



FAA-STD-002e
September 21, 1999

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
STANDARD
ENGINEERING
DRAWING PREPARATION & SUPPORT

FOREWORD

This standard was updated by the National CAEG Program Office (ANS-110) and has adopted the nationally accepted drawing practices of the American National Standards Institute (ANSI), the American Institute of Architects (AIA) and the Military to the extent specified herein. It will assist in developing a more efficient and effective means for management and technical data control of drawings prepared by and for the Federal Aviation Administration (FAA) National Airspace System (NAS) Program. This standard provides:

- a. Drawing practices for the preparation of architectural and engineering drawings and drawing format material.
- b. Definitions and examples of the types of facility drawings to be prepared by and for the Federal Aviation Administration.
- c. Procedures for the creation of titles for drawings.
- d. Numbering, coding and identification procedures for standard drawings, associated lists, and documents referenced on these drawings and associated lists.
- e. Practices applicable to Computer Aided Design and Drafting (CADD).

Changes from the previous version of this standard focus on:

- a. Current technological trends that are gaining widespread acceptance in government and industry.
- b. Greater use of electronic deliverables and delivery media.
- c. Synchronization with standard industry practices.
- d. Greater FAA-wide standardization to take full advantage of technological opportunities.
- e. Migration toward a less expensive, PC-based environment.

This standard does not provide preparation requirements for NAS mission equipment. Additionally, the U. S. National CAD Standard was deemed too new to adopt as presented, therefore this revision of FAA-STD-002 represents a transitional step towards eventual adaptation of that national CAD standard.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL		
<u>INSTRUCTIONS</u>		
<p>1. The preparing activity must complete blocks 1,2,3, and 8. In block 1, both the document number and the revision letter should be given.</p> <p>2. The sublimiter of this form must complete blocks 4,5,6, and 7.</p> <p>3. The preparing activity must provide a reply within 30 days from receipt of the form.</p> <p>NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.</p>		
I RECOMMEND A CHANGE	1. DOCUMENT NUMBER STD-002E	2. DOCUMENT DATE (YYMMDD)
2. DOCUMENT TITLE		
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
a. NAME (<i>Last, First, Middle Initial</i>)	b. ORGANIZATION	
c. ADDRESS (<i>Include Zip Code</i>)	d. TELEPHONE (<i>Include Area Code</i>) (1) Commercial (2) AUTOVON (<i>If applicable</i>)	7. DATE SUBMITTED (YYMMDD)
8. PREPARING ACTIVITY		
a. NAME Steven Kalabokes	b. TELEPHONE (<i>Include Area Code</i>) (1) Commercial 202.267.7411 (2) AUTOVON	
c. Address (<i>Include Zip Code</i>) AWA Headquarters 800 Independence Avenue, SW Washington, DC 20591-0004	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:	

DD Form 1426, Oct 89

Previous editions are obsolete

198-290

1. SCOPE.

1.1 Standards.

This standard prescribes general requirements for the preparation and revision of architectural and engineering drawings and associated lists that are prepared for facilities by and for the Federal Aviation Administration (FAA), using the two FAA-accepted CADD software suites, Autodesk AutoCAD and Bentley MicroStation.

1.2 Classification.

This standard shall apply, but not be limited, to the following drawing types regardless of source:

- a) Construction drawings for new and existing facilities.
- b) Installation drawings for electronic equipment.

2. APPLICABLE DOCUMENTS.

2.1 Government Documents.

Standards

Military

MIL-STD-12	Abbreviations for Use on Drawings, and in Specifications, Standards and Technical Documents
MIL-STD-14	Architectural Symbols
A/E/C CADD Tri-Service Standards	Tri-Service CADD/GIS Standards

Other Publications

NAS-SS-1000	Vol. 6 Facility Requirements for the National Airspace System
FAA 7350.6	Location Identifiers
FAA FSEP	Facilities, Services and Equipment Profile

Orders

DOT Order 1360.6	Graphic Standards
FAA Order 1000.15	Glossary
FAA Order 7340.1	Contractions

2.2 Commercial Documents.

Standards

ANSI/AWS A2.4	Symbols for Welding & Nondestructive Testing
ANSI/AWS A3.0	Welding Terms and Definitions
ANSI B1.1	Unified Screw Threads
ANSI/IEEE 2.16	Reference Designations for Electrical and Electronics Parts and Equipment
ANSI/IEEE 91	Graphic Symbols for Logic Functions
ANSI Y1.1	Abbreviations for use on Drawings and Text
ANSI Y14.1	Drawing Sheet Size and Format
ANSI Y14.2	Line Conventions and Lettering
ANSI Y14.5	Dimensioning and Tolerancing
ANSI Y14.6	Screw Thread Representation
ANSI Y14.7.1	Gear Drawing Standards - Part 1 for Spur, Helical, Double Helical and Rack
ANSI Y14.7.2	Gear and Spline Drawing Standards Part 2 - Bevel and Hypoid Gears
ANSI Y14.13	Mechanical Spring Representation
ANSI Y14.15	Electrical and Electronics Diagrams
ANSI Y14.15	Interconnection Diagrams
ANSI Y14.17	Fluid Power Diagrams
ANSI Y14.26.3	Dictionary of Terms for Computer-Aided Preparation of Product Definition Data
ANSI Y32.2	Graphic Symbols for Electrical and Electronic Diagrams
ANSI Y32.4	Graphic Symbols for Plumbing Fixture for Diagram used in Architecture & Building Construction
ANSI Y 32.9	Graphic Symbols for Electrical Wiring and Layout Diagrams Used in Architecture and Building Construction
AIA	CAD Layer Guidelines

2.3 Order of Precedence.

In the event of conflict between the documents referenced in Sections 2.1 and 2.2 and the contents of this standard, the contents of this standard shall be considered the superseding requirement.

3. DRAWING REQUIREMENTS.**3.1 Drawing Production.****3.1.1 Drawing File Format.**

1. Electronic drawings shall be created and maintained in native AutoCAD or MicroStation vector file formats (DWG or DGN). Translations between vector file formats (DWG and DGN) should be avoided. Tagged Image File Format (TIFF) Group 4 is the FAA's standard raster file format. Use of Drawing Exchange Format (DXF) should be avoided. CADD entities to avoid: Doughnuts, Segments, Solids and Traces, Polylines, Point entities, custom fonts, patterns or line types or styles, special characters such as %%d, %%p, %%c, or %%%, Nested blocks, Nested Xrefs or reference files, or Infinite Lines.

3.1.2 Creation of CADD Files.

All CADD drawing files should be created at full-scale (1-to-1). Drawing borders and text heights should be scaled to fit the full-scale drawing model. Refer to Table 3-1, Scale Factor and Text Height Conversion Chart for standard engineering, architectural and mapping scale factors and text heights to be used with full size drawings.

Plotted Scale	Scale Factor	Plotted Text Height			
		1/10"	1/8"	3/16"	1/4"
1/8"=1'-0"	96	9.6"	12"	18"	24"
3/16"=1'-0"	64	6.4"	8"	12"	16"
1/4"=1'-0"	48	4.8"	6"	9"	12"
3/8"=1'-0"	32	3.2"	4"	6"	8"
1/2"=1'-0"	24	2.4"	3"	4.5"	6"
3/4"=1'-0"	16	1.6"	2"	3"	4"
1"=1'-0"	12	1.2"	1.5"	2.25"	3"
1 1/2"=1'-0"	8	.8"	1"	1.5"	2"
3"=1'-0"	4	.4"	.5"	.75"	1"
6"=1'-0"	2	.2"	.25"	.375"	.5"
12"=1'-0"	1	.1"	.125"	.1875"	.25"
1"=10'	120	1'	1.25'	1.875'	2.5625'
1"=20'-0"	240	2'	2.5'	3.75'	5'
1"=25'-0"	300	2.5'	3.125'	4.6875'	6.26'
1"=30'-0"	360	3'	3.75'	5.625'	7.5'
1"=50'-0"	600	5'	6.25'	9.375'	12.5'
1"=100'-0"	1200	10'	12.5'	18.75'	25.0'
1=10	10	1	1.25	1.875	2.5
1=20	20	2	2.5	3.75	5
1=30	30	3	3.75	5.625	7.5

Table 3-1, Scale Factor and Text Height Conversion Chart

3.1.2.1 Drawing Sheet Format.

FAA-approved drawing formats include common drawing features such as boundary geometry, title block data, filename, pathname, zoning guides, and title block geometry. Copies of the approved formats will be provided by the CAEG Program Office (ANS-110) to both FAA and support organizations. All Regions and ANI Implementation Centers (ICs) are required to use these formats. Electronic copies of the drawing formats are currently available in digital form as DWG (AutoCAD), and as DGN files (MicroStation).

3.1.2.2 Drawing Sizes.

The FAA standard drawing size is D (22" X 34"). Other sizes are allowed only as needed. Drawing sheet size and margins must follow the specifications shown in Table 3-2, Standard Drawing Sizes. Apply ANSI Y14.1 for any information not provided in this standard, but required on drawing sheet size.

Size Designation	Vertical	Horizontal	Margin		
			Horizontal	Vertical	
				Left	Right
B	11.0	17.0	0.50	1.50	0.50
D	22.0	34.0	0.50	1.50	0.50
E	34.0	44.0	0.50	1.50	0.50
F	28.0	40.0	0.50	1.50	0.50

Table 3-2, Standard Drawing Sizes

NOTE: All dimensions are in inches.

3.1.2.3 Sizing Drawing Formats for Scaled Drawings.

Each facility shall be drawn in the CADD file at full size. The CADD user then reduces the data to fit the desired paper size during plotting. Table 3-3, provides the necessary scale factors needed to calculate the reduced plot size.

Plot Scale	Drawing Field Size (H x W)		
	D (21" x 22.5")	E (33" x 32.5")	F (27" x 28.5")
1/8"=1'-0"	168' x 180'	264' x 260'	216' x 228'
3/16"=1'-0"	112' x 120'	176' x 173.3'	144' x 152'
1/4"=1'-0"	84' x 90'	132' x 130'	108' x 114'
3/8"=1'-0"	56' x 60'	88' x 86.7'	72' x 76'
1/2"=1'-0"	42' x 45'	66' x 65'	54' x 57'
3/4"=1'-0"	28' x 30'	44' x 43.3'	36' x 38'
1"=1'-0"	21' x 22.5'	33' x 32.5'	27' x 28.5'
1 1/2"=1'-0"	14' x 15'	22' x 21.7'	18' x 19'
3"=1'-0"	7' x 7.5'	11' x 10.8'	9' x 9.5'
6"=1'-0"	3.5' x 3.75'	5.5' x 5.4'	4.5' x 4.75'
12"=1'-0"	1.75' x 1.875'	2.75' x 2.7'	2.25' x 2.375'
1"=10'-0"	210' x 225'	330' x 325'	270' x 285'
1"=20'-0"	420' x 450'	660' x 650'	540' x 570'
1"=25'-0"	525' x 562.5'	825' x 812.5'	675' x 712.5'
1"=30'-0"	630' x 675'	990' x 975'	810' x 855'
1"=50'-0"	1050' x 1125'	1650' x 1625'	1350' x 1425'
1"=100'-0"	2100' x 2250'	3300' x 3250'	2700' x 2850'
1=10	210 x 225	330 x 325	270 x 285
1=20	420 x 450	660 x 650	540 x 570
1=30	630 x 675	990 x 975	810 x 855

Table 3-3, Sheet Sizes, Drawing Field, and Scale Factors

3.1.2.4 Appearance.

Figure 3-1, Drawing Appearance, shows the typical features as applicable for the appearance of CADD-produced drawings. The figure shows the location of these features in a construction drawing. These features are:

- Border
- Title Block
- Contractor Identification Block
- Drawing Field
- Notes
- Legend
- Key Plan
- Graphic Scales
- North Arrow
- Plot Stamp (Full path name, User name, Date, Time)

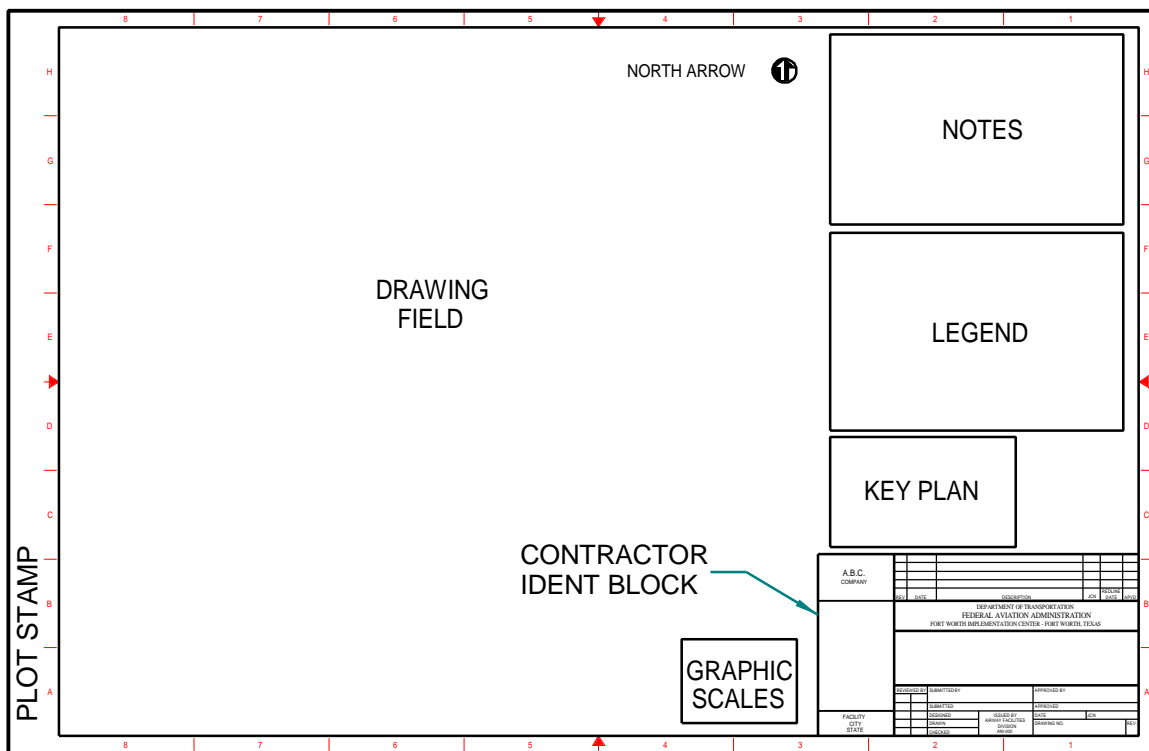


Figure 3-1, Drawing Appearance

3.1.3 Border.

The border is the rectangular frame surrounding the drawing. It contains a drawing zone system. The alphabetic characters are located on the left and right sides and the numeric characters are on top and bottom. The zones are referred to using an alphanumeric description, such as Zone F6 depicted in Figure 3-2, Drawing Zone System.

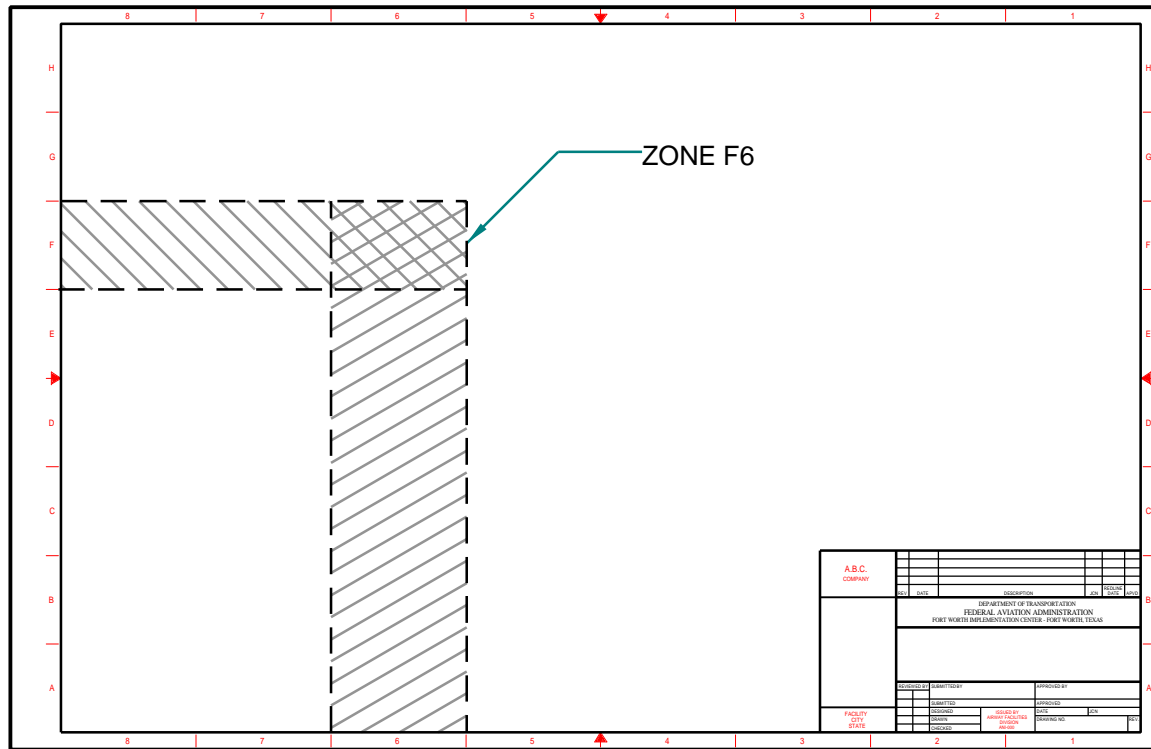


Figure 3-2, Drawing Zone System

3.1.4 Title Block.

The title block shown in Figure 3-3, Drawing Title Block, is used for recording drawing data. The title block is located in the lower right corner and just inside the format's boundary. It is sub-divided into rectangular areas that contain specific text data. Each rectangle contains a subject title such as Drawing Title, Drawn By, Approved By, Date and Drawing Number. All text shall be in upper case.

The title block in Figure 3-3 is subdivided into three main sections. The revision section is located at the top. The authorizing agency section is located in the middle, and the main section at the bottom. The main section of the title block contains the title, signatures, drawing identification, and the issuing office. All title blocks for drawing sizes D to F must conform to Figure 3-3. The title block overall dimensions are 7-3/8" x 5-5/16". Items labeled in Figure 3-3 are described in Table 3-4, Drawing Title Block Descriptions. Contractor logo shall be located to the left of the title block and shall not exceed 2-1/4" in width.

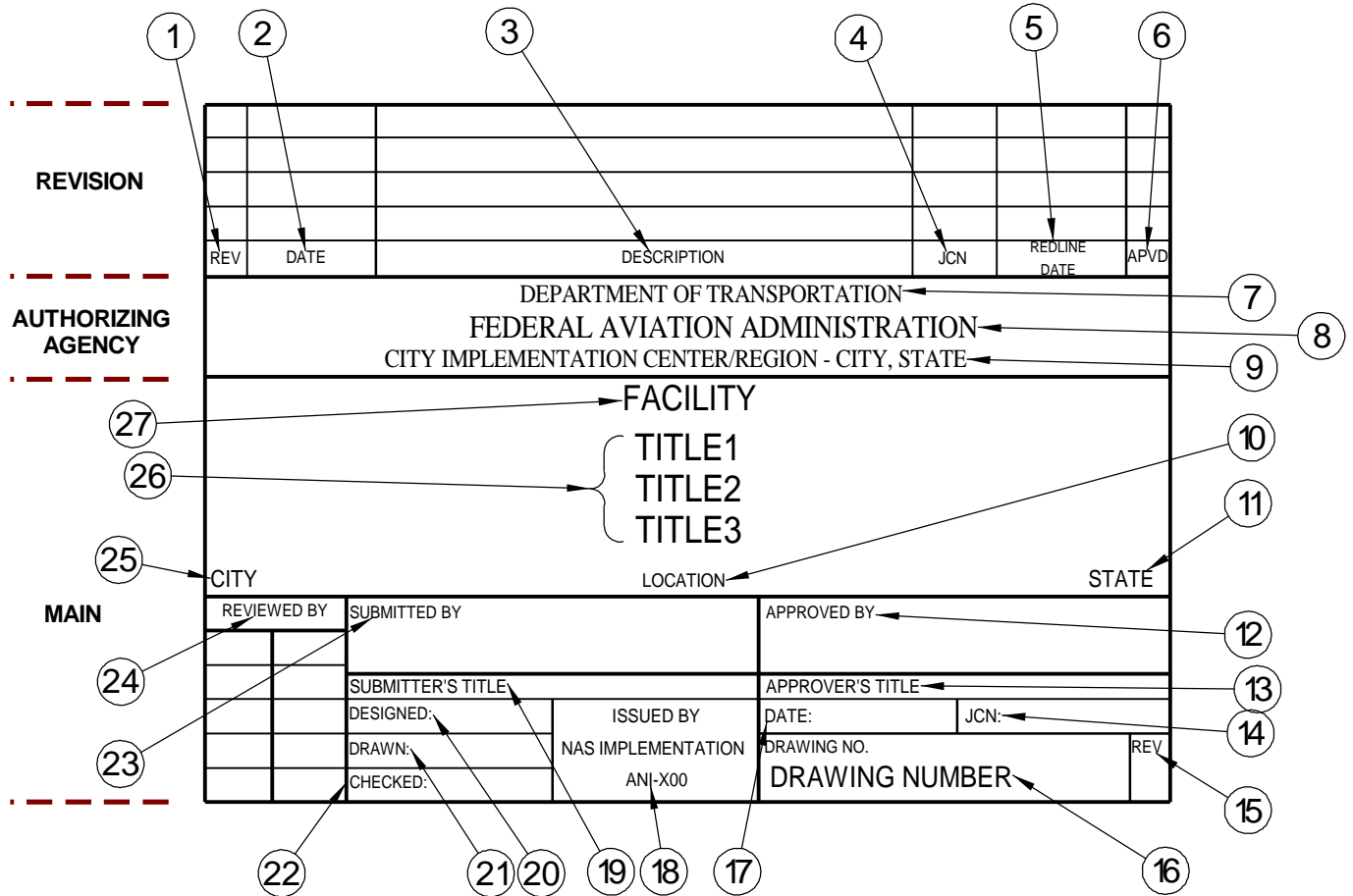


Figure 3-3, Drawing Title Block

ITEM	BLOCK DESCRIPTION	TEXT SIZE	ITEM	BLOCK DESCRIPTION	TEXT SIZE
1	REVISION LEVEL (LETTER)	0.100	15	LATEST REVISION LEVEL	0.1563
2	REVISION DATE	0.100	16	DRAWING NUMBER	0.1563
3	REVISION DESCRIPTION	0.100	17	DRAWING DATE	0.100
4	JCN AUTHORIZING REV	0.100	18	DIVISION ISSUED BY	0.100
5	ACTUAL REDLINING DATE	0.100	19	SUBMITTER'S TITLE	0.100
6	APPROVED BY BLOCK	0.100	20	DESIGNED BY	0.100
7	DOT	0.100	21	DRAWN BY	0.100
8	FAA	0.125	22	CHECKED BY	0.100
9	ISSUING FAA REGION	0.100	23	SUBMITTED BY	0.100
10	AIRPORT OR LOCATION	0.100	24	REVIEWED BY/DATE	0.125
11	STATE	0.125	25	CITY	0.125
12	APPROVED SIGNED BY	0.100	26	DRAWING TITLE	0.200
13	APPROVER'S TITLE	0.100	27	FACILITY TYPE	0.1875
14	INITIAL JCN	0.100			

Table 3-4, Drawing Title Block Descriptions

3.1.5 Drawing Numbering.

It is essential that the drawing numbering schema be one that:

- Facilitates electronic archiving, retrieval, and interchange.
- Readily relates the drawing of the facility or object being represented.
- Facilitates unique identification.
- Promotes reuse of existing drawings.

3.1.5.1 Drawing Number Structure.

The drawing number structure for all engineering drawings covered by this standard shall consist of a maximum of 24 characters as shown below. See Figure 3-4 for Drawing Number Structure.

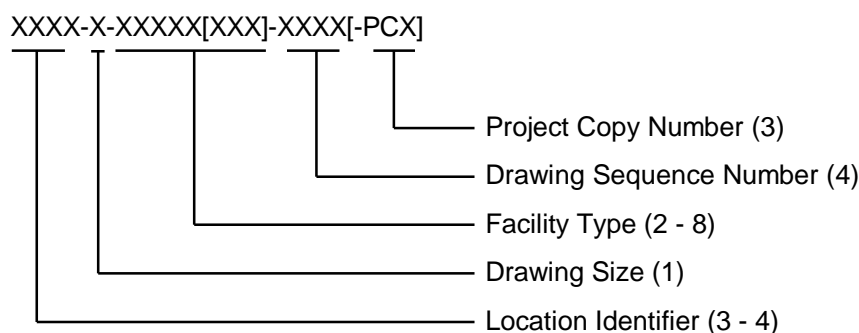


Figure 3-4, Drawing Number Structure

The portions of the drawing number shown in square brackets ([]) are used as required. The brackets are for reference only and are not included in the drawing number.

The location identifier is assigned to each airport and FAA facility listed in the FAA 7350.6 Location Identifiers or Facilities, Services Equipment Profile publications. If a facility has multiple location identifiers associated with different runways, the airport identifier shall be used in all cases.

The drawing size is indicated with an upper case letter (i.e. D, E or F).

The facility type is assigned from Table 3-5, Facility Type Acronyms. Runway-specific facilities, such as ILS, ALS, and RVR, must include the runway designation with the facility type. Facilities that will be co-located with another facility, such as DME, COMLO, RAIL, ATCRB, ARTS, etc., will be assigned the major facility. When there is more than one facility for the same location identifier, a letter shall be placed after the facility type, i.e. RCAGA. When the facility is related to a runway, such as ILS, ALS, PAPI, etc., the runway number shall be placed after the facility type, i.e. ILS34R.

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The drawing sequence number for a construction drawing starts with an upper case letter specifying the discipline followed by a three digit sequential number. The discipline codes are listed below:

A-architectural	F-fire protection	L-landscape	S-structural
C-civil	G-general	M-mechanical	T-telecomm.
D-demolition	H-hazardous mat.	P-plumbing	Z-contractor/shop drawing
E-electrical	I-interiors	R-real estate/lease	

The drawing sequence number for a Configuration Management baseline drawing starts with “BL” followed by a two digit sequential number. The drawing sequence number for a Configuration Management end-state drawing starts with “ES” followed by a two digit sequential number.

The drawing sequence number for an installation drawing is a three digit sequential number.

The project copy number is added to the drawing number when an existing drawing is checked out for Project Copy modifications.

An example of a construction drawing number is ORD-D-ATCT-A001. A project copy of the same drawing would have a drawing number of ORD-D-ATCT-A001-PC1. An example of an installation drawing number is ATL-D-ILS17R-020.

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ADC	Air Defense Command
AFSS	Automated Flight Service Station
ALP	Airport Layout Plan
ALS	Approach Lighting Systems
ALSF	Approach Lighting Systems with Sequenced Flashers
ARSR	Air Route Surveillance Radar
ARTCC	Air Route Traffic Control Center
ASDE	Airport Surface Detection Equipment
ASOS	Automated Surface Observing System
ASR	Airport Surveillance Radar
ATCBI	Air Traffic Control Beacon Interrogator
ATCT	Air Traffic Control Tower
AWOS	Automated Weather Observing System
BUEC	Backup Emergency Communications
CERAP	Combined Center/RAPCO
CFW	Center Field Wind
COMCO	Command Communications Outlet
DF	Direction Finder
DME	Distance Measuring Equipment
DVOR	Doppler VOR
EFAS	En Route Flight Advisory Service
EOF	Emergency Operation Facility
ERMS	Environmental Remote Monitoring System
FM	Fan Marker (when not associated with another facility)
FOTS	Fiber Optics Transmission System
FSS	Flight Service Station
GS	Glide Slope
H	Non-Directional Radio Homing Beacon (NDB)
IFSS	International Flight Service Station
ILS	Instrument Landing System
IM	Inner Marker
LAAS	Local Area Augmentation System
LCOT	UHF/VHF Link Terminal
LDA	Localizer Directional Aid
LDIN	Lead-In Light System
LDRCL	Low Density Radio Communication Link (Terminal/Repeater)
LIVQ	Living Quarters
LLWAS	Low Level Wind Shear Alert System
LOC	Localizer
LNKR	UHF/VHF Link Repeater
LRNC	Long Range Navigation C System
LRNCM	Long Range Navigation C System Monitor
MALS	Medium Intensity Approach Lighting System
MALSF	MALS with Sequenced Flashers
MALSR	MALS with Runway Alignment Indicator Lights

MCC	Maintenance Control Center
MLS	Microwave Landing System
MM	Middle Marker
MODES	Air Traffic Control Beacon Interrogator MODE Select
NADIN	National Air Space Data Interchange Network
NAFB	Non-Aviation Facilities Building
NDB	Non-Directional Beacon
NXRAD	Next Generation Weather Radar
OAW	Off-Airway Weather Station
OCC	Operational Control Center
ODALS	Omni-Directional Approach Lighting System
OFDPS	Off-Shore Flight Data Processing System
OM	Outer Marker
PAPI	Precision Approach Path Indicator
PRM	Precision Runway Monitor
RAIL	Runway Alignment Indicator Lights
RAPCO	Radar Approach Control – Air Force
RBC	Rotating Beam Ceilometer
RCAG	Remote Communications Air/Ground
RCF	Remote Communications Facility
RCL	Radio Communication Link (Terminal/Repeater)
RCO	Remote Communications Outlet
REIL	Runway End Identification Lights
RMC	Remote Monitor Control
RML	Radar Microwave Link
RMMS	Remote Maintenance Monitoring System
RO	Regional Office
RTR	Remote Transmitter/Receiver
RVR	Runway Visual Range
SMO	Systems Maintenance Office
SSC	Systems Support Center
TDWR	Terminal Doppler Weather Radar
TML	Television Microwave Link
TRACO	Terminal Radar Approach Control
VASI	Visual Approach Slope Indicator
VOR	VHF Omni-Directional Range
VORD	VOR with DME
VORTA	VOR collocated with TACAN
WAAS	Wide Area Augmentation System
WOS	Weather Observation Station

Table 3-5, Facility Type Acronyms

NOTE: Acronyms for new facility types shall be based upon those designated in the Regional Tracking Program (RTP).

3.1.6 Arrangement of Drawings.

3.1.6.1 Construction Drawing Sets.

The drawings in a construction drawing set are listed by discipline in Table 3-6, Construction Drawing Set. These drawings are commonly used in identifying a complete set of drawings for the construction of a new facility. Drawing sets for the construction of a

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facility modification must consist of a subset of the drawings listed in this table.
Construction drawing sets shall be arranged by discipline in the following order.

DISCIPLINE	CODE	DRAWING DESCRIPTION
General	G	Cover, Index, Abbreviations, Symbols, Staging & Safety Plans
Real Estate/Lease	R	Property Boundaries And Legal Descriptions
Civil	C	Legend
Civil	C	Site
Civil	C	Boring Log
Civil	C	Under Slab Drainage
Civil	C	Building Site Plan
Civil	C	Grading Plan
Civil	C	Utility Plan
Civil	C	Details, Elevations And Sections
Civil	C	Site Improvements
Civil	C	Structural Canopy Details
Civil	C	Layout, Grading, Draining And Landscaping
Civil	C	Structural Details
Demolition	D	Removal of Existing Construction
Hazardous Materials	H	Hazardous Materials
Landscaping	L	Legend, Symbols And Abbreviations
Landscaping	L	Irrigation Plan
Landscaping	L	Planting
Landscaping	L	Irrigation And Planting Details
Architectural	A	Legend, Symbols And Abbreviations
Architectural	A	Floor Plan
Architectural	A	Reflected Ceiling Plan
Architectural	A	Roof Plan
Architectural	A	Elevations
Architectural	A	Sections
Architectural	A	Details
Architectural	A	Millwork
Architectural	A	Equipment
Architectural	A	Furniture
Interiors	I	Interior Building Elements
Structural	S	Legend, Symbols And Abbreviations
Structural	S	Structural Foundation Plan
Structural	S	Framing And Decking Plan
Structural	S	Roof Framing Plan
Structural	S	Structural Details
Structural	S	Structural Steel Grounding
Structural	S	Erection Drawings

Table 3-6, Construction Drawing Set

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DISCIPLINE	CODE	DRAWING DESCRIPTION
Mechanical	M	Legend, Symbols And Abbreviations
Mechanical	M	Equipment Schedule
Mechanical	M	Elevations
Mechanical	M	Generator And Fan Room Plan
Mechanical	M	Chiller Room Plan
Mechanical	M	Mechanical Room Plan
Mechanical	M	Roof Plan
Mechanical	M	Sections And Details
Mechanical	M	Details
Mechanical	M	Hot And Cold Piping Diagrams
Mechanical	M	Miscellaneous
Mechanical	M	Steam Piping Systems
Mechanical - HVAC	M	Under Floor Plan
Mechanical - HVAC	M	Floor Plan (Room Area)
Mechanical - HVAC	M	Ceiling Plan
Plumbing	P	Legend, Symbols And Abbreviations
Plumbing	P	Foundation Plan
Plumbing	P	Piping Plan
Plumbing	P	Riser Diagram
Plumbing	P	Sanitary Riser Diagram
Plumbing	P	Storm Riser Diagram
Plumbing	P	Roof Drain System
Plumbing	P	Details
Electrical	E	Legend, Symbols And Abbreviations
Electrical	E	1st Floor Lighting Plan
Electrical	E	Power And Communications Plan
Electrical	E	Grounding Plan
Electrical	E	Security Plan
Electrical	E	Equipment
Electrical	E	Miscellaneous
Electrical	E	Details
Electrical	E	Single Line Diagrams
Electrical	E	Panel Schedules
Telecommunications	T	Legend, Symbols And Abbreviations
Telecommunications	T	1st Floor Communications Plan
Telecommunications	T	Details
Telecommunications	T	Manhole And Cable Diagrams

Table 3-6, Construction Drawing Set (Continued)

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DISCIPLINE	CODE	DRAWING DESCRIPTION
Fire Protection	F	Legend, Symbols And Abbreviations
Fire Protection	F	Sprinkler System
Fire Protection	F	Alarm Systems
Fire Protection	F	Fire Fighting Equipment
Fire Protection	F	Stand Pipe System
Z-Contractor	Z	Shop Drawings

Table 3-6, Construction Drawing Set, (Continued)

3.1.6.2 Installation Drawing Sets.

NAS electronic installation drawings shall cover the requirements for installation of NAS mission equipment in facilities. Refer to Table 3-7, Installation Drawing Number List, for arrangement and numbering of installation drawing sets.

DRAWING DISCIPLINE	SEQUENCE NO.	SEQUENCE NO. RANGE
Floor Plans		-001 to -099
Floor plan phone/data jack layout	-001 through -025	
Floor plan rack layout (overhead)	-026 through -050	
Floor plan cable tray/power duct layout	-051 through -075	
Power routing plans	-076 through -099	
Distribution Cabling System		-100 to -199
Block Diagram	-100 through -119	
CDF Front View	-120 through -129	
CDF Rear View	-130 through -139	
IDF Front View	-140 through -149	
IDF Rear View	-150 through -159	
MDF Front View	-160 through -169	
MDF Rear View	-170 through -179	
Phone/Data IDF Front View	-180 through -189	
Phone/Data IDF Rear View	-190 through -199	
Equipment Racks (front elevation)		-200 to -299
Bay 100	-200 through -209	
Bay 200	-210 through -219	
Bay 300	-220 through -229	
Bay 400	-230 through -239	
Bay 500	-240 through -249	
Bay 600	-250 through -259	
Bay 700	-260 through -269	
Bay 800	-270 through -279	
Bay 900	-280 through -289	
Bay 1000	-290 through -299	
Controller Position Layouts		-300 to -0349
Plan view	-300 through -325	
Console layouts	-326 through -349	

Table 3-7, Installation Drawing Number List

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DRAWING DISCIPLINE	SEQUENCE NO.	SEQUENCE NO. RANGE
Controller Position Demarc Blocks		-350 to -374
Block interconnection layouts	-350 through -374	
Communications		-400 to -499
Fiber Optics	-400 through -409	
Low Density RCL	-410 through -419	
Bandwidth Manager	-420 through -429	
ETVS	-430 through -439	
DVRS	-440 through -449	
Radio Control Equipment	-450 through -459	
Data Multiplexing Network	-460 through -469	
Emergency Transceivers	-470 through -479	
Truck Bypass System	-480 through -489	
Time Code Displays/Generator	-490 through -499	
Radar		-500 to -599
ASR-9	-500 to -549	
ASDE	-550 to -599	
Automation		-600 to -649
ARTS	-600 through -619	
STARS	-620 through -639	
DBRITE	-640 through -649	
Automation		-650 to -699
FDIO	-650 through -659	
TMS	-660 through -679	
IDS-4	-680 through -689	
TDLS/D-ATIS	-690 through -699	
NAVAIDS & Weather		-700 to -949
ILS Monitors	-700 through -739	
RVR System	-740 through -779	
ALSF Monitors	-780 through -819	
INTRAC System	-820 through -859	
LLWAS	-860 through -899	
DASI	-900 through -915	
TDWR	-916 through -931	
ASOS	-932 through -949	
PBX System		-950 to -999
System Block Diagram	-950 through -974	
System Drawings	-975 through -999	

Table 3-7, Installation Drawing Number List, (Continued)

3.1.7 Typical Sheets and Layouts for Construction Drawing Sets.

Nearly all construction drawing sets will use one of the following six standard sheets and layouts described in the following six subsections. All the sheets depicted in this section are D-size drawings.

3.1.7.1 Cover Sheet.

Each construction drawing set should have a cover sheet that clearly identifies the drawing set. The cover sheet must have a title block containing all of the information about the drawing set. See Figure 3-5, Cover Sheet Layout.

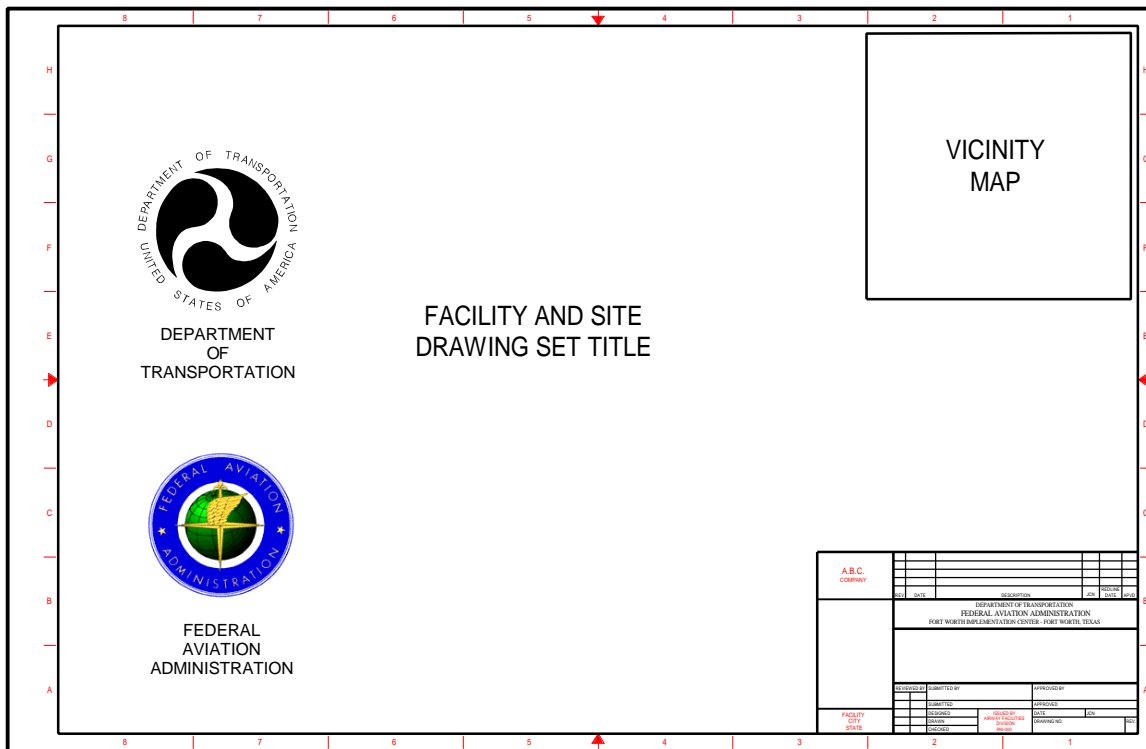


Figure 3-5, Cover Sheet Layout

3.1.7.2 Index Sheet.

The second sheet of each drawing set shall be the drawing index sheet. This lists every drawing contained in the drawing set. An example is shown in Figure 3-6, Index Sheet.

The figure shows a drawing index sheet template. It is a rectangular sheet divided into three vertical columns. The columns are labeled 'DRAWING LIST', 'ABBREVIATIONS', and 'SYMBOLS LEGEND' from left to right. The sheet is framed by a grid with letters A through H on the vertical axis and numbers 1 through 8 on the horizontal axis. In the bottom right corner, there is a detailed title block containing the following information:

A.B.C. Company		DATE	DESIGNER	CHECKED	DATE	DATE
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION FORT WORTH LABORATORY CENTER - FORT WORTH, TEXAS						
PROJECT NO.		PROJECT TITLE		APPROVED BY		
DRAWN BY		CHECKED BY		DATE		
FACILITY		APPROVED BY		DATE		
CITY		APPROVED BY		DATE		
STATE		APPROVED BY		DATE		

Figure 3-6, Index Sheet

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3.1.7.3 Floor Plan Layout.

The Floor Plan Layout sheet is intended for all plan type drawings regardless of discipline. See Figure 3-7, Floor Plan Layout.

The figure shows a standard architectural drawing sheet layout. The drawing area is a grid with vertical lines numbered 1-8 and horizontal lines lettered A-H. A north arrow is at the top center. On the right side, there are boxes for NOTES, LEGEND, and KEY PLAN. At the bottom right, there is a GRAPHIC SCALES box and a title block. The title block contains fields for A.B.C. COMPANY, PROJECT NO., SHEET NO., and a table for DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION FORT WORTH/MEADOWLAND CENTER, FORT WORTH, TEXAS. It also includes fields for DRAWN BY, CHECKED BY, DATE, and APPROVED BY.

Figure 3-7, Floor Plan Layout

3.1.7.4 Elevation and Section Plan Drawing Layout.

The elevations are stacked in the upper half of the drawing field. The bottom of the drawing field is available for details when the detail sheet is full. See Figure 3-8, Elevation and Section Plan Drawing Layout.

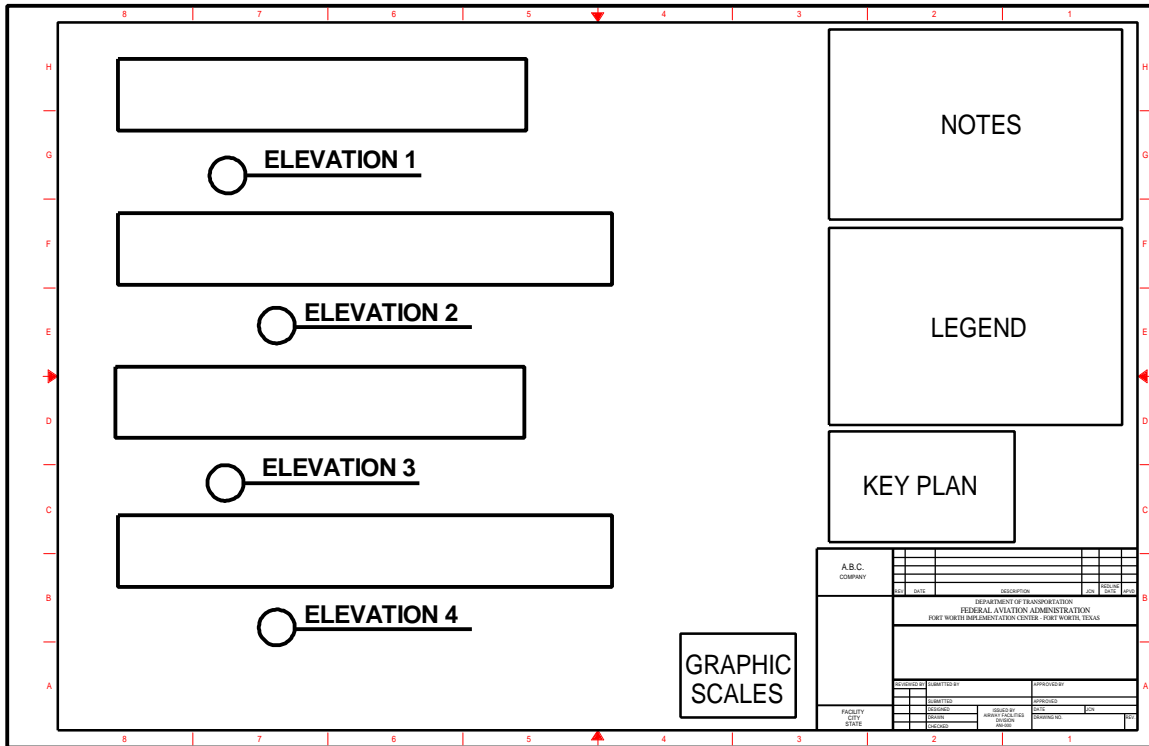


Figure 3-8, Elevation and Section Plan Drawing Layout

3.1.7.6 Schedule/Diagram Sheet Layout.

Figure 3-10, Schedule/Diagram Sheet Layout, shows the format for schedules and diagrams which are frequently used in drawing sets for electrical, plumbing, and mechanical drawings. The drawing field may extend above the title block, as long as the notes or legends can be relocated on the sheet as shown.

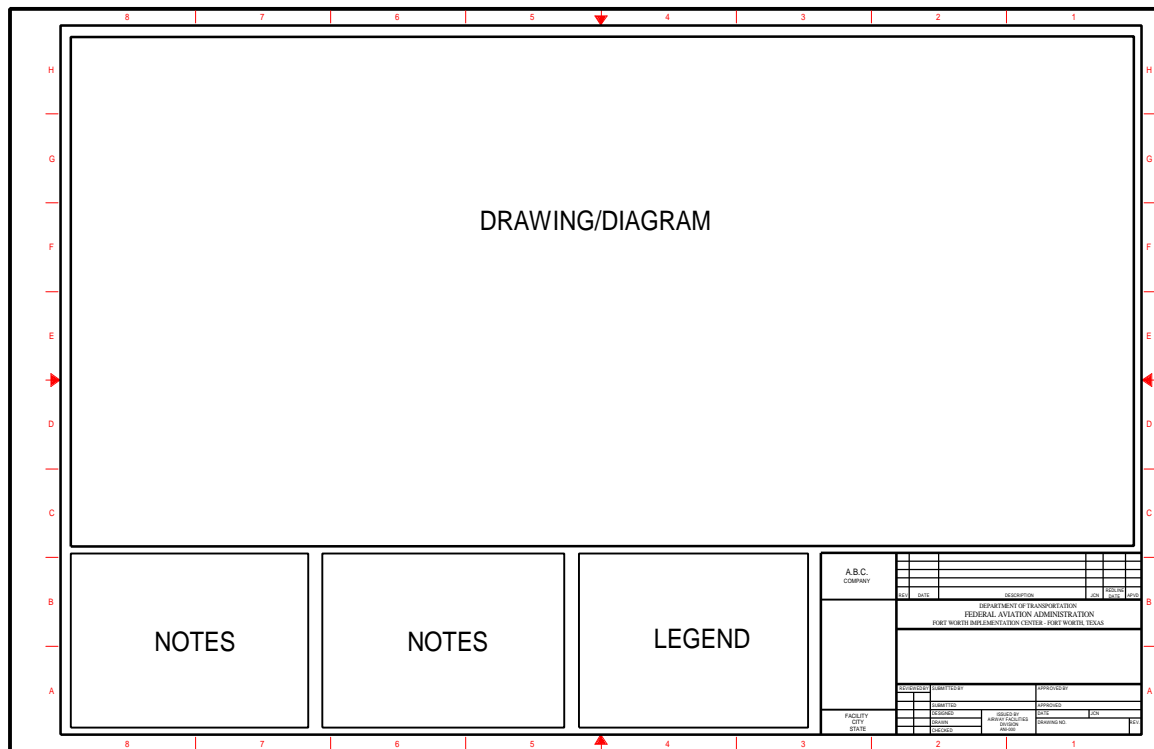


Figure 3-10, Schedule/Diagram Sheet Layout

3.1.8 DOT/FAA Logo Art.

The CAEG Program Office, ANS-110, will provide the following electronically formatted logos to be included in CADD products: Department of Transportation (DOT), Configuration Management (CM), and Federal Aviation Administration (FAA).

3.1.9 Layers/Levels.

CADD layers (AutoCAD)/levels (MicroStation) are analogous to overlays in manual drafting systems and serve to separate graphic elements according to the design discipline they represent. AutoCAD allows an unlimited number of layers to be identified with names or numbers. MicroStation has a preset number of 63 numbered levels, which can be named, but the name is merely an alias for a level number. The layers/levels defined within this standard are based on those set forth in the American Institute of Architects' publication, "CADD Layer Guidelines."

NOTE: Layer/level names are presented in Appendix A of this document.

3.1.10 Text Styles/Fonts.

Customized text fonts shall not be used. All drawing text shall be in upper case, except for special case abbreviations such as “dB”, “MHz”, and “NiCd”. Abbreviations shall comply with MIL-STD-12 and abbreviations shall not be followed by a period unless that abbreviation spells another word. There shall be no stacked fractions, that is, fractions shall be shown with a slash, e.g. 1/4. Contrasting text styles or fonts are used within a drawing to delineate types of information. In most A/E/C drawings the six MicroStation fonts and the six AutoCAD fonts shown in Table 3-8, Comparison of Font Types, should be sufficient. See Table 3-9, Text Heights and Colors, and Section 3.1.11, Line Weights, for appropriate line weights for text.

- Monotext font. This font creates text characters that are evenly spaced. It should be used where text fields need to line up such as in schedules or title blocks. In AutoCAD, use the “monospaced text” font, and in MicroStation, use Font #3.
- Proportional font. This font creates text where the characters are proportionally spaced. It is appropriate for general notes or labels. In AutoCAD, use the “Roman Simplex” font with a width factor of 1.0. In MicroStation use Font #1.
- Slanted font. A slanted font is used for instances where certain text needs to be distinguished from other text. This font can be created in AutoCAD by using the “Roman Simplex” font with the Obliquing Angle set to 21.8 degrees to achieve the American Standard slope of 2:5 (68.2 degrees). In MicroStation use Font #23.
- Standard font. This font is used for notes, callouts, etc.
- Roman Duplex font. This font is used for titles and subtitles.
- Greek font. This font provides special characters for use in labeling electronic components. In AutoCAD use the “Greeks” font with a width factor of 1.0. In MicroStation use Font #26.

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Fonts cannot be translated between CADD systems, however they can be replaced or mapped to a nearly identical one. For purposes of this manual, only those most compatible (identical in appearance and size) between MicroStation and AutoCAD are defined. It should be understood that these fonts do not translate perfectly and some cleanup may be required after any translation between systems.

MicroStation Font Number (font name)	AutoCAD Font Name (shape)
Font #3 (engineering) ABCDEF GHI JKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890	Monotext (monotxt) ABCDEF GHI JKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Font #1 (working) ABCDEF GHI JKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890	Roman Simplex - Proportional font (Romans) ABCDEF GHI JKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890

MicroStation Font Number (font name)	AutoCAD Font Name (shape)
Font #23 (slanted) <i>ABCDEF GHI JKLMNOPQRSTUVWXYZ</i> <i>abcdefghijklmnopqrstuvwxyz</i> <i>1234567890</i>	Roman Simplex - Slanted font (Romans, obliquing angle 21.8) <i>ABCDEF GHI JKLMNOPQRSTUVWXYZ</i> <i>abcdefghijklmnopqrstuvwxyz</i> <i>1234567890</i>
Font #0 (standard) ABCDEF GHI JKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890	Standard font (txt) ABCDEF GHI JKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Font #2 (fancy) ABCDEF GHI JKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890	Roman Duplex (Romand) ABCDEF GHI JKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 1234567890
Font #26 - for use as symbol font (Greek) ΑΒΧΔΕΦΓΗΘΚΛΜΝΟΠΞΡΣΤΤΦΩΧΨΖ αβγδεβγτηϕκλμσπξροστυφωχψζ	Greek Simplex - for use as symbol font (Greeks) ΑΒΧΔΕΦΓΗΘΚΛΜΝΟΠΞΡΣΤΤΦΩΧΨΖ αβγδεβγτηϕκλμσπξροστυφωχψζ

Table 3-8, Comparison of Font Types

APPLICATION	TEXT HEIGHT (IN INCHES)	COLOR
Titles	0.25	Green MicroStation #2 AutoCAD #3
Subtitles	0.156	Green MicroStation #2 AutoCAD #3
Notes; Callouts; etc.	0.125 (preferred) or 0.10	White MicroStation #0 AutoCAD #7

Table 3-9, Text Heights and Colors

3.1.11 Line Widths and Colors.

Most commercial CADD systems provide an extensive variety of line widths. However, for the majority of A/E/C drawings, the five line widths defined in Table 3-10, Color Comparison and Associated Line Widths, are considered sufficient and shall not be expanded unless an appreciable improvement in drawing clarity or contrast can be realized. Typical usage for the line widths is described below:

- Fine (0.18 mm). Fine lines should be used for depicting dimension lines, extension lines, leader lines, object lines seen in the distance, hidden lines, grid lines and patterning.
- Thin (0.25 mm). Thin lines should be used for depicting minor object lines, line terminators (arrowheads, dots, and slashes), dimension text, text for notes and callouts, and text inside schedules.
- Medium (0.35 mm). Medium lines should be used for depicting schedule boxes and charts, most object lines, text for titles and underlining.
- Wide (0.50 mm). Wide lines should be used for object lines requiring special emphasis and separating portions of drawings.
- Extra wide (0.70 mm). Extra wide lines should be used for the border only.

Table 3-10 cross references the on-screen display colors with the AutoCAD color number, MicroStation color number and line weight, and the physical width of the plotted line. The color yellow is reserved for highlighting.

Line Thickness	Color	Plotted Line Width (mm)	Plotted Line Width (in)	MicroStation Line Weight	MicroStation Color #	AutoCAD Color #
Fine	Blue	0.18	0.007	0	1	5
Fine	Gray	0.18	0.007	0	9	8
Thin	White	0.25	0.010	1	0	7
Thin	Red	0.25	0.010	1	3	1
Medium	Green	0.35	0.014	2	2	3
Medium	Cyan	0.35	0.014	2	7	4
Wide	Magenta	0.50	0.020	3	5	6
Extra Wide	Orange	0.70	0.028	5	6	30

Table 3-10, Color Comparison and Associated Line Widths.

NOTE to AutoCAD users: Because polylines do not readily translate between CADD systems and are unique to AutoCAD, their use is prohibited.

3.1.12 Line Types.

The line styles applicable to this standard are represented in Figure 3-11, Standard Line Types. Additionally, typical custom line types are represented in Figure 3-12, Typical Custom Line Types, and additional line types may be developed and incorporated into the standard as needed for specialized applications.

DESCRIPTION	EXAMPLE	MICROSTATION DESIGNATOR	AUTOCAD DESIGNATOR
Continuous	—————	0	CONTINUOUS
Dotted	1	ACAD_IS007W100
Dashed	- - - - -	2	ACAD_IS002W100
Dashed Spaced	- - - - -	3	ACAD_IS003W100
Dashed Dotted	- - . - - . - -	4	ACAD_IS010W100
Dashed Double-Dotted	- - .. - - .. - -	6	ACAD_IS012W100
Dashed Triple-Dotted	- - ... - - ... - -	*	ACAD_IS014W100
Chain	- - - - -	7	ACAD_IS008W100
Chain Double-Dashed	- - - - -	**	ACAD_IS009W100
<p>* This line style is not found in the default MicroStation line style resource file.</p> <p>** This line style is available in the MicroStation resource file ACADLSTY.RSC as "PHANTOM".</p>			

Figure 3-11, Standard Line Types













TYPE	EXAMPLE
Contour Line	
Property Line	
Cable	
Fence	
Water	
Gas	
Telephone	
Sanitary Sewer	
Storm Sewer	
Power	
Railroad	
Break	

Figure 3-12, Typical Custom Line Types

3.1.13 Units.

The units for all A/E/C drawings shall be units of feet and inches and fractions of an inch, with the smallest fraction normally being 1/8" or as decimals in feet, inches, and hundredths of an inch. Dimensions of less than a foot must be shown in inches or fractions of inches. Metric units may be used as required by specific projects.

3.1.14 Drawing Origins and Working Units for CADD Drawings.

AutoCAD and MicroStation manage the available drawing area in a CADD file very differently. The setup of the working units and drawing origin in each software must be handled separately, but designed in a way that eases translation from one software to the other. Consistent origins shall be used to ensure ease of translation and attaching of reference files in both software packages.

3.1.14.1 AutoCAD Working Units and Drawing Origin.

AutoCAD has an infinite design plane, eliminating limitations to the space available for drawing. Working units should be selected according to the discipline of the drawing: architectural (feet and inches), engineering (feet and tenths), or decimal (metric). The lower left corner of drawings should be positioned at the Cartesian coordinate point of 0,0,0.

3.1.14.2 MicroStation Working Units and Global Origin.

MicroStation has a finite design plane. The global origin shall be positioned in the center of the design plane to avoid loss of data exceeding the design plane. Working units shall be set to those shown in Table 3-11. The table represents a design plane equal in size, whether measured in Imperial or Metric units. Adherence to the settings will enable future conversion between Imperial and Metric units.

Units	MU	SU	PU	Design Cube Size	Recommended Global Origin
Imperial (A/E/C)	1 (ft)	12 (in)	8000	44,739 ft/side	GO = 22369.6213, 22369.6213, 22369.6213
Imperial (Civil/Site, Civil Works, Geotechnical, Survey/Mapping)	1 (ft)	100	10	4,294,967 ft/side	GO = 0, 0, 2147483.648
Metric (A/E/C)	1 (mm)	1	10	429,496,724 mm/side	GO = 214748364.8, 214748364.8, 214748364.8
Metric (Civil/Site, Civil Works, Geotechnical, Survey/Mapping)	1 (m)	1000	1	4,294,967 m/side	GO = 0, 0, 2147483.648
Metric (Mechanical Machine Design)	1 (mm)	1000	1	429,496,724 m/side	GO = 2147483.648, 2147483.648, 2147483.648

Table 3-11, MicroStation Working Units and Global Origins

NOTE: Existing drawings with Working Unit settings different from the standard noted above do NOT need to be changed to meet the standard.

3.1.15 Externally Referenced Files.

The use of externally referenced files by AutoCAD and MicroStation allows for the viewing of all or part of a drawing file from another drawing file (host file). Sheet files or reduced-scale files shall not be utilized as reference files. Only full-scale drawing files shall be utilized as references. Nesting of reference files shall be avoided. As files are created and referenced, filenames shall not be changed, as it will result in the inability of the host file to find its reference files. All reference files shall be included with file transfers to and from the FAA. Merge all reference files into the final drawing package when one or more of the following criteria is met:

- Prior to archiving old revisions of drawing files.
- The drawings are obsolete.

3.1.15.1 Specific Use of AutoCAD Reference Files.

All files referenced in the host file shall use the "Attach" option within the XREF command. When reference files are merged into the final drawing package, AutoCAD users shall use the "Bind" option.

3.1.15.2 Specific Use of MicroStation Reference Files.

MicroStation users **SHALL NOT** use the "Save Full Path" method when attaching drawing files for reference. When reference files are merged into the final drawing package, MicroStation users shall use the "Merge Into Master" method.

3.1.16 Patterning.

Do not create customized patterns; use the patterns supplied with the CADD software. Use associative locks when using MicroStation.

3.1.17 Dimensioning.

Refer to the ANSI Y14.5M for additional dimensioning information not provided in this standard. The distance from the object for the first dimension is 1/2" and each additional dimension is 3/8" further apart. See Figure 3-13, Dimensioning Styles and Directions, and Figure 3-14, Dimension and Extension Line Spacing, for dimension examples.

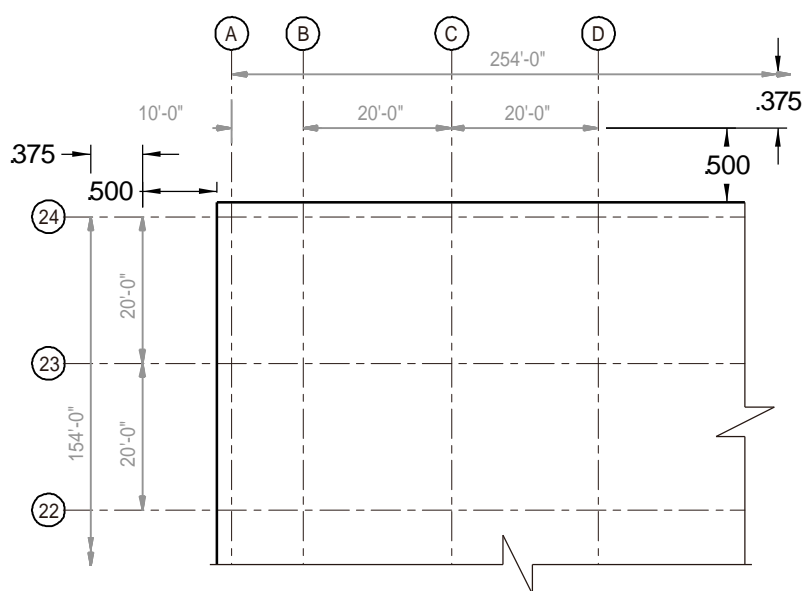


Figure 3-13, Dimensioning Styles and Directions

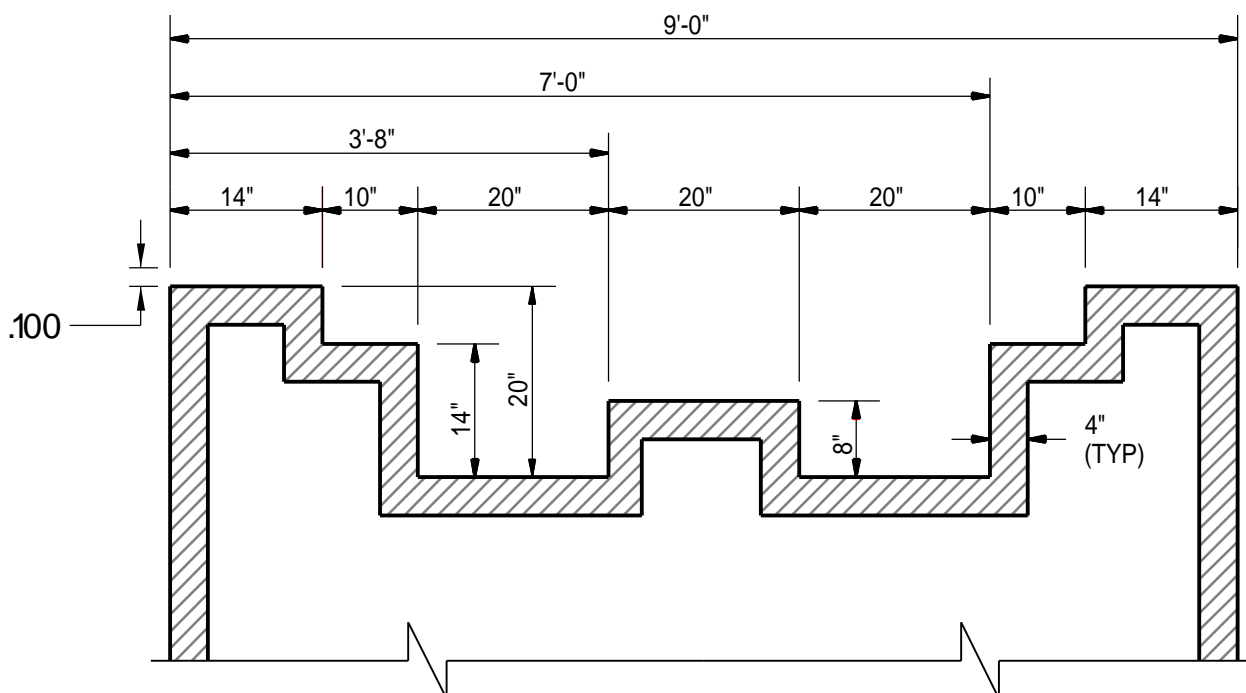


Figure 3-14, Dimension and Extension Line Spacing

3.1.17.1 Dimension Text Size.

All dimensioning text must be placed into the dimension layer. The size of dimension text is the same as the drawing field text (no smaller than 1/10" height, with 1/8" being preferable). Refer to Table 3-1, Scale Factor and Text Height Conversion Chart, for scaling factors and text height.

3.1.17.2 Positioning Dimensions.

See Figure 3-13, Dimensioning Styles, and Directions, for examples. Avoid crossing dimension lines. Centerlines may be extended and used as extension lines. Place longer dimensions outside of shorter ones. Do not cover dimensions with patterns in sectioned areas. Whenever possible, arrange dimensions so they can be read easily on one continuous line. Dimensions are always placed on the drawing so that the text may be read from the bottom or the right. Locate dimension lines so that they do not cross extension lines. If it is necessary to dimension at an angle, that angle should be in quadrant between the horizontal and vertical; so that the text may be read between 0 and 90 degrees. All text must be located above or centered on the dimension lines. The location of text on the dimension line shall be consistent throughout the drawing set. Fractions must be located on one line with a space between the whole inch and fraction. Make fractions with a slant bar with numbers the same height as text, for example, 1/4". All dimension and extension lines shall be created using the "fine" line weight. Arrowheads and dimension text shall be created using the "thin" line weight. See Table 3-10, Color Comparison and Associated Line Widths, for line weight definitions.

3.1.17.3 Leaders.

When a note or dimension can not be placed close to an object, a leader may be used. A leader consists of a short horizontal line, an angled line and a terminator. See Figure 3-16, Placement of Leader. When a leader points to an object, the angled line must terminate with an arrowhead at its first object line. When the information refers to (applies to, or points to) a surface of an object, use a small filled dot or tilde. When the information refers to a bundle or grouping of wires or cables, use a lasso. An example of this is shown in Figure 3-15, Typical Leaders. All leader lines and arrowheads shall be created using the “fine” line weight. See Table 3-10, Color Comparison and Associated Line Widths, for line weight definitions.

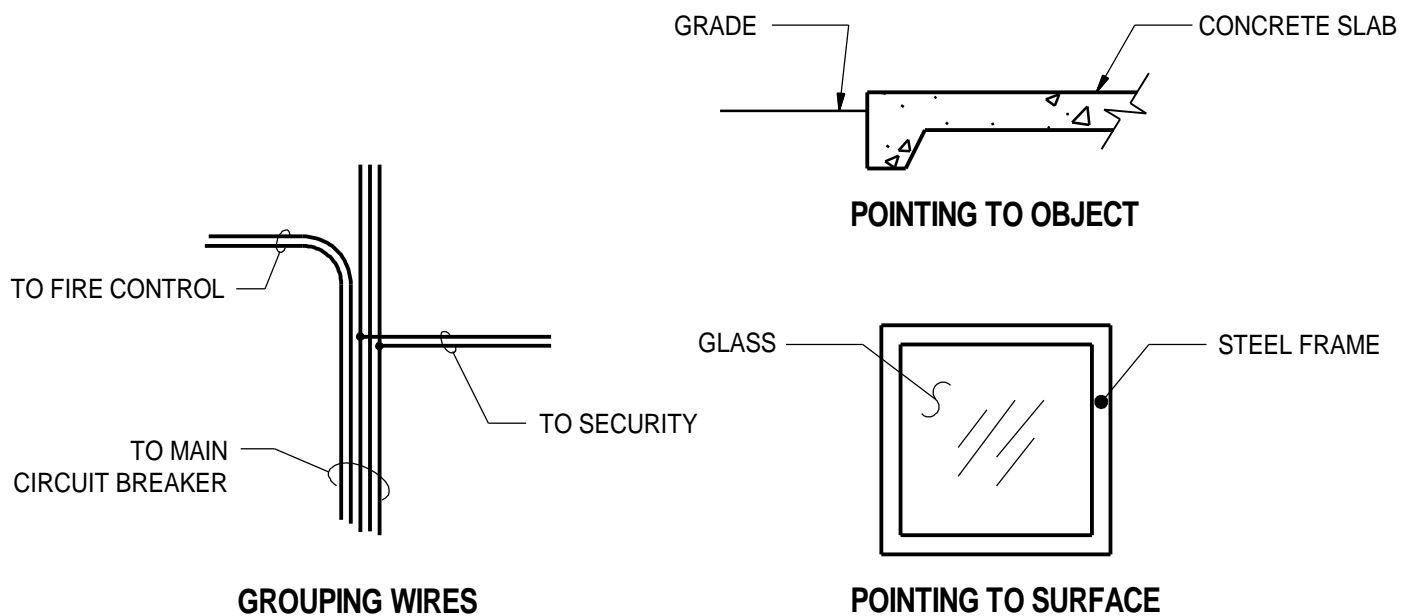


Figure 3-15, Typical Leaders

THIS FIGURE SHOWS THE PLACEMENT OF LEADERS FOR ENGINEERING NOTES, VENDOR DESCRIPTIONS, OR OTHER EQUIPMENT CALL OUTS ON A DRAWING. THE LEADERS CAN BE LOCATED AT THE START OF THE NOTE OR AT THE END.

THIS FIGURE SHOWS THE PLACEMENT OF LEADERS FOR ENGINEERING NOTES, VENDOR DESCRIPTIONS, OR OTHER EQUIPMENT CALL OUTS ON A DRAWING. THE LEADERS CAN BE LOCATED AT THE START OF THE NOTE OR AT THE END.

Figure 3-16, Placement of Leader

3.1.17.4 Arrowheads.

Arrowheads denote termination of dimensions and leader lines and show direction. Arrowheads should be filled, and must be the same size and style as the arrowheads used in other dimensions. Arrowhead size should be a 3:1 ratio for length to width, and in proportion to any associated text.

3.1.18 Symbols.

Symbols used in drawings should comply with the U.S. National CAD Standard or ANSI. All symbols used in a drawing must be indicated in a legend.

3.1.19 Drawing Subtitles.

Subtitles must be used on drawings with more than one view or when sections or details are required for clarity. Subtitles must also be used on drawings with a single view when title block information is inadequate and additional identification is required. Subtitles are always located below and centered on the view to which they apply, except for detail drawings where the title shall be located to the lower left. Subtitles for plans, standard details, typical details, etc., which are not referenced in other views, consist of two lines. The first line shows the exact title of the view or detail. The second line indicates the scale of the view or detail, along with bar scales. See Figure 3-17, Standard Subtitle Annotation.

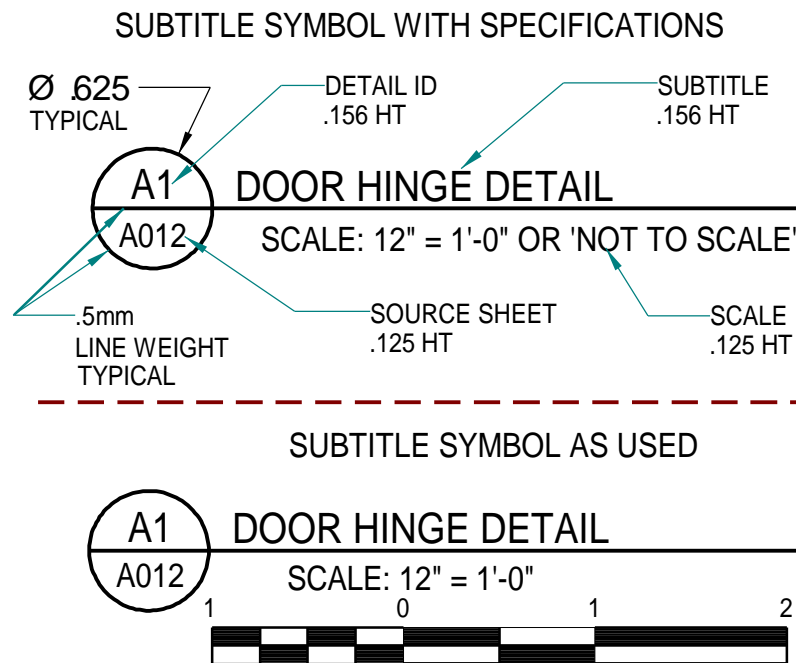


Figure 3-17, Standard Subtitle Annotation

3.1.20 Sections and Details.

3.1.20.1 Sections.

Sections must be drawn whenever additional clarification is warranted. Sections must be drawn using the drafting standards shown in Figure 3-18, Standard Section Annotation. The three types of section indicators to be used are short sections, extended sections, and offset sections. These are shown in Figure 3-19, Short Sections, Extended Sections, and Offset Sections.

All sections must be cut toward the top or left side of the drawing except in unusual situations. In some cases, it may be necessary to cut a short section reading from the left, but this should be avoided if possible. Sections must appear on the same drawing on which they are cut. If the section cannot be drawn on the same drawing, it must appear on a separate drawing reserved for sections. Under no circumstances are sections to be scattered indiscriminately throughout the set of drawings. Sectional cuts shall be lettered in alphabetical order on each drawing. The letter in the top half of the circle marker must indicate the section letter. The alphanumeric number in the lower half of the circle marker must indicate the drawing on which the section is shown. Heavy dark lines located in the position where the section is cut must indicate the location of the cutting plane. Offset sections may be used only when section clarity requires adjustment of a portion of the cutting plane. The limits of extended or offset sections limits must be indicated by a circular marker at one end of the cutting plane and by a half arrowhead at the other end. On all sectional cuts, the circle markers must be placed so that they can be read from the direction of cut.

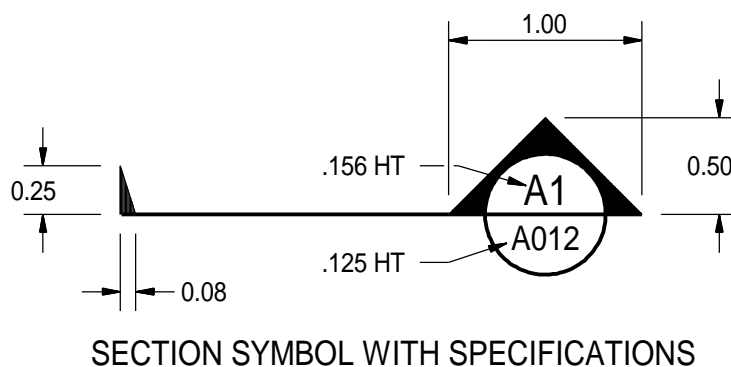


Figure 3-18, Standard Section Annotation

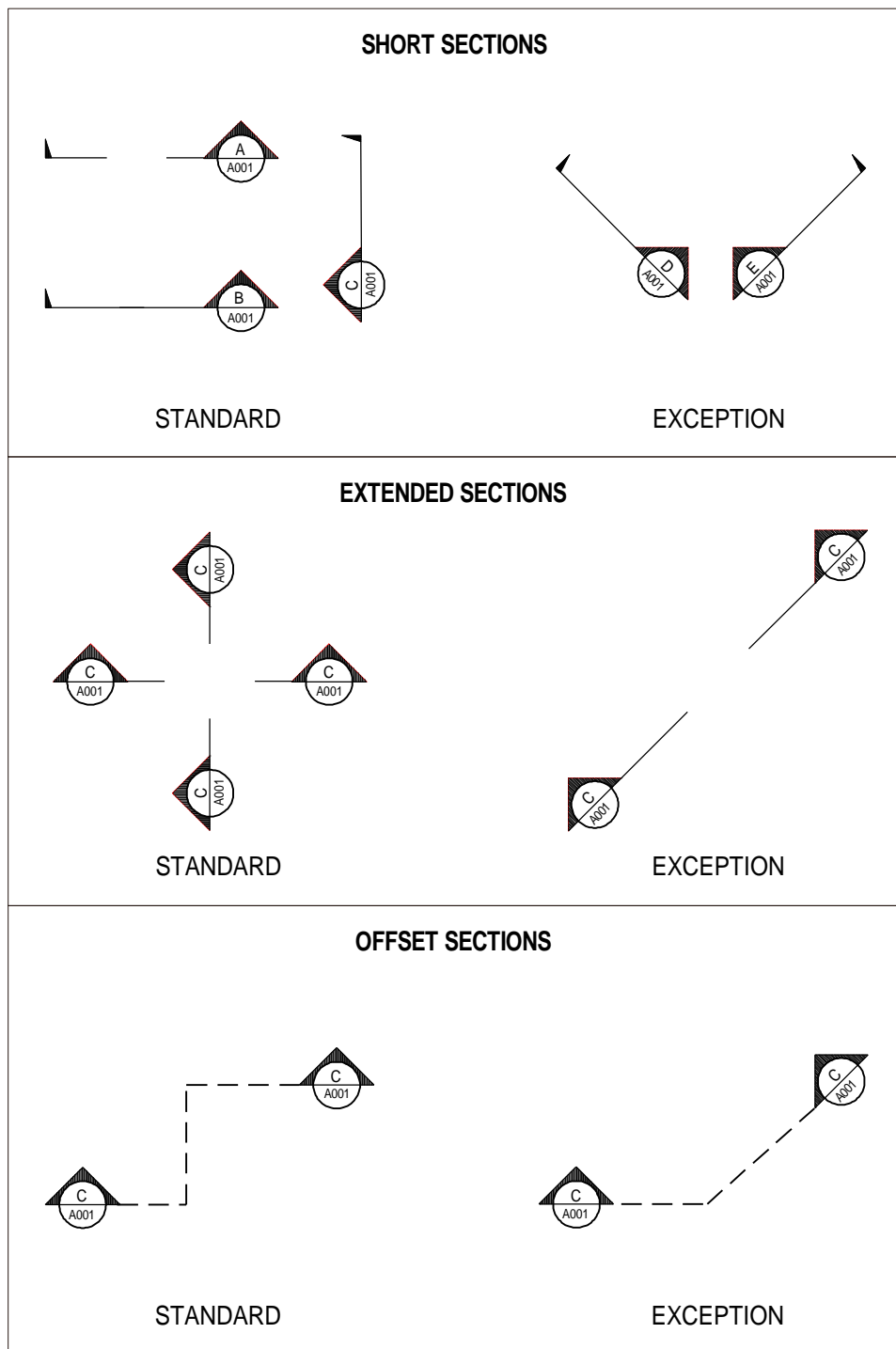
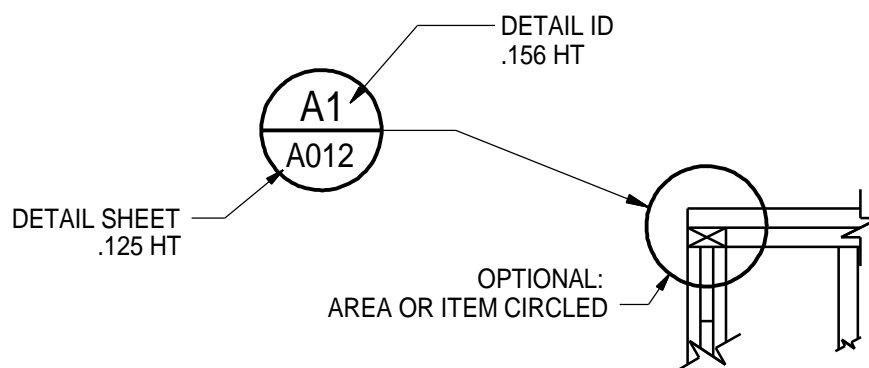


Figure 3-19, Short Sections, Extended Sections, and Offset Sections

3.1.20.2 Detail Drawings.

Detail drawings must be created whenever additional clarification is required and a section cannot readily be cut. The detail must either be a section, a plan view, an elevation, or an enlargement. Details must have an alphanumeric (e.g. A1) designation in the upper half of the circle marker. When details are intermixed with sections and it would be difficult to locate a lettered detail on a drawing, the details must be numbered consecutively with the sections. The alphanumeric number in the lower half of the circle marker must indicate the sheet number on which the details reside. See detail Figure 3-20, Standard Detail Symbol. When a detail appears more than once on the same drawing, extend a line off the detail, abbreviate the word typical (TYP), and indicate the quantity in parentheses.



DETAIL SYMBOL AS USED WITH SPECIFICATIONS

Figure 3-20, Standard Detail Symbol

3.1.21 Revision of Drawings.**3.1.21.1 Revision Methods.**

Revisions shall be made by the addition or deletion of information on the drawing. In the case of “As-Built” drawings, graphics may not require modifications.

3.1.21.1.1 Required Revisions.

After a drawing is approved, any subsequent changes shall be recorded as a revision.

3.1.21.1.2 Drawing Practices.

When revising an existing drawing the most recently approved graphic symbols, abbreviations, and drawing practices shall be used for any changes or revisions. Superseded symbology, etc., already appearing in the drawing and in accordance with formerly approved standards, should remain unchanged provided the interpretation is clear and unambiguous. Drawing entities that do not adhere to an FAA approved standard should be updated to comply with current standards.

3.1.21.2 Identifying Revisions on Drawings.

Revisions to the drawing shall be identified in the revision description area and the revision letter area in the title block. Both locations shall reflect the same revision letter.

3.1.21.2.1 Revision Locations.

The drawing zone in the revision description block should identify the location of specific items changed in a revision.

E	12/29/1998	ZONE A8 THRU H3 CUSTOMER MODIFICATIONS	1928374	09/26/1998	BAR
D	06/03/1997	AS-BUILT	9876543	05/26/1997	ABC
C	03/11/1996	ZONE G7, E4 ADDED WIRING DIAGRAM & DETAIL B1	6789123	02/13/1996	EAT
B	08/23/1995	ZONE F6 ENGINEER REVISION	1234567	07/08/1995	SAT
REV	DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION CITY IMPLEMENTATION CENTER/REGION - CITY, STATE					

Figure 3-21, Identifying Revision Locations

3.1.21.2.2 Revision Letters.

Uppercase letters shall be used in alphabetical sequence, excluding the letters “I”, “O”, “Q”, “S”, “X” and “Z”. Revision letters shall not exceed one character and numbers shall not be used. The first revision to a drawing shall be assigned the letter “A”. The first release or initial issue of a drawing does not require the use of a revision letter. When a drawing exceeds the letter revision “Y”, refer to Section 3.1.21.4, Redrawn or Replaced Drawings, within this standard.

3.1.21.2.3 Multiple Changes.

The same revision letter shall identify all changes to a drawing that are incorporated at the same time.

3.1.21.3 Revision Block.

The revision block size and format shall conform to Figure 3-21, Identifying Revision Locations. Only up to the four most current revisions shall be shown in the revision block. Each revision shall be recorded in the revision block in accordance with the following:

- a. The identifying letter pertaining to the revision shall be entered in the “REV” column.

- b. The date the CAD file changes revision shall be entered in the “DATE” column.
- c. A brief description of the change shall be entered in the “DESCRIPTION” column or it shall refer to the identity number of the document authorizing the change (e.g. CCD).
- d. The job control number (JCN) authorizing the revision shall be entered in the “JCN” column.
- e. The date of the actual redline changes is entered in the “REDLINE DATE” column.
- f. Initials of the approving official shall be entered in the “APVD” column.

3.1.21.4 Redrawn or Replaced Drawings.

Drawings are redrawn when manual drawings are converted to CADD, when there are extensive changes to a CADD file or when the revision letter reaches “Y”. The new drawing shall contain a note referencing the superseded drawing. The note shall be located above the revision block on the new drawing stating: “THIS DRAWING SUPERSEDES DRAWING _____, REVISION ____, DATED _____.” Subsequent revisions to the new drawing shall start with the letter “A”, regardless of the revision letter of the drawing being superseded. A note shall also be located above the revision block on the superseded drawing stating: “THIS DRAWING SUPERSEDED BY DRAWING _____, DATED _____.” The statements shall be in letters not less than .125 inch high. See Figure 3-22, Revision Block Example for Superseding Drawings.

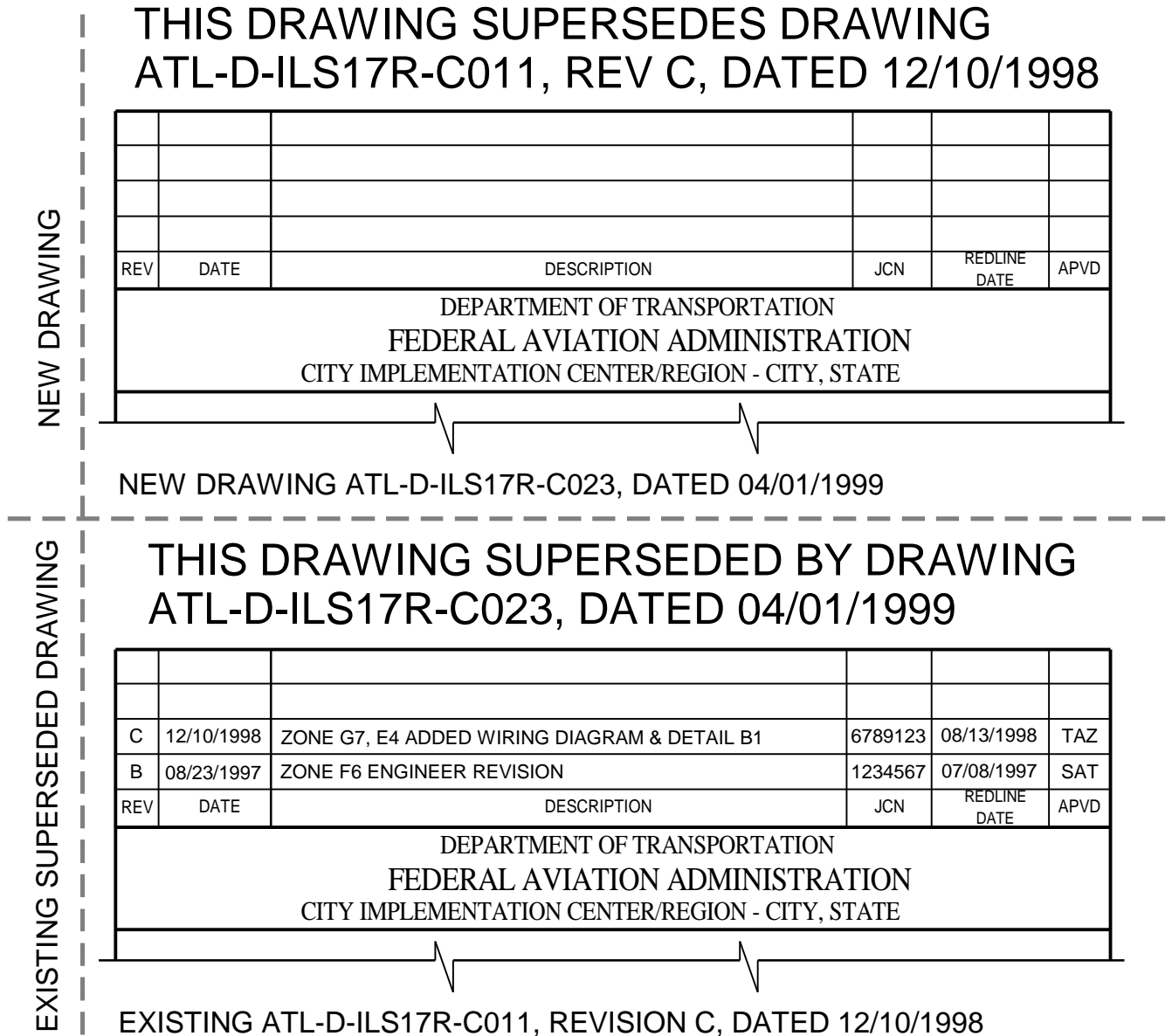


Figure 3-22, Revision Block Example for Superseding Drawings

3.2 Drawing Support.

3.2.1 EDMS.

At the time this Standard was being prepared the FAA’s Technical Graphics and Configuration Management Team, ANS-110, was in the process of selecting and procuring an engineering document management system which would have facilitated automation of the drawing production workflow as well as provided cataloging and archival capabilities.

3.2.2 File Naming.

Conventions for file naming must be implemented to ensure that each drawing is uniquely identified.

The file naming convention mirrors the drawing numbering convention in Section 3.1.5.1, Drawing Number Structure, and typically will match. This drafting standard promotes the use of the long file naming convention allowable with 32-bit software/OS technology. See Figure 3-23, File Naming Convention, for the format of CADD file names. The portions of the file name shown in square brackets ([]) are used as required. The brackets are for reference only and are not included in the file name.

The "Revision Letter" is appended to CADD filenames that have been replaced with a newer revision. The current revision of the CADD file doesn't have a revision letter appended to the end of the filename. This is required to maintain reference file linkage. When a drawing is revised and approved, the previously approved version of the CADD file shall be renamed with the revision appended to the end of the filename. For example, when drawing ZAU-D-ARTCC-023 is updated from revision A to revision B, the CADD file name of revision A is changed from zau-d-artcc-023.dgn to zau-d-artcc-023-a.dgn. So, the file name of revision B remains zau-d-artcc-023.dgn. When the initial issue of a drawing is revised, the file name of the old version of the drawing is appended with a zero (0), for example, zau-d-artcc-023-0.dgn.

The "Drawing Size" field for model files (reference files) shall be filled with the letter "M". "Project Copy Numbers" do not apply to model files.

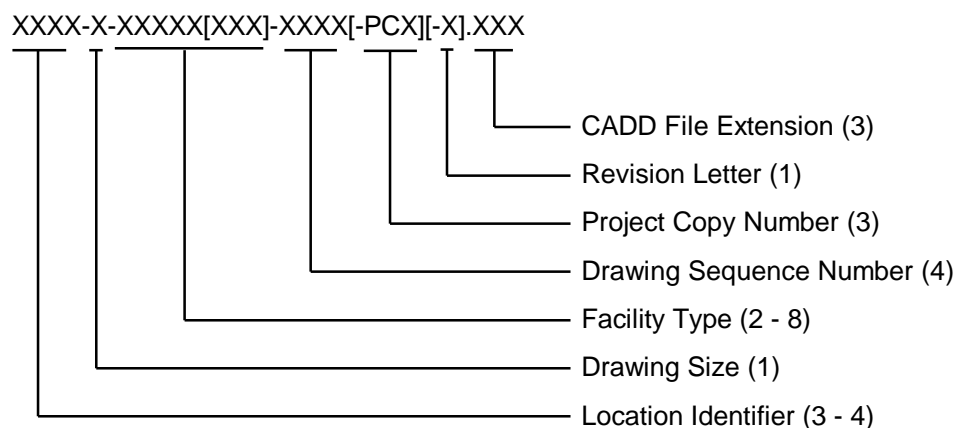


Figure 3-23, File Naming Convention

3.2.3 Drawing Configuration Management (CM).

Reference Configuration Management document, **National Configuration Change Management Procedures**, for guidelines on working with drawings under Configuration Management.

3.2.4 Archival of Drawings.

The CAEG Program Office, ANS-110, is tasked with determining guidelines on the archival of drawing files. Those guidelines will also address the issue of digital signatures.

4.0 ELECTRONIC DELIVERABLES.

4.1 General.

The need to exchange electronic drawing or data files, between the FAA and the A/E/C community, necessitates the requirements stated in this section.

4.1.1 Electronic Delivery Media.

The preferred type of media for data exchange depends both on the hardware and software platforms utilized in creating a drawing or data file and the size of file. The most common and generally accepted digital media consists of 3 1/2-inch high-density floppy disks (1.44MB MS-DOS formatted), CD-R (Joliet for Windows or ISO9660 for UNIX file systems), high-density disk (Zip or Jaz disk), or magnetic tape cartridge (4-mm DAT or DLT). Files or sets of files that exceed 9MB shall be furnished via CD-R, Zip disk or magnetic tape, and not on multiple diskettes.

4.1.2 Compression Software.

File compression is only permitted when one or more files extend beyond the storage capacity of a single diskette; however, receipt of files in non-compressed form is preferred. Compressed files shall be submitted in a format as created by PKZIP, WinZip or UNIX tar and compress commands. Compression files shall not span multiple diskettes. All compressed Zip files should be made self-extracting.

4.1.3 Media Labeling.

All media shall have a label containing, but not limited to:

1. Preparation date of the media.
2. The project description.
3. Contractor name and contract reference. (optional)
4. Contract transmittal number. (optional)
5. Quantity of files.
6. Operating System and version, and application software used to create the files.
7. The utility or command used to write the files to the media.

4.1.4 Electronic File Preparation.

All electronic files shall be delivered in a format that is directly readable and compatible with the FAA's software and hardware platforms without conversion. Before a file is placed on the electronic delivery media, the following procedures shall be performed:

1. Drawing files shall be in their native format, not DXF, or other neutral format.

2. Remove all extraneous graphics outside the drawing border area and set the active parameters to a standard setting of those in the seed or prototype file.
3. Ensure all external reference files are attached without device or directory specifications.

CADD entities to avoid:

1. Doughnuts, Segments, Solids and Traces
2. Text justification of align, fit or middle
3. Polylines
4. Point entities
5. Custom fonts, patterns or line types or styles
6. Special characters such as %%d, %%p, %%c, or %%%
7. Nested blocks
8. Nested Xrefs or reference files
9. Infinite Lines

4.1.5 Documentation.

All drawing packages submitted to the FAA shall include, but not limited to, a transmittal containing the same information as on the external media label, and:

The instructions for the restoring/transferring the files from the media.
File name identification, and cross reference to FAA drawing number, if applicable.

A full size hard copy plot of each drawing file submitted on the media.
Person designated as point of contact.

Certification in the form of a signed statement, that the delivery data is free of known computer viruses, including the name(s) and release date(s) of the virus scanning software used to check the media.

4.1.6 Ownership.

A statement similar to the following should be included in each contract with electronic drawing deliverables:

The FAA shall have unlimited rights under this contract to all information and materials developed under this contract and furnished to the FAA and documentation thereof, reports and listings, and all other items pertaining to the work and services pursuant to this agreement including any copyright. Unlimited rights under this contract are rights to use, duplicate, or disclose data and information, in whole or part in any manner and for any purpose whatsoever without compensation to or approval from Contractor. The FAA will at all reasonable times have the right to inspect the work and will have access to and the rights to make copies of the above-mentioned items. All digital files and data, and other products generated under this contract shall become the property of the FAA.

4.2 Quality Assurance.

This section lists the requirements for the inspection and submittal of drawings, and the engineering data quality assurance system for contractors.

4.2.1 Responsibility for Inspection.

Unless otherwise specified in the contract or order, the contractor/supplier is responsible for the performance of all inspection requirements. Except, as otherwise specified in the contract or order, the contractor may use their own, or any other facilities, that are suitable for the performance of the inspection requirements specified therein. These facilities are subject to approval of the inspections set forth in the specification where such inspections are deemed necessary to assure that the engineering drawings and the associated lists conform to prescribed requirements.

The CADD Manager is responsible for seeing that the electronic files are in compliance with FAA standards. This check would examine files for entities placed in the proper layer or level, proper drawing and plot parameters, title block is filled out and set correctly, and the drawing is free of unwanted entities.

4.2.2 Engineering Data Quality Assurance System.

Unless otherwise specified in the contract or order, the contractor/supplier needs to have an effective quality assurance system for the detailed quality assurance and technical accuracy of all engineering drawings and associated lists to be supplied under the terms of the contract. The procedures of the quality assurance system shall assure the conformance of the engineering drawings and associated lists to the applicable contract provisions. The quality assurance system shall be documented, and subject to the approval of the Contracting Officer.

5. GENERAL.**5.1 Drawing Definitions.**

The following sections define general A/E/C drawing types.

5.1.1 Engineering Drawings.

Engineering Drawings are formal representations used to convey the physical and functional end product design and/or installation requirements of an item. They may include pictorial, graphical, schematic or textual presentations.

5.1.2 Construction Drawings.

Construction Drawings are engineering drawings, which show the design of buildings, structures, or the related construction, and are normally associated with the architectural, construction and civil engineering operations. Construction drawings establish all the interrelated elements of the pertinent services, equipment, utilities, and other engineering skills.

5.1.3 Installation Drawings.

Installation drawings are engineering drawings, which show the installation requirements of NAS mission equipment in facilities.

5.1.4 National Standard Drawings.

National standard drawings may be either construction or installation drawings generated for or by Washington Headquarters Program Offices and depict standard design and installation requirements.

5.1.5 Regional Standard Drawings.

Regional standard drawings are generated and maintained by the Regional Offices, ANI IC, Aeronautical Center, and Technical Center, and are intended for their exclusive use.

5.2 Glossary.

The following are definitions of terms used in this standard.

AutoCAD—AutoCAD is a full-featured CADD tool produced by Autodesk Inc. that handles both 2D and 3D design. The native file format is DWG and it reads and writes DXF files.

CADD—Computer Aided Design & Drafting. Graphic software used by engineers and drafters to create and modify drawings in 2D and 3D.

CAEG—Computer Aided Engineering Graphics. The FAA's technical graphics initiative, CAEG, includes Computer Aided Design & Drafting (CADD), Computer-Aided Engineering (CAE), and Geographical Information Systems (GIS). The National CAEG Program Office is ANS-110.

DGN—MicroStation's native CADD file format.

Drawing Sheet Format—The sheet boundary lines, zoning system and title block geometry used to record administrative information about the CADD file.

Drawing Sheet Sizes—Standard sheet sizes are determined by the American National Standards Institute. Alphabetic characters name sheet sizes such as: D, E and F.

Drawing Zone System—Boundary information that sub-divides a sheet for easy referencing in a revision block.

DWG—AutoCAD's native CADD file format.

DXF—AutoCAD drawing exchange format for CADD files.

Job Control Number (JCN)—A unique number assigned to each project and tracked by the Regional Tracking Program (RTP).

MicroStation—MicroStation is a full-featured CADD tool that handles 2D and 3D design produced by Bentley Systems Inc. The native file format is DGN, although it also reads and writes DWG and DXF.

Model File—Model files are to be used to describe the facility’s physical layout and components. This includes the building’s walls, doors, windows, structural system, mechanical system, etc. All model files are drawn at full size (1-to-1). Model files can be 2D or 3D.

Model Space—AutoCAD Model Space is where the user creates a 2D or 3D full size (1-to-1) drawing. Model file types are created in Model Space.

Paper Space—AutoCAD Paper Space is where the user organizes different layouts for the purpose of plotting to an appropriate English or Metric drawing scale.

Plot Stamp—Plots of CADD drawing files should include a plot stamp, which should include the file name and path, date, time and the user name.

Project Copy—A project copy drawing is part of the project copy process, which manages concurrent design updates to a single released drawing.

Raster—A digital image process producing lines made of rectangular dots. Examples of raster formats are TIFF, JPG, BMP, GIF, etc.

Reference File—A CADD software capability that allows vector or raster files to be attached to sheet files and displayed, plotted, and (in the case of reference design files) used for construction purposes. This capability is generally used as a project organization tool to segregate the sources of project drawing files. Additionally, it allows designers to share drawing information electronically.

Revised Drawing—A drawing that has been replaced by a newer revision.

Sheet File—MicroStation sheet files are to be used to assemble model files, text, title block and other information for plotting purposes. Each sheet file represents one plotted drawing. Generally sheet files are plotted at 1-to-1 scale.

TIFF—Tagged Image File Format. Raster graphics format developed by a committee chaired by Aldus Corporation, with contributions from Microsoft and Hewlett-Packard. The FAA standard format is TIFF Group 4.

Vector—Computer graphics represented by points, lines and other geometric entities.

Workflow—The automatic routing of documents to the users responsible for working on them.

5.3 Acronyms and Abbreviations.

The following are definitions of acronyms and abbreviations used in this standard; these items are not listed in the FAA Glossary of Acronyms in Appendix B.

2D—Two Dimensional

3D—Three Dimensional

A/E/C—Architectural, Engineering and Construction

AIA—American Institute of Architects

ANI—NAS Implementation

CCD—Configuration Control Decision

CIFM—Computer Integrated Facilities Management

CM—Configuration Management

CD-R—Compact Disc-Recordable

CSI—Construction Specifications Institute

DAT—Digital Audio Tape

DLT—Digital Linear Tape

EC—Engineering Center

EDMS—Engineering Document Management System

GIS—Geographical Information Systems

GSA—General Services Administration

IC—Implementation Center

JCN—Job Control Number

JON—Job Order Number

NCP—NAS Change Proposal

NIBS—National Institute of Building Sciences

OS—Operating System

PBS—Public Buildings Service

RTP—Regional Tracking Program

UDS—Uniform Drawing System

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5.4 FAA, Standards and CADD Web Sites

FAA	http://www.faa.gov/
FAA National CAEG	http://www.mmac.jccbi.gov/nationalcaeg/
FAA Standards	http://www.nasi.hq.faa.gov/nasiHTML/FAAStandards/
FAA Acronyms	http://www.faa.gov/arp/acronym.htm
FAA NAS Implementation	http://www.ani.faa.gov/
AIA CAD Layer Guidelines	http://www.e-architect.com/
ANSI	http://www.ansi.org/
AutoCAD	http://www.autodesk.com/
CSI Uniform Drawing System	http://www.csinet.org/
GSA PBS CAD/CIFM Standard	http://www.tracor-es.com/gsa/
MicroStation	http://www.bentley.com/
NIBS National CADD Standard	http://www.nibs.org/caddhome.htm
Tri-Service CADD/ GIS Technology Center	http://tsc.wes.army.mil/

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APPENDIX A

LAYER/LEVEL Naming Scheme

Preface.

This appendix addresses the usage of MicroStation levels and AutoCAD layers. The associated MicroStation and AutoCAD color numbers listed in the following tables shall be used. Additions to the level/layer structure are allowed as required to the unassigned levels/layers only, not to exceed the level/layer number 63. Levels/layers identified as “Reserved For Reference” are to be used when working with reference files.

The level/layer tables are arranged to correlate the construction drawing set and installation drawings. Real Estate/Lease drawings shall use the General table. Demolition and Hazardous Materials drawings are typically discipline specific and have no specific table. Interiors drawings shall use the Architectural table. Telecommunications drawings shall use the Installation table.

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GENERAL.

The following AutoCAD layers/MicroStation levels shall be used to structure General Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	General Layer/Level Names	General Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	- -ANNO-TEXT	Text	7	0
2	- -ANNO-REDL	Redline	1	3
3	- -ANNO-SYMB	Symbols	4	7
4	- -ANNO-LEGN	Legends and Schedules	4	7
5	- -ANNO-DIMS	Dimensions and Leaders	5	1
6	- -ANNO-TTLB	Border and title block	30	6
7	- -ANNO-NOTE	Notes	7	0
8	- -ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	- -ANNO-KEYN	Key Notes	7	0
10	- -ANNO-REVS	Revisions	4	7
11	- -ANNO-PATT	Cross-hatching, poche'	5	1
12	- -ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	- -ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	1	3
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20				
21	G-OBJT-EXST	Existing objects	1	3
22	G-OBJT-NEW	New objects	4	7
23	G-BLINE	Boundary lines	4	7
24	G-BRAK	Break lines	8	9
25	G-CENL	Center lines	8	9
26	G-HIDL	Hidden lines	8	9
27	G-PHNL	Phantom lines	8	9
28	G-PROP	Property lines	4	7
29	G-TOPO	Topography lines	5	1

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General (Continued).

Lv Num (uStn)	General Layer/Level Names	General Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
30	G-NTHA	North arrows	1	3
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			
62	RESERVED FOR REFERENCE			
63				

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Civil.

The following AutoCAD layers/MicroStation levels shall be used to structure Civil Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	Civil Layer/Level Names	Civil Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	--ANNO-TEXT	Text	7	0
2	--ANNO-REDL	Redline	1	3
3	--ANNO-SYMB	Symbols	4	7
4	--ANNO-LEGN	Legends and Schedules	4	7
5	--ANNO-DIMS	Dimensions and Leaders	5	1
6	--ANNO-TTLB	Border and title block	30	6
7	--ANNO-NOTE	Notes	7	0
8	--ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	--ANNO-KEYN	Key Notes	7	0
10	--ANNO-REVS	Revisions	4	7
11	--ANNO-PATT	Cross-hatching, poche'	5	1
12	--ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	--ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	1	3
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20				
21	C-PROP	Property lines, survey benchmarks, retaining walls	4	7
22	C-PROP-BRNG	Bearings and distance labels	7	0
23	C-PROP-ESMT	Easements, rights-of-way, setback lines, runway approach zones	1	3
24	C-BLDG	Proposed building footprints	4	7
25	C-PROP-CONS	Construction Controls	4	7
26	C-TOPO	Contour lines and elevations, spot elevations	5	1

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Civil (Continued).

Lv Num (uStn)	Civil Layer/Level Names	Civil Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
27	C-TOPO-BORE	Test bores	1	3
28	C-PKNG	Parking lots, striping, handicapped symbols	1	3
29	C-PKNG-ISLD	Parking islands, curbs	4	7
30	C-PKNG-DRAN	Parking lot drainage slope indications	1	3
31	C-ROAD	Roadways, runways, taxiways, curbs	4	7
32	C-ROAD-CNTR	Center lines (roads, runways)	8	9
33	C-STRM-BASN	Storm drainage catch basins, manholes	1	3
34	C-STRM-UNDR	Underground storm drainage pipe lines	5	1
35	C-COMM-OVER	Site communications, telephone poles, boxes, towers	1	3
36	C-COMM-UNDR	Underground communication / power lines	5	1
37	C-COMM-OVHD	Overhead communication / power lines	1	3
38	C-WATR	Domestic water: manholes, pumping stations, storage tanks	1	3
39	C-WATR-UNDR	Domestic water: underground lines	5	1
40	C-FIRE	Fire protection: hydrants, connections	1	3
41	C-FIRE-UNDR	Fire protections: underground lines	5	1
42	C-NGAS	Natural gas – manholes, meters, storage tanks	1	3
43	C-NGAS-UNDR	Natural gas – underground lines	5	1
44	C-SSWR	Sanitary sewer – manholes, pumping stations	1	3
45	C-SSWR-UNDR	Sanitary sewer – underground lines	5	1
46	C-ATNA	Antenna (Comm/Radar) - antenna towers and antennas.	1	3
47				
48				
49				

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Civil (Continued).

Lv Num (uStn)	Civil Layer/Level Names	Civil Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
50				
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55	User Defined			
56	User Defined			
57	User Defined			
58	User Defined			
59	User Defined			
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			
62	RESERVED FOR REFERENCE			
63				

Landscaping.

The following AutoCAD layers/MicroStation levels shall be used to structure Landscape Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	Landscape Layer/Level Names	Landscape Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	- -ANNO-TEXT	Text	7	0
2	- -ANNO-REDL	Redline	1	3
3	- -ANNO-SYMB	Symbols	4	7
4	- -ANNO-LEGN	Legends and Schedules	4	7
5	- -ANNO-DIMS	Dimensions and Leaders	5	1
6	- -ANNO-TTLB	Border and title block	30	6
7	- -ANNO-NOTE	Notes	7	0
8	- -ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	- -ANNO-KEYN	Key Notes	7	0
10	- -ANNO-REVS	Revisions	4	7
11	- -ANNO-PATT	Cross-hatching, poche'	5	1
12	- -ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	- -ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	1	3
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20				
21	L-SITE-FURN	Site furnishings	1	3
22	L-PLNT	Plant and landscape materials, Ground covers and vines, Rock, bark and other landscaping beds, planting plants	1	3
23	L-PLNT-TREE	Trees	4	7
24	L-PLNT-TURF	lawn areas	1	3
25	L-IRRG	Irrigation systems, sprinklers, piping, equipment, coverage	1	3

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Landscape (Continued).

Lv Num (uStn)	Landscape Layer/Level Names	Landscape Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
26	L-WALK	Walks and steps and crosshatch patterns	1	3
27	L-SITE	Site improvements, fencing, walls, steps, decks, bridges, pools, spas, sports fields, play structures	1	3
28				
29				
30				
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55	User Defined			
56	User Defined			
57	User Defined			
58	User Defined			
59	User Defined			
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			

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Landscape (Continued).

Lv Num (uStn)	Landscape Layer/Level Names	Landscape Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
62	RESERVED FOR REFERENCE			
63				

Architectural.

The following AutoCAD layers/MicroStation levels shall be used to structure Architectural Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	Architectural Layer/Level Names	Architectural Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	- -ANNO-TEXT	Text	7	0
2	- -ANNO-REDL	Redline	1	3
3	- -ANNO-SYMB	Symbols	4	7
4	- -ANNO-LEGN	Legends and Schedules	4	7
5	- -ANNO-DIMS	Dimensions and Leaders	5	1
6	- -ANNO-TTLB	Border and title block	30	6
7	- -ANNO-NOTE	Notes	7	0
8	- -ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	- -ANNO-KEYN	Key Notes	7	0
10	- -ANNO-REVS	Revisions	4	7
11	- -ANNO-PATT	Cross-hatching, poche'	5	1
12	- -ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	- -ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	1	3
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20		Unused		
21	A-WALL-FULL	Full height walls, stair and shaft walls, walls to structure; Floor information; Overhead items (skylights, overhangs, usually dashed lines), columns	4	7

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Architectural (Continued).

Lv Num (uStn)	Architectural Layer/Level Names	Architectural Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
22	A-WALL-PRHT	Partial height walls; Door headers & jambs; Window headers & jambs; do not appear on reflected ceiling plans; Level changes, ramps, pits, depressions	1	3
23	A-WALL-MOVE	Moveable partitions	1	3
24	A-WALL-PATT	Wall insulation, hatching and fill; Wall surfaces - 3D views; Fire wall Patterning; Paving, tile, carpet patterns, Ceiling patterns, Area cross hatching, Elevation textures and hatch patterns, Textures and hatch patterns	5	1
25	A-DOOR	Doors; Full-height (to ceiling) doors, swing and leaf, 3-D Views	4	7
26	A-GLAZ	Windows, window walls, curtain walls, glazed partitions; Full height glazed walls and partitions; Windows and partial-ht. Glazed partitions; Windowsills; Glazing and mullions – elevation views	4	7
27	A-FLOR-OTLN	Floor or building outlines	4	7
28	A-FLOR-STRS	Stair treads, escalators, ladders; Stair risers, balcony handrails, guard rails	1	3
29	A-FLOR-EVTR	Elevator cars and equipment	4	7
30	A-FLOR-TPTN	Toilet partitions; Architectural specialties (toilet room accessories, display cases)	1	3
31	A-FLOR-WDWK	Architectural woodwork (field built-cabinets and counters); Casework (manufactured cabinets); Finishes, woodwork, trim, Wall-mounted casework	1	3
32	A-FLOR-RAIS	Raised floors	1	3

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Architectural (Continued).

Lv Num (uStn)	Architectural Layer/Level Names	Architectural Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
33	A-FLOR-PFIX	Plumbing Fixtures, Miscellaneous fixtures, Plumbing fixtures in elevation	1	3
34	A-SIGN	Signage	1	3
35	A-EQPM	Equipment, Fixed equipment, Moveable equip., Equip not in contract, Equip access, Equip surfaces 3-D views, Ceiling mounted or suspended equip	1	3
36	A-FURN-FREE	furniture: freestanding (desks, credenzas, etc), chairs and other seating, file cabinets, plants, furniture elevations - 3D	5	1
37	A-FURN-PNLS	Furniture: system panels and work surface components, storage components, system furniture power designations, finish patterns	1	3
38	A-CLNG	Ceiling information, ceiling grid, ceiling/roof penetrations, main tees, suspend elements, ceiling access	1	3
39	A-LITE	Light fixtures	1	3
40	A-HVAC	Supply diffusers, Return air diffusers	1	3
41	A-GRID	Planning grid or column grid	1	3
42	A-ROOF	Roof, Roof outline, Level changes, Roof surfaces – 3D	4	7
43	A-ELEV	Elevations	1	3
44				
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55	User Defined			
56	User Defined			
57	User Defined			
58	User Defined			

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Architectural (Continued).

Lv Num (uStn)	Architectural Layer/Level Names	Architectural Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
59	User Defined			
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			
62	RESERVED FOR REFERENCE			
63				

Structural.

The following AutoCAD layers/MicroStation levels shall be used to structure Structural Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	Structural Layer/Level Names	Structural Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	- -ANNO-TEXT	Text	7	0
2	- -ANNO-REDL	Redline	1	3
3	- -ANNO-SYMB	Symbols	4	7
4	- -ANNO-LEGN	Legends and Schedules	4	7
5	- -ANNO-DIMS	Dimensions and Leaders	5	1
6	- -ANNO-TTLB	Border and title block	30	6
7	- -ANNO-NOTE	Notes	7	0
8	- -ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	- -ANNO-KEYN	Key Notes	7	0
10	- -ANNO-REVS	Revisions	4	7
11	- -ANNO-PATT	Cross-hatching, poche'	5	1
12	- -ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	- -ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	1	3
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20				
21	S-WALL	Structural bearing or shear walls	4	7
22	S-GRID	Column grid outside building, inside building, grid dimensions, grid tags, columns	1	3
23	S-FNDN	Foundation, piles, drilled piers	1	3
24	S-FNDN-RBAR	Foundation reinforcing, Slab reinforcing, Anchor bolts	1	3

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Structural (Continued).

Lv Num (uStn)	Structural Layer/Level Names	Structural Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
25	S-SLAB	Slab, edge of slab, slab control joints	1	3
26	S-METL	Miscellaneous metal	1	3
27	S-BEAM	Beams	4	7
28	S-JOIS	Joists	4	7
29	S-DECK	Structural floor deck	1	3
30				
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55	User Defined			
56	User Defined			
57	User Defined			
58	User Defined			
59	User Defined			
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			
62	RESERVED FOR REFERENCE			
63				

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Mechanical.

The following AutoCAD layers/MicroStation levels shall be used to structure Mechanical Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	Mechanical Layer/Level Names	Mechanical Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	--ANNO-TEXT	Text	7	0
2	--ANNO-REDL	Redline	1	3
3	--ANNO-SYMB	Symbols	4	7
4	--ANNO-LEGN	Legends and Schedules	4	7
5	--ANNO-DIMS	Dimensions and Leaders	5	1
6	--ANNO-TTLB	Border and title block	30	6
7	--ANNO-NOTE	Notes	7	0
8	--ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	--ANNO-KEYN	Key Notes	7	0
10	--ANNO-REVS	Revisions	4	7
11	--ANNO-PATT	Cross-hatching, poche'	5	1
12	--ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	--ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	1	3
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20				
21	M-CHIM	Prefabricated chimneys	1	3
22	M-CMPA	Plant compressed air systems, equipment and piping	4	7
23	M-PROC	Process/instrument air piping and equipment	4	7
24	M-CONT	Thermostats, controls and instrumentation	1	3
25	M-CONT-WIRE	Low voltage control wiring	1	3

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Mechanical (Continued).

Lv Num (uStn)	Mechanical Layer/Level Names	Mechanical Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
26	M-DUST	Dust and fume collection system, equipment and ductwork	4	7
27	M-ELHT-EQPM	Electric heat equipment	1	3
28	M-ENER	Energy management system, equipment and wiring	1	3
29	M-RCOV	Energy recovery system, equipment and piping	1	3
30	M-EXHS	Exhaust system, equipment and ductwork, Roof exhaust equipment	1	3
31	M-FUEL-GAS	Fuel system tanks, piping, gas process piping, fuel gas general piping	1	3
32	M-FUEL-OIL	Fuel oil process tanks, piping and general piping	1	3
33	M-HVAC	HVAC system, HVAC ductwork, and equipment	4	7
34	M-HOTW	Hot water heating system, equipment piping	4	7
35	M-CWTR	Chilled water system, piping and equipment	4	7
36	M-MACH	Machine shop equipment	1	3
37	M-FUEL-NGAS	Natural gas systems, equipment and piping	4	7
38	M-HVAC-DFF	HVAC ceiling diffusers, other diffusers, supply diffusers, return air diffusers	4	7
39	M-REFG	Refrigeration systems, equipment and piping	4	7
40	M-SPCL	Special systems, equipment and piping	1	3
41	M-STEM	Steam systems, steam systems condensation piping and equipment, Low pressure steam piping, High pressure steam piping, Medium pressure steam piping	1	3
42	M-TEST	Test equipment	1	3
43				
44				
45				
46				

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Mechanical (Continued).

Lv Num (uStn)	Mechanical Layer/Level Names	Mechanical Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
47				
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54				
55	User Defined			
56	User Defined			
57	User Defined			
58	User Defined			
59	User Defined			
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			
62	RESERVED FOR REFERENCE			
63				

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Plumbing.

The following AutoCAD layers/MicroStation levels shall be used to structure Plumbing Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	Plumbing Layer/Level Names	Plumbing Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	- -ANNO-TEXT	Text	7	0
2	- -ANNO-REDL	Redline	1	3
3	- -ANNO-SYMB	Symbols	4	7
4	- -ANNO-LEGN	Legends and Schedules	4	7
5	- -ANNO-DIMS	Dimensions and Leaders	5	1
6	- -ANNO-TTLB	Border and title block	30	6
7	- -ANNO-NOTE	Notes	7	0
8	- -ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	- -ANNO-KEYN	Key Notes	3	2
10	- -ANNO-REVS	Revisions	4	7
11	- -ANNO-PATT	Cross-hatching, poche'	5	1
12	- -ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	- -ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	4	7
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20				
21	P-WAST-OIL	waste oil systems and piping	1	3
22	P-DOMW	Domestic hot and cold water systems and piping	1	3
23	P-SANR	Sanitary drainage and piping, floor drains and piping, sanitary risers and equipment	1	3
24	P-STRM	Storm drainage system, storm drain piping and risers	1	3
25	P-STRM-RFDR	Roof drains	8	9

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Plumbing (Continued).

Lv Num (uStn)	Plumbing Layer/Level Names	Plumbing Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
26	P-FIXT	Plumbing fixtures and equipment	1	3
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
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55	User Defined			
56	User Defined			
57	User Defined			
58	User Defined			
59	User Defined			
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			
62	RESERVED FOR REFERENCE			
63				

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Electrical.

The following AutoCAD layers/MicroStation levels shall be used to structure Electrical Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	Electrical Layer/Level Names	Electrical Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	- -ANNO-TEXT	Text	7	0
2	- -ANNO-REDL	Redline	1	3
3	- -ANNO-SYMB	Symbols	4	7
4	- -ANNO-LEGN	Legends and Schedules	4	7
5	- -ANNO-DIMS	Dimensions and Leaders	5	1
6	- -ANNO-TTLB	Border and title block	30	6
7	- -ANNO-NOTE	Notes	7	0
8	- -ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	- -ANNO-KEYN	Key Notes	3	2
10	- -ANNO-REVS	Revisions	4	7
11	- -ANNO-PATT	Cross-hatching, poche'	5	1
12	- -ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	- -ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	1	3
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20				
21	E-LITE	Lighting, special lighting, ceiling mounted lighting, wall mounted lighting, floor mounted lighting, lighting outline for optional background lighting, roof lighting	4	7
22	E-LITE-EXIT	Emergency and exit lighting	4	7
23	E-LITE-SITE	Site lighting	4	7

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Electrical (Continued).

Lv Num (uStn)	Electrical Layer/Level Names	Electrical Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
24	E-LITE-IDEN	Lighting circuit numbers, luminaire identification and text	7	0
25	E-LITE-SWCH	Lighting switches	1	3
26	E-LITE-CIRC	Lighting circuits	1	3
27	E-JBOX	Junction box	4	7
28	E-POWR-RECP	Power: wall and ceiling outlets and receptacles	4	7
29	E-POWR-EQPM	Power panels, equipment, switchboards	4	7
30	E-POWR-CIRC	Power circuits	4	7
31	E-POWR-CABL	Underfloor raceways, cable trays, busways	1	3
32	E-CTRL-DEVC	Control Systems Device	1	3
33	E-CTRL-WIRE	Control Systems Wiring	1	3
34	E-GRND-CIRC	Ground system, counterpoise, ground rods	4	7
35	E-GRND-REFR	Reference ground system	4	7
36	E-GRND-DIAG	Electrical grounding diagram	4	7
37	E-LTNG	Lightning protection system	4	7
38	E-FIRE	Fire alarm, fire extinguishers	4	7
39	E-COMM	Telephone, communications outlets	1	3
40	E-DATA	Data outlets	1	3
41	E-SOUN	Sound/PA system	1	3
42	E-TVAN	TV antenna system	1	3
43	E-CCTV	Closed-circuit TV	1	3
44	E-SECR	Security	1	3
45	E-ALRM	Miscellaneous alarm system	1	3
46	E-LEGN	Legend of symbols	4	7
47	E-1LIN	One-line diagram	4	7
48	E-RISR	Riser diagram	1	3
49				
50				
51				
52				
53				
54				
55	User Defined			
56	User Defined			
57	User Defined			
58	User Defined			
59	User Defined			

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Electrical (Continued).

Lv Num (uStn)	Electrical Layer/Level Names	Electrical Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			
62	RESERVED FOR REFERENCE			
63				

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Fire Protection.

The following AutoCAD layers/MicroStation levels shall be used to structure Fire Protection Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	Fire Protection Layer/Level Names	Fire Protection Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	- -ANNO-TEXT	Text	7	0
2	- -ANNO-REDL	Redline	1	3
3	- -ANNO-SYMB	Symbols	4	7
4	- -ANNO-LEGN	Legends and Schedules	4	7
5	- -ANNO-DIMS	Dimensions and Leaders	5	1
6	- -ANNO-TTLB	Border and title block	30	6
7	- -ANNO-NOTE	Notes	7	0
8	- -ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	- -ANNO-KEYN	Key Notes	3	2
10	- -ANNO-REVS	Revisions	4	7
11	- -ANNO-PATT	Cross-hatching, poche'	5	1
12	- -ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	- -ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	1	3
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20				
21	F-CO2S	CO2 sprinkler piping & equipment	1	3
22	F-HALN	Halon piping & equipment	1	3
23	F-IGAS	Inert gas equipment & piping	1	3
24	F-SPRN	Fire protection sprinkler system, sprinkler piping, sprinkler heads, sprinkler standpipes, fire protection systems	1	3

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Fire Protection (Continued).

Lv Num (uStn)	Fire Protection Layer/Level Names	Fire Protection Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
25	F-PROT	Fire system equipment (fire hose cabinet extinguishers), fire alarm, smoke detectors/heat sensors	1	3
26				
27				
28				
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49				
50				
51				
52				
53				
54				
55	User Defined			
56	User Defined			
57	User Defined			
58	User Defined			
59	User Defined			
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			

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Fire Protection (Continued).

Lv Num (uStn)	Fire Protection Layer/Level Names	Fire Protection Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
62	RESERVED FOR REFERENCE			
63				

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Installation.

The following AutoCAD layers/MicroStation levels shall be used to structure Installation Drawings. The associated AutoCAD and MicroStation color numbers will be used as a standard.

Lv Num (uStn)	Installation Layer/Level Names	Installation Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
1	- -ANNO-TEXT	Text	7	0
2	- -ANNO-REDL	Redline	1	3
3	- -ANNO-SYMB	Symbols	4	7
4	- -ANNO-LEGN	Legends and Schedules	4	7
5	- -ANNO-DIMS	Dimensions and Leaders	5	1
6	- -ANNO-TTLB	Border and title block	30	6
7	- -ANNO-NOTE	Notes	7	0
8	- -ANNO-NPLT	Construction Lines, non-plotting information	8	9
9	- -ANNO-KEYN	Key Notes	3	2
10	- -ANNO-REVS	Revisions	4	7
11	- -ANNO-PATT	Cross-hatching, poche'	5	1
12	- -ANNO-IDEN	Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s	7	0
13	- -ANNO-TITL	Drawing Component Titles Detail Titles, Section Titles, Elevations	3	2
14	G-PLAN	Floor plan – key map	1	3
15	G-SITE	Site plan - key map	1	3
16	G-ACCS	Access plan	1	3
17	G-EVAC	Evacuation plan	1	3
18	H-FLPN	Hazardous material on floor plan	4	7
19	H-SITE	Hazardous material on site plan	4	7
20				
21	Q-TELC-CABL	Telco Cable	1	3
22	Q-TELC-EQPM	Telco Equipment	4	7
23	Q-TELC-JACK	Telco data/telephone jacks	4	7
24	Q-DIAG	Electronic Diagram	1	3
25	Q-WAVG	Waveguide paths	4	7
26	Q-DATA-CABL	Data cable	1	3
27	Q-SCEM	Schematics diagrams	4	7
28	Q-RACK	Racks (plan or elevation view)	4	7
29				

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Installation (Continued).

Lv Num (uStn)	Electronic Layer/Level Names	Electronic Layer/Level Descriptions	AutoCAD Color #	MicroStation Color #
30				
31				
32				
33				
34				
35				
36				
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38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55	User Defined			
56	User Defined			
57	User Defined			
58	User Defined			
59	User Defined			
60	RESERVED FOR REFERENCE			
61	RESERVED FOR REFERENCE			
62	RESERVED FOR REFERENCE			
63				

GLOSSARY OF ACRONYMS

-A-

A/C -Aircraft
 A/G -Air to Ground
 A/H -Altitude/Height
 AAC -Mike Monroney Aeronautical Center
 AAF -Army Air Field
 AAI -Arrival Aircraft Interval
 AAP -Advanced Automation Program
 AAR -Airport Acceptance Rate
 ABDIS -Automated Data Interchange System Service B
 ACAIS -Air Carrier Activity Information System
 ACAS -Aircraft Collision Avoidance System
 ACC -Area Control Center
 ACCT -Accounting Records
 ACD -Automatic Call Distributor
 ACDO -Air Carrier District Office
 ACF -Area Control Facility
 ACFO -Aircraft Certification Field Office
 ACFT -Aircraft
 ACID -Aircraft Identification
 ACLS -Automatic Carrier Landing System
 ACLT -Actual Landing Time Calculated
 ACO -Aircraft Certification Office
 ADA -Air Defense Area
 ADAP -Airport Development Aid Program
 ADAS -AWOS Data Acquisition System
 ADCCP -Advanced Data Communications Control Procedure
 ADDA -Administrative Data
 ADF -Automatic Direction Finding
 ADI -Automatic De-Ice and Inhibitor
 ADIN -AUTODIN Service
 ADIZ -Air Defense Identification Zone
 ADL -Aeronautical Data-Link
 ADLY -Arrival Delay
 ADO -Airline Dispatch Office
 ADP -Automated Data Processing
 ADS -Automatic Dependent Surveillance
 ADSIM -Airfield Delay Simulation Model
 ADSY -Administrative Equipment Systems
 ADTN -Administrative Data Transmission Network
 ADTN2000 -Administrative Data Transmission Network 2000
 ADV0 -Administrative Voice
 AEG -Aircraft Evaluation Group
 AERA -Automated En-Route Air Traffic Control
 AEX -Automated Execution
 AF -Airway Facilities
 AFB -Air Force Base
 AFIS -Automated Flight Inspection System
 AFP -Area Flight Plan
 AFRES -Air Force Reserve Station
 AFS -Airways Facilities Sector
 AFSFO -AFS Field Office
 AFSFU -AFS Field Unit

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AFSOU -AFS Field Office Unit (Standard is AFSFOU)
 AFSS -Automated Flight Service Station
 AFTN -Automated Fixed Telecommunications Network
 AGL -Above Ground Level
 AID -Airport Information Desk
 AIG -Airbus Industries Group
 AIM -Airman's Information Manual
 AIP -Airport Improvement Plan
 AIRMET -Airmen's Meteorological Information
 AIRNET -Airport Network Simulation Model
 AIS -Aeronautical Information Service
 AIT -Automated Information Transfer
 ALP -Airport Layout Plan
 ALS -Approach Lighting System
 ALSF1 -ALS with Sequenced Flashers I
 ALSF2 -ALS with Sequenced Flashers II
 ALSIP -Approach Lighting System Improvement Plan
 ALTRV -Altitude Reservation
 AMASS -Airport Movement Area Safety System
 AMCC -ACF/ARTCC Maintenance Control Center
 AMOS -Automated Meteorological Observation Station
 AMP -ARINC Message Processor (OR) Airport Master Plan
 AMVER -Automated Mutual Assistance Vessel Rescue System
 ANC -Alternate Network Connectivity
 ANG -Air National Guard
 ANGB -Air National Guard Base
 ANMS -Automated Network Monitoring System
 ANSI -American National Standards Group
 AP -Acquisition Plan
 APP -Approach
 APS -Airport Planning Standard
 AQAFO -Aeronautical Quality Assurance Field Office
 ARAC -Army Radar Approach Control (AAF)
 ARAC -Aviation Rulemaking Advisory Committee
 ARCTR -FAA Aeronautical Center or Academy
 ARF -Airport Reservation Function
 ARINC -Aeronautical Radio, Inc.
 ARLNO -Airline Office
 ARO -Airport Reservation Office
 ARP -Airport Reference Point
 ARSA -Airport Service Radar Area
 ARSR -Air Route Surveillance Radar
 ARTCC -Air Route Traffic Control Center
 ARTS -Automated Radar Terminal System
 ASAS -Aviation Safety Analysis System
 ASC -AUTODIN Switching Center
 ASCP -Aviation System Capacity Plan
 ASD -Aircraft Situation Display
 ASDA -Accelerate - Stop Distance Available
 ASLAR -Aircraft Surge Launch And Recovery
 ASM -Available Seat Mile
 ASP -Arrival Sequencing Program
 ASOS -Automatic Surface Observation System
 ASQP -Airline Service Quality Performance
 ASR -Airport Surveillance Radar

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ASTA -Airport Surface Traffic Automation
 ASV -Airline Schedule Vendor
 AT -Air Traffic
 ATA -Air Transport Association of America
 ATAS -Airspace and Traffic Advisory Service
 ATCAA -Air Traffic Control Assigned Airspace
 AT&T -American Telephone and Telegraph
 AT&T ASDC -AT&T Agency Service Delivery Center
 AT&T CSA -AT&T Customer Support Associate
 ATC -Air Traffic Control
 ATCBI -Air Traffic Control Beacon Indicator
 ATCCC -Air Traffic Control Command Center
 ATCO -Air Taxi Commercial Operator
 ATCRB -Air Traffic Control Radar Beacon
 ATCRBS -Air Traffic Control Radar Beacon System
 ATCSCC -Air Traffic Control Systems Command Center
 ATCT -Airport Traffic Control Tower
 ATIS -Automated Terminal Information Service
 ATISR -ATIS Recorder
 ATM -Air Traffic Management
 ATM -Asynchronous Transfer Mode
 ATMS -Advanced Traffic Management System
 ATN -Aeronautical Telecommunications Network
 ATODN -AUTODIN Terminal (FUS)
 ATOVN -AUOTVON (Facility)
 ATOMS -Air Traffic Operations Management System
 ATS -Air Traffic Service
 ATSCCP -ATS Contingency Command Post
 ATTIS -AT&T Information Systems
 AUTODIN -DoD Automatic Digital Network
 AUTOVON -DoD Automatic Voice Network
 AVON -AUTOVON Service
 AVN -Aviation Standards National Field Office, Oklahoma City
 AWIS -Airport Weather Information
 AWOS -Automated Weather Observation System
 AWP -Aviation Weather Processor
 AWPG -Aviation Weather Products Generator
 AWS -Air Weather Station

-B-

BANS -BRITE Alphanumeric System
 BART -Billing Analysis Reporting Tool (GSA software tool)
 BASIC -Basic Contract Observing Station
 BASOP -Military Base Operations
 BCA -Benefit/Cost Analysis
 BCR -Benefit/Cost Ratio
 BDAT -Digitized Beacon Data
 BMP -Best Management Practices
 BOC -Bell Operating Company
 bps -bits per second
 BRI -Basic Rate Interface
 BRITE -Bright Radar Indicator Terminal Equipment
 BRL -Building Restriction Line
 BUEC -Back-up Emergency Communications
 BUECE -Back-up Emergency Communications Equipment

-C-

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CAA -Civil Aviation Authority
CAB -Civil Aeronautics Board
CARF -Central Altitude Reservation Facility
CASFO -Civil Aviation Security Office
CAT -Category
CAT -Clear - Air Turbulence
CAU -Crypto Ancillary Unit
CBI -Computer Based Instruction
CCC -Communications Command Center
CCCC -Staff Communications
CCCH -Central Computer Complex Host
CC&O -Customer Cost and Obligation
CCSD -Command Communications Service Designator
CCS7-NI -Communication Channel Signal-7 - Network Interconnect
CCU -Central Control Unit
CD -Common Digitizer
CDR -Cost Detail Report
CDT -Controlled Departure Time
CDTI -Cockpit Display of Traffic Information
CENTX -Central Telephone Exchange
CEQ -Council on Environmental Quality
CERAP -Central Radar Approach
CFC -Central Flow Control
CFCF -Central Flow Control Facility
CFCS -Central Flow Control Service
CFWP -Central Flow Weather Processor
CFWU -Central Flow Weather Unit
CGAS -Coast Guard Air Station
CLC -Course Line Computer
CLIN -Contract Line Item
CLT -Calculated Landing Time
CM -Commercial Service Airport
CNMPS -Canadian Minimum Navigation Performance Specification Airspace
CNS -Consolidated NOTAM System
CNSP -Consolidated NOTAM System Processor
CO -Central Office
COE -U.S. Army Corps of Engineers
COMCO -Command Communications Outlet
CONUS -Continental United States
CORP -Private Corporation other than ARINC or MITRE
CPE -Customer Premise Equipment
CPMIS -Consolidated Personnel Management Information System
CRA -Conflict Resolution Advisory
CRDA -Converging Runway Display Aid
CRT -Cathode Ray Tube
CSA -Communications Service Authorization
CSIS -Centralized Storm Information System
CSO -Customer Service Office
CSR -Communications Service Request
CSS -Central Site System
CTA -Controlled Time of Arrival
CTA -Control Area
CTA/FIR -Control Area/Flight Information Region
CTAF -Common Traffic Advisory Frequency
CTAS -Center - Tracon Automation System

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CTMA -Center Traffic Management Advisor
 CUPS -Consolidated Uniform Payroll System
 CVFR -Controlled Visual Flight Rules
 CVTS -Compressed Video Transmission Service
 CW -Continuous Wave
 CWSU -Central Weather Service Unit
 CWY -Clearway
-D-
 DA -Direct Access
 DA -Decision Altitude/Decision Height
 DA -Descent Advisor
 DABBS -DITCO Automated Bulletin Board System
 DAIR -Direct Altitude and Identity Readout
 DAR -Designated Agency Representative
 DARC -Direct Access Radar Channel
 dBA -Decibels A-weighted
 DBCRC -Defense Base Closure and Realignment Commission
 DBMS -Data Base Management System
 DBRITE -Digital Bright Radar Indicator Tower Equipment
 DCA -Defense Communications Agency
 DCAA -Dual Call, Automatic Answer Device
 DCCU -Data Communications Control Unit
 DCE -Data Communications Equipment
 DDA -Dedicated Digital Access
 DDD -Direct Distance Dialing
 DDM -Difference in Depth of Modulation
 DDS -Digital Data Service
 DEA -Drug Enforcement Agency
 DEDS -Data Entry and Display System
 DEIS -Draft Environmental Impact Statement
 DEP -Departure
 DEWIZ -Distance Early Warning Identification Zone
 DF -Direction Finder
 DFAX -Digital Facsimile
 DFI -Direction Finding Indicator
 DGPS -Differential Global Positioning Satellite (System)
 DH -Decision Height
 DID -Direct Inward Dial
 DIP -Drop and Insert Point
 DIRF -Direction Finding
 DITCO -Defense Information Technology Contracting Office Agency
 DME -Distance Measuring Equipment
 DME/P -Precision Distance Measuring Equipment
 DMN -Data Multiplexing Network
 DNL -Day-Night Equivalent Sound Level (Also called Ldn)
 DOD -Direct Outward Dial
 DoD -Department of Defense
 DOI -Department of Interior
 DOS -Department of State
 DOT -Department of Transportation
 DOTS -Dynamic Ocean Tracking System
 DOTCC -Department of Transportation Computer Center
 DSCS -Digital Satellite Compression Service
 DSUA -Dynamic Special Use Airspace
 DTS -Dedicated Transmission Service

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DUAT -Direct User Access Terminal
 DVFR -Defense Visual Flight Rules
 DVFR -Day Visual Flight Rules
 DVOR -Doppler Very High Frequency Omni-Directional Range
 DYSIM -Dynamic Simulator
-E-
 E-MSAW -En-Route Automated Minimum Safe Altitude Warning
 EARTS -En Route Automated Radar Tracking System
 ECOM -En Route Communications
 ECVFP -Expanded Charted Visual Flight Procedures
 EDCT -Expedite Departure Path
 EFAS -En Route Flight Advisory Service
 EFC -Expect Further Clearance
 EFIS -Electronic Flight Information Systems
 EIAF -Expanded Inward Access Features
 EIS - Environmental Impact Statement
 ELT -Emergency Locator Transmitter
 ELWRT -Electrowriter
 EMPS -En Route Maintenance Processor System
 ENAV -En Route Navigational Aids
 EPA -Environmental Protection Agency
 EPS -Engineered Performance Standards
 EOF -Emergency Operating Facility
 EPSS -Enhanced Packet Switched Service
 ERAD -En Route Broadband Radar
 ESEC -En Route Broadband Secondary Radar
 ESP -En Route Spacing Program
 ESYS -En Route Equipment Systems
 ESF -Extended Superframe Format
 ETA -Estimated Time of Arrival
 ETE -Estimated Time En Route
 ETG -Enhanced Target Generator
 ETMS -Enhanced Traffic Management System
 ETN -Electronic Telecommunications Network
 EVAS -Enhanced Vortex Advisory System
 EVCS -Emergency Voice Communications System
-F-
 FAA -Federal Aviation Administration
 F&E -Facility and Equipment
 FAAAC -FAA Aeronautical Center
 FAACIS -FAA Communications Information System
 FAATC -FAA Technical Center
 FAC -Facility
 FAF -Final Approach Fix
 FAP -Final Approach Point
 FAPM -FTS2000 Associate Program Manager
 FAR -Federal Aviation Regulation
 FAATSAT -FAA Telecommunications Satellite
 FAST -Final Approach Spacing Tool
 FAX -Facsimile Equipment
 FBO -Fixed Base Operator
 FBS -Fall Back Switch
 FCC -Federal Communications Commission
 FCLT -Freeze Calculated Landing Time
 FCOM -FSS Radio Voice Communications

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FCPU -Facility Central Processing Unit
 FDAT -Flight Data Entry and Printout (FDEP) and Flight Data Service
 FDE -Flight Data Entry
 FDEP -Flight Data Entry and Printout
 FDIO -Flight Data Input/Output
 FDIOC -Flight Data Input/Output Center
 FDIOR -Flight Data Input/Output Remote
 FDM -Frequency Division Multiplexing
 FDP -Flight Data Processing
 FED -Federal
 FEIS -Final Environmental Impact Statement
 FEP -Front End Processor
 FFAC -From Facility
 FIFO -Flight Inspection Field Office
 FIG -Flight Inspection Group
 FINO -Flight Inspection National Field Office
 FIPS -Federal Information Publication Standard
 FIR -Flight Information Region
 FIRE -Fire Station
 FIRMR -Federal Information Resource Management Regulation
 FL -Flight Level
 FLOWSIM -Traffic Flow Planning Simulation
 FMA -Final Monitor Aid
 FMF -Facility Master File
 FMIS -FTS2000 Management Information System
 FMS -Flight management System
 FNMS -FTS2000 Network Management System
 FOIA -Freedom Of Information Act
 FP -Flight Plan
 FRC -Request Full Route Clearance
 FSAS -Flight Service Automation System
 FSDO -Flight Standards District Office
 FSDPS -Flight Service Data Processing System
 FSEP -Facility/Service/Equipment Profile
 FSP -Flight Strip Printer
 FSPD -Freeze Speed Parameter
 FSS -Flight Service Station
 FSSA -Flight Service Station Automated Service
 FSTS -Federal Secure Telephone Service
 FSYS -Flight Service Station Equipment Systems
 FTS -Federal Telecommunications System
 FTS2000 -Federal Telecommunications System 2000
 FUS -Functional Units or Systems
 FWCS -Flight Watch Control Station
-G-
 GA -General Aviation
 GAA -General Aviation Activity
 GAAA -General Aviation Activity and Avionics
 GADO -General Aviation District Office
 GCA -Ground Control Approach
 GNAS -General National Airspace System
 GNSS -Global Navigation Satellite System
 GOES -Geostationary Operational Environmental Satellite
 GOESF -GOES Feed Point
 GOEST -GOES Terminal Equipment

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GPS -Global Positioning Satellite
GPWS -Ground Proximity Warning System
GRADE -Graphical Airspace Design Environment
GS -Glide Slope Indicator
GSA -General Services Administration

-H-

H -Non-Directional Radio Homing Beacon (NDB)
HAA -Height Above Airport
HAL -Height Above Landing
HARS -High Altitude Route System
HAT -Height Above Touchdown
HAZMAT -Hazardous Materials
HCAP -High Capacity Carriers
HLDC -High Level Data Link Control
HDME -NDB with Distance Measuring Equipment
HDQ -FAA Headquarters
HELI -Heliport
HF -High Frequency
HH -NDB, 2kw or More
HI-EFAS -High Altitude EFAS
HOV -High Occupancy Vehicle
HSI -Horizontal Situation Indicators
HUD -Housing and Urban Development
HWAS -Hazardous In-Flight Weather Advisory
Hz -HERTZ

-I-

IA -Indirect Access
IAF -Initial Approach Fix
I/AFSS -International AFSS
IAP -Instrument Approach Procedures
IAPA -Instrument Approach Procedures Automation
IBM -International Business Machines
IBP -International Boundary Point
IBR -Intermediate Bit Rate
ICAO -International Civil Aviation Organization
ICSS -International Communications Switching Systems
IDAT -Interfacility Data
IF -Intermediate Fix
IFCP -Interfacility Communications Processor
IFDS -Interfacility Data System
IFEA -In-Flight Emergency Assistance
IFO -International Field Office
IFR -Instrument Flight Rules
IFSS -International Flight Service Station
ILS -Instrument Landing System
IM -Inner Marker
IMC -Instrument Meteorological Conditions
INM -Integrated Noise Model
INS -Inertial Navigation System
IRMP -Information Resources Management Plan
ISDN -Integrated Services Digital Network
ISMLS -Interim Standard Microwave Landing System
ITI -Interactive Terminal Interface
IVRS -Interim Voice Response System
IW -Inside Wiring

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-J-**-K-**

Kbps -Kilobits Per Second
Khz -Kilohertz
KVDT -Keyboard Video Display Terminal

-L-

LAA -Local Airport Advisory
LAAS -Low Altitude Alert System
LABS -Leased A B Service
LABSC -LABS GS-200 Computer
LABSR -LABS Remote Equipment
LABSW -LABS Switch System
LAHSO -Land and Hold Short Operation
LAN -Local Area Network
LATA -Local Access and Transport Area
LAWRS -Limited Aviation Weather Reporting System
LCF -Local Control Facility
LCN -Local Communications Network
LDA -Localizer Directional Aid
LDA -Landing Directional Aid
LDIN -Lead-in Lights
LEC -Local Exchange Carrier
LF -Low Frequency
LINCS -Leased Interfacility NAS Communications System
LIS -Logistics and Inventory System
LLWAS -Low Level Wind Shear Alert System
LM/MS -Low/Medium Frequency
LMM -Locator Middle Marker
LMS -LORAN Monitor Site
LOC -Localizer
LOCID -Location Identifier
LOI -Letter of Intent
LOM -Compass Locator at Outer Marker
LORAN -Long Range Aid to Navigation
LRCO -Limited Remote Communications Outlet
LRNAV -Long Range Navigation
LRR -Long Range Radar

-M-

MAA -Maximum Authorized Altitude
MALS -Medium Intensity Approach Lighting System
MALSF -MALS with Sequenced Flashers
MALSR -MALS with Runway Alignment Indicator Lights
MAP -Modified Access Pricing
MAP -Military Airport Program
MAP -Missed Approach Point
MAP -Maintenance Automation Program
Mbps -Megabits Per Second
MCA -Minimum Crossing Altitude
MCAS -Marine Corps Air Station
MCC -Maintenance Control Center
MCL -Middle Compass Locator
MCS -Maintenance and Control System
MDA -Minimum Descent Altitude
MDT -Maintenance Data Terminal
MEA -Minimum En Route Altitude

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METI -Meteorological Information
 MF -Middle Frequency
 MFJ -Modified Final Judgement
 MFT -Meter Fix Crossing Time/Slot Time
 MHA -Minimum Holding Altitude
 Mhz -MegHERTZ
 MIA -Minimum IFR Altitudes
 MIDO -Manufacturing Inspection District Office
 MIS -Meteorological Impact Statement
 MISC -Miscellaneous
 MISO -Manufacturing Inspection Satellite Office
 MIT -Miles In Trail
 MITRE -Mitre Corporation
 MLS -Microwave Landing System
 MM -Middle Marker
 MMC -Maintenance Monitoring Console
 MMS -Maintenance Monitoring System
 MNPS -Minimum Navigation Performance Specification
 MNPSA -Minimum Navigation Performance Specifications Airspace
 MOA -Memorandum of Agreement
 MOA -Military Operations Area
 MOCA -Minimum Obstruction Clearance Altitude
 MODE C -Altitude-Encoded Beacon Reply
 MODE C -Altitude Reporting Mode of Secondary Radar
 MODE S -Mode Select Beacon System
 MOU -Memorandum of Understanding
 MPO -Metropolitan Planning Organization
 MPS -Maintenance Processor Subsystem (OR) Master Plan Supplement
 MRA -Minimum Reception Altitude
 MRC -Monthly Recurring Charge
 MSA -Minimum Safe Altitude
 MSAW -Minimum Safe Altitude Warning
 MSL -Mean Sea Level
 MSN -Message Switching Network
 MTCS -Modular Terminal Communications System
 MTI -Moving Target Indicator
 MUX -Multiplexor
 MVA -Minimum Vectoring Altitude
 MVFR -Marginal Visual Flight Rules
-N-
 NAAQS -National Ambient Air Quality Standards
 NADA -NADIN Concentrator
 NADIN -National Airspace Data Interchange Network
 NADSW -NADIN Switches
 NAILS -National Airspace Integrated Logistics Support
 NAMS -NADIN IA
 NAPRS -National Airspace Performance Reporting System
 NAS -National Airspace System or Naval Air Station
 NASDC -National Aviation Safety Data
 NASP -National Airspace System Plan
 NASPAC -National Airspace System Performance Analysis Capability
 NATCO -National Communications Switching Center
 NAVAID -Navigation Aid
 NAVMN -Navigation Monitor and Control
 NAWAU -National Aviation Weather Advisory Unit

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NAWPF -National Aviation Weather Processing Facility
 NCAR -National Center for Atmospheric Research; Boulder, CO
 NCF -National Control Facility
 NCIU -NEXRAD Communications Interface Unit
 NCS -National Communications System
 NDB -Non-Directional Radio Homing Beacon
 NDNB -NADIN II
 NEPA -National Environmental Policy Act
 NEXRAD -Next Generation Weather Radar
 NFAX -National Facsimile Service
 NFDC -National Flight Data Center
 NFIS -NAS Facilities Information System
 NI -Network Interface
 NICS -National Interfacility Communications System
 NPIAS -National Plan of Integrated Airport Systems
 NM -Nautical Mile
 NMAC -Near Mid Air Collision
 NMC -National Meteorological Center
 NMCE -Network Monitoring and Control Equipment
 NMCS -Network Monitoring and Control System
 NOAA -National Oceanic and Atmospheric Administration
 NOC -Notice Of Completion
 NOTAM -Notice to Airmen
 NPDES -National Pollutant Discharge Elimination System
 NPIAS -National Plan of Integrated Airport Systems
 NRC -Non-Recurring Charge
 NRCS -National Radio Communications Systems
 NSAP -National Service Assurance Plan
 NSSFC -National Severe Storms Forecast Center
 NSSL -National Severe Storms Laboratory; Norman, OK
 NTAP -Notices To Airmen Publication
 NTP -National Transportation Policy
 NTSB -National Transportation Safety Board
 NTZ -No Transgression Zone
 NWS -National Weather Service
 NWSR -NWS Weather Excluding NXR
 NSWRH -NWS Regional Headquarters
 NXR -Advanced Weather Radar System
-O-
 OAG -Official Airline Guide
 OALT -Operational Acceptable Level of Traffic
 OAW -Off-airway Weather Station
 ODAL -Omnidirectional Approach Lighting System
 ODAPS -Oceanic Display and Processing Station
 OFA -Object Free Area
 OFDPS -Offshore Flight Data Processing System
 OFT -Outer Fix Time
 OFZ -Obstacle Free Zone
 OM -Outer Marker
 OMB -Office of Management and Budget
 ONER -Oceanic Navigational Error Report
 OPLT -Operational Acceptable Level of Traffic
 OPSW -Operational Switch
 OPX -Off Premises Exchange
 ORD -Operational Readiness Demonstration

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OTR -Oceanic Transition Route

OTS -Organized Track System

-P-

PABX -Private Automated Branch Exchange

PAD -Packet Assembler/Disassembler

PAM -Peripheral Adapter Module

PAPI -Precision Approach Path Indicator

PAR -Precision Approach Radar

PAR -Preferential Arrival Route

PATWAS -Pilots Automatic Telephone Weather Answering Service

PBCT -Proposed Boundary Crossing Time

PBRF -Pilot Briefing

PBX -Private Branch Exchange

PCA -Positive Control Airspace

PCM -Pulse Code Modulation

PDAR -Preferential Arrival And Departure Route

PDC -Pre-Departure Clearance

PDC -Program Designator Code

PDR -Preferential Departure Route

PDN -Public Data Network

PFC -Passenger Facility Charge

PHONE -Telephone

PIC -Principal Interexchange Carrier

PIDP -Programmable Indicator Data Processor

PIREP -Pilot Weather Report

PMS -Program Management System

POLIC -Police Station

POP -Point Of Presence

POT -Point Of Termination

PPIMS -Personal Property Information Management System

PR -Primary Commercial Service Airport

PRI -Primary Rate Interface

PRM -Precision Runway Monitor

PSDN -Public Switched Data Network

PSN -Packet Switched Network

PSS -Packet Switched Service

PSTN -Public Switched Telephone Network

PUB -Publication

PUP -Principal User Processor

PVC -Permanent Virtual Circuit

PVD -Plan View Display

-Q-

-R-

RAIL -Runway Alignment Indicator Lights

RAPCO -Radar Approach Control (USAF)

RAPCON -Radar Approach Control (FAA)

RATCC -Radar Air Traffic Control Center

RATCF -Radar Air Traffic Control Facility (USN)

RBC -Rotating Beam Ceilometer

RBDPE -Radar Beacon Data Processing Equipment

RBSS -Radar Bomb Scoring Squadron

RCAG -Remote Communications Air/Ground

RCC -Rescue Coordination Center

RCF -Remote Communication Facility

RCCC -Regional Communications Control Centers

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RCIU -Remote Control Interface Unit
RCL -Radio Communications Link
RCLR -RCL Repeater
RCLT -RCL Terminal
RCO -Remote Communications Outlet
RCU -Remote Control Unit
RDAT -Digitized Radar Data
RDP -Radar Data Processing
RDSIM -Runway Delay Simulation Model
REIL -Runway End Identification Lights
RF -Radio Frequency
RL -General Aviation Reliever Airport
RMCC -Remote Monitor Control Center
RMCF -Remote Monitor Control Facility
RML -Radio Microwave Link
RMLR -RML Repeater
RMLT -RML Terminal
RMM -Remote Maintenance Monitoring
RMMS -Remote Maintenance Monitoring System
RMS -Remote Monitoring Subsystem
RMSC -Remote Monitoring Subsystem Concentrator
RNAV -Area Navigation
RNP -Required Navigation Performance
ROD -Record of Decision
ROSA -Report of Service Activity
ROT -Runway Occupancy Time
RP -Restoration Priority
RPC -Restoration Priority Code
RPG -Radar Processing Group
RPZ -Runway Protection Zone
RRH -Remote Reading Hygrothermometer
RRHS -Remote Reading Hydrometer
RRWDS -Remote Radar Weather Display
RRWSS -RWDS Sensor Site
RSS -Remote Speaking System
RT -Remote Transmitter
RT & BTL -Radar Tracking And Beacon Tracking Level
RTAD -Remote Tower Alphanumeric Display
RTCA -Radio Technical Commission for Aeronautics
RTR -Remote Transmitter/Receiver
RTRD -Remote Tower Radar Display
RVR -Runway Visual Range
RW -Runway
RWDS -Same as RRWDS
RWP -Realtime Weather Processor

-S-

S/S - Sector Suite
SAC -Strategic Air Command
SAFI -Semi Automatic Flight Inspection
SALS -Short Approach Lighting System
SATCOM -Satellite Communications
SAWRS -Supplementary Aviation Weather Reporting System
SCC -System Command Center
SCVTS -Switched Compressed Video Telecommunications Service
SDF -Simplified Direction Finding

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SDF -Software Defined Network
SDIS -Switched Digital Integrated Service
SDP -Service Delivery Point
SDS -Switched Data Service
SEL -Single Event Level
SELF -Simplified Short Approach Lighting System With Sequenced Flashing Lights
SFAR-38 -Special Federal Aviation Regulation 38
SHPO -State Historic Preservation Officer
SIC -Service Initiation Charge
SID -Station Identifier
SID -Standard Instrument Departure
SIGMET -Significant Meteorological Information
SIMMOD -Airport and Airspace Simulation Model
SIP -State Implementation Plan
SM -Statute Miles
SMGC -Surface Movement Guidance and Control
SMPS -Sector Maintenance Processor Subsystem
SMS -Simulation Modeling System
SNR -Signal-to-Noise Ratio, also: S/N
SOC -Service Oversight Center
SOIR -Simultaneous Operations On Intersecting Runways
SOIWR -Simultaneous Operations on Intersecting Wet Runways
SRAP -Sensor Receiver and Processor
SSALF -SSALS with Sequenced Flashers
SSALR -Simplified Short Approach Lighting System
SSB -Single Side Band
STAR -Standard Terminal Arrival Route
STD -Standard
STMUX -Statistical Data Multiplexer
STOL -Short Takeoff and Landing
SURPIC -Surface Picture
SVCA -Service A
SVCB -Service B
SVCC -Service C
SVCO -Service O
SVFO -Interphone Service F (A)
SVFB -Interphone Service F (B)
SVFC -Interphone Service F (C)
SVFD -Interphone Service F (D)
SVFR -Special Visual Flight Rules
-T-
TIMUX -T1 Multiplexer
TAAS -Terminal Advance Automation System
TACAN -Tactical Aircraft Control and Navigation
TACR -TACAN at VOR, TACAN only
TAF -Terminal Area Forecast
TARS -Terminal Automated Radar Service
TAS -True Air Speed
TATCA -Terminal Air Traffic Control Automation
TAVT -Terminal Airspace Visualization Tool
TCA -Traffic Control Airport or Tower Control Airport
TCA -Terminal Control Area
TCACCIS -Transportation Coordinator Automated Command and Control Information System
TCAS -Traffic Alert And Collision Avoidance System
TCC -DOT Transportation Computer Center

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TCCC -Tower Control Computer Complex
 TCE -Tone Control Equipment
 TCLT -Tentative Calculated Landing Time
 TCO -Telecommunications Certification Officer
 TCOM -Terminal Communications
 TCS -Tower Communications System
 TDLS -Tower Data-Link Services
 TDMUX -Time Division Data Multiplexer
 TDWR -Terminal Doppler Weather Radar
 TELCO -Telephone Company
 TELMS -Telecommunications Management System
 TERPS -Terminal Instrument Procedures
 TFAC -To Facility
 TH -Threshold
 TIMS -Telecommunications Information Management System
 TIPS -Terminal Information Processing System
 TL -Taxilane
 TMA -Traffic Management Advisor
 TMC -Traffic Management Coordinator
 TMC/MC -Traffic Management Coordinator/Military Coordinator
 TMCC -Terminal Information Processing System
 TMCC -Traffic Management Computer Complex
 TMF -Traffic Management Facility
 TML -Television Microwave Link
 TMLI -Television Microwave Link Indicator
 TMLR -Television Microwave Link Repeater
 TMLT -Television Microwave Link Terminal
 TM&O -Telecommunications Management and Operations
 TMP -Traffic Management Processor
 TMS -Traffic Management System
 TMSPS -Traffic Management Specialists
 TMU -Traffic Management Unit
 TODA -Takeoff Distance Available
 TOF -Time Of Flight
 TOFMS -Time of Flight Mass Spectrometer
 TOPS -Telecommunications Ordering and Pricing System (GSA software tool)
 TORA -Take-off Run Available
 TNAV -Terminal Navigational Aids
 TR -Telecommunications Request
 TRACAB -Terminal Radar Approach Control in Tower Cab
 TRACON -Terminal Radar Approach Control Facility
 TRAD -Terminal Radar Service
 TRNG -Training
 TSA -Taxiway Safety Area
 TSEC -Terminal Secondary Radar Service
 TSP -Telecommunications Service Priority
 TSR -Telecommunications Service Request
 TSYs -Terminal Equipment Systems
 TTMA -TRACON Traffic Management Advisor
 TTY -Teletype
 TVOR -Terminal VHF Omnidirectional Range
 TW -Taxiway
 TWEB -Transcribed Weather Broadcast
 TWR -Tower (non-controlled)
 TY -Type (FAACIS)
 -U-

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UAS -Uniform Accounting System
UHF -Ultra High Frequency
URA -Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
USAF -United States Air Force
USOC -Uniform Service Order Code
-V-
VASI -Visual Approach Slope Indicator
VDME -VOR with Distance Measuring Equipment
VF -Voice Frequency
VFR -Visual Flight Rules
VHF -Very High Frequency
VLF -Very Low Frequency
VMC -Visual Meteorological Conditions
VNAV -Visual Navigational Aids
VNTSC -Volpe National Transportation System Center
VON -Virtual On-net
VOR -VHF Omnidirectional Range
VOR/DME -VHF Omnidirectional Range/Distance Measuring Equipment
VORTAC -VOR collocated with TACAN
VOT -VOR Test Facility
VRS -Voice Recording System
VSCS -Voice Switching and Control System
VTA -Vertex Time of Arrival
VTAC -VOR collocated with TACAN
VTOL -Vertical Takeoff and Landing
VTS -Voice Telecommunications System
-W-
WAAS -Wide Area Augmentation System
WAN -Wide Area Network
WC -Work Center
WCP -Weather Communications Processor
WECO -Western Electric Company
WESCOM -Western Electric Satellite Communications
WMSC -Weather Message Switching Center
WMSCR -Weather Message Switching Center Replacement
WSCMO -Weather Service Contract Meteorological Observatory
WSFO -Weather Service Forecast Office
WSMO -Weather Service Meteorological Observatory
WSO -Weather Service Office
WTHR -"Weather"
WX -Weather
-X-
-Y-
-Z-