

DATA ITEM DESCRIPTION

Title: Location Surveys and Mapping Plan

Number: OE-005-07.01

Approval Date: 20021001

AMSC Number:

Limitation:

DTIC Applicable: No

GIDEP Applicable: No

Office of Primary Responsibility: CEHNC-ED-CS-D

Applicable Forms:

Use/Relationship: The Location Surveys and Mapping Plan will be used to describe methods, equipment and accuracy for conducting location surveys and mapping of Ordnance and Explosives (OE) sites. This Data Item Description contains instructions for preparing Work Plan chapters addressing location surveys and mapping for OE projects.

Requirements:

1. General. The site-specific Location Surveys and Mapping Plan for each project will document the site-specific survey, mapping, and aerial photography requirements tailored to the needs of that project. The specific Task Orders/Delivery Orders will specify the appropriate mix required for implementing each OE project and the methodology to accomplish the tasks. Additional information is provided in EM 1110-1-4009, Chapter 8 – Location Surveys and Mapping. Some projects may not require any of these capabilities but others may require comprehensive capabilities. Surveying and Mapping products will be required in either metric or English units depending upon the needs of the individual project. English is the standard unit, unless otherwise specified by the specific Task Order/Delivery Order. All required services will be accurately specified in the individual project Statement of Work (SOW) tasks.

1.1 Unexploded Ordnance (UXO) Safety Provision. During all initial fieldwork and all intrusive activities, the contractor shall provide a UXO Technician II to accompany the survey crew. The UXO Technician II shall conduct visual surveys for surface ordnance prior to the survey crew entering a suspected area, and a magnetometer survey of each intrusive activity site to ensure the site is anomaly free prior to the surveying crew setting monuments or driving stakes. The UXO Technician II shall not be assigned additional survey tasks which would interfere with the OE safety aspects of area clearance for driving stakes, iron pins, monumentation or other survey control, which will penetrate the surface in a potentially OE contaminated area. The UXO Technician II may not be required on a full time basis for non-intrusive activities.

1.2 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). 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 detailed above. 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. 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.

1.3 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.

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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. In addition, the UTM coordinates shall be established for the corners of each grid area investigated (100' x 100'; 100' x 200'; etc.; size and accuracy requirements to be determined when the SOW for the Task Order/Delivery Order is prepared). 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 OE 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. The use of a total station, global positioning system (GPS) or other precision survey method used to locate recovered munition items is not required. NOTE: Accuracies for the location of anomalies and suspected UXO may be greater for the geophysical mapping requirements. The lesser of the two will be the driving accuracy required for the location of recovered munitions with each grid.

2. Digital 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. Cut sheet plots and views into the project data shall be created by referencing the planimetric and contour files from additional Microstation work files.

- a. 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.
- b. 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.
- c. 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. Digital Format for Survey/Mapping Data.

3.1 All data shall conform to the Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE), and as outlined in the specific task order.

3.2 Sources and Standard: The SDSFIE have been developed and produced by the Tri-Service CADD/GIS Technology Center for the use of all DOD and other Federal Government, State Government, local government, and contractor personnel. They are designed for computer assisted mapping methods that must interface with other

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surveying firms, Government contractors, and customers so that the final product will be usable with consistent CADD documents.

3.3 Electronic Submittal: All data shall be submitted electronically on PC CD-ROM. The PC CD-ROM is the required format.

4. Items and Data. The data items to be delivered, and the specific timeframe for delivery will be specified within each Task Order/Delivery Order SOW. However, at no time will the delivery be less than that specified in EM 1110-1-4009, Chapter 8, Paragraph 8.8.

5.0 End of DID OE-005-07.01.