DATA ITEM DESCRIPTION

Title: Geospatial Information and Electronic Submittals

Number: MR-005-07 **Approval Date:** 20031201
AMSC Number: **Limitation:**
DTIC Applicable: No **GIDEP Applicable:** No
Office of Primary Responsibility: CEHNC-ED-CS-D
Applicable Forms:
Use/Relationship: The Geospatial Information and Electronic Submittals will be used to describe methods, equipment, and accuracy for conducting location surveys and mapping of Munitions Response or other munitions related projects, and the subsequent development of Geographical Information System (GIS) databases to support the mapping and document (paper and electronic) production process. This Data Item Description (DID) contains instructions for preparing work plan chapters addressing all geospatial information and electronic submittals for Munitions Response or other munitions related projects.

Requirements:

1. General. The site-specific Geospatial Information and Electronic Submittals Plan for each project will document the site-specific survey, mapping, aerial photography, CADD/GIS, and electronic submittals required to create a complete geospatial dataset requirements tailored to the needs of that project. Additional information is provided in EM 1110-1-4009. Geospatial data products will be required in either metric or English units depending upon the needs of the individual project. Metric is the standard unit, unless otherwise specified by the specific Task Order. All geospatial data shall conform to the CADD/GIS Technology Center Spatial Data Standards for Facilities Infrastructure and Environment (SDSFIE) and the OE-GIS data standard as outlined in the specific Task Order and this DID. Metadata shall be created for the core OE-GIS data layers, and will be prepared in accordance with Federal Geographic Data Committee (FGDC) metadata standards.

1.1 Accuracy. Horizontal and vertical control of "Class I, Third Order" or better shall be established for the network of monuments. Horizontal control shall be based on either the English or metric system and referenced to the North American Datum of 1983 (NAD83) and the Universal Transverse Mercator (UTM) Grid System. Vertical control, if required, shall also be based on either the English or metric system and referenced to the North American Datum of 1988 (NAVD88). All surveying and mapping requirements shall meet the minimum standards set forth in EM 1110-1-1004 - Geodetic and Control Surveying. If aerial photographs or orthophotography are used to provide this survey, the aerial targets used for control points shall meet the same horizontal and vertical accuracy and requirements in EM 1110-1-1000 - Engineering and Design - Photogrammetric Mapping. All newly established control points and recovered monuments shall be of a permanent nature for recoverability during future phases of work within the same project. All control points shall be iron or steel pins, concrete monuments, or other permanent construction method. Installation of control points and monuments shall meet minimum standards set forth in EM1110-1-1002 - Survey Markers and Monumentation. A licensed Professional Land Surveyor in the State where the work is being performed shall certify all surveying requirements to include all control points, grid corners, transect points, and boundaries as required by the project. The Northing and Easting (Y, X) for all control points, grid corners, transect points, and any boundaries or closures shall be presented in a certified letter or drawing, along with an electronic submittal of the same to CEHNC upon completion of the field work.

1.2 Geographic Information Systems (GIS) Incorporation. Spatial data created for the project are to be provided in neutral, nonproprietary Spatial Data Transfer Standard (SDTS) format at the completion of the project, as well as in either Microstation SE/MGE (Microstation design files), or ESRI-compliant formats (Shapefiles, coverages, or geodatabases) during the project. The use of one of these proprietary spatial data formats will be defined in the Task Order SOW. Raster data (orthophotography, remote sensing imagery, etc.) are to be provided in Tagged Image File format (TIF) at the completion of the project, as well as in either TIF format or MrSID-compliant format during the project. The selection of one of these raster data formats will be defined in the Task Order SOW. Supporting tabular data shall be provided in ANSI SQL language format at the completion of the project, as well as in either Microsoft Excel, Microsoft Access, or Oracle database format, dependent upon the storage and performance requirements of the project. The use of one of these proprietary database formats will be defined in the Task Order

SOW. The Final Submittal in electronic format shall contain all required Project (ArcGIS .mxd) files and Layout files for all plates, figures, and drawings conveyed in the appropriate Final Report.

1.3 Plotting. All of the control points (monuments, aerial targets, and property corners) recovered and/or established at the site shall be plotted at the appropriate coordinate points on reproducible electronic or hard copy media for production of planimetric or topographic maps at scales appropriate for the parcel size being described. Parcels less than 10 acres shall be plotted at 1:200. Parcels 10 – 100 acres shall be plotted at 1:600 (1”=50’). Parcels larger than 100 acres will be plotted at 1:2400 (1”=200’). Area maps shall be provided for parcels of 100 acres, and shall show sheet breakdown for subsequent sheets required for the set.

1.4 Mapping. The location, identification, coordinates, and elevations of all the control points recovered and/or established at the site shall be plotted on reproducible media for planimetric or topographic maps at the scale specified in the task order. Each control point shall be identified on the map by its name and number and the final adjusted coordinates and elevations (to the closest 0.001m and 0.01 ft.). Each map shall include a grid north, a true north, and a magnetic north arrow with the differences between them in degrees, minutes, and seconds shown. Grid lines or tic marks at systematic intervals with their grid values shall be shown on the edges of the map. Also, a legend showing the standard symbols used for the mapping and a map index showing the site in relationship to all other sites within the boundary lines of the project area shall be shown. The coordinates for the grid corners shall be shown to the closest one-foot (1.0 ft.), but may require greater accuracy to meet geophysical mapping and re-acquisition requirements. The locations of individual recovered Munitions and Explosives of Concern (MEC) items shall be tape measured or the X and Y distance estimated, to obtain a horizontal accuracy of plus or minus one foot within the grid, and plotted and identified on the map.

2. Digital Design Data.

2.1 General Design File Requirements. An overall planimetric design file shall be created and shall be digitized into a Microstation ". dgn" file at an elevation of zero. If contours and spot elevations are required, all data shall be digitized into a second Microstation 3D design file with each element (contours and spot elevations) at their correct elevation, and topologically triangulated network (ttn) files shall be created to model the topographic surface. The ttn file shall be created using the elements of the topographic file, and all spot elevations, contours, and break lines necessary to create the ttn file shall be used. The ttn file shall be created so that it can be used in an Intergraph software product INROADS to recreate the contours at their exact locations. Referencing the planimetric and contour files from additional Microstation work files shall create cut sheet plots, and views into the project data.

2.2 Each sheet shall be a standard metric A-1 size drawing, which is 841 mm by 594 mm (33.1 inches by 23.4 inches). Each sheet shall also have a standard border; revision block; title block; complete index sheet layout; bar scale; legend; grid lines or grid tic layout in feet or meters; a True North, a Magnetic North and a Grid North arrow, with their differences shown in degrees, minutes, and seconds; and shall be plotted at the horizontal scales required. The Contractor’s logo shall not dominate the title block and sheet border. The standard A-1 sheet size title block and border define the text size, location, and format.

2.3 All associated cell, reference, or attachment files shall be attached and provided with the digital data set along with all other supporting files or data. All production and work files shall be fully documented into a concise data manual. This manual shall include all specific information required for an outsider to be able to recreate all products and determine the location, names, structures, and association of the data such as layer description, weights, colors, symbology, referencing of files, etc. This manual shall be included as an ASCII file titled READ.ME that is included with all distributed digital data.

2.4 No digital data will be acceptable until proven compatible with the USAESCH Graphics System. All revisions required to obtain compatibility with the USAESCH Graphics System shall be done at the contractor’s own expense.

3. Computer Files and Digital Data Sets.

3.1 All final document files (e.g., reports and associated figures and tables) generated shall be furnished to USAESCH in IBM PC-compatible MS Office 97 or higher software and in Adobe Portable Document Format (PDF). Products shall be suitable for viewing, without modification, on the Internet. Freeware versions of Adobe

Acrobat Reader, Netscape, and Internet Explorer, as appropriate, shall accompany the document files on CD-ROM so that the user can use the CD to either install the programs and documents on a machine, or use the CD in a standalone mode to view the document files. In submissions with multiple CDs, only one copy of the viewers is required. It shall be included on the first CD of the series. The basic software supported to the field shall be capable of operating on a typical single Intel Pentium processor PC utilizing the Windows 2000 operating system with a minimum of 256 megabytes of memory and adequate disk storage for project data.

3.2 All final GIS data generated by this contract and other individual Task Orders shall be submitted in non-proprietary Spatial Data Transfer Standard format at the close of the project, as well as in the proprietary format used for the execution of the project (Microstation/MGE, DGN format, or ESRI's shapefile, coverage, or geodatabase format). All data shall conform to the Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE), and as outlined in the specific task order. All in-progress and fielded GIS data, design drawings, survey data, relational databases, geophysical data, and other related data may be required to be available on line to the Government by HTTP or FTP down load or by Web based GIS queries as specified for the project. All formal GIS data submittals will be made on PC CD-ROM. Each submittal shall be accompanied by a freeware viewer application appropriate for reviewing the proprietary formatted GIS data (e.g ArcReader for ESRI format shape files and coverage's). The viewer application need only be supplied on one CD-ROM for multiple CD-ROM submittals. At a minimum, the contractor will supply instructions for loading the data and viewer application. No other additional software shall be required, and no data modification shall be required for viewing the submittal. Other specific packages to be considered must be proposed to USAESCH for approval and for system and mission compatibility.

3.3 Electronic Submittal. All data shall be submitted electronically on PC CD-ROM. The PC CD-ROM is the required format. All data items will be delivered, and the specific timeframe for delivery will be specified within each Task Order SOW. However, at no time will the delivery be less than that specified in EM 1110-1-4009.

4. End of DID MR-005-07.