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**GUIDANCE SPECIFICATION
For
Development of
ADCS Performance Specification
Automated Document Conversion System (ADCS)**

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Foreword

This Automated Document Conversion System (ADCS) Guidance Specification provides guidelines for the development of a specific Performance Specification to allow an organization to specify procurement requirements for technical data conversion. The Guidance Specification is a template that allows individual organizations to specify individual requirements while conforming to an overall conversion requirement. The performance specification is necessary to secure full, accurate, and complete conversion of engineering related drawings/documents from hard copy or digital raster format to a vector format to be used in Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) processes.

The DoD has an expressed goal to convert technical documents required for acquisition, maintenance and material management by the Year 2002. This Guidance Specification addresses specific requirements for converting engineering drawings.

Use of the ADCS Guidance Specification will provide a unified approach for vector conversion. It assists in the establishment of a standards-based, neutral framework. Because the formats included in the Specification are predominately “neutral”, it accommodates interoperability of numerous users despite differing hardware and operating systems.

ADCS Guidance Specification (DRAFT)

1.0 Scope

This document includes performance requirements for the U.S. Army's Automated Document Conversion System (ADCS). It defines functional requirements for ADCS as applied to engineering related drawings, documents and data. It is intended to be a template for the generation of a specific Performance Specification that defines vendor requirements for the conversion of engineering drawings and related technical data.

2.0 Purpose

The purpose of this document is to provide government organizations with the requirements needed for a performance-based requirement document that specifies the contractor requirements for converting documents and drawings into a digital form in the most cost-effective manner. This Guidance Specification shall be used to develop a Performance Specification that will be delivered to the contractor to ensure the contractor meets the requirements herein stated.

3.0 Procurement Requirements

3.1 Document Packet Tracking

The contractor shall track all documents/files and packets provided by the government. The contractor shall include date received, document/file type, storage location, status, and contract to be converted using. The document tracking mechanism shall allow a government personnel or representative to determine each of the about requirements for any given drawing under contract by the contractor. The system may be manual or electronic.

3.2 Input Format

The contractor shall be provided *{Enter format of Input Drawings See Appendix D-Paragraph D.3.2.5 in ADCS Handbook}* documents, [Optional if Required]and *{Enter Additional Formats(from same source)}* documents]. The information to be converted shall be provided to the contractor on *{Enter Media to be Delivered, Appendix D-Paragraph D.3.2.5 See ADCS Handbook}*. Delivery of documents shall be via *{Enter delivery Mechanism (ie: US Mail, UPS, FedEx, Courier etc).}*

ADCS Guidance Specification (DRAFT)

3.3 Document Conversion Requirement

Engineering documents delivered to the contractor shall be converted from existing format to this {Enter Document Conversion Code, see Appendix D-Paragraph D.3.2.6, ADCS Handbook}. A complete definition of the conversion code is available in ADCS Performance Specification Detailed Requirement Specifications 'Definition Packages' for each defined Conversion Code. All requirements specified in the ADCS Performance Specification Detailed Requirement Specifications must be met to satisfy this requirement.

3.4 Document Conversion Format

The data shall be converted into {Enter Conversion Data Format or Formats, see Appendix D-Paragraph D.3.3.8 in ADCS Handbook}.

3.5 Document Conversion Media

The converted information shall be returned to the Government using the following media {Enter Media to Return Converted Files On, See Appendix D, Paragraph D.3.2.7 in ADCS Handbook}. The media shall be marked in the following manner: {Enter Media Marking Steps, See Appendix D, Paragraph D.3.2.7 in ADCS Handbook}

3.6 Converted Document Delivery

The converted information shall be delivered to the government {Enter Document Delivery Method, (ie: US Mail, UPS, Fed Ex, Courier, etc.)}.

3.7 Metadata

Contractor shall provide associated information (metadata) about the document conversion in the following formats {Insert Metadata format code or codes, See Section 4.2.4, Table VI - ADCS Handbook}. A complete definition of the metadata format codes is available in ADCS Performance Specification Detailed Requirement Specifications for each defined Metadata Format Code. All requirements specified in the ADCS Performance Specification Detailed Requirement Specifications must be met to satisfy this requirement.

3.8 Disposition of Input Data

The original documents will be {Enter Document Disposition, (ie: Returned, delivered to, shredded, erased, stored on, stored at, etc.)} according to instructions included in {Enter Instruction Sheet Code, See Appendix D, Paragraph 3.6 Packet Tracking Checklist}

ADCS Guidance Specification (DRAFT)

3.9 Safety and Security Documents

Contractor shall be responsible for maintaining document safety and document security according to the specification {Insert Security Procedures, See Paragraph XX ADCS Handbook}.

3.10 Document Arrival Acknowledgement

A signed copy of the {Insert Tracking Procedures Sheet Code, See Appendix D, Paragraphs D.3.6 & 4.3.1.2 ADCS Handbook} shall be forwarded to the Program Manager in a timely manner upon the receipt/arrival of a document packet.

4.0 Validation

Validation audits shall be performed during the production as per {Enter Validation Requirements Sheet ID, See Appendix D, Paragraph 3.4 in ADCS Handbook}. The contractor shall be provided with a copy of the Validation Requirement Sheet and informed that the requirements defined in the Validation Requirements Sheet will provide the means for validation of his services.

4.1 First Article Packet

Contractor shall convert the First Article Packet, containing as a minimum, {Enter Number of First Article Drawings, See Paragraph 4.3 & Appendix D, Paragraphs D.3.2.8 in ADCS Handbook} drawings and return them to the Project Manager within for validation of the contractor ability to meet requirement of ADCS Performance Specification. The converted documents shall be validated using standard validation methods defined above.

ADCS Guidance Specification (DRAFT)

APPENDIX A

Mechanical Functional Area, 2D, CAD Capable

A.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

A.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Mechanical 2D CAD Capable.

A.3.0 Functional Specification Requirements

A.3.1 Mechanical 2D Requirements, CAD Capable

A.3.1.1 General Requirements

All files delivered shall conform to the following general requirements for 2D CAD Capable Conversion. The 2D CAD Capable conversion process implemented shall result in a CAD-Capable data file. All entities shall be geometrically accurate with fully editable vectors and text. Layers, symbols, and line types shall be incorporated.

A.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and polylines.

A.3.1.3 Line Styles

When creating 2-D geometry, use the standard AUTOCAD 14 line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

A.3.1.4 Symbol Libraries

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard

ADCS Guidance Specification (DRAFT)

symbols or fonts developed by the contractor shall become the property of the U.S. Government. Use of third party fonts or symbols shall not be used unless previously approved by the Government.

A.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

A.3.1.6 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original image (see details below)

A.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: "Redrawn In CAD Without Change- NON-DIAMENSIONALLY ACCURATE CAD FILE". (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change- NON-DIAMENSIONALLY ACCURATE CAD FILE; (Specify Changes example: Updated Notes, Was B Size).

A.3.1.8 Revision Block

In both cases shown in A.3.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

A.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

A.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

A.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to CAD Capable. In addition, index information shall be included in the DLF file .

A.3.1.12 Text Size

Text size shall be converted to DoD standard heights..

ADCS Guidance Specification (DRAFT)

F.3.1.13 Sheet Size

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

A.3.1.14 Assembly Drawings

Detail drawings shall be converted prior to assembly drawings. Assemblies shall be created accurately using available detail/subassembly drawings whenever possible. Assembly drawings shall be CAD Perfect with the exception that only dimensioned geometry will dimensionally accurate in the CAD file.

A.3.1.15 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications .

A.3.1.16 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

A.3.1.17 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

A.3.1.18 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

A.3.1.19 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager for clarification.

A.3.1.20 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

A.3.1.21 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

A.3.1.22 Data Outside Border

ADCS Guidance Specification (DRAFT)

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

A.3.1.23 Disposition of Originals

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to the Program Manager at their discretion.

A.3.1.24 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

A.3.1.25 LAYERING AND COLOR

Layering and color conventions are as follows:

A.3.1.25.1 Color

Color settings shall be “BY-LAYER”, Layering shall be as follows:

LAYER NO.	LAYER DESCRIPTION	LINETYPE	COLOR
1	OBJECT-HEAVY	CONTINUOUS	RED
5	OBJECT-MEDIUM	CONTINUOUS	MAGENTA
10	OBJECT-LIGHT	CONTINUOUS	CYAN
20	CENTER LINE	CENTER	CYAN
22	HIDDEN LINE	HIDDEN	GREEN
24	PHANTOM LINE	PHANTOM	GREEN
30	DIMENSIONS	CONTINUOUS	GREEN
40	TEXT-NOTES	CONTINUOUS	YELLOW
45	TEXT-TITLE BLK	CONTINUOUS	MAGENTA
50	HATCH	CONTINUOUS	CYAN
60	WELD SYMBOLS	CONTINUOUS	GREEN
200	BORDER LINES	CONTINUOUS	BLUE

A.3.1.25.2 GRAPHICS CREATION GUIDELINES

A.3.1.25.2.1 Dimensionality

All Geometry shall be drawn correct they may not be dimensionally accurate.

A.3.1.25.2.2 Threads

All threads shall be drawn to the illustration per stated min/max thread diameters.

A.3.1.25.2.3 Line Width

Line widths shall be set to the default unless otherwise specified herein.

ADCS Guidance Specification (DRAFT)

A.3.1.25.2.4 Bilateral Tolerances

All drawings shall be drawn to the median value of bilateral tolerances.

A.3.1.25.2.5 Drawing Scale

All drawing objects shall be drawn at 1:1 scale. (i.e. if a line is dimensioned at 1.25" on the original, then it shall be drawn at 1.25" in AUTOCAD.)

A.3.1.25.2.6 Title Block Scale

Insert the title block by scaling it to the inverse scale of the drawing. For example: a 1/4 scale drawing would have the title block scaled 4:1.

A.3.1.25.2.7 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the AUTOCAD file to the drawing sheet scale prior to production of the C4 image.

A.3.1.25.3 LTSCALE

A.3.1.25.3.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of 1/2, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

A.3.1.25.4 HATCHING

A.3.1.25.4.1 Hatching

All hatching shall be associative and placed on the HATCH layer (layer 50). The hatch shall match the drawing in both style and direction. Do not explode the hatch.

A.3.1.25.5 BLOCKS

A.3.1.25.5.1 Attributed Blocks

Do not use attributed blocks.

A.3.1.25.5.2 Explode Blocks

Explode all blocks.

ADCS Guidance Specification (DRAFT)

A.3.1.25.6 CENTER LINES

A.3.1.25.6.1 DIM-CEN

Use the DIM-CEN command to create centerlines for circles.

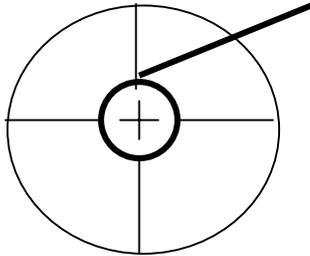
A.3.1.25.6.2 DIMCEN Tolerance

DIMCEN shall be set to match the original drawing, but go no lower than -.045.

A.3.1.25.6.3 Circle Centerlines

Change the crossing part of centerlines in circles to continuous line type on the dimension layer. The remainder of the centerline for circular features shall be left as a centerline by layer.

Example: Only the circled part of the centerline should be continuous



A.3.1.25.7 DIMENSIONS

A.3.1.25.7.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

A.3.1.25.7.2 Association

All dimensions shall be non-associative.

A.3.1.25.7.3 Leader Lines

All leader lines shall touch the object being called out.

A.3.1.25.7.4 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

ADCS Guidance Specification (DRAFT)

A.3.1.25.7.5 Geometric Tolerance Symbols

Do not use the AUTOCAD geometric tolerance symbols. Create and use a blocks list to create the geometric tolerances.

A.3.1.25.7.6 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

A.3.1.25.7.7 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

A.3.1.25.8 DIMSCALE

A.3.1.25.8.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

A.3.1.25.8.2 Moving Dimensions

Dimensions may be moved for clarity.

A.3.1.25.9 TEXT

A.3.1.25.9.1 Text Style

Text style name is MONOTXT with a font of MONOTXT.SHX.

A.3.1.25.9.2 Case

All text shall be capital letters.

ADCS Guidance Specification (DRAFT)

A.3.1.25.9.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

A.3.1.25.9.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

A.3.1.25.9.5 Width

Text width on all text shall be .8.

A.3.1.25.9.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tables Tolerances Notes Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

A.3.1.25.9.7 Spacing

For text spacing on all drawings, including the general notes, use the system default. Do not match the TIF.

A.3.1.25.9.8 CAGE

Convert/leave in lined out CAGE CODES as found.

A.3.1.25.10 TITLE BLOCK

A.3.1.25.10.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

ADCS Guidance Specification (DRAFT)

A.3.1.25.10.2 Material Engineer's Stamp

If there is a material engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the MATERIAL ENGINEER space.

A.3.1.25.10.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

A.3.1.25.10.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

A.3.1.25.10.5 FSCM

If the FSCM or Code Identification was 00000, leave the "*Enter Code Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

A.3.1.25.10.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

A.3.1.25.10.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

A.3.1.25.10.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

A.3.1.25.11 NOTES AND TABLES

ADCS Guidance Specification (DRAFT)

A.3.1.25.11.1 Notes

A.3.1.25.11.1.1 Justification

All notes shall be listed on the left side of the drawing and from top down.

A.3.1.25.11.1.2 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

A.3.1.25.11.1.3 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:
DOD-STD-00100D(AR)
ANSI Y14.5M-1982

A.3.1.25.11.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5” for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

A.3.1.25.11.1.5 Additional Notes

Any additional notes in the title block (i.e. Casting, Finishing, Heat Treatment, etc.) shall be shown in NOTE format after all of the existing notes on the drawing. If there is already a note regarding application of the part number, DO NOT add another one. This also includes any notation on the original denoting application of the part number. These shall be shown as: (# is the note number)

#. Apply Part Number per MIL-STD-130: 19207-XXXXXXXX (XXXXXXXX indicates the part number)

If the Title Block says, "Do Not Apply Part Number" this information shall be deleted and NOT be transferred to the notes column.

A.3.1.25.11.1.6 Precious Metal Indicator Code (PMIC)

If there is a PMIC (Precious Metal Indicator Code) in the notes on the TIF, transfer it into the title block.

ADCS Guidance Specification (DRAFT)

A.3.1.25.11.1.7 Physical Properties

Physical Properties listed in the title block on the TIF shall be converted and placed as notes using the following format: (# is the note number)

<u>WAS</u>	<u>NOW SHALL READ</u>
YP	#. YIELD POINT ___ PSI
TS	#. TENSILE STRENGTH ___ PSI
EL	#. ELONGATION AT ___ %
RA	#. REDUCTION OF AREA ___ %
BH	#. BRINELL HARDNESS ___ TO ___.
RH	#. ROCKWELL HARDNESS C ___ TO ___ C.

A.3.1.25.11.1.8 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

A.3.1.25.11.1.9 Unnumbered Notes

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) and ANSI Y14.5 (1982) note as number 1.

A.3.1.25.11.1.10 Parts Lists

Parts Lists are no longer maintained. Therefore, do not transfer notes referring to the Parts List onto the new CAD drawing. It shall be deleted.

A.3.1.25.11.1.11 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D (AR) and ANSI Y14.5M 1982) as the top most note.

A.3.1.25.11.2 TABLES

A.3.1.25.11.2.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX B

Mechanical Functional Area, 2D, CAD Perfect

B.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

B.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Mechanical 2D CAD Perfect.

B.3.0 Functional Specification Requirements

B.3.1 Mechanical 2D Requirements, CAD Perfect

B.3.1.1 General Requirements

Conversion to CAD Perfect is the highest quality of bulk conversion available. The CAD Perfect conversion process implemented shall result in a CAD-Perfect data file. All entities shall be dimensionally and orthogonally correct and accurate to eight (8) decimal points with fully editable vectors and text. Layers, blocks, symbols, and line types shall be incorporated.

B.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and polylines.

B.3.1.3 Line Styles

When creating 2-D geometry, use the standard line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

B.3.1.4 Symbol Libraries

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard

ADCS Guidance Specification (DRAFT)

symbols or fonts developed by the contractor shall become the property of the U.S. Government. Use of third party fonts or symbols shall not be used unless previously approved by the Government.

B.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

B.3.1.6 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original image (see details below).

B.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: "Redrawn In CAD Without Change". (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change; (Specify Changes example: Updated Notes, Was B Size) .

B.3.1.8 Revision Block

In both cases shown in B.3.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

B.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

B.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

B.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to CAD Capable. In addition, index information shall be included in the DLF file .

B.3.1.12 Text Size

Text size shall be converted to DoD standard heights.

B.3.1.13 Sheet Size

ADCS Guidance Specification (DRAFT)

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

B.3.1.14 Assembly Drawings

Detail drawings shall be converted prior to assembly drawings. Assemblies shall be created accurately using available detail/subassembly drawings whenever possible. Assembly drawings shall be CAD Perfect with the exception that only dimensioned geometry will dimensionally accurate in the CAD file.

B.3.1.15 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications.

B.3.1.16 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

B.3.1.17 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

B.3.1.18 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

B.3.1.19 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager.

B.3.1.20 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

B.3.1.21 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

B.3.1.22 Data Outside Border

ADCS Guidance Specification (DRAFT)

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

B.3.1.23 Disposition of Originals

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to the Program Office of origin.

B.3.1.24 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

B.3.1.25 LAYERING AND COLOR

Layering and color conventions are as follows:

B.3.1.25.1 Color

Color settings shall be “BY-LAYER”, Layering shall be as follows:

LAYER NO.	LAYER DESCRIPTION	LINETYPE	COLOR
1	OBJECT-HEAVY	CONTINUOUS	RED
5	OBJECT-MEDIUM	CONTINUOUS	MAGENTA
10	OBJECT-LIGHT	CONTINUOUS	CYAN
20	CENTER LINE	CENTER	CYAN
22	HIDDEN LINE	HIDDEN	GREEN
24	PHANTOM LINE	PHANTOM	GREEN
30	DIMENSIONS	CONTINUOUS	GREEN
40	TEXT-NOTES	CONTINUOUS	YELLOW
45	TEXT-TITLE BLK	CONTINUOUS	MAGENTA
50	HATCH	CONTINUOUS	CYAN
60	WELD SYMBOLS	CONTINUOUS	GREEN
200	BORDER LINES	CONTINUOUS	BLUE

B.3.1.25.2 GRAPHICS CREATION GUIDELINES

B.3.1.25.2.1 Dimensionality

All Geometry shall be drawn dimensionally correct including all section views and details.

B.3.1.25.2.2 Threads

All threads shall be drawn to the illustration per stated min/max thread diameters.

B.3.1.25.2.3 Line Width

Line widths shall be set to the default unless otherwise specified herein.

ADCS Guidance Specification (DRAFT)

B.3.1.25.2.4 Bilateral Tolerances

All drawings shall be drawn to the median value of bilateral tolerances.

B.3.1.25.2.5 Drawing Scale

All drawing objects shall be drawn at 1:1 scale. (i.e. if a line is dimensioned at 1.25" on the original, then it shall be drawn at 1.25" in AUTOCAD.)

B.3.1.25.2.6 Title Block Scale

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

B.3.1.25.2.7 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the file to the drawing sheet scale prior to production of the C4 image.

B.3.1.25.3 LTSCALE

B.3.1.25.3.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of ½, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

B.3.1.25.4 HATCHING

B.3.1.25.4.1 Hatching

All hatching shall be associative and placed on the HATCH layer (layer 50). The hatch shall match the drawing in both style and direction. Do not explode the hatch.

B.3.1.25.5 BLOCKS

B.3.1.25.5.1 Attributed Blocks

Do not use attributed blocks.

B.3.1.25.5.2 Explode Blocks

Explode all blocks.

ADCS Guidance Specification (DRAFT)

B.3.1.25.6 CENTER LINES

B.3.1.25.6.1 DIM-CEN

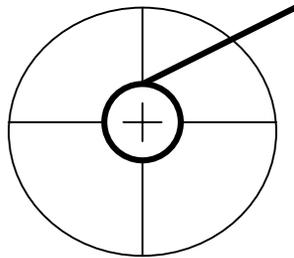
Use the DIM-CEN command to create centerlines for circles.

B.3.1.25.6.2 DIMCEN Tolerance

DIMCEN shall be set to match the original drawing, but go no lower than -.045.

B.3.1.25.6.3 Circle Centerlines

Change the crossing part of centerlines in circles to continuous line type on the dimension layer. The remainder of the centerline for circular features shall be left as a centerline by layer.



B.3.1.25.7 DIMENSIONS

B.3.1.25.7.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

B.3.1.25.7.2 Association

All dimensions shall be non-associative.

B.3.1.25.7.3 Leader Lines

All leader lines shall touch the object being called out.

B.3.1.25.7.4 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

ADCS Guidance Specification (DRAFT)

B.3.1.25.7.5 Geometric Tolerance Symbols

Create and use a blocks list to create the geometric tolerances.

B.3.1.25.7.6 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

B.3.1.25.7.7 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

B.3.1.25.8 DIMSCALE

B.3.1.25.8.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

B.3.1.25.8.2 Moving Dimensions

Dimensions may be moved for clarity.

B.3.1.25.9 TEXT

B.3.1.25.9.1 Text Style

Text style name is MONOTXT with a font of MONOTXT.SHX.

B.3.1.25.9.2 Case

ADCS Guidance Specification (DRAFT)

All text shall be as per original drawing.

B.3.1.25.9.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

B.3.1.25.9.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

B.3.1.25.9.5 Width

Text width on all text shall be .8.

B.3.1.25.9.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tables Tolerances Notes Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

B.3.1.25.9.7 Spacing

For text spacing on all drawings, including the general notes, use the system default. Do not match the TIF.

B.3.1.25.9.8 CAGE

Convert/leave in lined out CAGE CODES as found.

B.3.1.25.10 Title Block

B.3.1.25.10.1 Contractor Information

ADCS Guidance Specification (DRAFT)

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

B.3.1.25.10.2 Material Engineer's Stamp

If there is a material engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the MATERIAL ENGINEER space.

B.3.1.25.10.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

B.3.1.25.10.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

B.3.1.25.10.5 FSCM

If the FSCM or Code Ident was 00000, leave the "*Enter CAGE Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

B.3.1.25.10.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

B.3.1.25.10.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

B.3.1.25.10.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval

ADCS Guidance Specification (DRAFT)

B.3.1.25.11.1.6 Precious Metal Indicator Code (PMIC)

If there is a PMIC (Precious Metal Indicator Code) in the notes on the TIF, transfer it into the title block.

B.3.1.25.11.1.7 Physical Properties

Physical Properties listed in the title block on the TIF shall be converted and placed as notes using the following format: (# is the note number)

<u>WAS</u>	<u>NOW SHALL READ</u>
YP	#. YIELD POINT ___ PSI
TS	#. TENSILE STRENGTH ___ PSI
EL	#. ELONGATION AT ___ %
RA	#. REDUCTION OF AREA ___ %
BH	#. BRINELL HARDNESS ___ TO ___.
RH	#. ROCKWELL HARDNESS C ___ TO ___ C.

B.3.1.25.11.1.8 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

B.3.1.25.11.1.9 Unnumbered Notes

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) and ANSI Y14.5 (1982) note as number 1.

B.3.1.25.11.1.10 Parts Lists

Parts Lists are no longer maintained. Therefore, do not transfer notes referring to the Parts List onto the new CAD drawing. It shall be deleted.

B.3.1.25.11.1.11 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D (AR) and ANSI Y14.5M 1982) as the top most note.

B.3.1.25.11.2 TABLES

B.3.1.25.11.2.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX C

Mechanical Functional Area, 3D, CAD Perfect

C.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

C.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Mechanical 3D CAD Perfect.

C.3.0 Functional Specification Requirements

C.3.1 Mechanical 3D Requirements, CAD Perfect

C.3.1.1 General Requirements

All files delivered shall conform the following general requirements for CAD Perfect 3-D Conversion: CAD Perfect is the highest quality of bulk conversion available. The conversion process implemented shall result in a CAD-Perfect data file. All entities shall be dimensionally and orthogonally correct with fully editable surfaces, edges, loops, vectors and text. Boundary Representation Geometry, symbols, and other information shall be incorporated.

C.3.1.2 File Intelligence

All models shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true Boundary Representation Geometry (B-REP).

C.3.1.3 Symbol Libraries

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard symbols or fonts developed by the contractor shall become the property of the U.S. Government. Use of third party fonts or symbols shall not used unless previously approved by the Government.

C.3.1.4 Extraneous Markings

ADCS Guidance Specification (DRAFT)

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

C.3.1.5 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original image (see details below).

C.3.1.6 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: “Redrawn In CAD Without Change”. (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change; (Specify Changes example: Updated Notes, Was B Size) .

C.3.1.7 Revision Block

In both cases shown in C.3.1.6 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

C.3.1.8 Dates

Dates shall be standardized as follows: YY-MM-DD

C.3.1.9 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

C.3.1.10 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to CAD Capable In addition, index information shall be included in the DLF file.

C.3.1.11 Text Size

Text size shall be converted to DoD standard heights.

C.3.1.12 Sheet Size

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

C.3.1.13 Assembly Models

ADCS Guidance Specification (DRAFT)

Detail drawings shall be converted prior to assembly models. Assemblies shall be created accurately using available detail/subassembly models whenever possible. Assembly models shall be CAD Perfect 3-D.

C.3.1.14 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications .

C.3.1.15 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

C.3.1.16 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

C.3.1.17 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

C.3.1.18 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager with a copy to the AMSAA Point of Contact for resolution .

C.3.1.19 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

C.3.1.20 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

C.3.1.21 Data Outside Border

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

C.3.1.22 Disposition of Originals

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to the Program Office at the Program Manager's discretion.

ADCS Guidance Specification (DRAFT)

C.3.1.23 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

C.3.1.24 LAYERING AND COLOR

Layering and color conventions are as follows:

C.3.1.24.1 Color

Color settings shall be “BY-LAYER”, Layering shall be as follows:

LAYER NO.	LAYER DESCRIPTION	LINETYPE	COLOR
5	MODEL	CONTINUOUS	MAGENTA
30	DIMENSIONS	CONTINUOUS	GREEN
40	TEXT-NOTES	CONTINUOUS	YELLOW
45	TEXT-TITLE BLK	CONTINUOUS	MAGENTA
200	BORDER LINES	CONTINUOUS	BLUE

C.3.1.24.2 GRAPHICS CREATION GUIDELINES

C.3.1.24.2.1 Dimensionality

All Geometry shall be drawn dimensionally correct including all section views and details.

C.3.1.24.2.2. Threads

All threads shall be drawn to the illustration per stated min/max thread diameters.

C.3.1.24.2.3 Line Width

Line widths shall be set to the AUTOCAD default unless otherwise specified herein.

C.3.1.24.2.4 Bilateral Tolerances

All drawings shall be drawn to the median value of bilateral tolerances.

C.3.1.24.2.5 Drawing Scale

All drawing objects shall be drawn at 1:1 scale. (i.e. if a line is dimensioned at 1.25” on the original, then it shall be drawn at 1.25” in AUTOCAD.)

C.3.1.24.2.6 Title Block Scale

ADCS Guidance Specification (DRAFT)

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

C.3.1.24.2.7 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the AUTOCAD file to the drawing sheet scale prior to production of the C4 image.

C.3.1.24.3 LTSCALE

C.3.1.24.3.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of ½, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

C.3.1.24.4 BLOCKS

C.3.1.24.4.1 Attributed Blocks

Do not use attributed blocks.

C.3.1.24.4.2 Explode Blocks

Explode all blocks.

C.3.1.24.5 CENTER LINES

C.3.1.24.5.1 DIM-CEN

Use the DIM-CEN command to create centerlines for circles.

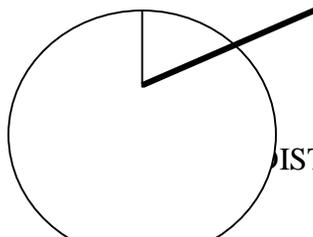
C.3.1.24.5.2 DIMCEN Tolerance

DIMCEN shall be set to match the original drawing, but go no lower than -.045.

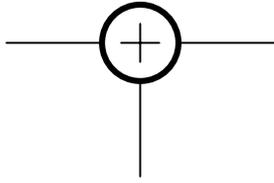
C.3.1.24.5.3 Circle Centerlines

Change the crossing part of centerlines in circles to continuous line type on the dimension layer. The remainder of the centerline for circular features shall be left as a centerline by layer.

Example: Only the circled part of the centerline should be continuous



ADCS Guidance Specification (DRAFT)



C.3.1.24.6 DIMENSIONS

C.3.1.24.6.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

C.3.1.24.6.2 Association

All dimensions shall be non-associative.

C.3.1.24.6.3 Leader Lines

All leader lines shall touch the object being called out.

C.3.1.24.6.4 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

C.3.1.24.6.5 Geometric Tolerance Symbols

Do not use the AUTOCAD geometric tolerance symbols. Create and use a blocks list to create the geometric tolerances.

C.3.1.24.6.6 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

C.3.1.24.6.7 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16

ADCS Guidance Specification (DRAFT)

DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

C.3.1.24.7 DIMSCALE

C.3.1.24.7.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

C.3.1.24.7.2 Moving Dimensions

Dimensions may be moved for clarity.

C.3.1.24.8 TEXT

C.3.1.24.8.1 Text Style

Text style name is MONOTXT with a font of MONOTXT.SHX.

C.3.1.24.8.2 Case

All text shall be as per original drawings.

C.3.1.24.8.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

C.3.1.24.8.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

C.3.1.24.8.5 Width

Text width on all text shall be .8.

C.3.1.24.8.6 Heights

ADCS Guidance Specification (DRAFT)

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tolerances Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

C.3.1.24.8.7 Spacing

For text spacing on all drawings, including the general notes, use the system default. Do not match the TIF.

C.3.1.24.8.8 CAGE

Convert/leave in lined out CAGE CODES as found.

C.3.1.24.9 TITLE BLOCK

C.3.1.24.9.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

C.3.1.24.9.2 Material Engineer's Stamp

If there is a material engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the MATERIAL ENGINEER space.

C.3.1.24.9.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

C.3.1.24.9.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

C.3.1.24.9.5 FSCM

ADCS Guidance Specification (DRAFT)

If the FSCM or Code Identification was 00000, leave the “*Enter Code Here*” in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

C.3.1.24.9.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

C.3.1.24.9.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

C.3.1.24.9.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

C.3.1.24.10 NOTES AND TABLES

C.3.1.24.10.1 Notes

C.3.1.24.10.1.1 Justification

All notes shall be listed on the left side of the drawing and from top down.

C.3.1.24.10.1.2 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

C.3.1.24.10.1.3 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:

ADCS Guidance Specification (DRAFT)

DOD-STD-00100D(AR)
ANSI Y14.5M-1982

C.3.1.24.10.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5” for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

C.3.1.24.10.1.5 Additional Notes

Any additional notes in the title block (i.e. Casting, Finishing, Heat Treatment, etc.) shall be shown in NOTE format after all of the existing notes on the drawing. If there is already a note regarding application of the part number, DO NOT add another one. This also includes any notation on the original denoting application of the part number. These shall be shown as: (# is the note number)

#. Apply Part Number per MIL-STD-130: 19207-XXXXXXXX (XXXXXXXX indicates the part number)

If the Title Block says, "Do Not Apply Part Number" this information shall be deleted and NOT be transferred to the notes column.

C.3.1.24.10.1.6 Precious Metal Indicator Code (PMIC)

If there is a PMIC (Precious Metal Indicator Code) in the notes on the TIF, transfer it into the title block.

C.3.1.24.10.1.7 Physical Properties

Physical Properties listed in the title block on the TIF shall be converted and placed as notes using the following format: (# is the note number)

<u>WAS</u>	<u>NOW SHALL READ</u>
YP	#. YIELD POINT ___ PSI
TS	#. TENSILE STRENGTH ___ PSI
EL	#. ELONGATION AT ___ %
RA	#. REDUCTION OF AREA ___ %
BH	#. BRINELL HARDNESS ___ TO ___.
RH	#. ROCKWELL HARDNESS C ___ TO ___ C.

C.3.1.24.10.1.8 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

ADCS Guidance Specification (DRAFT)

C.3.1.24.10.1.9 Unnumbered Notes

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) and ANSI Y14.5 (1982) note as number 1.

C.3.1.24.10.1.10 Parts Lists

Parts Lists are no longer maintained. Therefore, do not transfer notes referring to the Parts List onto the new CAD drawing. It shall be deleted.

C.3.1.24.10.1.11 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D (AR) and ANSI Y14.5M 1982) as the top most note.

C.3.1.24.10.2 TABLES

C.3.1.24.10.2.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX D

Electrical Board Functional Area, 2D, CAD Capable

D.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

D.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Electrical Board 2D CAD Capable.

D.3.0 Functional Specification Requirements

D.3.1 Electrical Board 2D, CAD Capable

D.3.1.1 General Requirements

All files delivered shall conform to the following general requirements for CAD Capable Conversion: The CAD Capable conversion process implemented shall result in a data file that can be used in a CAD system. All entities shall be not be dimensionally and orthogonally correct. Layers, blocks, symbols, and line types shall be incorporated.

D.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and polylines.

D.3.1.3 Line Styles

When creating 2-D geometry, use the standard AUTOCAD 14 line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

D.3.1.4 Symbol Libraries

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard symbols or fonts developed by the contractor shall become the property of the U.S. Government. Use of third party fonts or symbols shall not used unless previously approved by the Government.

ADCS Guidance Specification (DRAFT)

D.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

D.3.1.6 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original image.

D.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: “Redrawn In CAD Without Change ”. (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change ; (Specify Changes example: Updated Notes, Was B Size) .

D.3.1.8 Revision Block

In both cases shown in D.3.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

D.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

D.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

D.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to CAD Capable. In addition, index information shall be included in the DLF. file .

D.3.1.12 Text Size

Text size shall be converted to DoD standard heights.

D.3.1.13 Sheet Size

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

ADCS Guidance Specification (DRAFT)

D.3.1.14 Assembly Drawings

Detail drawings shall be converted prior to assembly drawings. Assemblies shall be created accurately using available detail/subassembly drawings whenever possible. Assembly drawings shall be CAD Perfect with the exception that only dimensioned geometry will dimensionally accurate in the CAD file.

D.3.1.15 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications.

D.3.1.16 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

D.3.1.17 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

D.3.1.18 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

D.3.1.19 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager.

D.3.1.20 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

D.3.1.21 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

D.3.1.22 Data Outside Border

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

D.3.1.23 Disposition of Originals

ADCS Guidance Specification (DRAFT)

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to the Program Office at the Program Managers discretion.

D.3.1.24 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

D.3.1.25 LAYERING AND COLOR

Layering and color conventions are as follows:

D.3.1.25.1 Color

Color settings shall be “BY-LAYER”, Layering shall be as follows:

LAYER NO.	LAYER DESCRIPTION	LINETYPE	COLOR
1	OBJECT-HEAVY	CONTINUOUS	RED
5	OBJECT-MEDIUM	CONTINUOUS	MAGENTA
10	OBJECT-LIGHT	CONTINUOUS	CYAN
20	CENTER LINE	CENTER	CYAN
22	HIDDEN LINE	HIDDEN	GREEN
24	PHANTOM LINE	PHANTOM	GREEN
30	DIMENSIONS	CONTINUOUS	GREEN
40	TEXT-NOTES	CONTINUOUS	YELLOW
45	TEXT-TITLE BLK	CONTINUOUS	MAGENTA
50	HATCH	CONTINUOUS	CYAN
200	BORDER LINES	CONTINUOUS	BLUE

D.3.1.25.2 GRAPHICS CREATION GUIDELINES

D.3.1.25.2.1 Dimensionality

All Geometry shall be drawn dimensionally correct including all section views and details.

D.3.1.25.2.2 Line Width

Line widths shall be set to the AUTOCAD default unless otherwise specified herein.

D.3.1.25.2.3 Bilateral Tolerances

All drawings shall be drawn to the median value of bilateral tolerances.

D.3.1.25.2.4 Drawing Scale

All drawing objects shall be drawn at 1:1 scale. (i.e. if a line is dimensioned at 1.25” on the original, then it shall be drawn at 1.25” in AUTOCAD.)

D.3.1.25.2.5 Title Block Scale

ADCS Guidance Specification (DRAFT)

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

D.3.1.25.2.6 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the file to the drawing sheet scale prior to production of the C4 image.

D.3.1.25.3 LTSCALE

D.3.1.25.3.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of ½, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

D.3.1.25.4 HATCHING

D.3.1.25.4.1 Hatching

All hatching shall be associative and placed on the HATCH layer (layer 50). The hatch shall match the drawing in both style and direction. Do not explode the hatch.

D.3.1.25.5 BLOCKS

D.3.1.25.5.1 Attributed Blocks

Do not use attributed blocks.

D.3.1.25.5.2 Explode Blocks

Explode all blocks.

D.3.1.25.6 CENTER LINES

D.3.1.25.6.1 DIM-CEN

Use the DIM-CEN command to create centerlines for circles.

D.3.1.25.6.2 DIMCEN Tolerance

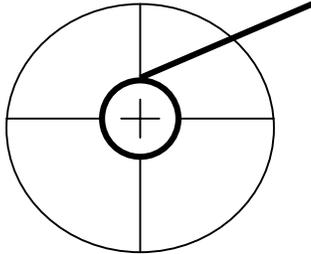
DIMCEN shall be set to match the original drawing, but go no lower than -.045.

ADCS Guidance Specification (DRAFT)

D.3.1.25.6.3 Circle Centerlines

Change the crossing part of centerlines in circles to continuous line type on the dimension layer. The remainder of the centerline for circular features shall be left as a centerline by layer.

Example: Only the circled part of the centerline should be continuous.



D.3.1.25.7 Dimensions

D.3.1.25.7.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

D.3.1.25.7.2 Association

All dimensions shall be non-associative.

D.3.1.25.7.3 Leader Lines

All leader lines shall touch the object being called out.

D.3.1.25.7.4 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

D.3.1.25.7.5 Geometric Tolerance Symbols

Do not use the AUTOCAD geometric tolerance symbols. Create and use a blocks list to create the geometric tolerances.

D.3.1.25.7.6 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

ADCS Guidance Specification (DRAFT)

D.3.1.25.7.7 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

D.3.1.25.8 DIMSCALE

D.3.1.25.8.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

D.3.1.25.8.2 Moving Dimensions

Dimensions may be moved for clarity.

D.3.1.25.9 TEXT

D.3.1.25.9.1 Text Style

Text style name is MONOTXT with a font of MONOTXT.SHX.

D.3.1.25.9.2 Case

All text shall be capital letters.

D.3.1.25.9.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

D.3.1.25.9.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

D.3.1.25.9.5 Width

Text width on all text shall be .8.

ADCS Guidance Specification (DRAFT)

D.3.1.25.9.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tables Tolerances Notes Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

D.3.1.25.9.7 Spacing

For text spacing on all drawings, including the general notes, use the system default. Do not match the TIF.

D.3.1.25.9.8 CAGE

Convert/leave in lined out CAGE CODES as found.

D.3.1.25.10 Title Block

D.3.1.25.10.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

D.3.1.25.10.2 Electrical Engineer's Stamp

If there is an electrical engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the ELECTRICAL ENGINEER space.

D.3.1.25.10.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

D.3.1.25.10.4 Signatures

ADCS Guidance Specification (DRAFT)

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

D.3.1.25.10.5 FSCM

If the FSCM or Code Ident was 00000, leave the "*Enter Code Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

D.3.1.25.10.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

D.3.1.25.10.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

D.3.1.25.10.8 TITLE BLOCK

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

D.3.1.25.11 NOTES AND TABLES

D.3.1.25.11.1 Notes

D.3.1.25.11.1.1 Justification

All notes shall be listed on the left side of the drawing and from top down.

D.3.1.25.11.1.2 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

D.3.1.25.11.1.3 Initial Note

ADCS Guidance Specification (DRAFT)

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:
DOD-STD-00100D(AR)
ANSI Y14.5M-1982

D.3.1.25.11.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5” for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

D.3.1.25.11.1.5 Additional Notes

Any additional notes in the title block shall be shown in NOTE format after all of the existing notes on the drawing. If there is already a note regarding application of the part number, DO NOT add another one. This also includes any notation on the original denoting application of the part number. These shall be shown as: (# is the note number)

#. Apply Part Number per MIL-STD-130: 19207-XXXXXXXX (XXXXXXXX indicates the part number)

If the Title Block says, "Do Not Apply Part Number" this information shall be deleted and NOT be transferred to the notes column.

D.3.1.25.11.1.6 Precious Metal Indicator Code (PMIC)

If there is a PMIC (Precious Metal Indicator Code) in the notes on the TIF, transfer it into the title block.

D.3.1.25.11.1.7 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

D.3.1.25.11.1.8 Unnumbered Notes

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) and ANSI Y14.5 (1982) note as number 1.

D.3.1.25.11.1.9 Parts Lists

ADCS Guidance Specification (DRAFT)

Parts Lists shall be maintained. Transfer notes referring to the Parts List onto the new CAD drawing.

D.3.1.25.11.1.10 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D (AR) and ANSI Y14.5M 1982) as the top most note.

D.3.1.25.11.2 TABLES

D.3.1.25.11.2.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX E

Electrical Board Functional Area, 2D, CAD Perfect

E.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

E.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Electrical Board, 2D, CAD Perfect

E.3.0 Functional Specification Requirements

E.3.1 Electrical Board 2D, CAD Perfect

E.3.1.1 General Requirements

All files delivered shall conform to the following general requirements for CAD Perfect Conversion: CAD Perfect is the highest quality of bulk conversion available. The CAD Perfect conversion process implemented shall result in a CAD-Perfect data file. All entities shall be dimensionally and orthogonally correct to eight (8) decimal points with fully editable vectors and text. Layers, blocks, symbols, and line types shall be incorporated.

E.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and polylines.

E.3.1.3 Line Styles

When creating 2-D geometry, use the standard line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

E.3.1.4 Symbol Libraries

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard

ADCS Guidance Specification (DRAFT)

symbols or fonts developed by the contractor shall become the property of the U.S. Government. Use of third party fonts or symbols shall not be used unless previously approved by the Government.

E.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

E.3.1.6 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original image.

E.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: "Redrawn In CAD Without Change". (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change; (Specify Changes example: Updated Notes, Was B Size) .

E.3.1.8 Revision Block

In both cases shown in E.3.1.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

E.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

E.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

E.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to CAD Capable

E.3.1.12 Index Information

Index Information shall be included in the DLF file.

E.3.1.13 Text Size

ADCS Guidance Specification (DRAFT)

Text size shall be converted to DoD standard heights.

E.3.1.14 Sheet Size

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

E.3.1.15 Assembly Drawings

Detail drawings shall be converted prior to assembly drawings. Assemblies shall be created accurately using available detail/subassembly drawings whenever possible. Assembly drawings shall be CAD Perfect with the exception that only dimensioned geometry will dimensionally accurate in the CAD file.

E.3.1.16 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications.

E.3.1.17 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

E.3.1.18 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

E.3.1.19 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

E.3.1.20 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager.

E.3.1.21 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

E.3.1.22 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

E.3.1.23 Data Outside Border

ADCS Guidance Specification (DRAFT)

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

E.3.1.24 Disposition of Originals

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to the Program Office at the Program Manager's discretion .

E.3.1.25 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

E.3.1.26 LAYERING AND COLOR

Layering and color conventions are as follows:

E.3.1.26.1 Color

Color settings shall be “BY-LAYER”, Layering shall be as follows:

LAYER NO.	LAYER DESCRIPTION	LINETYPE	COLOR
1	OBJECT-HEAVY	CONTINUOUS	RED
5	OBJECT-MEDIUM	CONTINUOUS	MAGENTA
10	OBJECT-LIGHT	CONTINUOUS	CYAN
20	CENTER LINE	CENTER	CYAN
22	HIDDEN LINE	HIDDEN	GREEN
24	PHANTOM LINE	PHANTOM	GREEN
30	DIMENSIONS	CONTINUOUS	GREEN
40	TEXT-NOTES	CONTINUOUS	YELLOW
45	TEXT-TITLE BLK	CONTINUOUS	MAGENTA
50	HATCH	CONTINUOUS	CYAN
60	WELD SYMBOLS	CONTINUOUS	GREEN
200	BORDER LINES	CONTINUOUS	BLUE

E.3.1.26.2 GRAPHICS CREATION GUIDELINES

E.3.1.26.2.1 Dimensionality

All Geometry shall be drawn dimensionally correct including all section views and details.

E.3.1.26.2.2 Threads

All threads shall be drawn to the illustration per stated min/max thread diameters.

E.3.1.26.2.3 Line Width

Line widths shall be set to the system default unless otherwise specified herein.

E.3.1.26.2.4 Bilateral Tolerances

ADCS Guidance Specification (DRAFT)

All drawings shall be drawn to the median value of bilateral tolerances.

E.3.1.26.2.5 Drawing Scale

All drawing objects shall be drawn at 1:1 scale. (i.e. if a line is dimensioned at 1.25" on the original, then it shall be drawn at 1.25" in AUTOCAD.)

E.3.1.26.2.6 Title Block Scale

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

E.3.1.26.2.7 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the AUTOCAD file to the drawing sheet scale prior to production of the C4 image.

E.3.1.26.3 LTSCALE

E.3.1.26.3.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of ½, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

E.3.1.26.4 HATCHING

E.3.1.26.4.1 Hatching

All hatching shall be associative and placed on the HATCH layer (layer 50). The hatch shall match the drawing in both style and direction. Do not explode the hatch.

E.3.1.26.5 BLOCKS

E.3.1.26.5.1 Attributed Blocks

Do not use attributed blocks.

E.3.1.26.5.2 Explode Blocks

Explode all blocks.

ADCS Guidance Specification (DRAFT)

E.3.1.26.6 CENTER LINES

E.3.1.26.6.1 DIM-CEN

Use the DIM-CEN command to create centerlines for circles.

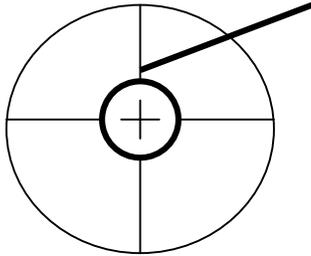
E.3.1.26.6.2 DIMCEN Tolerance

DIMCEN shall be set to match the original drawing, but go no lower than -.045.

E.3.1.26.6.3 Circle Centerlines

Change the crossing part of centerlines in circles to continuous line type on the dimension layer. The remainder of the centerline for circular features shall be left as a centerline by layer.

Example: Only the circled part of the center line should be continuous.



E.3.1.26.7 DIMENSIONS

E.3.1.26.7.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

E.3.1.26.7.2 Association

All dimensions shall be non-associative.

E.3.1.26.7.3 Leader Lines

All leader lines shall touch the object being called out.

E.3.1.26.7.4 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

ADCS Guidance Specification (DRAFT)

E.3.1.26.7.5 Geometric Tolerance Symbols

Do not use the AUTOCAD geometric tolerance symbols. Create and use a blocks list to create the geometric tolerances.

E.3.1.26.7.6 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

E.3.1.26.7.7 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

E.3.1.26.8 DIMSCALE

E.3.1.26.8.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

E.3.1.26.8.2 Moving Dimensions

Dimensions may be moved for clarity.

E.3.1.26.9 TEXT

E.3.1.26.9.1 Text Style

Text style name is MONOTXT with a font of **MONOTXT.SHX**.

E.3.1.26.9.2 Case

All text shall be per original drawing.

E.3.1.26.9.3 Legibility

ADCS Guidance Specification (DRAFT)

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

E.3.1.26.9.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

E.3.1.26.9.5 Width

Text width on all text shall be .8.

E.3.1.26.9.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section," "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tolerances Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

E.3.1.26.9.7 Spacing

For text spacing on all drawings, including the general notes, use the system default. Do not match the TIF.

E.3.1.26.9.8 CAGE

Convert/leave in lined out CAGE CODES as found.

E.3.1.26.10 Title Block

E.3.1.26.10.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

E.3.1.26.10.2 Electrical Engineer's Stamp

ADCS Guidance Specification (DRAFT)

If there is an electrical engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the ELECTRICAL ENGINEER space.

E.3.1.26.10.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

E.3.1.26.10.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

E.3.1.26.10.5 FSCM

If the FSCM or Code Identification was 00000, leave the "*Enter CODE Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

E.3.1.26.10.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

E.3.1.26.10.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

E.3.1.26.10.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

E.3.1.26.11 NOTES AND TABLES

E.3.1.26.11.1 Notes

ADCS Guidance Specification (DRAFT)

E.3.1.26.11.1.1 Justification

All notes shall be listed on the left side of the drawing and from top down.

E.3.1.26.11.1.2 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

E.3.1.26.11.1.3 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:
DOD-STD-00100D(AR)
ANSI Y14.5M-1982

E.3.1.26.11.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5”for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

E.3.1.26.11.1.5 Additional Notes

Any additional notes in the title block shall be shown in NOTE format after all of the existing notes on the drawing. If there is already a note regarding application of the part number, DO NOT add another one. This also includes any notation on the original denoting application of the part number. These shall be shown as: (# is the note number)

#. Apply Part Number per MIL-STD-130: 19207-XXXXXXX (XXXXXXX indicates the part number)

If the Title Block says, "Do Not Apply Part Number" this information shall be deleted and NOT be transferred to the notes column.

E.3.1.26.11.1.6 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

E.3.1.26.11.1.7 Unnumbered Notes

ADCS Guidance Specification (DRAFT)

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) and ANSI Y14.5 (1982) note as number 1.

E.3.1.26.11.1.8 Parts Lists

Parts Lists are to be maintained. Transfer notes referring to the Parts List onto the new CAD drawing.

E.3.1.26.11.1.9 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D (AR) and ANSI Y14.5M 1982) as the top most note.

E.3.1.26.11.2 TABLES

E.3.1.26.11.2.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX F

Electrical Schematic

F.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

F.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Electrical Schematic.

F.3.0 Functional Specification Requirements

F.3.1 Electrical Schematic

F.3.1.1 General Requirements

All files delivered shall conform to the following general requirements for CAD Capable Conversion . The CAD Capable conversion process implemented shall result in a data file that can be used in a CAE system. Layers, blocks, symbols, and line types shall be incorporated.

F.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and polylines.

F.3.1.3 Line Styles

When creating 2-D geometry, use the standard line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

F.3.1.4 Symbol Libraries

EDIF symbol libraries shall be used as the standard library set for Electronic Schematics. If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard symbols or fonts developed by the contractor shall become the property of the U.S. Government. Use of third party fonts or symbols shall not used unless previously approved by the Government.

ADCS Guidance Specification (DRAFT)

F.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

F.3.1.6 Information Transfer

All reference codes, symbols, shapes, and notes shall be transferred as found on the original image.

F.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: “Redrawn In CAD Without Change”. (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change; (Specify Changes example: Updated Notes, Was B Size) .

F.3.1.8 Revision Block

In both cases shown in F.3.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

F.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

F.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

F.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to CAD Capable.

F.3.1.12 Index Information

Index information shall be included in the DLF file.

F.3.1.13 Text Size

Text size shall be converted to DoD standard heights.

ADCS Guidance Specification (DRAFT)

F.3.1.14 Sheet Size

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

F.3.1.15 Conversion Format

The information collected for Electrical Schematics shall be capable of being represented in an EDIF file format

F.3.1.16 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications.

F.3.1.17 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

F.3.1.18 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

F.3.1.19 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

F.3.1.20 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager.

F.3.1.21 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

F.3.1.22 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

F.3.1.23 Data Outside Border

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

F.3.1.24 Disposition of Originals

ADCS Guidance Specification (DRAFT)

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to the Program Office at the Program Manager's discretion.

F.3.1.25 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

F.3.1.26 LAYERING AND COLOR

Layering and color conventions are as follows:

F.3.1.26.1 Color

Color settings shall be “BY-LAYER”, Layering shall be as follows:

LAYER NO.	LAYER DESCRIPTION	LINETYPE	COLOR
1	OBJECT-HEAVY	CONTINUOUS	RED
5	OBJECT-MEDIUM	CONTINUOUS	MAGENTA
10	OBJECT-LIGHT	CONTINUOUS	CYAN
45	TEXT-TITLE BLK	CONTINUOUS	MAGENTA
50	HATCH	CONTINUOUS	CYAN
200	BORDER LINES	CONTINUOUS	BLUE

F.3.1.26.2 GRAPHICS CREATION GUIDELINES

F.3.1.26.2.1 Dimensionality

All Geometry shall be drawn dimensionally correct including all section views and details.

F.3.1.26.2.2 Reference Designators

All reference designators shall be capable of being associated with the required symbol.

F.3.1.26.2.3 Line Width

Line widths shall be set to the system default unless otherwise specified herein.

F.3.1.26.2.4 Drawing Scale

All drawing objects shall be drawn at 1:1 scale. (i.e. if a line is dimensioned at 1.25” on the original, then it shall be drawn at 1.25” in AUTOCAD.)

F.3.1.26.2.5 Title Block Scale

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

ADCS Guidance Specification (DRAFT)

F.3.1.26.2.6 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the AUTOCAD file to the drawing sheet scale prior to production of the C4 image.

F.3.1.26.3 LTSCALE

F.3.1.26.3.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of 1/2, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

F.3.1.26.4 HATCHING

F.3.1.26.4.1 Hatching

All hatching shall be associative and placed on the HATCH layer (layer 50). The hatch shall match the drawing in both style and direction. Do not explode the hatch.

F.3.1.26.5 BLOCKS

F.3.1.26.5.1 Attributed Blocks

Do not use attributed blocks.

F.3.1.26.5.2 Explode Blocks

Explode all blocks

F.3.1.26.6 TEXT

F.3.1.26.6.1 Text Style

Text style name is MONOTXT with a font of **MONOTXT.SHX**.

F.3.1.26.6.2 Case

All text shall be per original drawing.

F.3.1.26.6.3 Legibility

ADCS Guidance Specification (DRAFT)

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

F.3.1.26.6.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

F.3.1.26.6.5 Width

Text width on all text shall be .8.

F.3.1.26.6.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Tables Notes Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

F.3.1.26.6.7 Spacing

For text spacing on all drawings, including the general notes, use the AUTOCAD default. Do not match the TIF.

F.3.1.26.6.8 CAGE

Convert/leave in lined out CAGE CODES as found.

F.3.1.26.7 TITLE BLOCK

F.3.1.26.7.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

F.3.1.26.7.2 Electrical Engineer's Stamp

If there is an electrical engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the ELECTRICAL ENGINEER space.

ADCS Guidance Specification (DRAFT)

F.3.1.26.7.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

F.3.1.26.7.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

F.3.1.26.7.5 FSCM

If the FSCM or Code Identification was 00000, leave the "*Enter CODE Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

F.3.1.26.7.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

F.3.1.26.7.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

F.3.1.26.7.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

F.3.1.26.9 NOTES AND TABLES

F.3.1.26.9.1 Notes

F.3.1.26.9.1.1 Justification

ADCS Guidance Specification (DRAFT)

All notes shall be listed on the left side of the drawing and from top down.

F.3.1.26.9.1.2 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

F.3.1.26.9.1.3 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:
DOD-STD-00100D(AR)
ANSI 414.5M-1982

F.3.1.26.9.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5" for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

F.3.1.26.9.1.5 Additional Notes

Any additional notes in the title block shall be shown in NOTE format after all of the existing notes on the drawing. If there is already a note regarding application of the part number, DO NOT add another one. This also includes any notation on the original denoting application of the part number. These shall be shown as: (# is the note number)

#. Apply Part Number per MIL-STD-130: 19207-XXXXXXX (XXXXXXX indicates the part number)

If the Title Block says, "Do Not Apply Part Number" this information shall be deleted and NOT be transferred to the notes column.

F.3.1.26.9.1.6 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

F.3.1.26.9.1.7 Unnumbered Notes

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) and ANSI Y14.5 (1982) note as number 1.

ADCS Guidance Specification (DRAFT)

F.3.1.26.9.1.8 Parts Lists

Parts Lists are maintained. Transfer notes referring to the Parts List onto the new CAD drawing.

F.3.1.26.9.1.9 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D (AR) and ANSI Y14.5 1982) as the top most note.

F.3.1.26.9.2 TABLES

F.3.1.26.9.2.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX G

Architectural Functional Area, 2D, CAD Capable

G.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

G.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Mechanical 2D CAD Capable.

G.3.0 Functional Specification Requirements

G.3.1 Architectural (AEC) 2D, CAD Capable

G.3.1.1 General Requirements

All files delivered shall conform the following general requirements for CAD Capable Conversion: The CAD Capable conversion process implemented shall result in a data file that can be input into a CAD system but is not dimensionally accurate. All entities shall be geometrically and orthogonally correct with fully editable vectors and text. Layers, blocks, symbols, and line types shall be incorporated.

G.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and polylines.

G.3.1.3 Line Styles

When creating 2-D geometry, use the standard line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

G.3.1.4 Symbol Libraries

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. For AEC, use of the Department of the Army's Engineering Manual No. 1110-1-1807 Standards Manual for US Army Corps of Engineering Computer-Aided Design and Drafting (CADD) System Part 4 – Cell Libraries. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing.

ADCS Guidance Specification (DRAFT)

Any non-standard symbols or fonts developed by the contractor shall be approved by the Program Manager and shall become the property of the U.S. Government.

G.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

G.3.1.6 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original.

G.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: “Redrawn In CAD Without Change – NOT DIAMENSIONALLY ACCURATE”. (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change - NOT DIAMENSIONALLY ACCURATE; (Specify Changes example: Updated Notes, Was B Size) .

G3.1.8 Revision Block

In both cases shown in G.3.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

G.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

G.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

G.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports(QARs) shall be converted to CAD Capable. In addition, index information shall be included in the DLF.

G.3.1.12 Text Size

Text size shall be converted to DoD standard heights.

G.3.1.13 Sheet Size

ADCS Guidance Specification (DRAFT)

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

G.3.1.14 Assembly Drawings

Detail drawings shall be converted prior to assembly drawings. Assemblies shall be created accurately using available detail/subassembly drawings whenever possible. Assembly drawings shall be CAD Capable.

G.3.1.15 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications .

G.3.1.16 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

G.3.1.17 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

G.3.1.18 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

G.3.1.19 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager.

G.3.1.20 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

G.3.1.21 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

G.3.1.22 Data Outside Border

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

G.3.1.23 Disposition of Originals

ADCS Guidance Specification (DRAFT)

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to the origin.

G.3.1.24 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

G.3.1.25 LAYERING AND COLOR

Within AEC there are many different type of levels and layers possible based on the type of drawing being converted. The program manager shall specify using a defined matrix the required level, color, and line size for a given AEC requirement. The Level/Layering Assignments defined in Chapter 4 of the Draft Tri-Service CADD-GIS Technology Report CADD-95-April 1995 shall be used.

G.3.1.25.1 GRAPHICS CREATION GUIDELINES

G.3.1.25.1.1 Dimensionality

All Geometry shall be drawn correctly including all section views and details.

G.3.1.25.1.2 Line Width

Line Thickness	Leroy Pen Designation	Inches	Millimeters	Microstation	Use
Thin	0000	0.004	0.10	wt=0	
Medium	000	0.010	0.25	wt=1	
Medium thick	0	0.014	0.35	wt=2	
Thick	1	0.020	0.50	wt=3	
Extra Thick	5	0.028	0.70	wt=4	
Optional	-	0.040	1.00	wt=5	

G.3.1.25.1.3 Bilateral Tolerances

All drawings shall be drawn to the median value of bilateral tolerances.

G.3.1.25.1.4 Drawing Scale

All drawing objects shall be drawn at 1:1 scale.

G.3.1.25.1.5 Title Block Scale

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

G.3.1.25.1.6 JEDMICS-C4 Scale

ADCS Guidance Specification (DRAFT)

For JEDMICS-C4 file conversions, scale a copy of the AUTOCAD file to the drawing sheet scale prior to production of the C4 image.

G.3.1.25.2 LTSCALE

G.3.1.25.2.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of 1/2, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

G.3.1.25.3 HATCHING

G.3.1.25.3.1 Hatching

All hatching shall be associative and placed on the HATCH layer (layer 50). The hatch shall match the drawing in both style and direction. Do not explode the hatch.

G.3.1.25.4 ORIGIN

G.3.1.25.4.1 Microstation

The recommended origin for a Microstation converted drawing is:

Discipline	MU:SU:PU = 1:12:254	MU:SU:PU = 1:1000:10
ALL	701555:0:8, 701555:0:8, 701555:0:8	214748:364:8, 214748:364:8, 214748:364:8

G.3.1.25.4.2 AUTOCAD

The recommended origin for a AUTOCAD converted drawing is 0,0,0.

G.3.1.25.5 BLOCKS

G.3.1.25.5.1 Attributed Blocks

Do not use attributed blocks.

G.3.1.25.5.2 Explode Blocks

Explode all blocks.

G.3.1.25.6 CENTER LINES

ADCS Guidance Specification (DRAFT)

G.3.1.25.6.1 DIM-CEN

Use the DIM-CEN command to create centerlines for circles.

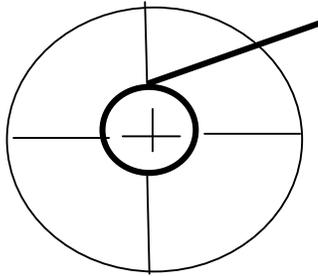
G.3.1.25.6.2 DIMCEN Tolerance

DIMCEN shall be set to match the original drawing, but go no lower than -.045.

G.3.1.25.6.3 Circle Centerlines

Change the crossing part of centerlines in circles to continuous line type on the dimension layer. The remainder of the centerline for circular features shall be left as a centerline by layer.

Example: Only the circled part of the centerline should be continuous.



G.3.1.25.7 DIMENSIONS

G.3.1.25.7.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

G.3.1.25.7.2 Association

All dimensions shall be non-associative.

G.3.1.25.7.3 Leader Lines

All leader lines shall touch the object being called out.

G.3.1.25.7.4 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

G.3.1.25.7.5 Diameter References

ADCS Guidance Specification (DRAFT)

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

G.3.1.25.7.6 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

G.3.1.25.8 DIMSCALE

G.3.1.25.8.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e. CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

G.3.1.25.8.2 Moving Dimensions

Dimensions may be moved for clarity.

G.3.1.25.9 TEXT

G.3.1.25.9.1 Text Style

Text style name is MONOTXT with a font of MONOTXT.SHX for Microstation Font #3.

G.3.1.25.9.2 Case

All text shall be as shown on original drawing.

G.3.1.25.9.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

G.3.1.25.9.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

ADCS Guidance Specification (DRAFT)

G.3.1.25.9.5 Width

Text width on all text shall be .8.

G.3.1.25.9.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tables Tolerances Notes Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

G.3.1.25.9.7 Spacing

For text spacing on all drawings, including the general notes, use the system Default. DO not match the TIF.

G.3.1.25.9.8 CAGE

Convert/leave in lined out CAGE CODES as found.

G.3.1.25.10 Title Block

G.3.1.25.10.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

G.3.1.25.10.2 AEC Engineer's Stamp

If there is an AEC engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the AEC ENGINEER space.

G.3.1.25.10.3 Multiple Signatures

ADCS Guidance Specification (DRAFT)

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

G.3.1.25.10.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

G.3.1.25.10.5 FSCM

If the FSCM or Code Identification was 00000, leave the "*Enter Data Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

G.3.1.25.10.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

G.3.1.25.10.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

G.3.1.25.10.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

G.3.1.25.11 NOTES AND TABLES

G.3.1.25.11.1 Notes

G.3.1.25.11.1.1 Justification

All notes shall be listed on the left side of the drawing and from top down.

ADCS Guidance Specification (DRAFT)

G.3.1.25.11.1.2 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

G.3.1.25.11.1.3 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:
DOD-STD-00100D(AR)

G.3.1.25.11.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5”for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

G.3.1.25.11.1.5 Additional Notes

Any additional notes in the title block shall be shown in NOTE format after all of the existing notes on the drawing

G.3.1.25.11.1.6 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

G.3.1.25.11.1.7 Unnumbered Notes

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) and note as number 1.

G.3.1.25.11.1.8 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D (AR) as the top most note.

G.3.1.25.10.2 TABLES

G.3.1.25.10.2.1 Conversion

ADCS Guidance Specification (DRAFT)

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX H

Architectural Functional Area, 2D, CAD Perfect

H.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

H.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Architectural 2D CAD Perfect

H.3.0 Functional Specification Requirements

H.3.1 AEC 2D, CAD Perfect

H.3.1.1 General Requirements

All files delivered shall conform to the following general requirements for CAD Perfect Conversion: CAD Perfect is the highest quality of bulk conversion available. The CAD Perfect conversion process implemented shall result in a complete and accurate data file. All entities shall be dimensionally and orthogonally correct with fully editable vectors and text. Layers, blocks, symbols, and line types shall be incorporated.

H.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and polylines.

H.3.1.3 Line Styles

When creating 2-D geometry, use the standard AUTOCAD 14 line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

H.3.1.4 Symbol Libraries

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. For AEC, use of the Department of the Army's Engineering Manual No. 1110-1-1807 Standards Manual for US Army Corps of Engineering Computer-Aided Design and Drafting (CADD) System Part 4 – Cell Libraries. If special fonts are to

ADCS Guidance Specification (DRAFT)

be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard symbols or fonts developed by the contractor shall be approved by the Program Manager and shall become the property of the U.S. Government.

H.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

H.3.1.6 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original image.

H.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: "Redrawn In CAD Without Change". (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change; (Specify Changes example: Updated Notes, Was B Size) .

H.3.1.8 Revision Block

In both cases shown in H.3.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

H.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

H.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

H.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to ASCII and CGM. In addition, index information shall be included in the DLF file.

H.3.1.12 Text Size

Text size shall be converted to DoD standard heights.

H.3.1.13 Sheet Size

ADCS Guidance Specification (DRAFT)

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

H.3.1.14 Assembly Drawings

Detail drawings shall be converted prior to assembly drawings. Assemblies shall be created accurately using available detail/subassembly drawings whenever possible. Assembly drawings shall be CAD Perfect with the exception that only dimensioned geometry will dimensionally accurate in the CAD file.

H.3.1.15 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications.

H.3.1.16 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

H.3.1.17 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

H.3.1.18 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

H.3.1.19 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager.

H.3.1.20 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

H.3.1.21 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

H.3.1.22 Data Outside Border

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

ADCS Guidance Specification (DRAFT)

H.3.1.23 Disposition of Originals

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to the Program Manager.

H.3.1.24 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

H.3.1.25 LAYERING AND COLOR

Within AEC there are many different type of levels and layers possible based on the type of drawing being converted. The program manager shall specify using a defined matrix the required level, color, and line size for a given AEC requirement. The Level/Layering Assignments defined in Chapter 4 of the Draft Tri-Service CADD-GIS Technology Report CADD-95-April 1995 shall be used.

H.3.1.25.1 Dimensionality

All Geometry shall be drawn dimensionally correct including all section views and details.

H.3.1.25.2 Drawing Scale

All drawing objects shall be drawn at 1:1 scale.

H.3.1.25.2.1 Title Block Scale

Insert the title block by scaling it to the inverse scale of the drawing. For example: a $\frac{1}{4}$ scale drawing would have the title block scaled 4:1.

H.3.1.25.2.2 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the file to the drawing sheet scale prior to production of the C4 image.

H.3.1.25.3 LTSCALE

H.3.1.25.3.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of $\frac{1}{2}$, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of $\frac{2}{1}$, divide .25 by 2 = .125.

H.3.1.25.4 BLOCKS

ADCS Guidance Specification (DRAFT)

H.3.1.25.4.1 Attributed Blocks

Do not use attributed blocks.

H.3.1.25.4.2 Explode Blocks

Explode all blocks.

H.3.1.25.5 ORIGIN

H.3.1.25.5.1 Microstation

The recommended origin for a Microstation converted drawing is:

Discipline	MU:SU:PU = 1:12:254	MU:SU:PU = 1:1000:10
ALL	701555:0:8, 701555:0:8, 701555:0:8	214748:364:8, 214748:364:8, 214748:364:8

H.3.1.25.5.2 AUTOCAD

The recommended origin for an AUTOCAD converted drawing is 0,0,0.

H.3.1.25.6 Dimensions

H.3.1.25.6.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

H.3.1.25.6.2 Association

All dimensions shall be non-associative.

H.3.1.25.6.3 Widths

Line Thickness	Leroy Pen Designation	Inches	Millimeters	Microstation	Use
Thin	0000	0.004	0.10	wt=0	
Medium	000	0.010	0.25	wt=1	
Medium thick	0	0.014	0.35	wt=2	
Thick	1	0.020	0.50	wt=3	
Extra thick	5	0.028	0.70	wt=4	
Optional	-	0.040	1.00	wt=5	

ADCS Guidance Specification (DRAFT)

Data supplied from Tri-Service CADD/GIS Technical Center Draft Technical Report CADD-95- April 1995 Chapter 2 Table 2.

H.3.1.25.6.4 Leader Lines

All leader lines shall touch the object being called out.

H.3.1.25.6.5 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

H.3.1.25.6.6 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

H.3.1.25.6.7 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

H.3.1.25.7 DIMSCALE

H.3.1.25.7.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

H.3.1.25.7.2 Moving Dimensions

Dimensions may be moved for clarity.

H.3.1.25.8 TEXT

H.3.1.25.8.1 Text Style

ADCS Guidance Specification (DRAFT)

Text style name is MONOTXT with a font of MONOTXT.SHX for AUTOCAD and Monotext Font#3 for Microstation.

H.3.1.25.8.2 Case

All text shall be in the same case converted from.

H.3.1.25.8.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

H.3.1.25.8.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

H.3.1.25.8.5 Width

Text width on all text shall be .8.

H.3.1.25.8.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
8Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tolerances Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

H.3.1.25.8.7 Spacing

For text spacing on all drawings, including the general notes, use the AUTOCAD or Microstation Default. DO not match the TIF.

H.3.1.25.8.8 CAGE

Convert/leave in lined out CAGE CODES as found.

H.3.1.25.9 TITLE BLOCK

H.3.1.25.9.1 Contractor Information

ADCS Guidance Specification (DRAFT)

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

H.3.1.25.9.2 AEC Engineer's Stamp

If there is an AEC engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the AEC ENGINEER space.

H.3.1.25.9.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

H.3.1.25.9.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

H.3.1.25.9.5 FSCM

If the FSCM or Code Identification was 00000, leave the "*Enter Code Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

H.3.1.25.9.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

H.3.1.25.9.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

H.3.1.25.9.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval

ADCS Guidance Specification (DRAFT)

Approved By
Tracer

Design Approval
Signature no longer required

H.3.1.25.10 NOTES AND TABLES

H.3.1.25.10.1 Notes

H.3.1.25.10.1.1 Justification

All notes shall be listed on the left side of the drawing and from top down.

H.3.1.25.10.1.2 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

H.3.1.25.10.1.3 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:
DOD-STD-00100D(AR)

H.3.1.25.10.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5” for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

H.3.1.25.10.1.5 Additional Notes

Any additional notes in the title block shall be shown in NOTE format after all of the existing notes on the drawing.

H.3.1.25.10.1.6 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

H.3.1.25.10.1.7 Unnumbered Notes

ADCS Guidance Specification (DRAFT)

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) , note as number 1.

H.3.1.25.10.1.8 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D (AR) as the top most note.

H.3.1.25.10.2 TABLES

H.3.1.25.9.10.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX I

Architectural Functional Area, 3D, CAD Perfect

I.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

I.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Architectural 3D, CAD Perfect

I.3.0 Functional Specification Requirements

I.3.1 AEC 3D, CAD Perfect

I.3.1.1. General Requirements

All files delivered shall conform the following general requirements for CAD Perfect Conversion: CAD Perfect is the highest quality of bulk conversion available. The CAD Perfect conversion process implemented shall result in a CAD-Perfect 3-Dimensional data file. All entities shall be dimensionally and orthogonally correct with fully editable B-Rep Models and text. Layers, blocks, symbols, and line types shall be incorporated.

I.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, B-Rep surfaces and text.

I.3.1.3 Geometric Representation

When creating 3-D geometry, use the standard line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

I.3.1.4 Symbol Libraries

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. For AEC, use of the Department of the Army's Engineering Manual No. 1110-1-1807 Standards Manual for US Army Corps of Engineering Computer-Aided Design and Drafting (CADD) System Part 4 – Cell Libraries. If special fonts are to

ADCS Guidance Specification (DRAFT)

be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard symbols or fonts developed by the contractor shall be approved by the Program Manager and shall become the property of the U.S. Government.

I.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

I.3.1.6 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original image.

I.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: "Redrawn In CAD Without Change". (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change; (Specify Changes example: Updated Notes, Was B Size) .

I.3.1.8 Revision Block

In both cases shown in I.3.3.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

I.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

I.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

I.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to CAD Capable. In addition, index information shall be included in the DLF file.

I.3.1.12 Text Size

Text size shall be converted to DoD standard heights.

I.3.1.13 Sheet Size

ADCS Guidance Specification (DRAFT)

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

I.3.1.14 Assembly Drawings

Detail drawings shall be converted prior to assembly drawings. Assemblies shall be created accurately using available detail/subassembly drawings whenever possible. Assembly drawings shall be CAD Perfect with the exception that only dimensioned geometry will dimensionally accurate in the CAD file.

I.3.1.15 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications.

I.3.1.16 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

I.3.1.17 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

I.3.1.18 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

I.3.1.19 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager with a copy to the AMSAA POC for resolution.

I.3.1.20 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

I.3.1.21 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

I.3.1.22 Data Outside Border

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

ADCS Guidance Specification (DRAFT)

I.3.1.23 Disposition of Originals

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to Program Manager.

I.3.1.24 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

I.3.1.25 LAYERING AND COLOR

Within AEC there are many different type of levels and layers possible based on the type of drawing being converted. The program manager shall specify using a defined matrix the required level, color, and line size for a given AEC requirement. The Level/Layering Assignments defined in Chapter 4 of the Draft Tri-Service CADD-GIS Technology Report CADD-95-April 1995 shall be used.

I.3.1.25.1 GRAPHICS CREATION GUIDELINES

I.3.1.25.1.1 Dimensionality

All Geometry shall be drawn dimensionally correct including all section views and details.

I.3.1.25.1.2 Line Width

Line Thickness	Leroy Pen Designation	Inches	Millimeter s	Microstation	Use
Thin	0000	0.004	0.10	wt=0	
Medium	000	0.010	0.25	wt=1	
Medium thick	0	0.014	0.35	wt=2	
Thick	1	0.020	0.50	wt=3	
Extra thick	5	0.028	0.70	wt=4	
Optional	-	0.040	1.00	wt=5	

Data supplied from Tri-Service CADD/GIS Technical Center Draft Technical Report CADD-95-April 1995 Chapter 2 Table 2.

I.3.1.25.1.3 Drawing Scale

All drawing objects shall be drawn at 1:1 scale. (i.e. if a line is dimensioned at 1.25" on the original, then it shall be drawn at 1.25" in AUTOCAD.)

I.3.1.25.1.4 Title Block Scale

ADCS Guidance Specification (DRAFT)

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

I.3.1.25.1.5 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the AUTOCAD file to the drawing sheet scale prior to production of the C4 image.

I.3.1.25.2 LTSCALE

I.3.1.25.2.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of ½, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

I.3.1.25.3 HATCHING

I.3.1.25.3.1 Hatching

All hatching shall be associative and placed on the HATCH layer (layer 50). The hatch shall match the drawing in both style and direction. Do not explode the hatch.

I.3.1.25.4 Blocks

I.3.1.25.4.1 Attributed Blocks

Do not use attributed blocks.

I.3.1.25.4.2 Explode Blocks

Explode all blocks.

I.3.1.25.5 CENTER LINES

I.3.1.25.5.1 DIM-CEN

Use the DIM-CEN command to create centerlines for circles.

I.3.1.25.5.2 DIMCEN Tolerance

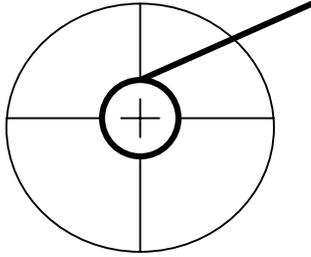
DIMCEN shall be set to match the original drawing, but go no lower than -.045.

ADCS Guidance Specification (DRAFT)

I.3.1.25.5.3 Circle Centerlines

Change the crossing part of centerlines in circles to continuous line type on the dimension layer. The remainder of the centerline for circular features shall be left as a centerline by layer.

Example: Only the circled part of the centerline should be continuous.



I.3.1.25.6 DIMENSIONS

I.3.1.25.6.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

I.3.1.25.6.2 Association

All dimensions shall be non-associative.

I.3.1.25.6.3 Leader Lines

All leader lines shall touch the object being called out.

I.3.1.25.6.4 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

I.3.1.25.6.5 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

I.3.1.25.6.6 Dimension Variables

Use the following dimension variable settings:

ADCS Guidance Specification (DRAFT)

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

I.3.1.25.7 DIMSCALE

I.3.1.25.7.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e. CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

I.3.1.25.7.2 Moving Dimensions

Dimensions may be moved for clarity.

I.3.1.25.8 TEXT

I.3.1.25.8.1 Text Style

Text style name is MONOTXT with a font of MONOTXT.SHX.

I.3.1.25.8.2 Case

All text shall be as on original drawing.

I.3.1.25.8.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager

I.3.1.25.8.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

I.3.1.25.8.5 Width

Text width on all text shall be .8.

I.3.1.25.8.6 Heights

The following are the specified text heights:

ADCS Guidance Specification (DRAFT)

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tables Tolerances Notes Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

I.3.1.25.8.7 Spacing

For text spacing on all drawings, including the general notes, use the system default. Do not match the TIF.

I.3.1.25.8.8 CAGE

Convert/leave in lined out CAGE CODES as found.

I.3.1.25.9 TITLE BLOCK

I.3.1.25.9.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

I.3.1.25.9.2 AEC Engineer's Stamp

If there is an AEC engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the AEC ENGINEER space.

I.3.1.25.9.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

I.3.1.25.9.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

I.3.1.25.9.5 FSCM

ADCS Guidance Specification (DRAFT)

If the FSCM or Code Identification was 00000, leave the “19207” in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

I.3.1.25.9.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

I.3.1.25.9.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

I.3.1.25.9.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

I.3.1.25.10 NOTES AND TABLES

I.3.1.25.10.1 Notes

I.3.1.25.10.1.1 Justification

All notes shall be listed on the left side of the drawing and from top down.

I.3.1.25.10.1.2 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

I.3.1.25.10.1.3 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

ADCS Guidance Specification (DRAFT)

1. APPLICABLE STANDARDS/SPECIFICATIONS: DOD-STD-00100D(AR)

I.3.1.25.10.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5” for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

I.3.1.25.10.1.5 Additional Notes

Any additional notes in the title block shall be shown in NOTE format after all of the existing notes on the drawing.

I.3.1.25.10.1.6 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

I.3.1.25.10.1.7 Unnumbered Notes

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) note as number 1.

I.3.1.25.10.1.8 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D (AR) as the top most note.

I.3.1.25.10.2 TABLES

I.3.1.25.10.2.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX J

Mapping Functional Area, 2D, CAD Capable

J.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

J.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Mapping 2D CAD Capable.

J.3.0 Functional Specification Requirements

J.3.1 Mapping (GIS) 2D, CAD Capable

J.3.1.1 General Requirements

All files delivered shall conform the following general requirements for CAD Capable Conversion: The CAD Capable conversion process implemented shall result in a data file that can be input into a CAD system but is not dimensionally accurate. All entities shall be to scale and geometrically and orthogonally correct with fully editable vectors and text with contour elevation maps shall have continuous geometry with the text string for each elevation level. All map separates for a map set shall have registration marks aligned within .005 inch. total tolerance as stated in MIL-STD-600001 Mapping, Charting & Geodesy Accuracy. Layers, blocks, symbols, and line types shall be incorporated.

J.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and polylines.

J.3.1.3 Line Styles

When creating 2-D geometry, use the standard AUTOCAD 14 line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

J.3.1.4 Symbol Libraries

ADCS Guidance Specification (DRAFT)

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. For GIS, use MIL-STD-600001 Mapping, Charting & Geodesy Accuracy Standards for Engineering Computer-Aided Design and Drafting (CADD) System. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard symbols or fonts developed by the contractor shall be approved by the Program Manager and shall become the property of the U.S. Government.

J.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted

J.3.1.6 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original.

J.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: “Redrawn In CAD Without Change – NOT DIAMENSIONALLY ACCURATE”. (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change - NOT DIAMENSIONALLY ACCURATE; (Specify Changes example: Updated Notes, Was B Size) .

J.3.1.8 Revision Block

In both cases shown in J.3.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

J.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

J.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

J.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to CAD Capable. In addition, index information shall be included in the DLF.

ADCS Guidance Specification (DRAFT)

J.3.1.12 Text Size

Text size shall be converted to DoD standard heights.

J.3.1.13 Sheet Size

Sheet sizes shall be resized as necessary per DoD-STD-00100D to keep notes and revision columns clear.

J.3.1.14 Assembly Drawings

Detail drawings shall be converted prior to assembly drawings. Assemblies shall be created accurately using available detail/subassembly drawings whenever possible. Assembly drawings shall be CAD Capable

J.3.1.15 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D specifications.

J.3.1.16 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

J.3.1.17 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

J.3.1.18 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

J.3.1.19 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager.

J.3.1.20 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

J.3.1.21 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

J.3.1.22 Data Outside Border

ADCS Guidance Specification (DRAFT)

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

J.3.1.23 Disposition of Originals

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) or returned to the origin.

J.3.1.24 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 600 dots per inch (DPI).

J.3.1.25 LAYERING AND COLOR

Within GIS there are many different type of levels and layers possible based on the type of drawing being converted. The program manager shall specify using a defined matrix the required level, color, and line size for a given GIS requirement. The Level/Layering Assignments defined CADD-GIS Technology Report.

J.3.1.25.1 GRAPHICS CREATION GUIDELINES

J.3.1.25.1.1 Dimensionality

All Geometry shall be drawn correctly including all section views and details.

J.3.1.25.1.2 Line Width

Line Thickness	Leroy Pen Designation	Inches	Millimeters	Microstation	Use
Thin	0000	0.004	0.10	wt=0	
Medium	000	0.010	0.25	wt=1	
Medium thick	0	0.014	0.35	wt=2	
Thick	1	0.020	0.50	wt=3	
Extra Thick	5	0.028	0.70	wt=4	
Optional	-	0.040	1.00	wt=5	

J.3.1.25.1.3 Bilateral Tolerances

All drawings shall be drawn to the median value of bilateral tolerances.

J.3.1.25.1.4 Drawing Scale

All drawing objects shall be drawn at 1:1 scale.

J.3.1.25.1.5 Title Block Scale

ADCS Guidance Specification (DRAFT)

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

J.3.1.25.1.6 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the system file to the drawing sheet scale prior to production of the C4 image.

J.3.1.25.2 LTSCALE

J.3.1.25.2.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of ½, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

J.3.1.25.3 HATCHING

I.3.1.25.3.1 Hatching

All hatching shall be associative and placed on the HATCH layer (layer 50). The hatch shall match the drawing in both style and direction. Do not explode the hatch.

J.3.1.25.4 ORIGIN

J.3.1.25.4.1 Microstation

The recommended origin for a Microstation converted drawing is:

Discipline	MU:SU:PU = 1:12:254	MU:SU:PU = 1:1000:10
ALL	701555:0:8, 701555:0:8, 701555:0:8	214748:364:8, 214748:364:8, 214748:364:8

J.3.1.25.4.2 AUTOCAD

The recommended origin for a AUTOCAD converted drawing is 0,0,0.

J.3.1.25.5 Blocks

J.3.1.25.5.1 Attributed Blocks

Do not use attributed blocks.

J.3.1.25.5.2 Explode Blocks

ADCS Guidance Specification (DRAFT)

Explode all blocks.

J.3.1.25.6 CENTER LINES

J.3.1.25.6.1 DIM-CEN

Use the DIM-CEN command to create centerlines for circles.

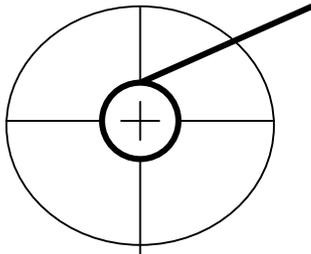
J.3.1.25.6.2 DIMCEN Tolerance

DIMCEN shall be set to match the original drawing, but go no lower than -.045.

J.3.1.25.6.3 Circle Centerlines

Change the crossing part of centerlines in circles to continuous line type on the dimension layer. The remainder of the centerline for circular features shall be left as a centerline by layer.

Example: Only the circled part of the centerline should be continuous.



J.3.1.25.7 DIMENSIONS

J.3.1.25.7.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

J.3.1.25.7.2 Association

All dimensions shall be non-associative.

J.3.1.25.7.3 Leader Lines

All leader lines shall touch the object being called out.

J.3.1.25.7.4 Arc/Circle Leader Lines

ADCS Guidance Specification (DRAFT)

If the object being called out is an arc or circle, the leader line shall extend radially.

J.3.1.25.7.5 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

J.3.1.25.7.6 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

J.3.1.25.8 DIMSCALE

J.3.1.25.8.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

J.3.1.25.8.2 Moving Dimensions

Dimensions may be moved for clarity.

J.3.1.25.9 TEXT

J.3.1.25.9.1 Text Style

Text style name is MONOTXT with a font of MONOTXT.SHX for Microstation Font #3.

J.3.1.25.9.2 Case

All text shall be as shown on original drawing.

J.3.1.25.9.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

ADCS Guidance Specification (DRAFT)

J.3.1.25.9.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

J.3.1.25.9.5 Width

Text width on all text shall be .8.

J.3.1.25.9.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE& LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tolerances Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

J.3.1.25.9.7 Spacing

For text spacing on all drawings, including the general notes, use the system Default. DO not match the TIF.

J.3.1.25.9.8 CAGE

Convert/leave in lined out CAGE CODES as found.

J.3.1.25.10 TITLE BLOCK

J.3.1.25.10.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

J.3.1.25.10.2 GIS Engineer's Stamp

If there is a GIS engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the GIS ENGINEER space.

J.3.1.25.10.3 Multiple Signatures

ADCS Guidance Specification (DRAFT)

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

J.3.1.25.10.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

J.3.1.25.10.5 FSCM

If the FSCM or Code Identification was 00000, leave the "*Enter Data Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

J.3.1.25.10.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

J.3.1.25.10.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

J.3.1.25.10.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

J.3.1.25.11 NOTES AND TABLES

J.3.1.25.11.1 Notes

J.3.1.25.11.1.1 Justification

All notes shall be listed on the left side of the drawing and from top down.

ADCS Guidance Specification (DRAFT)

J.3.1.25.11.1.2 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

J.3.1.25.11.1.3 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:
DOD-STD-00100D

J.3.1.25.11.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5”for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

J.3.1.25.11.1.5 Additional Notes

Any additional notes in the title block shall be shown in NOTE format after all of the existing notes on the drawing

J.3.1.25.11.1.6 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

J.3.1.25.11.1.7 Unnumbered Notes

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D and note as number 1.

J.3.1.25.11.1.8 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D as the top most note.

J.3.1.25.11.2 TABLES

J.3.1.25.11.2.1 Conversion

ADCS Guidance Specification (DRAFT)

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX K

Mapping Functional Area, 2D, CAD Perfect

K.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

K.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Mapping 2D CAD Perfect.

K.3.0 Functional Specification Requirements

K.3.1 Mapping (GIS) 2D ,CAD Perfect

K.3.1.1 General Requirements

All files delivered shall conform the following general requirements for CAD Perfect Conversion: CAD Perfect is the highest quality of bulk conversion available. The CAD Perfect conversion process implemented shall result in a complete and accurate data file which meets all the requirements of MIL-STD-6000001 for mapping accurately. All entities shall be to scale and dimensionally and orthogonally correct with fully editable vectors and text, contour elevation maps shall have continuous geometry with the text string being association with each elevation level. All map separates for a map set shall have registration marks aligned within .005 inch. total tolerance as stated in MIL-STD-600001 Mapping, Charting & Geodesy Accuracy. Layers, blocks, symbols, and line types shall be incorporated.

K.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and polylines.

K.3.1.3 Line Styles

When creating 2-D geometry, use the standard AUTOCAD 14 line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

K.3.1.4 Symbol Libraries

ADCS Guidance Specification (DRAFT)

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. For GIS, use MIL-STD-600001 Mapping, Charting & Geodesy Accuracy Standards for Engineering Computer-Aided Design and Drafting (CADD) System. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard symbols or fonts developed by the contractor shall be approved by the Program Manager and shall become the property of the U.S. Government.

K.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

K.3.1.6 Information Transfer

All register marks, dimensions, tolerances, and notes shall be transferred as found on the original image.

K.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: "Redrawn In CAD Without Change". (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change; (Specify Changes example: Updated Notes, Was B Size) .

K.3.1.8 Revision Block

In both cases shown in K.3.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

K.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

K.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

K.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to ASCII and CGM. In addition, index information shall be included in the DLF file.

ADCS Guidance Specification (DRAFT)

K.3.1.12 Text Size

Text size shall be converted to DoD standard heights.

K.3.1.13 Sheet Size

Sheet sizes shall be resized as necessary per DoD-STD-00100D to keep notes and revision columns clear.

K.3.1.14 Map Separates

All map separates must be converted to the exact same scale with all map register marks aligning within total of .005 of an inch for all map separate (sheets). Map separate drawings shall be totally CAD Perfect and dimensionally accurate in the CAD file. Per MIL-STD-600001 Mapping, Charting & Geodesy Accuracy.

K.3.1.15 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D specifications.

K.3.1.16 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

K.3.1.17 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

K.3.1.18 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

K.3.1.19 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager with a copy to the AMSAA Point of Contact for resolution .

K.3.1.20 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

K.3.1.21 Quality Assurance Process

ADCS Guidance Specification (DRAFT)

All files shall be subjected to a 100% quality assurance process.

K.3.1.22 Data Outside Border

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

K.3.1.23 Disposition of Originals

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded).

K.3.1.24 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 600 dots per inch (DPI).

K.3.1.25 LAYERING AND COLOR

K.3.1.25.1 Colors

Within GIS there are many different type of levels and layers possible based on the type of drawing being converted. The program manager shall specify using a defined matrix the required level, color, and line size for a given GIS requirement.

K.3.1.25.1.1 Dimensionality

All Geometry shall be drawn dimensionally correct including all section views and details.

K.3.1.25.1.2 Drawing Scale

All drawing objects shall be drawn at 1:1 scale.

K.3.1.25.1.3 Title Block Scale

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

K.3.1.25.1.4 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the AUTOCAD file to the drawing sheet scale prior to production of the C4 image.

K.3.1.25.2 LTSCALE

K.3.1.25.2.1 LTSCALE

ADCS Guidance Specification (DRAFT)

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of 1/2, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

K.3.1.25.3 BLOCKS

K.3.1.25.3.1 Attributed Blocks

Do not use attributed blocks.

K.3.1.25.3.2 Explode Blocks

Explode all blocks.

K.3.1.25.4 ORIGIN

K.3.1.25.4.1 Microstation

The recommended origin for a Microstation converted drawing is:

Discipline	MU:SU:PU = 1:12:254	MU:SU:PU = 1:1000:10
ALL	701555:0:8, 701555:0:8, 701555:0:8	214748:364:8, 214748:364:8, 214748:364:8

K.3.1.25.4.2 AUTOCAD

The recommended origin for an AUTOCAD converted drawing is 0,0,0.

K.3.1.25.5 Dimensions

K.3.1.25.5.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

K.3.1.25.5.2 Association

All dimensions shall be non-associative.

K.3.1.25.5.3 Widths

Line Thickness	Leroy Pen Designation	Inches	Millimeters	Microstation	Use
Thin	0000	0.004	0.10	wt=0	

ADCS Guidance Specification (DRAFT)

Medium	000	0.010	0.25	wt=1	
Medium thick	0	0.014	0.35	wt=2	
Thick	1	0.020	0.50	wt=3	
Extra thick	5	0.028	0.70	wt=4	
Optional	-	0.040	1.00	wt=5	

Data supplied from Tri-Service CADD/GIS Technical Center Draft Technical Report

K.3.1.25.5.4 Leader Lines

All leader lines shall touch the object being called out.

K.3.1.25.5.5 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

K.3.1.25.5.6 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

K.3.1.25.5.7 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

K.3.1.25.6 DIMSCALE

K.3.1.25.6.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

K.3.1.25.6.2 Moving Dimensions

Dimensions may be moved for clarity.

K.3.1.25.7 TEXT

K.3.1.25.7.1 Text Style

ADCS Guidance Specification (DRAFT)

Text style name is MONOTXT with a font of MONOTXT.SHX for AUTOCAD and Monotext Font#3 for Microstation.

K.3.1.25.7.2 Case

All text shall be in the same case converted from.

K.3.1.25.7.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager.

K.3.1.25.7.4 Justification

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

K.3.1.25.7.5 Width

Text width on all text shall be .8.

K.3.1.25.7.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section:", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tolerances Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

K.3.1.25.7.7 Spacing

For text spacing on all drawings, including the general notes, use the AUTOCAD or Microstation Default. DO not match the TIF.

K.3.1.25.7.8 CAGE

Convert/leave in lined out CAGE CODES as found.

K.3.1.25.8 TITLE BLOCK

ADCS Guidance Specification (DRAFT)

K.3.1.25.8.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

K.3.1.25.8.2 GIS Engineer's Stamp

If there is a GIS engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the GIS ENGINEER space.

K.3.1.25.8.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

K.3.1.25.8.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

K.3.1.25.8.5 FSCM

If the FSCM or Code Identification was 00000, leave the "*Enter Code Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

K.3.1.25.8.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

K.3.1.25.8.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

K.3.1.25.8.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer

ADCS Guidance Specification (DRAFT)

Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

K.3.1.25.9 NOTES AND TABLES

K.3.1.25.9.1 Notes

K.3.1.25.9.2 Justification

All notes shall be listed on the left side of the drawing and from top down.

K.3.1.25.9.3 Order of Notes

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

K.3.1.25.9.4 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:
DOD-STD-00100D

K.3.1.25.9.5 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5” for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

K.3.1.25.9.6 Additional Notes

Any additional notes in the title block shall be shown in NOTE format after all of the existing notes on the drawing.

K.3.1.25.9.7 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

K.3.1.25.9.8 Unnumbered Notes

ADCS Guidance Specification (DRAFT)

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D and ANSI Y14.5 (1982) note as number 1.

K.3.1.25.9.9 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D) as the top most note.

K.3.1.25.10 TABLES

K.3.1.25.10.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)

APPENDIX L

Mapping Functional Area, 3D, CAD Perfect

L.1.0 Scope

This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

L.2.0 Purpose

The purpose of this Appendix is to provide a detailed description of the requirements for the document conversion of Mapping 3D CAD Perfect.

L.3.0 Functional Specification Requirements

L.3.1 Mapping, (GIS) 3D, CAD Perfect

L.3.1.1 General Requirements

All files delivered shall conform to the following general requirements for CAD Perfect Conversion: CAD Perfect is the highest quality of bulk conversion available. The CAD Perfect conversion process implemented shall result in a CAD-Perfect data file. All entities shall be dimensionally and orthogonally correct with fully editable vectors and text. Layers, blocks, symbols and line types shall be incorporated.

L.3.1.2 File Intelligence

All drawings shall consist of 100% CAD recognizable geometric entities and intelligent editable images. The drawing files shall have total intelligence as in true text, lines, arcs, circles, and 2D polylines.

L.3.1.3 Line Styles

When creating 2-D geometry, use the standard line styles. They are CONTINUOUS, CENTER, PHANTOM, and HIDDEN.

L.3.1.4 Symbol Libraries

If available, existing symbol libraries will be provided by the government to the contractor for use in the conversion. All additional fonts and symbols created by the contractor shall be approved by the Government, and provided as a separate deliverable. If special fonts are to be used, limit their use to simple, easily readable fonts and provide these fonts along with the drawing. Any non-standard

ADCS Guidance Specification (DRAFT)

symbols or fonts developed by the contractor shall be approved by the Program Manager and shall become the property of the U.S. Government. Use of third party fonts or symbols shall not be used unless previously approved by the Government.

L.3.1.5 Extraneous Markings

Speckles, smudges, broken lines, skewed images or other extraneous markings shall not be included in the final converted files.

L.3.1.6 Information Transfer

All dimensions, fractions, tolerances, and notes shall be transferred as found on the original image.

L.3.1.7 Revision Histories

Revision histories shall be excluded with the following exception: The revision block on all drawings shall contain the latest revision from the original file with an additional revision specifying the following language: "Redrawn In CAD Without Change". (if no notes are added and sheet size remains the same) or Redrawn In CAD With Change; (Specify Changes example: Updated Notes, Was B Size) .

L.3.1.8 Revision Block

In both cases shown in L.3.1.7 above, add the assigned ERR (ECP/ERR if applicable) number following the with change/without change statement. After the final checker changes are incorporated, the contractor shall finalize the revision block by confirming the ERR number, and adding the revision date and initials of the drafter/drawer and checker.

L.3.1.9 Dates

Dates shall be standardized as follows: YY-MM-DD

L.3.1.10 Revision Balloons

Remove all Revision Balloons from the face of the drawing.

L.3.1.11 SQAPs and QARs

Supplemental Quality Assurance Plans (SQAPs) and Quality Assurance Reports (QARs) shall be converted to CAD Capable. In addition, index information shall be included in the DLF file.

L.3.1.12 Text Size

Text size shall be converted to DoD standard heights.

L.3.1.13 Sheet Size

ADCS Guidance Specification (DRAFT)

Sheet sizes shall be resized as necessary per DoD-STD-00100D (AR) to keep notes and revision columns clear.

L.3.1.14 Assembly Drawings

Detail drawings shall be converted prior to assembly drawings. Assemblies shall be created accurately using available detail/subassembly drawings whenever possible. Assembly drawings shall be CAD Perfect with the exception that only dimensioned geometry will dimensionally accurate in the CAD file.

L.3.1.15 Title Blocks

Title blocks and notes shall be created and standardized per DoD-STD-00100D (AR) specifications .

L.3.1.16 Indexing

Drawings shall not have multiple plot files or frames. All files shall have proper indexing information.

L.3.1.17 Military Specification Drawings

The Government will provide available/on hand Military Specification (MS) Parts drawings, otherwise it shall be the contractor's responsibility to obtain MS drawings from existing files or other sources.

L.3.1.18 XREFs

The part geometry stored inside a CAD drawing shall be self-contained (no XREFs shall be used).

L.3.1.19 Illegible Items

Illegible items outside of the title block (text, graphics) and/or inaccuracies in the original drawing shall immediately submitted to Program Manager with a copy to the AMSAA POC for resolution.

L.3.1.20 Drawing Protection

All original drawings/QA documentation shall be protected from damage or loss.

L.3.1.21 Quality Assurance Process

All files shall be subjected to a 100% quality assurance process.

L.3.1.22 Data Outside Border

Any data on the original drawing found outside of the border can be deleted unless otherwise specified below.

ADCS Guidance Specification (DRAFT)

L.3.1.23 Disposition of Originals

After completion of the conversion and release of the drawing, all electronic and paper copies in the vendors possession shall be destroyed (deleted or shredded) .

L.3.1.24 JEDMICS C4 DPI

The JEDMICS C4 raster files shall be produced at 200 dots per inch (DPI).

L.3.1.25 LAYERING AND COLOR

Layering and color conventions are as follows:

L.3.1.25.1 Color

Color setting shall be "BY-LAYER", Layering shall be as follows:

<u>LAYER NO.</u>	<u>LAYER DESCRIPTION</u>	<u>LINETYPE</u>	<u>COLOR</u>
1	OBJECT-HEAVY	CONTINUOUS	RED
5	OBJECT-MEDIUM	CONTINUOUS	MAGENTA
10	OBJECT-LIGHT	CONTINUOUS	CYAN
20	CENTER LINE	CENTER	CYAN
22	HIDDEN LINE	HIDDEN	GREEN
24	PHANTOM LINE	PHANTOM	GREEN
30	DIMENSIONS	CONTINUOUS	GREEN
40	TEXT-NOTES	CONTINUOUS	YELLOW
45	TEXT-TITLE BLK	CONTINUOUS	MAGENTA
50	HATCH	CONTINUOUS	CYAN
60	WELD SYMBOLS	CONTINUOUS	GREEN
200	BORDER LINES	CONTINUOUS	BLUE

L.3.1.25.2 GRAPHICS CREATION GUIDELINES

L.3.1.25.2.1 Dimensionality

All Geometry shall be drawn correctly including all section views and details.

L.3.1.25.2.2 Threads

All threads shall be drawn to the illustration per stated min/max thread diameters.

L.3.1.25.2.3 Line Width

Line widths shall be set to the system default unless otherwise specified herein.

L.3.1.25.2.4 Bilateral Tolerances

All drawings shall be drawn to the median value of bilateral tolerances.

L.3.1.25.2.5 Drawing Scale

ADCS Guidance Specification (DRAFT)

All drawing objects shall be drawn at 1:1 scale. (i.e. if a line is dimensioned at 1.25" on the original, then it shall be drawn at 1.25" in AUTOCAD.)

L.3.1.25.2.6 Title Block Scale

Insert the title block by scaling it to the inverse scale of the drawing. For example: a ¼ scale drawing would have the title block scaled 4:1.

L.3.1.25.2.7 JEDMICS-C4 Scale

For JEDMICS-C4 file conversions, scale a copy of the system file to the drawing sheet scale prior to production of the C4 image.

L.3.1.25.3 LTSCALE

L.3.1.25.3.1 LTSCALE

LTSCALE shall be set to match the original drawing with a minimum of .25. Drawings with a drawing scale of 1/1 shall have the line type scale set to .25. For drawings with a drawing scale smaller than 1/1, the line type scale of .25 shall be multiplied by the divisor of the drawing scale. Example; for a drawing scale of ½, multiply .25 by 2 = .5. For drawings with a drawing scale larger than 1/1, the line type scale of .25 shall be divided by the multiplier of the drawing scale. Example; for a drawing scale of 2/1, divide .25 by 2 = .125.

L.3.1.25.4 HATCHING

L.3.1.25.4.1 Hatching

All hatching shall be associative and placed on the HATCH layer (layer 50). The hatch shall match the drawing in both style and direction. Do not explode the hatch.

L.3.1.25.5 BLOCKS

L.3.1.25.5.1 Attributed Blocks

Do not use attributed blocks.

L.3.1.25.5.2 Explode Blocks

Explode all blocks.

L.3.1.25.6 CENTER LINES

L.3.1.25.6.1 DIM-CEN

ADCS Guidance Specification (DRAFT)

Use the DIM-CEN command to create centerlines for circles.

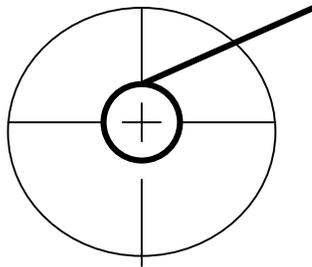
L.3.1.25.6.2 DIMCEN Tolerance

DIMCEN shall be set to match the original drawing, but go no lower than -.045.

L.3.1.25.6.3 Circle Centerlines

Change the crossing part of centerlines in circles to continuous line type on the dimension layer. The remainder of the centerline for circular features shall be left as a centerline by layer.

Example: Only the circled part of the centerline should be continuous.



L.3.1.25.7 DIMENSIONS

L.3.1.25.7.1 Converted Dimensions

All dimensions, fractions, and tolerances shall be converted as they appear on the original image. (i.e. shall be replicated in form and format in the converted drawing).

L.3.1.25.7.2 Association

All dimensions shall be non-associative.

L.3.1.25.7.3 Leader Lines

All leader lines shall touch the object being called out.

L.3.1.25.7.4 Arc/Circle Leader Lines

If the object being called out is an arc or circle, the leader line shall extend radially.

L.3.1.25.7.5 Geometric Tolerance Symbols

Do not use the AUTOCAD symbols. Create and use a blocks list to create the geometric tolerances.

ADCS Guidance Specification (DRAFT)

L.3.1.25.7.6 Diameter References

Diameter references shall be standardized. DIA shall be changed to the diameter symbol. Use “2X” type symbology, rather than “2 places”.

L.3.1.25.7.7 Dimension Variables

Use the following dimension variable settings:

DIMVARS Setting	A/B Format	C & Larger
DIMASO	OFF	OFF
DIMTXT	0.14	0.16
DIMASZ	0.16	0.18
DIMEXE	0.06	0.1
DIMEXO	0.06	0.16
DIMCEN	-.09	-.09

L.3.1.25.8 DIMSCALE

L.3.1.25.8.1 DIM TEXT

Do not convert fractions to decimals. The revised drawing shall be the same as the original. (i.e CONVERT ALL DIMENSIONS AS SHOWN ON THE FACE OF THE DRAWING. DO NOT CHANGE THE APPEARANCE OF ANY OF THEM).

L.3.1.25.8.2 Moving Dimensions

Dimensions may be moved for clarity.

L.3.1.25.9 TEXT

L.3.1.25.9.1 Text Style

Text style name is MONOTXT with a font of MONOTXT.SHX.

L.3.1.25.9.2 Case

All text shall be as shown on original drawing.

L.3.1.25.9.3 Legibility

Any text in the title block, revisions block, or notes column that is illegible shall be replaced with X's and shall be reported immediately to Program Manager with a copy to the AMSAA POC for action.

L.3.1.25.9.4 Justification

ADCS Guidance Specification (DRAFT)

Use the appropriate text justification. (i.e. left, center, right, middle, etc.)

L.3.1.25.9.5 Width

Text width on all text shall be .8.

L.3.1.25.9.6 Heights

The following are the specified text heights:

USE	A/B SIZE	C-SIZE & LARGER
"SECTION" Letters (A-A) "VIEW" or "DETAIL" Letters (A) Tabulation Letters (A,B, etc.)	.25	.25
Word "Section", "View" or "Detail" Letters and Numbers in Callout Bubbles and Hexes	.16	.25
Dimensions Tolerances Zone Letters on Field of Drawing Subtitles for Views, Details and Sections	.14	.16

L.3.1.25.9.7 Spacing

For text spacing on all drawings, including the general notes, use the system Default. DO not match the TIF.

L.3.1.25.9.8 CAGE

Convert/leave in lined out CAGE CODES as found.

L.3.1.25.10 TITLE BLOCK

L.3.1.25.10.1 Contractor Information

In the title block type in the contractor information if it is on the original. The Original Contractors name and address shall be transferred exactly as in the original drawings Title Block. You may use .08 text to make it all fit.

L.3.1.25.10.2 GIS Engineer's Stamp

If there is a GIS engineer's stamp on the side of the drawing, place the engineer's initial and the date in the title block in the GIS ENGINEER space.

L.3.1.25.10.3 Multiple Signatures

If there is more than one signature for a particular space on the title block, do not pick one to put in rather put X's in that space.

ADCS Guidance Specification (DRAFT)

L.3.1.25.10.4 Signatures

The contractors shall put "*Enter Name Here*" as the Drawing Approver and "*Enter Name Here*" as the Design Approver in the Title Block. If the drawer, checker and engineer initials can be read, transfer them to the new CAD drawing. If they cannot be read, put "xxx" in the appropriate block.

L.3.1.25.10.5 FSCM

If the FSCM or Code Identification was 00000, leave the "*Enter CODE Here*" in the Title Block and add the following note above the Title Block. "ORIGINAL DESIGN ACTIVITY NO. 00000"

L.3.1.25.10.6 Code Identification Numbering

All drawings shall be numbered: 1 of 1, 1 of 2, 2 of 2 etc.

L.3.1.25.10.7 Scale Notes Renaming

If the original Title Block contains a note saying, "Do Not Scale Drawing", the note shall be transferred to the redrawn drawing. If this note is not on the original drawing DO NOT add it to the redrawn drawing.

L.3.1.25.10.8 Title Block

Selected fields in the old title block have been renamed. The conversion matrix is shown below:

Title block conversion matrix

<u>Old Title Block</u>	<u>New Title Block</u>
Draftsman	Drawn By
Checker	Checker
Engr	Engineer
Submitted By	Drawing Approval
Approved By	Design Approval
Tracer	Signature no longer required

L.3.1.25.11 NOTES AND TABLES

L.3.1.25.11.1 Notes

L.3.1.25.11.1.1 Justification

All notes shall be listed on the left side of the drawing and from top down.

L.3.1.25.11.1.2 Order of Notes

ADCS Guidance Specification (DRAFT)

Keep the same order of the notes as the original drawing. If the notes on the original read from the bottom up, flip them and place them according to above paragraph.

L.3.1.25.11.1.3 Initial Note

The first note shall always be as follows (it may be unnumbered if the notes list was previously numbered other than one on the original. In addition, If an existing note describes the applicable standards other than note one, it shall be eliminated entirely except the note number):

1. APPLICABLE STANDARDS/SPECIFICATIONS:

DOD-STD-00100D

ANSI Y14M-1982

L.3.1.25.11.1.4 Spacing of Notes

The spacing of the notes is very important, for the insertion point of the first note, measure down .5” for A and B size drawings and .75 for C- size and larger drawings. This will give you the initial spacing for the first note (if using the prefab border/title block, this has been previously done). Note spacing shall be single space within each note and double space between notes. Continue this spacing for all notes.

L.3.1.25.11.1.5 Additional Notes

Any additional notes in the title block shall be shown in NOTE format after all of the existing notes on the drawing. If there is already a note regarding application of the part number, DO NOT add another one. This also includes any notation on the original denoting application of the part number. There shall be shown as (#is the note number).

#. Apply Part Number per MIL-STD-130: 19207-XXXXXXX (XXXXXXX indicates the part number)

If the Title Block says, "Do Not Apply Part Number" this information shall be deleted and NOT be transferred to the notes column.

L.3.1.25.11.1.6 Precious Metal Indicator Code (PMIC)

If there is a PMIC in the notes on the TIF, transfer it into the title block.

L.3.1.25.11.1.7 Physical Properties

Physical Properties listed in the title block on the TIF shall be converted and placed as notes using the following format: (#is the note number)

<u>WAS</u>	<u>NOW SHALL READ</u>
YP	#.YIELD POINT ___PSI
TS	#.TENSILE STRENGTH ___PSI
EL	#.ELONGATION AT ___%

ADCS Guidance Specification (DRAFT)

RA	#.REDUCTION OF AREA ___%
BH	#.BRINELL HARDNESS ___TO
RH	#.ROCKWELL HARDNESS C ___TO___C.

L.3.1.25.11.1.8 Current Notes

Notes shall be shown as they currently read. Remove lined out notes, but do not remove the note number.

L.3.1.25.11.1.9 Unnumbered Notes

If the notes are unnumbered, they shall be numbered sequentially on the redrawn drawing, with the DOD STD 00100D (AR) and ANIS Y14.5 (1982) note as number 1.

L.3.1.25.11.1.10 Parts List

Parts Lists are no longer maintained. Therefore, do not transfer notes referring to the Parts List onto the new CAD drawing. It shall be deleted.

L.3.1.25.11.1.11 Drawing Standard

The old drawing standard, MIL-D-70327 shown on the face of the drawing or in notes, shall be replaced by the new drawing standard (DOD-STD-00100D) as the top most note.

L.3.1.25.11.2 TABLES

L.3.1.25.11.2.1 Conversion

Tables shall be converted as shown – reordering or renumbering of rows is not permitted. If a table on the original reads from the bottom up, it shall be converted exactly the same way.

ADCS Guidance Specification (DRAFT)