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**Final Report for Architectural Conservator**

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BACKGROUND

In 1993, the Government Performance and Results Act (GPRA, 1993) was passed and signed into law. This legislation mandated that the actions of federal agencies be guided through the establishment of concrete goals and measured by performance evaluation.

The following year, the National Leadership Council of the National Park Service (NPS), as its first formal action, approved and adopted the NPS Employee Training and Development Strategy. This Strategy, commensurate with the spirit of GPRA, implemented a competency-based approach to training for all employees Servicewide. Its stated mission is to provide for the professional growth and continuous learning of all NPS employees, by providing them with a comprehensive, mission-focused training and development program (NPS, 1995).

Furthermore, the Government Education and Training Act (GETA), enacted in 1958, requires agencies to conduct training needs assessments in order to provide a realistic basis upon which to plan, program, and direct training and development activities toward the achievement of organizational and program goals. As a result, the NPS Stephen T. Mather Training Center entered into a cooperative agreement with the Center for Recreation Resources Policy at George Mason University in 1994 to conduct a training needs assessment for the Interpretation career field (Wright and Makay, 1995).

With the growing momentum of the Strategy, teams of employees and training managers, representing 17 different career fields, began the arduous task of compiling and documenting the "essential competencies" required to guide the professional development of NPS employees, in 225 occupational groups, for the next 10 years. The results of this effort are documented in the NPS Employee Training and Development Career Planning and Tracking Kit.

To begin establishing a baseline of data depicting needs and levels of current performance, the National Park Service, Stephen T. Mather Training Center, entered into an agreement with George Mason University, Center for Recreation Resources Policy, to conduct formal training needs assessments for employees in or associated with the Cultural Resources Stewardship Career Field.

The purpose of this report is to document the procedures and findings associated with the assessment of training needs for Architectural Conservators. More specifically, this study was designed to accomplish the following objectives:

1. To determine the perceptions of Architectural Conservators regarding the importance of each of the essential competencies outlined in the NPS Employee Training and Development Career Planning and Tracking Kit.

2. To determine the perceptions of Architectural Conservators regarding their level of preparedness to perform each essential competency.

3. To diagnostically assess the gaps in existing training, given the importance assigned to competencies and the general level of preparedness to perform critical tasks.
4. To compare the perceptions of employees and their first-line supervisors regarding training needs.

METHODS

Study Population. Given the relatively small number of employees in the Cultural Resources Stewardship Career Field, particularly in some occupational fields (e.g., 15 Museum Conservators), a decision was made to include the total population of employees rather than survey a proportional sample. Four (4) Developmental Level Architectural Conservators and four (4) Full Performance Level Architectural Conservators in NPS parks, offices, and centers were asked to participate in this study. There were no Architectural Conservators at the Entry Level.

Development of the Survey Instrument. Essential competencies identified for Architectural Conservators were integrated into a mail survey instrument. These competencies, in addition to demographic data pertinent to National Park Service employees, formed the basis for the questionnaire. Respondents were asked to indicate their perceptions of how important essential competencies were to the performance of their present jobs (1 = Not Important, 7 = Extremely Important). Then, given the same list of competencies, they were asked to rate their preparation to perform those tasks (1 = Unprepared, 7 = Fully Competent). A copy of each survey instrument is included as Appendix A-1 and A-3.

Data Collection. Following standard procedures of social science and survey research, a cover letter, questionnaire, and self-addressed, business reply envelope was mailed to each of the Architectural Conservators in May 1999. They were asked to complete the questionnaire during their workday, as part of their official duties. Approximately four weeks later, those persons who had not responded to the initial mailing were mailed a follow up letter and questionnaire requesting that they complete the questionnaire and return it as soon as possible.

Study participants also were sent a separate questionnaire and cover letter and asked to give it to their first-line supervisor to complete and return. Because some supervisors were responsible for supervising more than one employee, the total population of supervisors is not known. Therefore, no response rate for supervisors will be reported. Data collected from supervisors are reported as an aggregate and used for comparative purposes only.

Response Rate. At the end of the data collection period, a total of three (3) questionnaires for Developmental Level Architectural Conservators and four (4) questionnaires for Full Performance Level Architectural Conservators had been returned. Unlike surveys of the general population, there were no questionnaires returned as "undeliverable." Therefore, the effective response rate for this study was as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Rate</th>
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<tr>
<td>Developmental Level</td>
<td>75 percent</td>
</tr>
<tr>
<td>Full Performance Level</td>
<td>100 percent</td>
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</table>
Data Analyses. Data were analyzed using the Statistical Package for the Social Sciences (SPSS), a popular software program utilized by social and behavioral scientists. Standard frequency distributions were computed for both the importance assigned to and ability to perform each of the essential competencies.

Moreover, these statistics were combined to identify "training gaps" through a simple Importance-Performance, or gap analysis. For example, competencies in which employees perceived themselves to be unprepared to perform can be viewed relative to their perceived importance to the employees' successful job performance. Competencies experiencing the largest "gaps" (i.e., Competency minus Importance) should receive greater emphasis when planning training. Treatment of the importance and competency (performance) data using Importance-Competency (I-C), or gap analysis, is similar to procedures reported first by Martilla and James (1977). *The results are presented in the discussion, table, and figure below.*

RESULTS AND DISCUSSION

ARCHITECTURAL CONSERVATOR – DEVELOPMENTAL LEVEL

Profile of Respondents. Of the three respondents, two were male and one was female. On average, respondents were 46 years of age. They had completed slightly more than 18 years of formal education ($\bar{x} = 18.33$ years). See Appendix A-2 for information pertaining to academic degrees held by Developmental Level Architectural Conservators.

Two respondents were White (66.7%) and one was Hispanic (33.3%). Two were ranked as GS-9's; the other was a GS-11. While they had been employed by the National Park Service for an average of almost six years ($\bar{x} = 5.67$ years), they reported being in their current position for only slightly more than a year ($\bar{x} = 1.33$ years).

Importance of Competencies. As can be seen in Table 1, respondents rated five competencies as having the greatest importance to them in their current positions. They were:

(Q7) Knowledge of and ability to understand and apply all NPS management and planning guidelines and laws including Director's Order No. 28: Cultural Resource Management, and NPS Management Policies.

(Q14) Ability to conduct inclusive sampling of materials for the purpose of laboratory identification and/or comparative dating.

(Q16) Ability to analyze materials such as mortars, plasters, stuccos, paint, coatings, wall coverings, and soils and their component parts.

(Q18) Ability to document and interpret research findings that are included in or contributed to written reports such as site histories, materials analysis studies, or historic structure reports.

(Q40) Ability to write documents on the level of Historic Structure Reports to provide parks with documentation for essential historical analysis.
These items were rated as 5.0 or higher on the 7-point Importance Scale. However, it should be noted that Developmental Level Architectural Conservators consistently rated competencies lower in importance than other occupational groups. Moreover, respondents rated 10 items lower than 3.0 on the 7-point scale. The competencies perceived to be lowest in importance were:

(Q4) Ability to write specifications for contracting purposes and to serve as the Contracting Officer’s Technical Representative for architectural conservation projects.

(Q10) Knowledge of fire protection systems and other environmental protection regarding lightning, flooding, and animal and human intrusion for sites and historic structures.

(Q11) Ability to maintain active working relationships with conservation peers inside and outside the government such as the Smithsonian Institution, the Institute of Science and Technology, the Getty Conservation Institute, the International Center for the Study of Preservation and Restoration of Cultural Property, and the National Institute of Standards and Technology, in order to maintain levels of competence in a rapidly changing field of knowledge.

(Q13) Ability to develop laboratory analyses based on known scientific applications as well as to develop new methodologies for testing materials.

(Q17) Ability to manage collections of artifacts for research purposes and to collect and manage field sampling programs in accordance with scientific principles.

(Q22) Ability to produce thorough and complete measured drawings, either through computer-aided drafting or mechanical drafting.

(Q24) Knowledge of and ability to determine when materials require removal and transportation to the laboratory for treatment and ability to transport that material with the least amount of damage.

(Q27) Knowledge of ability to apply permanent and temporary conservation treatments prior to the necessary moving or relocation of material that is destined for a repository, a temporary location such as a laboratory, a museum, or to be restored to its original location.

(Q35) Knowledge of and ability to apply Contracting Officer's Technical Representative and contract law procedures, purchasing regulations, small business, sole source, budgeting, and change orders in the form of small contract obligations or major large contracts.

(Q38) Ability to write and publish scientific and technical material such as articles that contribute to the knowledge, understanding, and the continuity of ongoing research and developmental field work by preservationists and conservators.
Perceived Level of Competency. Respondents reported feeling competent regarding 11 or the 42 competencies posed to them. They rated these items as 5.0 or higher on the 7-point Scale of Competence. They were:

(Q2) Ability to conduct conservation treatments on materials using one or more of the following: application of adhesives coatings, consolidants, and biocides; removal of deteriorated material, deteriorative mechanisms, and non-functioning or destructive earlier treatments; and replacement of missing materials when warranted.

(Q9) Knowledge of and ability to interpret the Venice Charter and the American Institute for Conservation Code of Ethics.

(Q14) Ability to conduct inclusive sampling of materials for the purpose of laboratory identification and/or comparative dating.

(Q18) Ability to document and interpret research findings that are included in or contributed to written reports such as site histories, materials analysis studies, or historic structure reports.

(Q19) Ability to establish, maintain, and develop records for treatment programs, sampling procedures, and testing programs that may include treatment histories, project histories, causal relationships, completion reports, or effects of repair campaigns.

(Q21) Ability to record sites and field conditions in written or tabular formats that are complete assessments of site conditions, materials deterioration mechanisms, causes and effects, and recommendations for program development.

(Q24) Knowledge of and ability to determine when materials require removal and transportation to the laboratory for treatment and ability to transport that material with the least amount of damage.

(Q28) Ability to apply results of materials analysis in specifying preservation or conservation treatments.

(Q32) Ability to initiate pilot treatment programs following laboratory work that serves as models for implementation, test walls, and testing application systems.

(Q37) Ability to develop scopes of work and/or task directives for projects that are clear and concise in order to gain written approval from all involved parties.

(Q40) Ability to write documents on the level of Historic Structure Reports to provide parks with documentation for essential historical analysis.
Conversely, respondents reported feeling significantly less competent regarding the following items:

(Q4) Ability to write specifications for contracting purposes and to serve as the Contracting Officer’s Technical Representative for architectural conservation projects.

(Q10) Knowledge of fire protection systems and other environmental protection regarding lightning, flooding, and animal and human intrusion for sites and historic structures.

(Q22) Ability to produce thorough and complete measured drawings, either through computer-aided drafting or mechanical drafting.

(Q27) Knowledge of ability to apply permanent and temporary conservation treatments prior to the necessary moving or relocation of material that is destined for a repository, a temporary location such as a laboratory, a museum, or to be restored to its original location.

(Q35) Knowledge of and ability to apply Contracting Officer's Technical Representative and contract law procedures, purchasing regulations, small business, sole source, budgeting, and change orders in the form of small contract obligations or major large contracts.

Further, all respondents indicated that the “Ability to manage collections of artifacts for research purposes and to collect and manage field sampling programs...” (Q17) was not applicable to them in their current positions.

Gaps in Cultural Resource Stewardship Training. When analyzed together, the relative ratings of importance and competency provide a diagnostic assessment of training “gaps” in this occupational group. Table 1 provides a ranking of essential competencies producing the largest “I-C gaps.” Five competencies produced gaps in excess of 1.0. They were, in order of magnitude:

(Q16) Ability to analyze materials such as mortars, plasters, stuccos, paint, coatings, wall coverings, and soils and their component parts.

(Q7) Knowledge of and ability to understand and apply all NPS management and planning guidelines and laws including Director’s Order No. 28: Cultural Resource Management, and NPS Management Policies.

(Q20) Knowledge of and/or skill at different types of photography including video, 35 mm, 4 x 5 camera, photogrammetry, boroscopy, X-ray, and photomicroscopy.

(Q34) Ability to plan and coordinate regulatory requirements in order to expedite and meet compliance approval.
(Q18) Ability to document and interpret research findings that are included in or contributed to written reports such as site histories, materials analysis studies, or historic structure reports.

However, a word of caution is required here. Given the generally low relative importance assigned to some items by this group of respondents, gaps in excess of 1.0 may be misleading. For example, the “Ability to land and coordinate regulatory requirements in order to expedite and meet compliance approval” (Q34) produced a gap of 1.0, but was ranked relatively low (4.0) in importance. It is feasible that items with smaller gaps, but higher levels of importance should be given priority when allocating resources and making training decisions.

As can be seen in the last column of Table 1, 24 of the 42 items posed to respondents produced positive gaps. That is, respondents rated their competency relative to these items higher than their perceived importance. Figure 1 presents a graphic depiction of the gaps between importance and competency assigned to each item.

*Perceptions of First-Line Supervisors.* No responses were received from first-line supervisors for this occupational group.
<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
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<tbody>
<tr>
<td>Q16. Ability to analyze materials such as mortars, plasters, stuccos, paint, coatings, wall coverings, and soils and their component parts.</td>
<td>6.333</td>
<td>1.155</td>
<td>4.333</td>
<td>1.155</td>
<td>-2.000</td>
</tr>
<tr>
<td>Q7. Knowledge of and ability to understand and apply all NPS management and planning guidelines and laws including Director's Order No. 28: Cultural Resource Management, and NPS Management Policies.</td>
<td>5.667</td>
<td>1.528</td>
<td>4.000</td>
<td>1.000</td>
<td>-1.667</td>
</tr>
<tr>
<td>Q20. Knowledge of and/or skill at different types of photography including video, 35 mm, 4 x 5 camera, photogrammetry, boroscopy, X-ray, and photomicroscopy.</td>
<td>4.667</td>
<td>0.577</td>
<td>3.333</td>
<td>1.528</td>
<td>-1.334</td>
</tr>
<tr>
<td>Q18. Ability to document and interpret research findings that are included in or contributed to written reports such as site histories, materials analysis studies, or historic structure reports.</td>
<td>6.333</td>
<td>0.577</td>
<td>5.333</td>
<td>0.577</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q34. Ability to plan and coordinate regulatory requirements in order to expedite and meet compliance approval.</td>
<td>4.000</td>
<td>2.646</td>
<td>3.000</td>
<td>2.828</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q4. Ability to write specifications for contracting purposes and to serve as the Contracting Officer’s Technical Representative for architectural conservation projects.</td>
<td>2.667</td>
<td>1.528</td>
<td>2.000</td>
<td>1.000</td>
<td>-0.667</td>
</tr>
<tr>
<td>Q26. Knowledge of the history and evolution of materials including their technologies as well as historic conservation treatments (methods and materials) of such materials and how they contribute to present conditions.</td>
<td>4.667</td>
<td>1.528</td>
<td>4.000</td>
<td>1.000</td>
<td>-0.667</td>
</tr>
<tr>
<td>Q8. Knowledge of and ability to interpret Section 106 of the National Historic Preservation Act of 1966, as amended.</td>
<td>4.333</td>
<td>1.155</td>
<td>3.667</td>
<td>1.528</td>
<td>-0.666</td>
</tr>
<tr>
<td>Q35. Knowledge of and ability to apply Contracting Officer’s Technical Representative and contract law procedures, purchasing regulations, small business, sole source, budgeting, and change orders in the form of small contract obligations or major large contracts.</td>
<td>2.000</td>
<td>1.000</td>
<td>1.500</td>
<td>0.707</td>
<td>-0.500</td>
</tr>
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### Table 1. Cultural Resources Stewardship Training Gap Analyses in Descending Order of Need

#### Architectural Conservator - Developmental Level

<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q14. Ability to conduct inclusive sampling of materials for the purpose of laboratory identification and/or comparative dating.</td>
<td>5.667</td>
<td>1.528</td>
<td>5.333</td>
<td>0.577</td>
<td>-0.334</td>
</tr>
<tr>
<td>Q27. Knowledge of ability to apply permanent and temporary conservation treatments prior to the necessary moving or relocation of material that is destined for a repository, a temporary location such as a laboratory, a museum, or to be restored to its original location.</td>
<td>2.333</td>
<td>1.528</td>
<td>2.000</td>
<td>0.000</td>
<td>-0.333</td>
</tr>
<tr>
<td>Q1. Ability to identify and conduct conservation procedures in situ or in the laboratory (as the project dictates), on one or more materials such as: structural components (e.g., wood, metal, masonry); construction materials (e.g., wood, stone, brick, metal, concrete, mortar, earthen materials); surface treatments (e.g., plaster, stucco, terra cotta, masonry joints); decorative finishes (e.g., paints and coat-ings, stenciling, wall paintings, gilding, wall coverings); and decorative elements (e.g., carved wood, molded paster, metal ceilings).</td>
<td>4.000</td>
<td>2.646</td>
<td>4.000</td>
<td>1.414</td>
<td>0.000</td>
</tr>
<tr>
<td>Q6. Ability to apply the philosophy and fundamental principles of historic preservation and architectural conservation to project work, particularly with regard to the history and development of materials, conservation treatment technologies, and crafts skill development including tools and trade, and treatment histories.</td>
<td>4.000</td>
<td>1.732</td>
<td>4.000</td>
<td>2.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Q23. Ability to treat materials associated with a historic structure, and/or architectural element in situ for the sole purpose of conserving the element in its existing form so it may retain its highest integrity and thus authentic interpretability.</td>
<td>4.000</td>
<td>2.646</td>
<td>4.000</td>
<td>1.414</td>
<td>0.000</td>
</tr>
<tr>
<td>Q40. Ability to write documents on the level of Historic Structure Reports to provide parks with documentation for essential historical analysis.</td>
<td>5.333</td>
<td>2.887</td>
<td>5.333</td>
<td>1.155</td>
<td>0.000</td>
</tr>
<tr>
<td>Q33. Ability to develop and produce scopes of work and/or task directives and budgets for projects that involve NPS personnel, contractors, and/or cooperators.</td>
<td>4.333</td>
<td>3.055</td>
<td>4.500</td>
<td>0.707</td>
<td>0.167</td>
</tr>
<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN IMPORTANCE</td>
<td>STANDARD DEVIATION</td>
<td>MEAN COMPETENCY</td>
<td>STANDARD DEVIATION</td>
<td>(I - C) GAP</td>
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<tr>
<td>Q5. Ability to be fully conversant in ethical issues that relate to architectural conservation practices, particularly in relation to copyright and to professional codes when application of treatments may be controversial or potentially cause irreversible damage or effect.</td>
<td>3.667</td>
<td>2.517</td>
<td>4.000</td>
<td>1.414</td>
<td>0.333</td>
</tr>
<tr>
<td>Q30. Knowledge of and ability to conduct full testing programs in accordance with standard practice (e.g., ASTM [American Society for Testing and Materials] and other national and international standards organizations such as RILEM [Réunion Internationale des Laboratoires D'ssais de Matériaux], BSI [British Standard Institution], and NORMAL [Normativa Manufatti Lapidei], and conservation lab practices) on materials such as porous building materials, earthen building materials, stone, brick, mortars and cements, surfaces, renderings, mosaics, paint, wallpaper, and wood.</td>
<td>3.667</td>
<td>2.517</td>
<td>4.000</td>
<td>1.414</td>
<td>0.333</td>
</tr>
<tr>
<td>Q36. Sound knowledge of Section 106 of the National Historic Preservation Act and agreements with State Historic Preservation Officers relating to preservation activities in the parks and the ability to advise management of laws and the effects of the regulation on specific activities.</td>
<td>3.000</td>
<td>1.000</td>
<td>3.333</td>
<td>2.517</td>
<td>0.333</td>
</tr>
<tr>
<td>Q37. Ability to develop scopes of work and/or task directives for projects that are clear and concise in order to gain written approval from all involved parties.</td>
<td>4.667</td>
<td>2.309</td>
<td>5.000</td>
<td>1.000</td>
<td>0.333</td>
</tr>
<tr>
<td>Q3. Ability to develop and implement short-term preservation goals designed to realize long-term preservation strategies of a comprehensive nature, or to develop and implement long-term preservation strategies from the onset.</td>
<td>4.000</td>
<td>2.646</td>
<td>4.500</td>
<td>0.707</td>
<td>0.500</td>
</tr>
<tr>
<td>Q22. Ability to produce thorough and complete measured drawings, either through computer-aided drafting or mechanical drafting.</td>
<td>2.000</td>
<td>1.000</td>
<td>2.500</td>
<td>0.707</td>
<td>0.500</td>
</tr>
</tbody>
</table>
Table 1. Cultural Resources Stewardship  
Training Gap Analyses in Descending Order of Need  
Architectural Conservator - Developmental Level

<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q29. Knowledge of the contributions of the scientific community and ability to work within that community to research problems, resolve technical issues, and consult on materials science issues.</td>
<td>3.000</td>
<td>2.000</td>
<td>3.500</td>
<td>0.707</td>
<td>0.500</td>
</tr>
<tr>
<td>Q2. Ability to conduct conservation treatments on materials using one or more of the following: application of adhesives coatings, consolidants, and biocides; removal of deteriorated material, deteriorative mechanisms, and non-functioning or destructive earlier treatments; and replacement of missing materials when warranted.</td>
<td>4.333</td>
<td>2.887</td>
<td>5.000</td>
<td>1.414</td>
<td>0.667</td>
</tr>
<tr>
<td>Q10. Knowledge of fire protection systems and other environmental protection regarding lightning, flooding, and animal and human intrusion for sites and historic structures.</td>
<td>1.333</td>
<td>0.577</td>
<td>2.000</td>
<td>1.000</td>
<td>0.667</td>
</tr>
<tr>
<td>Q31. In depth knowledge of and ability to apply all material and safety programs and chemical safety standards integral to conservation practice including the ability to provide safety training for projects and activities.</td>
<td>3.667</td>
<td>2.517</td>
<td>4.500</td>
<td>0.707</td>
<td>0.833</td>
</tr>
<tr>
<td>Q15. Knowledge of and ability to access current research programs such as the Canadian Heritage Information Network, the Getty Conservation Institute, and the International Center for the Study of Preservation and Restoration of Cultural Property networks as well as institutions of higher learning where research is in progress.</td>
<td>3.000</td>
<td>1.732</td>
<td>4.000</td>
<td>1.414</td>
<td>1.000</td>
</tr>
<tr>
<td>Q19. Ability to establish, maintain, and develop records for treatment programs, sampling procedures, and testing programs that may include treatment histories, project histories, causal relationships, completion reports, or effects of repair campaigns.</td>
<td>4.000</td>
<td>2.646</td>
<td>5.000</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Q39. Skill at public speaking and communication to a variety of audiences in order to communicate the nature and substance of programs and scientific studies in order to raise public awareness of pertinent preservation and conservation issues.</td>
<td>3.000</td>
<td>1.000</td>
<td>4.000</td>
<td>1.732</td>
<td>1.000</td>
</tr>
<tr>
<td>ITEMS RATED/QUESTIONS</td>
<td>MEAN IMPORTANCE</td>
<td>STANDARD DEVIATION</td>
<td>MEAN COMPETENCY</td>
<td>STANDARD DEVIATION</td>
<td>(I - C) GAP</td>
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</tr>
<tr>
<td>Q41. Ability to provide training in lab testing programs and specific lab tests such as mortar testing, paint analysis, wallpaper analysis, soils analysis, and basic microscopy.</td>
<td>3.000</td>
<td>1.732</td>
<td>4.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Q42. Ability to provide training in field environments focusing on specific techniques of field conservation testing and treatment, such as architectural surfaces, consolidating stone, application of water repellent to masonry surfaces, conserving integral surface coatings, and implementing emergency measures to temporarily preserve surfaces and structures.</td>
<td>3.000</td>
<td>1.732</td>
<td>4.000</td>
<td>1.414</td>
<td>1.000</td>
</tr>
<tr>
<td>Q21. Ability to record sites and field conditions in written or tabular formats that are complete assessments of site conditions, materials deterioration mechanisms, causes and effects, and recommendations for program development.</td>
<td>4.333</td>
<td>2.887</td>
<td>5.500</td>
<td>0.707</td>
<td>1.167</td>
</tr>
<tr>
<td>Q25. Knowledge of contemporary conservation treatments (methods and materials), when their application is required, and the technologies relating to their applications, such as cleaning, coatings (i.e., repellents), consolidation, adhesion or readhesion, biocides, and temporary reversible stabilizations.</td>
<td>3.333</td>
<td>2.517</td>
<td>4.500</td>
<td>0.707</td>
<td>1.167</td>
</tr>
<tr>
<td>Q13. Ability to develop laboratory analyses based on known scientific applications as well as to develop new methodologies for testing materials.</td>
<td>2.667</td>
<td>1.528</td>
<td>4.000</td>
<td>1.414</td>
<td>1.333</td>
</tr>
<tr>
<td>Q32. Ability to initiate pilot treatment programs following laboratory work that serves as models for implementation, test walls, and testing application systems.</td>
<td>3.667</td>
<td>2.517</td>
<td>5.000</td>
<td>0.000</td>
<td>1.333</td>
</tr>
<tr>
<td>Q12. Ability to direct primary and secondary research necessary for the scientific study of specific project requirements.</td>
<td>3.000</td>
<td>1.732</td>
<td>4.500</td>
<td>0.707</td>
<td>1.500</td>
</tr>
<tr>
<td>Q28. Ability to apply results of materials analysis in specifying preservation or conservation treatments.</td>
<td>3.667</td>
<td>2.517</td>
<td>5.500</td>
<td>0.707</td>
<td>1.833</td>
</tr>
</tbody>
</table>
Table 1. Cultural Resources Stewardship
Training Gap Analyses in Descending Order of Need
Architectural Conservator - Developmental Level

<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q9. Knowledge of and ability to interpret the Venice Charter and the American Institute for Conservation Code of Ethics.</td>
<td>3.000</td>
<td>1.732</td>
<td>5.000</td>
<td>1.000</td>
<td>2.000</td>
</tr>
<tr>
<td>Q11. Ability to maintain active working relationships with conservation peers inside and outside the government such as the Smithsonian Institution, the Institute of Science and Technology, the Getty Conservation Institute, the International Center for the Study of Preservation and Restoration of Cultural Property, and the National Institute of Standards and Technology, in order to maintain levels of competence in a rapidly changing field of knowledge.</td>
<td>1.667</td>
<td>0.577</td>
<td>4.000</td>
<td>1.000</td>
<td>2.333</td>
</tr>
<tr>
<td>Q24. Knowledge of and ability to determine when materials require removal and transportation to the laboratory for treatment and ability to transport that material with the least amount of damage.</td>
<td>2.667</td>
<td>2.082</td>
<td>5.000</td>
<td>0.000</td>
<td>2.333</td>
</tr>
<tr>
<td>Q38. Ability to write and publish scientific and technical material such as articles that contribute to the knowledge, understanding, and the continuity of ongoing research and developmental field work by preservationists and conservators.</td>
<td>2.333</td>
<td>1.528</td>
<td>4.667</td>
<td>0.577</td>
<td>2.334</td>
</tr>
</tbody>
</table>

Q17. Ability to manage collections of artifacts for research purposes and to collect and manage field sampling programs in accordance with scientific principles.

**NOTE:** Q17 was viewed not applicable to respondents in their current position. As a result, no "I-C Gap" is generated.
Denote symbols overlapping in Questions 6, 12, 13, 28, and 40 are due to identical Mean Importance and Mean Competency scores. (No Gap.) Q17 was viewed not applicable to respondents in their current position. As a result, no "I-C gap" is generated.
ARCHITECTURAL CONSERVATOR - FULL PERFORMANCE LEVEL

Profile of Respondents. All respondents were female, averaging slightly less than 46 years of age. They had completed almost 18 years of formal education (\( \bar{x} = 17.75 \) years). See Appendix A-4 for information pertaining to academic degrees held by Full Performance Level Architectural Conservators.

All respondents were White and had been employed by the National Park Service for an average of 19 years. Most respondents held the rank of GS-12. While they had been in their current positions for an average of 11.5 years, the range of years in their current positions was quite disparate. Two respondents had been in their current positions for three years or less; two had been in their position for over 20 years.

Importance of Competencies. As can be seen in Table 2, respondents rated five different competencies as having an importance of 5.0 or higher on the 7-point Scale of Importance. They were:

(Q5) Ability to manage the application of the philosophy and fundamental principles of historic preservation with regard to advising upper level management of appropriate options relating to actions affecting cultural resources.

(Q11) Ability to manage, coordinate, and supervise research and field projects that include conceptualization, planning, actualization, compilation, and follow-up of project development.

(Q12) Ability to deal effectively with field changes while managing field projects.

(Q16) Ability to write and manage the production Historic Structure Reports and equivalent substantial research and management documents for the purpose of directing cultural resource preservation approaches and activities.

(Q17) Skilled at all training techniques and methods including on-the-job training, presentations, didactic exercises, traditional academic methods, audio-visual, hands on, and mentoring.

Perceived Level of Competency. Respondents reported feeling relatively competent regarding four items. These items were rated as 5.0 or higher. They were:

(Q5) Ability to manage the application of the philosophy and fundamental principles of historic preservation with regard to advising upper level management of appropriate options relating to actions affecting cultural resources.
(Q11) Ability to manage, coordinate, and supervise research and field projects that include conceptualization, planning, actualization, compilation, and follow-up of project development.

(Q15) Knowledge of the NPS planning process to incorporate architectural conservation objectives into site-specific and realizable field-applied programs such as general management plans or cultural resource management plans and to incorporate long-term planning initiatives into regional, national, and international initiatives.

(Q16) Ability to write and manage the production Historic Structure Reports and equivalent substantial research and management documents for the purpose of directing cultural resource preservation approaches and activities.

Conversely, respondents did not feel they were well prepared to address three competencies. They rated their preparedness for these competencies as less than 3.0 on the 7-point Scale of Competency:

(Q2) Ability to direct conservation treatments on materials using one or more of the following: application of adhesives, coatings, consolidants and biocides; removal of the deteriorated material, deterioration mechanisms, and non-functioning or destructive earlier treatments; and replacement of missing materials when warranted.

(Q7) Ability to develop comprehensive testing programs aligned with the American Society for Testing and Materials and other national and international standards organizations such as the Réunion Internationale des Laboratoires D’ssais de Matériaux (RILEM), the British Standard Institution (BSI), and Normativa Manufatti Lapidei (NORMAL), and scientific principles of conservation focused on materials analysis, treatment analysis, test wall applications, field monitoring programs, pilot installations, and repair programs.

(Q10) Ability to manage and direct a full safety program which covers the application of all OSHA, EPA, and industry standards and guidelines as well as laboratory safety procedures relating to the use and handling of hazardous chemicals and wastes.

Gaps in Cultural Resource Stewardship Training. Once again, the diagnostic nature of assessing the gaps between the importance and competency assigned to each item is instructive. Table 2 provides a ranking of these “gaps” in descending order of magnitude. Even though three items produced gaps in excess of 1.0, the competencies in question were rated as relatively unimportant when compared to others. Those producing the largest gaps were:

(Q2) Ability to direct conservation treatments on materials using one or more of the following: application of adhesives, coatings, consolidants and biocides; removal of the deteriorated material, deterioration mechanisms,
and non-functioning or destructive earlier treatments; and replacement of missing materials when warranted.

(Q1) Ability to direct conservation procedures in situ or in the laboratory (as the project dictates), on one or more materials such as: structural components (e.g., wood, metal, masonry); construction materials (e.g., wood, stone, brick, metal, concrete, mortar, earthen materials); surface treatments (e.g., plaster, stucco, terra cotta, masonry joints); decorative finishes (e.g., paints and coatings, stenciling, wall, paintings, gilding, wall coverings); decorative elements (e.g., carved wood, molded plaster, metal ceilings).

(Q10) Ability to manage and direct a full safety program which covers the application of all OSHA, EPA, and industry standards and guidelines as well as laboratory safety procedures relating to the use and handling of hazardous chemicals and wastes.

However, please note that those competencies perceived to be most important to the respondents in their current jobs (Q11, Q12, Q16 and Q5) produced the 9th, 10th, 11th, and 12th largest gaps, respectively. It appears that while respondents viewed these competencies as most important, they also felt relatively well prepared to accomplish them.

Figure 2 presents a graphic depiction of the gaps between importance and competency assigned to each item.

Perceptions of First-Line Supervisors. No responses were received from first-line supervisors for this occupational group.
Table 2. Cultural Resources Stewardship
Training Gap Analysis In Descending Order of Need
Architectural Conservator - Full Performance Level

<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2. Ability to direct conservation treatments on materials using one or more of the following: application of adhesives, coatings, consolidants and biocides; removal of the deteriorated material, deterioration mechanisms, and non-functioning or destructive earlier treatments; and replacement of missing materials when warranted.</td>
<td>4.500</td>
<td>2.380</td>
<td>2.750</td>
<td>1.500</td>
<td>-1.750</td>
</tr>
<tr>
<td>Q1. Ability to direct conservation procedures <em>in situ</em> or in the laboratory (as the project dictates), on one or more materials such as: structural components (e.g., wood, metal, masonry); construction materials (e.g., wood, stone, brick, metal, concrete, mortar, earthen materials); surface treatments (e.g., plaster, stucco, terra cotta, masonry joints); decorative finishes (e.g., paints and coatings, stenciling, wall, paintings, gilding, wall coverings); decorative elements (e.g., carved wood, molded plaster, metal ceilings).</td>
<td>4.500</td>
<td>2.380</td>
<td>3.250</td>
<td>1.893</td>
<td>-1.250</td>
</tr>
<tr>
<td>Q10. Ability to manage and direct a full safety program which covers the application of all OSHA, EPA, and industry standards and guidelines as well as laboratory safety procedures relating to the use and handling of hazardous chemicals and wastes.</td>
<td>3.750</td>
<td>2.754</td>
<td>2.750</td>
<td>1.708</td>
<td>-1.000</td>
</tr>
<tr>
<td>Q4. Knowledge of and ability to manage field conservation programs directed towards temporary and permanent conservation.</td>
<td>4.500</td>
<td>2.380</td>
<td>3.750</td>
<td>1.500</td>
<td>-0.750</td>
</tr>
<tr>
<td>Q7. Ability to develop comprehensive testing programs aligned with the American Society for Testing and Materials and other national and international standards organizations such as the Réunion Internationale des Laboratoires D’essais de Matériaux (RILEM), the British Standard Institution (BSI), and Normativa Manufatti Lapidei (NORMAL), and scientific principles of conservation focused on materials analysis, treatment analysis, test wall applications, field monitoring programs, pilot installations, and repair programs.</td>
<td>3.000</td>
<td>2.708</td>
<td>2.250</td>
<td>1.258</td>
<td>-0.750</td>
</tr>
</tbody>
</table>
Table 2. Cultural Resources Stewardship 
Training Gap Analysis In Descending Order of Need
Architectural Conservator - Full Performance Level

<table>
<thead>
<tr>
<th>ITEMS RATED/QUESTIONS</th>
<th>MEAN IMPORTANCE</th>
<th>STANDARD DEVIATION</th>
<th>MEAN COMPETENCY</th>
<th>STANDARD DEVIATION</th>
<th>(I - C) GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q17. Skilled at all training techniques and methods including on-the-job training, presentations, didactic exercises, traditional academic methods, audio-visual, hands on, and mentoring.</td>
<td>5.000</td>
<td>2.160</td>
<td>4.250</td>
<td>1.708</td>
<td>-0.750</td>
</tr>
<tr>
<td>Q8. Knowledge of and ability to conduct or direct full testing programs in accordance with standard practice (e.g., ASTM, [American Society of Testing and Materials] and other national and inter-national standards organizations such as RILEM [Réunion Internationale des Laboratoires D’essais de Matériaux], BSI [British Standard Institution], and NORMAL [Normativa Manufatti Lapide], and conservation lab practices) on materials, stone, brick, mortar, mortars and cements, surfaces, renderings, mosaics, paint, wallpaper, and wood.</td>
<td>3.750</td>
<td>2.754</td>
<td>3.250</td>
<td>1.500</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q11. Ability to manage, coordinate, and supervise research and field projects that include conceptualization, planning, actualization, compilation, and follow-up of project development.</td>
<td>5.500</td>
<td>1.732</td>
<td>5.000</td>
<td>0.816</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q12. Ability to deal effectively with field changes while managing field projects.</td>
<td>5.000</td>
<td>1.826</td>
<td>4.500</td>
<td>1.291</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q16. Ability to write and manage the production Historic Structure Reports and equivalent substantial research and management documents for the purpose of directing cultural resource preservation approaches and activities.</td>
<td>7.000</td>
<td>0.000</td>
<td>6.500</td>
<td>0.577</td>
<td>-0.500</td>
</tr>
<tr>
<td>Q5. Ability to manage the application of the philosophy and fundamental principles of historic preservation with regard to advising upper level management of appropriate options relating to actions affecting cultural resources.</td>
<td>6.250</td>
<td>0.957</td>
<td>6.000</td>
<td>1.414</td>
<td>-0.250</td>
</tr>
<tr>
<td>Q3. Ability to manage or consult on complex field conservation projects in a well balanced manner reflecting coordination with multi-disciplinary groups and the ability to utilize input from these diverse influences.</td>
<td>4.750</td>
<td>2.217</td>
<td>4.750</td>
<td>1.500</td>
<td>0.000</td>
</tr>
</tbody>
</table>
### ITEMS RATED/QUESTIONS

| Q14. Ability to formulate and manage cooperative agreements for the purpose of partnering with professional groups in the field of conservation, including primary goals of research and training. | 4.000 | 2.309 | 4.000 | 1.633 | 0.000 |
| Q9. Ability to initiate pilot treatment programs following laboratory work that serve as models for implementation, test walls, and testing application systems. | 3.250 | 2.630 | 3.500 | 1.291 | 0.250 |
| Q13. Ability to develop programs incorporating long-term research initiatives with programmatic and specific goals. | 4.000 | 2.449 | 4.250 | 0.500 | 0.250 |
| Q15. Knowledge of the NPS planning process to incorporate architectural conservation objectives into site-specific and realizable field-applied programs such as general management plans or cultural resource management plans and to incorporate long-term planning initiatives into regional, national, and international initiatives. | 4.750 | 1.500 | 5.250 | 1.500 | 0.500 |
| Q18. Ability to identify training deficiencies of employees and to target systems or approaches for employee development. | 4.250 | 2.630 | 4.750 | 1.893 | 0.500 |
| Q6. Ability to direct research programs focused on developmental approaches that not only solve site-specific conservation problems, but also address contemporary long-range regional, multi-regional, national, or international preservation and/or conservation issues. | 3.750 | 2.500 | 4.500 | 1.000 | 0.750 |
Figure 2. Cultural Stewardship Training Gap Analysis
Architectural Conservator - Full Performance Level

Denote symbols overlapping in Questions 3 and 14 are due to identical Mean Importance and Mean Competency scores. (No Gap.)
REFERENCES


National Park Service  
Cultural Resources Stewardship Needs Assessment  
Architectural Conservator - Developmental Level

In the performance of your present job as an architectural conservator, how important are the following professional competencies? The essential competencies for architectural conservator can be found in the NPS Tracking Kit at the “Learning Place” web site: www.nps.gov/training/npsonly/npsescom.htm. Please check the most appropriate response for each item.

**Professional Discipline**

1. Ability to identify and conduct conservation procedures *in situ* or in the laboratory (as the project dictates), on one or more materials such as: structural components (e.g., wood, metal, masonry); construction materials (e.g., wood, stone, brick, metal, concrete, mortar, earthen materials); surface treatments (e.g., plaster, stucco, terra cotta, masonry joints); decorative finishes (e.g., paints and coatings, stenciling, wall paintings, gilding, wall coverings); and decorative elements (e.g., carved wood, molded plaster, metal ceilings).

2. Ability to conduct conservation treatments on materials using one or more of the following: application of adhesives coatings, consolidants, and biocides; removal of deteriorated material, deteriorative mechanisms, and non-functioning or destructive earlier treatments; and replacement of missing materials when warranted.

3. Ability to develop and implement short-term preservation goals designed to realize long-term preservation strategies of a comprehensive nature, or to develop and implement long-term preservation strategies from the onset.
4. Ability to write specifications for contracting purposes and to serve as the Contracting Officer's Technical Representative for architectural conservation projects.

5. Ability to be fully conversant in ethical issues that relate to architectural conservation practices, particularly in relation to copyright and to professional codes when application of treatments may be controversial or potentially cause irreversible damage or effect.

**Preservation Law, Philosophy, and Practice**

6. Ability to apply the philosophy and fundamental principles of historic preservation and architectural conservation to project work, particularly with regard to the history and development of materials, conservation treatment technologies, and crafts skill development including tools and trade, and treatment histories.

7. Knowledge of and ability to understand and apply all NPS management and planning guidelines and laws including Director's Order No. 28: Cultural Resource Management, and NPS Management Policies.

8. Knowledge of and ability to interpret Section 106 of the National Historic Preservation Act of 1966, as amended.


10. Knowledge of fire protection systems and other environmental protection regarding lightning, flooding, and animal and human intrusion for sites and historic structures.
11. Ability to maintain active working relationships with conservation peers inside and outside the government such as the Smithsonian Institution, the Institute of Science and Technology, the Getty Conservation Institute, the International Center for the Study of Preservation and Restoration of Cultural Property, and the National Institute of Standards and Technology, in order to maintain levels of competence in a rapidly changing field of knowledge.

Research, Materials Analysis, and Documentation

12. Ability to direct primary and secondary research necessary for the scientific study of specific project requirements.

13. Ability to develop laboratory analyses based on known scientific applications as well as to develop new methodologies for testing materials.

14. Ability to conduct inclusive sampling of materials for the purpose of laboratory identification and/or comparative dating.

15. Knowledge of and ability to access current research programs such as the Canadian Heritage Information Network, the Getty Conservation Institute, and the International Center for the Study of Preservation and Restoration of Cultural Property networks as well as institutions of higher learning where research is in progress.

16. Ability to analyze materials such as mortars, plasters, stuccos, paint, coatings, wall coverings, and soils and their component parts.
17. Ability to manage collections of artifacts for research purposes and to collect and manage field sampling programs in accordance with scientific principles.

18. Ability to document and interpret research findings that are included in or contributed to written reports such as site histories, materials analysis studies, or historic structure reports.

19. Ability to establish, maintain, and develop records for treatment programs, sampling procedures, and testing programs that may include treatment histories, project histories, causal relationships, completion reports, or effects of repair campaigns.

20. Knowledge of and/or skill at different types of photography including video, 35 mm, 4 x 5 camera, photogrammetry, boroscopy, X-ray, and photomicroscopy.

21. Ability to record sites and field conditions in written or tabular formats that are complete assessments of site conditions, materials deterioration mechanisms, causes and effects, and recommendations for program development.

22. Ability to produce thorough and complete measured drawings, either through computer-aided drafting or mechanical drafting.

**Preservation Treatment and Maintenance**

23. Ability to treat materials associated with a historic structure, and/or architectural element *in situ* for the sole purpose of conserving the element in its existing form so it may retain its highest integrity and thus authentic interpretability.
24. Knowledge of and ability to determine when materials require removal and transportation to the laboratory for treatment and ability to transport that material with the least amount of damage.

25. Knowledge of contemporary conservation treatments (methods and materials), when their application is required, and the technologies relating to their applications, such as cleaning, coatings (i.e., repellents), consolidation, adhesion or readhesion, biocides, and temporary reversible stabilizations.

26. Knowledge of the history and evolution of materials including their technologies as well as historic conservation treatments (methods and materials) of such materials and how they contribute to present conditions.

27. Knowledge of ability to apply permanent and temporary conservation treatments prior to the necessary moving or relocation of material that is destined for a repository, a temporary location such as a laboratory, a museum, or to be restored to its original location.

28. Ability to apply results of materials analysis in specifying preservation or conservation treatments.

29. Knowledge of the contributions of the scientific community and ability to work within that community to research problems, resolve technical issues, and consult on materials science issues.
30. Knowledge of and ability to conduct full testing programs in accordance with standard practice (e.g., ASTM [American Society for Testing and Materials] and other national and international standards organizations such as RILEM [Réunion Internationale des Laboratoires D’ssais de Matériaux], BSI [British Standard Institution], and NORMAL [Normativa Manufatti Lapidei], and conservation lab practices) on materials such as porous building materials, earthen building materials, stone, brick, mortars and cements, surfaces, renderings, mosaics, paint, wallpaper, and wood.

31. In depth knowledge of and ability to apply all material and safety programs and chemical safety standards integral to conservation practice including the ability to provide safety training for projects and activities.

32. Ability to initiate pilot treatment programs following laboratory work that serves as models for implementation, test walls, and testing application systems.

Program and Project Management

33. Ability to develop and produce scopes of work and/or task directives and budgets for projects that involve NPS personnel, contractors, and/or cooperators.

34. Ability to plan and coordinate regulatory requirements in order to expedite and meet compliance approval.
35. Knowledge of and ability to apply Contracting Officer's Technical Representative and contract law procedures, purchasing regulations, small business, sole source, budgeting, and change orders in the form of small contract obligations or major large contracts.

36. Sound knowledge of Section 106 of the National Historic Preservation Act and agreements with State Historic Preservation Officers relating to preservation activities in the parks and the ability to advise management of laws and the effects of the regulation on specific activities.

Writing and Communication

37. Ability to develop scopes of work and/or task directives for projects that are clear and concise in order to gain written approval from all involved parties.

38. Ability to write and publish scientific and technical material such as articles that contribute to the knowledge, understanding, and the continuity of ongoing research and developmental field work by preservationists and conservators.

39. Skill at public speaking and communication to a variety of audiences in order to communicate the nature and substance of programs and scientific studies in order to raise public awareness of pertinent preservation and conservation issues.

40. Ability to write documents on the level of Historic Structure Reports to provide parks with documentation for essential historical analysis.
Training

41. Ability to provide training in lab testing programs and specific lab tests such as mortar testing, paint analysis, wallpaper analysis, soils analysis, and basic microscopy.

42. Ability to provide training in field environments focusing on specific techniques of field conservation testing and treatment, such as architectural surfaces, consolidating stone, application of water repellent to masonry surfaces, conserving integral surface coatings, and implementing emergency measures to temporarily preserve surfaces and structures.
Cultural Resources Stewardship Needs Assessment
Architectural Conservator - Developmental Level

The National Park Service has the responsibility of providing meaningful training and education for its employees. The purpose of this training is to ensure the basic missions of the Service and its individual units are met, while allowing employees to reach their personal career goals.

Please look at the same list again. This time consider how you rate your overall preparation (all sources) for these aspects of being a architectural conservator. Please check the most appropriate response for each item. If the training competency does not apply to your present position, check the first box - N/A.

Professional Discipline

43. Ability to identify and conduct conservation procedures in situ or in the laboratory (as the project dictates), on one or more materials such as: structural components (e.g., wood, metal, masonry); construction materials (e.g., wood, stone, brick, metal, concrete, mortar, earthen materials); surface treatments (e.g., plaster, stucco, terra cotta, masonry joints); decorative finishes (e.g., paints and coatings, stenciling, wall paintings, gilding, wall coverings); and decorative elements (e.g., carved wood, molded plaster, metal ceilings).

44. Ability to conduct conservation treatments on materials using one or more of the following: application of adhesives coatings, consolidants, and biocides; removal of deteriorated material, deteriorative mechanisms, and non-functioning or destructive earlier treatments; and replacement of missing materials when warranted.

45. Ability to develop and implement short-term preservation goals designed to realize long-term preservation strategies of a comprehensive nature, or to develop and implement long-term preservation strategies from the onset.
46. Ability to write specifications for contracting purposes and to serve as the Contracting Officer's Technical Representative for architectural conservation projects.

47. Ability to be fully conversant in ethical issues that relate to architectural conservation practices, particularly in relation to copyright and to professional codes when application of treatments may be controversial or potentially cause irreversible damage or effect.

Preservation Law, Philosophy, and Practice

48. Ability to apply the philosophy and fundamental principles of historic preservation and architectural conservation to project work, particularly with regard to the history and development of materials, conservation treatment technologies, and crafts skill development including tools and trade, and treatment histories.

49. Knowledge of and ability to understand and apply all NPS management and planning guidelines and laws including Director's Order No. 28: Cultural Resource Management, and NPS Management Policies.

50. Knowledge of and ability to interpret Section 106 of the National Historic Preservation Act of 1966, as amended.


52. Knowledge of fire protection systems and other environmental protection regarding lightning, flooding, and animal and human intrusion for sites and historic structures.
53. Ability to maintain active working relationships with conservation peers inside and outside the government such as the Smithsonian Institution, the Institute of Science and Technology, the Getty Conservation Institute, the International Center for the Study of Preservation and Restoration of Cultural Property, and the National Institute of Standards and Technology, in order to maintain levels of competence in a rapidly changing field of knowledge.

Research, Materials Analysis, and Documentation

54. Ability to direct primary and secondary research necessary for the scientific study of specific project requirements.

55. Ability to develop laboratory analyses based on known scientific applications as well as to develop new methodologies for testing materials.

56. Ability to conduct inclusive sampling of materials for the purpose of laboratory identification and/or comparative dating.

57. Knowledge of and ability to access current research programs such as the Canadian Heritage Information Network, the Getty Conservation Institute, and the International Center for the Study of Preservation and Restoration of Cultural Property networks as well as institutions of higher learning where research is in progress.

58. Ability to analyze materials such as mortars, plasters, stuccos, paint, coatings, wall coverings, and soils and their component parts.
59. Ability to manage collections of artifacts for research purposes and to collect and manage field sampling programs in accordance with scientific principles.

60. Ability to document and interpret research findings that are included in or contributed to written reports such as site histories, materials analysis studies, or historic structure reports.

61. Ability to establish, maintain, and develop records for treatment programs, sampling procedures, and testing programs that may include treatment histories, project histories, causal relationships, completion reports, or effects of repair campaigns.

62. Knowledge of and/or skill at different types of photography including video, 35 mm, 4 x 5 camera, photogrammetry, boroscopy, X-ray, and photomicroscopy.

63. Ability to record sites and field conditions in written or tabular formats that are complete assessments of site conditions, materials deterioration mechanisms, causes and effects, and recommendations for program development.

64. Ability to produce thorough and complete measured drawings, either through computer-aided drafting or mechanical drafting.

Preservation Treatment and Maintenance

65. Ability to treat materials associated with a historic structure, and/or architectural element in situ for the sole purpose of conserving the element in its existing form so it may retain its highest integrity and thus authentic interpretability.
66. Knowledge of and ability to determine when materials require removal and transportation to the laboratory for treatment and ability to transport that material with the least amount of damage.

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67. Knowledge of contemporary conservation treatments (methods and materials), when their application is required, and the technologies relating to their applications, such as cleaning, coatings (i.e., repellents), consolidation, adhesion or readhesion, biocides, and temporary reversible stabilizations.

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68. Knowledge of the history and evolution of materials including their technologies as well as historic conservation treatments (methods and materials) of such materials and how they contribute to present conditions.

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69. Knowledge of ability to apply permanent and temporary conservation treatments prior to the necessary moving or relocation of material that is destined for a repository, a temporary location such as a laboratory, a museum, or to be restored to its original location.

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70. Ability to apply results of materials analysis in specifying preservation or conservation treatments.

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71. Knowledge of the contributions of the scientific community and ability to work within that community to research problems, resolve technical issues, and consult on materials science issues.

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72. Knowledge of and ability to conduct full testing programs in accordance with standard practice (e.g., ASTM [American Society for Testing and Materials] and other national and international standards organizations such as RILEM [Réunion Internationale des Laboratoires D’essais de Matériaux], BSI [British Standard Institution], and NORMAL [Normativa Manufatti Lapidei], and conservation lab practices) on materials such as porous building materials, earthen building materials, stone, brick, mortars and cements, surfaces, renderings, mosaics, paint, wallpaper, and wood.

73. In depth knowledge of and ability to apply all material and safety programs and chemical safety standards integral to conservation practice including the ability to provide safety training for projects and activities.

74. Ability to initiate pilot treatment programs following laboratory work that serves as models for implementation, test walls, and testing application systems.

Program and Project Management

75. Ability to develop and produce scopes of work and/or task directives and budgets for projects that involve NPS personnel, contractors, and/or cooperators.

76. Ability to plan and coordinate regulatory requirements in order to expedite and meet compliance approval.
77. Knowledge of and ability to apply Contracting Officer's Technical Representative and contract law procedures, purchasing regulations, small business, sole source, budgeting, and change orders in the form of small contract obligations or major large contracts.

78. Sound knowledge of Section 106 of the National Historic Preservation Act and agreements with State Historic Preservation Officers relating to preservation activities in the parks and the ability to advise management of laws and the effects of the regulation on specific activities.

**Writing and Communication**

79. Ability to develop scopes of work and/or task directives for projects that are clear and concise in order to gain written approval from all involved parties.

80. Ability to write and publish scientific and technical material such as articles that contribute to the knowledge, understanding, and the continuity of ongoing research and developmental field work by preservationists and conservators.

81. Skill at public speaking and communication to a variety of audiences in order to communicate the nature and substance of programs and scientific studies in order to raise public awareness of pertinent preservation and conservation issues.

82. Ability to write documents on the level of Historic Structure Reports to provide parks with documentation for essential historical analysis.
Training

83. Ability to provide training in lab testing programs and specific lab tests such as mortar testing, paint analysis, wallpaper analysis, soils analysis, and basic microscopy.

84. Ability to provide training in field environments focusing on specific techniques of field conservation testing and treatment, such as architectural surfaces, consolidating stone, application of water repellent to masonry surfaces, conserving integral surface coatings, and implementing emergency measures to temporarily preserve surfaces and structures.
Demographics

85. Age (years): _____

86. Gender:  □ Female  □ Male

87. Race/National Origin:

□ American Indian or Alaskan Native  □ Hispanic
□ Black (Not of Hispanic Origin)  □ Asian or Pacific Islander
□ White (Not of Hispanic Origin)  □ Other (Please Specify):

88. Do you have a disability? □ Yes □ No

89. Current GS level ______

90. Number of years served in the National Park Service? ______

91. Number of years in current position? ______

92. Education (Circle the highest number of years of formal education completed)

<12  12  13  14  15  16  17  18  18+

93. If you hold a college degree(s), please complete the following questions regarding the type of degree(s) and major field(s) of study:

Bachelor’s:

Type of Degree (i.e., B.S., B.A., etc.) __________________________

Major Field of Study_________________________________________

Master’s:

Type of Degree (i.e., M.S., M.A., etc.) __________________________

Major Field of Study_________________________________________

Doctorate:

Type of Degree (i.e., Ph.D., Ed.D., etc.) _________________________

Major Field of Study_________________________________________
The following list of degrees, as reported by the respondents, has been condensed for the ease of compilation. Some specific degree titles do not appear due to categorization under a more general term.

**ARCHITECTURAL CONSERVATOR – DEVELOPMENTAL LEVEL**

**UNDERGRADUATE [B.S. & B.A.]**

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<td>Political Science/American History</td>
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**GRADUATE [M.S. & M.A.]**

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<tr>
<td>Preservation Studies</td>
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**DOCTORATE [Ph.D. & J.D.]**

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<tr>
<td>Law</td>
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National Park Service
Cultural Resources Stewardship Needs Assessment
Architectural Conservator - Full Performance Level

In the performance of your present job as an architectural conservator, how important are the following professional competencies? The essential competencies for architectural conservator can be found in the NPS Tracking Kit at the "Learning Place" website: www.nps.gov/training/npsonly/npsescom.htm. Please check the most appropriate response for each item.

Professional Discipline

1. Ability to direct conservation procedures in situ or in the laboratory (as the project dictates), on one or more materials such as: structural components (e.g., wood, metal, masonry); construction materials (e.g., wood, stone, brick, metal, concrete, mortar, earthen materials); surface treatments (e.g., plaster, stucco, terra cotta, masonry joints); decorative finishes (e.g., paints and coatings, stenciling, wall, paintings, gilding, wall coverings); decorative elements (e.g., carved wood, molded plaster, metal ceilings).

2. Ability to direct conservation treatments on materials using one or more of the following: application of adhesives, coatings, consolidants and biocides; removal of the deteriorated material, deterioration mechanisms, and non-functioning or destructive earlier treatments; and replacement of missing materials when warranted.

3. Ability to manage or consult on complex field conservation projects in a well balanced manner reflecting coordination with multi-disciplinary groups and the ability to utilize input from these diverse influences.
4. Knowledge of and ability to manage field conservation programs directed towards temporary and permanent conservation.

**Preservation Law, Philosophy, and Practice**

5. Ability to manage the application of the philosophy and fundamental principles of historic preservation with regard to advising upper level management of appropriate options relating to actions affecting cultural resources.

**Research, Materials Analysis, and Documentation**

6. Ability to direct research programs focused on developmental approaches that not only solve site-specific conservation problems, but also address contemporary long-range regional, multi-regional, national, or international preservation and/or conservation issues.

7. Ability to develop comprehensive testing programs aligned with the American Society for Testing and Materials and other national and international standards organizations such as the Réunion Internationale des Laboratoires D’ssais de Matériaux (RILEM), the British Standard Institution (BSI), and Normativa Manufatti Lapidei (NORMAL), and scientific principles of conservation focused on materials analysis, treatment analysis, test wall applications, field monitoring programs, pilot installations, and repair programs.
Preservation Treatment and Maintenance

8. Knowledge of and ability to conduct or direct full testing programs in accordance with standard practice (e.g., ASTM, [American Society of Testing and Materials] and other national and international standards organizations such as RILEM [Réunion Internationale des Laboratoires D’ssais de Matériaux], BSI [British Standard Institution], and NORMAL [Normativa Manufatti Lapidei], and conservation lab practices) on materials, stone, brick, mortar, mortars and cements, surfaces, renderings, mosaics, paint, wallpaper, and wood.

9. Ability to initiate pilot treatment programs following laboratory work that serve as models for implementation, test walls, and testing application systems.

10. Ability to manage and direct a full safety program which covers the application of all OSHA, EPA, and industry standards and guidelines as well as laboratory safety procedures relating to the use and handling of hazardous chemicals and wastes.

Program and Project Management

11. Ability to manage, coordinate, and supervise research and field projects that include conceptualization, planning, actualization, compilation, and follow-up of project development.

12. Ability to deal effectively with field changes while managing field projects.

13. Ability to develop programs incorporating long-term research initiatives with programmatic and specific goals.
14. Ability to formulate and manage cooperative agreements for the purpose of partnering with professional groups in the field of conservation, including primary goals of research and training.

15. Knowledge of the NPS planning process to incorporate architectural conservation objectives into site-specific and realizable field-applied programs such as general management plans or cultural resource management plans and to incorporate long-term planning initiatives into regional, national, and international initiatives.

**Writing and Communication**

16. Ability to write and manage the production of Historic Structure Reports and equivalent substantial research and management documents for the purpose of directing cultural resource preservation approaches and activities.

**Training**

17. Skilled at all training techniques and methods including on-the-job training, presentations, didactic exercises, traditional academic methods, audio-visual, hands on, and mentoring.

18. Ability to identify training deficiencies of employees and to target systems or approaches for employee development.
Cultural Resources Stewardship Needs Assessment
Architectural Conservator - Full Performance Level

The National Park Service has the responsibility of providing meaningful training and education for its employees. The purpose of this training is to ensure the basic missions of the Service and its individual units are met, while allowing employees to reach their personal career goals.

Please look at the same list again. This time consider how you rate your overall preparation (all sources) for these aspects of being an architectural conservator. Please check the most appropriate response for each item. If the training competency does not apply to your present position, check the first box - N/A.

**Professional Discipline**

19. Ability to direct conservation procedures *in situ* or in the laboratory (as the project dictates), on one or more materials such as: structural components (e.g., wood, metal, masonry); construction materials (e.g., wood, stone, brick, metal, concrete, mortar, earthen materials); surface treatments (e.g., plaster, stucco, terra cotta, masonry joints); decorative finishes (e.g., paints and coatings, stenciling, wall, paintings, gilding, wall coverings); decorative elements (e.g., carved wood, molded plaster, metal ceilings).

20. Ability to direct conservation treatments on materials using one or more of the following: application of adhesives, coatings, consolidants and biocides; removal of the deteriorated material, deterioration mechanisms, and non-functioning or destructive earlier treatments; and replacement of missing materials when warranted.

21. Ability to manage or consult on complex field conservation projects in a well balanced manner reflecting coordination with multi-disciplinary groups and the ability to utilize input from these diverse influences.
22. Knowledge of and ability to manage field conservation programs directed towards temporary and permanent conservation.

**Preservation Law, Philosophy, and Practice**

23. Ability to manage the application of the philosophy and fundamental principles of historic preservation with regard to advising upper level management of appropriate options relating to actions affecting cultural resources.

**Research, Materials Analysis, and Documentation**

24. Ability to direct research programs focused on developmental approaches that not only solve site-specific conservation problems, but also address contemporary long-range regional, multi-regional, national, or international preservation and/or conservation issues.

25. Ability to develop comprehensive testing programs aligned with the American Society for Testing and Materials and other national and international standards organizations such as the Réunion Internationale des Laboratoires D’ssais de Matériaux (RILEM), the British Standard Institution (BSI), and Normativa Manufatti Lapidei (NORMAL), and scientific principles of conservation focused on materials analysis, treatment analysis, test wall applications, field monitoring programs, pilot installations, and repair programs.
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26. Knowledge of and ability to conduct or direct full testing programs in accordance with standard practice (e.g., ASTM, [American Society of Testing and Materials] and other national and international standards organizations such as RILEM [Réunion Internationale des Laboratoires D’essais de Matériaux], BSI [British Standard Institution], and NORMAL [Normativa Manufatti Lapidei], and conservation lab practices) on materials, stone, brick, mortar, mortars and cements, surfaces, renderings, mosaics, paint, wallpaper, and wood.

27. Ability to initiate pilot treatment programs following laboratory work that serve as models for implementation, test walls, and testing application systems.

28. Ability to manage and direct a full safety program which covers the application of all OSHA, EPA, and industry standards and guidelines as well as laboratory safety procedures relating to the use and handling of hazardous chemicals and wastes.

Program and Project Management

29. Ability to manage, coordinate, and supervise research and field projects that include conceptualization, planning, actualization, compilation, and follow-up of project development.

30. Ability to deal effectively with field changes while managing field projects.

31. Ability to develop programs incorporating long-term research initiatives with programmatic and specific goals.
32. Ability to formulate and manage cooperative agreements for the purpose of partnering with professional groups in the field of conservation, including primary goals of research and training.

33. Knowledge of the NPS planning process to incorporate architectural conservation objectives into site-specific and realizable field-applied programs such as general management plans or cultural resource management plans, and to incorporate long-term planning initiatives into regional, national, and international initiatives.

**Writing and Communication**

34. Ability to write and manage the production of Historic Structure Reports and equivalent substantial research and management documents for the purpose of directing cultural resource preservation approaches and activities.

**Training**

35. Skilled at all training techniques and methods including on-the-job training, presentations, didactic exercises, traditional academic methods, audio-visual, hands on, and mentoring.

36. Ability to identify training deficiencies of employees and to target systems or approaches for employee development.
Demographics

37. Age (years): ______

38. Gender:  ☐ Female  ☐ Male

39. Race/National Origin:
   ☐ American Indian or Alaskan Native
   ☐ Hispanic
   ☐ Black (Not of Hispanic Origin)
   ☐ Asian or Pacific Islander
   ☐ White (Not of Hispanic Origin)
   ☐ Other (Please Specify):

40. Do you have a disability?  ☐ Yes  ☐ No

41. Current GS level ______

42. Number of years served in the National Park Service? ______

43. Number of years in current position? ______

44. Education (Circle the highest number of years of formal education completed)
   <12  12  13  14  15  16  17  18  18+

45. If you hold a college degree(s), please complete the following questions regarding the type of degree(s) and major field(s) of study:

   Bachelor’s:
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   Major Field of Study__________________________________________

   Master’s:
   Type of Degree (i.e., M.S., M.A., etc.) __________________________
   Major Field of Study__________________________________________

   Doctorate:
   Type of Degree (i.e., Ph.D., Ed.D., etc.) _________________________
   Major Field of Study__________________________________________
The following list of degrees, as reported by the respondents, has been condensed for the ease of compilation. Some specific degree titles do not appear due to categorization under a more general term.

**ARCHITECTURAL CONSERVATOR – FULL PERFORMANCE LEVEL**

**UNDERGRADUATE [B.S. & B.A.]**

- ART HISTORY 01
- BUILDING PRESERVATION 01
- FINE ARTS 01
- INTERIOR & FURNITURE DESIGN 01

**GRADUATE [M.S. & M.A.]**

- ART/ARCHITECTURAL HISTORY 01
- HISTORIC PRESERVATION 01
- PRESERVATION STUDIES 02