

Evaluating Cultural Resource Significance: Implementation Tools

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AUTHORS

E Lindner; M R Edwards; R L Peer; T H Klein; Transportation Research Board

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NCHRP REPORT 542

**Evaluating Cultural Resource
Significance:**

Implementation Tools

MARK R. EDWARDS
REBECCA L. PEER
EMILY LINDNER
URS Group, Inc.
Gaithersburg, MD

TERRY H. KLEIN
SRI Foundation
Rio Rancho, NM

SUBJECT AREAS

Energy and Environment

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Hobbs, GIS Technical Lead, Minnesota Department of Transportation; Mr. Eric Ingbar, Director of Research, Gnomon, Inc.; and Ms. Fennelle Miller, King County Department of Transportation—Road Services, King County, Washington. Not only did the focus group members enthusiastically and ably explore proposed IT prototypes at this meeting, they continued to be involved with the project long after this meeting concluded. Many focus group members helped “spread the word” about these IT prototypes, which greatly assisted in the external prototype evaluation portion of the project. Focus group members continued to provide input, on a volunteer basis, with the URS project team to help refine ideas for this final report. The support and enthusiasm of this group of individuals went beyond our expectations, was greatly appreciated by our project team, and certainly will not be forgotten.

FOREWORD

*By Charles W. Niessner
Staff Officer
Transportation Research
Board*

This report presents the findings of a research project to develop information technology (IT) tools that improve and streamline the National Register evaluation of cultural resources. The researchers developed two IT prototypes: a searchable database of historic contexts and a collection of National Register evaluation documents. The second prototype provides an explicit, but flexible tool for improving National Register eligibility determinations. This report will be of particular interest to cultural resource management professionals.

Since the mid 1990s, transportation and historic preservation professionals have been calling for an improvement in how National Register eligibility determinations of structures, landscapes, buildings, archaeological sites, traditional cultural properties, and other cultural resources are made. Typically, eligibility evaluations are performed on a piecemeal, project-by-project basis, rarely taking into account previous studies or past decisions on resource significance. Further, cultural resource information collected by state and federal agencies over the last 20 to 30 years is generally not used to evaluate National Register eligibility. Access to this information is often difficult, and there is limited awareness of the availability of the information.

Under NCHRP Project 8-40, "Evaluating Cultural Resource Significance Using Information Technology," URS Group, Inc. (URS), undertook research to (1) identify current methods used nationwide to manage and organize cultural resource inventory data and historic contexts, (2) determine if IT applications have been useful in developing resource inventories and historic contexts, and (3) provide recommendations regarding IT applications to improve the development and use of resource inventories and historic contexts as tools for determining resource significance. This research demonstrated that historic contexts and cultural resource inventories are generally not used in making decisions on National Register eligibility, though consistent application of National Register criteria requires the use of historic contexts and existing resource data. NCHRP Project 8-40 also found that historic preservation and transportation professionals were very interested in IT applications that improved access to existing historic contexts (and inventories) and facilitated their use in everyday decision making. NCHRP Project 8-40(2), "Evaluating Cultural Resource Significance—Implementation Tools," developed two prototype tools that will facilitate both the use of and access to historic contexts and other National Register evaluation documentation, in addition to resource inventories.

The researchers developed two prototypes: the Historic Property Screening Tool (HPST) and the Electronic Cultural Resource Evaluation Library (ECREL). The HPST provides a database for the management and use of historic contexts and cultural resource inventory information. This tool also records National Register eligibility decisions for future use. The HPST guides the user through the decision-making process that is typically used when applying National Register criteria. ECREL is designed to improve accessibility to National Register evaluation documents, including historic contexts.

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EVALUATING CULTURAL RESOURCE SIGNIFICANCE: IMPLEMENTATION TOOLS

SUMMARY

The National Cooperative Highway Research Program (NCHRP) contracted with URS Group, Inc. (URS), to conduct a two-phased study on improving current approaches to evaluating cultural resource significance (i.e., National Register eligibility) in the context of both transportation projects and compliance with Section 106 of the National Historic Preservation Act. The first phase examined current methods used nationwide to manage and organize cultural resource inventory data and historic contexts. The study also determined if information technology (IT) applications have been useful in developing inventories and contexts. Finally, the study provided recommendations regarding IT applications to improve the development and use of resource inventories and historic contexts as tools for determining National Register eligibility. The second phase focused on the development and testing of two prototype IT applications that would streamline and improve how resources are evaluated for National Register eligibility.

The two prototypes that were fully developed are the Historic Property Screening Tool (HPST) and the Electronic Cultural Resource Evaluation Library (ECREL). The HPST is a tool that guides a user through the National Register eligibility evaluation steps, using the evaluation components of a historic context, as defined in *National Register Bulletin 15* and the *Secretary of the Interior's Standards for Historic Preservation Planning*. The HPST database allows users to select a historic context and the property type most appropriate to the resource being evaluated. The "registration" criteria for the property type (based in part on aspects of integrity) are then used to determine National Register eligibility. ECREL is a web-based tool that includes searchable historic contexts and other documents used in making decisions on National Register eligibility. Development of this tool involved (1) designing a document profile (i.e., index values [metadata] collected for each document), (2) defining acceptable index values and a keyword baseline, and (3) collecting and scanning paper documents and loading the documents into the database. Electronic documents were also placed within the database. State departments of transportation (DOTs), state historic preservation offices (SHPOs), and cultural resource management (CRM) consultants assisted URS in the testing and validation of these two tools by using the tools and completing an evaluation form on each tool.

The evaluations of ECREL were uniformly positive. Most reviewers felt that ECREL would benefit all historic preservation professionals. Though ECREL would not in itself result in an increase in the development of historic contexts, reviewers noted that the tool would at least result in the production of more useful historic contexts when these documents were created. The HPST, however, is more problematic. Reviewers all noted that this tool would not be used without direction and approval from upper management within agencies. The tool's use requires changes in the existing evaluation processes used by most states. Further, unless agencies are willing to replace one or more existing evaluation and reporting requirements with the HPST, historic preservation professionals are not likely to use this tool. Most reviewers, nevertheless, felt that the HPST would be a useful tool, but indicated that more work would be required to refine the tool's features and to integrate the tool into current SHPO and DOT processes.

Based on the evaluations of ECREL and the HPST, URS recommends several options for implementing one or both of these tools:

- **ECREL Option 1: Voluntary Implementation.** This option involves (1) locating a host for the ECREL database and website, (2) developing a document submittal protocol in consultation with the primary parties involved in the Section 106–related National Register evaluation process, (3) developing a document loading procedure, (4) advertising the establishment of ECREL, and (5) having state DOTs, SHPOs, tribal historic preservation offices (THPOs), and consultants voluntarily send in electronic versions of documents to the organization maintaining ECREL.
- **ECREL Option 2: National Implementation.** This option is the same as Option 1, with the addition of collecting hard copies of documents from SHPOs and DOTs around the country. This step is recommended because the majority of documents within states are in a paper, not electronic, format.
- **HPST Option 1: Voluntary Implementation.** This option involves (1) advertising the tool nationally and highlighting the utility of this tool, (2) sending HPST CDs to all DOTs and SHPOs and making the CD available to CRM consultants, and (3) making the HPST source code available on CD to anyone who wants to use all or part of the tool in his or her own system.
- **HPST Option 2: Pilot Program.** This program involves the participation of a small number of states (involving both the SHPO and DOT of each state) to fully implement the HPST. States would input existing historic contexts in the HPST and use the tool in actual project-related National Register evaluations. If possible, this option would also include using the HPST to create a new historic context from scratch. It is also recommended that ECREL be integrated into this pilot program, as the two tools can be used together (e.g., searching ECREL for appropriate historic contexts and then placing the contexts into the HPST program).

Table 1 shows the pros and cons of each option.

The HPST and ECREL were not created to increase the workload of state and federal agency staff by adding yet another level of documentation. Rather, these tools will provide consistency—in terms of the format, presentation, and content of evaluation documents—that is sorely lacking in current documentation. These tools will also decrease development and review time for eligibility evaluations because the documentation levels needed for effective decision making are made explicit and readily accessible, eliminating extraneous materials often inserted into current documents. These tools will replace currently used evaluation report formats, forms, and correspondence. The majority of decision-making efforts are documented and captured in a single format. Also, historic contexts that are developed in the HPST will be no more

TABLE 1 Pros and cons of ECREL and HPST options

Option	Pros	Cons
ECREL Option 1	This option requires the least cost and time commitment for an organization or agency to host ECREL and to develop the document submittal protocol and loading procedure.	There is no mechanism to maintain consistency in the format of documents placed into ECREL by users (this option assumes that the organization hosting ECREL is not reviewing or vetting the format of documents submitted for placement into ECREL). As a result, sharing of information and data sets may become problematic.
ECREL Option 2	The format of documents placed with ECREL will be consistent given the control over the documents obtained from DOTs and SHPOs. A single organization or agency will be responsible for collecting documents and entering them into ECREL. The resulting electronic library will be much more complete than under ECREL Option 1. This larger, more comprehensive library will encourage greater use of the site and its adoption by a broader audience.	This option is the most expensive in terms of time and money. It may be difficult to get the SHPOs to participate in this effort given current staff and budgetary cut-backs. The SHPOs may not have the resources to assist in the collection of the documents to be placed within ECREL.
HPST Option 1	This option is the least costly. This option provides an easy and efficient mechanism for distributing the HPST.	This option does not provide a strong mechanism to demonstrate the value of this tool to potential users, as the tool has not been implemented in a real-world setting, such as an SHPO or DOT office, using real data from the resource inventories and historic contexts. As a result, there may be little interest in the HPST. There is little evidence that this tool will actually help potential users in their day-to-day decision making.
HPST Option 2	This option provides a mechanism to demonstrate the value of this tool to potential users, as the tool will be implemented in a real-world setting, such as an SHPO or DOT office, using real data from the resource inventories and historic contexts. The results of the pilot study will serve as evidence that this tool will actually help agencies and the private sector in their day-to-day decision making.	This HPST option is the most expensive because it requires funding additional SHPO and DOT staff and funding an organization to conduct the pilot study. This option would require much more time and effort than HPST Option 1 would require.

time consuming (and may be less time consuming) to create than the current method of compiling information using word processing software. The use of the HPST for context development also increases the likelihood that the resulting historic context will contain the information and guidance needed to evaluate National Register eligibility.

If development and testing of these IT tools is to continue, state DOTs, SHPOs, and organizations such as the Transportation Research Board's Historic and Archaeological Preservation in Transportation Committee (ADC50) and the American Association

of State Highway Transportation Officials (AASHTO) will hopefully provide leadership to secure funding to support additional prototype testing and refinement. As the February 2004 Santa Fe, New Mexico, “Working Conference on Historic Preservation and Transportation: Enhancing and Streamlining Compliance with Section 106 of the National Historic Preservation Act” illustrated, federal and state agencies clearly want to move away from a project-by-project approach to embrace new processes that emphasize examination of issues at a preplanning phase of project development. Tools such as ECREL and the HPST would greatly assist in supporting preproject planning efforts. As this study concluded, these tools have been shown to function extremely well and seem to represent two of the most innovative historic property-based IT tools yet developed to achieve environmental streamlining.

The beneficiaries of this paradigm shift—primarily state DOTs and SHPOs—are in the best position to encourage federal agencies, such as the FHWA, or organizations, such as AASHTO or the NCHRP, to consider funding a pilot implementation program for continued prototype testing and refinement. Selected state DOTs and SHPOs should consider participating in the prototype testing effort. (Based on comments received in this study, those states might include, but not be limited to, California, Florida, Maryland, Minnesota, Rhode Island, Texas, Vermont, and Washington.)

The authors of this report have come to realize that impediments that prevent these products from becoming useful tools are institutional, not technological, and will take institutional leadership to implement. The authors also believe that a pilot implementation program will show the many benefits of these tools and should be seriously considered for future national implementation. Long-term implementation has the greatest potential for success through adoption of a national initiative, such as the FHWA’s environmental streamlining program. Encouraging agencies to use standardized tools such as ECREL and the HPST would most successfully be achieved through a combination of requirements and financial incentives implemented through a national memorandum of understanding (MOU). (This MOU might be modeled on the MOU signed on December 14, 2001, by 23 state agencies in support of the Efficient Transportation Decision Making system.) Implementation and ongoing system maintenance, as well as provision for staff training at state DOT and SHPO offices, could be supported through multiyear cost-sharing agreements among multiple federal agencies and the states.

CHAPTER 1

INTRODUCTION AND BACKGROUND

This research effort is the second phase of an NCHRP project on improving current approaches to evaluating cultural resource significance (i.e., National Register eligibility) in the context of both transportation projects and compliance with Section 106 of the National Historic Preservation Act. The NCHRP panel overseeing this two-phased study, which began in 2000, consists of representatives from state DOTs, TRB, the FHWA, and private consultants. URS conducted both phases of study for the NCHRP.

PHASE 1

The following summary provides the scope, research approach, and objectives of the first phase. A more detailed discussion of the Phase 1 study can be found in *NCHRP Research Results Digest 277: Review and Improvement of Existing Processes and Procedures for Evaluating Cultural Resource Significance*.

The evaluation of the significance of historic and archaeological resources (i.e., determining their eligibility for listing in the National Register of Historic Places) is an important and critical problem in the transportation planning process, at both the state and local level. This problem has been generally addressed in a piecemeal manner and in the context of a specific project or group of projects, often resulting in project delays, conflicts, and increased cost. What is required to solve this problem and avoid these delays and conflicts is to have an existing general framework for making resource evaluation decisions. The primary goal of this NCHRP study is to develop and test possible tools to improve cultural resource significance decision making.

The Phase 1 study examined current methods used nationwide to manage and organize cultural resource inventory data and historic contexts. The study also determined if IT applications have been useful in developing inventories and contexts. Finally, the study provided recommendations regarding IT applications to improve the development and use of resource inventories and historic contexts as tools for determining resource significance. Through a nationwide survey of SHPOs, state DOTs, THPOs, and several federal agencies (including the FHWA), the research team (1) examined current methods for managing and organizing cultural resource data and historic contexts and (2) evaluated IT applications for

inventories and context use. The survey was conducted in the fall of 2001. A literature review of published documents and reports on CRM practices was also conducted.

The literature review and the nationwide survey resulted in several interesting observations as to how existing computerized inventories were structured and how historic contexts were used. Geographic information system (GIS) programs from Environmental Systems Research Institute, Inc. (ESRI), are the most popular software programs used. Together, ArcView and ArcInfo are used by more than half of the agencies with computerized cultural resource databases. MS Access is the next most popular software and is in use by 30 to 40 percent of the agencies. Oracle and dBASE are less common. Many agencies are using more than one software package and may have migrated their databases one or more times.

Eighty-nine percent of the SHPOs and 51 percent of the DOTs had computerized archaeological inventory files. However, only 70 percent of SHPOs and 40 percent of DOTs with computerized inventories also had the resource locations computerized. Historic structure inventories showed similar percentages, but historic bridges and landscapes were less likely to be computerized. Of the agencies with computerized inventories, only 60 percent of the SHPOs and 40 percent of DOTs had historic bridges and landscapes computerized.

The concept of a “digital divide” has become common in the popular media, and to some extent the survey results indicate such a divide among agencies in their progress toward computerizing cultural resource inventories. In particular, most of the SHPOs have made either substantial progress (over 75 percent of their resource inventory is computerized) or little progress (less than 25 percent is computerized).

When asked the question “If there is no computerized resource inventory, what is the number one impediment to the development of this inventory?” the most frequent responses were lack of personnel and lack of funds. Lack of time was the third most common answer, and not an agency priority ranked fourth. When asked the question “Should there be a national clearinghouse (with Internet access) listing all existing computerized inventory database and historic contexts?” approximately two-thirds of all respondents said yes. The states, however, are wary of national database efforts for two main reasons. First, they perceive problems with previous federal attempts at centralized data collection, particularly the National Park Service’s National Archaeological Database

(NADB) project. Second, many states question the utility of national systems to address local and regional issues, and these states do not want to see database queries being passed off as a substitute for thorough background studies for projects.

One of the more surprising results of the nationwide survey is the indication that historic contexts are rarely consulted and are not frequently updated, even though the survey respondents noted that they considered historic contexts to be useful tools in determining resource significance. DOTs and most federal agencies rely mostly on consultants' reports for significance decision making, and SHPO staff rely mostly on their personal experience. Historic contexts were ranked fourth and fifth in value in the decision-making process by DOTs and SHPOs, respectively. Further, only 14 percent of the SHPOs and 22 percent of the DOTs report using historic contexts 100 percent of the time in significance determinations. In addition to problems of infrequent use, the linkages between contexts and resource inventories are poor and hard to access. While 60 percent of the SHPOs report some kind of linkages, only 20 percent of them report computerized linkages.

To further explore the trends noted in the survey responses, follow-up questions were developed and e-mailed to all SHPOs and DOTs that responded to the original survey. Ten SHPOs and nine DOTs answered these follow-up questions. The comments received suggest that even in states where historic contexts are reported as being used regularly, the decision-making process is rarely systematic and formalized. These responses also supported observations that contexts are not used because they are out of date (or never developed) and often do not provide specific guidance relevant to the kinds of problems commonly encountered in historic preservation compliance projects (i.e., problems complying with Section 106 of the National Historic Preservation Act of 1966, as amended). To deal with the day-to-day requirements for making significance decisions, agencies fall back on staff experience and knowledge and assess each resource on a project-by-project basis.

Based on the results of the literature search and nationwide survey, URS proposed several IT tools for improving the collection, organization, and management of data for making decisions on resource significance. The NCHRP panel overseeing the Phase 1 study recommended that prototypes for five of these IT tools be developed and tested in the next phase of study:

- **Tool 1: An electronic “Historic Context Development Tool.”** This tool would contain all of the necessary components of a historic context as defined in the *Secretary of the Interior’s Standards for Historic Preservation Planning*. The purpose of this tool would be to assist agencies in the creation of historic contexts and to produce contexts in a format that could be accessed and shared electronically. This tool, along with Tool 2, eventually became the HPST in Phase 2.

- **Tool 2: A “Historic Significance Attribute Table” for organizing and documenting information used to make decisions on resource significance.** This tool would provide an electronic mechanism for capturing decision making in a somewhat standard format, following National Register guidance (e.g., *National Register Bulletin 15*). This tool, along with Tool 1, eventually became the HPST in Phase 2.
- **Tool 3: An MS Access database application that standardizes resource inventory data for use in evaluating resource significance.** This database would include the above “Historic Significance Attribute Table” and a way to link data to existing historic contexts.
- **Tool 4: A common electronic format that would replace existing historic contexts, National Register nomination forms, and Consensus of Eligibility documents.** These documents would be scanned, indexed, and then made searchable using key words. Documents from a sample of states would be used to develop and test this prototype. This tool eventually became ECREL in Phase 2.
- **Tool 5: ESRI’s Geography Network as the mechanism for making the above IT prototypes accessible to potential users across the country.**

PHASE 2

The following sections describe the Phase 2 approach to developing and testing prototypes for the five above-listed IT tools. In Phase 2, Tool 1 was evaluated independently from the others because it was seen as a stand-alone tool; thus, the following sections discuss Tool 1 independently from the other tools.

Tool 1: A Historic Context Development Tool

The purpose of the Historic Context Development Tool was to provide a method by which consistent electronic versions of historic context documents could be generated. The tool was intended to be a stand-alone system that any user could install on his or her desktop computer and use without additional training. A user guide and example would be provided with the application.

The first step in developing a prototype Historic Context Development Tool was to complete a requirements definition document and to prepare a design of the tool. Some basic requirements for this tool were specified in the Phase 1 study, but additional requirements needed to be identified and documented. URS was to also evaluate existing standards that could be used as the basis for this tool. The best candidate in terms of existing standards appeared to be the National Register’s Multiple Property Submission form. Examples of historic contexts were also to be collected and a small number selected as models. These models were to be used to guide the development of the tool with respect to

- Required elements or sections,
- Format, and
- Size of each section and whether it is fixed or variable.

The project team was also to identify (1) elements that provided the user with a list of acceptable values from which to select and (2) elements that had to be free text.

The design phase would be documented in a requirements definition and a detailed design. The requirements definition document would summarize the proposed functionality (i.e., what the application was expected to do). This summary would be the first step in translating the user's needs into a document for programmers. The detailed design was to be a specification that programmers would use to develop the system. When the system was verified as working correctly, it would be finalized. The URS project team would also identify one state agency (probably either an SHPO or a state transportation agency) that would agree to test the prototype Historic Context Development Tool.

Tools 2–5: A Historic Significance Attribute Table, an MS Access Database, a Common Electronic Format for Contexts, and ESRI's Geography Network

Prior to developing and testing the four remaining tools, the NCHRP panel recommended the convening of a focus group of IT professionals to review the four options. The purposes of this meeting would be to evaluate the utility of these tools from an IT developer and user perspective. The recommendations of the focus group would then be presented to the panel, and the panel would determine whether or not a specific prototype would be advanced to the full development and testing stage of the Phase 2 study. The focus group would consist of IT experts currently involved in IT management of historic preservation data and files.

To assist the focus group members in their deliberation, URS would develop a more detailed description of each tool that included the system architecture, the testing plan, and other details that IT professionals would need in order to make informed recommendations. These detailed descriptions (i.e., a "Business Case") would include, but would not be limited to,

- Minimum and recommended requirements for the user's hardware and operating system,

- Software type and versions to be used for development,
- Work plan outlining the general approach for development of each component,
- Testing/training plans,
- Distribution plans, and
- User support plan (if any).

In order to develop realistic hardware requirements and system architectures, URS was to contact 10 states from the original Phase 1 survey by telephone and/or e-mail. Building upon the previous Phase 1 study, a new questionnaire would be developed, which would begin by asking questions such as "If IT systems are developed, will you actually use them? If not, what would it take to induce you to use such a system or systems?" In addition, basic information about the hardware and software available to the states would be collected. States that were the most responsive to the original survey would be included in this second survey, but an attempt to balance this small sample would be made by including both states with advanced IT systems and those with very basic IT systems. The results of this second survey would be shared with the members of the focus group before their meeting.

Based on the recommendations made by the focus group, URS would then finalize the descriptions of each prototype, including the proposed system architecture, testing plan, and other details. An important component of the testing plan would be the selection of a sample of state agencies (i.e., DOTs and SHPOs) to use and review the prototypes. Costs associated with each option would also be outlined. The NCHRP panel would subsequently review the recommended IT options. The panel would also determine if these options would be advanced to the full development and testing stage during the second phase of the study.

REPORT ORGANIZATION

The following chapter describes the process used to select the IT tools for development during Phase 2. This discussion includes the results of the IT professional focus group meeting and the NCHRP panel's recommendations based on the focus group meeting. Chapter 3 discusses the design and testing of the prototypes selected by the NCHRP panel. Chapter 4 presents an implementation plan for the dissemination and use of the IT tools and the conclusions of the Phase 2 study.

CHAPTER 2

SELECTION OF INFORMATION TECHNOLOGY TOOLS FOR DEVELOPMENT

INTRODUCTION

As noted in Chapter 1, the NCHRP panel recommended developing and testing five prototype tools that would improve the process of evaluating cultural resource significance:

1. **A Historic Context Development Tool** (which later was fully developed as the HPST);
2. **A Historic Significance Attribute Table** for organizing and documenting information used to make decisions on resource significance;
3. **An MS Access database** application that standardizes resource inventory data for use in evaluating resource significance (which later was fully developed as the HPST);
4. **A common electronic format** that would replace existing historic contexts, National Register nomination forms, and Consensus of Eligibility documents (which later was fully developed as ECREL); and
5. **ESRI's Geography Network** as the mechanism for making the above IT prototypes accessible to potential users across the country.

The first prototype tool that the NCHRP panel directed URS to develop was the Historic Context Development Tool (Tool 1 above). The purpose of this tool was to provide a method by which consistent electronic versions of historic context documents could be generated. The tool was intended to be a stand-alone system that any user could install on his or her desktop computer and use without additional training. URS developed the prototype tool using MS Access and Visual Basic for Applications (VBA). The latter application is a run-time version of MS Access, so that the user does not need to have MS Access installed on his or her computer. A simple user's guide for this tool was also created.

URS was asked by the NCHRP panel to convene a meeting of IT professionals to serve as a focus group. This focus group would evaluate whether the other four prototypes (i.e., the prototypes for Tools 2–4) effectively improved decision making (and therefore whether the prototypes should be advanced to the full development phase). URS would then present the IT specialists' recommendations to the NCHRP panel. The following is a discussion of the IT specialist focus group meeting, held in Washington, D.C., on March 26, 2004, where the four remaining prototypes were evaluated.

SECOND SHPO AND STATE DOT SURVEY

In order to develop realistic hardware requirements and system architectures for Tools 2–4 to be reviewed by the IT focus group, URS contacted 10 states from the original Phase 1 survey by telephone and/or e-mail. Building upon the Phase 1 study, a new questionnaire was developed, which began by asking questions such as "If IT systems are developed, will you actually use them? If not, what would it take to induce you to use such a system or systems?" In addition, basic information about the hardware and software available to the states was collected. URS developed a "Business Case for Developing Four Prototype Computer Applications for Streamlining the Resource Evaluation Process" (Business Case) using, in part, the results of this second survey. The Business Case (Appendix A) included descriptions of tool system architecture, testing plans, and other details. The Business Case, which included the results of this second survey, was sent to the focus group prior to its meeting.

Of the 10 states contacted, only 5 agreed to participate in the second survey (Wisconsin, North Carolina, New Hampshire, New York, and Nevada). The Wisconsin SHPO was about to place its resource inventory on-line and had no problems with making decisions on resource significance. Thus, the proposed IT tools were seen as unnecessary. The New Hampshire DOT also felt that the proposed IT tools would not be useful for improving its resource significance evaluations. The North Carolina SHPO, the Nevada SHPO, and New York DOT were more positive about the use of these IT tools.

All of the states involved in this second survey noted that DOTs and SHPOs must work together if the use of any IT tool is to be successful. The states in the second survey also identified money as a key issue, asking the question "Who would pay for the development and maintenance of these tools?" These agencies all have budget difficulties.

When queried about their databases (the majority of which were new), the states said they mostly used MS Access, with some moving to more robust programs, such as Oracle. If they had GIS, they all used ESRI products.

The following is a summary of the states' opinions on the proposed IT solutions:

- **A Historic Significance Attribute Table.** The states had mixed responses to this tool. One state noted that

since significance decision making is subjective, this tool would not be useful.

- **An MS Access database.** Most of the states already have databases in place. States were not really interested in making changes to their existing databases or creating a new one.
- **A Common Electronic Format.** The states were very positive about this tool. All noted that it would be useful to have electronic access to historic contexts within the states and from other states.
- **ESRI's Geography Network.** The states had no comments on this option, as they were not familiar with the network.

IT FOCUS GROUP MEETING

The IT focus group meeting was held at the offices of the National Academies in Washington, D.C., on March 26, 2003. The IT specialists and users attending the meeting included the following:

- Mr. John Byrne, National Register Database Manager, National Park Service;
- Dr. Charles Hall, State Terrestrial Archaeologist, Maryland Historical Trust (SHPO);
- Dr. Elizabeth Hobbs, GIS Technical Lead, Minnesota Department of Transportation;
- Mr. Eric Ingbar, Director of Research, Gnomon, Inc.; and
- Ms. Fennelle Miller, King County DOT—Road Services, King County, Washington.

Kevin Neimond of ESRI briefly attended the meeting to present information on the Geography Network.

The following sections summarize the group's discussion of each of the four tools. The group stressed that regardless of which IT options are advanced to the next phase of the study, it was important to always consider the true life cycle costs of implementing any IT system. Also, it is critical to consider the elements used by agencies and consultants to evaluate resources and to build prototypes that include these elements. If spatial data are used, for example, then spatial data need to be included and accessible through these tools.

A Historic Significance Attribute Table

When the members of the focus group first saw the name of this tool and its description, they had an immediate negative reaction. The tool was seen as a mechanical, inflexible, quantifiable method to make what is basically a subjective decision. However, after the URS team described this tool in more detail, the focus group members realized that this was not the case. This tool is not really a simple table for organizing information to calculate a "significance score." It is more of a decision-making application that would potentially

contain several tables, each one a tool to make explicit the process of deciding what is and is not eligible for listing in the National Register. The tool is a format for capturing the subjective decisions on resource significance. The focus group recommended referring to this tool simply as a "decision aid," a "preliminary screening tool," or a "tool to organize your argument."

The benefit of this tool is that it creates focused arguments on eligibility that in turn facilitate discussions and consultations among agencies. This tool may also result in the creation of a "dynamic historic context," focusing on the attributes and elements that make a resource significant. It is "dynamic" in that as the tool is used, it can build on previous significance evaluations and decisions that have been captured in an electronic format. The attributes and elements in the tool can be updated and modified based on these earlier decisions on significance.

The focus group noted that the table should capture the attributes that make a resource significant (i.e., the elements that link a resource to the theme, geographic area, and time period within which the resource is evaluated). Also, placing an X in the boxes within the table is not enough. There should be a mechanism for attaching support documentation to the table, such as photos, reports, and maps. There should also be an attachment for narratives that describe how the resource was inventoried and researched.

In terms of the table's structure, the selection of one component in the table would dictate what other components were relevant to the evaluation of the resource in question. As the group discussed the variations in the table attributes that would be required to handle all the different resource types, it became obvious that this "table" was really a set of inter-related tables with a user-friendly interface that guided the user through the evaluation process. This prototype would be an application, not just a set of tables. The application would also produce a report that could include a National Register eligibility concurrence signature line.

To develop this prototype, the focus group recommended that existing contexts be used to create the tables, using, for example, National Register forms as a start. Then, the developed tables should be tested by a sample of state DOTs and/or SHPOs using selected resource categories, such as archaeological site, historic structure, or historic district. To determine which attributes (drawn from historic contexts) should be used to populate the tables, someone from the participating state agencies should interview fellow agency staff to identify these attributes.

The success of the prototype would be measured by the time saved in using the prototype. To determine the time saved, one would first measure the time it takes for DOTs and SHPOs, as well as any consulting firms that they have hired, to produce and review evaluation reports without using the prototype. One would then compare this time with the time it takes for these same organizations to produce and review evaluation reports using the prototype.

The focus group's discussion of this prototype ended with a listing of the pros and cons of fully developing and using a Historic Significance Attribute Table. Pros included the following:

- The table would provide a more defensible National Register evaluation analysis.
- The table would result in more explicit National Register significance decision making and would expedite the review process.
- The table would generate IT-processed reports in formal and standard formats.
- The table would result in an improved and structured tool for consultation and decision making.
- The table would reduce time needed for consultation among resource agencies and consultants.
- The table would provide a standard format for reviews.
- The table may accelerate tribal reviews.
- The table would document the knowledge base of agency staff that will be leaving as a result of retirement or moving to another job.
- DOTs could use this tool to create a new resource evaluation format (replacing current types of documentation [e.g., narrative evaluation reports]) to streamline the review process. Either the DOT or a consultant would complete a form and attach supporting materials. The form would then be sent electronically to the agencies involved in the evaluation consultation process for their review and concurrence.

Cons of fully developing and using a Historic Significance Attribute Table include the following:

- The table would require CRM professionals to define the important attributes needed to develop the tables. This definition might be difficult to do.
- The table may result in the perception that the tool mechanizes the evaluation process, resulting in an inflexible system.
- The table would require more up-front time and resources to develop.

Ultimately, the focus group members recommended the full development and testing of this tool. The tool was seen as an important way to streamline and improve significance evaluations.

An MS Access Database

The focus group noted that to use the MS Access database, it was necessary to determine whether the database would be a complete inventory of resource attributes or just the minimal information needed for evaluating significance. The database would need to link resource data and significance criteria,

the latter involving time, place, and theme. The database would also need to include integrity, and it would benefit users to have information about the use of similar resources.

Having this tool would help agencies focus on collecting the right information and would give researchers and reviewers the ability to find information on similar resources. It would also lead to the development of dynamic historic contexts.

The pros identified for this option were as follows:

- The database would result in a standardization of databases.
- The database would build significance attributes into resource inventories.

The cons identified for this option were as follows:

- Most states have already completed or started building databases and have invested a lot of resources in these efforts. States seem unwilling to redo, add, or modify their existing systems.¹
- The database would require significant support.

Ultimately, the focus group had little enthusiasm for developing the prototype for this option. The primary reason for not recommending this option was the negative responses of the state DOTs and SHPOs during both the first survey and the follow-up survey conducted during Phase 2. The focus group felt that the other options were more effective mechanisms to improve significance evaluations.

A Common Electronic Format

The focus group noted that not all historic contexts are useful; therefore, it would be necessary for states participating in the testing of this tool to select their best historic contexts, making sure that the contexts explicitly deal with evaluating National Register eligibility. Also, it was recommended that existing electronic files and documents be used to facilitate tool development and testing.

The process for developing this tool would involve (1) designing the document profile (i.e., the index values [metadata] that should be collected for each document), (2) defining the acceptable index values and keyword baseline in consultation with participating states, (3) collecting and scanning the documents, and (4) having states review the resulting document library. For this tool to work, good document indexing would be necessary, as searchability would be very important. The focus group suggested the following preliminary indexing fields:

¹ The project team considered developing translation programs or data loaders that could be used to link existing databases to a new standardized database or to migrate data from existing databases to a new one. There are several issues with this approach. The primary issue is the high cost of developing custom scripts to work with each different source database and developing a customized approach for each state.

- Title,
- Author,
- Date,
- Site number (optional),
- Theme (possibly use existing state plans as a starting point),
- Time period, and
- Document type.

The group discussed the pros and cons of having this tool on a CD versus a web option. It was noted that web availability seemed to be more productive and useful than a CD, though the prototype could involve both. With web access, the trick would be to publicize the website and post information that was useful so it became a “bookmarked” site for conducting resource evaluations. The group noted that one could measure the success of a web-based tool by tracking the number of “hits” on the site. They also noted that with the web-based or CD option, one could conduct follow-up phone calls and interviews to measure the tool’s success.

The pros for this application, identified by the focus group, were as follows:

- The database would enhance use of historic context data by multiple states.
- The database would allow for regional access and use of historic contexts.
- The database would increase awareness of existing historic contexts.
- The database would provide examples for creating new historic contexts.
- The database would facilitate use of historic contexts.

Cons for this application were as follows:

- The database would require up-front time and cost to index and define keywords and to convert existing documents and files.
- The database would require classifying documents and their contents, which may result in misclassifications.
- Agencies may not use the tool, given that historic contexts are rarely used by agencies (according to the Phase I findings).

Ultimately, the focus group strongly recommended this option. The group felt this was the most useful and important of the four proposed tools.

The Geography Network

Kevin Neimond from ESRI provided the following information on the Geography Network to the focus group and URS team.

The Geography Network is an Internet site run by ESRI (www.geographynetwork.com). Participants in the network

share maps, data, and documents and publish their Internet map services through this portal. There is no charge for participants, although some labor is required each time a participant updates the site.

Users search the website by selecting a geographic region, content type (maps, documents, live data, or all), and content theme. The user can also enter a keyword. The results are displayed, as shown in Figure 1.

Users can view information about the data (i.e., metadata) or the link to the content type or theme. The participants in the network can decide how much information they want to post. At a minimum, they provide information about the types of data and documents they have and provide a contact (e-mail or phone number). They may publish their data for downloading, or if they already have a website, they can provide a link to their website.

The Geography Network includes access to data (live link or downloadable), documents (could include static maps, reports, etc.), and resources (links to other on-line services). Metadata are the key to these data, documents, and resources because they are how users search the Network. Searches are done using keywords, “bounding boxes” over geographic areas, content types, and themes. Further, the metadata have to comply with Federal Geographic Data Committee (FGDC) requirements. Applying this tool to the NCHRP study would require the definition of metadata. For non-spatial information, fields and attributes similar to those to be used in developing Tool 4 (a common electronic format for historic contexts) could serve as metadata.

In terms of the NCHRP study, there would be two options for using the Network. The first would be to simply use the Network following its current parameters. This would require no special customization. To access the Network, one would register any existing ArcIMS service (or similar Internet map



Figure 1. The Geography Network—screen showing results of records search.

server [IMS]) with the Geography Network. In using ESRI's Geography Network, one would have access to ArcExplorer Web Services. ArcExplorer is a downloadable application that provides users with additional tools to view information on the Network, along with some GIS functionality. If one does not have a web-based mapping service but wants to share information through the Network, one could post information in a data download section of the Network, set up a link to a file transfer protocol (FTP) or other mechanism, and sign up with the Network (thereby supplying the Network with metadata and other required information).

The second option would be to develop a smaller network on the same technology. Examples of such smaller networks include the Texas Geography Network, the National Geographic Map Machine, and the Bureau of Land Management's Geocommunicator. For this second option, it would be necessary to have a stakeholder to spearhead the development effort and someone who has to design the ArcExplorer component for this smaller network. This option also requires the use of ArcSDE to extract data from each information supplier. ArcSDE works with Oracle or SQL Server to manage spatial data. Both ArcSDE and Oracle (or SQL Server) are complex, expensive software packages. ESRI was interested in talking to the NCHRP project team about this second option. ESRI could work with the NCHRP team to create the small network for free and then explore distribution opportunities. The focus group was concerned, however, that this work might have unknown and large costs in the future.

The focus group asked Mr. Neimond about security issues. He said that if location information were an issue, one could make the data scale dependent, whereby points disappear when a user zooms into an area. Location data can also be scrambled. Mr. Neimond noted, however, that each entity linking to the Network has to provide its own security.

Pros for this option were as follows:

- Scanned historic contexts/reports would be available on a website.
- No additional project costs would be required to place information on the Network.
- The Network would allow the sharing of information and access to geographic data.

Cons for this option were as follows:

- The Network would force data into a geographic framework.
- There are big costs (time and resources) for developing metadata.
- The database would result in loss of identification of information suppliers.
- There are questions about security in terms of resource location data.

- There are unknown future costs associated with the use of a smaller, private network.

Ultimately, the focus group saw this option as a simple and cost-effective way to provide states access to the proposed tools. The issue of cost for developing metadata would be irrelevant because defining metadata would be part of the development of the other tools.

REVIEW OF RECOMMENDED TOOLS BY NCHRP PANEL

The results of the focus group meeting were detailed in a May 20, 2003, interim report and submitted to the NCHRP panel for review. The URS team then met with the panel to discuss the findings presented in the interim report and to develop recommendations as to which of the four tools should be advanced to full prototype development and testing. The following is a summary of results of the meeting with the NCHRP panel.

The Historic Significance Attribute Table should be called the "Historic Property Screening Tool" (HPST). The tool would be used to screen for National Register eligibility using the evaluation components of a historic context, as defined in *National Register Bulletin 15* and the *Secretary of the Interior's Standards for Historic Preservation Planning*.

The HPST would allow users to select a historic context and then the property type most appropriate to the resource being evaluated. The registration criteria for the property type (based in part on the aspects of integrity) would then be used to determine National Register eligibility.

The common electronic format for historic contexts (Tool 4) should be referred to as the "Electronic Cultural Resource Evaluation Library" (ECREL). The common electronic format would provide structure to the narrative that is usually included in historic contexts (e.g., containing descriptions of property types and the registration criteria for the property types). The panel also recommended that at least one historic context should be done from scratch using the common electronic format in ECREL as part of the prototype's validation process.

ECREL should be a web-based tool that can be picked up in Google or other web searches. Also, since some historic contexts are very large, the panel was concerned that the Portable Document Format (PDF) files containing the contexts may be too large to download. URS should evaluate this concern and may break large documents into smaller ones. The panel also noted that consultant reports containing good resource evaluations might be more important than existing historic contexts.

ECREL should include National Register multiple property documents recently scanned by the National Park Service (NPS) so that these documents can be made searchable (which is currently not the case in the NPS's database). This tool should also include any electronic files already scanned

by SHPOs and DOTs. Paper documents that are to be scanned should contain valuable contextual information.

The panel recommended dropping the Geography Network as a tool for this study. There was a consensus among the panel members that the NPS should be responsible for distributing this type of information on the Internet. This belief was also the consensus of the Phase 1 survey respondents.

In summary, the panel recommended that only two final tools be advanced to the full prototype development and testing phase: the HPST (which combines Tools 1 and 3) and ECREL (Tool 4). The following chapter details the design and testing of these two final tools.

CHAPTER 3

DESIGN AND TESTING OF PROTOTYPES

INTRODUCTION

As noted in Chapter 2, the focus group and the NCHRP panel recommended advancing the development of two prototypes: the HPST and ECREL. In order to finish the design of the prototypes, it was important to understand the ways in which the prototypes might be used within the existing resource evaluation process. The Business Case document (Appendix A), originally developed for the focus group, provided background information on this process. The process that CRM professionals normally use (or should be using, based on the *Secretary of the Interior's Standards for Historic Preservation Planning* and National Register guidance) was analyzed in the Business Case. The goal of the two prototypes is to help CRM professionals determine whether or not a property is eligible for listing in the National Register. By focusing on how the two tools might be used to streamline and improve the existing evaluation process, the design team was more likely to create usable products.

Table 2 describes the current process and shows how the two prototypes might be used to facilitate and improve the evaluation process. It is important to note that no attempt was made to re-engineer or improve the current business process. The reports created from the HPST are not intended to replace National Register nomination forms. The HPST reports are to be used to communicate the results of an evaluation among consultants, DOTs, SHPOs, and other Section 106 consulting parties.

OVERVIEW OF DESIGN AND TESTING PROCESS

The general approach used to create the two prototypes was design, develop, verify, and validate. The steps for each are listed below.

Design

1. Identify a state that will participate in the design process. Work with URS CRM professionals, IT professionals, and a state CRM professional to design each prototype.
2. Identify the state(s) that will evaluate the prototype, and secure their agreement to participate.

3. Develop the design specifications, expanding the basic requirements collected at focus group and NCHRP panel meetings.

Develop

4. Develop the evaluation criteria and test plans (i.e., the surveys or other instruments that will be used to evaluate the prototype).
5. Develop the prototype, and test the prototype using URS team members (i.e., URS and SRI Foundation personnel).

Verify

6. Develop a draft user guide, and have the state CRM professional from the design team test the system (i.e., acceptance testing). When the CRM professionals (from URS and the state) have signed off on the prototype, the verification process is complete. The verification process certifies that the design requirements have been met. (A verification and validation plan was developed as part of the design process [see Appendix B].)

Validate

7. Deliver the final products to the test state(s), providing an evaluation form.
8. Have the test states evaluate the prototype and send their responses back to URS.

The specifics of how each step was executed for each of the prototypes are described below. During the design and validation stages, it was difficult to obtain the hoped for level of state involvement. Several focus group members provided some input into the ECREL design process, but the HPST design was completed only with URS staff. In large part, this occurred because ECREL is web based, allowing the design team to display interim products over the web for review. The HPST is a desktop system and requires that the designers be in the same place to work with the developers. In order

TABLE 2 Possible uses for the HPST and ECREL

Current Process Used by CRM Professionals	How the HPST and ECREL Can Help
A property (site, building, structure, object, or district) is to be evaluated for National Register (NR) eligibility.	Enter information about the property in the HPST. Information focuses on attributes that are relevant to determining eligibility.
Find a historic context that contains predefined property types that best represent the resource to be evaluated. Contexts should have predefined property types that have already been linked to the National Register criteria. For example, property type X represents a significant property under NR criterion D.	<ol style="list-style-type: none"> 1. Look for a relevant historic context in the HPST. 2. Use ECREL to search for relevant historic contexts if not found in the HPST.
If one cannot find a relevant historic context, a context would need to be developed.	<ol style="list-style-type: none"> 1. Use ECREL to search for similar contexts that could be used as a model for creating a new context or for relevant material that might be incorporated in the new context. 2. Use the HPST to develop a new historic context, storing key components in the database. Using the HPST ensures that contexts are being used in a consistent manner and that all necessary elements are included.
Compare the resource to the property types included in the historic context and ask the following question: <i>Does the resource meet the required criteria to be considered a representation of this property type?</i>	<ol style="list-style-type: none"> 1. Use the Criteria Evaluation form in the HPST to record decisions about the NR criteria under which the property is eligible. 2. Use the Integrity Evaluation wizard in the HPST to record decisions about the property's integrity (i.e., using the requirements of the National Register's seven aspects of integrity). One uses the Criteria Evaluation and Integrity Evaluation functions to document the process and the reasons for making a determination of National Register eligibility.
If the answer to the above question is YES, you have a property that is eligible for listing in the National Register of Historic Places.	<ol style="list-style-type: none"> 1. Use the HPST to print an Evaluation Summary report as part of the documentation for the evaluation. 2. Use the HPST to print a new historic context report and submit to ECREL for inclusion in the library.

to keep the project moving forward, URS relied solely on in-house CRM professionals for the initial design and verification stages of the HPST.

ECREL

Design

The basic requirements for ECREL were defined by the focus group, and additional requirements were added by the NCHRP panel. The index fields, valid values, other functional requirements, and business rules had to be defined. The software and process for converting and loading documents also had to be selected.

The URS design team developed a complete list of requirements and technical specifications. The ability to search document contents for a word or phrase was determined to be the most critical element of this application. Most of the source documents existed only in hard copy and needed to be scanned into a searchable format. Moreover, many documents that had already been scanned existed only in image format (i.e., they are not full-text searchable). Therefore, the design team had to (1) develop a method to convert all documents into a searchable format and (2) select an implementing technology that supported full-text searching.

To accomplish the above two tasks, URS chose to scan the documents into PDF searchable-image compact format. This method retains the original look of the document, but reduces the electronic size as much as possible for faster response

times on a network. This approach was tested by scanning several paper documents and rescanning several documents that existed in PDF image-only format. The process chosen was to first scan the hard-copy documents to a Tagged Image File Format (TIFF) and then rescan the TIFF to PDF.

A cover sheet was created to capture metadata² for each document. The cover sheet is designed to be read by the capture software when the document is scanned; the values entered in each box on the sheet correspond to a field in the database. The capture software reads the value and writes it into the database field. A quality control step allows the operator to review the data entry and make corrections if needed. For hard-copy scanning, the cover sheet is printed, is placed on top of the document, and is the first page scanned into the system. The cover sheet is not used for electronic documents; instead, the metadata on these documents are entered by the operator.

As noted in Chapter 2, ECREL is to be a web-based system. URS used Cold Fusion to develop the web pages because Cold Fusion includes a license for the Verity search engine. Verity is one of the more widely used search engines and therefore allows evaluators and testers easy access to the website containing ECREL.

All ECREL design artifacts (i.e., elements and documents) are included in Appendix C. The artifacts include the complete requirements list (Appendix C.1) and technical specifications (Appendix C.2), which include use cases and architecture (Appendix C.2.1), entity-relationship diagram (ERD) (C.2.2), data dictionary (C.2.3), and the cover sheets used for document scanning (C.2.4).

Develop

Development of the ECREL prototype consisted of four components:

- Development of the web pages and database;
- Collection, scanning, and indexing of the documents;
- Loading of the documents into the database and running of the indexer; and
- Development of on-line help files.

The database was developed using SQL Server 2000 and the web pages using Cold Fusion v.6 and HTML.

Documents were collected in several different ways. The NPS has scanned multiple property submission documents and posted them on its National Register website. Twenty-three of these PDF image files were downloaded, rescanned into a searchable format, and loaded onto the ECREL site. In

addition, some states have begun to post historic contexts, National Register nominations, and similar documents in PDF format on the Internet. Some of these documents were also downloaded and rescanned. Most of the documents, however, were collected in hard-copy format from SHPOs in Vermont, New Hampshire, Minnesota, and New Mexico. A project team member spent 1 to 2 days onsite at each office, copying documents identified by the SHPO staff. With some guidance from SHPO staff, the cover sheets for each document were completed. The paper files were then shipped to URS's Raleigh-Durham office for scanning. A complete list of the documents included in the prototype (and the document sources) are provided in Appendix C.3.

After the documents were scanned, the metadata values were written to the ECREL Structured Query Language (SQL) Server database and documents were indexed for full-text searching by Verity. New documents had to be loaded manually to the prototype system, and Verity re-indexed the entire document.

The final step before testing began was to develop an on-line help file and evaluation forms. RoboHelp was used to create the ECREL user's guide (Appendix C.4). The ECREL evaluation form (Appendix C.5) and test procedures (Appendix C.6) were then posted on the website.

Verify and Validate

The initial (verification) testing was completed by members of the design team, and the primary focus was on verifying that all requirements had been met and that the evaluation form was designed to capture information that could be used to validate the prototype. The testers' comments were incorporated into the final ECREL prototype.

To test ECREL, URS solicited members of the American Cultural Resource Association (ACRA) and the National Conference of State Historic Preservation Officers (NCSHPO). ACRA is a national professional association of CRM professionals and includes over 138 member firms. These firms provide historic preservation, archaeological, historic architectural, anthropological, and landscape architectural services. A request to test ECREL was posted on ACRA's "Members Only" section of the association's website. The NCSHPO acts as a communications vehicle among SHPOs and their staffs and represents most SHPOs in developing national agreements and protocols with federal agencies and national preservation organizations. The request to test ECREL was posted on the NCSHPO's listserv.

The original requests to ACRA and the NCSHPO were sent on December 1, 2003, and the deadline for sending in evaluations was January 30, 2004. Because of the low number of responses received, the deadline was extended to February 28, 2004, and a reminder was sent to the NCSHPO and ACRA members. The URS project team also presented a poster on the two prototypes at the TRB 2004 Annual Meeting. During the

² "Metadata" (which is literally "data about data") within ECREL consist of a type of index field. The index values are defined by the user and manually entered into the database. These values include author, title, areas of significance, etc. To prepare the document for full-text searching, an indexer is run to create files of every unique word in the document.

poster session, the team passed out reduced-sized copies of the poster as well as copies of the evaluation form and encouraged conference participants to provide an evaluation of ECREL and the HPST. In addition, an opportunity to test ECREL and the HPST and to complete a short evaluation form was provided to participants at a historic preservation and transportation working conference held in Santa Fe, New Mexico, in late February 2004. The results of these evaluations are discussed in a later section of this chapter.

HPST

Design

The URS development team worked with URS CRM professionals to complete the requirements list for the HPST (Appendix D.1) and develop the detailed design. The HPST design was driven by National Register guidance for evaluating National Register eligibility. In order to complete a resource evaluation, the system must store data about properties and key historic context elements (e.g., theme, time period, and geographic limits, property types, and appropriate National Register eligibility criteria and integrity requirements).

Existing historic contexts generally include a lot of descriptive text. Whether or not such long narratives are really necessary for creating a viable historic context will not be examined here. While these types of narratives may be relevant to some historic context creators and users, such extensive descriptive text is not strictly needed in the ECREL database. Entering large amounts of text in a database field is not user-friendly, and formatting (fonts, bolding, italics, etc.) is not supported. Nevertheless, several methods for including text were built into the HPST design. A historic context creator could type the narrative directly into an MS Word file that would be saved and linked to the database. Alternatively, the context creator could link an existing file in any format (PDF, for example) to the database. The context creator might also leave this section of the HPST blank. In order to use the HPST evaluation functions, however, certain key components (i.e., text) are required for the historic context. These are

- A historic context,
- A description of the property to be evaluated,
- National Register evaluation criteria (i.e., A, B, C, and/or D) to be applied to the property (as stipulated in the associated historic context), and
- The integrity of the property (again, as required by the associated historic context) (see the Property Types form in Section 6.1.1 of the HPST User Guide, Appendix D.4).

The CRM specialists on the design team emphasized the need to make the interface as intuitive as possible. Therefore, a familiar “switchboard” listing all program components is displayed when the system opens; from there, the user may select from the four components listed above. When a com-

ponent is selected, a form or set of forms is displayed. If more than one form is used within a module, tabs are used to facilitate navigation. The general layout, functions, and navigation for each form was designed in an MS Excel spreadsheet and reviewed by CRM staff before development began.

MS Access was selected as the platform because the final application can be compiled and distributed as a “run-time” program. Therefore, end users do not need a copy of MS Access in order to use the prototype. All HPST technical specifications are in Appendix D.2, including use cases (D.2.1), architecture (D.2.2), entity-relationship diagram (D.2.3), and data dictionary (D.2.4). The HPST would be placed onto a CD for distribution and testing. The CD would also provide the user guidance on installing the HPST onto their computers.

Develop

When the design was approved, the URS program developer began working on the prototype. The tables and fields (i.e., columns) in each table were developed in MS Access. The data entry forms were developed in Visual Basic for Applications (VBA).

The evaluation version of the HPST prototype included several example historic contexts and properties. Appendix D.3 includes sample reports from the HPST showing some of the data entered as examples. A user’s guide (Appendix D.4) and evaluation form (Appendix D.5) were also developed and included on the installation CD sent to prospective testers.

Verify and Validate

The HPST was verified by a URS archaeologist and architectural historian. Each was asked to enter a property and a historic context to the tool, and to evaluate the property. Each was also asked to verify that the requested functionality was included and to provide comments on bugs or usage issues. Finally, each was asked to complete the evaluation survey form. Comments were addressed before the final HPST prototype installation CD was created. The contexts and properties that the archaeologist and architectural historian entered were included in the version of the HPST that was distributed to outside validation testers.

Potential outside validation testers were identified in several ways. First, the availability of the HPST was advertised in the e-mail letter sent to ECREL testers. Anyone interested in testing the HPST was asked to contact one of the research team members. Requests were received from two people as a result of this notification; however, none of them returned an evaluation form after receiving the HPST CD.

An additional 30 HPST CDs were distributed at URS’s poster session at the TRB 2004 Annual Meeting. A few people spent some time working with the HPST during the poster session. None of these people, however, submitted an

evaluation form. Some verbal comments were received. Generally, people felt that some sort of tool like the HPST was needed, but it would be difficult to get SHPOs to use this type of tool. Some state employees believed that they already had tools that provide the same or a similar function.

As described above, the HPST was also tested by some of the participants at the 2004 Santa Fe historic preservation and transportation working conference. A few of the participants requested a CD and, upon returning to their offices, asked their staff to evaluate the tool.

EVALUATION RESULTS

Appendix E contains the complete set of received evaluations, a list of individuals who provided comments on either tool, the responses from the evaluation forms, and the Santa Fe conference participants' responses. A summary of the evaluation results is presented below.

Evaluation Forms

Relatively few people completed the evaluation forms. URS received nine evaluations of ECREL and two of the HPST (and the latter were both completed by URS CRM staff). Responses were received from the following states: Arkansas, Illinois, Minnesota, Montana, Nevada, North Carolina, Ohio, Washington, and Wisconsin. In general, the respondents were enthusiastic about ECREL and thought the HPST had merit. All respondents felt ECREL should be completed (i.e., more documents should be added) and maintained on a permanent basis. While other websites contain cultural resource documents, ECREL is unique in that it facilitates the search for a wide variety of documents in one place, presents document metadata in a useful format, and provides several different search options. Most reviewers did not think that ECREL would increase the number of historic contexts produced; however, they did feel that this tool would result in better historic contexts when they were created. The HPST's future was more problematic. The testers felt that the idea had merit, but wondered if anyone would use it unless forced. Implementing the HPST will require changes to existing processes, maybe even replacement of current procedures and tools. ECREL, on the other hand, augments existing procedures and tools.

Poster Presentation at the 2004 TRB Annual Meeting

As noted previously, a large, colored poster that described the two prototype IT tools was available for viewing at the TRB Annual Meeting held in Washington, D.C., in January 2004. Conference attendees were able to use the HPST on lap-

tops at the poster session and discuss the project concept with project personnel. URS distributed 30 copies of the HPST CDs as well as handouts with the ECREL website URL information. No evaluation forms were returned as a result of this poster session. Informal comments at the session were generally positive. Most people felt that tools like these were strongly needed, but that more support (in the form of funding and training) would also be needed to get the SHPOs to use them.

Demonstration/Review of the HPST and ECREL at 2004 Santa Fe Historic Preservation and Transportation Conference

Conference attendees were given the opportunity to use both prototypes and were asked to complete a very abbreviated evaluation form. Nine people completed the forms. Reviewers represented the following states or tribal groups: Missouri, New Mexico, New York, Texas, and White Mountain Apache Tribe. In general, the response was that the tools "showed promise" and could streamline the review process. The caveat was that getting people to use them would be a challenge.

After the conference, several individuals worked very hard to try to get additional feedback from their respective staffs. The following highlights some of the key observations made by these staff.

Minnesota DOT

Beth Hobbs (an IT focus group member) worked with two other CRM staff members in her office to review the HPST. While they did not complete the evaluation form, they did provide written comments on potential enhancements of the tool and stated that they were "very excited about its possibilities."

California Department of Transportation (Caltrans)

Margaret Buss (NCHRP panel member) worked with URS to present ECREL and the HPST to members of her staff. After they had reviewed and commented on the prototypes, she invited SHPO staff to her office for a similar presentation and discussion. Again the response was largely positive. Ms Buss noted that

In the group session [of Caltrans staff] . . . most of the comments on ECREL revolved around concerns for 1) security of confidential information, and, more important to the group, 2) concern about ensuring the context statements were vetted by SHPOs, that is, that they were considered good, sound research and represented an official view of some kind. The tool itself was easy enough to use; there were no substantive comments about ways to improve the tool itself, only concern about who would be arbiter/manager/approver of the

contexts posted. Aside from that concern, everyone was enthusiastic about the concept of being able to share contexts and research.

Regarding the HPST, Buss noted that Caltrans management “is reluctant to impose it if our SHPO doesn’t require it . . .” However, Caltrans is already developing electronic tools and may be able to integrate the HPST into these tools, so Caltrans could begin to compile contexts in the HPST format.

In addition, Buss said that two Caltrans staff

demonstrated both ECREL and HPST to about seven SHPO staff members plus one senior archaeologist at State Parks. They all thought both were great ideas but had no specific feedback on how it worked. The SHPO staff were going to

send HPST to a couple of CLGs [Certified Local Governments] who were sophisticated on computers to see if they could use it in building their local surveys, and the State Parks archaeologist was very enthusiastic about using it for their current inventory effort within all the State Parks. I contacted all of them after a couple of weeks to see if they had tried it and had feedback. The response from SHPO was that they hadn’t played around with it and probably wouldn’t do much with it unless directed by their bosses, who didn’t attend the presentation, and the State Parks staff archaeologist didn’t return my call.

The general consensus from these reviewers was that both prototypes are worth pursuing, but, without specific direction from their managers, SHPO and DOT staffs are not going to invest any time to adequately test these prototypes.

CHAPTER 4

IMPLEMENTATION PLAN AND CONCLUSIONS

IMPLEMENTATION PLAN

In order to implement ECREL and/or the HPST, it is important to examine the impediments to the use of these two prototypes. If these impediments are not addressed, implementation of these tools will not advance beyond this second phase of the NCHRP study.

Impediments to Use of Tools

The impediments to the use of ECREL are not as great as those for the HPST. ECREL does not require new types of documentation or processes, as is necessary for the use of the HPST. A tool such as ECREL does not add a new step in the evaluation process, but enhances the current process employed by SHPOs, THPOs, DOTs, and their consultants. ECREL provides easy access to documentation that can assist decision making. Nevertheless, the following questions must be addressed prior to implementing ECREL: Who would be responsible for maintaining and updating this system? How will the system be funded? Where will it be housed? How will new documents be added to the database, and who will do this?

Implementing the HPST, on the other hand, requires more dramatic changes to existing procedures and processes. Use of the HPST requires that one or more organizations populate the tool with data (i.e., historic contexts). This will take time and effort away from other tasks currently performed within SHPOs, THPOs, and/or DOT offices. In addition, agency staff will need to be trained in the use of this tool. If consultants are the ones to place historic contexts into this tool, they will need to be given time, money, and training to do so.

As found in the Phase 1 survey, historic context development and use has not been a high priority among agencies. The focus is on project-specific activities and reviews, not on the development of planning and decision-making tools such as the HPST. The use of a tool like the HPST requires a commitment within agencies to spend the time and resources necessary to put the tool into place, understanding that the “pay-off” comes later during future project efforts. Also, as evident from the review comments on the HPST, state DOTs may not

apply these tools unless the SHPO requires their use. Changing such attitudes requires a cultural shift within DOTs and the FHWA whereby these agencies recognize that (1) under existing historic preservation laws and regulations, they, not the SHPO, define how resources are to be identified and evaluated and (2) such tools would enhance and streamline the decision-making process when these tools consult with the SHPO on National Register eligibility.

The use of the HPST also requires the replacement of current reporting and documentation efforts. If this replacement does not occur, the HPST will never be used. This tool cannot be simply added on to existing practices; it needs to replace existing processes and documentation. SHPO, THPO, and DOT staffs do not need an additional form to complete or process to implement. Agency staff, therefore, should be required to develop new in-house procedures and processes to accommodate this tool. There should be new expectations on the types and level of documentation that are developed in support of National Register evaluations.

The HPST should not simply be an alternative reporting format. As discussed above, it is an electronic, standardized, and dynamic decision-making tool. Current reporting formats, for the most part, do not have these characteristics, nor do they provide a readily accessible database on how decisions are made. With the HPST, decisions can be easily built upon during future resource evaluations and historic preservation planning efforts.

Senior agency management must provide support for any of these changes to occur. Senior managers must allow their staff the time and provide them the resources to create the databases needed to populate the HPST. If consultants are the ones populating and using the HPST (along with DOTs and SHPOs), agency managers will need to approve the expenditure of funds to contract with the private sector to use this tool.

Given these impediments, the following actions are necessary in order to successfully implement the HPST and ECREL:

- Identifying and procuring funding sources;
- Locating an agency or organization to maintain and update the tools, particularly ECREL;
- Improving, through training, practitioners’ understanding of the utility of historic contexts;

- Obtaining support of upper agency management in the use of these tools;
- Shifting some agency activities away from project-specific actions to preproject planning efforts;
- Replacing existing reporting formats; and
- Training staff and consultants in the use of the new formats.

These actions are expanded upon below.

Implementing ECREL and the HPST

Based on the evaluations of ECREL and the HPST, URS recommends several options for implementing one or both of these tools. Table 1 (on page 3) shows the pros and cons of each option.

ECREL

Although ECREL must be hosted by an application service provider (ASP) (which could be a commercial vendor) or by a government agency, URS recommends two options for implementing ECREL:

- **ECREL Option 1: Voluntary Implementation.** This option involves (1) locating a host for the ECREL database and website, (2) developing a document submittal protocol in consultation with the primary parties involved in the Section 106–related National Register evaluation process, (3) developing a document loading procedure, (4) advertising the establishment of ECREL, and (5) having state DOTs, SHPOs, THPOs, and consultants voluntarily send in electronic versions of documents to the organization maintaining ECREL.

To implement this option, funding is needed to pay for an entity to host ECREL and to develop a document submittal protocol and a document loading procedure. Also, given the Phase 1 findings, some type of training on the importance of using historic contexts for making decisions on resource significance is highly recommended. Current use of historic contexts is infrequent (with the exception of a few states), and new agency and consultant staff most likely have no background in their use. Training will likely increase the use of ECREL and historic contexts in general. Therefore, a mechanism for this training needs to be identified. One option is to include such training in the National Highway Institute’s soon-to-be-developed historic preservation training course.

- **ECREL Option 2: National Implementation.** This option is the same as Option 1, with the addition of collecting hard copies of documents from SHPOs and DOTs around the country. This step is recommended because

the majority of documents within states are in a paper, not electronic, format.

Funds would be needed for SHPOs and DOT staff to participate in this effort and to pay for the collection and scanning of documents. The estimated cost of completing this option is about \$200,000. This includes the cost of sending personnel to each state (other than those that participated in the prototype) for 2–3 days to work with CRM staff to collect, copy, and fill out the cover sheet for the documents to be scanned. The copied documents would be sent to a central location for scanning. (The actual cost to scan, index, and convert documents to searchable PDFs is estimated at \$0.075/page for more than 10,000 pages and \$0.10/page for less than 10,000 pages.)

Funding is clearly a key impediment to implementing either of these two options. Engaging institutional and individual leaders is therefore critical in obtaining funding for the implementation of this tool. These institutional leaders include the FHWA, AASHTO, the NCSHPO, and the National Association of Tribal Historic Preservation Officers (NATHPO). Key individuals within these organizations who would need to be involved in this effort include the FHWA’s historic preservation officer, the executive director of the NCSHPO, the president of NATHPO, the director of AASHTO’s environmental programs, and the chair of AASHTO’s Standing Committee on the Environment.

Possible funding sources include transportation enhancement funds or the FHWA’s stewardship and streamlining program funds. Sources that may be more readily available are project-specific funds. Some state DOTs direct project funds toward the development of planning tools that have a direct link to project needs, so using some of these funds for a planning tool such as ECREL would not be an unusual step. For example, funds for the treatment of a category of historic property within a project area might be directed toward the collection of historic contexts nationwide that relate to this property type, and the contexts would be placed within ECREL. Some project funding could also be used to support the maintenance of ECREL. Several DOTs already assist in updating and maintaining statewide GIS databases. ECREL could be an added component of these databases.

Another source of funding is other federal agencies. The development of ECREL will benefit all other agencies that make determinations of National Register eligibility in the context of the Section 106 process. These agencies include the Federal Aviation Administration (FAA), U.S. Army Corps of Engineers (USACE), the Federal Emergency Management Administration (FEMA), and several land-managing agencies such as the Bureau of Land Management (BLM), the NPS, and the National Forest Service (NFS). Each of these agencies has a stake in the development and implementation of a tool such as ECREL. The joint funding of historic preservation planning tools is not new to these agencies. For exam-

ple, many of these agencies jointly fund the development and maintenance of cultural resource inventory databases (including databases using GIS) housed within SHPOs.

HPST

URS recommends two options for implementing the HPST:

- **HPST Option 1: Voluntary Implementation.** This option involves (1) advertising the tool nationally and highlighting the utility of this tool, (2) sending HPST CDs to all DOTs and SHPOs and making the CD available to CRM consultants, and (3) making the HPST source code available on CD to anyone who wants to use all or part of the tool in his or her own system.

NCHRP could distribute these CDs in the same manner in which NCHRP reports are currently distributed nationwide (e.g., on-line ordering). The availability of these CDs could be advertised at national historic preservation and transportation conferences.

- **HPST Option 2: Pilot Program.** This program involves the participation of a small number of states (involving both the SHPO and DOT of each state) to fully implement the HPST. States would input existing historic contexts in the HPST and use the tool in actual project-related National Register evaluations. If possible, this option would also include the creation of a new historic context from scratch using the HPST. It is also recommended that ECREL be integrated into this pilot program, as the two tools can be used together (e.g., searching ECREL for appropriate historic contexts and then placing the contexts into the HPST program).

Funding is needed to pay for an organization to direct and implement the program and to fund SHPO and DOT staff participation in the pilot program. The latter task is important because SHPO and DOT staffs are having great difficulty meeting their current agency responsibilities. Adding another responsibility would only be possible through the funding of additional staff. States will also need programming support and training for the duration of the pilot program. The results of the pilot program would be shared and advertised nationwide to historic preservation and transportation professionals.

Funding approaches for this option would be similar to those discussed above for ECREL.

CONCLUSIONS

As noted in the previous chapter, the responses to ECREL were uniformly positive. Most reviewers felt that ECREL would benefit all historic preservation professionals. Though ECREL would not in itself result in an increase in the development of historic contexts, reviewers noted that the tool

would at least result in the production of more useful historic contexts when these documents were created.

The HPST is more problematic. It is clear that it will not be used without direction and approval from upper management within agencies. The HPST use will also require some changes in the existing evaluation processes used by most states. In addition, all reviewers made it clear that they did not want to do more work. Therefore, unless agencies were willing to replace one or more existing evaluation and reporting requirements with the HPST, historic preservation professionals are not likely to use this tool.

Most reviewers, nevertheless, felt that the HPST met the intended objectives, but that more work would be required to refine its features and integrate it into current SHPO and DOT processes. Unlike ECREL, which can and should be implemented centrally, the HPST would have to be implemented individually within each SHPO, DOT, and consultant offices, with specific requirements for each organization. For example, many reviewers wanted the HPST linked to their GIS; however, since each GIS may be organized differently, the HPST would have to be customized for each customer.

The HPST and ECREL were not created to increase the workload of state and federal agency staff. Rather, these tools should provide consistency—in terms of the format, presentation, and content of evaluation documents—that is sorely lacking in current documentation. These tools will also decrease development and review time for eligibility evaluations as the documentation levels needed for effective decision making are made explicit and readily accessible, eliminating extraneous materials often inserted into current documents. The HPST, in particular, would replace currently used evaluation report formats, forms, and correspondence, and the majority of decision-making efforts would be documented and captured in a single format. Also, historic contexts that are developed in the HPST will be no more time consuming (and may be less time consuming) to create than the current method of compiling information using word processing software. The use of the HPST for context development also increases the likelihood that the resulting historic context will actually contain the information and guidance needed to evaluate National Register eligibility.

If development and testing of these IT tools is to continue, state DOTs, SHPOs, organizations such as TRB's Historic and Archaeological Preservation in Transportation Committee (ADC50), and AASHTO will hopefully provide leadership to secure funding to support additional prototype testing and refinement. As the February 2004 Santa Fe, New Mexico, "Working Conference on Historic Preservation and Transportation: Enhancing and Streamlining Compliance with Section 106 of the National Historic Preservation Act" illustrated, federal and state agencies clearly want to move away from a project-by-project approach to embrace new processes that emphasize examination of issues at a preplanning phase of project development. Tools such as ECREL and the HPST would greatly assist in supporting preproject planning efforts.

As this study concluded, these tools have been shown to function extremely well and seem to represent two of the most innovative historic property-based IT tools yet developed to achieve environmental streamlining.

The beneficiaries of this paradigm shift—primarily state DOTs and SHPOs—are in the best position to encourage federal agencies such as the FHWA or nonfederal organizations such as AASHTO or the NCHRP to consider funding a pilot implementation program for continued prototype testing and refinement. Selected state DOTs and SHPOs should consider participating in the prototype testing effort. (According to comments received in this study, those states might include, but not be limited to, California, Florida, Maryland, Minnesota, Rhode Island, Texas, Vermont, and Washington.)

The authors of this report have come to realize that impediments that prevent these products from becoming useful tools are institutional, not technological, and will take institu-

tional leadership to implement. The authors also believe that a pilot implementation program will show the many benefits of these tools and should be seriously considered for future national implementation. Long-term implementation has the greatest potential for success through adoption of a national initiative, such as the FHWA's environmental streamlining program. Encouraging agencies to use standardized tools such as ECREL and the HPST would most successfully be achieved through a combination of requirements and financial incentives implemented through a national MOU. (This MOU might be modeled on the MOU signed on December 14, 2001, by 23 state agencies in support of the Efficient Transportation Decision Making system.) Implementation and ongoing system maintenance, as well as provision for staff training at state DOT and SHPO offices, could be supported through multiyear cost-sharing agreements among multiple federal agencies and states.

APPENDIX C.4

ECREL USER'S GUIDE

Using the ECREL Search Features

Welcome to the Electronic Cultural Resource Evaluation Library (ECREL) Search Tool. This tool allows you to search for electronic copies of a wide variety of documents used for evaluating the National Register eligibility of properties.

There are three types of searches you may perform:

1. **Content Search** – search for a word or phrase contained in the document.
2. **Metadata Search** – search by title, author, publication date, area of significance (from *National Register Bulletin 16A*), repository, geographic location, and/or keyword.
3. **Combined Search** – use the search fields alone or in combination. For example, you may search by author, by author and area of significance (AOS), or by author, AOS, and a word or phrase.

The screenshot displays the ECREL Search interface within a web browser window. The browser title is "ECREL Search - Washington Redskins". The address bar shows "http://www2.nps.gov/". The page header includes "TRANSPORTATION RESEARCH BOARD" and "THE NATIONAL ACADEMIES". The main heading is "Electronic Cultural Resource Evaluation Library (ECREL) Search Project 8-40(2) Prototype Evaluation Site". Below the heading are "Search" and "Clear" buttons. The interface is divided into three main search sections:

- Search documents by entering a word or phrase:** Includes a text input field for "Word or phrase" and a link "Need help with search syntax?".
- Search documents by category/metadata:** Includes fields for "Title", "Author", "Pub Date" (with a dropdown menu set to "equals" and a date input field), "Area of Significance" (with a dropdown menu), "Repository", "Region" (with a dropdown menu and a "View Map" link), "State" (with a dropdown menu), "County" (with a dropdown menu), and "City" (with a text input field).
- Document Type:** Includes a dropdown menu and a "View keyword list" link.

At the bottom of the search area, there are "Search" and "Clear" buttons.

Click on a search type above or in the Table of Contents to learn more about that type.

Content Search

Content searching uses the Verity search engine to find a word or phrase in a published document. For example, enter the word *fishing* in the context search box and click the search button.

A list of all documents containing the word *fishing* will be displayed. The list may include some documents that are clearly related to fishing, and others that may not be so obviously related.

If the phrase *fishing industry* is entered, a much shorter list of results is returned.

The screenshot displays the search interface of the Electronic Cultural Resource Evaluation System. At the top, there are 'Search' and 'Clear' buttons. Below them, a search box contains the word 'fishing'. The results page shows '17 documents found.' with a 'Back' button. It indicates 'Now displaying records 1 to 10 of 17.' and includes a 'Next >>' link. The first result is titled 'The Culebra River Villages of Costilla Count' with an area of significance in 'Community Planning and Development, Arch'. The second result is titled 'Tarpon Springs Sponge Boats' with an area of significance in 'Commerce' and a repository URL 'http://www.nr.nps.gov/nrcover.htm'. Both results have a 'Get Metadata' link.

This type of search is commonly used for Internet searches. It is very powerful because it does not require prior categorization and allows for greater searching flexibility than metadata searching.

Combined Search

A combination of metadata and content searching can be used. For example, a content search on *Civil War* will yield all documents containing that phrase. If the *Mid Atlantic* region is also included in the search, only documents associated with that region and also containing the phrase *Civil War* will be returned.

Whenever more than one search criterion is used, the syntax is:

value1 AND value2 AND . . .

In other words, only documents that meet all the specified criteria are retrieved. In general, the more criteria specified, the fewer the results.

The screenshot displays a search interface with two search forms and two result panels. The first search form is titled "Search documents by entering a word or phrase" and has a text input field containing "Civil War" and a "Search" button. The second search form is identical but also includes a "Clear" button. Below these is a more complex search form titled "Search documents by category/metadata" with fields for Title, Author, Pub Date (with a dropdown set to "equals" and a date input field), Area of Significance (a dropdown menu), Repository, Region (a dropdown menu with "Mid Atlantic" selected and a "View Map" link), County (a dropdown menu), Document Type (a dropdown menu), and Keyword (a text input field). This form also has "Search" and "Clear" buttons. To the right, two result panels are shown. The top panel indicates "23 documents found." and "Now displaying records 1 to 10 of 23." with pagination links "1 2 3 Next >>". The bottom panel indicates "16 documents found." and "Now displaying records 1 to 10 of 16." with pagination links "1 2 Next >>".

Definitions

Title	Enter the title of document, usually the descriptive name assigned by the author.
Author	The original authors of the document.
Publication Date	Date the document was published. If the document is a Multiple Property or other National Register nomination form, it is the date the form was written.
Area of Significance	Up to five areas of significance (from <i>National Register Bulletin 16A</i>) that are associated with the properties discussed in this document.
Repository	Usually, the name of the agency that is the primary repository for the document. Some documents in ECREL were captured by downloading from websites. In this case, the Repository name is the URL for the document source.
Region	Geographic region in the United States as defined by the National Park Service.
County	If the document is associated with a particular county, the name of the county is recorded here. May be blank.
State	The state with which the document is most closely associated; if the document is not associated with a particular state, this field may be blank.
City	If the document is associated with a particular city, the name of the city is recorded here. May be blank.
Document Type	Documents are classified into one of the following document types: Historic Contents, Multiple Property Submission, National Register Nomination, and Administrative Record.
Keyword	Keywords for a document may be assigned to ensure that properties discussed in the document will be linked with specific associations, events, time periods, attributes, etc. Generally, keywords are used only if they are not already captured elsewhere (e.g., Area of Significance), or do not appear in the document content.

Metadata Search

What are metadata?

Metadata are “data about data.” In ECREL’s case, they are data about documents and include things like author and title. When documents were entered in ECREL, metadata were defined for them. You may use any one or combinations of the following metadata attributes to search for documents:

Title

Enter a document title or part of a title. If you are not sure of the title, try entering one word from the title. For example, entering ‘village’ in the title search will return “The Culebra River Villages of Costilla County Colorado” as well as “MD Suburbanization – Colonial Village.”

Author

Enter one or more names. As with title, a partial name (e.g., Brown) will work.

Publication Date

You have three search options. First enter a date — you may enter a year (e.g., 1995) or a specific date (e.g., 5/3/1995) — then select one of the following:

- EQUALS searches for documents with the exact publication date you specified;
- GREATER THAN OR EQUAL searches for documents published on or after the date specified;
- LESS THAN OR EQUAL searches for documents published before or on the date specified.

Pub Date: equals 9/27/2000 (eg. 1/1/2002)
 Area of Significance: equals greater than or equal less than or equal
 Repository:

Area of Significance (from *National Register Bulletin 16A*)

You may select one or more areas of significance. Use the scroll bar to view the entire list.

Region, State, County

You may select one value only for each of these.

City

You may type in the name of a specific city.

Area of Significance: Exploration/Settlement
 Repository: Exploration/Settlement
 Region: Health/Medicine
 County: Industry
 Document Type: Invention
 Keyword: Landscape Architecture
 Law
 Literature
 Maritime History
 Military
 Other
 Performing Arts

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Document Type

You may select one document type.

Keyword

Keywords have been assigned for some documents. View the list to see keywords currently in use, and then type one or more separated by commas in the box. (**Note:** Content searching is usually a more effective method than keyword searching.)

APPENDIX D.4

HPST USER'S GUIDE

1.0 Introduction

The Historic Property Screening Tool (HPST) prototype provides a user-friendly means to manage information about historic contexts and historic properties in a database and to record the basis for decisions about individual properties' eligibility for listing on the National Register. The tool allows users to create and edit historic contexts in a database format with links to related documents and to create and edit records for historic properties with links to maps and images. The HPST also steps the user through the decision-making process typically used when determining the National Register criteria (A, B, C or D) under which a property is eligible and then steps the user through an integrity evaluation. By using the HPST consistently, a Department of Transportation, State Historic Preservation Office, or other organization involved in the cultural resource management (CRM) field will build a database of historic properties and contexts, as well as capture the history of the decision-making process through time.

The goal of the HPST and ECREL is to help CRM professionals determine whether or not a property is eligible for listing in the National Register. The process CRM professionals normally use (or should be using based on the Secretary of the Interior's standards and guidelines and on National Register guidance) was analyzed, and the two prototype tools (the HPST and ECREL) were developed to streamline and improve the evaluation process. These tools provide a consistent, easy-to-use framework for making (and in turn justifying and defending) significance evaluations. They also allow for easy access to evaluation information and record the decision-making process.

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The table below describes the current process and describes how the two prototypes might be used to facilitate and improve the process:

The Process	Role of the Prototypes
<p>You have a property (site, building, structure, object, district, etc.) that you want to evaluate for National Register (NR) eligibility.</p>	<p>Enter information about the property in the HPST. You may structure the information about the property in a way that is meaningful to you, and that includes the property attributes that are relevant to determining eligibility.</p>
<p>Find a historic context that contains predefined property types into which your site fits best. Contexts have predefined property types that have already been linked to the NR criteria. For example, property type X represents a significant property under NR criterion D.</p>	<ol style="list-style-type: none"> 1. Look for a relevant context in the HPST. 2. Use ECREL to search for relevant historic contexts if not found in the HPST.
<p>If you cannot find a relevant historic context, develop a historic context.</p>	<ol style="list-style-type: none"> 1. Use ECREL to search for similar contexts that could be used as a model for your context or for relevant material that might be incorporated in your context. 2. Use the HPST to develop a new historic context, storing key components in the database. By using the HPST, you ensure that contexts are being used in a consistent manner and that all necessary elements are included.
<p>You compare your property to the property types included in the historic context and ask the following question: Does my property meet the required criteria to be considered a representation of this property type? These criteria include required levels of integrity that the property must exhibit (i.e., the seven aspects of integrity). If the context and the property are in the HPST, you can use the Criteria Evaluation and Integrity Evaluation functions to document the process and your reasons for making an NR evaluation.</p>	<ol style="list-style-type: none"> 1. Use the Criteria Evaluation form in the HPST to record your decisions about NR criteria under which the property is eligible. 2. Use the Integrity Evaluation wizard in the HPST to record your decisions about the property's integrity.
<p>If the answer to this question is YES, you have an NR eligible property and you know under what NR criteria it is eligible for listing in the NR.</p>	<ol style="list-style-type: none"> 1. Use the HPST to print an Evaluation Summary report as part of the documentation for your evaluation. 2. Use the HPST to print your new Historic Context report and submit to ECREL for inclusion in the library.

The reports created from the HPST are not intended to replace National Register nomination forms. The HPST reports are to be used to communicate the results of an evaluation among consultants, DOTs, SHPOs, and other Section 106 consulting parties.

The HPST and ECREL were not created to increase the work load of state and federal agency staff. Rather, these tools should provide consistency—in terms of the format, presentation, and content of evaluation documents—that is sorely lacking in current documentation. These tools will also decrease development and review time for eligibility evaluations as the documentation levels needed for effective decision making are made explicit and readily accessible, eliminating extraneous materials often inserted into current documents. Ultimately, these tools should replace currently used evaluation report formats, forms, and correspondence, as the majority of decision-making efforts are documented and captured in a single format.

Also, historic contexts that are developed in the HPST will be no more time consuming (and may be less time consuming) to create than the current method of compiling information using word processing software. The use of the HPST for context development also increases the likelihood that the resulting historic context will contain the information and guidance needed to evaluate National Register eligibility.

It should be noted, however, that the inclusion of existing contexts is more problematic. Users may not have time to enter all of the data into the HPST. Section 6.1.1 describes Using an Existing Context, a method for linking to an existing context by entering minimum information.

2.0 Objectives

This user's guide provides guidance on the use of the Historic Property Screening Tool. It is organized to guide a user through the application, introducing key concepts and providing task-specific step-by-step instructions when necessary. The manual provides sufficient information to enable a user to:

- Add/Edit a Historic Context
- Add/Edit a Property
- Perform a Criteria Evaluation
- Perform an Integrity Evaluation
- Run Reports

The typical user is assumed to be a CRM professional with a basic understanding of office applications for computers (such as MS Word). It is assumed the user is also familiar with the National Register nomination process and with the content and formats for historic contexts. The HPST developers relied on the following references as the source of the business rules guiding design of the HPST: 48 FR 44716, *Secretary of the Interior's Standards for Historic Preservation Planning* (1983); *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation* (Washington, D.C.: 1991); and Hardesty, Donald L. and Barbara J. Little, *Assessing Site Significance, A Guide for Archaeologists and Historians* (Walnut Creek: Alta Mira Press, 2000).

The evaluation process was designed primarily for buildings, but the HPST is intended to be used for any category of property. Archaeologists will find the Hardesty and Little reference invaluable for applying the National Register process to archaeological sites.

3.0 Requirements

The HPST is distributed as a run-time MS Access 2000 application. The program will run on Windows NT, Windows 2000, or Windows XP. The minimum requirement is NT 4.0 SP3.

If you have Access 2000, you may use the run-time version installation disks to install the HPST database.

Microsoft Data Access Components version 2.7 (MDAC 2.7) must be installed on the PC in order for the application to work correctly. A copy of the MDAC 2.7 installation package is included in the HPST directory. You may install it by running MDAC_TYP.EXE.

4.0 Installation

The application is delivered in an installation package and requires that the person installing the HPST have local administrator rights on the machine on which they wish to install the HPST. The file HPST.mdb can be installed on an individual's computer, or in a shared server directory. The installation package needs to be executed on every individual's computer who will be using the application, even if the file HPST.mdb will reside in a shared server directory. If the application resides on a server, then appropriate network security permissions must be granted to the users of the application on either the folder or file.

It is strongly recommended that a consistent directory structure be used with this application. By default, when the application is installed, subdirectories Maps, Images, and Narratives are created in the HPST directory. If the database is to be shared, the directories should be accessible by all users. The HPST will allow you to link documents to database records. Any format can be used, but the user who wishes to view the documents must have software on his or her machine to support the file format. For example, the map formats can be a shape file or MXD file. However, the appropriate software to view the maps must be on the user's PC. If the system is to be shared, it may be safer to store all maps as MS Word or Acrobat or other common format.

System Requirements

To use MS Access 2000 and the HPST database, you will need:

- PC with a Pentium 75-megahertz (MHz) or higher processor
 - MS Windows 95 or later operating system, or MS Windows NT Workstation operating system version 4.0 Service Pack 3 or later
 - For Windows 95 or Windows 98: 16 megabytes (MB) of RAM for the operating system, plus an additional 8 MB of RAM for Access
 - For Windows NT Workstation: 32 MB of RAM for the operating system, plus an additional 8 MB of RAM for Access
 - 170 MB of available hard-disk space for typical installation; your hard-disk usage will vary depending on configuration. Choices made during custom installation may require more or less hard-disk space.
 - CD-ROM drive
-

Installing the HPST

Insert the CD in your computer's CD drive. Click the **Start** button in the bottom left corner of your screen and select **Run** from the pop-up list.

Click the **Browse** button to browse to the location of the installation files (your CD drive) and select **setup.exe**.

Click **Open** (the file name will be inserted on the Run screen).

Click **OK**.

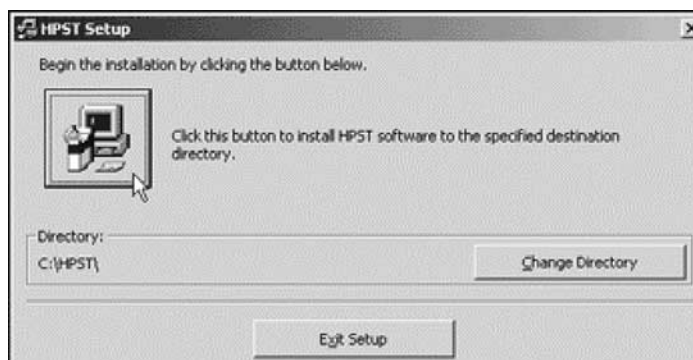
If other applications are running, a screen will appear like the one at right, and you will be given the option of closing the applications before proceeding. To close running applications, click the **OK** button.



To continue with the installation, click **Open** (the file name will be inserted on the Run screen).

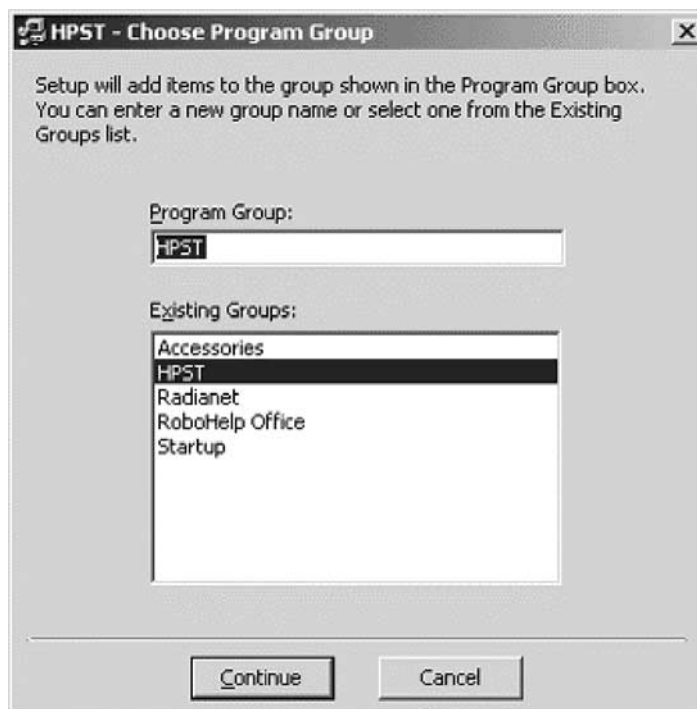
Click **OK** on the run screen to begin the installation. Click **OK** to continue.

Click the button with the computer on it to continue the installation.

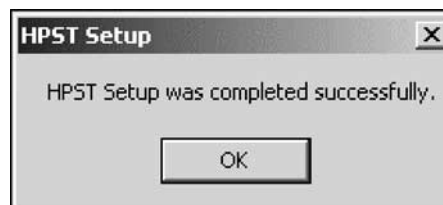


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Select the **HPST** Group and click the **Continue** button.



The installation is complete.



5.0 Interface Overview

All of the functions of the Historic Property Screening Tool are found on the Main Switchboard. The interface includes the Main and Reports switchboards.

5.1 Main Switchboard

Contexts: Opens forms to enter or edit information detailing a historic context; includes area of significance, theme, time period, context level, geographic limits, maps, references, narrative, and property types. The property types include the following information: description, registration information, requirement statements for each aspect of integrity, and research questions.

Properties: Opens forms to enter or edit information detailing a property; includes property ID, Smithsonian ID, name, category, owner, attributes, maps, photos, references, and Universal Transverse Mercator zones (UTMs). It is expected that the properties entered in this database are potentially historically significant and may be evaluated for National Register eligibility at some time in the future.

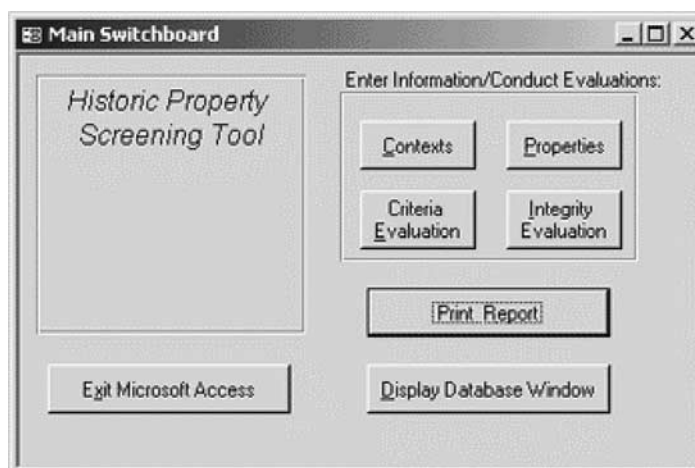
Criteria Evaluation: Opens a form to select a property and a historic context/property type and to record evaluation information to document why a property is eligible under Criterion A, B, C and/or D. **A historic context and property must be entered in the HPST before you can perform a criteria evaluation.**

Integrity Evaluation: Opens forms to select a property and historic context/property type and evaluate aspects of integrity. **A Criteria Evaluation must be entered for the selected property and historic context/property type before you can perform an integrity evaluation.**

Print Report: Opens the Reports Switchboard.

Display Database Window: Closes the Main Switchboard and opens the MS Access database window.

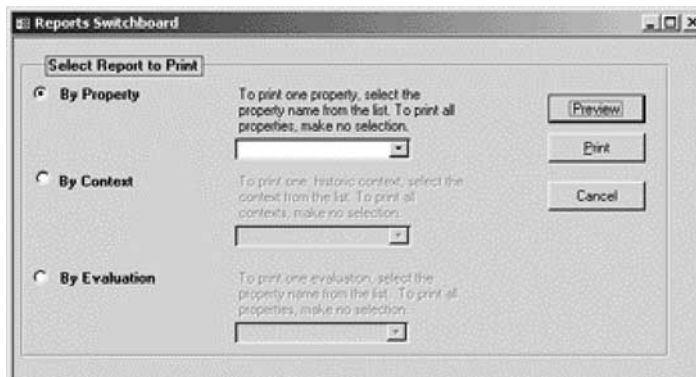
Exit Microsoft Access: Closes the Historic Property Screening Tool.



5.2 Reports Switchboard

From this switchboard, you can select, preview and print the following types of reports:

- **By Property:** View information for a selected property.
- **By Context:** View information for a selected context.
- **By Evaluation:** View the criteria and integrity evaluation information for a selected property.



5.3 Action Buttons

Many forms contain buttons that, when clicked, perform a specific action. The following buttons are used to manipulate files linked to the database record:

Delete: Click this button to delete a file.

View: Click this button to launch the appropriate software and load the linked file. For example, if the linked file is a PDF, Adobe Acrobat will be launched and the selected file opened.

Find: Use this to browse to a file's location and link it to a database record.

Add <object>: Use this to add a new record for a specific object (e.g., map).

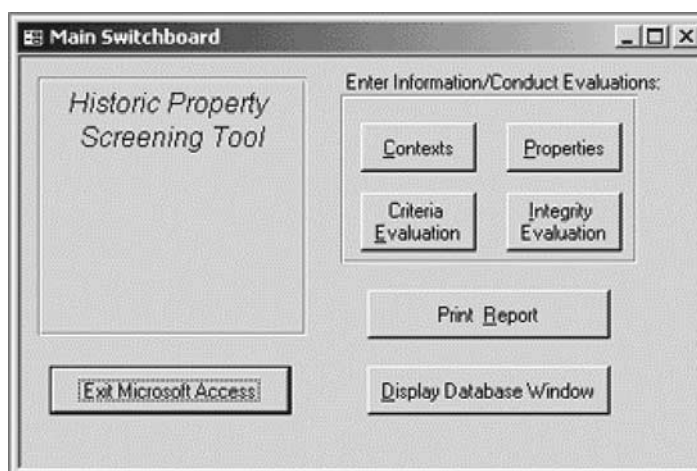
6.0 Using the Interface

The Historic Property Screening Tool interface includes all of the information and functionality required to create, view, edit, and report any record(s) in the database. The sections below provide step-by-step instructions for completing tasks using the tool. The Contexts, Properties, and Integrity Evaluation functions are designed as wizards that step you through the forms in a defined sequence. A **Next** button on each form will take you to the next form in the sequence. A **Back** button will return you to the previous form. However, you do not need to use these buttons for navigation. You may click on any tab to jump directly to the selected form. A **Save** button may be used at any time to save your work up to that point and return to the main switchboard.

NOTE: The easiest way to move between fields on all forms is to press TAB on your keyboard.

6.1 Main Switchboard

The Main Switchboard is loaded when the Historic Property Screening Tool is opened. Click on a button to start a task.



6.1.1 Contexts

The Contexts screen is opened when you select **Contexts** from the Main Switchboard. Use this screen to enter or update a historic context.

To create a new context, select **<add new>** from the **Select A Context** drop-down list. To update an existing context, select an existing context theme from the **Select A Context** drop-down list. The following instructions assume you are entering a new context.

Select an area of significance from the **Area of Significance** drop-down list. To add additional areas of significance, click the **Add Area of Significance** button, select the area of significance from the list, and click the **Save & Close** button. Repeat to add additional area of significance values.

Enter the context theme in the **Context Theme** input box.

Enter the time period in the **Time Period** input box. A historic context is generally defined for a specific chronological time period. The time period may be defined as a span of years (e.g., 1830-1960) or using some other commonly understood designator (e.g., Archaic Period, 19th Century). The system is very flexible and does not limit the user to a specific format.

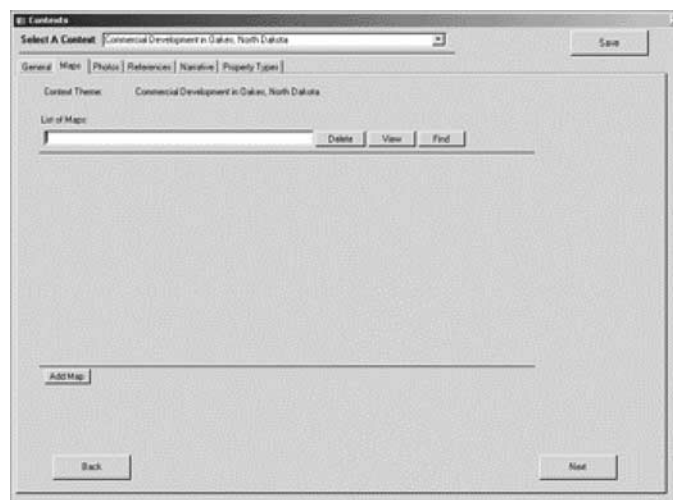
A context can be significant at the local, state or national level, or it can be significant at more than one level. Check all that apply.

Enter the geographic limits in the **Geographic Limits** input box. Current political boundaries (e.g., county name) or physical features (e.g., east of the Mississippi) may be used.

Maps

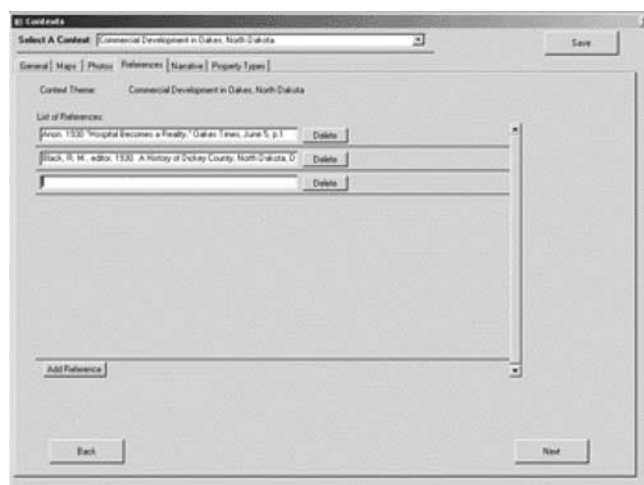
You may link to one or more maps associated with the context. Each map path should be placed in a new input box. Type the Universal Naming Convention (UNC) path in the input box to specify the name and path of the map, or use the **Find** button to locate the map on your network.

The map may be a Word, PDF, TIFF, or other standard format. File types used by mapping software such as ESRI's ArcView may also be linked to a context. In order to view the linked maps, users must have the appropriate software on their machine.



References

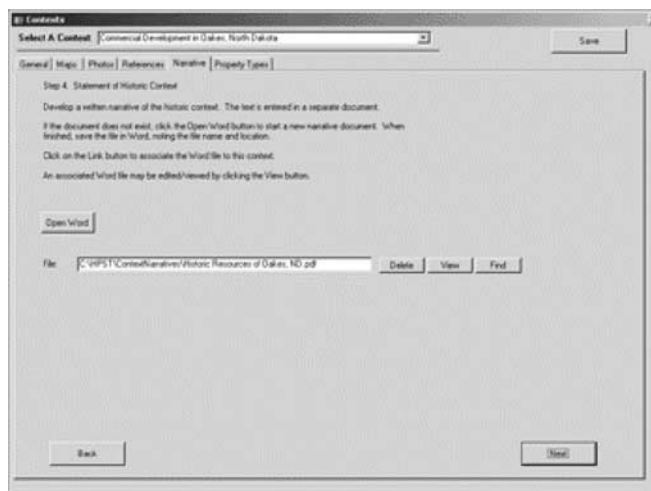
Type references in the List of References input boxes. It is recommended that you use a separate box for each reference.



Narrative

Provide Statement of Historic Context narrative for the context in a document. If a document does not already exist, one can be created by clicking the **Open Word** button. The document must be saved, and then the **Link** button can be used to enter the document file name into the File input box.

If you have an electronic copy of an entire context, it is recommended that you link to the file rather than re-key into a new Word file. Any file format is acceptable (e.g., PDF), provided you have the software required for viewing.



Property Types

Use this screen to define one or more property types for the context. At least one property type must be defined in order to use a context in the Integrity Evaluation wizard. To get started, click the **Add Type** button, and then enter the property type description in the **Property Type** input box. Hit **Enter**. The new property type should be displayed in the box at the left of the screen.

The critical elements on this form are the individual statements about each aspect of integrity. If you wish to include additional text to describe the property type or to provide an overview of the registration requirements, two optional text fields are provided. Click the text **Click here for Description** to enter descriptive information for the property type. This will open a new form with a large field for text. Click **Close** when finished.

Click the text **Click here for Registration Requirements** to enter information for registration requirements of the property type. This will open a new form with a large field for text. Click **Close** when finished.

The requirements to meet each aspect of integrity should be defined in the text box to the right of each aspect for every property type. These criteria will be used as a guide to determine if a property has sufficient integrity to qualify it for National Register status. Provide a brief statement of required integrity for each aspect, where applicable, in the associated input boxes. Check all National Register criteria for which a property may be eligible. This is usually stated in the Registration Requirements, as well.

To add another property type, click **Add Type** and enter the descriptor. After you hit enter, the aspects of integrity information you entered for the first property type will be used as the default for the new property type. Edit as needed, and continue to add property types until all have been defined. Enter applicable research questions in the **Research Questions** input boxes.

The screenshot shows a software interface for defining property types. At the top, it says 'Select A Context' with a dropdown menu showing 'Commercial Development in Oakes, North Dakota'. Below this are tabs for 'General', 'Maps', 'Photos', 'References', 'Narrative', and 'Property Types'. The 'Property Types' tab is active. The main area is titled 'Step 5: Define property types and significance criteria'. It has a 'Property Type' input field containing 'Building'. Below this is a table with columns for 'Location', 'Design', 'Setting', 'Materials', 'Workmanship', 'Feeling', and 'Association'. Each row contains a descriptive statement and a grid of checkboxes labeled A, B, C, and D. For example, the 'Location' row states '(Should be in original location. Exceptions can be made if building is of highest architectural or original design on second and third' and has checkboxes for A, B, C, and D. The 'Design' row states 'Architecturally significant properties must possess original design on second and third' and has checkboxes for A, B, C, and D. The 'Setting' row states '(Setting is intact in terms of massing, setback, and architectural diversity' and has checkboxes for A, B, C, and D. The 'Materials' row states 'Architecturally significant properties (with exception noted under Design) must retain nearly' and has checkboxes for A, B, C, and D. The 'Workmanship' row states 'Architecturally significant properties should exhibit workmanship applied to materials to produce' and has checkboxes for A, B, C, and D. The 'Feeling' row states 'Will not seem independent of sufficient materials, design, and workmanship' and has checkboxes for A, B, C, and D. The 'Association' row states 'Will not seem independent of sufficient materials, design, and workmanship' and has checkboxes for A, B, C, and D. Below the table is a 'Research Questions' section with a text input field and a 'Delete' button. At the bottom left is a 'Back' button and at the bottom center is an 'Add Question' button.

Using an Existing Context

You may link an existing context to the HPST without entering all the data. In order to use the HPST evaluation functions, certain key components must be defined for the historic context. These are:

1. Historic context theme
2. Property types
3. National Register eligibility (i.e., A, B, C and/or D) for each property type and defined aspects of integrity associated with the property types included in the historic context (see the previous section on Property Types).

You may enter this minimum information and then link to an electronic copy of the context. If you have only a hard copy of the context, you may write a note in the Narrative section of the context, referencing the physical location hard-copy document (e.g., file drawer number and location). It is recommended that you also enter a brief statement of the requirements for each aspect of integrity in the **Property Types** forms so that it will appear on screen when you conduct an integrity assessment. However, this is not strictly required, and you may refer instead to your hard-copy document. The evaluation version of the HPST prototype is distributed with several example historic contexts. The “Diners of Massachusetts” historic context was included by linking the PDF file with the narrative sections to the HPST forms. Review the forms for this context for an illustration of how to enter a historic context into the HPST.

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6.1.2 Properties

The Properties form is opened when you select **Properties** from the main switchboard. Use this screen to enter or update information about historic properties.

To create a new property, select **<add new>** from the **Select a Property** drop-down list.

To update an existing property, select an existing property from the **Select a Property** drop-down list. The following instructions assume you are entering a new property.

Enter the Property ID in the **Property ID** box (required).

Enter the Smithsonian ID in the **Smithsonian ID** box. If the ID does not exist, leave this space blank.

Enter the Property Name in the **Property Name** box (required).

Select a Property Category from the **Property Category** drop-down list (required).

Enter the name or title of property Owner in the **Owner** box.

The screenshot shows a web-based form titled "Property" with a dropdown menu set to "Select A Property" and the value "32 01 26 - Klein and Suttner Block". Below the dropdown are tabs for "General", "Attributes", "Maps", "Photos", "References", and "UTMs". The "General" tab is active, showing the following fields: "Property ID" with the value "32 01 26", "Smithsonian ID" (empty), "Property Name" with the value "Klein and Suttner Block", "Property Category" with a dropdown menu showing "Building", and "Owner" with the value "private". There are "Save" and "Next" buttons at the bottom right.

Attributes

Attributes are entered one field at a time. You may enter as many attributes for the property as you wish. If you make a mistake, or decide the attribute does not apply to the property, click the **Delete** button next to the corresponding attribute row.

Defining an attribute is a two-step process. First, select or define a label for the attribute. A label may be very specific (e.g., architectural style, foundation materials, or historic event). The same attribute label may be used as often as needed. The second step is to define the value for the attribute. For example, "Architectural Style" may have the value "Italianate." Attributes for a building may look like the following:

The screenshot shows the "Attributes" tab of the "Property" form. It displays a list of predefined attributes with their corresponding values and "Delete" buttons. The attributes listed are: "Contributing Resources" (empty), "Noncontributing Resources" (empty), "Historic Functions" (COMMERCIAL/TRADE/Department store), "Historic Functions" (COMMERCIAL/TRADE/Multiple dwelling), "Historic Functions" (COMMERCIAL/TRADE/Business), "Style" (Italianate), "Current Functions" (MIXED/NOT IN USE), "Foundation" (Concrete), "Walls" (Brick, wood), and "Floor Materials" (Floor wooden). There is an "Add Attribute" button at the bottom left and "Back" and "Next" buttons at the bottom.

Style	Georgian
Historic Function	Plantation home of John Q. Smieth ca 1800
Historic Function	Legal offices of Jones & Jones ca 1900=pre
Exterior Condition	Excellent, original facade intact
Interior Condition	Has been modified significantly

Some attribute labels have been predefined. You may select any of these (click the down arrow in the attributes field to view predefined attributes) and enter your values. You may also define new labels by typing them in an empty box.

Maps

You may link to one or more maps associated with the property. Each map path should be placed in a new input box. Type the UNC path in the input box to specify the name and path of the map, or use the **Find** button to locate the map on your network. The map may be a Word, PDF, TIFF, or other standard format. File types used by mapping software such as ESRI's ArcView may also be linked to a property. In order to view the linked maps, the users must have the appropriate software on their machine.

Photos

You may link to one or more photo(s) associated with a property. Multiple photo references are acceptable. Enter the UNC path or URL in the **List of Photos** box or use **Find** to browse to a property's corresponding photo.

References

Type references in the **List of References** input boxes. It is recommended that you use a separate box for each reference.

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UTMs

Use this form to define the Universal Transverse Mercator zones (UTMs) for a property.

Click inside the **Easting** and **Northing** text boxes to enter your coordinates. You may enter as many coordinates as are available for your property's location.

The screenshot shows a window titled 'Property' with a tabbed interface. The 'UTMs' tab is active, displaying a table for defining Universal Transverse Mercator zones. The table has columns for 'Northing', 'Easting', and 'Zone', with a 'Delete' button next to each row. The first row contains the values '107 400', '570 000', and an empty 'Zone' field. Below the table is an 'Add UTM' button and a 'Back' button.

6.1.3 Criteria Evaluation

This form is used to record decisions about National Register criteria applicability for a property with respect to a specific historic context. In order to use this function, the historic context and property must have been entered and saved in the HPST.

Select Property, Context

When you first select the Criteria Evaluation function from the main menu, the form is empty. You must first select a property from the drop-down list and then select the context and property type.

If a criteria evaluation has already been done for this combination of property and context/property type, you will see the message shown below. If you want to edit or review the information in the form, click **Yes**. Otherwise, you may go to Reports and print this evaluation, or you may select a different context/property type and perform a different evaluation.

The screenshot shows a Microsoft Access dialog box with the text: 'There is already an evaluation for this selection. Do you want to edit the existing evaluation?'. There are two buttons: 'Yes' and 'No'.

The screenshot shows a 'Significance Evaluation' window with a 'Criteria Screening Wizard' section. It includes several dropdown menus for 'Select a Property ID:', 'Category:', 'Select a Context:', and 'Select a Property type:'. Below these are sections for 'Criterion A', 'Criterion B', 'Criterion C', and 'Criterion D', each with a checkbox and associated text boxes for 'Associated event:', 'Document significance at each level where appropriate' (National, State, Local), and 'Describe Association:'. At the bottom, there are 'Cancel' and 'Save' buttons, and a 'Research Questions' button.

Criteria

You may now enter your determination for each criterion. Check the associated checkbox for each criterion that is significant. This form was derived from the National Park Service guidance on preparing National Register nominations. Please refer to *National Register Bulletin 15* for additional information that will help complete this form.

If the property is eligible under Criterion A, enter the associated event; describe the national, state and/or local significance; and describe briefly how the property is associated with the event.

If the property is eligible under Criterion B, enter the names of the associated person(s); describe the national, state and/or local significance; and describe briefly how the property is associated with the person(s).

If the property is eligible under Criterion C, describe briefly the distinctive characteristics that make the property significant; describe the national, state and/or local significance; and describe briefly how the property illustrates the characteristics.

Immediately to the right of the Criterion D input boxes is a **Research Questions** button. If Research Questions have been defined for the context, they can be viewed by clicking this button.

If the property is eligible under Criterion D, enter the categories of information that might be derived from the property and the importance of that information.

6.1.4 Integrity Evaluation

This set of forms is used to evaluate the aspects of integrity for a property with respect to a specific historic context. ***In order to use this function, the Criteria Evaluation for the property must be completed and saved in the HPST.***

Select Property, Context

When you first select the Integrity Evaluation function from the main menu, the forms are empty. You must first select a property from the drop-down list and then select the context and property type.

If an integrity evaluation has already been done for this combination of property and context/property type, you will see the message shown below. If you want to edit or review the information in the forms, click **Yes**. Otherwise, you may go to Reports and print this evaluation, or you may select a different context/property type and do a different evaluation.

Aspects of Integrity

You may now enter your determination for each aspect of integrity. A form (tab) exists for each of the seven aspects of integrity; however, not all contexts will require that a property meet all aspects in order to be eligible. If the context has specified the requirements to meet an aspect, it is displayed on the form. If nothing is displayed in the area to the right of the aspect of integrity label, no requirement was defined in the context.

Immediately to the right of the aspect requirements description are two buttons: **Research Questions** and **Definitions**. If Research Questions have been defined for the context, they can be viewed by clicking the button. The **Definitions** button displays the general definitions of each aspect of integrity.

When you perform a new evaluation of integrity, two fields will be empty:

- Has integrity?
- Justification

You may select from three options to answer the first question: Yes, No, and No Basis for Evaluation. The first two are self-explanatory; the third option should be entered when you feel that you need more information on either the context or the property. For example, you might choose “No Basis for Evaluation” and then in **Justification**, enter “Field study to collect more information on this aspect of integrity is needed.”

The lower half of each aspect of integrity form is used to display information about the property. All forms show the attributes defined for the property; use the scroll bar at the right to scroll up and down through the list. UTM's are shown only on the Location form. Other forms may include links to maps and/or photos as shown at right. The property evaluation at right includes several photographs and maps, any one of which can be viewed by clicking the **View** button next to it.

Integrity Matrix

The last form compiles your responses to the individual aspects of integrity and displays the information in a color-coded matrix. The rows represent National Register criteria A, B, C, and D. Criteria that are not applicable (i.e., not selected when you did the Criteria Evaluation form) are shown as gray rows. Similarly, if an aspect of integrity is not applicable for the selected context/property type (as defined under contexts), it will be shown in gray. In the example at right, the site being evaluated is deemed eligible under D and has integrity of setting and association (green), but does not have integrity of workmanship. The reviewer felt more information was needed to determine integrity of materials. The reviewer has indicated that she believes the site is eligible for listing and gives reasons for this finding.

The screenshot shows the 'Integrity Evaluation' window with the 'Integrity Screening Wizard' active. The wizard has selected the following information:

- Select a Property ID: Elizabeth Mine
- Category: District
- Select a Context: Appalachian Mining History
- Select a Property type: Mine/Processing Complex

The 'National Register Eligibility Evaluation Matrix' is displayed with the following data:

	Location	Design	Setting	Materials	Workmanship	Feeling	Association	Eligible?
A								P
B								P
C								P
D								P

The legend indicates the following color coding:

- No basis for evaluation (White)
- Not applicable (Gray)
- Does not have integrity (Light Green)
- Has integrity (Dark Green)

The 'Basis for Decision' field contains the text: 'The site has integrity under multiple categories across criteria'. The reviewer's name is 'Dan Conroy'.

The following actions can be executed at any time:

Click **Cancel** to cancel the evaluation without saving.

Click **Save** to save the evaluation and return to the Main Switchboard. You may save an incomplete evaluation and return to finish it later.

6.2 Reports Switchboard

The Reports Switchboard is loaded by selecting Print Reports on the Main Switchboard.

6.2.1 Property Report

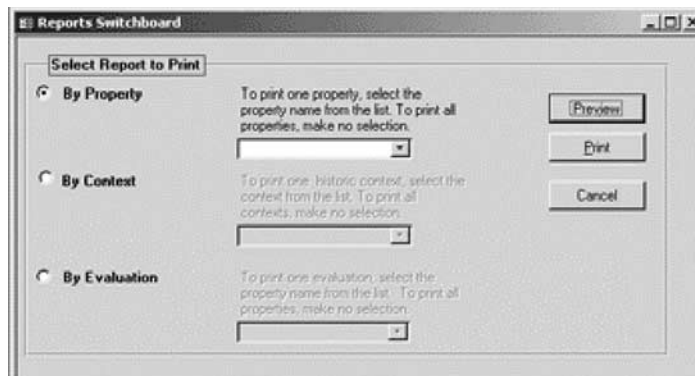
The Property Report is loaded from the Reports Switchboard.

The Property Report contains the property details information.

The report displays the property identification information, specific attribute data, map and photo lists, and UTM data. Attribute information includes attribute and description. UTM data include the easting and northing coordinates.

Click **By Property** and select the property name from the list. If no property is selected, ALL properties in the database will be included in the report.

The standard MS Access 2000 report controls are available, including print, zoom and scroll buttons. Close the report by clicking the X in the top right corner.



Property Report	
PROPERTY NAME:	Government House
PROPERTY ID:	rip0001
SMITHSONIAN ID:	
CATEGORY:	Building
OWNER:	Gov't of Guam
	<u>Attribute</u> <u>Description</u>
ATTRIBUTES:	Architect Robert Neutra
	Condition good but modified from original design
	Architectural Style Spanish Colonial Revival, Chamorro-Spanish, Modern Movement
	Roof Materials Concrete, tile
	Foundation Concrete

6.2.2 Historic Context Report

The Historic Context Report is loaded from the Reports Switchboard.

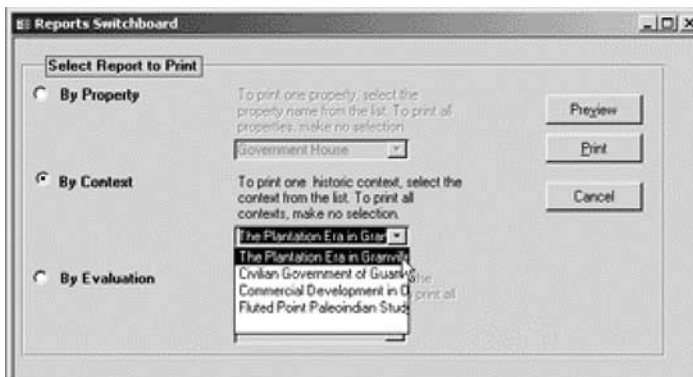
The Historic Context Report contains the historic context and property type information.

Historic context information includes the theme, time period, geographic location, and narrative information. Property type information includes registration requirements, physical and associative characteristics, and research questions.

Click **By Context** and select the context from the list. If no context is selected, ALL contexts will be included in the report.

The standard MS Access 2000 report controls are available, including print, zoom and scroll buttons.

Close the report by clicking the **X** in the top right corner.



Historic Property Screening Tool - Historic Context Report				
Historic Context				
THEME:	The Plantation Era in Granville County			
TIME PERIOD:	1746-1965			
GEOGRAPHIC LIMITS:	Granville County			
LEVEL:	<input type="checkbox"/> Local	<input checked="" type="checkbox"/> State	<input type="checkbox"/> National	
NARRATIVE:				
Property Types				
PROPERTY TYPE:	Georgian and Federal Style Dwellings			
DESCRIPTION:				
REGISTRATION REQUIREMENTS:				
Requirements for Eligibility				
Physical Characteristics			Associative Characteristics	
LOCATION:	Should be in original location.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DESIGN:	Should display characteristic decorative elements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SETTING:	Evokes agrarian way of life typical of period.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MATERIALS:	wood, with stone or brick chimneys and foundations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WORKMANSHIP:	Should demonstrate high quality workmanship in use of spare decorative elements and laboriously carved moldings.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FEELING:	Should evoke the plantation era period of their construction.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ASSOCIATION:	Should retain sufficient stylistic and structural features to identify them as having been built during the plantation period.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Research Questions :				

6.2.3 Evaluation Report

The Evaluation Report is loaded from the Reports Switchboard.

The Evaluation Report contains both the criteria and integrity evaluation information.

The report displays the evaluation criteria and associated descriptions, integrity evaluations and justifications, and eligibility criteria and descriptions.

Click **By Evaluation** and select the property name. If no property is selected, ALL properties in the database will be included in the report. If a property has been evaluated under more than one context, all evaluations for the selected property will be printed.

The standard MS Access 2000 report controls are available, including print, zoom, and scroll buttons. Close the report by clicking the **X** in the top right corner.

Reports Switchboard

Select Report to Print

By Property To print one property, select the property name from the list. To print all properties, make no selection.

By Context To print one historic context, select the context from the list. To print all contexts, make no selection.

By Evaluation To print one evaluation, select the property name from the list. To print all properties, make no selection.

Buttons: Preview, Print, Cancel

Evaluation Report

PROPERTY ID: Me0002
PROPERTY TYPE: Fluted Point Paleoindian Site
PROPERTY NAME: Val Site
CONTEXT: Fluted Point Paleoindian Study Unit/Statewide Management Unit

Criteria Evaluation

Criteria A
 National:
 Event:
 State:
 Local:
 Description:

Criteria B
 Person:
 National:
 State:
 Local:
 Description:

Criteria C
 Characteristic:
 National:
 State:
 Local:
 Description:

Criteria D
 Categories: Stone tools, killing grounds, meat cache
 Importance: Enhance our understanding of Paleoindian adaptive pattern in Maine

Integrity Evaluation

Location
 Design
 Setting Tools suggest habitation.
 Materials
 Workmanship Consultant's report does not address specifically.

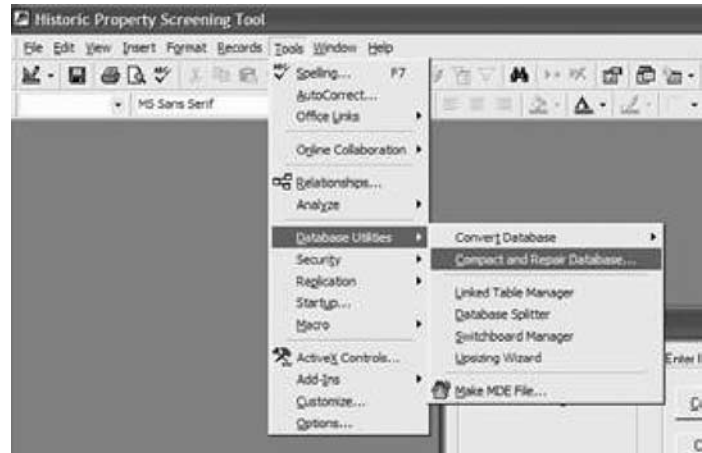
7.0 Administration

Instructions for completing two recommended administration tasks are provided here.

7.1 Compact and Repair

To ensure optimal performance, compact your Microsoft Access databases and Microsoft Access projects on a regular basis.

To compact and repair the Historic Property Screening Tool, select **Tools** from the main menu. Select **Database Utilities**, then **Compact and Repair Database**.



7.2 Backup and Recovery

A backup and recovery plan should be established for the Historic Property Screening Tool. A recommended plan is to have the database reside on a server that is backed up daily. If this is not possible, back up the Historic Property Screening Tool by copying the HPST.mdb to another location on a daily basis.

UNPUBLISHED APPENDIXES

The following appendixes to the final report are not published herein. However, they are available upon request from the NCHRP:

- APPENDIX A: The Business Case for Developing Four Prototype Computer Applications for Streamlining the Resource Evaluation Process
 - APPENDIX B: Verification and Validation Test Plan
 - APPENDIX C: Electronic Cultural Resource Evaluation Library (ECREL)
 - C.1: Requirements List
 - C.2: Technical Requirements
 - C.2.1: Use Cases and Architecture
 - C.2.2: Entity-Relationship Diagram
 - C.2.3: Data Dictionary
 - C.2.4: Cover Sheets Used for Document Scanning
 - C.3: List of Documents and Sources in ECREL Prototype
 - C.5: ECREL Evaluation Form
 - C.6: Test Procedures
 - C.7: ECREL CD
 - APPENDIX D: Historic Property Screening Tool (HPST)
 - D.1: Requirements List
 - D.2: Technical Specifications
 - D.2.1: Use Cases
 - D.2.2: Architecture
 - D.2.3: Entity-Relationship Diagram
 - D.2.4: Data Dictionary
 - D.3: Sample Reports
 - D.5: Evaluation Form
 - APPENDIX E: Evaluation Results
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Abbreviations used without definitions in TRB publications:

AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ITE	Institute of Transportation Engineers
NCHRP	National Cooperative Highway Research Program
NCTRP	National Cooperative Transit Research and Development Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
SAE	Society of Automotive Engineers
TCRP	Transit Cooperative Research Program
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation