINE		90	Continuous	Details - fine lines		S		C
A		DETL	HIDE		Red	Hidden2	Hidden lines		S		C
A		DETL	IDEN		150	Continuous	Detail marks		S		C
A		DETL	MEDM		31	Continuous	Details - medium lines		S		C
A		DETL	PATT		190	Continuous	Details - hatching		S		C
A		DETL	THIN		150	Continuous	Details - thin lines		S		C
A		DETL	WIDE		212	Continuous	Details - wide lines		S		C
A		DETL	GRPH		150	Continuous	Graphics, gridlines, non-text items		S		C
A		DETL	INPD		150	Continuous	Inch-pound-specific dimensions and notes		S		C
A		DETL	METR		150	Continuous	Metric-specific dimensions and notes				C
A		DOOR			31	Continuous	Doors		S		C
A		DOOR	IDEN		132	Continuous	Door Tags, Door number and symbol, hardware group, etc.		S		C
A		ELEV	CASE		111	Continuous	Wall-mounted casework				C
A		ELEV	FIXT		111	Continuous	Miscellaneous fixtures		S		C
A		ELEV	FNSH		111	Continuous	Finishes, woodwork, trim				C
A		ELEV	IDEN		151	Continuous	Component identification numbers		S		C
A		ELEV	OTLN		141	Continuous	Building outlines		S		C
A		ELEV	PATT		141	Continuous	Textures and hatch patterns		S		C
A		ELEV	PFIX		111	Continuous	Plumbing fixtures		S		C
A		ELEV	SIGN		111	Continuous	Signage		S		C
A		EQPM	ACCS		91	Continuous	Equipment access				C
A		EQPM	FIXD		91	Continuous	Fixed equipment		S		C
A		EQPM	IDEN		132	Continuous	Equipment tags, Equipment identification numbers		S		C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
A		EQPM	MOVE		91	Continuous	Moveable equipment		S		C
A		EQPM	NICN		91	Continuous	Not in contract equipment				C
A		EQPM	OVHD		91	Continuous	Overhead, ceiling, mounted, or suspended equipment		S		C
A		FLOR	APPL		11	Continuous	Appliances		S		C
A		FLOR	CASE		31	Continuous	Casework		S		C
A		FLOR	CASE	IDEN	191	Continuous	Casework Tags		S		C
A		FLOR	EVTR		172	Continuous	Elevator cars and equipment		S		C
A		FLOR	FIXT		172	Continuous	Plumbing fixtures		S		C
A		FLOR	HRAL		11	Continuous	Stair and balcony handrails, guard rails		S		C
A		FLOR	IDEN		171	Continuous	Room name, space identification text		S		C
A		FLOR	NUMB		171	Continuous	Room/space identification number and symbol	L	S		C
A		FLOR	OVHD		172	Continuous	Overhead items (skylights, overhands, etc.)		S		C
A		FLOR	PATT		172	Continuous	Paving, tile, carpet patterns		S		C
A		FLOR	SPCL		172	Continuous	Architectural specialties (e.g., toilet room accessories, display cases)				C
A		FLOR	STRS		31	Continuous	Stair risers/treads, escalators, ladders		S		C
A		FLOR	TPTN		31	Continuous	Toilet partitions		S		C
A		FLOR	WDWK		31	Continuous	Door and window headers		S		C
A		GLAZ			151	Continuous	Windows		S		C
A		GLAZ	ASSM		71	Continuous	Window Assemblies		S		C
A		GLAZ	CURT		52	Continuous	Curtain Walls		S		C
A		GLAZ	CURT	UNIT	51	Continuous	Curtain Wall Units		S		C
A		GLAZ	IDEN		152	Continuous	Window tags, Window		S		C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							number and symbol				
A		GLAZ	SILL		152	Continuous	Window sills		S		C
A		LITE	CLNG		72	Continuous	Specialty ceiling lights not shown on Electrical				C
A		LITE	CLNG	CORE	72	Continuous					C
A		LITE	CLNG	IDEN	171	Continuous	Ceiling Tags				C
A		ROOF			132	Continuous	Rooflines		S		C
A		ROOF	EXPJ		12	Continuous	Expansion joints				C
A		ROOF	GUTR		12	Continuous	Roof internal gutters				C
A		ROOF	HRAL		12	Continuous	Stair handrails, nosings, guard rails		S		C
A		ROOF	LEVL		132	Continuous	Level changes		S		C
A		ROOF	OTLN		12	Continuous	Roof perimeter/edge, roof geometry		S		C
A		ROOF	PATT		12	Continuous	Roof surface patterns, hatching		S		C
A		ROOF	RFDR		12	Continuous	Roof drains		S		C
A		ROOF	SPCL		132	Continuous	Roof specialties, accessories, access hatches, dormers				C
A		ROOF	STRS		12	Continuous	Stair risers/treads, ladders		S		C
A		ROOF	WALK		12	Continuous	Roof walkways		S		C
A		ROOF	WALL		12	Continuous	Parapet walls and wall caps		S		C
A		SECT	IDEN		191	Continuous	Component identification numbers		S		C
A		SECT	MBND		73	Continuous	Material beyond section cut				C
A		SECT	MCUT		181	Continuous	Material cut by section				C
A		SECT	PATT		191	Continuous	Textures and hatch patterns				C
A		SLAB			192	Continuous	Slabs		S		C
A		STAT	DEMO	PHS1	210	Continuous	Demolition - phase 1	L			C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
A		STAT	DEMO	PHS2	180	Continuous	Demolition - phase 2	L			C
A		STAT	DEMO	PHS3	130	Continuous	Demolition - phase 3	L			C
A		WALL			113	Continuous	Walls		S		C
A		WALL	CHAS		91	Continuous	Wall Chase		S		C
A		WALL	IDEN		211	Continuous	Wall Tags		S		C
A		WALL	INTR		113	Continuous	Interior full height walls	L	S		C
A		WALL	INTR	IDEN	211	Continuous	Wall Interior Tags	L			
A		WALL	HEAD		31	Continuous	Door and window headers		S		C
A		WALL	JAM		31	Continuous	Door and window jambs				C
	D				8	HIDDEN	Existing to be Demolished	L	S	SU	C
	R				3	Continuous	Existing to Remain	L	S	SU	C
	L				2	Continuous	Existing to be Relocated	L	S	SU	C
	F				4	Dashed	Future Work	L	S	SU	C
	N				5	Continuous	New Work	L	S	SU	C
	T				6	Continuous	Temporary Work	L	S	SU	C
ARCHITECTURAL SITE LAYERS											
AS		CTRL			White	Continuous	Control Points			SU	C
AS		PROP			White	Continuous	Property		S	SU	C
AS		TINN			White	Continuous	Triangulated irregular network			SU	C
AS		TOPO			White	Continuous	Topography		S	SU	C
CIVIL LAYERS											
C		ANNO	DIMS		211	Continuous	Dimension, dimension text		S	SU	C
C		ANNO	KEYN		231	Continuous	Reference keynotes with associated leaders		S	SU	C
C		ANNO	PATT		111	Continuous	Miscellaneous patterning and hatching			SU	C
C		ANNO	NOTE		231	Continuous	General notes and general remarks		S	SU	C
C		ANNO	SYMB		131	Continuous	Miscellaneous symbols		S	SU	C
C		ANNO	TEXT		231	Continuous	Miscellaneous text and			SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							callouts with associated leaders				
C		ALGN	DATA		White	Continuous	Alignment coordinates and curve data			SU	C
C		ALGN	LINE		White	Continuous	Alignments			SU	C
C		ALGN	STAT		White	Continuous	Alignment stationing and tick marks			SU	C
C		BLDG	IDEN		White	Continuous	Building and other structure annotator		S	SU	C
C		BLDG	OTLN		White	Continuous	Buildings and other structures		S	SU	C
C		BORE	ELEV		White	Continuous	Boring elevations			SU	C
C		BORE	FDTA		White	Continuous	Field data			SU	C
C		BORE	HOLE		White	Continuous	Bore/per hole locations			SU	C
C		BORE	IDEN		White	Continuous	Bore/per hole numbers			SU	C
C		BORE	LDTA		White	Continuous	Laboratory data			SU	C
C		BORE	PATT		White	Continuous	Soil/rock patterns			SU	C
C		DETL	GRPH		White	Continuous	Graphics, gridlines, non-text items			SU	C
C		DOMW	ABND		White	Continuous	Abandoned piping		S	SU	C
C		DOMW	DEVC		White	Continuous	Connectors, faucets, reducers, regulators, vents, intake points, tanks, taps, backflow preventers, and valves		S	SU	C
C		DOMW	FIRE		White	Continuous	Fire lines		S	SU	C
C		DOMW	HYDR		White	Continuous	Hydrants		S	SU	C
C		DOMW	MAIN		White	Continuous	Main domestic water piping		S	SU	C
C		DOMW	METR		White	Continuous	Meters			SU	C
C		DOMW	SERV		White	Continuous	Domestic water service piping			SU	C
C		DOMW	SIGN		White	Continuous	Surface markers/signs			SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
C		ELEV	OTLN		White	Continuous	Building outlines		S	SU	C
C		GRAD	EXST		White	Continuous	Existing grade, ground line		S	SU	C
C		GRAD	FNSH		White	Continuous	Finished grade		S	SU	C
C		GRID	FRAM		White	Continuous	Frame			SU	C
C		GRID	MAJR		White	Continuous	Major grid lines			SU	C
C		GRID	MINR		White	Continuous	Minor grid lines			SU	C
C		INDW	ABND		White	Continuous	Abandoned piping		S	SU	C
C		INDW	FLOW		White	Continuous	Flow direction arrows		S	SU	C
C		INDW	MAIN		White	Continuous	Main industrial waste water piping			SU	C
C		INDW	PLNT		White	Continuous	Treatment plants			SU	C
C		INDW	RSVR	IDEN	White	Continuous	Identifier tags, symbol modifier, and text			SU	C
C		INDW	SIGN		White	Continuous	Surface markers/signs			SU	C
C		IRRG	PIKE		White	Continuous	Piping			SU	C
C		IRRG	SPKL		White	Continuous	Sprinklers			SU	C
C		JOIN	EDGE		White	Continuous	Thickened edges			SU	C
C		JOIN	EXPN		White	Continuous	Expansion joints			SU	C
C		JOIN	CNSL		White	Continuous	Construction joints - longitudinal			SU	C
C		JOIN	CNST		White	Continuous	Constructional joints - transverse			SU	C
C		JOIN	CNTL		White	Continuous	Contraction joints - longitudinal			SU	C
C		JOIN	CNTT		White	Continuous	Contraction joints - transverse			SU	C
C		NGAS	ABND		White	Continuous	Abandoned piping			SU	C
C		NGAS	FLOW		White	Continuous	Flow direction arrows			SU	C
C		NGAS	MAIN		White	Continuous	Main natural gas piping			SU	C
C		NGAS	SIGN		White	Continuous	Surface markers/signs			SU	C
C		PKNG	CARS		30	Continuous	Graphic illustration of cars		S	SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
C		PKNG	CNTR	IDEN	70	Continuous	Centerline annotation		S	SU	C
C		PKNG	CNTR		70	Continuous	Centerlines		S	SU	C
C		PKNG	CURB		70	Continuous	Curbs and gutters		S	SU	C
C		PKNG	DRAN		70	Continuous	Parking lot drainage slope indications		S	SU	C
C		PKNG	FIXT		70	Continuous	Parking lot fixtures (e.g., wheel stops, parking meters)			SU	C
C		PKNG	IDEN		211	Continuous	Parking lot, minor road, and curb annotation		S	SU	C
C		PKNG	OTLN		70	Continuous	Parking lots and minor roads			SU	C
C		PLNT	BEDS		White	Continuous	Planting beds		S	SU	C
C		PLNT	BUSH		White	Continuous	Bushes and shrubs (e.g., evergreen, deciduous)		S	SU	C
C		PLNT	TURF		White	Continuous	Lawn areas (turfing limits)			SU	C
C		PLNT	TREE	LINE	White	Continuous	Tree line		S	SU	C
C		PROP	CONS		White	Continuous	Construction limits/controls, staging area			SU	C
C		PROP	ESMT		White	Continuous	Easements		S	SU	C
C		PROP	IDEN		White	Continuous	Property annotator			SU	C
C		PROP	RWAY		White	Continuous	Right of ways		S	SU	C
C		PVMT	ASPH		White	Continuous	Pavement pattern - asphalt			SU	C
C		PVMT	CONC		White	Continuous	Pavement pattern - concrete			SU	C
C		PVMT	GRVL		White	Continuous	Pavement pattern - gravel			SU	C
C		PVMT	IDEN		White	Continuous	Road, parking lot, railroad, airfield pavement annotation		S	SU	C
C		PVMT	MRKG		White	Continuous	Pavement markings and signs			SU	C
C		PVMT	PATT		White	Continuous	Joint patterns, text and			SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							dimensions				
C		PVMT	ROAD		White	Continuous	Roads, parking lots, railroads, airfield pavements		S	SU	C
C		PVMT	SIGN		White	Continuous	Other signs		S	SU	C
C		RAIL	CNTR	IDEN	White	Continuous	Centerline annotation			SU	C
C		RAIL	EQPM		White	Continuous	Railroad equipment (e.g., gates, signals)			SU	C
C		RAIL	IDEN		White	Continuous	Railroad - annotation			SU	C
C		RAIL	TRAK		White	Continuous	Railroads		S	SU	C
C		ROAD	CNTR	IDEN	White	Continuous	Centerline annotation		S	SU	C
C		ROAD	CNTR		White	Continuous	Centerlines			SU	C
C		ROAD	CURB		White	Continuous	Curbs		S	SU	C
C		ROAD	GRAL		White	Continuous	Guardrails		S	SU	C
C		ROAD	IDEN		White	Continuous	Road, curb, and guardrail annotation		S	SU	C
C		ROAD	OTLN		White	Continuous	Roads		S	SU	C
C		SECT	IDEN		White	Continuous	Component identification numbers			SU	C
C		SECT	MBND		White	Continuous	Material beyond section cut			SU	C
C		SECT	MCUT		White	Continuous	Material but by section			SU	C
C		SECT	PATT		White	Continuous	Textures and hatch patterns			SU	C
C		SITE	EROS		91	Continuous	Riprap, revetments/stone protection, breakwaters, dikes, jetties, and drains			SU	C
C		SITE	EROS	IDEN	91	Continuous	Riprap, revetment/stone protection, breakwater, dike jetty and drain annotation			SU	C
C		SITE	FENC		91	Continuous	Fences and handrails		S	SU	C
C		SITE	FENC	IDEN	91	Continuous	Fence, handrail, ramp,			SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							sign, and trail annotation				
C		SITE	IDEN		211	Continuous	Site improvement annotation			SU	C
C		SITE	IMPR		91	Continuous	Site improvements (channel or levee features)			SU	C
C		SITE	STRC		91	Continuous	Structures (bridges, sheds, foundation pads, footings, etc.)			SU	C
C		SITE	STRS		91	Continuous	Stairs and ramps		S	SU	C
C		SITE	WALK		91	Continuous	Walks, trails and bicycle paths			SU	C
C		SSWR	ABND		White	Continuous	Abandoned piping			SU	C
C		SSWR	FLOW		White	Continuous	Flow direction arrows			SU	C
C		SSWR	IDEN		White	Continuous	Identifier tags, symbol modifier, and text			SU	C
C		SSWR	MAIN		White	Continuous	Sanitary sewer piping			SU	C
C		SSWR	PLNT		White	Continuous	Treatment plants			SU	C
C		SSWR	PUMP		White	Continuous	Booster pump stations			SU	C
C		SSWR	RSVR	IDEN	White	Continuous	Identifier tags, symbol modifier, and text			SU	C
C		SSWR	SIGN		White	Continuous	Surface markers/signs			SU	C
C		SSWR	TANK		White	Continuous	Septic tanks			SU	C
C		STRM	ABND		150	Continuous	Abandoned piping			SU	C
C		STRM	CULV		150	Continuous	Culverts			SU	C
C		STRM	FLOW		150	Continuous	Flow direction arrows			SU	C
C		STRM	MAIN		150	Continuous	Storm sewer piping			SU	C
C		STRM	PUMP		150	Continuous	Pump stations			SU	C
C		STRM	ROOF		150	Continuous	Roof drain line			SU	C
C		STRM	SIGN		150	Continuous	Surface markers/signs			SU	C
C		STAT	DEMO	PHS1	210	Continuous	Demolition - phase 1		S	SU	C
C		STAT	DEMO	PHS2	180	Continuous	Demolition - phase 2		S	SU	C
C		STAT	DEMO	PHS3	130	Continuous	Demolition - phase 3			SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
C		STRC	IDEN		White	Continuous	Bridges, piers, breakwaters, docks, floats, etc. - annotator			SU	C
C		STRC	OTLN		White	Continuous	Bridges, piers, breakwaters, docks, floats, etc. - outlines			SU	C
C		STRM	IDEN		White	Continuous	Storm drainage, headwall, inlets, manholes, culverts, and drainage structure annotation			SU	C
C		STRM	STRC		White	Continuous	Storm drainage, headwalls, inlets, manholes, culverts, and drainage structures			SU	C
C		SURV	DATA		White	Continuous	Survey data (benchmarks and horizontal control points or monuments)			SU	C
C		SURV	IDEN		White	Continuous	Survey, baseline, and control line annotator			SU	C
C		SURV	LINE		White	Continuous	Survey, baseline, and control lines			SU	C
C		TOPO	COOR		White	Continuous	Coordinate grid ticks and text			SU	C
C		TOPO	MAJR	IDEN	White	Continuous	Major contours - annotation		S	SU	C
C		TOPO	MAJR		White	Continuous	Major contours			SU	C
C		TOPO	MINR	IDEN	White	Continuous	Minor contours - annotation		s	SU	C
C		TOPO	MINR		White	Continuous	Minor contours			SU	C
C		TOPO	SLOP	IDEN	White	Continuous	Cut/fill slope, top/toe slope annotation			SU	C
C		TOPO	SLIP	FILL	White	Continuous	Cut/fill slopes			SU	C
C		TOPO	SPOT		White	Continuous	Spot elevations			SU	C
C		TOPO	SLOP	TOPT	White	Continuous	Top/toe slopes			SU	C
	D				8	HIDDEN	Existing to be Demolished	L	S	SU	C
	R				3	Continuous	Existing to Remain	L	S	SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
	L				2	Continuous	Existing to be Relocated	L	S	SU	C
	F				4	Dashed	Future Work	L	S	SU	C
	N				5	Continuous	New Work	L	S	SU	C
	T				6	Continuous	Temporary Work	L	S	SU	C
ELECTRICAL LAYERS											
E		BATT			43	Continuous	Batteries				C
E		BRKL			43	Phantom	Break Lines				C
E		BSDT			43	Continuous	Bus Duct		S		C
E		CAPS			43	Hidden	Cap Banks				C
E		CLTL			43	Continuous	Ceiling Tiles				C
E		CNTR			43	Center	Center Lines				C
E		COND	BG		43	Continuous	Conduits - Below Grade				C
E		COND	AG		43	Continuous	Conduits - Above Grade				C
E		COND	LBLS		43	Continuous	Conduit Labels		S		C
E		CTBR			43	Continuous	Circuit Breakers		S		C
E		CTSW			43	Continuous	Circuit Switchers		S		C
E		DELG			43	Continuous	Deluge				C
E		DIMS			43	Continuous	Dimensions	L			C
E		DTLS			43	Continuous	Details				C
E		DVCS			43	Continuous	Devices				C
E		EQPT			43	Continuous	Equipment		S		C
E		FDRS			43	Hidden	Feeders		S		C
E		FIRE	PULL		43	Continuous	Fire Protection - Pull Stations				C
E		FIRE	SMKE		43	Continuous	Fire Protection - Smoke Detectors				C
E		FIRE	HORN		43	Continuous	Fire Protection - Horn/Strobe				C
E		FORM			43	Continuous	Format				C
E		GRDG			43	Hidden	Grounding				C
E		HTCH	COMP		43	Continuous	Hatch				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
E		HVAC			43	Continuous	HVAC		S		C
E		JTBX			43	Continuous	Junction Boxes				C
E		LBLS	COMP		43	Continuous	Labels				C
E		LGHT			43	Continuous	Lighting	L			C
E		LPTR			43	Continuous	Light & Power Transformers		S		C
E		MISC			43	Continuous	Miscellaneous		S		C
E		MNHL			43	Continuous	Manholes		S		C
E		NMPL			43	Continuous	Nameplates		S		C
E		NOTE			43	Continuous	Notes	L			C
E		PLBX			43	Continuous	Pull Boxes		S		C
E		PNLS			43	Continuous	Panels				C
E		RCPT			43	Continuous	Receptacles				C
E		RCTS			43	Continuous	Rectifiers				C
E		REVS	CLDS		43	Continuous	Revision Clouds				C
E		REVS	NOTE		43	Continuous	Revision Notes				C
E		SECT	MARK		43	Continuous	Section Markers				C
E		SIGN			43	Continuous	Signs				C
E		SUBT			43	Continuous	Subtitles				C
E		SWGR			43	Continuous	Switchgear				C
E		TEXT	COMP		43	Continuous	Text				C
E		TITL			43	Continuous	Titles				C
E		TRAY			43	Continuous	Wire/Cable Trays				C
E		TRCH			43	Continuous	Trenches				C
E		TRFS			43	Continuous	Transformers		S		C
E		UPS			43	Continuous	UPS		S		C
E		VIEW			43	Continuous	Viewports				C
E		WIRE			43	Continuous	Wiring				C
E		1LIN			153	Continuous	Any major group: one-line diagrams				C
E		ALRM			153	Continuous	Alarm system				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
E		AUXL			153	Continuous	Auxiliary systems				C
E		BELL			193	Continuous	Bell system				C
E		CABL			133	Continuous	Cable system		S		C
E		CABL	ANNO		133	Continuous	Cable system: annotation		S		C
E		CABL	ANNO	KEYN	133	Continuous	Cable system: annotation: keynotes		S		C
E		CABL	ANNO	NOTE	133	Continuous	Cable system: annotation: notes		S		C
E		CABL	COAX		133	Continuous	Cable system: coax cable		S		C
E		CABL	FIBR		133	Continuous	Cable system: fiber optics cable		S		C
E		CABL	MULT		133	Continuous	Cable system: multi-conductor cable		S		C
E		CABL	REVC		133	Continuous	Cable system: revision clouds		S		C
E		CABL	REVS		133	Continuous	Cable system: revisions		S		C
E		CABL	TRAY		133	Continuous	Cable system: cabletray and wireways		S		C
E		CCTV			153	Continuous	Closed-circuit TV		S		C
E		CLOK			93	Continuous	Clock system				C
E		CLOK	ANNO		93	Continuous	Clock system: annotation				C
E		CLOK	ANNO	KEYN	93	Continuous	Clock system: annotation: keynotes				C
E		CLOK	ANNO	NOTE	93	Continuous	Clock system: annotation: notes				C
E		CLOK	CIRC		93	Continuous	Clock system: circuits				C
E		CLOK	CLNG		93	Continuous	Clock system: ceiling-mounted				C
E		CLOK	CNMB		93	Continuous	Clock system: circuit numbers				C
E		CLOK	EQPM		93	Continuous	Clock system: equipment				C
E		CLOK	FLOR		93	Continuous	Clock system: floor-mounted				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
E		CLOK	IDEN		93	Continuous	Clock system: identification and text				C
E		CLOK	REVC		93	Continuous	Clock system: revision clouds				C
E		CLOK	REVS		93	Continuous	Clock system: revisions				C
E		CLOK	WALL		93	Continuous	Clock system: wall-mounted				C
E		COMM			73	Continuous	Telephone, communication outlets				C
E		COMM	ANNO		73	Continuous	Telephone, communication outlets:				C
E		COMM	ANNO	KEYN	73	Continuous	Telephone, communication outlets:				C
E		COMM	ANNO	NOTE	73	Continuous	Telephone, communication outlets:				C
E		COMM	CIRC		73	Continuous	Telephone, communication outlets:				C
E		COMM	CLNG		73	Continuous	Telephone, communication outlets:				C
E		COMM	CNMB		73	Continuous	Telephone, communication outlets:				C
E		COMM	EQPM		73	Continuous	Telephone, communication outlets:				C
E		COMM	IDEN		73	Continuous	Telephone, communication outlets:				C
E		COMM	REVC		73	Continuous	Telephone, communication outlets:				C
E		COMM	REVS		73	Continuous	Telephone, communication outlets:				C
E		COMM	WALL		73	Continuous	Telephone, communication outlets:				C
E		CTRL			white	Continuous	Control Systems				C
E		CTRL	DEVC		white	Continuous	Control Systems: devices				C
E		CTRL	WIRE		white	Continuous	Control Systems: wiring				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
E		DATA			63	Continuous	Data outlets				C
E		DATA	ANNO		63	Continuous	Data outlets: annotation				C
E		DATA	ANNO	KEYN	63	Continuous	Data outlets: annotation: keynotes				C
E		DATA	ANNO	NOTE	63	Continuous	Data outlets: annotation: notes				C
E		DATA	CIRC		63	Continuous	Data outlets: circuits				C
E		DATA	CLNG		63	Continuous	Data outlets: ceiling-mounted				C
E		DATA	CNMB		63	Continuous	Data outlets: circuit numbers				C
E		DATA	EQPM		63	Continuous	Data outlets: equipment				C
E		DATA	FLOR		63	Continuous	Data outlets: floor-mounted				C
E		DATA	IDEN		63	Continuous	Data outlets: identification and text				C
E		DATA	REVC		63	Continuous	Data outlets: revision clouds				C
E		DATA	REVS		63	Continuous	Data outlets: revisions				C
E		DATA	WALL		63	Continuous	Data outlets: wall-mounted				C
E		DIAG			white	Continuous	Diagrams				C
E		DIAG	ANNO		white	Continuous	Diagrams: annotation				C
E		DIAG	ANNO	KEYN	white	Continuous	Diagrams: annotation: keynotes				C
E		DIAG	ANNO	NOTE	white	Continuous	Diagrams: annotation: notes				C
E		DIAG	BKRS		white	Continuous	Diagrams: breakers				C
E		DIAG	BUSS		white	Continuous	Diagrams: bus duct				C
E		DIAG	ENCL		white	Continuous	Diagrams: equipment enclosures				C
E		DIAG	EQPM		white	Continuous	Diagrams: equipment				C
E		DIAG	FEED		white	Continuous	Diagrams: feeders				C
E		DIAG	FLOR		white	Continuous	Diagrams: floor lines				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
E		DIAG	GRND		white	Continuous	Diagrams: grounding				C
E		DIAG	REVC		white	Continuous	Diagrams: revision clouds				C
E		DIAG	REVS		white	Continuous	Diagrams: revisions				C
E		DIAG	SWCH		white	Continuous	Diagrams: switches				C
E		DIAG	XFMR		white	Continuous	Diagrams: transformers				C
E		DICT			white	Continuous	Central dictation system				C
E		DICT	ANNO		white	Continuous	Central dictation system: annotation				C
E		DICT	ANNO	KEYN	white	Continuous	Central dictation system: annotation: keynotes				C
E		DICT	ANNO	NOTE	173	Continuous	Central dictation system: annotation: notes				C
E		DICT	CIRC		173	Continuous	Central dictation system: circuits				C
E		DICT	CLNG		173	Continuous	Central dictation system: ceiling-mounted				C
E		DICT	CNMB		173	Continuous	Central dictation system: circuit numbers				C
E		DICT	EQPM		173	Continuous	Central dictation system: equipment				C
E		DICT	IDEN		173	Continuous	Central dictation system: identification and text				C
E		DICT	REVC		173	Continuous	Central dictation system: revision clouds				C
E		DICT	REVS		173	Continuous	Central dictation system: revisions				C
E		DICT	WALL		173	Continuous	Central dictation system: wall-mounted				C
E		FIRE			233	Continuous	Fire alarm, fire extinguishers				C
E		FIRE	ANNO		233	Continuous	Fire alarm, fire extinguishers: annotation				C
E		FIRE	ANNO	KEYN	233	Continuous	Fire alarm, fire				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							extinguishers: annotation: keynotes				
E		FIRE	ANNO	NOTE	233	Continuous	Fire alarm, fire extinguishers: annotation: notes				C
E		FIRE	CIRC		233	Continuous	Fire alarm, fire extinguishers: circuits				C
E		FIRE	CLNG		233	Continuous	Fire alarm, fire extinguishers: ceiling-mounted				C
E		FIRE	CNMB		233	Continuous	Fire alarm, fire extinguishers: circuit numbers				C
E		FIRE	EQPM		233	Continuous	Fire alarm, fire extinguishers: equipment				C
E		FIRE	IDEN		233	Continuous	Fire alarm, fire extinguishers: identification and text				C
E		FIRE	REVC		233	Continuous	Fire alarm, fire extinguishers: revision clouds				C
E		FIRE	REVS		233	Continuous	Fire alarm, fire extinguishers: revisions				C
E		FIRE	WALL		233	Continuous	Fire alarm, fire extinguishers: wall-mounted				C
E		GRND			193	Continuous	Ground systems				C
E		GRND	ANNO		193	Continuous	Ground systems: annotation				C
E		GRND	ANNO	KEYN	193	Continuous	Ground systems: annotation: keynotes				C
E		GRND	ANNO	NOTE	193	Continuous	Ground systems: annotation: notes				C
E		GRND	CIRC		193	Continuous	Ground systems: circuits				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
E		GRND	CLNG		193	Continuous	Ground systems: ceiling-mounted				C
E		GRND	CNMB		193	Continuous	Ground systems: circuit numbers				C
E		GRND	DIAG		193	Continuous	Ground systems: diagram				C
E		GRND	EQPM		193	Continuous	Ground systems: equipment				C
E		GRND	EQUI		193	Continuous	Ground systems: equipotential				C
E		GRND	IDEN		193	Continuous	Ground systems: identification and text				C
E		GRND	REFR		193	Continuous	Ground systems: reference				C
E		GRND	REVC		193	Continuous	Ground systems: revision clouds				C
E		GRND	REVS		193	Continuous	Ground systems: revisions				C
E		GRND	WALL		193	Continuous	Ground systems: wall-mounted				C
E		INST			63	Continuous	Instrumentation system				C
E		INST	ANNO		63	Continuous	Instrumentation system: annotation				C
E		INST	ANNO	KEYN	63	Continuous	Instrumentation system: annotation: keynotes				C
E		INST	ANNO	NOTE	63	Continuous	Instrumentation system: annotation: notes				C
E		INST	CIRC		63	Continuous	Instrumentation system: circuits				C
E		INST	CLNG		63	Continuous	Instrumentation system: ceiling-mounted				C
E		INST	CNMB		63	Continuous	Instrumentation system: circuit numbers				C
E		INST	EQPM		63	Continuous	Instrumentation system: equipment				C
E		INST	IDEN		63	Continuous	Instrumentation system: identification and text				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
E		INST	REVC		63	Continuous	Instrumentation system: revision clouds				C
E		INST	REVS		63	Continuous	Instrumentation system: revisions				C
E		INST	WALL		63	Continuous	Instrumentation system: wall-mounted				C
E		INTC			63	Continuous	Intercom system				C
E		LEGN			63	Continuous	Legend of symbols				C
E		LITE			43	Continuous	Lighting	L	S		C
E		LITE	ANNO		43	Continuous	Lighting: annotation				C
E		LITE	ANNO	KEYN	43	Continuous	Lighting: annotation: keynotes				C
E		LITE	ANNO	NOTE	43	Continuous	Lighting: annotation: notes				C
E		LITE	CIRC		43	Continuous	Lighting: circuits				C
E		LITE	CIRC	CRIT	43	Continuous	Lighting: circuits: critical				C
E		LITE	CIRC	EMER	43	Continuous	Lighting: circuits: emergency				C
E		LITE	CIRC	NUMB	43	Continuous	Lighting: circuits: numbers				C
E		LITE	CLNG		43	Continuous	Lighting: ceiling-mounted				C
E		LITE	CLNG	CRIT	43	Continuous	Lighting: ceiling-mounted: critical				C
E		LITE	CLNG	EMER	43	Continuous	Lighting: ceiling-mounted: emergency				C
E		LITE	CLNG	EXIT	43	Continuous	Lighting: ceiling-mounted: exit				C
E		LITE	CNMB		43	Continuous	Lighting: circuit numbers				C
E		LITE	CNMB	CRIT	43	Continuous	Lighting: circuit numbers: critical				C
E		LITE	CNMB	EMER	43	Continuous	Lighting: circuit numbers: emergency				C
E		LITE	EMER		43	Continuous	Lighting: emergency				C
E		LITE	EQPM		43	Continuous	Lighting: equipment				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
E		LITE	EQPM	CRIT	43	Continuous	Lighting: equipment: critical				C
E		LITE	EQPM	EMER	43	Continuous	Lighting: equipment: emergency				C
E		LITE	EXIT		43	Continuous	Lighting: exit				C
E		LITE	EXTR		43	Continuous	Lighting: exterior and site				C
E		LITE	FLOR		43	Continuous	Lighting: floor-mounted				C
E		LITE	IDEN		43	Continuous	Lighting: identification and text				C
E		LITE	IDEN	CRIT	43	Continuous	Lighting: identification and text: critical				C
E		LITE	IDEN	EMER	43	Continuous	Lighting: identification and text: emergency				C
E		LITE	JBOX		43	Continuous	Lighting: junction box				C
E		LITE	OTLN		43	Continuous	Lighting: outline for background				C
E		LITE	REVC		43	Continuous	Lighting: revision clouds				C
E		LITE	REVS		43	Continuous	Lighting: revisions				C
E		LITE	ROOF		43	Continuous	Lighting: roof lighting				C
E		LITE	SPCL		43	Continuous	Lighting: special				C
E		LITE	SWCH		43	Continuous	Lighting: switches				C
E		LITE	SWCH	CRIT	43	Continuous	Lighting: switches: critical				C
E		LITE	SWCH	EMER	43	Continuous	Lighting: switches: emergency				C
E		LITE	WALL		43	Continuous	Lighting: wall-mounted				C
E		LITE	WALL	CRIT	43	Continuous	Lighting: wall-mounted: critical				C
E		LITE	WALL	EMER	43	Continuous	Lighting: wall-mounted: emergency				C
E		LITE	WALL	EXIT	43	Continuous	Lighting: wall-mounted: exit				C
E		LTNG			43	Continuous	Lightning protection system:				C
E		LTNG	ANNO		43	Continuous	Lightning protection				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							system: annotation				
E		LTNG	ANNO	KEYN	43	Continuous	Lightning protection system: annotation: keynotes				C
E		LTNG	ANNO	NOTE	43	Continuous	Lightning protection system: annotation: notes				C
E		LTNG	CIRC		43	Continuous	Lightning protection system: circuits				C
E		LTNG	CLNG		43	Continuous	Lightning protection system: ceiling-mounted				C
E		LTNG	CNMB		43	Continuous	Lightning protection system: circuit numbers				C
E		LTNG	EQPM		43	Continuous	Lightning protection system: equipment				C
E		LTNG	IDEN		43	Continuous	Lightning protection system: identification and text				C
E		LTNG	REVC		43	Continuous	Lightning protection system: revision clouds				C
E		LTNG	REVS		43	Continuous	Lightning protection system: revisions				C
E		LTNG	WALL		43	Continuous	Lightning protection system: wall-mounted				C
E		NURS			133	Continuous	Nurse call system				C
E		NURS	ANNO		133	Continuous	Nurse call system: annotation				C
E		NURS	ANNO	KEYN	133	Continuous	Nurse call system: annotation: keynotes				C
E		NURS	ANNO	NOTE	133	Continuous	Nurse call system: annotation: notes				C
E		NURS	CIRC		133	Continuous	Nurse call system: circuits				C
E		NURS	CLNG		133	Continuous	Nurse call system: ceiling-mounted				C
E		NURS	CNMB		133	Continuous	Nurse call system: circuit				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							numbers				
E		NURS	EQPM		133	Continuous	Nurse call system: equipment				C
E		NURS	FLOR		133	Continuous	Nurse call system: floor-mounted				C
E		NURS	IDEN		133	Continuous	Nurse call system: identification and text				C
E		NURS	REVC		133	Continuous	Nurse call system: revision clouds				C
E		NURS	REVS		133	Continuous	Nurse call system: revisions				C
E		NURS	WALL		133	Continuous	Nurse call system: wall-mounted				C
E		PGNG			63	Continuous	Paging system				C
E		POWR			83	Continuous	Power		S		C
E		POWR	ANNO		83	Continuous	Power: annotation		S		C
E		POWR	ANNO	KEYN	83	Continuous	Power: annotation: keynotes				C
E		POWR	ANNO	NOTE	83	Continuous	Power: annotation: notes				C
E		POWR	BUSW		83	Continuous	Power: bus ways				C
E		POWR	CABL		83	Continuous	Power: cable trays				C
E		POWR	CIRC		83	Continuous	Power: circuits				C
E		POWR	CIRC	CRIT	83	Continuous	Power: circuits: critical				C
E		POWR	CIRC	NUMB	83	Continuous	Power: circuits: numbers				C
E		POWR	CLNG		83	Continuous	Power: ceiling-mounted				C
E		POWR	CLNG	CRIT	83	Continuous	Power: ceiling-mounted: critical				C
E		POWR	CNMB		83	Continuous	Power: circuit numbers				C
E		POWR	CNMB	CRIT	83	Continuous	Power: circuit numbers: critical				C
E		POWR	DEVC		83	Continuous	Power: devices				C
E		POWR	EQPM		83	Continuous	Power: equipment				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
E		POWR	EQPM	CRIT	83	Continuous	Power: equipment: critical				C
E		POWR	EXTR		83	Continuous	Power: exterior				C
E		POWR	FEED		83	Continuous	Power: feeders				C
E		POWR	FLOR		83	Continuous	Power: floor-mounted				C
E		POWR	FLOR	CRIT	83	Continuous	Power: floor-mounted: critical				C
E		POWR	IDEN		83	Continuous	Power: identification and text				C
E		POWR	JBOX		83	Continuous	Power: junction box				C
E		POWR	PANL		83	Continuous	Power: panels				C
E		POWR	REVC		83	Continuous	Power: revision clouds				C
E		POWR	REVS		83	Continuous	Power: revisions				C
E		POWR	ROOF		83	Continuous	Power: roof				C
E		POWR	SWBD		83	Continuous	Power: switchboards				C
E		POWR	UCPT		83	Continuous	Power: under-carpet wiring				C
E		POWR	URAC		83	Continuous	Power: underfloor raceways				C
E		POWR	WALL		83	Continuous	Power: wall-mounted				C
E		POWR	WALL	CRIT	83	Continuous	Power: wall-mounted: critical				C
E		SERT			133	Continuous	Security		S		C
E		SERT	ANNO		133	Continuous	Security: annotation				C
E		SERT	ANNO	KEYN	133	Continuous	Security: annotation: keynotes				C
E		SERT	ANNO	NOTE	133	Continuous	Security: annotation: notes				C
E		SERT	CIRC		133	Continuous	Security: circuits				C
E		SERT	CLNG		133	Continuous	Security: ceiling-mounted				C
E		SERT	CNMB		133	Continuous	Security: circuit numbers				C
E		SERT	EQPM		133	Continuous	Security: equipment				C
E		SERT	FLOR		133	Continuous	Security: floor-mounted				C
E		SERT	IDEN		133	Continuous	Security: identification and				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							text				
E		SERT	REVC		133	Continuous	Security: revision clouds				C
E		SERT	REVS		133	Continuous	Security: revisions				C
E		SERT	WALL		133	Continuous	Security: wall-mounted				C
E		SITE			white	Continuous	Site		S		C
E		SITE	OVHD		white	Continuous	Site: overhead lines		S		C
E		SITE	POLE		white	Continuous	Site: electric poles		S		C
E		SITE	UNDR		white	Continuous	Site: underground lines		S		C
E		SOUN			white	Continuous	Sound/PA system		S		C
E		TVAN			193	Continuous	TV antenna system				C
E		TVAN	ANNO		193	Continuous	TV antenna system: annotation				C
E		TVAN	ANNO	KEYN	193	Continuous	TV antenna system: annotation: keynotes				C
E		TVAN	ANNO	NOTE	193	Continuous	TV antenna system: annotation: notes				C
E		TVAN	CIRC		193	Continuous	TV antenna system: circuits				C
E		TVAN	CLNG		193	Continuous	TV antenna system: ceiling-mounted				C
E		TVAN	CNMB		193	Continuous	TV antenna system: circuit numbers				C
E		TVAN	EQPM		193	Continuous	TV antenna system: equipment				C
E		TVAN	IDEN		193	Continuous	TV antenna system: identification and text				C
E		TVAN	REVC		193	Continuous	TV antenna system: revision clouds				C
E		TVAN	REVS		193	Continuous	TV antenna system: revisions				C
E		TVAN	WALL		193	Continuous	TV antenna system: wall-mounted				C
	D				8	HIDDEN	Existing to be Demolished	L	S	SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
	R				3	Continuous	Existing to Remain	L	S	SU	C
	L				2	Continuous	Existing to be Relocated	L	S	SU	C
	F				4	Dashed	Future Work	L	S	SU	C
	N				5	Continuous	New Work	L	S	SU	C
	T				6	Continuous	Temporary Work	L	S	SU	C
FIRE PROTECTION LAYERS											
F		PROT	EQPM		90	Continuous	Fire system equip.		S		C
F		WALL	FIRE		152	Dashed2	Fire wall patterning		S		C
GENERAL LAYERS											
G		ANNO	MATC		214	Continuous	Match Lines		S		C
G		ANNO	NPLT		140	Continuous	Sheet View viewports, Construction Lines		S		C
G		ANNO	TITL		233	Continuous	Drawing title text		S		C
G		ANNO	TITL	SCAL	231	Continuous	Graphical Scales		S		C
G		ANNO	TTLB		213	Continuous	Border and title block		S		C
G		GRID	NPLT		200	Dashed2	Layout grids		S		C
INTERIOR LAYERS (IPDS Standard for Digital Plan Submittals)											
I		CASE			White	Continuous	Casework	L	S		C
I		CLNG			30	Continuous	Ceiling	L	S		C
I		CLNG	IDEN		231	Continuous	Ceiling Tag, text, notes	L			C
I		CLNG	ACCS		30	Continuous	Ceiling Access	L			C
A		CLNG	GRID		72	Continuous	Ceiling grid	L			C
A		CLNG	IDEN		151	Continuous	Ceiling tags	L			C
I		CLNG	HEAD		White	Continuous		L			
I		CLNG	SUSP		30	Continuous	Ceiling Suspended Elements	L			C
I		CLNG	TEES		25	Continuous	Ceiling Main Tees	L			C
I		CLNG	SPRK		25	Continuous	Sprinklers	L			C
I		CLNG	SPRK	IDEN	231	Continuous	Sprinkler Tags, Text, Notes	L			C
I		AGEN	AREA	LINE	White	Continuous		L			

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
I		AGEN	FURN		White	Continuous		L			
I		COLS			White	Continuous	Columns	L	S		C
I		DOOR			White	Continuous	Door	L	S		C
I		DOOR	IDEN		White	Continuous	Door Tag, text	L			C
I		DOOR	FULL		White	Continuous	Doors Full Height	L			C
I		DOOR	PRHT		White	Continuous	Doors Partial Height	L			C
I		EQPM			White	Continuous	Equipment	L	S		C
I		EQPM	IDEN		White	Continuous	Equipment Tags, Text, notes	L	S		C
I		EQPM	ACCS		White	Continuous	Equipment Access	L			C
I		EQPM	FIXD		White	Continuous	Fixed Equipment	L	S		C
I		EQPM	MOVE		White	Continuous	Moveable Equipment	L	S		C
I		EQPM	NICN		White	Continuous	Equipment not in contract	L			C
I		EQPM	OVHD		White	Continuous	Equipment Overhead	L			C
I		EQPM	STOR		White	Continuous	Equipment Storage	L			C
I		FLOR			White	Continuous	Floor	L	S		C
I		FLOR	EVTR		White	Continuous	Floor Elevators, car and equipment	L			C
I		FLOR	FIXT		White	Continuous	Floor Plumbing Fixtures	L			C
I		FLOR	HRAL		White	Continuous	Floor Hand Rails, Guard Rails	L			C
I		FLOR	LEVL		White	Continuous	Floor Level changes, ramps, pits, depressions	L			C
I		FLOR	OTLN		White	Continuous	Floor Outline	L			C
I		FLOR	OVHD		White	Continuous	Floor Overhead (Objects Above)	L			C
I		FLOR	RAIS		White	Continuous	Floor Raised	L	S		C
I		FLOR	RISR		White	Continuous	Floor Stair Risers	L	S		C
I		FLOR	SIGN		White	Continuous	Floor Signs	L			C
I		FLOR	STRS		White	Continuous	Floor Stair Treads, escalators, ladders	L			C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
I		FLOR	SPCL		White	Continuous	Floor Architectural Specialties (Toilet Room, Accessories, Display cases)	L	S		C
I		FLOR	TPTN		White	Continuous	Floor Toilet Partitions	L	S		C
I		FLOR	WDWK		White	Continuous	Floor Architectural Woodwork	L	S		C
I		FNSH			White	Continuous	Finishes	L			C
I		FURN			White	Continuous	Furnishings	L	S		C
I		FURN	IDEN		White	Continuous	Furnishings Tags, Text, Notes	L	S		C
I		FURN	HD	FILE	White	Continuous	Furnishings File Cabinets	L	S		C
I		FURN	FREE		White	Continuous	Furnishings Freestanding	L	S		C
I		FURN	PLNT		White	Continuous	Furnishings Plants	L			C
I		FURN	PNLS		White	Continuous	Furnishings System Panels	L	S		C
I		FURN	SEAT		White	Continuous	Furnishings Seating	L	S		C
I		FURN	STOR		White	Continuous	Furnishings System Storage Components	L	S		C
I		FURN	WKSF		White	Continuous	Furnishings System Work Surface Components	L	S		C
I		GLAZ			White	Continuous	Windows	L	S		C
I		GLAZ	IDEN		White	Continuous	Window Tags, Text, Notes	L			C
I		GLAZ	FULL		White	Continuous	Windows Full Height	L			C
I		GLAZ	PTRL		White	Continuous	Windows Partial Height	L			C
I		GLAZ	SILL		White	Continuous	Windows Sill	L			C
I		HVAC			White	Continuous	HVAC	L	S		C
I		HVAC	SDFF		White	Continuous	HVAC Supply Diffusers	L			C
I		HVAC	IDEN		White	Continuous		L			
I		HVAC	RDFF		White	Continuous	HVAC Return Air Diffusers	L			C
A		LITE	CLNG		White	Continuous	Specialty ceiling lights not shown on Electrical	L			C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							Lighting Plan				
I		LITE	FIXT		White	Continuous	Interior Lighting Fixture	L	S		C
I		LITE	FIXT	IDEN	White	Continuous	Interior Lighting Fixture Tags, Text, Notes	L			C
I		MILL			White	Continuous	Millwork	L	S		C
I		MILL	IDEN		White	Continuous	Millwork Tags, Text, Notes	L			C
I		PRTN			White	Continuous	Partitions	L	S		C
I		PRTN	IDEN		White	Continuous	Partition Tags, text, Notes	L			C
I		PRTN	FULL		White	Continuous	Partitions Full Height	L			C
I		PRTN	PRHT		White	Continuous	Partitions Partial Height	L			C
I		PRTN	MOVE		White	Continuous	Moveable Partitions	L	S		C
I		PRTN	HEAD		White	Continuous	Partitions Door and Window Headers	L	S		C
I		PRTN	JAMB		White	Continuous	Partitions, Door and Window Jambs	L			C
I		PRTN	FIRE		White	Continuous	Partitions Fire Wall	L			C
I		ANNO	LEGN	FURN	White	Continuous	Furniture Legend	L	S		C
I		ANNO	LEGN	CLGN	White	Continuous	Ceiling Legend	L	S		C
I		ANNO	LEGN	SCHD	White	Continuous	Schedule Legend	L			C
I		ANNO	LEGN	ELEC	White	Continuous	Electrical Legend	L			C
I		ANNO	LEGN	CONS	White	Continuous		L			
I		ANNO	LEGN	VD	White	Continuous		L			
I		STAFF	NAMES		White	Continuous	Names of the Staff	L	S		C
I		USABLE	SF		White	Continuous		L			C
I		VD			White	Continuous		L			C
I		VD	IDEN		White	Continuous		L			
I		TILE	REMOVE		White	Continuous		L			
I		PHASE 1			White	Continuous		L			C
I		WS			White	Continuous		L			
I		PHASE 2			White	Continuous		L			C
I		PHASE 3			White	Continuous		L			C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
G		ANNO	TITL		233	Continuous	Drawing title text	L			C
G		ANNO	TITL	SCAL	231	Continuous	Graphical Scales	L	S		C
G		ANNO	TTLB		213	Continuous	Border and title block	L			C
A		FLOR	IDEN		171	Continuous	Room name, space identification text	L			C
A		FLOR	NUMB		White	Continuous	Room/space identification number and symbol	L			C
I		LIMIT OF WORK			White	Continuous		L			C
I		LIMIT OF WORK	ADD		White	Continuous		L			C
I		SHADE A			517C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE B			171C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE C			2975C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE D			137C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE E			333C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE F			109C PANTONE	Continuous	SOLID COATED)	L			C
I		SHADE G			367C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE H			470C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE J			877C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE K			347C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE L			2725C PANTONE	Continuous	(SOLID COATED)	L			C
I		SHADE M			2935C	Continuous	(SOLID COATED)	L			C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
					PANTONE						
	D					HIDDEN	Existing to be Demolished	L			C
	R				3	Continuous	Existing to Remain	L			C
	L				2	Continuous	Existing to be Relocated	L			C
	F				4	Dashed	Future Work	L			C
	N				5	Continuous	New Work	L			C
	T				6	Continuous	Temporary Work	L			C
LANDSCAPE LAYERS											
L		FURN	PLNT		70	Continuous	Plants - indoor		S		C
L		SITE	PLNT		71	Continuous	Plants - outdoor		S		C
MECHANICAL LAYERS											
M		ANNO			white	Continuous	Annotation				C
M		ANNO	DLTA		white	Continuous	Annotation: revision delta				C
M		ANNO	TTLB		white	Continuous	Annotation: titleblock				C
M		ANNO	TTLB	PROS	white	Continuous	Annotation: titleblock: date/time/file name stamp				C
M		BRIN			white	Continuous	Brine systems				C
M		BRIN	EQPM		white	Continuous	Brine systems: equipment				C
M		BRIN	PIPE		white	Continuous	Brine systems: piping				C
M		CHIM			white	Continuous	Chimneys and stacks				C
M		CMPA			13	Continuous	Compressed/processed air systems				C
M		CMPA	ANNO		13	Continuous	Compressed/processed air systems: annotation				C
M		CMPA	EQPM		13	Continuous	Compressed/processed air systems: equipment				C
M		CMPA	PEQP		13	Continuous	Compressed/processed air systems: process equipment				C
M		CMPA	PIPE		13	Continuous	Compressed/processed air systems: piping				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		CMPA	PPIP		13	Continuous	Compressed/processed air systems: process piping				C
M		CNDW			113	Continuous	Condenser water systems				C
M		CNDW	ANNO		113	Continuous	Condenser water systems: annotation				C
M		CNDW	CONP		113	Continuous	Condenser water systems: condensate piping				C
M		CNDW	EQPM		113	Continuous	Condenser water systems: equipment				C
M		CNDW	PIPE		113	Continuous	Condenser water systems: piping				C
M		CNDW	RETN		113	CWR	Condenser water systems: return				C
M		CNDW	RETN	PIPE	113	Continuous	Condenser water systems: return: piping				C
M		CNDW	RETN	SKCH	113	Continuous	Condenser water systems: return: sketch				C
M		CNDW	SUPP		113	CWS	Condenser water systems: supply				C
M		CNDW	SUPP	PIPE	113	Continuous	Condenser water systems: supply: piping				C
M		CNDW	SUPP	SKCH	113	Continuous	Condenser water systems: supply: sketch				C
M		CNDW	SYMB		113	Continuous	Condenser water systems: symbol				C
M		CONT			63	Continuous	Controls and instrumentation				C
M		CONT	THER		63	Continuous	Controls and instrumentation: thermostats				C
M		CONT	WIRE		63	Continuous	Controls and instrumentation: low voltage wiring				C
M		CWTR			150	Continuous	Chilled water systems				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		CWTR	ANNO		150	Continuous	Chilled water systems: annotation				C
M		CWTR	CONP		150	Continuous	Chilled water systems: condensate piping				C
M		CWTR	EQPM		150	Continuous	Chilled water systems: equipment				C
M		CWTR	PIPE		150	Continuous	Chilled water systems: piping				C
M		CWTR	RETN		150	Continuous	Chilled water systems: return				C
M		CWTR	RETN	PIPE	150	Continuous	Chilled water systems: return: piping				C
M		CWTR	RETN	SKCH	150	Continuous	Chilled water systems: return: sketch				C
M		CWTR	SUPP		150	Continuous	Chilled water systems: supply				C
M		CWTR	SUPP	PIPE	150	Continuous	Chilled water systems: supply: piping				C
M		CWTR	SUPP	SKCH	150	Continuous	Chilled water systems: supply: sketch				C
M		CWTR	SYMB		150	Continuous	Chilled water systems: symbol				C
M		DOMW			170	Continuous	Domestic water systems				C
M		DOMW	ANNO		170	Continuous	Domestic water systems: annotation				C
M		DOMW	MKUP		170	Continuous	Domestic water systems: make-up water				C
M		DUAL			163	Continuous	Dual temperature systems				C
M		DUAL	ANNO		163	Continuous	Dual temperature systems: annotation				C
M		DUAL	RETN		163	Continuous	Dual temperature systems: return				C
M		DUAL	RETN	PIPE	163	Continuous	Dual temperature systems: return: piping				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		DUAL	RETN	SKCH	163	Continuous	Dual temperature systems: return: sketch				C
M		DUAL	SUPP		163	Continuous	Dual temperature systems: supply				C
M		DUAL	SUPP	PIPE	163	Continuous	Dual temperature systems: supply: piping				C
M		DUAL	SUPP	SKCH	163	Continuous	Dual temperature systems: supply: sketch				C
M		DUAL	SYMB		163	Continuous	Dual temperature systems: symbol				C
M		DUST			183	Continuous	Dust and fume collection systems				C
M		DUST	DUCT		183	Continuous	Dust and fume collection systems: ductwork				C
M		DUST	EQPM		183	Continuous	Dust and fume collection systems: equipment				C
M		ELHT			183	Continuous	Electric heat				C
M		ELHT	EQPM		183	Continuous	Electric heat: equipment				C
M		ENER			183	Continuous	Energy management systems				C
M		ENER	EQPM		183	Continuous	Energy management systems: equipment				C
M		ENER	WIRE		183	Continuous	Energy management systems: wiring				C
M		EXHS			83	Continuous	Exhaust system				C
M		EXHS	CDFF		83	Continuous	Exhaust system: ceiling diffusers				C
M		EXHS	DUCT		83	Continuous	Exhaust system: ductwork				C
M		EXHS	EQPM		83	Continuous	Exhaust system: equipment				C
M		EXHS	RFEQ		83	Continuous	Exhaust system: rooftop equipment				C
M		FUEL			4	Continuous	Fuel systems				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		FUEL	EQPM		4	Continuous	Fuel systems: equipment				C
M		FUEL	GGEP		4	Continuous	Fuel systems: gas general piping				C
M		FUEL	GGEP	ANNO	4	Continuous	Fuel systems: gas general piping: annotation				C
M		FUEL	GGEP	HPIP	4	Continuous	Fuel systems: gas general piping: high pressure				C
M		FUEL	GGEP	LPIP	4	Continuous	Fuel systems: gas general piping: low pressure				C
M		FUEL	GGEP	LQPG	4	Continuous	Fuel systems: gas general piping: liquid petroleum gas				C
M		FUEL	GGEP	MPIP	4	Continuous	Fuel systems: gas general piping: medium pressure				C
M		FUEL	GGEP		4	Continuous	Fuel systems: gas process piping				C
M		FUEL	OGEP		53	Continuous	Fuel systems: oil general piping				C
M		FUEL	OGEP	ANNO	53	Continuous	Fuel systems: oil general piping: annotation				C
M		FUEL	OGEP	DISC	53	Continuous	Fuel systems: oil general piping: discharge				C
M		FUEL	OGEP	FLLW	53	Continuous	Fuel systems: oil general piping: flow				C
M		FUEL	OGEP	GAGE	53	Continuous	Fuel systems: oil general piping: gauge				C
M		FUEL	OGEP	RETN	53	FOR	Fuel systems: oil general piping: return				C
M		FUEL	OGEP	SUPP	53	FOS	Fuel systems: oil general piping: supply				C
M		FUEL	OGEP	VENT	53	Continuous	Fuel systems: oil general piping: vent				C
M		FUEL	OPRP		53	Continuous	Fuel systems: oil process piping				C
M		FUEL	RPIP		4	FR	Fuel systems: return piping				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		FUEL	SPIP		4	FS	Fuel systems: supply piping				C
M		FUME			53	Continuous	Fume hood		S		C
M		FUME	DUCT		53	Continuous	Fume hood: exhaust ductwork				C
M		FUME	EQPM		53	Continuous	Fume hood: equipment				C
M		GLYC			63	Continuous	Glycol systems				C
M		GLYC	ANNO		63	Continuous	Glycol systems: annotation				C
M		GLYC	RETN		63	Continuous	Glycol systems: return				C
M		GLYC	RETN	PIPE	63	Continuous	Glycol systems: return: piping				C
M		GLYC	RETN	SKCH	63	Continuous	Glycol systems: return: sketch				C
M		GLYC	SUPP		63	Continuous	Glycol systems: supply				C
M		GLYC	SUPP	PIPE	63	Continuous	Glycol systems: supply: piping				C
M		GLYC	SUPP	SKCH	63	Continuous	Glycol systems: supply: sketch				C
M		GLYC	SYMB		63	Continuous	Glycol systems: symbol				C
M		HOTW			20	Continuous	Hot water heating system				C
M		HOTW	ANNO		20	Continuous	Hot water heating system: annotation				C
M		HOTW	EQPM		20	Continuous	Hot water heating system: equipment				C
M		HOTW	PIPE		20	Continuous	Hot water heating system: piping				C
M		HOTW	RETN		20	HWR	Hot water heating system: return				C
M		HOTW	RETN	PIPE	20	Continuous	Hot water heating system: return: piping				C
M		HOTW	RETN	SKCH	20	Continuous	Hot water heating system: return: sketch				C
M		HOTW	SUPP		20	HWS	Hot water heating system:				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							supply				
M		HOTW	SUPP	PIPE	20	Continuous	Hot water heating system: supply: piping				C
M		HOTW	SUPP	SKCH	20	Continuous	Hot water heating system: supply: sketch				C
M		HOTW	SYMB		20	Continuous	Hot water heating system: symbol				C
M		HVAC			111	Continuous	HVAC systems		S		C
M		HVAC	ANNO		111	Continuous	HVAC systems: annotation				C
M		HVAC	BOXD		111	Continuous	HVAC systems: mixing box, dual duct				C
M		HVAC	BOXS		111	Continuous	HVAC systems: mixing box, single duct				C
M		HVAC	CDFF		111	Continuous	HVAC systems: ceiling diffusers				C
M		HVAC	CLDA		111	Continuous	HVAC systems: cold air				C
M		HVAC	CLDA	ANNO	111	Continuous	HVAC systems: cold air: annotation				C
M		HVAC	CLDA	DUCT	111	Continuous	HVAC systems: cold air: ductwork				C
M		HVAC	CLDA	EQPM	111	Continuous	HVAC systems: cold air: equipment				C
M		HVAC	CLDA	RSCH	111	Continuous	HVAC systems: cold air: sketch line round or oval duct				C
M		HVAC	CLDA	SECT	111	Continuous	HVAC systems: cold air: ductwork section				C
M		HVAC	CLDA	SIZE	111	Continuous	HVAC systems: cold air: ductwork size				C
M		HVAC	CLDA	SSCH	111	Continuous	HVAC systems: cold air: sketch line rectangular duct				C
M		HVAC	DMPR		111	Continuous	HVAC systems: fire, smoke, volume damper				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		HVAC	DOOR		111	Continuous	HVAC systems: equipment doors				C
M		HVAC	EFAN		111	Continuous	HVAC systems: equipment with electric fans				C
M		HVAC	EPDU		111	Continuous	HVAC systems: equipment with piping, ductwork and electricity				C
M		HVAC	EPIP		111	Continuous	HVAC systems: equipment with piping and electricity				C
M		HVAC	EQPM		223	Continuous	HVAC systems: equipment				C
M		HVAC	EXHS		223	Continuous	HVAC systems: exhaust air				C
M		HVAC	EXHS	ANNO	223	Continuous	HVAC systems: exhaust air: annotation				C
M		HVAC	EXHS	DUCT	223	Continuous	HVAC systems: exhaust air: ductwork				C
M		HVAC	EXHS	EQPM	223	Continuous	HVAC systems: exhaust air: equipment				C
M		HVAC	EXHS	GRIL	223	Continuous	HVAC systems: exhaust air: grilles				C
M		HVAC	EXHS	RSCH	223	Continuous	HVAC systems: exhaust air: sketch line round or oval duct				C
M		HVAC	EXHS	SECT	223	Continuous	HVAC systems: exhaust air: ductwork section				C
M		HVAC	EXHS	SIZE	223	Continuous	HVAC systems: exhaust air: ductwork size				C
M		HVAC	EXHS	SSCH	223	Continuous	HVAC systems: exhaust air: sketch line rectangular duct				C
M		HVAC	HOTA		83	Continuous	HVAC systems: hot air				C
M		HVAC	HOTA	ANNO	83	Continuous	HVAC systems: hot air: annotation				C
M		HVAC	HOTA	DUCT	83	Continuous	HVAC systems: hot air: ductwork				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		HVAC	HOTA	EQPM	83	Continuous	HVAC systems: hot air: equipment				C
M		HVAC	HOTA	RSCH	83	Continuous	HVAC systems: hot air: sketch line round or oval duct				C
M		HVAC	HOTA	SECT	83	Continuous	HVAC systems: hot air: ductwork section				C
M		HVAC	HOTA	SIZE	83	Continuous	HVAC systems: hot air: ductwork size				C
M		HVAC	HOTA	SSCH	83	Continuous	HVAC systems: hot air: sketch line rectangular duct				C
M		HVAC	IDEN		51	Continuous	HVAC systems: identification tags				C
M		HVAC	ODFF		51	Continuous	HVAC systems: other diffusers				C
M		HVAC	PIPE		51	Continuous	HVAC systems: piping				C
M		HVAC	RDFF		51	Continuous	HVAC systems: return air diffuser				C
M		HVAC	RDFF	IDEN	51	Continuous	HVAC systems: return air diffuser: identification tags				C
M		HVAC	RETN		51	Continuous	HVAC systems: return				C
M		HVAC	RETN	ANNO	10	Continuous	HVAC systems: return: annotation				C
M		HVAC	RETN	DUCT	10	Continuous	HVAC systems: return: ductwork				C
M		HVAC	RETN	EQPM	10	Continuous	HVAC systems: return: equipment				C
M		HVAC	RETN	RSCH	10	Continuous	HVAC systems: return: sketch line round or oval duct				C
M		HVAC	RETN	SECT	10	Continuous	HVAC systems: return: ductwork section				C
M		HVAC	RETN	SIZE	10	Continuous	HVAC systems: return: ductwork size				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		HVAC	RETN	SSCH	10	Continuous	HVAC systems: return: sketch line rectangular duct				C
M		HVAC	SDFF		143	Continuous	HVAC systems: supply diffusers				C
M		HVAC	SDFF	IDEN	143	Continuous	HVAC systems: supply diffusers: identification tags				C
M		HVAC	SUPP		143	Continuous	HVAC systems: supply				C
M		HVAC	SUPP	ANNO	143	Continuous	HVAC systems: supply: annotation				C
M		HVAC	SUPP	DUCT	143	Continuous	HVAC systems: supply: ductwork				C
M		HVAC	SUPP	EQPM	143	Continuous	HVAC systems: supply: equipment				C
M		HVAC	SUPP	RSCH	143	Continuous	HVAC systems: supply: sketch line round or oval duct				C
M		HVAC	SUPP	SECT	143	Continuous	HVAC systems: supply: ductwork section				C
M		HVAC	SUPP	SIZE	143	Continuous	HVAC systems: supply: ductwork size				C
M		HVAC	SUPP	SSCH	143	Continuous	HVAC systems: supply: sketch line rectangular duct				C
M		LGAS			123	Continuous	Laboratory gas systems				C
M		LGAS	EQPM		123	Continuous	Laboratory gas systems: equipment				C
M		LGAS	PIPE		123	Continuous	Laboratory gas systems: piping				C
M		MACH			123	Continuous	Machine shop				C
M		MDGS			143	Continuous	Medical gas				C
M		MDGS	CAIR		143	Continuous	Medical gas: compressed air				C
M		MDGS	EQPM		143	Continuous	Medical gas: equipment				C
M		MDGS	NITG		143	Continuous	Medical gas: nitrogen				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		MDGS	NOXG		143	Continuous	Medical gas: nitrous oxide				C
M		MDGS	OXYG		143	Continuous	Medical gas: pure O2				C
M		MDGS	PIPE		143	Continuous	Medical gas: piping				C
M		MDGS	SAIR		143	Continuous	Medical gas: scavenge air				C
M		MDGS	VACU		143	Continuous	Medical gas: medical vacuum				C
M		MKUP			183	Continuous	Make-up air systems				C
M		MKUP	CDFF		183	Continuous	Make-up air systems: ceiling diffusers				C
M		MKUP	DUCT		183	Continuous	Make-up air systems: supply ducts				C
M		MKUP	EQPM		183	Continuous	Make-up air systems: equipment				C
M		MPIP			112	Continuous	Miscellaneous piping systems				C
M		MPIP	ANNO		122	Continuous	Miscellaneous piping systems: annotation				C
M		MPIP	IDEN		112	Continuous	Miscellaneous piping systems: identification tags				C
M		MPIP	PIPE		112	Continuous	Miscellaneous piping systems: piping				C
M		MPIP	SYMB		112	Continuous	Miscellaneous piping systems: symbols				C
M		NGAS			153	Continuous	Natural gas systems				C
M		NGAS	EQPM		153	Continuous	Natural gas systems: equipment				C
M		NGAS	PIPE		153	Continuous	Natural gas systems: piping				C
M		PROC			white	Continuous	Process systems				C
M		PROC	EQPM		white	Continuous	Process systems: equipment				C
M		PROC	PIPE		white	Continuous	Process systems: piping				C
M		RAIR			white	Continuous	Relief air systems				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		RCOV			white	Continuous	Energy recovery systems				C
M		RCOV	EQPM		white	Continuous	Energy recovery systems: equipment				C
M		RCOV	PIPE		white	Continuous	Energy recovery systems: piping				C
M		REFG			173	Continuous	Refrigeration systems				C
M		REFG	ANNO		173	Continuous	Refrigeration systems: annotation				C
M		REFG	DISC		173	Continuous	Refrigeration systems: discharge				C
M		REFG	EQPM		173	Continuous	Refrigeration systems: equipment				C
M		REFG	PIPE		173	Continuous	Refrigeration systems: piping				C
M		REFG	RETN		173	Continuous	Refrigeration systems: return				C
M		REFG	SUPP		173	Continuous	Refrigeration systems: supply				C
M		SMOK			122	Continuous	Smoke extraction systems				C
M		SMOK	CDFF		122	Continuous	Smoke extraction systems: ceiling diffusers				C
M		SMOK	DUCT		122	Continuous	Smoke extraction systems: duct				C
M		SMOK	EQPM		122	Continuous	Smoke extraction systems: equipment				C
M		SPCL			white	Continuous	Special systems				C
M		SPCL	EQPM		white	Continuous	Special systems: equipment				C
M		SPCL	PIPE		white	Continuous	Special systems: piping				C
M		STEM			13	Continuous	Steam systems				C
M		STEM	ANNO		13	Continuous	Steam systems: annotation				C
M		STEM	BLBD		13	Continuous	Steam systems: boiler blow down piping				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		STEM	BLBD	PIPE	13	Continuous	Steam systems: boiler blow down piping: piping				C
M		STEM	CONP		13	Continuous	Steam systems: condensate piping				C
M		STEM	CONP	PIPE	13	Continuous	Steam systems: condensate piping: piping				C
M		STEM	CONP	SKCH	13	Continuous	Steam systems: condensate piping: sketch				C
M		STEM	EQPM		13	Continuous	Steam systems: equipment				C
M		STEM	HPIP		20	Continuous	Steam systems: high-pressure steam piping				C
M		STEM	HPIP	PIPE	20	Continuous	Steam systems: high-pressure steam piping: piping				C
M		STEM	HPIP	SKCH	20	Continuous	Steam systems: high-pressure steam piping: sketch				C
M		STEM	LPIP		70	Continuous	Steam systems: low-pressure steam piping				C
M		STEM	LPIP	PIPE	70	Continuous	Steam systems: low-pressure steam piping: piping				C
M		STEM	LPIP	SKCH	70	Continuous	Steam systems: low-pressure steam piping: sketch				C
M		STEM	MPIP		50	Continuous	Steam systems: medium-pressure steam piping				C
M		STEM	MPIP	PIPE	50	Continuous	Steam systems: medium-pressure steam piping: piping				C
M		STEM	MPIP	SKCH	50	Continuous	Steam systems: medium-pressure steam piping: sketch				C
M		STEM	SYMB		13	Continuous	Steam systems: symbols				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
M		TEST			white	Continuous	Test equipment				C
	D				8	HIDDEN	Existing to be Demolished				C
	R				3	Continuous	Existing to Remain				
	L				2	Continuous	Existing to be Relocated				C
	F				4	Dashed	Future Work				C
	N				5	Continuous	New Work				C
	T				6	Continuous	Temporary Work				C
											C
PLUMBING LAYERS											
P		ACID			113	Continuous	Acid waste systems				C
P		ACID	EQPM		113	Continuous	Acid waste systems: equipment				C
P		ACID	PIPE		113	Continuous	Acid waste systems: piping				C
P		ACID	VENT		113	Continuous	Acid waste systems: vents				C
P		DOMW			143	Continuous	Domestic water systems				C
P		DOMW	CPIP		143	Continuous	Domestic water systems: cold water piping				C
P		DOMW	EQPM		143	Continuous	Domestic water systems: equipment				C
P		DOMW	HPIP		73	Continuous	Domestic water systems: hot water piping				C
P		DOMW	RISR		73	Continuous	Domestic water systems: hot and cold water risers				C
P		DOMW	RPIP		73	Continuous	Domestic water systems: hot water recirculation piping				C
P		MDGS			63	Continuous	Medical gas				C
P		MDGS	CAIR		63	Continuous	Medical gas: compressed air				C
P		MDGS	EQPM		63	Continuous	Medical gas: equipment				C
P		MDGS	NITG		63	Continuous	Medical gas: nitrogen				C
P		MDGS	NOXG		63	Continuous	Medical gas: nitrous oxide				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
P		MDGS	OXYG		63	Continuous	Medical gas: pure O2				C
P		MDGS	PIPE		63	Continuous	Medical gas: piping				C
P		MDGS	SAIR		63	Continuous	Medical gas: scavenge air				C
P		MDGS	VACU		63	Continuous	Medical gas: medical vacuum				C
P		SANR			51	Continuous	Sanitary drainage systems				C
P		SANR	EQPM		51	Continuous	Sanitary drainage systems: equipment				C
P		SANR	FIXT		51	Continuous	Sanitary drainage systems: plumbing fixtures				C
P		SANR	FLDR		51	Continuous	Sanitary drainage systems: floor drains				C
P		SANR	PIPE		51	Continuous	Sanitary drainage systems: piping				C
P		SANR	RISR		51	Continuous	Sanitary drainage systems: risers				C
P		SANR	VENT		51	Continuous	Sanitary drainage systems: vent piping				C
P		STRM			93	Continuous	Storm drainage systems				C
P		STRM	PIPE		93	Continuous	Storm drainage systems: piping				C
P		STRM	RFDR		93	Continuous	Storm drainage systems: roof drains				C
P		STRM	RISR		93	Continuous	Storm drainage systems: risers				C
	D				8	HIDDEN	Existing to be Demolished		S		C
	R				3	Continuous	Existing to Remain		S		C
	L				2	Continuous	Existing to be Relocated		S		C
	F				4	Dashed	Future Work		S		C
	N				5	Continuous	New Work		S		C
	T				6	Continuous	Temporary Work		S		C
STRUCTURAL LAYERS											

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
S		ANNO	DIMS		TBD	Continuous	Dimension, dimension text				C
S		ANNO	PATT		TBD	Continuous	General notes and general remarks				C
S		ANNO	SYMB		TBD	Continuous	Miscellaneous symbols				C
S		BEAM	CNTR		12	Continuous	Beam centerlines		S		C
S		BEAM	PRIM		12	Continuous	Primary beams, girders		S		C
S		BEAM	SECD		12	Continuous	Secondary beams, girders		S		C
S		BRAC	LATL		32	Continuous	Lateral bracing		S		C
S		BRAC	SHEA		32	Continuous	shear walls		S		C
S		BRAC	VERT		32	Continuous	Vertical bracing		S		C
S		COLS	CNTR		52	Continuous	Column centerlines/working lines		S		C
S		COLS	MSC1		52	Continuous	Miscellaneous columns (Type 1)				C
S		COLS	MSC2		52	Continuous	Miscellaneous columns (Type 2)				C
S		COLS	MSC3		52	Continuous	Miscellaneous columns (Type 3)				C
S		COLS	MSC4		52	Continuous	Miscellaneous columns (Type 4)				C
S		COLS	PRIM		52	Continuous	Primary columns		S		C
S		COLS	SCND		White	Continuous	Secondary columns		S		C
S		DECK	FLOR		White	Continuous	Floor deck				C
S		DECK	OPEN		White	Continuous	Openings and penetrations		S		C
S		DECK	RBAR		White	Continuous	Deck/slab reinforcing				C
S		DECK	ROOF		White	Continuous	Roof deck		S		C
S		FNDN	CNTR		White	Continuous	Beam centerlines		S		C
S		FNDN	FTNG		White	Continuous	Footings		S		C
S		FNDN	GRBM		White	Continuous	Grade beams		S		C
S		FNDN	PEDS		White	Continuous	Column pedestals		S		C
S		FNDN	PILE		White	Continuous	Piles (steel sheet, concrete, wood), piers,		S		C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
							caisson piers, drilled piers				
S		FNDN	RBAR		White	Continuous	Foundation reinforcing				C
S		GRAT	ELEV		White	Continuous	Elevated grating (catwalks)				C
S		GRAT	FLOR		White	Continuous	Floor grating				C
S		GRDL	EXGL		White	Continuous	Existing ground				C
S		GRDL	FNGR		White	Continuous	Finished grade				C
S		GRDL	WATR		White	Continuous	Water surface				C
S		GRID	HORZ		191	Continuous	Primary grid lines (horizontal)				C
S		GRID	IDEM		191	Continuous	Column I.D. tags				C
S		GRID	MSC1		191	Continuous	Miscellaneous grid lines (Type 1)				C
S		GRID	MSC2		191	Continuous	Miscellaneous grid lines (Type 2)				C
S		GRID	MSC3		191	Continuous	Miscellaneous grid lines (Type 3)				C
S		GRID	MSC4		191	Continuous	Miscellaneous grid lines (Type 4)				C
S		GRID	VERT		191	Continuous	Primary grid lines (vertical)				C
S		JOIS	BRDG		White	Continuous	Bridging				C
S		JOIN	CTRL		White	Continuous	Control/expansion joints				C
S		JOIN	CNST		White	Continuous	Construction joints				C
S		JOIS	PRIM		White	Continuous	Primary joists				C
S		JOIS	SECD		White	Continuous	Secondary joists				C
S		METL	MISC		White	Continuous	Miscellaneous metal				C
S		PADS	EQPM		White	Continuous	Equipment pads				C
S		SAFE	FENC		White	Continuous	Fencing		S		C
S		SAFE	HRAL		White	Continuous	Handrails		S		C
S		SLAB	EDGE		White	Continuous	Edge of slab				C
S		SLAB	OPEN		White	Continuous	Openings and penetrations		S		C
S		SLAB	RBAR		White	Continuous	Slab reinforcing				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
S		SPPT	MISC		White	Continuous	Miscellaneous fasteners, anchor blots, supports				C
S		SPPT	SHPS		White	Continuous	Miscellaneous shapes, plates				C
S		STAT	DEMO	PHS1	White	Continuous	Demolition - phase 1				C
S		STAT	DEMO	PHS2	White	Continuous	Demolition - phase 2				C
S		STAT	DEMO	PHS3	White	Continuous	Demolition - phase 3				C
S		STRS	FRAM		White	Continuous	Stair/elevator framing				C
S		STRS	LADD		White	Continuous	Ladders, ladder handrails, safety guard, grab bars				C
S		STRS	RBAR		White	Continuous	Stair reinforcing				C
S		TRUS	PRIM		White	Continuous	Primary trusses				C
S		TRUS	SECD		White	Continuous	Secondary trusses				C
S		WALL	CONC		White	Continuous	Concrete walls				C
S		WALL	LOAD		White	Continuous	Load bearing CMU walls				C
S		WALL	NONL		White	Continuous	Non-load bearing CMU walls				C
S		WALL	PCST		White	Continuous	Precast walls				C
S		WALL	STUD		White	Continuous	Stud walls				C
S		WALL	RBAR		White	Continuous	Wall reinforcing		S		C
	D				8	HIDDEN	Existing to be Demolished		S		C
	R				3	Continuous	Existing to Remain		S		C
	L				2	Continuous	Existing to be Relocated		S		C
	F				4	Dashed	Future Work		S		C
	N				5	Continuous	New Work		S		C
	T				6	Continuous	Temporary Work		S		C
TELECOMMUNICATION LAYERS											
T		COMM			130	Continuous	Communication				C
T		CTRL			230	Continuous	Control systems				C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
V		CTRL			White	Continuous	Geodetic Control Points (Point, locked layer)			SU	C
V		CTRL	HCPT		White	Continuous	Secondary Control Points (Point, locked layer)			SU	C
V		SITE	OTLN		White	Continuous	Map Reference Features (Point, locked layer)			SU	C
V		PROP	LINE		White	Continuous	Property Boundary (Line)		S	SU	C
V		ANNO	DIMS		White	Continuous	Property Dimensions, Survey Calls (Text)		S	SU	C
V		PROP	ESMT		White	Continuous	Easement (Line or Polyline)		S	SU	C
V		PROP	RWAY		White	Continuous	Right of Way Boundary (Line or Polyline)		S	SU	C
V		SURV	DATA		White	Continuous	Survey Monuments (Line or Polyline)		S	SU	C
V		PVMT	ROAD		White	Continuous	Edge of Pavement (Line or Polyline)		S	SU	C
V		PVMT	WALK		White	Continuous	Edge of Sidewalk (Line or Polyline)		S	SU	C
V		BDLG	OTLNF		White	Continuous	Building footprint Outlines (Line or Polyline)		S	SU	C
V		BDLG	TOLNR		White	Continuous	Building Roofprint Outlines (Line or Polyline)		S	SU	C
V		SITE	EWAT		White	Continuous	Stream, River & Pond Edges (Polylines)		S	SU	C
V		SITE	BVW		White	Continuous	Wetland Boundaries (Polylines)		S	SU	C
V		TOPO	MINR		White	Continuous	Topographic Contour-Interval (Line or Polyline)		S	SU	C
V		TOPO	MAJR		White	Continuous	Topographic Contour-Index (Line or Polyline)		S	SU	C
V		TOPO	MAJR	IDEN	White	Continuous	Elevation Value-Index (Text)		S	SU	C
V		TOPO	SPOT		White	Continuous	Spot Elevations (Point)		S	SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
V		TOPO	SPOT	IDEN	White	Continuous	Spot Elevations Value (Text)		S	SU	C
L		SITE	RTWL		White	Continuous	Retaining Walls (Line or Polyline)		S	SU	C
C		RAIL	CNTR		White	Continuous	Raild Road Line (Line or Polyline)		S	SU	C
V		SITE	FENC		White	Continuous	Fence Line (Line or Polyline)		S	SU	C
L		PLNT	BUSH		White	Continuous	Shrub or Shrubbery (Point)		S	SU	C
L		PLNT	TREE	LINE	White	Continuous	Forested or Large Vegetation area (Line or Polyline)		S	SU	C
L		PLNT	TREE		White	Continuous	Tree (>=6" Diam) (Point)		S	SU	C
C		ROAD	CNTR		White	Continuous	Road Centerline (Line or Polyline)		S	SU	C
C		PKNG	OTLN		White	Continuous	Parking Area Outline (Line or Polyline)		S	SU	C
V		DOMW	MAIN		White	Continuous	Water Mains (Line or Polyline)		S	SU	C
V		DOMW	SERV		White	Continuous	Water Services (Line or Polyline)			SU	C
V		DOMW	HYDR		White	Continuous	Fire Hydrant (Point)			SU	C
V		DOMW	DEVC		White	Continuous	Water Valves (Point)			SU	C
V		DOMW	FTTG		White	Continuous	Water Reducer or Fitting (Point)			SU	C
V		DOMW	WELL		White	Continuous	Water Well (Point)			SU	C
V		DOMW	METR		White	Continuous	Water Meter Pit (Point)			SU	C
V		DOMW	TANK		White	Continuous	Water Storage Unit (Point)			SU	C
V		DOMW	PUMP		White	Continuous	Water Pump Station (Point)			SU	C
V		DOMW	MISCPT		White	Continuous	Water Miscellaneous Points (Point)			SU	C
V		SSWR	MAIN		White	Continuous	Sewer Mains (Line or Polyline)		S	SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
V		SSWR	SERV		White	Continuous	Sewer Service Lines (Line or Polyline)			SU	C
V		SSWR	JBOX		White	Continuous	Sewer Manholes (Point)		S	SU	C
V		SSWR	PUMP		White	Continuous	Sewer Pump Station (Point)			SU	C
V		SSWR	LEAC		White	Continuous	Sewer Wet Well (Point)			SU	C
V		SSWR	DEVC		White	Continuous	Sewer Valve (Point)			SU	C
V		SSWR	MISCPT		White	Continuous	Sewer Miscellaneous Points (Point)			SU	C
V		STRM	MAIN		White	Continuous	Storm Drain Mains (Line or Polyline)			SU	C
V		STRM	JBOX		White	Continuous	Storm Drain Manholes (Point)			SU	C
V		STRM	CB		White	Continuous	Catch Basin (Point)			SU	C
V		STRM	CULV		White	Continuous	Culvert (Point)		S	SU	C
V		STRM	HDWL		White	Continuous	Storm Drain Headwall (Line)		S	SU	C
V		STRM	INLT		White	Continuous	Storm Drain Inlet (Line)		S	SU	C
V		STRM	OTFL		White	Continuous	Storm Drain Outfall (Line)		S	SU	C
V		STRM	LAGN		White	Continuous	Retention/Detention Basin (Line or Polyline)		S	SU	C
V		STRM	MISCPT		White	Continuous	Drain Miscellaneous Points (Point)			SU	C
F		ALRM	MANL		White	Continuous	Fire Departmet Call box (Point)			SU	C
V		POLE	UTIL		White	Continuous	Electric Poles (Point)			SU	C
V		LITE	FIX		White	Continuous	Street Lights (Point)		S	SU	C
V		ELEC	JBOX		White	Continuous	Electric Manhole (Point)		S	SU	C
V		COMM	JBOX		White	Continuous	Telephone Manhole (Point)		S	SU	C
V		COMM	CBOX		White	Continuous	Telephone Switching Station (Point)		S	SU	C
V		ELEC	HBOX		White	Continuous	Hand Hole (Point)		S	SU	C

LAYER STRATEGEM											
DISC	STATUS	MAJOR	MINOR	DESC	COLOR	LINETYPE	DESCRIPTION	DCAM DEPT			
V		ELEC	PAD		White	Continuous	Pad Mount		S	SU	C
V		ELEC	CBOX		White	Continuous	Electric Switching Station (Point)		S	SU	C
V		MISC	JBOX		White	Continuous	Manholes, Other (Point)		S	SU	C
V		SPCL	TRAF		White	Continuous	Traffic Light (Point)			SU	C
V		SPCL	TCBOX		White	Continuous	Traffic Light Control Box (Point)			SU	C
C		PVMT	SIGN		White	Continuous	Traffic Sign (Point)				C
	D				8	HIDDEN	Existing to be Demolished		S		C
	R				3	Continuous	Existing to Remain		S		C
	L				2	Continuous	Existing to be Relocated		S		C
	F				4	Dashed	Future Work		S		C
	N				5	Continuous	New Work		S		C
	T				6	Continuous	Temporary Work		S		C

APPENDIX II

PEN SETTINGS (CTB)

PEN SETTINGS (CTB's)

DCAM.ctb					
OBJECT COLOR	**SCREENING**	**LINE WEIGHT**	**OBJECT COLOR**	**SCREENING**	**LINE WEIGHT**
32	100	0.70	131	100	0.25
113	100	0.50	11	100	0.25
233	100	0.50	31	100	0.25
213	100	0.50	51	100	0.25
12	100	0.50	191	100	0.25
73	100	0.50	111	100	0.25
12	100	0.50	151	100	0.25
152	100	0.35	140	100	0.18
212	100	0.35	30	100	0.18
52	100	0.35	White	100	0.18
192	100	0.35	90	100	0.18
132	100	0.35	150	100	0.18
172	100	0.35	110	100	0.18
72	100	0.35	70	100	0.18
151	100	0.25	200	100	0.18
71	100	0.25	Red	100	0.18
211	100	0.25	230	100	0.18
91	100	0.25	130	100	0.18
231	100	0.25	181	100	0.18
171	100	0.25	141	100	0.18

APPENDIX III

PLOTTING TO PDF

WHAT IS A PDF FILE?

PDF stands for Portable Document Format. It is an open, secure, file format developed by Adobe for sharing electronic data. The ability to create a PDF is provided with the PDF Writer an additional installation to ADT. A PDF can be viewed and printed using the Adobe Acrobat Reader and can be downloaded for free from the Adobe Web Site.

PLOTTING DRAWINGS TO PDF FORMAT

In order to plot a PDF from ADT you will need to have already set up a layout with the appropriate page set up. This is identical to the methodology outlined in the CAD Standards.

In the 2007 version of Autocad you now have a default pc3 file for PDF plotting named DWG to PDF.
As an alternative to the default ADT PDF writer you can place a copy of the Adobe PDF.pc3, which is included with this document, into the plotters directory of the version of AutoCAD you are using.

If you are using Autocad 2007 the default location of the PC3 files will be:

C:\ Documents and Settings \ username \ Application Data \ Autodesk \ Autodesk Product 2007 \ R17\ enu \ Plotters \

Creating a .pdf from within AutoCAD is virtually identical to plotting directly to a printer or large format plotter. A digital file known as a .pdf will replace the hard copy.

CREATING A SINGLE SHEET PDF

To add a PDF Page Setup follow the steps as outlined in **section 6.0** Plot Setup. The Page Setup for a PDF is “PDF specific printer and size”.

Once the Page Setup is loaded select “Plot…” from the File pull-down menu and verify the settings as shown in **Figure III-1**

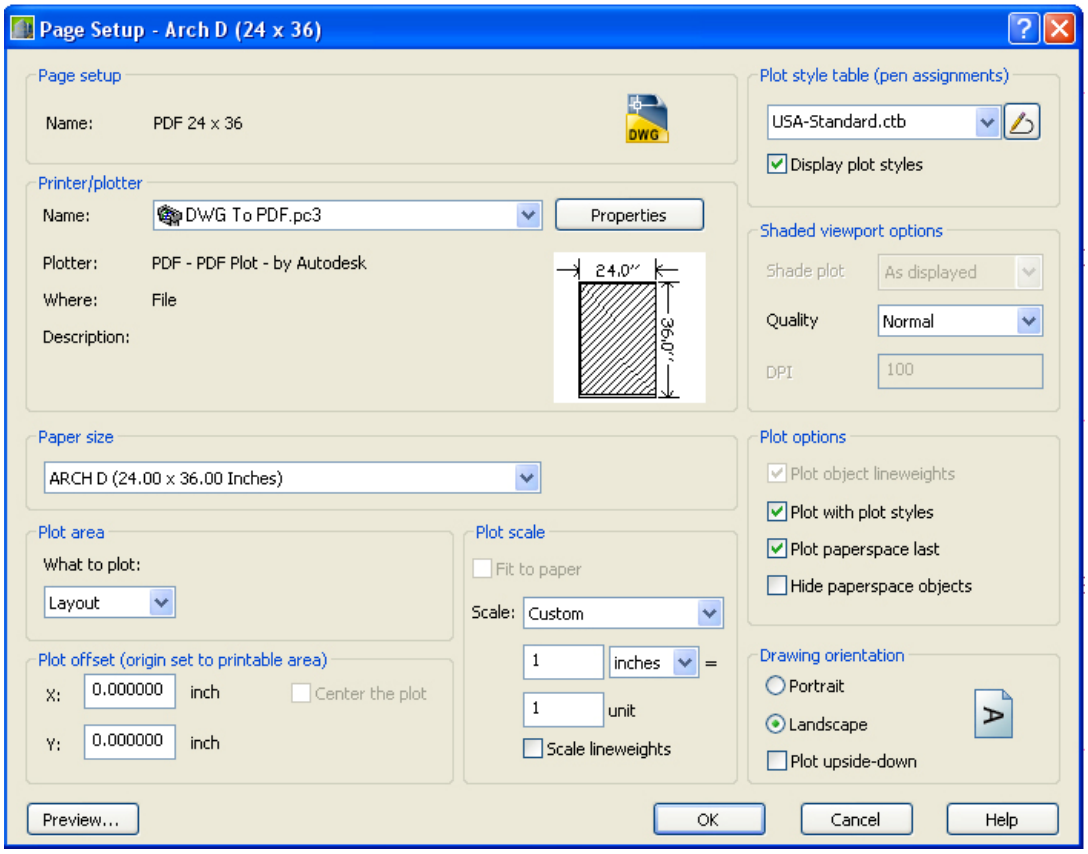


Figure III –1

APPENDIX IV

CREATING PAGE SETUPS AND PLOTTER CONFIGURATIONS

SAMPLE PLOTTER (Full-Size 30” x 42” DCAM STANDARD)

While in a new session of AutoCAD, click on one of the layout tabs. If the Page Setup dialog is not automatically displayed, right click on the current Layout tab and select “Page Setup…” The “Page Setup…” dialog will appear as shown in **Figure IV- 1.**

Select ‘New…’ and enter a Page Setup name in the New Page Setup dialog then select Ok as shown in **Figure IV- 2.**

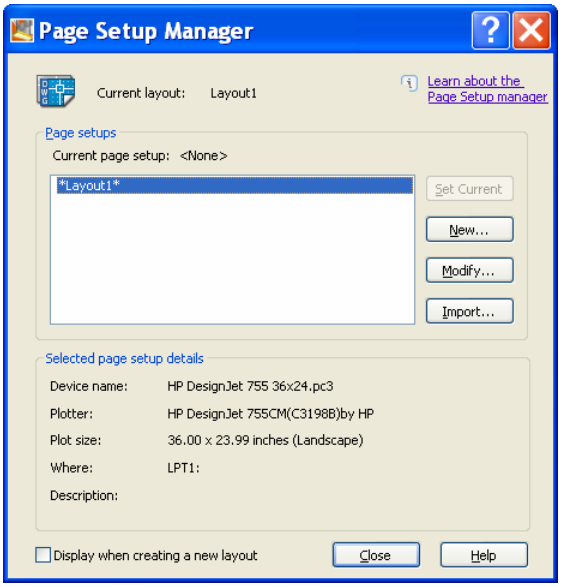


Figure IV -1

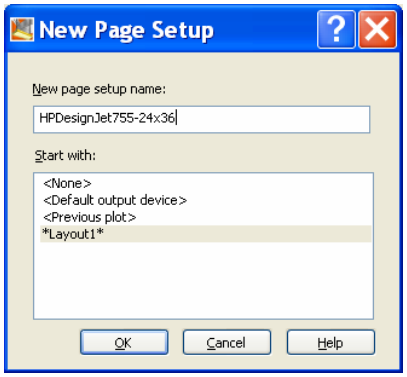


Figure IV- 2

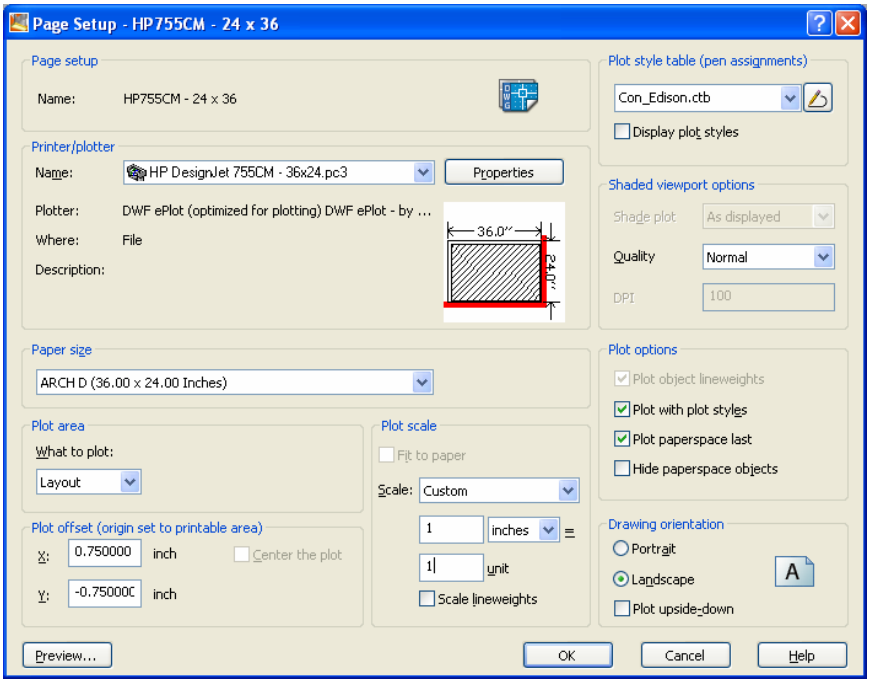


Figure IV - 3

When the Page Setup dialog is shown select the appropriate HP wide format plotter and select the “Properties…” button to invoke the Plotter Configuration Editor as shown in **Figure IV- 3.**

.

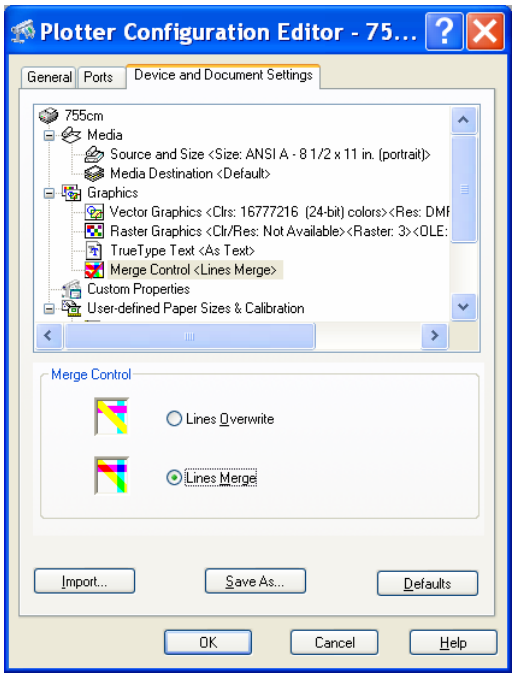


Figure IV -4

Select the Device and Document Settings tab and then select the plus symbol to the left of the ‘Graphics’ option. This will display the options, select the ‘Lines Merge’ option as shown **in Figure IV- 4.**

Once completed select ‘Custom Properties as shown in **Figure IV- 5.**

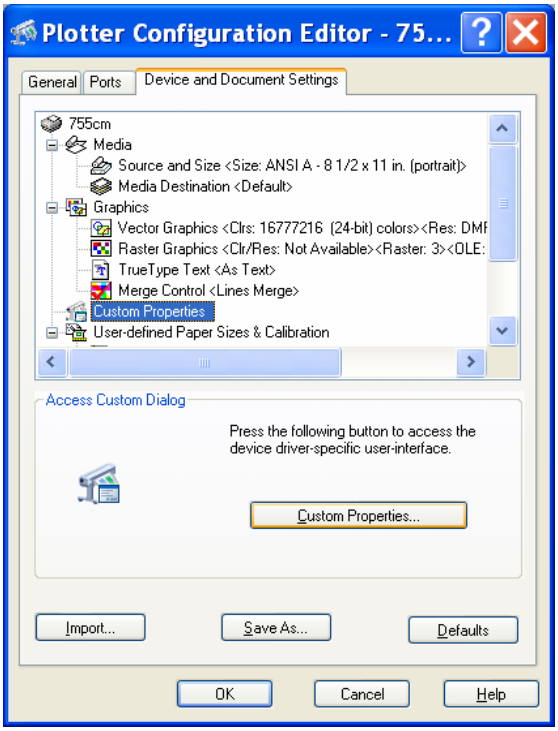


Figure IV-5

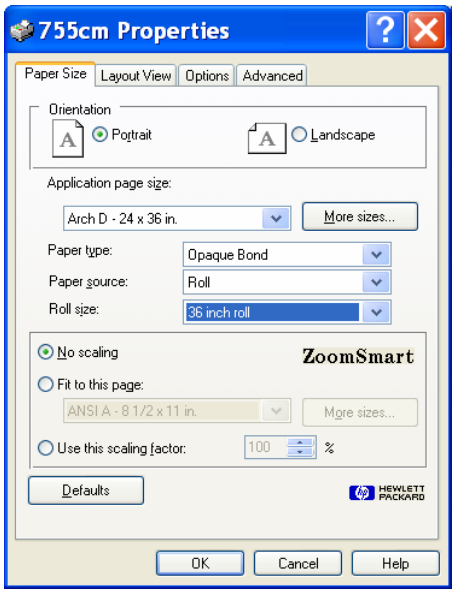
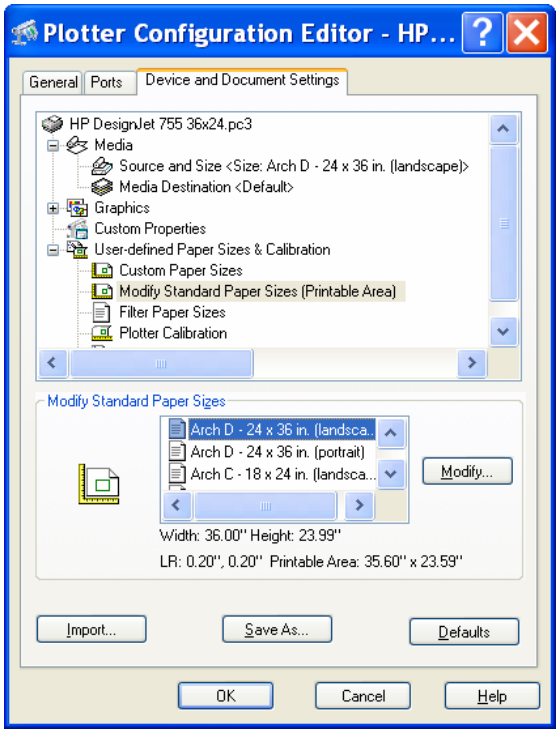


Figure IV-6

Select the ‘Custom Properties…’ button, which will invoke the dialog shown in **Figure IV- 6**. Select ‘30 x 42’ for the Application Page Size. Next, select ‘Roll’ for the Paper source and ’correspondent size number” for the Roll size. Finally, select ‘OK’ to return to the Plotter Configuration Editor dialog box.



Once returned to the Plotter Configuration Editor select "Modify Standard Paper Sizes" then select "30 x 42 (Landscape or Portrait) from the Modify Standards Page Sizes list followed by selecting "Modify…" as shown in **Figure IV- 7.**

In the Custom Paper Size – Printable Area dialog enter "0.25" for each value then select "Next >" as show in **Figure IV-8.**

Figure IV-7

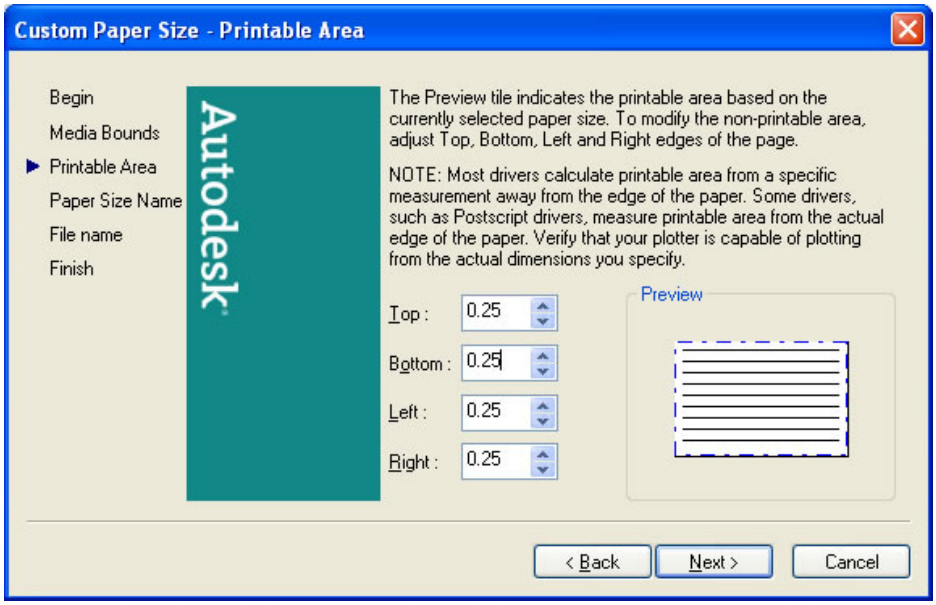


Figure IV-8

In the Custom Paper Size – Finish dialog select “Finish” to complete this section and return to the Plotter Configuration Editor as shown in **Figure IV-9**

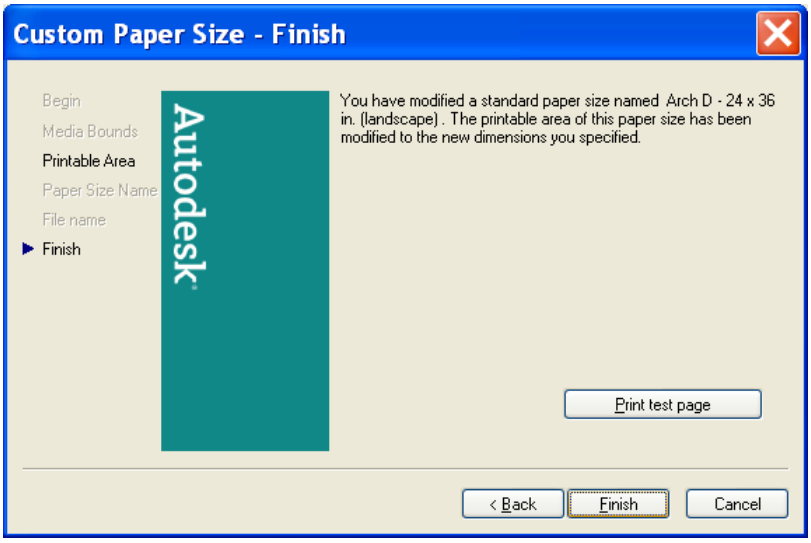


Figure IV-9

Select ‘OK’ in the Plotter Configuration Editor dialog as shown in **Figure IV- 10**

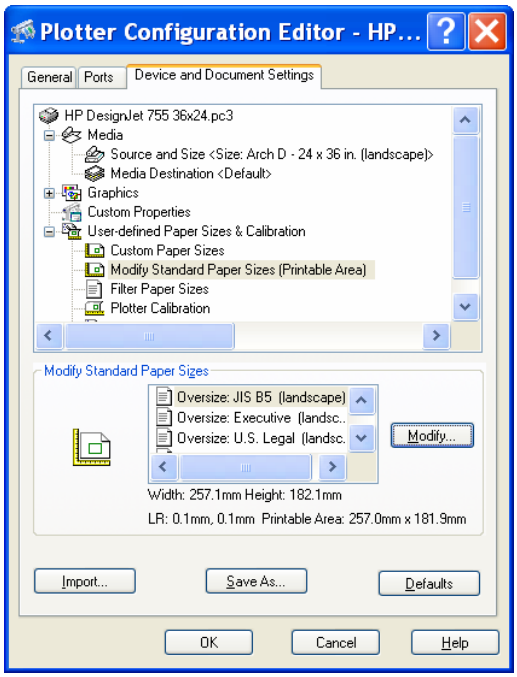


Figure IV-10

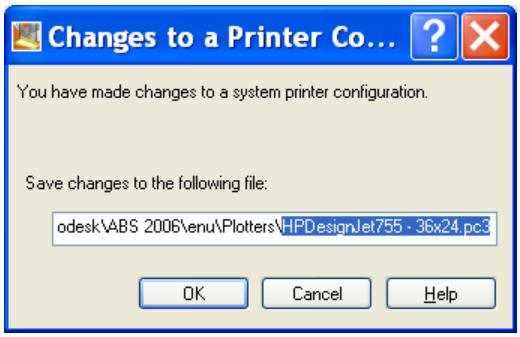


Figure IV-11

You will then be prompted to name the PC3 file in which you are creating. Enter a name, which includes the plotter name followed by the paper size to be used as shown in **Figure IV- 11.**

Once a name has been entered select 'OK', this will return you to the Page Setup dialog as shown

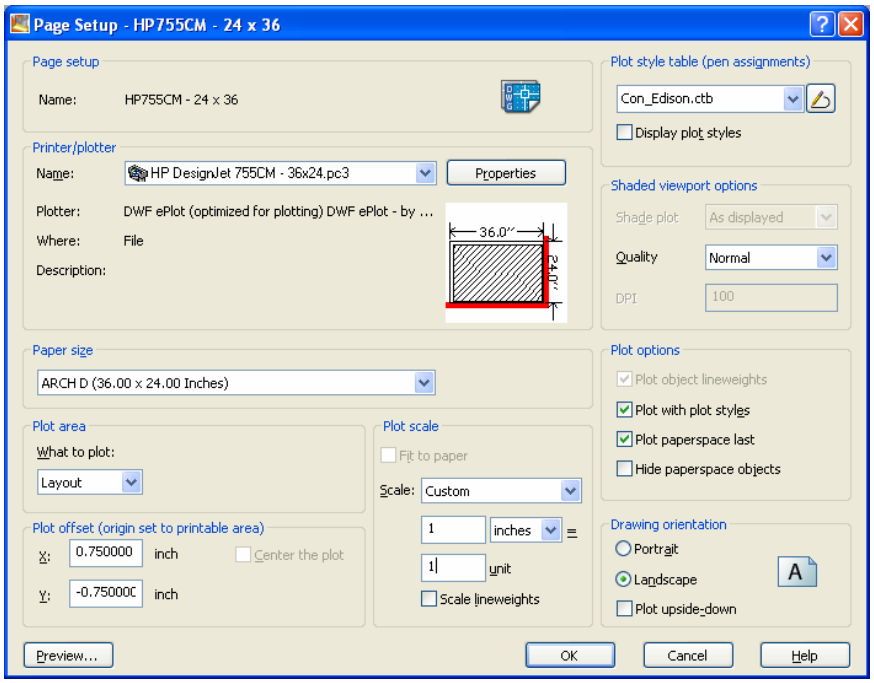


Figure IV-12

Once returned to the Page Setup dialog; ensure that the paper size selected is "30 x 42 in. (Landscape)". The Drawing Orientation should be set to landscape and the Plot Area should have 'Layout' as the selected value. The Plot scale should be set to 1:1 and the Plot Offset values will need to be changed. The X value should be set to 0.75 and the Y value set to –0.75. See **Figure IV- 12.**

Once the information is completed in the Page Setup dialog select Ok to return to the Page Setup Manager and then select Close.

SAMPLE PLOTTER (Half-Size 17” x 22”)

While in a new session of AutoCAD, click on one of the layout tabs. If the Page Setup dialog is not automatically displayed, right click on the current Layout tab and select “Page Setup…” The “Page Setup…” dialog will appear as shown in **Figure IV -13.**

Select ‘New…’ and enter a Page Setup name in the New Page Setup dialog followed by selecting Ok.

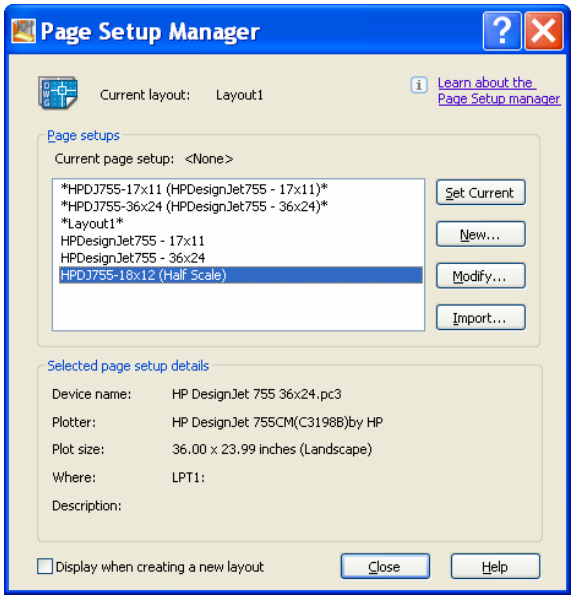


Figure IV-13

When the Page Setup dialog is shown select the HP 755 wide format plotter and select the “Properties…” button to invoke the Plotter Configuration Editor as shown in **Figure IV -14.**

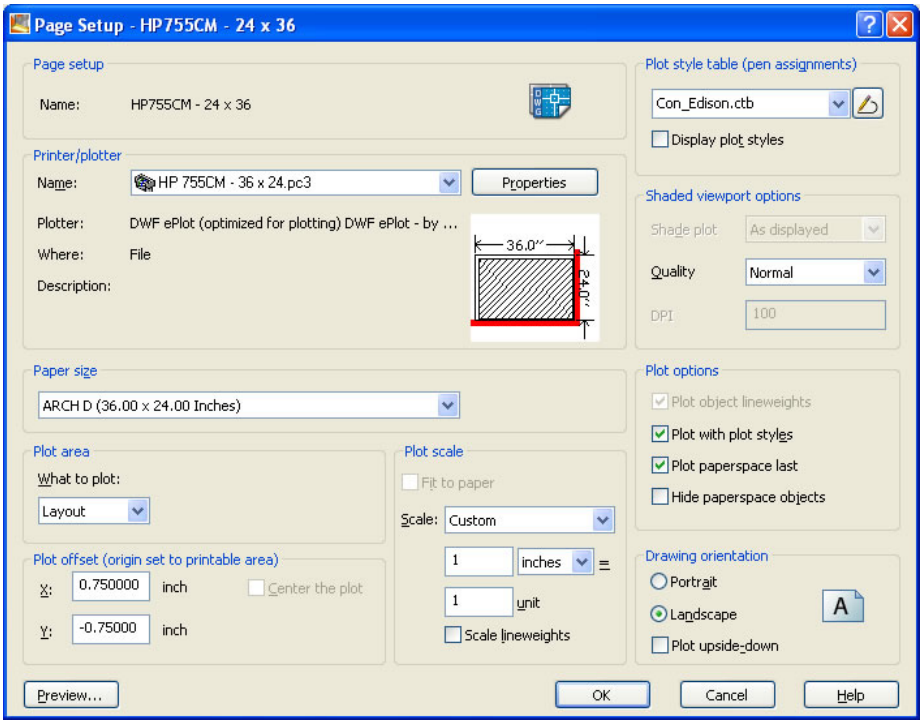


Figure IV-14

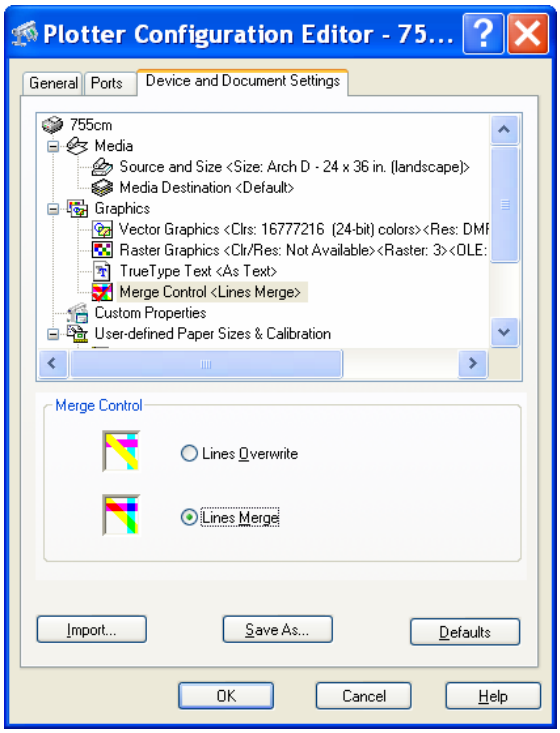


Figure IV-15

Select the Device and Document Settings tab and then select the plus symbol to the left of the 'Graphics' option. This will display the options, select the 'Lines Merge' option as shown in **Figure IV -15.**

Once completed select 'Custom Properties and then click the "Custom Properties…" button.

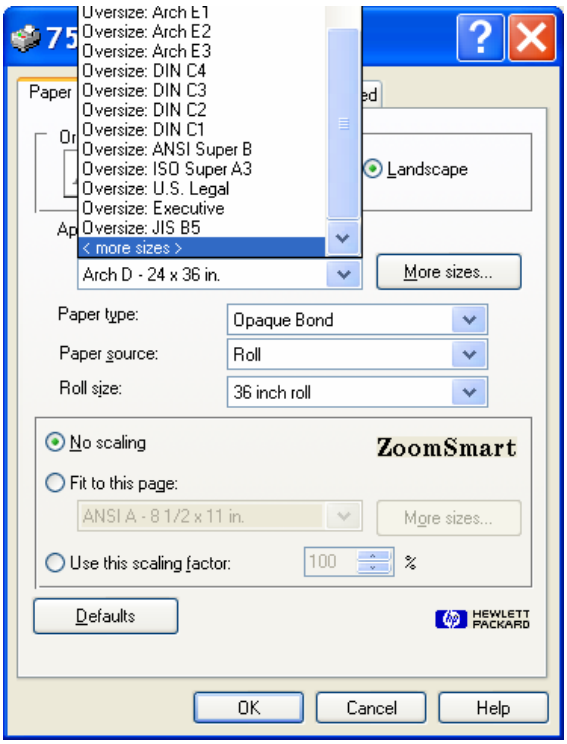


Figure IV-16

Select 'Roll' for the Paper source and '30 inch roll' for the Roll size. In the Application PAGE Size drop-down select "More Sizes as shown in **Figure IV-16.**

In the Paper Sizes dialog enter 17 and 22 for the width and height for a custom paper size as shown in **Figure IV- 17.**

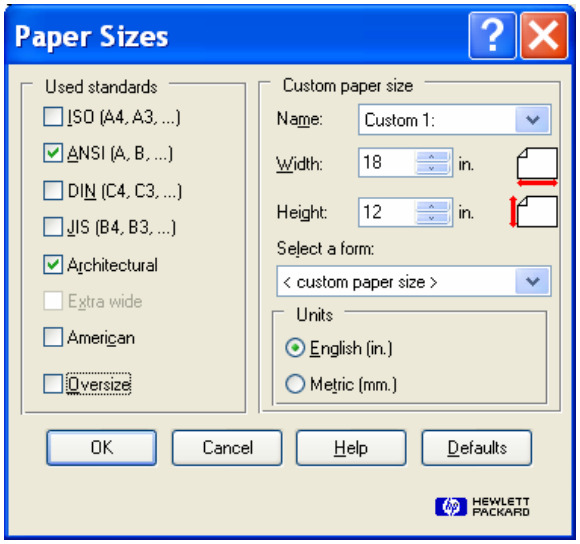


Figure IV-17

.

Once returned to the Plotter Configuration Editor select “Modify Standard Paper Sizes” select “Custom 1 – 17 x 22 (Landscape) and select “Modify…” as shown in **Figure IV - 18**

In the Custom Paper Size – Printable Area dialog enter “0.25” for each value then select “Next >” as shown in **Figure IV -19.**

.

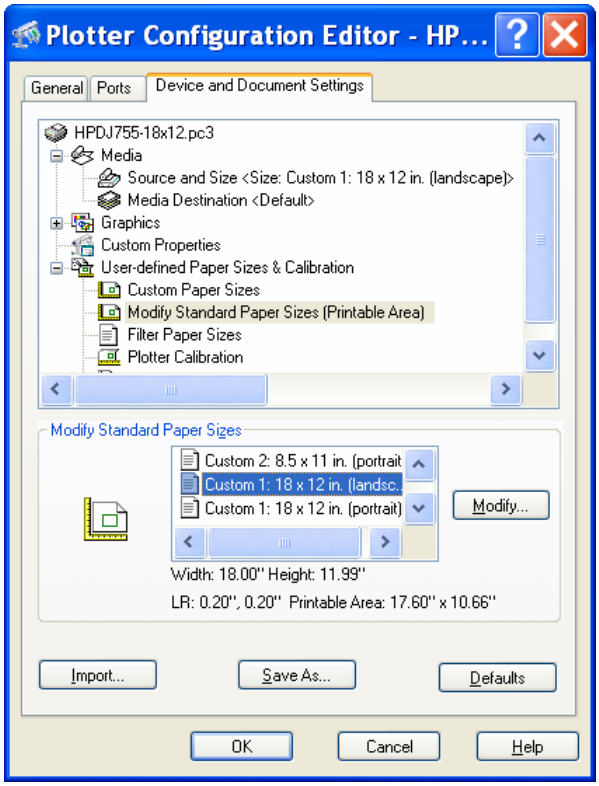


Figure IV-18

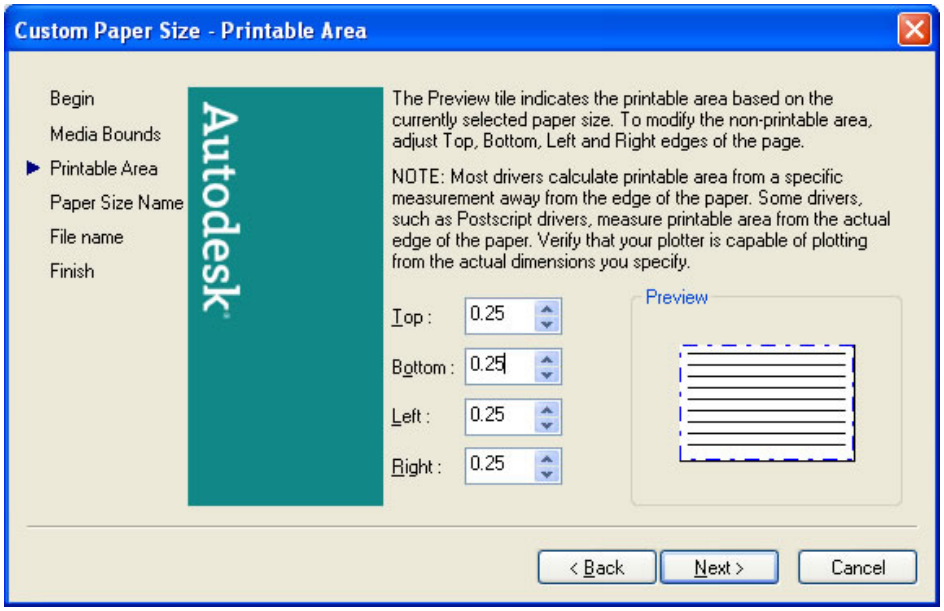


Figure IV-19

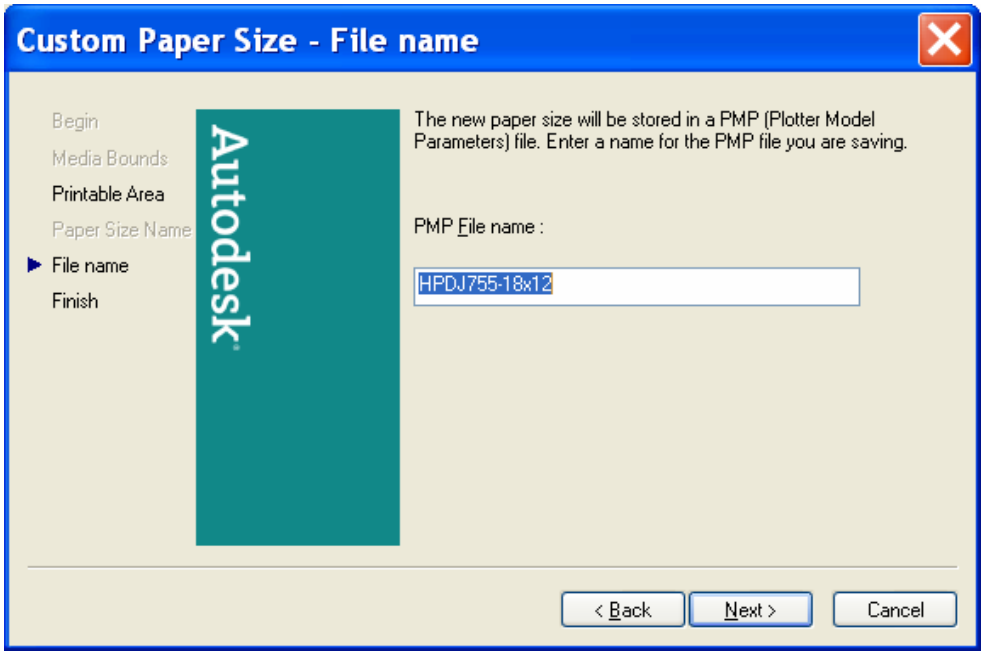


Figure IV-20

In the Custom Paper Size – Finish dialog (not shown) select "Finish".

In the Custom Paper Size – File Name dialog enter a name relative to the device and paper size as shown in **Figure IV -20.**

Select 'OK' in the Plotter Configuration Editor dialog as shown in **Figure IV - 21.**

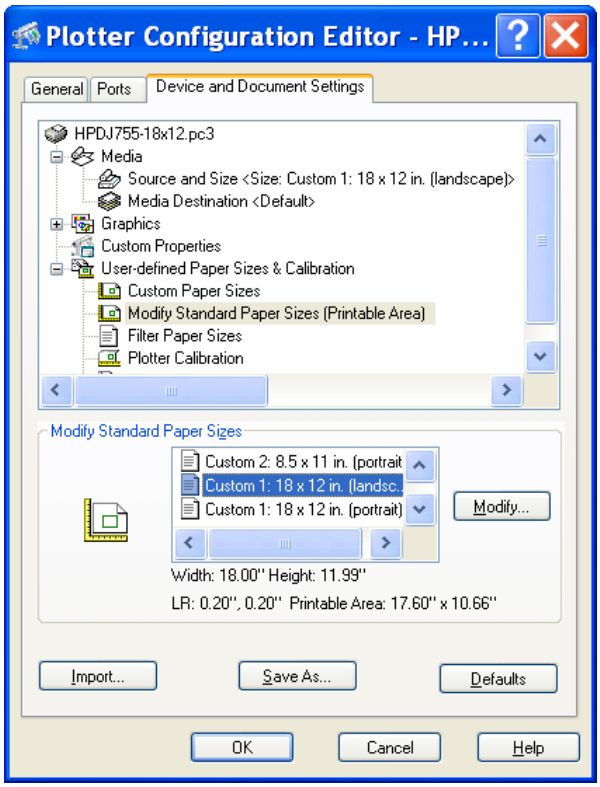
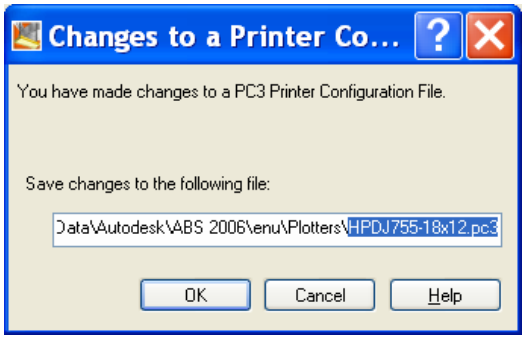


Figure IV-21



You will then be prompted to name the PC3 file in which you are creating. Enter a name, which includes the plotter name followed by the paper size to be used as shown in **Figure IV -22.**

Figure IV-22

Once returned to the Page Setup dialog; ensure that the paper size selected is “17 x 22 in. (Landscape)”. The Drawing Orientation should be set to landscape and the Plot Area should have ‘Layout’ as the selected value. The Plot scale should be set to 1:2 and the Plot Offset values will need to be changed. The X value should be set to 0.75 and the Y value set to –0.75. See **Figure IV -23.** Once the information is completed in the Page Setup dialog select Ok to return to the Page Setup Manager and then select Close.

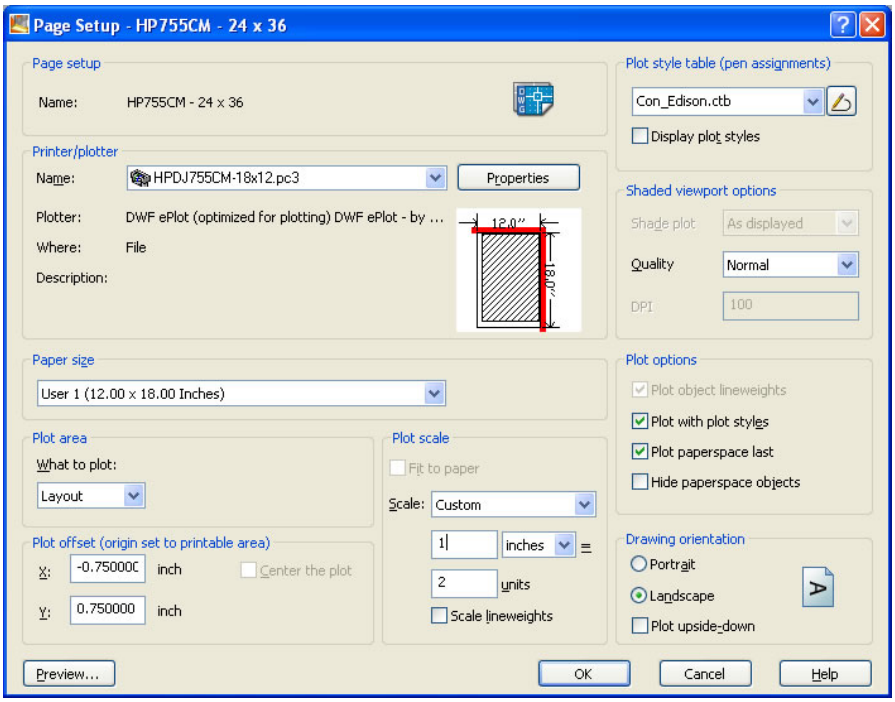


Figure IV-23

SAMPLE PRINTER (11”x17”)

While in a new session of AutoCAD, click on one of the layout tabs. If the Page Setup dialog is not automatically displayed, right click on the current Layout tab and select “Page Setup…” The “Page Setup…” dialog will appear as shown in **Figure IV -24.**

Select ‘New…’ and enter a Page Setup name in the New Page Setup dialog as shown in **Figure IV -24**.

When the Page Setup dialog is shown select the appropriate HP wide format plotter and select the “Properties…” button to invoke the Plotter Configuration Editor as shown in **Figure IV -25.**

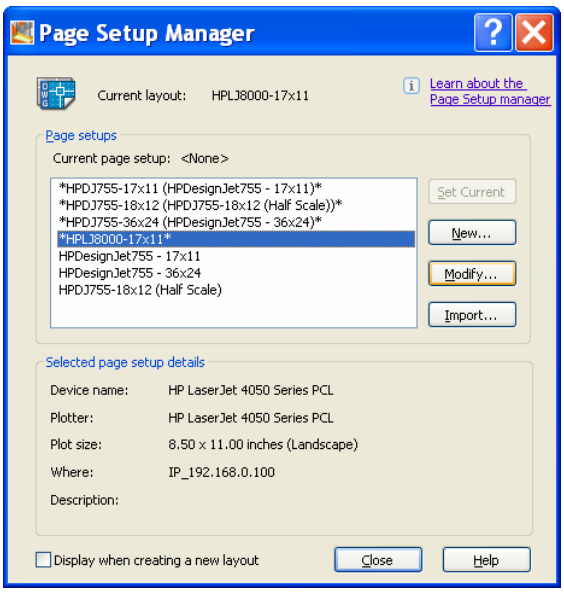


Figure IV-24

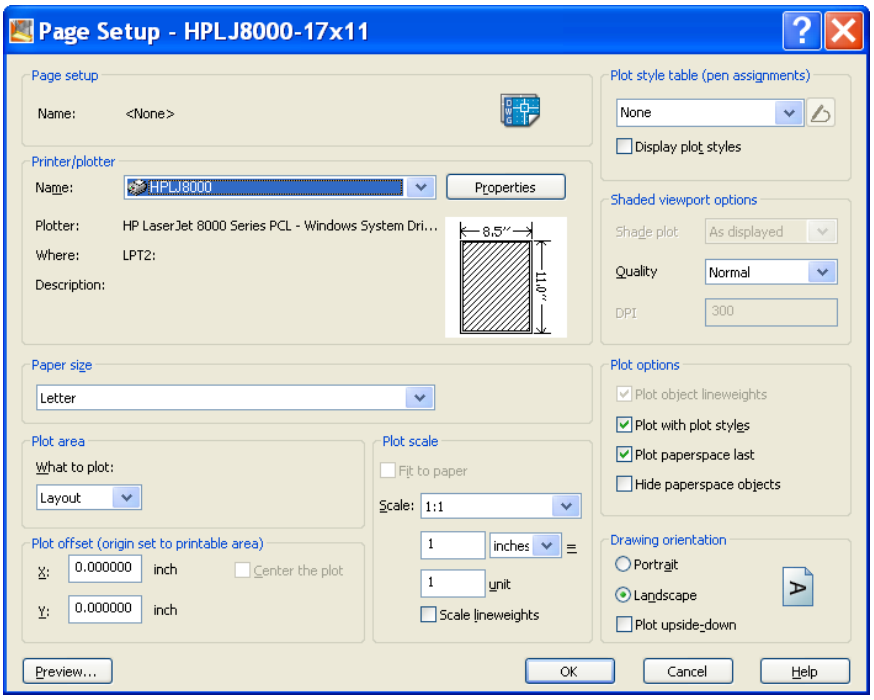
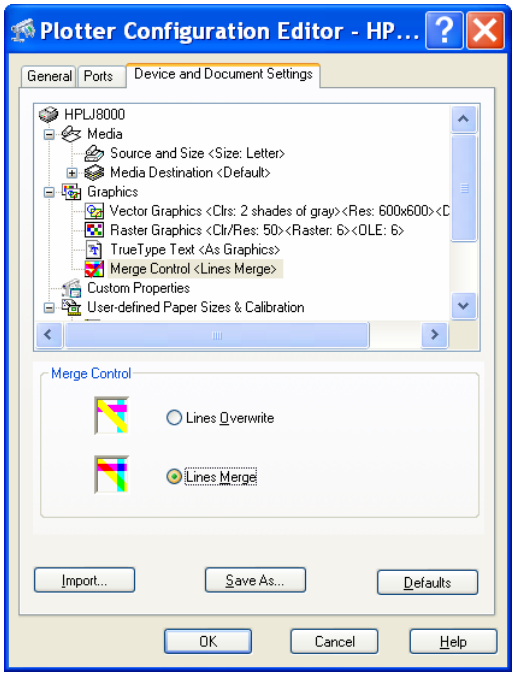
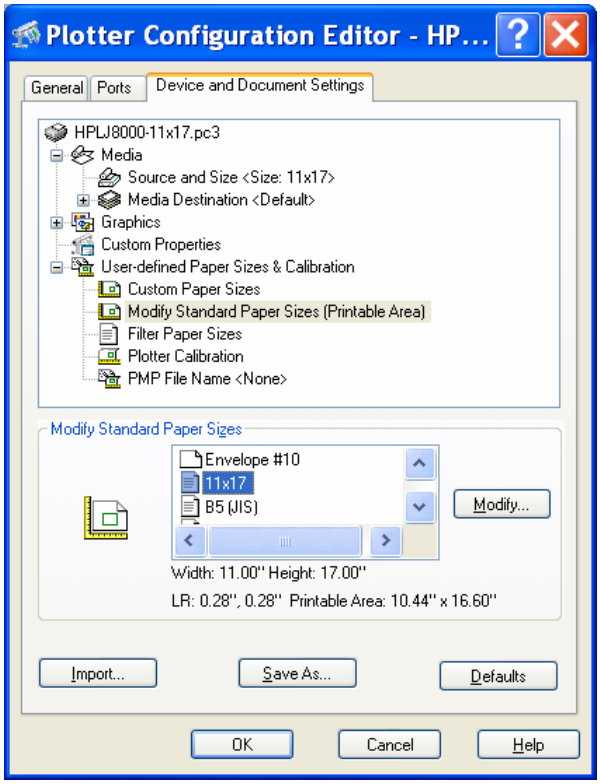


Figure IV-25



Select the Device and Document Settings tab and then select the plus symbol to the left of the 'Graphics' option. This will display the options, select the 'Lines Merge' option as shown in **Figure IV -26.**

Figure IV-26



Once returned to the Plotter Configuration Editor select "Modify Standard Paper Sizes" select "ANSI B – 11x17in (Landscape) and select "Modify…" as shown in **Figure IV - 27**

Figure IV-27

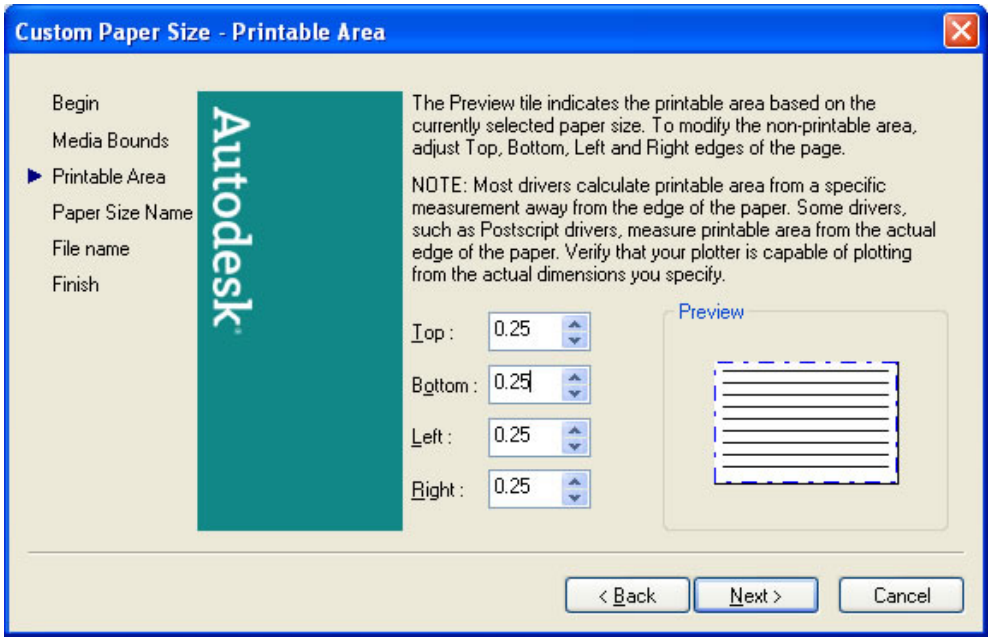


Figure IV-28

In the Custom Paper Size – Printable Area dialog enter “0.20” for each value then select “Next >” as shown in **Figure IV –28.**

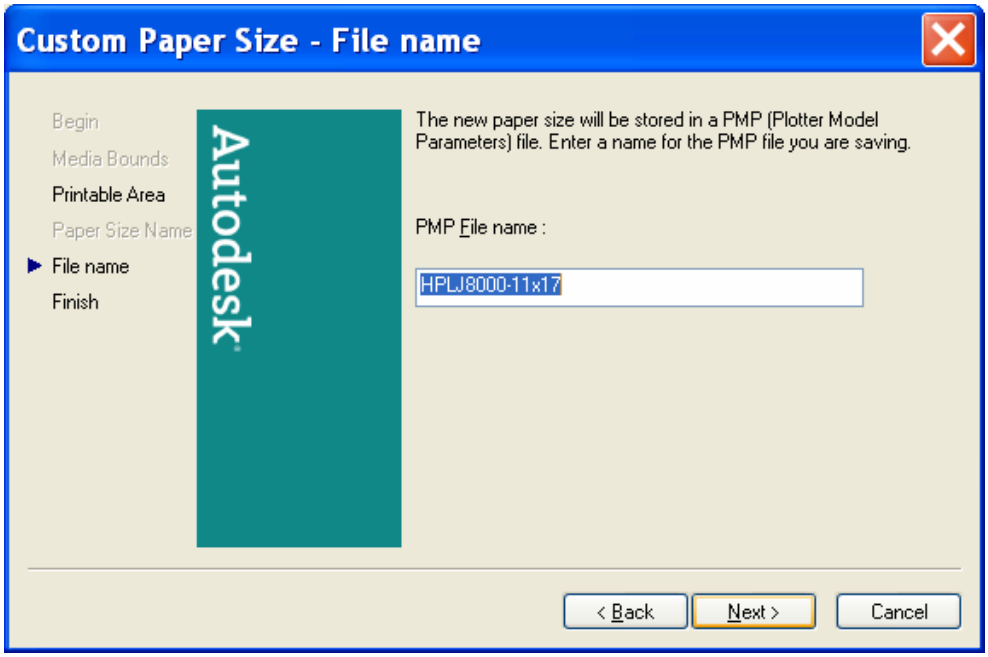


Figure IV-29

In the Custom Paper Size – File Name dialog enter a name including the device and paper size as illustrated in **Figure IV - 29.**

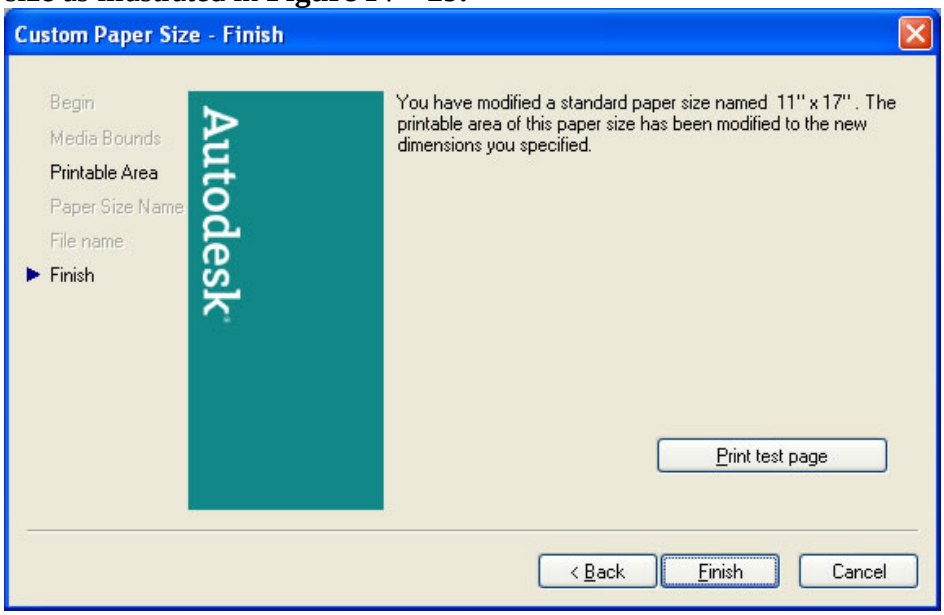
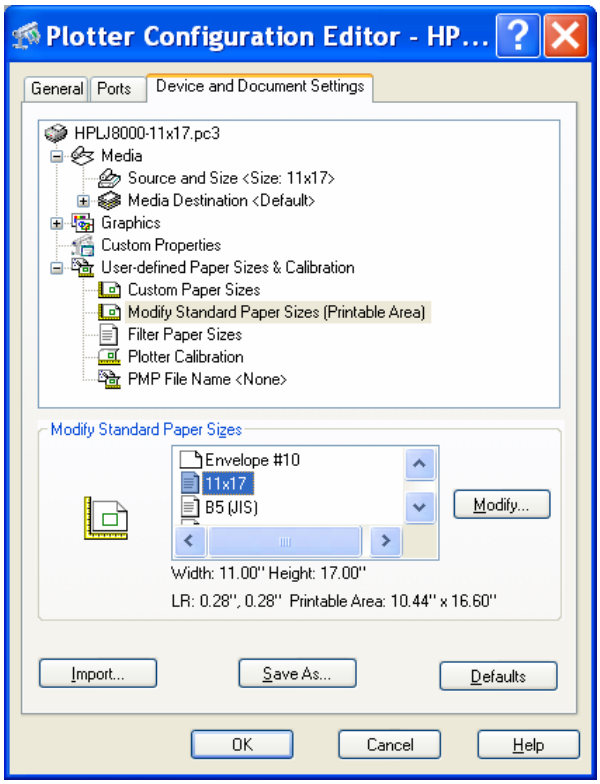


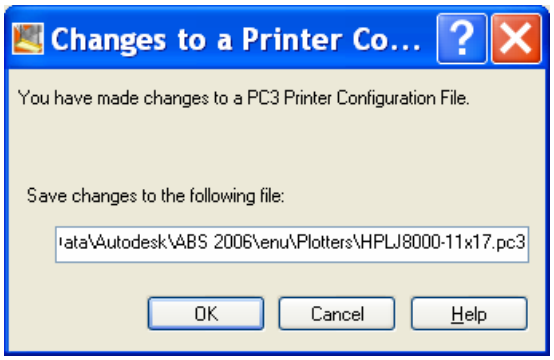
Figure IV-30

In the Custom Paper Size – Finish dialog box select finish to complete this section to return to the Plotter Configuration Editor. See **Figure IV -30.**



Next, select Ok to exit the Plotter Configuration Editor as shown in **Figure IV –31.**

Figure IV-31



You will then be prompted to name the PC3 file in which you are creating. Enter a name, which includes the plotter name followed by the paper size to be used as shown in **Figure IV- 32.**

Figure IV-32

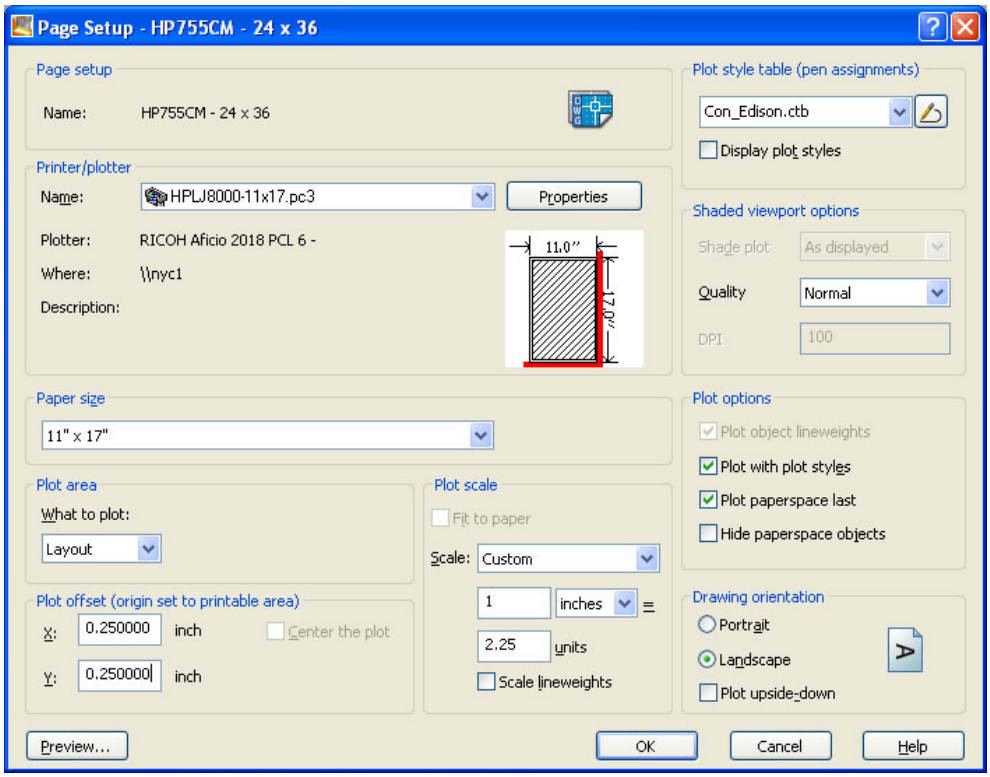


Figure IV-33

Once returned to the Page Setup dialog; ensure that the paper size selected is “ANSI B 11 x 17. (Landscape)”. The Drawing Orientation should be set to landscape and the Plot Area should have ‘Layout’ as the selected value. The Plot scale should be set to 1:2.25 and the Plot Offset values will need to be changed. The X value should be set to 0.25 and the Y value set to 0.25. See **Figure IV -33.**

APPENDIX V

REQUEST TO CHANGE STANDARDS

REQUEST TO CHANGE STANDARD

Disclaimer

By making this submission you, the submitter, agrees that no contractual confidential relationship is established between you and the issuer of this Standard. If your material is incorporated into this Standard, you will not be compensated. In addition, if the material which you have submitted on this form is protected by any copyright, patent, trademark, or other proprietary right, then you are granting the issuer of this Standard a non-exclusive, royalty-free, perpetual and fully transferable license to use the materials in connection with this Standard.

Submitter Information

Name:
Date:
Company:
Address:
City, State, Zip:
Phone:

Software Information

CAD Standard Revision Issue Date:

Change Category

- Submittal Media or Format
- Documentation Correction
- Add/Revise Layer
- Add/Revise Linetype
- Add/Revise Symbol
- Other (Specify:)

Change Description

Please be specific about any change or enhancements you would like to request. In addition, please include why you are requesting the change:

APPENDIX VI

CAD DRAWING REQUIREMENTS

SUBMISSION REQUIREMENTS

DRAWING REQUIREMENTS (SCHEMATIC DESIGN PHASE)

Requirements (Extracted from The Designers Procedures Manual (which replaces Form 9) effective june 2005

1.1.1 General:

1. All drawings shall be ¼" scale unless approved by DCAM.
2. Drawings shall be submitted on a standard DCAM 30" x 42" sheet with a standard DCAM title block. Please refer to the Appendix.
3. A small-scale, legible key plan adjacent to the title box on all drawings showing section, detail or partial plan locations, when the floor plan to which the sections, detail or partial plans apply, shall be included on another sheet. The key plan shall indicate the drawing number of the sheet where the section was taken.
4. Legends of materials, symbols, and abbreviations for each classification of drawings shall be included.
5. The date on which the drawings were submitted to DCAM shall be inserted in the title box of all schematic design drawings.
6. General Dimensions and Notes shall be indicated.

The Schematic Design Phase submission for new construction, renovation, or demolition projects shall include the following:

1. **Design Premise:** Premise upon which the design scheme is based, including sketches which illustrate indoor and outdoor program functional relationships.
2. **Site plans:** Site plans of project addressing impact of handicapped access, zoning, utilities, environment, parking, and other related program criteria.
3. **Floor plans–Spaces:** Floor plans of all levels identifying all program spaces.
4. **Floor Plans–Levels:** Floor plans of all levels indicating the building's general mechanical, electrical, plumbing, and structural systems.
5. **Floor Plans–Demolition and/or Current Conditions:** Demolition and existing conditions floor plans for all trades.
6. **Floor Plans–Site Relationship:** The Designer must submit four elevations from the main orientation points of view indicating the relationship to site configurations.
7. **Floor Plans–Program Spaces and Site Configurations:** Two cross-sections with floor heights, including basement spaces identifying program spaces and relationship to site configurations.

8. **Models–Designer's Studies:** A three dimensional representation, axonometric, perspective drawing or an aerial photographic view of the Designer's Study model to convey the general massing of the project; a computer generated model in context is preferable.

9. **Floor Plans–Scales:** The plan, section, and elevation drawings shall be 1/4" = 1'0". If the building is large or irregular in shape and will not adapt to the use of match lines, 1/8" = 1'0" scale may be approved for submission.
10. **Title Sheet:** The Title Sheet shall contain all information as indicated. (Please refer to the Appendix.)
11. **Graphic Scale, Key Plan and North Arrow:** A graphic scale, key plan and north arrow shall appear on all drawings.

1.1.2 DCAM Standard Specifications

The Designer shall utilize the DCAM Standard Specification provided at the contract signing. The following provides an overview of the specification requirements:

1. **Basis of Design:** Specifications shall consist of a general description of the project and shall include a Basis of Design to satisfy the needs of the program. This shall include all the design parameters that affect the design of the building systems. For example: the hours of occupancy; the design and temperature for heating and cooling; the floor loading; the number of occupants; and the foot-candle design in various spaces.
2. **Detailed Specifications:** The Specifications shall be as comprehensive and complete as the Schematic Documents permit. They shall address all relevant components/sections of the work and, where required by the scope of the project, include equipment, capacities, and descriptions of structural, mechanical, and electrical and other special systems that impact the project.
3. **Section Numbers and Titles:** The Section numbers and titles established at the Schematic Phase shall be the same as the Section numbers and titles for the Design Development and Construction Document Phases.
4. **Specification Index:** Provide an edited index of the standard specification.

DRAWING REQUIREMENTS (DESIGN DEVELOPMENT PHASE)

1. All drawings shall be ¼” scale unless approved by DCAM.
2. Provide a graphic scale and north arrow.
3. Submit all drawings on a standard DCAM 30” x 42” sheet with a standard DCAM title block and provide a standard Title Sheet.
4. A small-scale, legible key plan adjacent to the title box on all drawings showing section, detail or partial plan locations, when the floor plan to which the sections, detail or partial plans apply are on another sheet. The key plan shall indicate the drawing number of the sheet where the section was taken.
5. Show legends of materials, symbols, and abbreviations for each classification of drawings.
6. Insert, in the title box of all Design Development drawings, the date on which the drawings were submitted to DCAM.
7. Indicate general dimensions and notes.
8. A Title Sheet, with the list of drawings and consultant names.
9. All legends, symbols, abbreviations, and general notes.
10. Building code analysis and ADA/MAAB analysis on the Title Sheet or second sheet.
11. An egress path of travel analysis and egress capacity analysis (graphic).
12. Height and area limitation analysis.
13. Fire separation analysis.
14. Toilet count analysis.

1.1.3 Site Plans:

15. All legends, symbols, and general notes.
16. Existing conditions site plan with borings.
17. Demolition plan.
18. Site plan.
19. Layout and grading plan.
20. Drainage and sewer plan.
21. Utility plan.

1.1.4 Landscape:

22. All legends, symbols, and general notes.
23. The landscape plan.

1.1.5 Architectural:

24. All legends, symbols, and general notes.
25. Demolition plans.
26. Phasing plans.
27. Plans of all floors and the roof.
28. Reflective ceiling plans of all floors.
29. Enlarged plans of toilet rooms.
30. Enlarged plans of stairs.
31. Elevator plans.
32. Enlarged plans of specialty rooms (e.g., labs, typical classroom, control room, media room, etc.).
33. Elevations of all exterior building faces.
34. A minimum of two full building sections.
35. Wall sections.
36. Roof details.
37. Stair sections.
38. Door, window and frame details and schedules; finish schedules.

1.1.6 Structural:

39. Structural legends, symbols, and general notes.
40. Structural plans and details.
41. Structural sections.
42. Column schedule.

1.1.7 Fire Protection:

43. Fire protection legends, symbols and general notes.
44. Demolition plan/existing conditions.
45. Fire protection plans.

1.1.8 Plumbing:

46. Plumbing legends, symbols, and general notes.
47. Demolition plan/existing conditions.
48. Plumbing floor plans.
49. Plumbing roof plan.
50. Plumbing schedules.
51. Plumbing risers.

1.1.9 HVAC:

52. HVAC legends, symbols and general notes.
53. Demolition plan/existing conditions.
54. HVAC floor plans.
55. HVAC roof plan.
56. HVAC mechanical room enlarged plan.
57. HVAC piping plans.
58. HVAC sections.
59. HVAC controls.
60. HVAC schedules.

1.1.10 Electrical:

61. Electrical legends, symbols, and general notes.
62. Demolition plan/existing conditions.
63. Electrical site plan.
64. Electrical lighting floor plans.
65. Electrical power floor plans (indicate telecommunications and fire alarm).
66. Electrical roof plan (indicate lightning protection).
67. Electrical risers.
68. Electrical schedules.

DRAWING REQUIREMENTS (CONSTRUCTION DOCUMENT PHASE)

Submission requirements:

1.1.11 General:

All drawings shall be ¼” scale unless approved by DCAM.

Provide a graphic scale and north arrow.

Submit all drawings on a standard DCAM 30” x 42” sheet with a standard DCAM title block.

When referring to sections on sheets separate from but applying to a floor plan, provide a small-scale, legible key plan adjacent to the title box of the floor plan showing those section locations; the key plan shall indicate the drawing number of the sheet from which the section was taken.

Show legends of materials, symbols, and abbreviations for each classification of drawings.

In the title box of each construction drawing, insert the date DCAM approved the drawing as indicated by the approval date on the title sheet.

1.1.12 Drawings

The Construction Document Phase submission for new construction, renovation, or demolition projects shall include the following:

A title sheet with all consultant stamps.

All legends, symbols, and general notes.

Prior to submitting the Construction Documents to DCAM, the following steps shall be completed, as applicable:

1.1.12.1 For State Projects:

- Two sets of drawings and specifications shall be stamped "Approved" and signed by the appropriate State Building Inspector from the DPS
- The Plumbing drawings and specifications shall be signed and stamped "Approved" by the Board of State Examiners of Plumbers and Gas Regulations Board. The local Fire Chief shall approve, stamp, and sign the Fire Protection, HVAC, and Electrical construction documents. The local Electrical Inspector shall approve, stamp and sign Electrical construction documents.

1.1.12.2 For County Projects

Two sets of the construction documents shall be approved and signed by the local building official, the Local Plumbing Inspector, the Local Electrical Inspector, and the local Fire Chief in the same manner as indicated above.

- All other approvals of State or Federal agencies having jurisdiction shall also be obtained
- The sets containing the original approvals will be retained by DCAM as the official approved sets
- All documents revised after being stamped shall be replaced and the procedure shall be repeated as described above

1.1.12.3 Building Code Analysis/ADA/MAAB Analyses:

- A graphic egress path of travel analysis and egress capacity analysis
- A height and area limitation analysis
- A fire separation analysis
- Toilet count analysis

ADA/MAAB path of travel and access considerations

1.1.12.4 Site Plans:

- Legends, symbols, and general notes
- An existing conditions site plan with borings
- A demolition plan
- A site plan
- A layout and grading plan
- A drainage and sewer plan
- A utility plan
- A utility profile
- Site details

1.1.12.5 Landscape:

- Legends, symbols, general notes
- A landscape plan
- Landscape details

1.1.12.6 Architectural:

- Legends, symbols, general notes
- Demolition plans
- Phasing plans
- Plans of all floors and roof
- Reflective ceiling plans of all floors
- Enlarged plans of toilet rooms
- Enlarged plans of stairs
- Elevator plans and details
- Enlarged plans of specialty rooms (e.g., labs, typical classroom, control room, media room, etc.)
- Elevations of all building faces
- A minimum of two building sections
- Wall sections
- Roof details
- Plan and vertical details
- Stair sections
- Door, window and frame details and schedules, finish schedules
- Interior elevations of all toilet rooms, specialty rooms and typical spaces (e.g., classrooms, cells, etc.)
- Interior finish details
- Casework details

1.1.12.7 Structural:

- Structural legends, symbols and general notes
- Structural plans and details
- Structural sections
- Column schedule

1.1.12.8 Fire Protection:

- Fire protection legends, symbols and general notes
- Demolition plan/existing conditions
- Fire protection plans
- Fire protection details

1.1.12.9 Plumbing:

- Plumbing legends, symbols and general notes
- Demolition plan/existing conditions
- Plumbing floor plans
- Plumbing roof plan
- Plumbing schedules
- Plumbing details
- Plumbing risers

1.1.12.10 HVAC:

- HVAC legends, symbols and general notes
- Demolition plan/existing conditions
- HVAC floor plans
- HVAC roof plan
- HVAC mechanical room enlarged plan
- HVAC piping plans
- HVAC sections
- HVAC details
- HVAC controls
- HVAC schedules

1.1.12.11 Electrical

- Electrical legends, symbols, and general notes
- Demolition plan/existing conditions
- Electrical site plan
- Electrical lighting floor plans
- Electrical power floor plans (indicate telecommunications and fire alarm)
- Electrical roof plan (indicate lightning protection)
- Electrical details
- Electrical risers
- Electrical schedules