

OHIO DEPARTMENT OF TRANSPORTATION OFFICE OF ENVIRONMENTAL SERVICES RESEARCH IMPLEMENTATION PLAN



Title: Best Management Practices of Archaeological Study Methods

State Job Number: 14775

PID Number: RFP No. 01-61

Research Agency: University of Cincinnati

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Sponsor(s): Howard Wood, Tim Hill

Study Start Date: 4/2/2001

Study Completion Date: 4/2/2003

Study Duration: 24 Months

Study Cost: \$100,000.00

Study Funding Type: 80 Federal / 20 State, ODOT SPR (2)

STATEMENT OF NEED: For several decades, the Ohio Department of Transportation (ODOT) allocated substantial funding to ascertain the location, extent, and significance of archaeological phenomena that would be affected by ground-disturbing undertakings. As archaeological survey data accumulated from such Phase I studies, however, questions arose regarding their usefulness for project-planning processes, particularly in settings involving transportation projects in their preliminary phases of development. This Final Report presents an analysis of information about Phase I pedestrian surveys that were conducted under the auspices of ODOT, either by ODOT personnel or contractors, between 1974 and 2001.

RESEARCH OBJECTIVES: To study and summarize administrative, pre-survey, survey project, and survey design characteristics of 270 Phase I surveys in Ohio to determine whether current approaches to Phase I archaeological surveys provide the information needed for ODOT management and planning.

RESEARCH TASKS: The consultant was directed to study selected ODOT Phase I survey reports for selected data, conduct a survey and review of similar practices in neighboring states to see how those state highway agencies have approached the management of archaeological information, and conduct a review of prior archaeological predictive models for the State of Ohio as well as neighboring states and recommend corrections to any shortcomings in the models in use in Ohio. The consultant was to evaluate the applicability of new technologies and approaches to archaeological survey within the context of ODOT management and planning practices.

RESEARCH DELIVERABLES: In consultation with ODOT, the consultant first did a study of practices in neighboring states to see how those state highway agencies in Illinois, Indiana, Kentucky, and West Virginia have approached the management and use of archaeological information that was gathered via survey work for highway projects. A general outline was then compiled for the various divisions in each state highway agency involved in such activities, followed by details regarding collaborating state and private organizations working on related projects.

The consultant also conducted a review of prior archaeological predictive models for the State of Ohio as well as neighboring states, and recommendations to correct any theoretical and methodological shortcomings in the models in use in Ohio.

A project database description section summarizes administrative, pre-survey, survey project and survey design characteristics of 270 Phase I archaeological surveys to determine whether current approaches to Phase I archaeological survey provide the information needed for ODOT planning and management.

A site database description section presents similar sets of information for 5424 sites that were discovered by the 270 Phase I surveys. In order to provide a foundation for a Stage I statewide predictive modeling study, a sample of sites from the site database was drawn, consisting of 72% of the total number of sites and representing 43% of the total number of projects analyzed.

RESEARCH RECOMMENDATIONS: In order to overcome the bulk of problems that affect the usefulness of Phase I survey data for ODOT planning, particularly the lack of accurate Universal Transverse Mercator (UTM) coordinates for registering survey boundaries and the locations of archaeological phenomena, electronic survey (e-survey) procedures are proposed utilizing state of the art Global Positioning System (GPS) receivers, Geographic Information System (GIS) technology and the Internet. Such protocols will expedite the Phase I process because survey-designated resources can be allocated more efficiently by discontinuing the use of variables that are useless to ODOT planning, by eliminating variables that require interpretation (and are often inconsistently recorded), and by ensuring the capture of highly accurate data regarding survey intensity and the locations of archaeological phenomena. The report also contains a review of prior archaeological predictive models for the State of Ohio as well as neighboring states, and of recommendations to correct their theoretical and methodological shortcomings.

PROJECT PANEL COMMENTS: The project review panel consisted of the AEA over the OES Cultural Resource Section, all five OES staff archaeologists, and the archaeology reviewer for ODOT projects from the Ohio Historic Preservation Office (OHPO). Comments were given at the time of the research.

IMPLEMENTATION STEPS & TIME FRAME: ODOT already has implemented recommendations that came out of this 2003 study in a number of ways. For example, ODOT funded a project with the OHPO to establish a joint GIS system for archaeological (and other) data so that accurate site location information will be recorded at the OHPO. This included the correcting of the UTM coordinates on all their site inventory forms, then that data was put into the GIS system for joint use by ODOT and OHPO staff. Another project with OHPO digitized all areas in the State of Ohio that have been subjected to prior archaeological survey. With just these two initiatives, ODOT now has accurate location data, plus data on areas already surveyed on which to base evaluations of the necessity and intensity of any survey actions that may be needed in an area of the state. In 2004 ODOT published a Cultural Resources Manual. One of the many requirements of that manual is that a GPS equipment standard is now required of all consultants doing ODOT project work. The manual requires that all archaeological site locations have GPS data recorded. All of that data is fed into the GIS system shared by ODOT and OHPO. ODOT also requires consultants to test existing predictive models when we have a project of sufficient areal extent to do so, and to make recommendations on modifying and improving upon any models. All of these initiatives (and more) allow ODOT and OHPO to better focus archaeological research and utilize and refine predictive models for archaeological sites. The environmental streamlining benefit is ongoing.

EXPECTED BENEFITS: Many are already being realized in the sense that based on the previously mentioned information, we have streamlined our process, gained accurate and dependable information, have a system that can be constantly added to, all of which allow ODOT personnel to better scope the necessary archaeological work that is required on projects.

EXPECTED RISKS, OBSTACLES, & STRATEGIES TO OVERCOME THEM: The only obstacles that we have are time and equipment based. In other words, staff time to work on many of these initiatives with the OHPO and consultants is paramount. Much of the work gets done on specific projects as opposed to just doing hard research. Equipment based obstacles are mainly the challenge to keep up with GIS, GPS, Lidar, etc., technology so that ODOT can stay on top of the best information management practices.

OTHER ODOT OFFICES AFFECTED BY THE CHANGE: All ODOT Districts have projects on which these initiatives are used, implemented, refined, and processed.

PROGRESS REPORTING & TIME FRAME: Already in place, being used, and being improved upon.

TECHNOLOGY TRANSFER METHODS TO BE USED: ODOT-OES archaeology staff and ODOT-OES' GIS specialist work very closely with their counterparts at the OHPO on an ongoing basis. With the above mentioned initiatives (and more), it has been a seamless transfer.

IMPLEMENTATION COST & SOURCE OF FUNDING: Most of the work that has been put in place with the OHPO has been paid for by ODOT from various sources, primarily SPR funds. This is an ongoing process of building and refining the GIS system we've put in place. Some funding has come from FHWA as well. A sizable portion of the work has been done via project specific research, so we've integrated the day to day, year to year project work and results with the GIS system we've built with OHPO.

Approved By: (attached additional sheets if necessary)

Office Administrator(s):

Signature: *Timothy M. Hill* Office: OES Date: 11/8/05

Division Deputy Director(s):

Signature: *Howard P. Wood* Division: Planning Date: 11/9/05