



ARKANSAS STATE HIGHWAY AND TRANSPORTATION AHTD

Surveys Division

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January 20, 2011

AHTD Surveys Certification Requirements

It is required that the Consultant Surveyor be certified for the task or tasks to be performed. All survey work shall be performed according to the current Arkansas minimum standards and regulations governing the practice of Registered Professional Land Surveyors, as well as the requirements of the AHTD as specified in the most current version of the AHTD *Requirements and Procedures for Design Surveys and Land Surveys*, and under the supervision of the Professional Land Surveyor registered in Arkansas approved by the AHTD to perform the task(s) specified.

The AHTD also has requirements for software and hardware to be used on projects performed for the AHTD. Model numbers for the equipment for the total station, data collection equipment, and automatic levels, etc., need to be listed. The information that follows gives details of what equipment and software is required to perform design surveys and/or land surveys for the AHTD.

It is required that all design and land survey field data collection shall be performed using the AASHTOWare® SDMS® (Survey Data Management System) Collector software and according to current AHTD data collection requirements. It is also required that all field data be processed using the AASHTOWare SDMS Processor software. The software for field data collection and processing is furnished under the site license held by the AHTD from AASHTO. All field, calculated, and control data shall be submitted in the appropriate AASHTO SDMS formats. This includes the unedited field files (.PRJ); edited files (.EDI); control files (.CTL); points and chains files (.PAC); and, alignment files (.ALI).

The minimum allowable precision for horizontal control is FGDC (NGS) First Order Class 1 based on least squares adjustment of a control network. This normally requires a total station instrument capable of measuring angles to 2" – 5" with a read out of 1". **It is required you furnish the manufacturer's instrument specifications for your total station(s) to verify the measurement capabilities of each instrument that may be used on a project.**

All elevation control shall be established equivalent to NGS 2nd Order for Vertical Control, using 3Wire leveling techniques and in compliance with current AHTD requirements. Therefore, the proper equipment, including a high quality Philadelphia type level rod, must be used. **It is required you furnish instrument specifications for your precise level(s) to verify the capabilities of each instrument that may be used on a project.** It is also required that the serial number and stadia interval for each precise level, as well as the brand and model number of all level rods that would be used, be furnished.

You will also need to show that you have equipment on hand that is compatible with the required AASHTO SDMS Collector data collection system. A list of hardware platforms and total station instruments that are known to work with SDMS follows

Data Collectors

- Husky Hunter 16 (2Mb minimum)
- Husky FS/2 (2Mb minimum)
- Husky FS/3 (2Mb minimum)
- Husky FSGS (2 Mb minimum)
- Husky MP2500 (2Mb minimum)
- HP100LX (2 Mb minimum)

- HP200LX (2 Mb minimum)
- PC and Laptop Computers that support MS DOS.

Total Station Instruments

- Geodimeter System (400/500/600)
- LIECA TCR303
- LEICA TCA1103
- Lietz Set Series (3 and 3B)
- Nikon DTM Series 400, 500,700, 800
- Pentax PTS-III
- Sokkia Set Series (2, 2B, 3, 3B, XL, & 100 Series)
- Topcon (Course and Fine Modes)
 - GTS Series (4 & 300/500/700)
 - GTS AF Series (601-603, 605)
 - GPT Series (1001, 1002, 1003)
- Trimble TTS Series (300 and 500)
- Wild 2000 & T2002
- Zeiss Elta Series (3 & 4D)

Post processing of data, if part of the scope of work for a project, requires using the AASHTOWare SDMS Processor software. This software will also be furnished by the AHTD.

Digital Terrain Modeling (DTM), final design survey maps, land survey work sheets and final plats, if part of the scope of work, shall be submitted using Bentley Systems, Inc., Bentley Inroads, Version 8.9/SP2 and Microstation Version 8.5 or higher. The minimum modules required are Inroads Survey (for SDMS data import) and Inroads Site (for geometry). The Inroads Software shall use Microstation as the CAD platform. You are responsible for licensing the required CAD software products and for any and all training required in their use.

Control surveys, design surveys and land surveys require direct oversight by the Professional Surveyor(s), registered in Arkansas, who is designated as the Surveyor(s) who will be in responsible charge and who has been approved by the Surveys Division. Requirements specific to each type survey follow.

CONTROL SURVEYS

Control surveys consist of: static GPS; horizontal traverses; elevation control by three wire level techniques; and aerial photography targeting control for Photogrammetry. The task that may be assigned will be based on the Consultant Surveyor's previous experience and expertise shown in performing the task or tasks to be performed. The proper equipment meeting AHTD requirements must be used at all times. Currently, this requires dual frequency geodetic quality receivers and antennae for static GPS. The equipment shall be able to produce a RINEX raw data file. Dual frequency geodetic quality Trimble receivers, antennae, and data-collectors are required for RTK GPS. The surveyor shall utilize the AHTD.FCL feature code file. Trimble Geomatics Office software is required for any GPS post processing functions. The GPS antennae for static and RTK surveys shall have been tested and phase-center models produced by the National Geodetic Survey (NGS).

DESIGN SURVEYS

Design surveys are currently broken down into four (4) separate tasks: (1) Topography and terrain data collection; (2) Field data processing; (3) CAD development of digital terrain models and topography; and, (4) Hydrographic surveys data collection. Design surveys scopes of work currently pertain to Task 1 and Task 4.

It is required that all design survey field data collection shall be performed using the AASHTOWare SDMS (Survey Data Management System) Collector software furnished under the site license held by the AHTD from AASHTO, and according to current AHTD data collection requirements. All original field data shall be submitted in the AASHTO SDMS project (PRJ) file

format. No editing of the original field data file is allowed. Edited files shall be saved and furnished with the extension “.EDI”.

Post processing of the collected data may be added in future scopes of work if a Surveying Consultant shows they have become adequately familiar with the AHTD surveying procedures and requirements. Post processing, if it is included in a scope of work, will require the use of the current AASHTO SDMS Processor. Processed data must be furnished in the Points and Chains (PAC) file format. The entire project, “field to finish”, shall be archived and furnished to the AHTD. The software will be furnished by the AHTD.

The development of Digital Terrain Models (DTMs) and drafting related to design surveys may also be added to future scopes of work if the surveying consultant shows proficiency in the other phases of the survey work as explained above. DTMs and CAD are done using the Bentley Systems, Inc., Inroads software. Graphics, topography, and DTM information, if part of a future scope of work, must be provided in the Bentley Microstation (DGN) and InRoads (ALG & DTM) formats.

LAND SURVEYS

Land surveying is broken down into four (4) tasks: (1) field reconnaissance/data collection/worksheet generation; (2) right of way plan development; (3) right of way staking; and, (4) right of way monumentation and final plats. Once a Consultant Surveyor becomes certified to perform Task 1, they can also work toward becoming qualified, and ultimately certified, for any or all the other tasks listed. Obtaining and maintaining certification for any or all tasks depends on performance of the current project task assigned.

Land survey work requires the Consultant Surveyor to collect field information using AASHTOWare SDMS Collector and provided in the SDMS project (PRJ) format. No editing of the original field data file is allowed. Edited project files shall be saved and furnished with the extension “.EDI”. Field data shall be processed using SDMS Processor. The processed data must be furnished in the Points and Chains (PAC) file format. The entire project, “field to finish”, shall be archived and furnished to the AHTD for review. If this work is found acceptable, a project file set performed previously by the Surveys Division will be sent to you to process and prepare the required CAD drawings using AHTD requirements, feature tables, and cell libraries. Performance on this project will then determine whether your firm will be approved to perform specified land survey tasks.

Certified plats of the land survey information furnished to the AHTD shall meet current State and AHTD requirements for land surveys. The plats shall be furnished in the Bentley Microstation and InRoads formats. Both graphic and coordinate information is required. Land Surveys to be developed using Bentley Systems, Inc., Inroads software, Version 8.9/SP2 and Microstation Version 8.5 or higher. The minimum modules required are Inroads Survey (for SDMS data import) and Inroads Site (for geometry). The Inroads Software shall use Microstation as the CAD platform.

If you are requesting to be considered for land survey tasks, you must also show you have licensed the required CADD software and have had adequate training to use that software.

It is also suggested you have a copy of the Deed Plotter software for the review of record descriptions.

Once the Professional Surveyor has met the basic requirements, a test project which includes field collected data will be assigned by the AHTD for that person to work completely and submit. The field data must be processed and analyzed using AASHTOWare SDMS Processor and the Bentley Systems, Inc., Inroads software to develop the survey plat.

NOTE: It is not required that you be certified for all tasks. But, you must start the certification process for Design Surveys.

To start the certification process for a specific surveying task (or tasks), the information that follows shall be submitted.

- Name, PS number, and a resume of the Professional Surveyor who will be in responsible charge of the work.
- A list of the hardware (with specifications for each instrument attached) and software on hand that complies with the requirements for the task or task for which certification is requested.

Once qualified to perform a specific task, becoming certified for that task will depend on the performance on the first project you submit. It is your responsibility to perform the fieldwork on a test project to determine you and your staff understand the requirements of the AHTD. **Each test project will be performed at no expense to the AHTD.** The test project will be as close to your headquarters as practical. The Consultant Surveyor and the surveys support staff will be trained by one of the Surveys Division staff members in the use of the AASHTOWare® SDMS® data collection and processing software.

Training in the use of the Bentley Systems, Inc., Microstation Inroads software is the responsibility of the Consultant Surveyor. The AHTD will furnish the required feature and preference libraries to assure all data is on the proper levels when submitted.

When all of the requirements are met for the specific surveying task (or tasks) to be performed, your firm may be added to the list of those certified to perform that task for the AHTD on a probationary basis. If approved, you will be notified in writing what type of survey work your firm is certified to perform.

The intent of the AHTD is to develop a list of certified firms to be available for projects on an as needed basis. Therefore, the AHTD does not guarantee your firm will receive a notice to perform either design surveys or land surveys; that your firm will be used for a specific number of projects; or, the size of a project, if assigned.

If it is determined Consultant Surveyor meets requirements to qualify for one or more of the various survey tasks and is selected to work on a project for the AHTD, training will be provided for the required field data collection and processing procedures on the initial project performed. This will assure there is a good understanding of the system and procedures prescribed for the collection and editing of field data. Training sessions are held at a site specified by the AHTD.

The selected Consultant Surveyor must submit an audit report including a report on internal control and compliance. The report shall meet the reporting guidelines provided in the applicable financial audit standards sections of the *General Accepted Government Auditing Standards (GAGAS)*, and shall include **positive assurance** that all costs included in the recommended rate are allowed by **48 CFR Part 31**. An indirect cost rate, set by the audit, must be approved by the AHTD prior to executing the contract. It is also required that proof of having current liability insurance be on file or submitted with the estimate.

A copy of the AHTD **Requirements and Procedures for Design Surveys and Land Surveys**, can be accessed and downloaded from the AHTD Internet WEB Site. The WEB address is: <ftp://www.arkansashighways.com/outgoing/Surveys/contents.htm>. This document is posted as a Portable Document File (PDF).

The AASHTOWare® SDMS® software (SDMS Collector and SDMS Processor) will be furnished by the AHTD, but a licensing agreement is required.

Bentley Systems, Inc., Microstation and Inroads Software - contact Becky Horsfall, Account Manager of Bentley Systems, Inc. (Tel: 512-338-1711; Cell: 512-784-5816; E-Mail: becky.horsfall@bentley.com) for more details, updates, and software pricing.

Maintaining certification, is based on performance on each project assigned. Therefore, the AHTD reserves the right to remove a Consultant Surveyor from the list of certified Consultant Surveyors at any time based on the performance on any and all projects assigned.

Re-certification for the specific approved Control Surveys, Design Surveys, and Land Surveys tasks must be renewed on an annual basis. It is the responsibility of the Consultant Surveyor to request continuation on the list of those qualified and/or certified to perform surveys for the AHTD.

It should also be noted that certification is based on the credentials of the Arkansas Registered Professional Surveyor(s) submitted for certification as being in responsible charge of the projects and

trained in the use of the AASHTO SDMS software. It is also required that each Professional Surveyor be certified individually. Any changes will affect your certification. Therefore, it is imperative you notify the Surveys Division immediately of any changes in Registered Professional Surveyor or Surveyors submitted for approval. Certification will be suspended or revoked until the new land surveyor has been approved.

When requested by prospective roadway and bridge design consultants, a list of Consultant Surveyors, with only the names and contact information, will be furnished. It is the responsibility of the Consultant Surveyor to inform the design consultant which surveying task or tasks they are certified to perform

All correspondence should be addressed to:

Kit Carson, PE, PS
Division Head, Surveys
Arkansas Highway and Transportation Department
PO Box 2261
Little Rock, AR 72203

If you have any questions, you may contact our office (501-569-2341).

Kit Carson, PE, PS
Division Head, Surveys, AHTD

The Arkansas State Highway and Transportation Department (AHTD) complies with all civil rights provisions of federal statutes and related authorities that prohibit discrimination in programs and activities receiving federal financial assistance. Therefore, the AHTD does not discriminate on the basis of race, sex, color, age, national origin, religion or disability, in the admission, access to and treatment in the AHTD's programs and activities, as well as the AHTD's hiring or employment practices. Complaints of alleged discrimination and inquiries regarding the AHTD's nondiscrimination policies may be directed to James B. Moore, Jr., Section Head - EEO/DBE (ADA/504/Title VI Coordinator), P. O. Box 2261, Little Rock, AR 72203, (501) 569-2298, (Voice/TTY 711), or the following email address: james.moore@arkansashighways.com. This notice is available from the ADA/504/Title VI Coordinator in large print, on audiotape and in Braille.