ENGINEERING AND CONSTRUCTION BULLETIN

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Subject: Standardizing Computer Aided Design (CAD) and Geographic Information Systems (GIS) Deliverables for all Military Design and Construction Projects

Applicability: Guidance

1. The purpose of this document is to provide interim guidance on identifying the use of CAD/GIS data standards by contractors when they submit final deliverables to government on all MILCON contracts. This ECB does not provide specific guidance to a contractor on how they will execute the CAD/GIS portion of their work, but identifies the format for final as-built drawings and data sets to be delivered by the contractor to the government. The intent of the deliverable set is to provide the Installation with comprehensive geospatial information about the facility footprint and site features that exist outside the building(s). By obtaining drawings and data sets in a standard format ensures that the government can maximize the reuse of the data in O&M activities and or other ongoing base activities.

2. Any CAD/GIS data developed as a result of executing MILCON contracts shall adhere to the Architectural/Engineering/Construction (AEC) CADD Standard (for CAD data) and/or the Spatial Data Standards for Facilities, Infrastructure and Environment (SDSFIE) (for GIS data) and be documented using the Federal Geographic Data Committee (FGDC) metadata standard. The government will provide a standard database and metadata template for the contractor to populate and provide back to government as a final deliverable. If no data is collected/developed as part of executing the MILCON contract, the contractor shall provide the government a written statement that CAD/GIS technologies were not used to execute the contract.

3. Electronic CAD/GIS files depicting the as-built condition shall be identified as a final deliverable. If the contractor is using Building Information Modeling (BIM) technology, the BIM electronic files shall be identified as an additional final deliverable.

- CAD Files
    - [Micro Station DGN or AutoCAD DWG, version 'X']
    - The coordinate system, projection, datum(s) and units will be documented in the metadata.
- BIM Files
    - IFC compatible BIM format
    - The coordinate system, projection, datum(s) and units will be defined for the BIM and be documented in the metadata.
- GIS Files
    - [ESRI ArcGIS shp/personal geodatabase or Intergraph GeoMedia or Bentley GeoGraphics]

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- The coordinate system, projection, datum(s) and units will be defined for the layer and will be documented in the metadata.
- Where captured, vertical coordinate information will be stored as a feature attribute. Polygon-z, polyline-z, and point-z formatted files are not requested.

4. All geospatial deliverables (CAD/GIS format), whether obtained via survey or any other data collection process, shall be measured in feet or meters. The coordinate system for all geospatial data will be the [State Plane Coordinate System and Zone, or UTM Coordinate System and Zone]. The vertical datum will be North American Vertical Datum 1988 (NAVD 88). The horizontal datum will be WGS84. The coordinate system and datums are determined by the Installation and are based on the Installation's preference in conjunction with the design standard being followed by USACE.

[Precise specifications of the State Plane Coordinate System, are as follows:

Coordinate System :	[example: Kansas State Plane Coordinate System]
Zone:	[example: South]
Units:	[Example: Feet]
Projection:	[Example: Lambert Conformal Conic]
Spheroid:	[Example: Geodetic Reference System 1980 (GRS80)]
Origin Latitude:	[Example: 36° 40 min, 0.00 sec (36.66666667°)]
Origin Longitude:	[Example: 98° 30 min, 0.00 sec N Longitude (-98.50°)]
Northern Standard Parallel:	[Example: 37° 55min, 0.00 sec (37.9166667)]
Southern Standard Parallel:	[Example: 36° 40 min, 0.00 sec (47.666667)]
False Easting :	[Example: 1312333.333333 feet]
False Northing :	[Example: 1312333.333333 feet]
Horizontal Datum :	[Example: WGS84]
Vertical Datum :	[Example: North American Vertical Datum 1988 (NAVD 88)]

5. Upon request, the government will provide the contractor with an SDSFIE-compliant GIS layer template to be used for populating the GIS deliverables required under the contract. The contractor shall populate the layers without modifying the template. The contractor shall ensure that layers delivered are fully compliant with the current SDSFIE standard.

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Data Integrity Check

The contractor shall utilize a topology build and clean routine and assure the following:
- No erroneous overshoots, undershoots, dangles or intersections in the line-work;
- Lines should be continuous (i.e., do not create dashed lines with many small line segments);
- Point features should be digitized as points, not graticules, cells, symbols or icons;
- No sliver polygons;
- All polygons completely close and have a single unique centroid;
- Digital representation of the common boundaries for all graphic features must be coincident, regardless of feature layer.

6. The Contractor shall use conventional surveying and other methods, such as a total station or GPS for field data collection, at an accuracy level in accordance with "Geospatial Positioning Accuracy Standards, Part 4: Architecture, Engineering Construction, and Facilities Management" published by the Federal Geographic Data Committee (FGDC) and available at http://www.fgdc.gov/standards/standards_publications/.

Horizontal and vertical accuracy of features, where vertical coordinates are collected, shall be +/- 2cm.

Surveyor Certification Requirement

The surveyor shall verify the survey for accuracy. A statement shall be provided to the government stating the level of accuracy for the data being reported (in inch-pound or metric units). In addition to the accuracy statement, the following information should be provided in a survey report:
- Coordinate system & datum used;
- Projection;
- Units of measure (vertical and horizontal);
- Attribute description (GPS data dictionary—features, attributes and attribute values);
- Source - Receiver type, antenna type, receiver settings, number of positions per point feature, correction method and any field other relevant field procedures utilized;
- Survey method;
- Equipment list;
- Calibration documentation;
- Description of control points and control diagrams;
- Field notes;
- Field-collected data (in addition to the post-processed final data used to prepare the geospatial data deliverable).

7. The contractor shall prepare metadata conforming to the most current version of the FGDC's "Content Standard for Digital Geospatial Metadata" (CSDGM) at

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http://www.fgdc.gov/standards/standards_publications/. Appendix A is the FGDC Metadata profile for Army Installations and should be followed as closely as possible. An ESRI Metadata Sylesheet for Army Geospatial Data is posted at https://gis.hqda.pentagon.mil/ . Metadata content will accompany all electronic geospatial data submissions. This includes both CAD and GIS formats. A metadata file shall accompany, at minimum, each CAD data set and/or each GIS data set. Metadata should be prepared to FGDC standards and delivered in XML format readable by software applications that use the FGDC XML format standard (such as ESRI ArcMap v9.x) 8. Points of contact for this bulletin are Ms Nancy Blyler, HQUSACE, 202-761-7755 and Mr. Robert Bank, HQUSACE, 202-761-4243.

 1 Encl

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                                       MOODY K. MILES III, P.E., L.S.
                                       Acting Chief, Engineering and Construction
                                       Directorate of Civil Works

Section 1 – Identification

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
1.1 Citation			
1.1 (Citation 8.1)	Identification (Data Set Originator)	The name of the office/branch/section and/or program that created the data set. This will contain USA, a single space, office/branch/section and/or program, a single space, followed by the installation/site name.	*Example values:* "USA Master Planning Office Fort x"
1.1 (Citation 8.2)	Identification (Data Set Publication Date)	The date of release or current version of the file. This represents the date that a given overlay layer and associated metadata file were "locked" for approval by the base-level command authority. Lineage: The data when the source was published or otherwise made available for release.	*Format:* yyyymmdd
1.1 (Citation 8.4)	Identification (Data Set Title)	The name by which the data set is referred. For all Army installations data this will contain the SDSFIE Entity Type name followed by the installation/facility name. To enhance searchability all underscores will be replaced with spaces. Lineage: The name by which the source of the layer is known. This could be the name of a local study, a national data set, a standard business process by which the data are generated, etc.	*Example values:* "Installation Area Fort x" "Military Range Area Fort x" "Flood Zone Area Camp x" "Wetland Area Fort x" "Mil Qty Distance Arc Area Fort x" "Noise Zone Area Camp x" Free text. Ex. "Short-Range Component", "National Hydrology Dataset"
1.1 (Citation 8.6)	Geospatial Data Presentation Form	The mode in which geospatial data depicted in a layer were represented.	"Vector Digital Data"
1.1 (Citation 8.8.2)	Identification (Data Set Publisher)	The name of the Army component or program that published the data set.	*Valid Values:* "OACSIM IGI&S", "USAR", "USARNG" "SRP","AEC"

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
1.2 Description			
1.2.1	Description, Abstract	A brief narrative of the data set. For all Army installation data the SDSFIE Entity Type Definition will be used.	Valid values: SDSFIE Entity Type Definition Ex. Land and water currently owned or used by the military installation or facility
1.2.2	Description, Purpose	A summary of the intentions with which the data set was developed. *Note: Each program should develop a standard purpose to fit within their program.*	*As defined by Army Program Leads (ARNG, AEC, OACSIM, IMA..etc)*
1.3 Time Period of Content			
1.3 (Citation 9.1.1)	Time Period of Content (Single Calendar Date)	The latest date to which the data content represents conditions on the ground (that is, when the "real world" looked the way it is described in the data). If the data content represents features presented from an image or map product and are not verified to current real world conditions this data must be the date of the image or map product source. Note: This assumes the image or map product source date represents ground conditions for that date. If only the month and year of the date are known enter zeros ("0") in the place of "dd" (for day) as shown. Ex. 20050400 represents April 2005.	*Format:* yyyymmdd
1.3.1	Time Period of Content, Currentness Reference	Reference for the Time Period of Content. For all Army installation data this value will be "ground condition".	*Valid Value:* "Ground Condition"
1.4 Status			
1.4.1	Status, Progress	The state of the data set. **Note**: Data sets required for reporting to the Army GISR are not	*Valid Values:* "Complete" "In-Work"

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
		complete until approved by the designated Command Authority.	
1.4.2	Status, Maintenance and Update Frequency	The frequency with which changes and additions are made to the data set after the initial data set is completed. **Note**: Data sets required for reporting to the Army GISR will have the update frequency defined by regulation.	*Valid Values:* "Bianually"

1.5 Spatial Domain

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
1.5.1	Spatial Domain, Bounding Coordinates	The outermost limits of coverage of a data set expressed by latitude and longitude values in the order western-most (CSDGM element 1.5.1.1), eastern-most (1.5.1.2), northern-most (1.5.1.3), and southern-most (1.5.1.4).	*Valid Values:* *Latitude:* -90.00 to 90.00 *Longitude:* -180.00 to 180.00

1.6 Keywords

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
1.6.1.1	Theme Keyword Thesaurus	Reference to a formally registered thesaurus or a similar authoritative source of theme keywords.	*Valid Value:* "Spatial Data Standard for Facilities, Infrastructure, and Environment" (version number).
1.6.1.2	Theme Keyword	Common-use words or phrase words used to describe the subject of the data set. Must include the installation name, entity type, entity class and entity set in addition to one or more of the remaining values in the list.	*Required Keyword Values:* {installation name} {service component} {entity type} {entity class} {entity set} *Plus one or more of the following:* "boundaries" "farming" "climatologyMeteorologyAtmosphere" "biota" "economy" "planningCadastre" "society" "elevation" "environment"

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
			"structure" "geoscientificInformation" "health" "imageryBaseMapsEarthCover" "inlandWaters" "location" "intelligenceMilitary" "oceans" "transporation" "utilitiesCommunication"
	Place Keywords	Geographical location of a dataset. This should include: country, state or territory, region, city, garrison, installation or site.	

1.7 Access Constraints

1.7	Access Constraints	Restrictions and legal prerequisites for accessing the data set. These include any access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions on obtaining the data set.	Valid Value: Data are to be used by Army personnel and Army support personnel only unless a written request to the IGI&S Government POC has been approved.

1.8 Use Constraints

1.8	Use Constraints	Restrictions and legal prerequisites for using the data set after access is granted. These include constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on using the data set.	*As defined by Army Program Leads (ARNG, AEC, OACSIM, IMA..etc)*

1.9 Point of Contact

The point of contact should be the Subject Matter Expert (SME) who identified the data source, and shall not be the base-level GIS/mapping POC (unless the POC authoring the metadata file is the same person as the subject matter expert responsible for source selection). In the event the SME expert is a contractor, the organizational information should reflect the government office for which the contractor works, not the contractor company information.

The name of the individual/organization responsible for creating the metadata file is recorded in CSDGM element 7.4, Metadata Contact.

1.9 (Citation 10.1.1)	Point of Contact (Contact Person)	Name of Subject Matter Expert responsible for selecting the source for the given layer	Free text field Ex: "John Smith"

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
1.9 (Citation 10.1.2)	Point of Contact (Contact Organization)	Organization name (or office symbol for military organizations) of the subject matter expert.	Free text field Ex: "Fort Drum Dept of Public Works", "Fort Monmouth Directorate of Public Safety"
1.9 (Citation 10.3)	Point of Contact (Contact Position/Title)	Title of the subject matter expert.	Free text field
1.9 (Citation 10.4.1)	Point of Contact (Address Type)	The type of address provided. Must be one of the following valid values:	*Valid Values:* "mailing" "physical" "mailing and physical" "po box" Other (describe)
1.9 (Citation 10.4.2)	Point of Contact (Address)	Address line for the subject matter expert.	Free text field Ex: "1230 Main Street"
1.9 (Citation 10.4.3)	Point of Contact (City)	The address city for the subject matter expert.	Free text field Ex: "Honolulu", "San Diego"
1.9 (Citation 10.4.4)	Point of Contact (State or Territory)	The address state or territory for the subject matter expert. Use accepted two-letter Postal state/territory codes for this field.	Free text field Ex: "NY", "VA", "PR"
1.9 (Citation 10.4.5)	Point of Contact (Postal/ZIP Code)	The ZIP code for the subject matter expert. Nine digit ZIP codes, with dashes, preferred, but five digit zip codes will be accepted.	Free text field Ex: "22030-1260"
1.9 (Citation 10.4.6)	Point of Contact (Country)	Subject matter expert address country.	Free text field Ex: "USA"
1.9 (Citation 10.5)	Point of Contact (Telephone Number)	Subject matter expert Telephone number, including all applicable area codes and extensions. Commercial numbers are preferred, and should be preceded with "COMM" as shown. However, if only DSN numbers are	Free text field *Ex:* COMM 123-456-7890 DSN 123-4567

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
		available, enter that number here and precede the number with "DSN" as shown:	
1.9 (Citation 10.8)	Point of Contact (EMAIL address)	The email address for the subject matter expert.	Free text field Ex: "John.Smith@us.army.mil"

1.12 Security Information

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
1.12.1	Security Classification System	The name of the classification system.	*Valid Values:*
1.12.2	Security Classification	The name of the handling restrictions on the data set.	*Valid Values:* "FOUO" "Unclassified" "Sensitive"

Section 2 – Data Quality Information

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
2. Data Quality Information			
2.1 Attribute Accuracy			
2.1.1	Attribute Accuracy Report	Assessment of the accuracy of assigned values in the dataset. Detailed explanation of the accuracy of the dataset values, tests utilized to obtain these accuracy values and a date when the test was executed.	Attribute value domains and ranges are verified against a set domain of values according to SDSFIE. Content is populated according to the Standard Operating Procedures for that layer. Specific value content is verified by an authority with site knowledge and access to other sources.
2.2	Logical Consistency Report	Logical consistency describes how the geometry was	Free text field

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
		captured and explains any topological test that may have been performed. Since most commercial GIS software structures data topologically, simply describing the process of how the data was captured addresses this report.	Ex: Topology verified using the ArcINFO clean command.
2.3	Completeness Report	Information about omissions, selection criteria, generalizations, definitions used, and other rules to derive the dataset. Use this field to record if any features (e.g., wetland polygon, floodplain polygon, APZ or ESQD clear zone, noise contour, or installation boundary element) were excluded from the data set for any reason. Note: This report should include all feature types that are present in the dataset.	*If no omissions are present – Valid Value:* "Complete data set" *If omissions are present – Valid Value:* Free text, describing any map features/elements that exist on the ground but have been omitted from the dataset due to classification constraints. *Example Values:* "Wetlands from 1999 restoration study not included because {provide justification}" "New boundary from 2003 land transfer to {jurisdiction] not shown as the boundary re-survey has not yet been performed."

2.4 Positional Accuracy

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
2.4.1.1	Horizontal Positional Accuracy Report	A narrative explanation of the accuracy of the horizontal coordinate measurements. Use this field to record the horizontal positional accuracy of digital geospatial data sources and the published map scale of hardcopy/paper map sources, as stated on the selected source. Valid values must be stated in one of the following two fashions: • Circular error, as defined by FGDC STD 007.3-1998, NSSDA, (digital sources) or • Meeting National Map Accuracy Standards (NMAS) at a given printed map scale (hardcopy/paper sources).	*Example Values:* *Circular Error Format:* "4-meter CE 90 (1-meter imagery)" "25-meter CE 90 (5-meter imagery)" *National Map Accuracy Standards:* "Meets National Map Accuracy Standards at {map scale}" *If the layer was created using "heads-up" digitizing techniques and another image or overlay layer was used as reference:* "Referenced to {imagery or overlay layer name}" *If horizontal positional accuracy is unknown:*

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
			"Unknown"
2.4.2.1	Vertical Positional Accuracy Report	Explanation of achieved accuracy, methods for ascertaining the accuracy values and dates of tests utilized to obtain those results.	Valid Values: Free text field or "NA"

2.5 Lineage

The following section may be repeated numerous times in the event that multiple sources were selected and used to develop any given layer. Most metadata management applications (including ESRI ArcCatalog and the USACE CorpsMet application) can accommodate numerous source citations.

A set of Lineage, Process Description and Process Point of Contact elements are used to record the GIS technical point of contact.

An additional set of Process Description elements are used to record the process and contact information for the data validation (signature) process.

The following Lineage elements are used to record the source data information for the data set described.

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
2.5.1.1 (Citation 8.1)	Lineage, Source Citation (Source Originator)	The name of the individual or organization that developed the source of the data set.	*Valid Values:* {Source originator name}
2.5.1.1 (Citation 8.2)	Lineage, Source Citation (Source Publication Date)	The date when the source was published or otherwise made available for release. If only the month and year are known, but not specific day within the given month, enter zeros ("0") in the place of "dd" as shown. Must be one of the following valid values:	*Valid Values:* "Unknown" "Unpublished material" {date} *Date Format:* yyyymmdd *Example date values:* "20020101" (representing 01 Jan 02) "20031128" (representing 28 Nov 03) "19980100" (representing Jan 98, where the specific day is not provided)
2.5.1.1 (Citation 8.4)	Lineage, Source Citation (Source Title)	The name by which the source of the layer is known. This could be the name of a local study, a national data set, a standard business process by which the data are generated, etc.	*Valid Values:* {source name} *Example values:* "National Wetlands Inventory"

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
			"USACHPPM Noise Study" "FEMA Flood Insurance Study for {jurisdiction}"
2.5.1.1 (Citation 8.6)	Lineage, Source Citation (Geospatial Data Presentation Format)	The mode in which geospatial data depicted in the layer were represented in the source document(s). Must be one of the following valid values:	*Valid Values:* "Diagram" "Map" "Model" "Profile" "Raster digital data" "Spreadsheet" "Tabular digital data" (e.g., coordinates) "vector digital data" Other (specify)
2.5.1.1 (Citation 8.8.2)	Lineage, Source Citation (Publisher)	The name of the individual or organization that published the data set source. Must be one of the following valid values:	*Valid Values:* {publisher name/organization} "Unknown" "N/A"
2.5.1.6	Lineage, Source Contribution	An indicator of which source for the data set was used.	*Example Values for Layers:* Values vary by layer type and by which source was chosen.
The following Process Description elements describe the actions performed against the above sources in order to create the data. The POC listed below is the GIS technical point of contact.			
2.5.2.1	Lineage, Process Description	General description of the process used to convert or create the data.	Free text field
2.5.2.3	Process Date	Date for the completion of data compilation.	
2.5.2.6 (Citation 10.1.1)	Process Point of Contact (Contact Person)	Party or parties responsible for the computation of the processing step information.	Free text field Ex. "John Smith"
2.5.2.6 (Citation 10.1.2)	Process Point of Contact (Contact Organization)	Organization name (or office symbol for military organizations) of the POC.	Free text field Ex: "Fort Drum Dept of Public Works", "Fort Monmouth Directorate of Public Safety"
2.5.2.6 (Citation 10.3)	Process Point of Contact (Contact Position/Title)	Title of the point of contact.	Free text field

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
2.5.2.6 (Citation 10.4.1)	Process Point of Contact (Address Type)	The type of address provided. Must be one of the following valid values:	*Valid Values:* "mailing" "physical" "mailing and physical" "po box" Other (describe)
2.5.2.6 (Citation 10.4.2)	Process Point of Contact (Address)	Address line for the point of contact.	Free text field Ex: "1230 Main Street"
2.5.2.6 (Citation 10.4.3)	Process Point of Contact (City)	The address city for the point of contact.	Free text field Ex: "Honolulu", "San Diego"
2.5.2.6 (Citation 10.4.4)	Process Point of Contact (State or Territory)	The address state or territory for the point of contact. Use accepted two-letter Postal state/territory codes for this field.	Free text field Ex: "NY", "VA", "PR"
2.5.2.6 (Citation 10.4.5)	Process Point of Contact (Postal/ZIP Code)	The ZIP code for the point of contact. Nine digit ZIP codes, with dashes, preferred, but five digit zip codes will be accepted.	Free text field Ex: "22030-1260"
2.5.2.6 (Citation 10.4.6)	Process Point of Contact (Country)	Point of contact address country.	Free text field Ex: "USA"
2.5.2.6 (Citation 10.5)	Process Point of Contact (Telephone Number)	Point of contact telephone number, including all applicable area codes and extensions. Commercial numbers are preferred, and should be preceded with "COMM" as shown. However, if only DSN numbers are available, enter that number here and precede the number with "DSN" as shown:	Free text field *Ex:* COMM 123-456-7890 DSN 123-4567
2.5.2.6 (Citation 10.8)	Process Point of Contact (EMAIL address)	The email address for the point of contact.	Free text field Ex: "John.Smith@us.army.mil"
The following lineage section represents the metadata elements that should be populated for the Signature Authority process and point of contact.			
2.5.2.1	Lineage, Process Description	Description of the signature process.	*Valid Values:*
2.5.2.3	Process Date	Date the data was validated through signature (signature date).	
2.5.2.6	Signature Authority Point of	Name of the individual appointed as the Signature	Free text field

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
(Citation 10.1.1)	Contact (Contact Person)	Authority.	Ex. "John Smith"
2.5.2.6 (Citation 10.1.2)	Signature Authority Point of Contact (Contact Organization)	Organization name (or office symbol for military organizations) of the Signature POC.	Free text field Ex: "Fort Drum Dept of Public Works", "Fort Monmouth Directorate of Public Safety"
2.5.2.6 (Citation 10.3)	Signature Authority Point of Contact (Contact Position/Title)	Title of the Signature Authority.	Free text field
2.6	Cloud Cover	Area of data set obstructed by clouds expressed as a percentage of the spatial extent. Applicable to raster imagery only.	*Valid Values:* 0-100%

Section 3 – Spatial Data Organization Information

Not required

Section 4 – Spatial Reference Information

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
4.1 Horizontal Coordinate System Definition			
The Spatial Reference Information should be defined using one of the following Horizontal Coordinate Systems (4.1.1 Geographic or 4.1.2 Planar {UTM}).			
4.1.1	Geographic	The quantities of latitude and longitude which define the position of a point on the Earth's surface with respect to a reference spheroid.	
4.1.1.1	Latitude Resolution	The minimum difference between two adjacent latitude values expressed in Geographic Coordinate Units of measure.	*Valid Value: Value > 0.0*
4.1.1.2	Longitude Resolution	The minimum difference between two adjacent longitude values expressed in Geographic Coordinate Units of measure.	*Valid Value: Value > 0.0*

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
4.1.1.3	Geographic Coordinate Units	Measurement units for horizontal coordinates. Must be the following value:	*Valid Value:* "Decimal Degrees"
4.1.4.1	Horizontal Datum Name	Name of the reference system used for defining horizontal coordinates. Must be the following value:	*Valid Value:* "World Geodetic System of 1984 (WGS 84)"
The following Spatial Reference information should be used to define a Universal Transverse Mercator (UTM) Coordinate System.			
4.1.2	Planar	The quantities of distances, or distances and angles, which define the position of a point on a reference plane to which the surface of the Earth has been projected.	
4.1.2.2	Grid Coordinate System, Grid Coordinate System Name	A plane-rectangular coordinate system usually based on, and mathematically adjusted to, a map projection so that geographic positions can be readily transformed to and from plane coordinates. The name of the grid coordinate system should be "Universal Transverse Mercator" (UTM). This is a grid system based on the transverse mercator projection, applied between latitudes 84 degrees north and 80 degrees south on the Earth's surface and consisting of zones numbered from 1-60.	*Valid Value:* "Universal Transverse Mercator"
4.1.2.2.1	UTM Zone Number	The identifier for the UTM Zone	*Valid Value:* 1 < = UTM Zone Number < = 60 for the northern hemisphere; -60 < = UTM Zone Number < = -1 for the southern hemisphere
4.1.2.1.23.17	Scale Factor at Central Meridian	A multiplier for reducing a distance obtained from a map by computation or scaling to the actual distance along the central meridian.	*Valid Value:* *Value > 0.0*
4.1.2.1.23.2	Longitude of Central Meridian	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.	*Valid Value:* *-180.0 < = Longitude of Central Merdian < 180.0*
4.1.2.1.23.3	Latitude of Projection Origin	The latitude chosen as the origin of rectangular	*Valid Value:*

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
		coordinates for a map projection.	*-90.0 <= Latitude of Projection Origin <= 90.0*
4.1.2.1.23.4	False Easting	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	*Valid Value:* *Free Text*
4.1.2.1.23.5	False Northing	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.	*Valid Value:* *Free Text*
4.1.2.4.2.1	Abscissa Resolution	The (nominal) minimum distance between the "x" or column values of two adjacent points, expressed in Planar Distance Units of measure. *NOTE: This field is auto-populated in ArcCatalog.*	*Valid Value:* Value > 0.0
4.1.2.4.4	Planar Distance Units	Units of measure used for distances.	*Valid Values:* "meters"
4.1.4.1	Horizontal Datum Name	Name of the reference system used for defining horizontal coordinates. Must be the following value:	*Valid Value:* "World Geodetic System of 1984 (WGS 84)"

Section 5 – Entity and Attribute Information

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
5.1.1 Entity Type			
5.1.1.1	Entity Type Label	The name by which the data set is referred. For all Army installation data the SDSFIE Entity Type name will be used. To enhance searchability all underscores will be replaced with spaces.	*Valid Values:* SDSFIE Entity Type (ex: firing line, military range area, noise contour line)

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
5.1.1.2	Entity Type Definition	The definition of the entity type.	*Valid Values:* SDSFIE Entity Type Definition Ex: The designated hazard area that follows the projected trajectory of a munition.
5.1.1.3	Entity Type Definition Source	The source of the entity type definition.	*Valid Value:* "Spatial Data Standards for Facilities, Infrastructure, and Environment" (enter version number)

5.1.2 Attribute

5.1.2.1	Attribute Label	The name of the attribute	*Valid Value:* SDSFIE attribute name, common name EX: "Attribute Name: hgt_dim, Common Name: Height dimension"
5.1.2.2	Attribute Definition	The definition of the attribute	*Valid Value:* SDSFIE attribute definition Ex: "The height of the target."
5.1.2.3	Attribute Definition Source	The attribute definition source	*Valid Value:* SDSFIE (enter version number)

5.2 Overview Description

5.2.1	Entity and Attribute Overview	Statement summarizing the attribute table for the layer. Note: If the dataset is in SDSFIE Advance Compliancy, any additional fields in the table must be detailed.	*Example Value:* "Attributes organized by the Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE), NCITS 353, Version 2.4. Attribute table structure meets basic compliance guidelines as defined by the CADD-GIS Technology Center. "Several custom fields have been added to store additional information because this

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
			information does not fit within the current SDSFIE".

Section 6 – Distribution Information

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
6.2 Resource Description			
6.2	Resource Description	The identifier by which the distributor knows the data set. Must be one of the following values:	*Valid Values:* *"Live Data and Maps"* *"Downloadable Data"* *"Map Files"* *"Static Map Images"* *"Other Documents"* *"Applications"* *"Geographic Services"* *"Clearinghouses"* *"Geographic Activities"*
6.4 Standard Order Process			
6.4.2.1.1	Format Name	The name of the data file format. This field can be free text or a value may be selected from the domain table.	Free text field or select a value from the drop down list.
6.4.2.1.7	Transfer Size	The size, or estimated size, of the transferred data set in megabytes.	*Valid Value:* Transfer size >X

Section 7 – Metadata Reference Information

CSDGM Element Number	CSDGM Element Name	Description	Valid Values

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
7.1 Metadata Date			
7.1	Metadata Date	Date the metadata file was created or last updated.	*Format:* yyyymmdd
7.2	Metadata Review Date	Date of the latest review of the metadata entry.	
7.4 Metadata Contact			
The Metadata Point of Contact (POC) will be the individual responsible for authoring the metadata file. The mission knowledge expert responsible for source selection will be recorded in CSDGM element 1.9, Point of Contact.			
7.4 (Citation 10.1.1)	Point of Contact (Contact Person)	Name of individual responsible for preparing the metadata file.	Free text field Ex: "John Smith"
7.4 (Citation 10.1.2)	Point of Contact (Contact Organization)	Organization name (or office symbol for military organizations) of the POC.	Free text field Ex: "Fort Drum Dept of Public Works", "Fort Monmouth Directorate of Public Safety"
7.4 (Citation 10.3)	Point of Contact (Contact Position/Title)	Title of the metadata author.	Free text field
7.4 (Citation 10.4.1)	Point of Contact (Address Type)	The type of address provided. Must be one of the following valid values:	*Valid Values:* "mailing" "physical" "mailing and physical" "po box" Other (describe)
7.4 (Citation 10.4.2)	Point of Contact (Address)	Address line for the metadata author.	Free text field Ex: "1230 Main Street"
7.4 (Citation 10.4.3)	Point of Contact (City)	The address city for the metadata author.	Free text field Ex: "Honolulu", "San Diego"
7.4 (Citation 10.4.4)	Point of Contact (State or Territory)	The address state or territory for the metadata author. Use accepted two-letter Postal state/territory codes for this field.	Free text field Ex: "NY", "VA", "PR"
7.4	Point of Contact	The ZIP code for the metadata author. Nine digit ZIP	Free text field

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
(Citation 10.4.5)	(Postal/ZIP Code)	codes, with dashes, preferred, but five digit zip codes will be accepted.	Ex: "22030-1260"
7.4 (Citation 10.4.6)	Point of Contact (Country)	Metadata author address country.	Free text field Ex: "USA"
7.4 (Citation 10.5)	Point of Contact (Telephone Number)	Metadata author telephone number, including all applicable area codes and extensions. Commercial numbers are preferred, and should be preceded with "COMM" as shown. However, if only DSN numbers are available, enter that number here and precede the number with "DSN" as shown:	Free text field *Ex:* COMM 123-456-7890 DSN 123-4567
7.4 (Citation 10.8)	Point of Contact (EMAIL address)	The email address for the metadata author.	Free text field Ex: "John.Smith@us.army.mil"

7.5 Metadata Standard Name

7.5	Metadata Standard Name	The name of the metadata standard used to document the data set. Must be the following value:	*Valid Value:* "US Army Installation Geospatial Data Standard tailoring of the FGDC Content Standards for Digital Geospatial Metadata"

7.6 Metadata Standard Version

7.6	Metadata Standard Version	Identification of the version of the metadata standard used to document the data set. Must be the following value:	*Valid Values:* "Version 2 - 1998 (FGDC-STD-001 June 1998)" "Version 1 – 2005 (OACSIM IGI&S November 2005)"

7.10 Metadata Security Information

7.10.1	Metadata Security Classification System	The name of the classification system for the metadata.	*Valid Value:*

CSDGM Element Number	CSDGM Element Name	Description	Valid Values
7.10.2	Metadata Security Classification	The name of the handling restrictions on the metadata.	*Valid Values:* "FOUO" "Unclassified" "Sensitive"

Section 8 – Citation Information

Please see Section 1.1 (Citation)

Section 9 – Time Period Information

Not required

Section 10 – Contact Information

Please see Section 7.4 (Metadata Contact)