DIVISION A – DESIGN SPECIFIC REQUIREMENTS

BASE DESIGN GUIDE
DATA SHEET

Mountain Home Air Force BASE

IDAHO STATE

SECTION A.1 - SPECIFICATIONS, DRAWINGS, AND MAPPING REQUIREMENTS

DATA SHEET

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A. SPECIFICATIONS

1. Format
    a. Specifications shall be produced digitally.
        i. The designer shall submit one copy of all files with the 100% design submittal.
        ii. All individual specification section files shall be format-compatible with the most recent version of Microsoft® Word. Additionally, a single *.pdf file consisting of the compilation of all specification sections, with bookmarks applied on the first page of each section, shall be provided.
        iii. The designer shall submit all files electronically Via DOD safe or digital medium as determined by the Project Manager (e.g. e-mail, Microsoft® SharePoint, etc.)
    b. Base Design Guide Submittal Checklist
        i. For each design phase (35%, 65%, 95%, 100%), the designer shall attach the *Submittal Checklist* found at the end of this section. The checklist shall be filled out and submitted with all specifications and drawings for each design phase. *.dwg files will be submitted to CENM to ensure compliance with Air Force standards.
    c. Codes
        i. All design and construction work shall be in strict accordance with all current Federal, State, and local codes and regulations, including, but not limited to, UFC 1-200-01, *General Building Requirements.*

B. DRAWINGS

1. Responsibilities
    a. The responsibility for developing and maintaining each drawing shall be determined at the outset of each project. The responsibility shall not be changed during the course of the project. All drawings developed by Contractors to be used for construction shall be reviewed and stamped by a registered Professional Engineer or Architect, as appropriate, to determine that the work meets all applicable requirements and codes. This applies to both new construction and repair work.
    b. The designer responsible for developing each drawing shall provide electronic copies to other designers when the drawings are used as a reference.
    c. The exchange shall take place when the recipient is ready to commence development of referenced drawings, prior to final coordination, and when major modifications occur.
    d. At other times, for coordination purposes, print or plotted drawings are to be furnished instead. These shall be clearly marked to show the occurrence of minor revisions.

2. As-Built/Final Drawings

    a. Contractors shall be responsible for gathering as-built information at the job site and conveying it to the as-built drawings.
    b. As-Builts of a project, or a portion of the project, within a building/structure footprint shall be in the appropriate AutoCAD format and follow the standards listed below.
    c. As-Builts of a project, or a portion of the project, outside the bounds of a building/structure footprint, can be submitted in any of the following formats:
        i. Geo-referenced AutoCAD (*.dwg).
        ii. GIS: Projected File Geodatabase (*.gdb)
    d. Survey data shall be included for all newly installed, altered and previously unidentified features (e.g. utilities not identified in MHAFB utility maps/data).
        i. Contractor shall provide raw survey data containing PNEZD (Point, Northing, Easting, Elevation, Description) information in one of the following formats: *.shp, *.xlsx, *.txt or *.csv.
        ii. The Survey Data shall be incorporated in a georeferenced V-Series (See current A/E/C CAD Standards for additional details) with all survey points.
    e. CAD As-Built, GIS and Survey shall be created/completed utilizing WGS 1984 UTM Zone 11 North or NAD 1983 StatePlane Idaho West FIPS 1103 (US Feet) coordinate system.
    f. The contractor shall also provide a PDF copy of all AutoCAD Drawings.
3. Computer-Aided Drafting and Design (CADD) Software

        i. All drawings shall be accomplished and developed using AutoDesk® AutoCAD Software. Verify with 366 CES/CENME for the current version to utilize.
4. Drawing Standards

    a. Drawings are defined as graphic and textual information organized on a two-dimensional surface to convey data about a specific portion of the project.
    b. The Contractor shall submit all CAD data in the *.dwg, *.dgn, or *.dxf format IAW the United States Army Corps of Engineers Architecture, Engineering, and Construction Standards Release 6.1 (*A/E/C CAD Standard R6.1*)
    c. A-E shall utilize both Model and Layout View for its drawing files. All drawings shall be drawn full size (1:1) in Model View. The Layout View shall contain an externally-referenced border sheet with a viewport(s) showing the applicable portions in the Model View; if applicable, any general notes shall be placed on the far-right column of the drawing area. Additionally, there will only be one Layout View in each drawing file in a *ready-to- plot* configuration.
    d. To minimize design efforts, a master drawing shall be created in each discipline (e.g. floor plans, border sheets, etc.) and externally referenced into individual sheet drawings.
    e. To reduce file sizes and accommodate plotted sheet sizes, large facility floor plans are usually divided into several areas. To facilitate assembling these areas into a single plot for small-scale orientation plans (e.g. roof plans, mechanical room plans), each area shall be drawn in its relative position in coordinate space. Additionally, a key plan viewport showing the relative position for the specified area shall be placed on the bottom right of the Layout View.
    f. Drawings and references shall use an origin of 0,0,0. Additionally, all blocks and external references shall be inserted at the origin of 0,0,0.
    g. Scales and measurements within the structure footprint and detail drawings shall be in Architectural units. All scales and measurements outside the structure footprint shall be in Engineering units. The configuration for these settings is detailed below:
        i. Architectural Units
            1. Unit Type: Architectural Unit = 1”

2. Precision: 0'-0 1/8"
3. Angle Type: Decimal Degrees
4. Precision: 0.00°
5. Insertion Scale: Inches
6. Direction: East 0, North 90, West 180, South 270

ii. Engineering Units

1. Unit Type: Decimal Unit = 1'-0"
2. Precision: 0.00
3. Angle Type: Deg/Min/Sec
4. Precision: 0°00'00"
5. Insertion Scale: Inches
6. Direction: East 0°, North 90°, West 180°, South 270°

h. Lines

i. Line widths shall correspond with their corresponding typical use and line thickness outlined in *A/E/C CAD Standard R6.1, Table 3-1*.

ii. Line types shall correspond with their corresponding typical use and line weights outlined in *A/E/C Graphics Standard R2.1, Figure 4-12.* Specific definitions for each of these line types and their uses are documented in *A/E/C Graphics Standard R2.1, pg.44-45*

iii. Dimension Lines are used to show a linear measurement indicated on a drawing. Dimensions show the extent and significance of the object. Please review the specific standards on the configuration of dimension lines in *A/E/C Graphics Standard R2.1, Section 5.2*.

iv. Leader lines shall be used to indicate a part or portion to which a number, note, or other reference applies. They shall be blue (AutoCAD color #5) lines with a closed filled arrowhead. The arrowhead will be 1/3 length at the back side. Set AutoCAD DIMASZ to 1/8"

i. Text

v. Only use fonts authorized in the *A/E/C CAD Standard R6.1*, *Section 3.2*. The only authorized fonts for AutoCAD drawings are defined is the TrueType font 'Arial'.

vi. Notes with leaders pointing toward a specific location will be neat, short, and accurate. When more than one note for the same view is required, they will be aligned on the left edge, one above the other with a double space between the notes.

vii. All texts, including layer and file naming, shall be capitalized in all drawing sheets.

viii. Abbreviations, orientations, and text heights for texts shall be configured IAW *A/E/C Graphics Standard R2.1, Section 5.1*

j. Section, Elevation, and Detail Identifiers

i. Section, elevation, and detail identifiers shall be modified IAW *A/E/C Graphics Standard R2.1* by bisecting the lower half of the circle. The left portion shall be labeled with the sheet from which the detail, elevation, or section is taken from; the right portion shall be labeled with the sheet on which the detail, elevation, or section is located on.

ii. Sections are indicated with the symbol found on the cover sheet. These indicators cut through an area of the drawing that shall be shown in a section cut in a sections sheet. The arrow of the section identifier points in the direction that the drawing represents. In the cut plan, the edges of the cut section shall use the SECTION CUTTING PLANE line type (see *A/E/C Graphics Standard R2.1, Figure 4-12)* and be identified with a jagged

line. All sections will be lettered sequentially.

iii. Elevations are a view of a vertical surface and are indicated with the symbol found on the cover sheet. When drafting an elevation of a structure, all edges, such as the corner of a building, will be heavier than other details. Elevations will be numbered sequentially throughout the project.

iv. Details are enlarged views of a plan, section, or elevation and are indicated with the symbol found on the cover sheet. Detail symbols will be tied into the area with either a circle around the blown-up area or a leader pointing to it. Details will be numbered sequentially throughout the project.

k. New, Existing, and Demolition Features

i. Utilities will be located on all site plans, both existing and new construction. When placing proposed utilities on a site plan, they will be heavier than existing utilities. This can be done by using the EXISTING FEATURE and PRIMARY FEATURE line types (see *A/E/C Graphics Standard R2.1, Figure 4-12)*. A site survey shall be done before beginning a drawing. Additionally, the screening feature shall be used for further differentiation by setting new work to 100% (unscreened) and existing work between 20%-60%. If required by contract, a site survey shall be done before beginning a drawing.

ii. New and existing structures shall be distinguishable from each other. This can be done by using the EXISTING FEATURE and PRIMARY FEATURE line types (see *A/E/C Graphics Standard R2.1, Figure 4-12)*. Additionally, the screening feature shall be used for further differentiation by setting new work to 100% (unscreened) and existing work between 20%-60%. If required by contract, a site survey shall be done before beginning a drawing.

iii. If additional guidance is required for screening procedures, refer to *A/E/C CAD Standard R6.1, Table 3-3* for specific screening considerations.

iv. Demolition plans shall not be combined with new construction. Additionally, notes, key notes, symbol modifiers, patterns, line styles, or callouts shall be used to delineate items to be removed or relocated.

v. To further increase differentiation between new, existing, and demolition features, the 'optional status code' portion of the layer naming can be used. When doing so, the corresponding codes are D-Demolition, E-Existing, and N-New.

l. Schedules are used to relay detailed information about specific items/features (e.g. door schedule, window schedule) shown on a drawing set. Schedules shall contain a subject title (Heading), a column identifying an item (Mark), a column for the description of the item (Item Description), and a column indicating a notable characteristic (Distinguishing Feature). For the specific graphical configuration for symbols, consult *A/E/C Graphics Standard R2.1, Section 6.*

m. Revisions shall be identified with the TRIANGLE symbol and are reserved for incorporating change requests. All areas identified by the TRIANGLE symbol shall be contained within a revision cloud. The TRIANGLE shall be labeled with sequential numbers for amendments and capitalized alphabetical numbers for modifications. All revisions with their corresponding label shall be annotated in the issue block. Note: The TRIANGLE symbol may be used as a symbol for other features as long as the usage is identified in the legend. Additional information on the revisions can be found in *A/E/C Graphics Standard 2.1, Section 7*.

n. The Keyed Note symbol will be an octagon with a number centered inside. Keyed Notes are used to provide specific notes on specific features requiring further clarification on the sheet. This symbol will be by the object referenced along with the note.

o. A library of standard symbology details can be downloaded at

https://cadbimcenter.erdc.dren.mil/cadlib.aspx. All details not furnished to the A-E as part of the Government Furnished Material (GFM) shall be IAW *A/E/C CAD Standard R6.1* and *A/E/C Graphic Standard R2.1* and be provided to the Government as part of the design/as-built submittals.

p. For the usage of non-standard fonts, line types, layers, or symbols, a justification for the discrepancy must be provided in each submittal and approved by the GeoBase Office for continued use.

   i. For non-standard layers, IAW *A/E/C CAD Standard R6.1, Section 4.1*, any non- standard layers used must follow the format outlined in *Figure 4-3* of the same reference.

5. Project Layout (Index)

   a. The drawing index always starts with a Standard Title Sheet (Page 1). The cover sheet shall contain Vicinity Map, Base Map, Project Location, Standard Abbreviations, Legend, and Sheet Index.
      i. Note: If more space is needed for the Standard Abbreviations, Legend, and/or Sheet Index, the information will be included immediately after the title sheet and on a standard sheet. The sheet containing the information will be annotated on the title sheet.
   b. Avoid overcrowding any particular sheet. Use as many sheets as required for each discipline before continuing to the next discipline.
   c. All sheet numbers on the Sheet Index shall be sequential and correspond correctly with the sheets of the drawing set.
   d. The coordinate system for all drawings shall correspond to the WGS 1984 UTM Zone 11 North or NAD 1983 StatePlane Idaho West FIPS 1103 (US Feet) coordinate system. If a different coordinate system is used, the Contractor shall disclose the coordinate system used to create the drawing.
   e. Standard Title Sheet Items

      i. Base Map: The base map will contain a map of MHAFB or the applicable off-base site. The haul route(s) will also be annotated inside this viewport.
      ii. Project Location: The project location will be circled and the words PROJECT LOCATION with a leader line pointing to the circle shall be included. If an area has been designated as a 'Contractor Storage Area', the location of this area shall be annotated similarly to the Project Location callout.
      iii. Haul Route: The haul route will be shown on the 'Base Map' portion of the title sheet. The thickness of the arrow may vary to fit the scaling associated with the Project Location map.
      iv. Project Title: Assigned by 366 CES/CENP (Programming)
      v. Project Number: Assigned by 366 CES/CENP (Programming)
      vi. Standard Abbreviations: All abbreviations used throughout the drawing set will be annotated in the Standard Abbreviations window. Note: For sheet-file specific abbreviations, the abbreviations may also be included in the General Notes section of the sheet.

vii. Legend: The legend will contain all standard symbols, as well as all symbols used within the drawing set. Note: For sheet-file specific symbols, the symbols may also be included in the General Notes section of the sheet.

viii. Sheet Index: The sheet index will contain a list of all sheets in the drawing set separated by discipline. This index will contain the sheet designator (e.g. G-001), sheet number (e.g. 1 of 25), and the sheet title (e.g. Project Information).

ix. Date: The date will be placed on the Title Sheet upon completion of the 100% design and subsequently updated with the As-Built date upon completion of the As-Built.

f. Appropriate sheet files and their corresponding designators for each discipline (General, Hazardous Materials, Survey/Mapping, Geotechnical, Civil, Landscape, Structural, Architectural, Interiors, Fire Protection, Plumbing, Mechanical, Electrical, Telecommunications, Resource, Other Disciplines, and Operations) can be found in *A/E/C CAD Standard R6.1, Table 2-3.*

6. Government Furnished Materials (GFM)

a. A/E/C CAD Standard R6.1

b. A/E/C Graphics Standard R2.1

c. Air Force ArcGIS Data Dictionary 4.0.x

d. GIS Data (as required): If Required, GeoBase will provide a shell file Geodatabase (*.gdb) which contains the current data structure. The data dictionary provides guidance and definitions on how to attribute GIS Data.

C. MAPPING STANDARDS/SURVEY STANDARDS

1. Georeferenced AutoCAD or GIS, and Survey Data is required for all work outside the building footprints (e.g. Geodetic, Landform, Pavements, Real Property, Utilities, etc.) This data shall be provided in a georeferenced *.dwg file, *.shp file, or *.gdb file.

a. The coordinate system for all files shall correspond to WGS 1984 UTM Zone 11 North or NAD 1983 StatePlane Idaho West FIPS 1103 (US Feet) coordinate system.

i. Survey Data shall contain PNEZD information in one of the following formats: *.shp, *.xlsx, *.txt, *.csv

ii. Survey data shall be incorporated in a georeferenced V-Series with all survey points.

b. For survey data, an *.xls or a *.csv shall be included with all points, associated coordinates, point codes, and descriptions.

2. If requested by the Contractor, 366 CES/CENME (GeoBase) may provide geospatial data within the internal bounds of the project. To obtain geospatial data, the Contractor must submit the request through 366 CES/CENMP (Construction Management) and fill out a compete Data Release Agreement. This agreement outlines the usage constraints for the geospatial data provided by the GeoBase Office.

a. **The Contractor shall not duplicate, copy, or otherwise reproduce government geospatial property for purposes other than those necessary for the performance of**

the contract.

b. After the performance of the contract, the Contractor, as directed by the Contracting Officer, shall either destroy or return to the government all government geospatial property within 30 days of the final acceptance of the As-Built.

c. Once government geospatial data is deleted, the contractor must provide correspondence to the GeoBase Office through the Construction/Project Manager.

3. When required in the statement of work, the contractor shall provide GIS Data on newly installed utilities, pavements, buildings, and other infrastructure installed in the project site. Refer to the SDSFIE website for additional information: https://www.sdsfie.mil/. The current official AFA can be found on USAF CE Portal: GeoBase Information Hub.

   a. The GeoBase Office will provide an empty file geodatabase (*.gdb) which contains the current Air Force GeoBase data structure. Additionally, the GFM includes a GIS Data Dictionary which provides definitions and information on metadata requirements.

   b. The contractor is responsible for supplying SDSFIE compliant data for utilities, pavements, buildings, and other infrastructure in the project site within GIS. This data shall be spatial accurate and also align with data included in the surveys, and data included in the georeferenced AutoCAD Drawings.

   c. When digitizing GIS features, the contractors is also responsible for populating as-built attributes contained within the *GIS Data Dictionary*.

      i. Note that some attributes are for internal Air Force use only and do not need to be filled out by the contractor. The contractor is only responsible for attributing fields that are identified in the As-Built site plans, notes, and detail sheets, and fields that have a locational component (latitude, longitude, length, depth, area size, etc.).

         - For example, the contractor is responsible for filling out “Pipe Diameter” and “Pipe Material”, but not responsible for filling out “Facility Number” and “Category Code”.

4. For any specific questions on GIS Data, the GeoBase Office can be contacted through the Project/Construction Manager.

D. SUBMISSION REQUIREMENTS

1. Digital Media

   a. Digital media shall be submitted for all submittals

   b. Digital media shall be submitted through DoDsafe or any other electronic file exchange (e.g. Microsoft Teams, SharePoint) agreed upon by the Contractor, Project/Construction Manager, and the GeoBase Office.

   c. Electronic file submissions shall contain the following information:

      i. The Contract Number (and Delivery Order Number, if applicable).

      ii. Project Number and Project Name.

   d. A transmittal sheet (printed or electronic) containing the information shall accompany the media:

      i. Short description of media content.

      ii. The Contract Number (and Delivery Order Number, if applicable).

      iii. Project Number and Project Name.

      iv. List of the names and descriptions of the files on each disk.

      v. A statement indicating that the A-E will retain a copy of all delivered digital media

and will provide additional copies to the government, if requested, at no additional cost for at least one year from the date of acceptance.

vi. A list of all deviations from standards with descriptions and justifications for each (e.g. layers, file-naming convention, hatching, etc.).

vii. A list of all external reference/reference files associated with each drawing with descriptions.

2. Plotted Drawings

   a. All drawings shall be plotted on mid-weight, bright white, quality bond paper. Plotted drawings shall be identical to the digital drawing files provided in the corresponding submittal. Lastly, all drawings will be plotted Arch D (24x36), unless specified otherwise.

3. AutoCAD Files

   a. Model files are a type of external reference to sheet files containing the physical components of a building. The model file naming convention has four sequential mandatory fields: Project Code, Discipline Designator, Model File Type, and a User-Definable Field. Additional information on model files can be found in *A/E/C CAD Standard R6.1, Section 2.2.1.1.*

      i. Project Code: The project code is designed as the project number used to identify the drawings (e.g. QYZH1027142)

      ii. Discipline Designator: The discipline designator identifies which drawing discipline the model-file is utilized in (e.g. G-General, V-Survey/Mapping, etc.). A table showing all usable discipline designators can be found in *A/E/C CAD Standard R6.1, Table 2-1.* The discipline designator is always followed by a '-' in model files.

      iii. Model File Type: The model file type identifies the specific type of model included within the model (e.g. CS-Cover Sheet, PB-Property Boundary, DT-Detail, etc.). A table showing all usable model file types can be found in *A/E/C CAD Standard R6.1, Table 2-2*.

      iv. User-Definable Field: The user-definable field can be any set of characters defined by the individual responsible for the drawing (e.g. 0001, FLPN, etc.). This field must always be exactly four characters. For any unused character in the user-definable field, use the character 'X' as a placeholder for unused characters.

      v. An example of a complete model-file name for a CAD drawing is 'QYZH1027142G-CSXXXX.dwg'.

   b. Raster references are defined as TIF, JPG, and PDF files used to supplement a CAD drawing through the practical presentation of non-vector information. The naming convention for raster references shall conform to the model file naming convention; however, raster references may only use the model file type 'IG'. An example of a complete model-file name for a raster reference is 'QYZH1027142C-IGXXXX.tif'

   c. All model files and raster references must be stored in a separate folder for the entire sheet set or a separate folder for each discipline in a folder entitled 'External References'. All applicable external references shall load automatically in the sheets where the reference is used. This is done by attaching all external references without device or directory specifications. External references shall not be bound.

   d. Sheet files are the plotted CAD drawing file with a selected view or portion of the referenced model file(s) within a 1:1 border sheet. The sheet file naming convention has four sequential mandatory fields with one optional field: Project Code, Discipline Designator, Sheet Type Designator, Sheet Sequence Number, and Supplemental Drawing Designator (optional).

      i. Project Code: The project code is designed as the project number used to identify the drawings (e.g. QYZH1027142). For Mountain Home AFB, there will always be

a '_' after the Project Code.

Discipline Designator: The discipline designator identifies which drawing discipline the sheet file is portraying (e.g. GC-General Contract, CS-Civil Site, etc.) A table showing all usable discipline designators can be found in *A/E/C CAD Standard R6.1, Table 2-3*. Note: The discipline designator is always two characters. If only one letter is displayed for the designator (e.g. G-General, H-Hazardous Materials, C-Civil, etc.), there will always be a '-' after the single character in the naming convention. For discipline designators that have two letters, there is no " – " after the letters (e.g. Civil Site = CS101, Mechanical Demo = MD101)

ii. Sheet Type Designator: The sheet type designator identifies what type of drawing the sheet file is portraying (e.g. 1-Plans, 2-Elevations, 3-Sections, etc.). A table showing all usable sheet type designators can be found in *A/E/C CAD Standard R6.1, Table 2-4*. Note: If using the user-defined sheet type designators '7' and '8', a description and justification must be included in the list of deviations.

iii. Sheet Sequence Number: The sheet sequence number is a two-character field used to identify the order of the sheets (e.g. 01, 12, 45, etc.). When practical, this number should always be sequential within disciplines.

iv. Supplemental Drawing Designator: The supplemental drawing designator is a one-character designator used if a sheet needs to be added between two sequential sheets (e.g. A, B, C, etc.). Sheet-files shall be renamed and re- sequenced prior to the final version of each submittal. The use of the supplemental drawing designator shall be identified with a description and justification in the list of deviations.

v. An example of a complete sheet-file name is 'QYZH1027142_C-101.dwg'. An example of a complete sheet-file name with a supplemental drawing designator is 'QYZH1027142_C-101A.dwg'. An example of a sheet-file with a two-character discipline designator is 'QYZH1027142_CG101".

e. The border sheet title block must be filled out for each drawing sheet. Each field should be filled out as defined below:

i. Project Number: Same as title sheet (e.g. QYZH1027142).

ii. Project Name: Same as title sheet (e.g. Construct RV Sewage Holding Tank; Clear Lake, Washington).

iii. Sheet Name: As specified on the sheet index (e.g. Site Plan, Details, etc.).

iv. Sheet Reference Number: As specified on the sheet index (e.g. C-101, V-301, etc.).

v. Sheet Number: As specified on the sheet index (e.g. 01, 02, 45, etc.).

vi. Designed By: Initials of Project Designer.

vii. Drawn By: Initial of Drafter.

viii. Checked By: Initial of QA/QC.

ix. Plot Scale: 1:1.

x. Date: Date of last modification.

xi. File Name: As written on the file name (e.g. QYZH1027142_C-101.dwg).

xii. Issue Block: Identify all sheet revisions after each submittal.

f. As-Built/Final Drawings shall be submitted in AutoCAD. Drawings produced using another software shall be acceptable provided all drawings are converted to and fully comply with

all AutoCAD standards identified in this data sheet. Any files not compatible with AutoCAD are not acceptable and must be modified before submission to the government.

g. Drawing files shall be in the *.dwg format and shall not include any *.bak, *.zip, or any incompatible format.
h. Each AutoCAD file contains the contents of only one drawing sheet. Additionally, each final plotted drawing sheet shall have its own separate *.dwg file.
i. Remove all data not needed in the drawing file such as graphics outside the extents of the design and border areas. Additionally, remove all information not relevant to the project. Lastly, all unused blocks, plot styles, layers, shapes, etc. (all items in the purge menu) shall be purged and deleted from each file.
j. Ensure that all files needed for full project comprehension are included in each submittal. This includes all the sheet files, model files, raster references, spreadsheets, explanatory documents, and any other files deemed necessary to understand the project.
k. The following shall accompany each exchange of AutoCAD drawings:
    i. A list of drawings and their content.
    ii. A list of raster references and their contents.
    iii. A list of all non-standard entities used such as *.lin, *.shx, *.stb, *.ctb, etc.
    iv. A list providing descriptions and justifications for non-standard layers, use of supplemental drawing designators, and user-defined portions of naming conventions.
    v. A descriptive list of blocks and their associated attribute data. Blocks that do not contain attribute data shall be exploded and purged.
l. During each project stage (35%, 65%, 95%, 100%, As-Built), the 366 CES/CENME will conduct a standards review. The purpose of this standards review is to ensure all guidelines outlined in *A/E/C CAD Standard R6.1, A/E/C Graphics Standard 2.1, GIS Data Dictionary and Base Design Guide* are followed by the Contractor. **After each review by 366 CES/CENME, the Contractor shall either concur with the comments regarding the discrepancy and address the discrepancy in the next submittal, or provide justification as to why a deviation from the standards was an unavoidable necessity.** This correspondence will be conducted through the Project/Construction Manager.

4. Geospatial/Survey Data Files
    a. All geospatial data will be independently verified by 366 CES/CENME to ensure the accuracy and quality of data. Data corrections and resurveys will be addressed on a case-by-case basis. Survey-grade data will have a minimum of centimeter accuracy.
    b. The acceptable data formats for geospatial data is an sdsfie compliant file geodatabase (*.gdb) format. The recommended format for geospatial data submission is the same file provided by 366 CES/CENME during the data release process. This ensures the consistency of the schema and field attribution.
    c. In addition to the aforementioned formats, a Microsoft Excel *.xlsx including points, associated coordinates, point codes, and descriptions may be included in the submittal.
    d. Any deviations or additional information not compliant with SDSFIE must be housed in an appended table with a joining factor (e.g. FeatureName, FacilityNumber, *IDPK) clearly stated.
5. Other Computer Files
    a. All design packages shall include a ‘README.txt’ file that illustrates how documents or files are structured in the database.
        i. Include projection information.

b. Graphics files shall be submitted in the following formats:
    i. Tag Image File Format (TIFF)
    ii. Joint Photographic Experts Group (JPEG)
    iii. Graphics Interchange Format (GIF)
    iv. Seamless Image Database (SID)
    v. Portable Network Graphics (PNG)
c. Files shall be compressed in a *.zip file to limit the file size of items such as raster's and images.
d. The Contractor is responsible for ensuring the compatibility of all electronic files.