Master’s Thesis

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ABSTRACT

Title of Thesis: DEVELOPING THE QUALIFICATION STANDARD FOR THE PRESERVATION CRAFTWORKER

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If we can agree that working on preservation projects requires different skills sets compared to modern construction, then there should be a qualification standard for the craftworker engaged in preservation. This thesis research explored the question: How can the preservation community create and define a qualification standard for the Preservation Craftworker?

In order to answer this hypothesis, my thesis research examines several past and present preservation programs, the Secretary of the Interior's Professional Qualification Standard and examines the process in developing a new job classification for the preservation craftworker.

This thesis research also included responses from a survey, which was developed in order to obtain additional data from practicing craftworkers, contractors and preservation professionals. In evaluating the survey responses, it was found that there is a

strong desire among practicing professionals in developing a qualification standard for craftworkers.

In addition, this thesis research has revealed a number of individuals, organizations and past initiatives dedicated to the education of craftworkers engaged in preservation. Upon evaluating, the endless amount of material developed by these various individuals and organizations, this thesis research determined that the key in establishing a nationally recognized qualification standard for preservation craftworkers rests collectively among these stakeholders. Although there is much more research needed in establishing a qualification standard, the material contained in this thesis research will undoubtedly aide in those future researches.

My thesis research demonstrates that the preservation community has more than ample information and resources to create qualification standards for the preservation craft worker who will restore, conserve and maintain our historic buildings and structures. It is now time to recognize the need for defining the minimum qualifications of craftworkers engaged in preservation and enact a national preservation craftworker standard. Otherwise, buildings will certainly continue to lose their integrity at the hands of craftworkers who lack the knowledge and understanding of historic materials and mistakenly apply treatments that are incompatible with historic buildings.

DEVELOPING THE QUALIFICATION STANDARD FOR THE PRESERVATION CRAFTWORKER

Michael J. Kassman

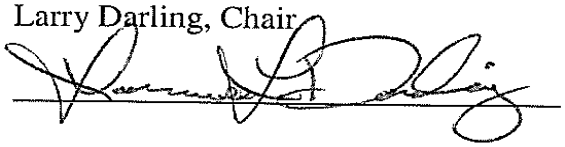
Thesis Submitted to the Faculty of Goucher College in partial fulfillment of the requirements for the degree of

Masters of Arts in Historic Preservation

2011

Advisory Committee

Larry Darling, Chair



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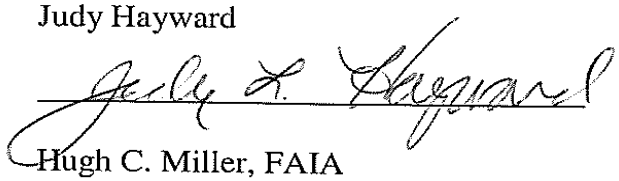

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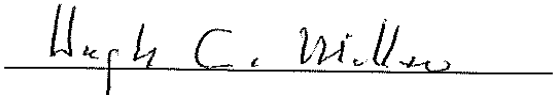


This thesis is dedicated to my wife Colleen and my sons Michael Jr. and Austin, as without their encouragement, patience, and sacrifices the coursework, research, fieldwork and writing could not have been accomplished. I also would like to dedicate this thesis to my father Anthony Kassman, as without his hard work, guidance and dedication to the masonry restoration trade; the pathway for my successes would not have been created nor would I have had the opportunity or desire in achieving such a high level of education. (Thanks Dad!)

ACKNOWLEDGEMENTS

Without the availability, guidance, experience, and dedication to preservation education of my thesis committee. This thesis research would not have created such a useful and valuable tool for future use. For this, I am extremely grateful, thank you again Hugh Miller, Larry Darling and Judy Hayward for all your help in guiding me through this process.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I
INTRODUCTION

Statement of Hypothesis

Thomas McGrath, Jr., the National Park Service Historic Preservation Training Center Superintendent, aptly observed: *"*If we accept that preservation work requires different and specialized trade skills from those used in contemporary construction, it should follow that we can define those competencies common to the preservation trades."[1]

The problem is that these particular competencies have yet to have been officially established. Given that the list of historic buildings will continue to expand, property owners will hire contractors who may not understand the incompatibilities between modern and traditional methods and materials, it is apparent that without having a recognized standard, inexperienced and unskilled workers will continue to alter the integrity of a historic building. There are several examples where a historic building has lost its fabric due to either having it removed, or by having the historic fabric compromised due to a previous applied treatment that was found to be incompatible or completely the wrong approach, that rendered such fabric into an un-repairable state.

As more and more buildings become eligible for listing in the National Register of Historic Places (National Register), there will be a continued demand for qualified craftworkers. Especially as a large majority of preservation treatments, are executed

without the use of a recognized "professional" as defined in the Secretary of the Interior's Professional Qualification Standards. These standards include a criterion, which dictates the minimum requirements for individuals who oversee historic preservation programs or projects and those who are involved in selecting the appropriate treatments for such projects. These individuals must meet the Department's definition of a Qualified Professional. Generally, in order for a person to meet this definition, the person must have attained a higher level of education, which is usually master's degree, and they must have documented work experience.[2]

Many would agree that elements found on historic buildings may be exceptional craftworks. Such works, may not be easily replicated or recreated (if at all) because it is difficult (if not impossible) to both locate original materials and craftworkers who know the techniques that were used in originally creating those works. In addition, since a craftworker will apply the majority of the treatments, they too, should be held to qualification standard.

This thesis research will examine current training programs and ideal qualifications of the craftworker engaged in masonry preservation. My hypothesis for this thesis research is to answer: How can the preservation community create and define a qualification standard for the Preservation Craftworker?

This person is a craftworker who has received training in traditional materials using traditional tools and techniques. A Preservation Craftworker is also a person who has an understanding of preservation methods and conservation. A person meeting this definition is different from a tradesperson who is working on modern construction, which

generally requires different skills and knowledge than that needed for historic buildings. The survival of our historic buildings may be in jeopardy without having a continuous supply of qualified Preservation Craftworkers who have received the necessary education and achieved journey level skills in traditional methods and materials.

Thesis Topic, Context and Scope

In training the next generation of craftworkers, it is apparent that it will be a constant challenge to "balance new technology and traditional methods and materials."[3] It can be argued that today's new building technologies have changed the role of the craftworker from being a builder to an installer.[4] Over time, this will eventually result in creating an even greater shortage of qualified craftworkers who have the knowledge and skill to work on historic buildings. What will happen twenty years from now as more and more buildings become eligible for listing in the National Register of Historic Places? Will we still be able to find a plumber who knows how to solder or a bricklayer who can build an arch?

Many preservationists who have been in practice for some time can attest to seeing buildings whose integrity was unintentionally, placed in jeopardy by a craftworker who simply was not qualified to do the job. Having a standard that outlines the competencies and indentifies core curriculum will create continuity in the education of our future Preservation Craftworkers.

It is now time to recognize the need for defining the minimum qualifications of craftworkers engaged in preservation; otherwise, buildings will certainly continue to lose

their integrity at the hands of craftworkers who lack the knowledge and understanding of historic materials and mistakenly apply treatments that are incompatible with historic buildings.

The scope of this thesis research will be to examine examples of current training programs; query leading preservation people on the need for a new Qualification Standard for Preservation Craftworkers; and to indentify competencies and a core matrix that ultimately may serve as the framework on implementing a new Secretary of the Interior Qualification Standard classification. Although there are many disciplines engaged in preservation, the primary focus of this thesis research will be limited to the masonry craftworkers.

Chapter II includes an overview of the current Secretary of the Interior Department Standards, the Bureau of Apprenticeship and Training programs and preservation initiatives (largely by the National Park Service) in developing competencies for the preservation craftworker. An evaluation of my survey concerning a new Qualification Standard is also included.

Chapter III contains an evaluation of survey responses. There were over 225 surveys sent via email resulting in 77 responses. The survey consisted of 25 general questions in order to measure the attitude of the preservation community on the development of a standard for a preservation craftworker.

Chapter IV discusses existing and proposed titles of workers engaged in preservation, including titles that the surveyed contractors themselves preferred for such workers. This discussion includes key definitions of widely used terms such as specialist,

technician, master, and journeyman. This chapter also contains an overview of the Department of Labor Standard Occupation Classification System as well as a discussion on the procedures of implementing a new job title classification. In addition, a section within this chapter will contain an overview of the Department of Labor Apprenticeable Occupations as well as new trades under review.

Chapter V provides an overview of current Apprenticeships and Preservation Programs. The programs evaluated include the International Bricklayers Apprenticeship Program, International Masonry Institute, Historic Windsor, Inc. /Preservation Education Institute Certificate Program, Preservation Trades Technology Program at Thaddeus Stevens College, National Trust for Historic Preservation Lyndhurst Restoration Program and Timber Framers Apprenticeship Program In addition, this chapter will include an overview of a few newly introduced, preservation job titles. The job titles discussed are the Pennsylvania Preservation Construction Specialist (PCS), and the Preservation Carpenter.

There are certainly many other preservation programs as well as job titles that exist in preservation. However, due to the focus of this study and time restraints, the previously named job titles and preservation programs will be the only ones discussed in this chapter. This chapter also includes a discussion on key challenges as well as benefits on developing a Preservation Trades Training Program.

Chapter VI contains the proposed competencies for the Preservation Craftworker based upon the survey respondents and conversations among subject matter experts. This chapter will also discuss the possibility of having this standard accepted on a national

level. If the proposed Preservation Craftworker classification becomes recognized and is included in the Secretary of the Interior's Professional Qualification Standards, then today's craftworker, who lacks the necessary preservation skills and knowledge would undoubtedly seek to acquire necessary training in order to meet the standard and become more employable.

Adding a new classification for preservation craftworkers will most certainly aid in protecting our historic buildings while serving as an additional incentive for continuing education, thereby, creating a more qualified craftworker. Although there are, many crafts engaged in building conservation, the primary focus of this thesis research will be limited to the masonry trade. This research is intended to be a starting point to encourage future study for the other trades.

Research Methods

Various methods were used to obtain the necessary information needed in order to propose the competencies for a Preservation Craftworker. Initially, a questionnaire containing approximately twenty-five questions were sent via email to leading preservation contractors, State Historic Preservation Officers, conservators, architects and others in order to determine the need for a qualified craftworker designation, obtain opinions on current craft education, and identify the variations or gaps in the competency matrix of today's craftworkers.

Besides utilizing the data obtained from the questionnaire, my primary sources were journals; preservation organizations such as the National Trust for Historic

Preservation, the U.S. National Park Service, and the Preservation Trades Network (PTN); preservation forums; universities, short courses, libraries and the internet.

My thesis research also evaluates the new job classifications of a Preservation Carpenter and Preservation Construction Specialist (PCS). Along with these new job classifications, my research examines several past and present Apprenticeship and preservation programs. The programs evaluated in my thesis research included the International Bricklayers and Allied Craftworkers Union, Timber Framers Apprenticeship Program, Historic Windsor, Inc. /Preservation Education Institute Certificate Program, Thaddeus Stevens College and National Trust for Historic Preservation Restoration Workshop at Lyndhurst.

These programs were evaluated in order to identify core-training elements, which will be used to develop a competency matrix for the Preservation Craftworker qualification standard. In addition, my research includes several telephone interviews with various subject matter experts on recommended competencies for a Preservation Craftworker.

There are many other preservation programs that exist, such as RESTORE, Job Corps, Building Trade Unions, American College of the Building Arts, Community Colleges to include the Campbell Center for Historic Preservation, and others found abroad such as those found in England, Scotland, Germany and Japan, all of which are important. However, due to time restraints of this thesis research only those previously mentioned programs will be evaluated.

CHAPTER II
THE IMPORTANCE OF TRADITIONAL BUILDING TRADES

The National Historic Preservation Act of 1966 set the framework for a national policy, including a provision for a National Register of Historic Places.

> To be listed, a property must meet rigorous standards, including a demonstration that the property is "of significance in American history, architecture, archeology, engineering, and culture," which is determined through "location, design, setting, materials, workmanship, feeling, and association." Moreover, the property must either be associated with "events that have made a significant contribution to the broad patterns of our history," with "the lives of persons significant in our past," be architecturally significant, or significant as an archeological site.[5]

As all state and local government agencies begin to inventory any and all buildings or structures considered significant and historic, an eight-person committee led by Walter Muir Whitehill was formed to investigate the national status on historic preservation education. The committee issued its findings in 1968 in what became known as the Whitehill Report. The Whitehill Report concentrated on the country's availability of craftworkers and architects who had received training in restoration and preservation.

A subcommittee led by Charles van Ravenswaay reached the following conclusion:

> Technology has displaced the traditional building craftsmen as effectively as industry previously displaced the hand craftsmen who made the objects of domestic use and commerce. Not only has prefabricated and disposable construction destroyed the general need for such craftsmen, but artificial materials have replaced many of the natural materials used in earlier buildings whose properties are part of the craftsmen's lore. These ancient crafts are a significant part of our national cultural resources. Their continuation as a living tradition is

essential to insure the authentic conservation of our early buildings.[6]

There was a time when the choices for selecting the material to be used, where it was to be used, how it was to be formed, and how it was to be installed were all decided by "master" craftsman. However, in the U.S, these decisions are now given exclusively to the architects. The increased involvement of architects coupled with new building technologies that expedite the building process including "low bid", has removed the critical thinking and active involvement by craftworkers, turning their work, which was once considered a noble path, into "just a job", this reinforces the notion "headless hand" viewed by James Marston Fitch (see note [8]).

The development of new building materials and their effects on the craftworker is not a recent development. There are numerous examples throughout history of how new technologies and materials altered the jobs craftworkers performed but there is nothing quite as severe as the replacement of plaster with drywall. The introduction of this new material has virtually eliminated the plastering trade while compromising the restoration of many historic buildings. As the number of qualified plasterers continues to decline, historic buildings may continue to lose valuable features as historic property owners try to repair the elements themselves or have them completely removed.

Moreover, it can be argued that today's new building technologies have changed the role of the craftworker from being a builder to an installer.[7] Over time, this change will eventually result in creating an even greater shortage of qualified craftworkers who have the knowledge and skills to work on historic buildings.

The continued demand for simplifying methods and materials comes with a price:

the majority of new building technologies are production orientated, emphasizing quantity versus quality. For example, the expanding use of tilt-up precast concrete panels makes it possible to construct entire sections of a building in a single day. Other examples can be found in the construction of new homes or small commercial buildings. These buildings are often constructed with the use of solderless plastic tubing; this material enables a plumber to complete the entire plumbing installation in a single day.

While expediting the building process, such modern building technologies, along with their simplified methods of installation, have led to considerably less skilled craftworkers who are not near the high caliber of yesteryear's craftworkers in knowledge of and ability to work with traditional building materials. These new processes have also eliminated the need for skilled craftsmen as many of these new installation practices require little or no training.

Many of these simpler technologies have also reduced the much needed critical thinking in today's workforce, creating workers who are basically installers. A good example of what the future in building construction holds, has just been introduced in China. This new building system just completed the construction of a 15-story hotel in a period of 6 days. (www.wimp.com/chinesehotel/).

Describing consequences of this change for the building trade craftworker, Professor James Marston Fitch of Columbia University wrote the following:

> This condition (of the so-called "headless hand") is the consequence of the industrialization of the building field during the last century or so—a process which effectively ended that symbiotic relationship between designer and fabricator, which had always characterized architectural and artifactual production in pre-industrial epochs. Such dissolution might have been inevitable, given the

> ineluctable demands of standardized serial mass production; but it has not been achieved without costs, the most serious of which was to rob the craftsman of any role or voice in the design process itself. Robbed of such participation, the craftsman was also rendered illiterate; denied any functional access to the expertise and literature which characterized any craft—from gold smithing to cabinet work and stair building and ultimately to architecture itself. Robbed of any opportunity to apply his own talent and training to the solution of day-to-day problems in the field and workshops, the craftsman's critical capacities simply atrophied.[8]

The continued breakdown of skill and knowledge in today's craftworker has been a leading topic of discussion among those in the preservation community. As Vice President Ken Follet of Apple Restorations and Waterproofing, Inc observes:

> "If reduced costs and methods that require less skill and less labor continue to be the driving factors in new technologies then those who are skilled in the traditional building trades cannot compete with the unskilled and inexperienced."[9]

Throughout America virtually every town, city, or even a rural environment has at least one exemplary building depicting works of a master craftworker—exemplary in terms of the building style, the materials used, the installation methods, and of course, the applied finishes. Unfortunately, some of these craftwork buildings now include treatments applied by inexperienced and unskilled workers who unintentionally altered these buildings, jeopardizing their historic integrity (See Figures 1 and 2).

Such a problem will continue to grow as the list of historic buildings continues to expand and property owners hire contractors who may not understand the importance of preserving the building as well as understand the incompatibilities between modern and traditional methods and materials.

One major factor often overlooked as a direct cause for the ongoing breakdown of crafts skills and the destruction of historic integrity is the selection of the lowest bidder

on contracts. In many cases, the differences between the high bidder (which is usually a highly qualified contractor) and the low bidder (who is often inexperienced and not truly qualified can result in price differences ranging from a few hundred to several thousands of dollars.

Figure 1: Historic residential building located on Clayton Avenue, Waynesboro, Pennsylvania. Photo showing an example of work performed possibly by the lowest bidder. Notice the difference in not only the color of the mortar, observe the difference in joint finish, as well as increase joint size. [Photo by Michael J. Kassman, August 2010.]

Historic building owners, however, would do well to heed the advice of English art and architectural critic John Ruskin:

> It's unwise to pay too much…but it's worse to pay too little. When you pay too much, you lose a little money…that is all. When you pay too little, you sometimes lose everything, because the thing you bought was incapable of doing the thing it was bought to do. The common law of business balance prohibits paying a little and getting a lot…it can't be done. If you deal with the lowest bidder, it is well to

add something for the risk you run. And, if you do that, you will have enough to pay for something better.[10]

Figure 2: Brick repair showing brick repaired by an unskilled mason, rendering fabric un-repairable. [Photo by Michael J. Kassman, May 2009.]

The Preservation Trades Network (PTN) Executive Director Rudy Christian states:

> The shortfall of people skilled in the traditional trades is a problem that will continue to worsen every year if more high quality programs aren't created at a much faster rate than they are being created today. We also need to get trades education back into the public school system in order to introduce pre-college students to the trades both for the sake of preserving our built heritage and our cultural heritage. The fact that America is finally beginning to see the value of her historic architecture is in many ways a double-edged sword. But a sword is just a tool, and we need to learn how to use it for the good of historic preservation and the good of the traditional trades.[11]

As the supply of historic buildings in need of repair continues to grow and the persons with have gained knowledge in traditional materials as well as to their applications continue to dwindle. More emphasis is needed in requiring that craftworkers obtain training and be certified in historic preservation. In addition, property owners of historic properties need to be educated on how to conduct a pre-qualification process before awarding contracts.

It has been over forty years since the committee of the 1968 Whitehill Report, published the following finding:

> We do not know of any training centers for the traditional building crafts within the United States. Neither the vocational schools, nor the unions, nor the preservation agencies have developed any systematic training to preserve skills, and to maintain and replenish the supply of carpenters, masons, plasterers, wood carvers and painters increasingly needed in preservation and restoration work. The craftsmen who possess and use these skills have been trained as apprentices either here or abroad, are self-taught in part, or were guided to their special skills, by the architects and craftsmen of the large preservation agencies.[12]

Since these findings were published there are now approximately forty-eight schools that offer graduate and bachelor degrees in historic preservation. However, only a few of these preservation programs are beginning to incorporate hands-on training. As colleges began to offer degrees in preservation, the "formation of an association of preservation educators" created the "National Council for Preservation Education" in 1980. [13]

This council not only advises the historic preservation degree programs, but also identity's and makes recommendations on core preservation curriculum that is to be integrated into each of these recognized programs. The core curriculum includes courses

such as preservation technology, which covers how to identify problems, select appropriate treatments, implement application procedures, and correctly use appropriate materials.

In the last decade, there have been a number of hands-on preservation programs geared to craftworkers, high school students, and "do-it-yourself" property owners. These programs are offered through community colleges, vocational centers, and nonprofit organizations. All too often those who attend such programs just do not have the much needed construction background knowledge, and mistakenly, expect to have gained it all with a few sittings at most. These programs are indeed useful in upgrading the knowledge of the practicing craftworker. However, it is essential that the assigned craftworker have an understanding of a given building's history and its pathology, as this understanding will aid in understanding the methods being utilized and the reasoning behind the repair procedures.

The advertisement as seen Figure 3 shows that for an investment of five hundred forty-five dollars, program participants can increase their business by twenty-five to fifty thousand dollars per year. This five-day intensive masonry program, which includes some hands-on training, adds to the problem. Giving a certificate for attending a seminar is one thing; providing a certificate of completion and certifying persons without testing the knowledge gain from the training session can in many ways be harmful.

The completers of the advertised program can be in a sense be considered "armed and dangerous" as the attendees may not realize that skills and knowledge are achieved through years of ongoing practice.

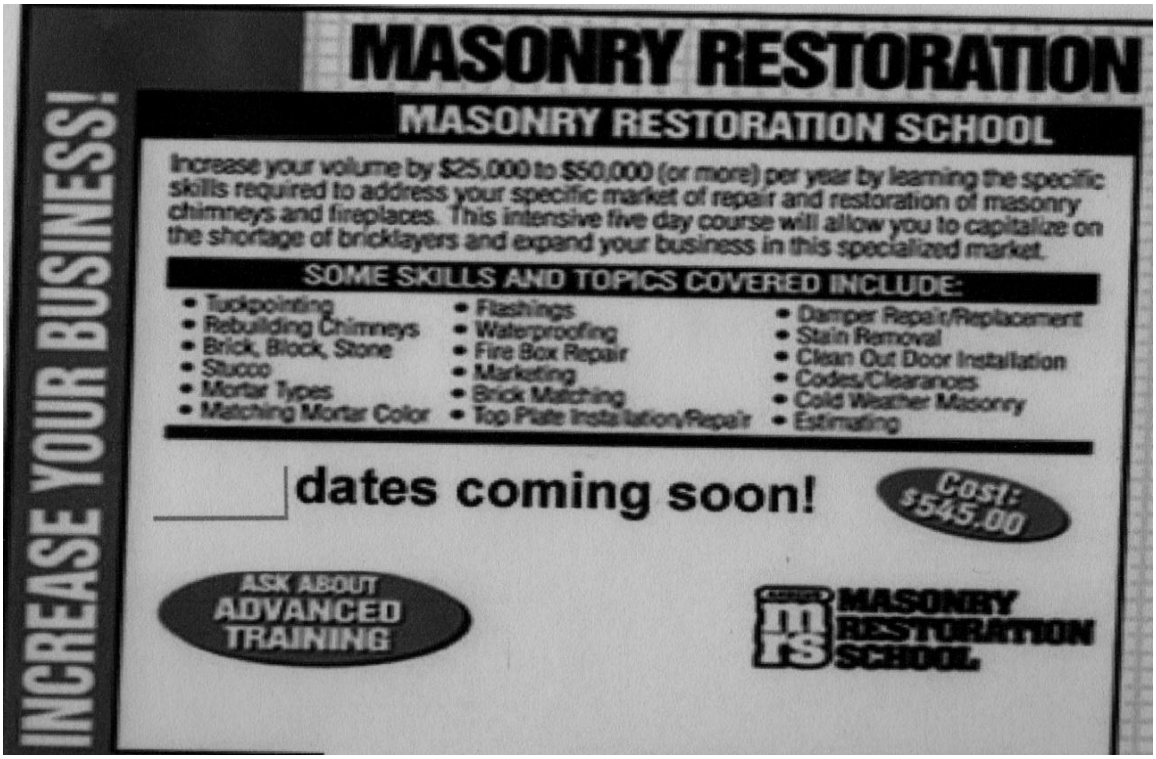


Figure 3: An Internet advertisement describing an upcoming five-day masonry course. [http://www.ahrenschimney.com/deleted/school.html, 2004]

Another issue is the use of lucrative name titles that practicing craftworkers call themselves such as “restoration specialist”, “preservation specialist”, “building doctor”, “building envelope technician”, “building mechanic”, “master”, and “mechanic”, to name a few. These titles are beginning to appear more often as independent contractors compete in order to gain additional work. The use of these names as well as a few others will be discussed in further detail in Chapter IV.

Overview of the Interior Department Professional Qualification Standards

In response to public outcry over the loss of many key historic buildings, the U.S. Congress enacted into law the National Historic Preservation Act (NHPA) of 1966. Over

the years, the original act was revised several times, most recently in1992. Today, the NHPA can be divided into three main components:

> It Authorizes the expansion and maintenance of the National Register of Historic Places, the official federal listing of districts, sites, buildings, structures and objects significant in American history, architecture, archaeology, engineering and culture.
>
> It establishes a protective review process (known as section 106) to ensure that federal agencies consider the effects of federally licensed, assisted, regulated, or funded activities on historic properties listed or eligible for listing in the National Register.
>
> It requires all federal agencies to locate, inventory and nominate properties to the National Register, assume responsibility for preserving historic properties and use historic buildings to the maximum extent possible.[14]

As the interest in documenting and protecting historic resources expanded, many people, who deemed themselves qualified in preservation, began to profit from new preservation projects. It soon became apparent that standards did not exist for this type of work, particularly projects that involved federal funding. This of course ran counter to the purpose of the NHPA, which was to protect historic resources. Since the NHPA did not include provisions specifying a qualification criterion for individuals practicing historic preservation, it was deemed necessary to ensure that all documentation, identification, registration, and treatment would be executed in the same manner nationally.

The National Park Service (NPS) was given the responsibility of administering the NHPA and in 1983; the Secretary of the Interior's Professional Qualification Standards was created. [15] These qualification standards are intended to be used as a guide in selecting individuals assigned to document and treat the nation's historic resources. These standards are not law, but have been adopted and are currently being utilized on

local, state, and federal government properties and programs as well as in the private sector. The professional standards of 1983 were based on the disciplines named in the NHPA. The disciplines only included the following four professionals: architects, historians, archaeologists, and historic planners. The most recent update to the qualification standards were issued in 1997; this update included that the current name Secretary of the Interior's Professional Qualification Standards be changed to Secretary of the Interior's Historic Preservation Qualification Standards.

In addition, the standards have expanded the list of professional occupations to twelve which include historic archeology, pre-historic archeology, architectural history, conservation, cultural anthropology, curation, engineering, historic architecture, historic landscape architecture, historic preservation, historic preservation planning, and history.

The expanded list of recognized professions was deemed necessary because of their importance to historic preservation. Generally, in order for an individual to meet the Department's definition of a "Qualified Professional", as a person must have attained a higher level of education, which is usually a master's degree, and must have documented work experience.[16]

The following section is extracted from the National Historic Preservation Act of 1966, as amended through 2006:

> Section 112
> [16 U.S.C. 470h-4(a) — Each Federal agency is to protect historic resources through professionalism of employees and contractors]Each Federal agency that is responsible for the protection of historic resources, including archaeological resources pursuant to this Act or any other law shall ensure each of the following:
>
> (1) (A) All actions taken by employees or contractors of such agency shall

> meet professional standards under regulations developed by the Secretary in consultation with the Council, other affected agencies, and the appropriate professional societies of the disciplines involved, specifically archaeology, architecture, conservation, history, landscape architecture, and planning.
>
> (B) Agency personnel or contractors responsible for historic resources shall meet qualification standards established by the Office of Personnel Management in consultation with the Secretary and appropriate professional societies of the disciplines involved. The Office of Personnel Management shall revise qualification standards within 2 years after October 30, 1992, [the date of enactment of the 1992 Amendments to this Act] for the disciplines involved specifically archaeology, architecture, conservation, curation, history, landscape architecture, and planning. Such standards shall consider the particular skills and expertise needed for the preservation of historic resources and shall be equivalent requirements for the disciplines involved.

According to the above standard, all government agency personnel and all contractors "shall meet ["shall" is defined as "must"] professional standards" as outlined by the Secretary of the Interior's Standards for Historic Preservation. There is no requirement for the employees of the contractor. If craftworkers do not meet need to meet a specified set of standards or professional criteria in order to apply treatments on historic buildings, what will become of the buildings historic fabric?

Working on a historic building requires additional skills, knowledge, and materials than those required for modern construction. For example, mortar used in construction today contains Portland cement, which is a material that is hydraulic, having a high compressive strength. Using this material on a historic building can be disastrous especially if the building was originally constructed using a lime-based mortar, which is softer. Using a mortar that is harder will not only affect how a building moves how it allows water to escape through the mortar joints.

In evaluating the masonry and carpentry trades, the Bureau of Labor Statistics

estimates that there were 160,200 jobs held by brick, block, and stonemasons in 2008. Out of that total, there were approximately 43,254 or (27%) who served as self-employed contractors. There were 1.3 million carpenters in total having approximately 416,000 or (32%) self-employed contractors.[17]

Many of these small, self-employed contractors will be hired on small commercial and residential projects that will not employ a recognized professional to oversee the project. It is easy to see how numerous buildings lose valuable features such as original windows, doors, and flooring as hired handymen or small contractors do not either recognize the value of these elements or do not know how to repair or restore them. In many cases, the notion that it is cheaper to replace than to repair dominates such work.

In the last decade, there has been an incredible fifty billion dollars spent on preservation through Federal Rehabilitation Tax Credits.[18] With such an increase in credits, the Secretary of the Interior Qualification Standards are required to be used on all federal funded projects. Although, the qualification standards have been re-drafted in 1997, in order to extend the list of qualified professional preservation occupation, the standards continue to exclude qualification standards for the "Preservation Craftworker."

The National Park Service National Historic Preservation Training Center Superintendent Thomas McGrath rightly affirmed: "If we want to ensure that our buildings are preserved to the very highest standards, the preservation community needs to pay attention to the training, development and economic opportunities for qualified preservation trade people as we are now doing for the preservation professionals."[19]

Several states have begun to initiate a contract prequalification process. In

general, some of these prequalifications are just general questions regarding the contractor's experience in the type of work needed and information on comparable projects in the past. The Pennsylvania State Historic Preservation Office appears to be an exception with its somewhat rigorous Contractor Qualification process (See Chapter VI). This process includes a section where as employees of the contractor, must demonstrate their skills on a designed mock-up based on work needed on the project. This Contractor Qualification process could serve as a basis or model for the development of a standard for the Preservation Craftworker.

The Emergence of Preservation Training Initiatives

The National Park Service

Following World War II, the typical American families became highly mobile. As many were now able to venture out in their automobile and travel across the countryside that often led them into one of many National Parks. Consequently, the infrastructure of the National Park System was found to be inadequate in accommodating the ever-increasing visitors. In 1956, a ten-year federal program named "Mission 66" was launched. The one-billion-dollar program was to provide:

> ...a wealth of modern services, including 584 new comfort stations, 221 administrative buildings, 36 service buildings, 1,239 units for employee housing, and more than 100 new visitor centers. The Park Service also acquired 78 additional park units under the program, an increase of almost forty percent over the 180 parks held in 1956." [20]

During this time, all National Park Service (NPS) restoration projects were under the direction of architect Charles E. Peterson, FAIA. As Peterson expected to have

several dozen craftworkers engaged in the undertaking of these projects, he drafted a "Building Restoration Specialist series", which he expected to be adopted by the Civil Service Commission.[21] This new series was created in order to "provide appropriate recognition and compensation for the handful of master craftsmen working on preservation projects."[22] The "Restoration Specialist" classification never became utilized "in the U.S. civil service classification system" until the name was changed to "exhibit specialist (restoration)."[23] As this title changed was accepted into the civil service classification system, it gave the NPS, the ability to "hire a cadre of tradespeople for permanent jobs."[24] During my thesis research, the state of New York was the only state to have adopted a similar title "Building Restoration Specialist" (See Appendix I)

Following the 1968, Whitehill Report, with an approved budget of $309,000, architects Henry A. Judd and Lee Nelson established the William Strickland Preservation Training Center in Philadelphia.[25] This program, the first of its kind, was to be a three-year program created to provide all NPS employees with the necessary knowledge and skills learning to properly treat historic properties owned by the NPS. Unfortunately, the program came to a halt later in the year, as the promised funding was transferred into another project. [26]

The concept of creating a training center for federal employees was revisited during the 1971 National Trust "Conference on Training for the Building Crafts." This conference reaffirmed "the commitment to the working principles of the Whitehill Report, and restated the need for the establishment of preservation trades training centers by the National Park Service, the National Trust, and other entities."[27]

The NPS and National Trust for Historic Preservation organized several training workshops as the discussion of building a permanent training center continued for the next several years. The NPS s did not receive the necessary funding to establish a training center until not until 1977. This new preservation-training center was located in Williamsport, Maryland and the head of the NPS Williamsport Preservation Training Center program was long- time employee James S. Askins.[28]

During the late 1970s and early 80s, James S. Askins teamed up with Chief Architect Hugh C. Miller on the development of a training program for NPS architects and maintenance workers. The new program aimed to eliminate the inordinate amount of time spent on repairing previously restored buildings that were not properly maintained on a regular basis. With its slogan, "Maintenance is Preservation" (originated by Hugh Miller), the program launched in 1973 and became an annual training course that involved both tradesmen as well as professionals.[29]

Today NPS has relocated its Historic Preservation Training Center (HPTC) to Frederick, Maryland. The HPTC offers a three-year program for Exhibits Specialists (Restoration). According to the HPTC website, trainees follow a self-directed competency-based curriculum that includes:

> Preservation philosophy based on the latest historic preservation laws, regulations, and guidelines.
>
> Identification, evaluation, documentation, and preservation of historic structures Identification and application of preservation techniques for various building materials and technologies.
>
> An understanding of the health and safety issues associated with working on historic structures

Knowledge of preservation project management[30]

The HPTC program offers practical benefits for trainees that include "direct involvement in projects ever increasing in complexity" as well as "expertise in a specific craft skill or the technical management of projects." Furthermore, when trainees complete the program and are certified, they "are placed in career positions within the National Park Service."[31] In addition, the HPTC also offers a continuing education program where "completers" of the three-year program continue their education by taking annual mini workshops and seminars.

With the duty of protecting the nation's most valued treasures, the National Park Service has been a pioneer in developing both training and competencies for NPS employees engaged in applying restoration and preservation treatments. Notably the NPS has outlined detailed competencies called KSAs—knowledge, skills, and abilities—for its Exhibits Specialist (Restoration) position for various levels of experience. (See the NPS KSAs in Appendix II.)

National Trust for Historic Preservation Restoration Workshop

In 1961, the National Trust for Historic Preservation (NTHP) acquired the Lyndhurst property located in Tarrytown, New York. (See Figure 4)

> The house was designed in 1838 by Alexander Jackson Davis**,** and has been the home of former New York City mayor William Paulding, Jr.**,** merchant George Merritt**,** and railroad tycoon Jay Gould, whose daughter Anna Gould**,** Duchess of Talleyrand-Périgord, donated it to the National Trust for Historic Preservation in 1961.[32]

The Lyndhurst property consisted of 67 acres, a carriage house, green house and

two horse stable sheds. The main building is considered as "one of "America's finest Gothic Revival mansions."[33] This property is one of twelve properties that the NHPT owned during 1960's and 1970's. The other properties owned by the NHTP included the Woodlawn Plantation, Decatur House, Woodrow Wilson House, Drayton Hall, Cliveden, Pope-Leighy House, Chesterwood, Belle Grove, Oatlands, Filoli, and Shadows-on-the-Teche.

Figure 4: Lyndhurst a Gothic Revival Mansion and designated as a National Historic site. This property is owned and operated by the National Trust for Historic Preservation [photo obtained by Old house Journal, 2010] http://www.oldhouses.com/cf/displaylisting.cfm?q_listingid=94

As several historic properties were now in the care and custody of the NHPT, creating a preservation program would be the most cost effective way in maintaining these properties as well as take on some of the extensive repairs that are needed rather than hiring contractors outside the NHPT.[34] Blaine Cliver of the NHTP developed the restoration program and appointed "Alan Keiser as head of the restoration program and hired two other apprentices"[35] Alan, had a law degree and was Chief of the program from 1973-1983.

The "primary goals of the Restoration Workshop are to serve preservationists with quality restoration work at reasonable cost and to train apprentices who will return to their firms or communities with skills to share."[36] The selection process was very competitive, at a minimum "applicants must have experience in a building trade and demonstrate a commitment to pursuing a career in the preservation trades." [37]

In a study titled "The Restoration Workshop a Plan for the Nineties" by Wesley Hayes, The core curriculum of the restoration program can be broken into the following six categories:

General	5%
Stabilization of Historic structures	10%
Restoration carpentry and millwork	50%
Allied restoration trades	20%
Continuing Maintenance	10%
Career opportunity	5%

> The general category included philosophy, architectural history, technological history, survey and analysis, documentation and administration was identified as the classroom component. The bulk of this was offered in the winter using guest lecturers. Demonstrations were frequently done in the field concerning a specific project.[38]

In the beginning, the workshop focused primarily on the Lyndhurst property as the property was in dire need of immediate repairs. These repairs included "porches, finials, crockets, turrets, pinnacles, cresting and the cupola to duplicate missing wooden sections. Restoration of the Lyndhurst carriage house interior required replacement of an intricate coffered wooden ceiling and careful staining of the new wood to match the original fabric."[39] Other areas that needed restoration include the bowling alley, greenhouse, and swimming pool.[40]

Shortly after the launch of the Restoration Workshop, its creator Blain Cliver left the NHPT to take a position as Regional Historical Architect for the North Atlantic Region of the National Park Service.

In 1975, Blaine Cliver "began the North Atlantic Historic Preservation Center as an organization to do the needed preservation work within the region, from research to drawings and reports, and included the field crews that carried out the work. Also included in what the Center did was maintenance training for park crews that included bringing park staff onto the Center's crews while they were working in that park."[41] Today, the North Atlantic Historic Preservation Center remains in operation, but most of the training conducting by the NPS is conducted out of the National Historic Preservation Center located in Fredrick, Maryland under the direction of Thomas McGrath.

During the recent Preservation Trades Network (PTN) annual event, I met two graduates of the Lyndhurst program, David Gibney and Jameson Gibson Jr of Gibson/Magerfield Corp, both of whom are still heavily involved in preservation. These graduates attended the Restoration Workshop at different intervals, and were more than

happy to offer the following highlights of their experience.

Jameson Gibson notes

a. I was actually hired as an employee of the National Trust. The period was not defined, but was assumed to be for a two-year minimum.

b. There were no prerequisites. Most of us had worked in construction, but not all. Ironically, we all had undergraduate degrees.

c. I was at Lyndhurst from Sept. 75 to Dec. 76 and at Woodlawn Plantation, Decatur House, Woodrow Wilson House and Pope-Leighy House from Jan77 – Aug 77.

d. There were 5 of us when I started and 8 or 9 when I left.

e. There were 65 individuals who completed the program which ended in 1986. I have a database which we compiled two years ago that lists most of their names although we were unable to find a few and 1-2 have died. One of these was on the job in 78 or 79.

f. During my first year, there was only housing for the Chief and two apprentices. Another person and I shared an apartment in town and were given a little more per hour (but not enough) as our wage was roughly $5/hr which was inadequate for living in New York at the time. It was good deal, though, as now, you would probably have to pay thousands to get that kind of training and experience.

g. The maintenance projects for these properties included just about everything such as plaster repair, shutter repair, painting, stucco, iron work, slate and copper roofing, masonry and some faux finishing.

h. We were not as structured and did not have a classroom. Experts were brought in periodically to help us get started on a particular project, and they might work with us for several weeks. We also occasionally went to expert's shops and watched them work and then got to practice the basics with them "looking over our shoulders" and giving us tips.

i. There was no classroom or library, but we did have to write reports for the National Park Service upon completion of a major project. Alan Keiser, with his Yale law degree, and Air Force backgrounds, was a very good editor and proofreader.

David Gibney is highly regarded as a "master craftsman" and is currently owner of the Historic Restoration Specialists Inc, located in Smithsburg, Md. During an interview, David agreed to offer the following highlights of the Lyndhurst program.

a. Persons attending the restoration workshop must agree to enroll a minimum of 2yr. Most attended two years.

b. In order for one to gain entry into the program, you must have construction experience. Those who did not have construction experience where turned away unless they were sponsored or affiliated with a organization.

c. David mentioned that he attended the program in 1980 and completed in 1982

d. Generally, the program was limited to twelve persons

e. These twelve trainees worked under a "Chief Restoration Craftworker", (which is a National Trust classification)

f. There were 65 individuals who completed the program which ended in 1986

g. The students were housed on site. The living quarters for the trainees, was a transformed greenhouse, which served as a dormitory.

h. The maintenance projects for these properties included just about everything such as plaster repair, shutter repair, painting, stucco etc…

i. During the winter months, the National Trust would bring in master craftworkers who in turn would teach the students hand-on techniques of various crafts. These teachings included plaster, stucco, masonry, slate and carpentry.

j. There was very little classroom instruction as the program was pretty much all hands-on. However, students who wanted additional knowledge were encouraged to utilize the onsite reading room.

The program came to a halt in 1987 as "the overhead costs of time, travel and general conditions of staging work at other Trust properties scattered along the eastern seaboard was particularly problematic."[42] Maintaining the necessary funding was the

biggest downfall of the program as well as the relationship between property administrators and the Workshop began to deteriorate, as some officials began to question, "why the properties should bear the cost of training journeyman who would leave the system. When project funding was available, property administrators found that they could obtain many of the services performed by the workshop at the same or lower cost through local contractors" [43] Other issues that hindered the continuation of the Restoration Workshop include the "high cost of living, union presences and premises-operation liability."[44] There were 65 persons who graduated from the Restoration Workshop and all of whom have received a certificate of completion (See Appendix IV). In 2008, administrators and graduates of the Restoration Workshop held a reunion at the Lyndhurst location. All graduates are still heavily involved in preservation and currently are employed in museums; serve as craftsmen, private contractors, and educators.

The Durham Preservation Program

Located in Durham County, North Carolina, a small tract of land containing 71 acres named "Stagville" was originally part of the largest pre-civil war plantations in the south with having a combine total 30,000 acres. The small tract of land was given the name of "Stagville" as the original owners purchased it from Judy Staggs following the Revolutionary War. This plantation remained in the Bennehan-Cameron families until 1954, when it was sold to the Liggett and Myers Tobacco Company, which is now named Liggett Group. [45]

The small tract of land "Stagville" retains the original pre-civil war buildings,

which include "18th-century Bennehan House, four rare slave houses, a pre-Revolutionary War farmer's house, a huge timber framed barn built by skilled slave craftsmen, and the Bennehan Family cemetery."[46] Since the plantation had as many as 900 slaves, it is believed that these buildings where constructed by slave craftsmen. As this property is significant due to its long history and architecture, the now named Liggett Group, donated the property to the state of North Carolina in 1976.[47]

Although the historic buildings where intact, they suffered from years of neglect. Following, "a $400,000 fix-up, Stagville was opened to the public as the Center for Preservation Technology."[48]

In 1978, a preservation program developed by John Fugelso, was created at the Stagville site. This preservation program was designed so that each student would complete a core set of class instruction related to preservation, followed by an overview of carpentry, masonry, plastering, and painting. This preservation program not only created a well-rounded preservation craftworker, it is credited as being the first preservation program to be accredited by an institution of higher learning.[49] The Durham Technical Institute (which is now Durham Technical College) sponsored the program until the mid-80s as funding for the program came to a halt.[50] Even though the program for the preservation trades has ended, the site continues to "serve as an instructional tool for the visiting public and teaches them about Southern plantation life and North Carolina material culture."[51] John Fugelso left Stagville prior to the program's termination, to take a position as the "Chief of the Preservation Construction Section at the Pennsylvania Museum and Historical Commission." In this position, John created a new job

classification titled “Preservation Construction Specialist (PCS).[52]

This new job classification as well as other earlier initiatives such as Historic Windsor's Certificate Program and a new preservation program at Thaddeus Steven College of Technology will be discussed in further detail in Chapter IV.

A Brief History on Apprenticeship

An ancient practice, apprenticeship dates back more than four thousand years and has been practiced in many places across the globe including Egypt, Greece, the Roman Empire, and England. With its long history, apprenticeship has laid the foundation for modern training and certification programs. In the United States, the practice of apprenticeship can be traced to the time of the country’s first settlers. As the majority of settlers came from European countries, the practice of informally passing down knowledge and skills from father to son was quite common. If a person began a formal apprenticeship, the person would have been indentured (serving a contract) at an early age, sometimes younger than ten years old, to a master craftworker.

The term “master” could be defined as a person who had spent many years in a respective trade, enough to have mastered it. (This term, along with a few others related to apprenticeship, will be discussed in further detail in Chapter II.)

In colonial New England, many youngsters less than ten years old whose parents could not support them were indentured to masters who agreed to teach them a trade and were usually bound to masters until they were twenty-one years old,. This practice was legalized by the "poor laws.” The poor laws are a set of laws designed to

provide "relief and support of the poor."[53] The indentured apprentice Nathan Knight, mentioned below, apparently began his service in 1676 when he was about eight and a half years old. His indenture required him to serve more than twelve years to learn masonry and these were the conditions of his servitude:

> This Indenture witnesseth that I, Nathan Knight…have put myself apprentice to Samuel Whidden, of Portsmouth, in the county of Portsmouth, mason, and bound after the manner of an apprentice with him, to serve and abide the full space and term of twelve years and five months…during which time the said apprentice his said master faithfully shall serve…He shall not…contract matrimony within the said time. The goods of his said master, he shall not spend or lend. He shall not play cards, or dice, or any other unlawful game, whereby his said master may have damage in his own goods, or others, taverns, he shall not haunt, nor from his master's business absent himself by day or by night, but in all things shall behave himself as a faithful apprentice ought to do. And the said master his said apprentice shall teach and instruct, or cause to be taught and instructed in the art and mystery as mason; finding unto his said apprentice during the said time meat, drink, washing, lodging, and apparel, fitting an apprentice, teaching him to read, and allowing him three months towards the latter end of his time to go to school to write, and also double apparel at end of said time…[54]

After completing the terms of his agreement, the apprentice would be given the status of journeyman, which allowed him to travel abroad freely to continue the practice of his trade while receiving a higher pay scale. A journeyman would practice the trade for a number of years before he would be considered a master craftsman. It was said that for a person who achieved the status of journeyman, the skill and knowledge that he had gained was his only possession.[55]

Structured Apprenticeship Programs

The first structured apprenticeship program in the U. S. was created in the state of Wisconsin in 1911 and was under the control of the Industrial Commission of

Wisconsin. This program was approved by the state, which also mandated that all apprentices attend job training a minimum of five hours a week. Unlike Europe, the Wisconsin apprenticeship system only included apprentice and journeyman levels; the master level was only adopted for the electrical and plumbing trades.

The apprenticeship system was not fully structured nationally until the passing of the National Apprenticeship Act of 1937, which was better known as the Fitzgerald Act. This act imposed a fully structured system to safeguard the welfare of the apprentices. Unlike earlier times when an apprentice was indentured for numerous *years*, apprenticeship programs under this act were required to record the number of *hours* an apprentice was to serve as well as create a pay system based on time served and skill level achieved, provide certificates upon completion, and list competencies. The act further mandates the following additional requirements for all registered apprentice programs:

a) The starting age of an apprentice is not less than 16;
b) There is full and fair opportunity to apply for apprenticeship;
c) There is a schedule of work processes in which an apprentice is to receive training and experience on the job;
d) The program includes organized instruction designed to provide apprentices with knowledge in technical subjects related to their trade (a minimum of 144 hours per year is normally considered necessary);
e) There is a progressively increasing schedule of wages;
f) Proper supervision of on-the-job training with adequate facilities to train apprentices is insured;
g) The apprentice's progress, both in job performance and related instruction, is evaluated periodically and appropriate records are maintained;
h) There is employee-employer cooperation; Successful completions are recognized; and there is no discrimination in any phase of selection, employment, or training.[56]

The Bureau of Apprenticeship and Training

The Bureau of Apprenticeship and Training (BAT), which was created by the Fitzgerald Act, has the responsibility of providing assistance in creating and maintaining apprenticeship programs. Besides developing new apprenticeship programs, the BAT is also heavily involved in re-evaluating existing programs, as some occupations may need updating due to demand changes as well as adjusted to account for new technologies. In some cases, occupations were eliminated as they were found to be no longer in demand.

The BAT also stays involved in creating promotional programs such as Pre-job, a preparatory program usually lasting eight weeks that allows a student to evaluate any trade and determined if the trade is attractive as a career. Upon completion, the Pre-job student is placed in an apprenticeship program. Another program recently created by the BAT, Helmet to Hardhat, was launched in 2003 in order to assist returning veterans as they make the transition into the civilian workforce. This program allowed veterans to receive up to two-years' credit toward apprenticeships from their military service.

Conclusion

As this chapter provided an overview of the past preservation programs, it is apparent that Apprenticeship training programs are indeed, vital for the continued survival of our heritage. There will always be a need for preservation workshops and seminars, but the real education is best achieved from actually doing it. As there are many steps within a specific trade that a craftworker performs that are simply not found in a book, a craftworker just knows.

In order to fully understand and appreciate a trade, one must pay dues by spending time in building. This is why, Lyndhurst, Durham and the NPS preservation programs are the ideal models in which to train future preservation craftworkers. These programs allowed the students to put in to practice what they learned on real projects.

CHAPTER III
ANALYSIS OF THESIS SURVEYS

A cross-section sampling of selected people working in the field of preservation were surveyed for this thesis project to determine the need for and interest in a new Department of the Interior Preservation Qualification Standard Classification. The online application SurveyMonkey was selected for its simplicity and ease of use for respondents along with its reporting tools (e.g., graphs and tables) for the researcher. Of the 225 persons who were emailed, 77 (35%) have responded to the survey as of August 15, 2010. This chapter discusses and summarizes responses and highlights specific comments for each question. (See the Appendix VI entire set of responses.)

Question #1:

Please indicate Professional Status.

a) Craftworker
b) Owner
c) Superintendent
d) Educator
e.) Conservator
f.) Architect
g.) Engineer
h.) Other
Please Specify Other_____

The persons surveyed, were randomly selected using several historic preservation directories; state preservation trusts directories, historic preservation contractor's directories all of which were obtained from the use of the internet.

The survey respondents comprised a diverse group of persons in the field of

preservation, which is all the more evident in the breakdown of professions in the "Other" category. This category includes:

NPS HPTC Director
Craftworker
Contractor Superintendent
Consultant
Manufacturer
NPS Exhibit Specialist
SHPO Staff
SHPO Tech Staff
Government Preservation
State Historic Preservation Officer
Landscape Architect
Research Director
Sculptor, Carver, Mold Maker
Project Manager
Preservation Contractor
Administrator
Restoration Specialist
Technical Advisor
Architectural Historian
Cultural Resource Manager
Vice President of the International Bricklayers and Allied Craftworkers Union

.

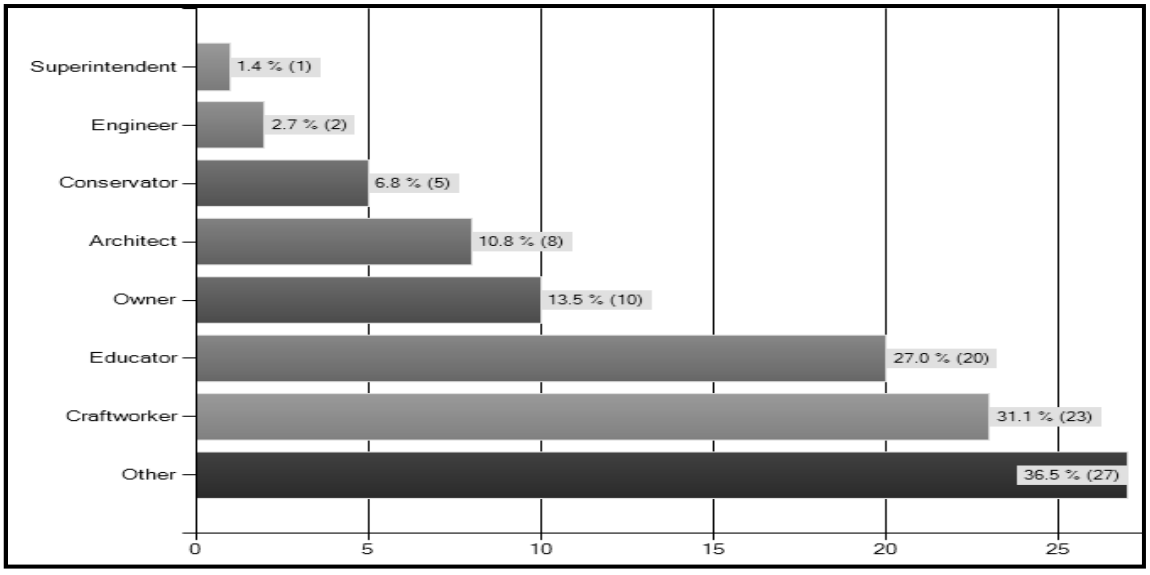


Figure 5: This bar graph shows the breakdown of respondents by professional status and the x-axis shows the number of respondents. (Downloaded through Survey Monkey, August 2010.)

Question #2:

In your experience, have you discovered a historic building(s) that had its historic fabric compromised due to the application of incompatible materials or by simply having the wrong treatment applied?

The response to this question was not all that surprising. With all 77 respondents answering this question, 97.4% responded that they had seen buildings compromised because of the application of incompatible materials or the wrong treatment. The small 2.6% of persons who disagreed offered two other possibilities. One was that generally, a craftworker only applies what is prescribed. In other words, a craftworker is generally not involved in diagnosing the building and only takes direction on what to do. Another point raised was that the right treatment might have been selected but could have been applied incorrectly. Both of these points along with a few others will be discussed further in this study. Nevertheless, the overwhelming majority of the respondents had seen historic fabric compromised as a result of either incompatible materials or treatment.

Question #3:

Do you agree that craftworkers are beginning to diminish?

Of the 77 respondents, 81.8% agreed that craftworkers are indeed beginning to diminish in number because of two main factors. One is the belief that in order to be successful one must go to college; this notion has often stirred the ideal candidate away from the trades. "The American education system identified children at an early age as "College bound" and directed them toward academically challenging coursework while the underachievers were told to go learn a trade at vo-tech school."[57]

Question #4:

Do you believe that today's craftworkers do not have the same skills of craftworkers of yesteryear? (Table 2)

As illustrated in Table 2, 43 respondents wrote comments on this issue.

Comments noted the loss of at least a generation of craftworkers as craft trade education has virtually been eliminated in the public school system. Survey respondent #16 wrote the following comment "I think that the ability to use modern tooling has helped in production, but some of the motor skills have been lost - tricks and techniques used before mechanization." Survey respondent #42 made the following statement "Yes and no. I think a lot of craftworkers are more school educated today than yesteryear but the volume work of yesteryear gave craftworker an edge"

As respondent #42 states, "the volume of work of yesteryear gave a craftworker an edge", this is a very interesting point. There indeed was a lot more work opportunities yesteryear than found today. If a craftworker did not like the job he had, he just quit and could walk across the street to get another one. I believe that both of these statements are true and are just a few of many reasons as to why there is a need to develop a qualification standard for craftworkers engaged in preservation.

Answer Options	**Response Percent**	**Response Count**
Yes	65.8%	50
No	18.4%	14
Neutral	15.8%	12
Comment:		43
answered question		**76**
skipped question		**1**

Table 1: Computerized results for question #4. (Downloaded through SurveyMonkey, August 2010.)

Today it is different, generally craftworkers are staying with one employer, so that in essence "You only know what you're exposed to" exists. Other words, if you work for

a contractor that primarily caulks and cleans masonry, and "if this is all they do, then this is all you will know how to do."

Question #5:

Do you agree that craftworkers engaged in preservation need additional skill sets compared to those skills for new construction?

Out of the 77 respondents, 97.4% agreed that craftworkers need additional skills when treating historic buildings. All respondents answered this question and 43 provided additional comments. Because of the large number of comments left by survey respondents, only a few following sample is included in this section (See Appendix VI for complete Survey Responses).

> Respondent #1 wrote: "They need an awareness that the old materials may not be compatible with what can be picked up at Home Depot and an understanding of character-defining features in order to determine what fabric should be maintained and what can be changed."
>
> Respondent #16 wrote: "Craftworkers who engage in preservation must understand the materials they are working with as individual materials and how the building and its materials function as a system."
>
> Respondent #17 provided the following comment: "Tradesman are often taught only on more modern materials both on the job and through any vocational training opportunities. Many lack the knowledge to understand that historic buildings are different."
>
> Respondent #25 observed: "Conservation work requires knowledge of different materials and techniques than are typically used in new construction."
>
> Respondent #26 said: "Absolutely agree! Craftsman in new construction typically have minimal skills that translate to working w/ historic buildings."

Each of these responses have brought up some of the same issues discussed earlier in this thesis research. With having reached a consensus that, craftworkers

working on a historic project need additional skills, it is apparent that the craftworker role on a preservation project is extremely high on the list. Professor David Mertz from the Belmont Technical College best describes the differences between a modern builder and a preservation craftworker.

While you need to know how to assemble, you often have to analyze why something is not working or what went wrong in order to fix it properly. This involves understanding material science, why things deteriorate, chemistry, structures and a host of other topics. Your average "Joe the Homeowner" and handyman contractor doesn't understand any of this and will often do things to a building that in the long run is more detrimental than helpful. The running joke in our school is that 50% of the time, students will end up fixing problems caused by water and the other 50% of the time they will end up fixing problems caused by morons."[58]

Question #6:

Have you completed a program, hired employees or have worked with other employees that have completed a Vocational program, State approved Apprenticeship or Preservation program?

Answer Options	Response Percent	Response Count
Yes	76.6%	59
No	15.6%	12
Not Applicable	6.5%	5
Other Program	1.3%	1
answered question		**77**
skipped question		**0**

Table 2: Computerized results for question #6. (Downloaded through SurveyMonkey, August, 2010.)

As indicated by the responses illustrated in Table 2, a large majority of the respondents have indicated that either they have completed or their employees have completed an Apprenticeship, Vocational Program or other Preservation Program. It would have been interesting to see if the twelve persons who responded "no" were taught

solely on the job. Unfortunately, this survey question did not allow respondents to leave comments.

Question #7:

If you answered yes to question #6, how would you rate apprenticeship, preservation, or other vocational programs as an introduction to conservation?

Answer Options	Response	Response Count
Good	32.3%	21
Very Good	29.2%	19
Excellent	18.5%	12
Not Applicable	20.0%	13
answered question		65
skipped question		12

Table 3: Computerized results for question #7. (Downloaded through SurveyMonkey, August 2010.)

Question #8:

Can you provide the name of the Preservation or Apprenticeship Program you or your employees have completed? (Table 4)

Answer Options	Response Percent	Response Count
Yes	75.7%	53
No	7.1%	5
Not Applicable	17.1%	12
Please provide name of program:		55
answered question		70
skipped question		7

Table 4: Computerized results for question #8. (Downloaded through SurveyMonkey, August 2010)

The intent of Question #8 was to get an idea of the variety of programs that exist. As illustrated in Table 4, there were 55 persons indicated a program name. Because of the

size of the list, only a sampling will be mentioned here. (See Appendix VI):

a) American College of the Building Arts
b) Thaddeus Stevens College
c) Belmont Technical Institute
d) Weymouth College in England
e) International Bricklayers and Allied Craftworkers Apprenticeship Program
f) Colonial Williamsburg Foundation's Historic Trades Program
g) RESTORE
h) College of the Redwoods
i) State of Pennsylvania PCS
j) International Masonry Institute

Question #9:

How important are craft certifications?

In question #9, 92% of respondents found that craft certifications were somewhat to very important while only about 8% found such certifications to be not important. However, based on some of additional comments left by respondents, many elicited that skills are just important as the certification. I agree with this as well, there are many certifications that are issued that should really be only a "certificate of attendance."

One of the survey respondents stated that "all programs that are intended to certify, should have been developed based on a recognized standard, so that one certification given at Vocational School is equivalent to a Preservation Certification given at a Community College or other Preservation Training Center otherwise how will one differentiate one program from another?"

I agree with this statement, there should be some continuity between programs. One way to have continuity would be to indentify a set of courses that would serve as the core foundation. Some course for example could be Introduction to Preservation, Intro Architecture, Building Technology, Preservation Safety, and Structure Reports, which would be part of all preservation trade programs. There also should be criteria, which

dictate a base level of job experience, such as mandating that a person achieve 2yrs, 5yrs or even 10 years of trade experience prior to achieving certification.

Question #10:

Do you think that craftworkers who have taken the necessary steps to achieve certification should be compensated?

All respondents answered this question, with 51 respondents indicating yes to compensation, 16 respondents answering maybe, 7 persons remaining neutral, and only 3 respondents deciding no. Twenty-nine respondents wrote comments on this question, a few of which follow:

> Respondent #3 provided the following statement: "Industry certifications demonstrate increased effort and hopefully skills and those in possession of these credentials should definitely be compensated, and at higher rates than those without certifications."
>
> Respondent #4 agreed: "If they took the time to get better educated—by all means that should mean better wages compared to a person who has not received any formal training.
>
> Respondent #11 elaborated: "More than certification, workers need to be able to demonstrate preservation trades skill sets. This can be by graduating in good standing from preservation trades programs (such as those at the junior college level) or by maintaining a portfolio of successful projects. These kinds of workers should definitely be compensated at a higher level (though this can occur simply by getting more work than others)."
>
> Respondent #25 devalued certifications: "Certifications do not mean you can keep the cost of a project down (examples speed, material waste, and quality work are all important on a preservation project. Most of the time you need experience along with a certification)

Question#11:

Are you familiar with the Professional Qualification Standards outlined by the Secretary of the Interior?

Of the 74 respondents who answered this question, 52 (70.3%) selected yes while only 22 (29%) responded no. Having just about 1/3 of the respondents answering no to this question may also add to the many reasons as to why a qualification standard for the craftworker is needed. Preservation Practitioners should have base knowledge of the guidelines outlined by the Secretary of Interior. This is regardless, to the fact that private owners employ some of the respondents to this survey.

Question #12:

Are you aware, that qualification standards do not exist for craftworkers who will be engaged in the application of treatments to historic buildings?

As shown in Table 5, a large majority of the persons who responded were not aware that a standard does not exist.

Answer Options	Response Percent	Response Count
Yes	87.0%	67
No	13.0%	10
	answered question	77
	skipped question	0

Table 5: Computerized results for question #12. (Downloaded through SurveyMonkey, August 2010.)

Question #13:

Do you think that having a Preservation Craftworker Qualification Standard is needed in order to continue to protect our valued historic resources?

As shown in (Table 6) nearly 50% of the respondents indicated that such a standard could protect our historic resources, while another 40.3% indicated maybe a standard is needed. Unfortunately, respondents were not allowed to provide comments on

this question. However, in future surveys it would be good to know "what will change a maybe into a solid yes."

Answer Options	Response Percent	Response Count
Yes	49.4%	38
No	7.8%	6
Maybe	40.3%	31
Neutral	2.6%	2
answered question		77
skipped question		0

Table 6: Computerized results from question #13. (Downloaded through SurveyMonkey, August 2010.)

Question #14:

Do you think that if a qualification standard for craftworkers can be implemented it would aid in the successful preservation of historic buildings?

Even though question #14 is very similar to the preceding one, it elicited an even higher percentage (93%) of respondents seeing the value in a qualification standard for craftworkers. Although questions #13 and #14, did not allow for additional comments, these questions were designed to lead the respondents to question #15.

Question #15:

Briefly, explain: Why do you think a qualification standard is needed? Or briefly explain: Why do you think a qualification standard is not needed?

Of the 77 survey respondents, 68 of them (88%) took the time to answer this open-ended question. Here are a few of their comments:

> Respondent #4 provided the following response: "I think that qualification standards can lead to better craftworkers being selected for particular preservation projects. Qualification standards should be based on the worker's ability to do the

work, based on having completed similar work in the past. While time that a person has been involved in a craft or trade may be useful as part of a qualification standard (ie - 10 years working as a mason), it should not be a determinate. However, qualification standards should never be confused with certification. The qualification standards should be performance standards and should be written in the contract, specs, etc."

Respondent #8 elaborated: "In the absence of governmental or industry support for preservation trades education, I believe that the first step in establishing a meaningful trades certification program is the development of a standard for recognizing and certifying people with the trades skills to serve as instructors and educators. A principal impediment to preservation trades education is that many highly skilled individuals lack academic credentials to serve as faculty and instructors in academic and vocational programs. Developing a standard to recognize these people's skills and expand opportunities for them to educate architects and preservationists as well as trades students and apprentices would help to correct several major imbalances in the industry (i.e., lack of recognition by architects and preservationists of the value of the skills, and the danger that young trades trainees with minimal experience could graduate from programs with a certification that would erroneously identify them as having higher skills than older or self-taught, and highly experienced practitioners)."

Respondent #24 shared this anecdote: "I once showed up at a project in Georgia to begin a very large masonry repair endeavor. The bulk of the repairs were composite patches to be applied to brownstone and sandstone. The contractor provided craftsmen to be trained in our specific line of products (Jahn Products). The bulk of the craftsmen who attended the training had never picked up a trowel. We had people who were plumbers, carpenters, etc. who were hired to fix a historic masonry church."

Question #16:

Do you believe that having a qualification standard for craftworkers will add additional costs to the conservation of buildings?

The majority indicated that additional costs could be a possibility as shown in Table 8; however, more than one-third disagreed. A sampling of the 41 comments received can be seen in Figure #7.

Answer Options	Response Percent	Response Count
Yes	27.3%	21
No	39.0%	30
Maybe	31.2%	24
Neutral	2.6%	2
Please add any additional comment on this issue:		41
answered question		77
skipped question		0

Table 7: Computerized results from question #16. (Downloaded through SurveyMonkey, August 2010.)

Survey Respondent # and Question #16 Responses	
4	It will certainly cost the owner much more in the end not having a certification.
6	It may add some cost initially for training, but theoretically the investment may save money by having better quality of workmanship, and fewer losses from correcting mistakes or bad work.
33	In my experience, qualified craftsmen may already be charging for their expertise.
35	I think that having a qualification standard for craft workers has the potential to reduce the cost of conservation of historic buildings if qualified trades workers are brought in at the earliest stages of project planning as recognized members of the preservation team. Involvement of qualified trades workers in planning, scoping and establishing project methodologies could eliminate much redundant development of drawings and specifications for project work by architects not well versed in trade techniques and set appropriate scopes and methods of work. This frequently is not done because architects do not have the familiarity with trade techniques and properties of historic materials.

Figure 6: Question #16 sample comments on the cost factor of having a qualification standard for building conservation. Note: Number at left column is participant number. [Downloaded through SurveyMonkey, August 2010.]

Question #17:

If a qualification standard can be established, how important do you think is the title of that classification?

As show in Table #9, a large percentage (83%) found the importance of a

classification title to be somewhat to extremely important.

Answer Options	Response Percent	Response Count
Extremely important	24.7%	19
Somewhat important	58.4%	45
Not important	3.9%	3
Neutral	13.0%	10
answered question		77
skipped question		0

Table 8: Computerized results for question #17. (Downloaded through SurveyMonkey, August 2010.)

Question #18:

Would it be better suited to have a name defined by a specific Craft, such as the term: Masonry Preservation Craftworker?

Out of the respondents from question #18, nearly 78% of the respondents indicated a preference for a craft-specific name and 27 respondents included comments Due to the length of these comments, there are only a few selected to be shown here.(see a Figure 6). While other comments, can be viewed in their entirety in Appendix VI section of this thesis.

One very reason that perhaps a qualification standard for the trades does not exist may lie that the title Preservation Craftworker, may be too broad of a title. Creating a title focused in a defined area may make it more acceptable. The title of Preservation Craftworker can be just a generalist; where as a Masonry Preservation Craftworker would be more specialized within the field. This discussion on job titles will be discussed in further detail in Chapter IV of this thesis research.

Question #18 Comments from Respondents	
3	It depends on the position. Some work is of a more generalist nature; some specific to one craft
5	Yes, there should be a name, but there has to be a range of titles: masonry, roofing, carpentry, bricklaying, windows, etc. And people have to be able to get more than one title - for example, I have to be able to do all of those crafts for my job.
8	However, the word craftworker is unclear.
9	There must be multiple qualifications for multiple crafts.
12	First you are a carpenter second you are a preservation carpenter.
14	I think this would be absolutely necessary for each trade.
15	It would need to be protected so that it could not be legally used by uncertified workers.
19	In order to provide clarity and transparency, yes. You don't want to hire a "Certified Preservation Craftworker" to repair wooden windows if s/he's a mason.
21	Trade is better than CRAFT, in my opinion
23	A title without true proven qualification is worthless. Workers need to prove physically, hands on, they have the knowledge [to] complete the given task.
24	I believe that use of the term "craft" has lost much of it's original meaning and become devalued as a dilettante or hobbyist activity. Also the artificial distinction between the "preservation trades" and construction generally implies that preservation is separate from and disconnected from good construction and building practice.
25	Less trade specific at first. After that, a specialized certification could be awarded after specific study/apprenticeship and/or testing

Figure 7: Question #18 selected comments on having a craft-specific title. [Downloaded through SurveyMonkey, August 2010.]

Many of the comments received from question #18 dealing with the meaning of the words “craft”, “craftworker”, “trade”, and “tradesman” will be discussed in more detail in Chapter IV.

Question #19:

Please rank the terms below according as to what most accurately represents the masonry craftworker engaged in the conservation of buildings. Please rank the terms 1 through 8, with 1 being the most accurate.

a) Restoration Specialist
b) Mechanic`
c) Pointer, Caulker, Cleaner
d) Master Craftsman

e) Preservation Specialist
f) Masonry Preservation Technician
g) Preservation Technician
h) Masonry Preservation Craftworker

While some of these titles are just being introduced, it was interesting to the see the responses. This question along with the responses regarding the titles listed below can be found in Chapter IV.

Question #20:

If the knowledge, skills and abilities (KSAs) for craftworkers can be defined, persons who fulfill those requirements should be recognized nationally. Would you agree?

Over 60 of the respondents (77%) answered yes to this question, while 17 respondents or (22%) answered no. Of the 77 who responded to this question, 38 provided comments; for a sampling, see Figure 8.

Question #20 Responses	
3	National certifications allow the craftworker greater mobility. Despite geographic variables, overall standards are of greatest importance.
7	There were regional variations in the techniques and materials used in the construction of buildings. A mason working nationally should be able to recognize regional differences and should be able to replicate the historic techniques using historically compatible materials for a given area.
9	Preservation and conservation expertise is global, not limited to practice in one geographical location.
12	This could be a maybe ... masonry restoration in the mid-Atlantic and Midwest may be similar, but working in the Adobe world of masonry in New Mexico it would not apply. Craft is craft for the local area.
20	Although there are regional differences defined both by weather and architecture, these could be recognized in a national standard.
27	Yes, nationally or regionally to match specific regional practices. This would further ensure quality and ability to connect people with the proper craftsmen.

Figure 8: Question #20 sample comments on national recognition. [Downloaded through SurveyMonkey, August 2010.]

Question #21:

How would you define the following?

a) Craftsman
b) Journeyman
c) Mechanic
d) Specialist
e) Technician

Of the 77 respondents, 56 defined these terms. The responses as well as the definitions of these terms will be discussed in detail in Chapter IV.

Question #22:

If a qualification standard for Preservation Craftworkers can be established, what would be the key elements in defining the knowledge, skills and abilities (KSAs) for a Craftworker practicing Masonry Conservation? Please rank the following 16 items by importance with (1) being the most important.

a) Architecture
b) Material Science
c) Masonry Mortars
d) Water Proofing
e) Damp Proofing
f) Terra Cotta Restoration
g) Caulking and Sealants
h) Masonry Cleaning
i) Proprietary Patch materials (Edison, Jahn, Mimic, etc.)
j) Secretary of Interior Standards for Treatment of Historic Properties
k) Epoxy Injection
l) Inspection and condition assessment
m) Stone Patching
n) Rigging (Scaffolding, ladder etc)
o) Safety programs (such as Lead, Asbestos, PCB, and Silica)
p) Terminology

Although all survey participants attempted to rank the listed topics, there were a few who failed to complete the list of topics, which may have been too lengthy. The reason for having this question was to bring attention to the vast knowledge that is needed for masons practicing in preservation.

In addition to the topics listed above, many survey participants suggested additional topics that can found in Appendix VI. The amount preservation topics needed in a specific trade reinforces the need for a level beyond journeyman as there is far too

much to learn in your average three, four or five year apprenticeship program. This discussion will be discussed in further detail in the proposed KSAs in Chapter VI.

Question #23**:**

Please list any other topics, methods, or materials that you feel that should have been included above in question #22.

Of the 77 participants, 37 provided additional comments (see Figure 9 for selected comments). These comments along with question #22 will be discussed in further detail in Chapter VI.

Question #23 Responses	
1	Skills, skills, skills. Preparation and installation of mortars, installation of masonry units, stone drafting, shaping and carving
8	It is VERY difficult to rank the above items, because almost ALL of them are EXTREMELY important.
21	When not to use any of the techniques listed above, as well as when to use them -- such as waterproofing. Sec. of Interior's Standards are so general -- just a starting point.
23	Add the topics of power tool usage, anchorage technology, lintel restoration, and joint sealant systems.
32	All of 22 is important - I am sorry I cannot go through the whole list - many are equally important in my opinion.
35	Question 22 is very difficult, just about everything listed is critical, and needs to be included in the training or background educational requirements. Probably the one area that is not mentioned is flashing insitu, in existing buildings both materials and techniques.

Figure 9: Question #23 selected comments. [Downloaded through SurveyMonkey, August 2010.]

Question #24**:**

Please provide any additional suggestions, comments, or information that you feel would be of benefit to the success of this study.

All respondents provided additional comments and suggestions. For a sampling, see Figures #10, additional comments can be found in Appendix VI.

Question #24 Response	
2	I know there is a great deal of need/desire among students of historic preservation programs to learn craft skills to enhance their academic knowledge but there are not many opportunities out there. Material knowledge is important for designers, architects and planners and the best way to learn it is to work with it.
6	I think this is a good start on getting the craftsman more recognition
14	There seems to be a tendency to use the terms preservation, restoration, and conservation interchangeably. Conservation is the practice of prolonging the physical and aesthetic life of material culture through documentation, preventive care, treatment, and research. Restoration is the act of restoring something, like a building, to a specific point in time. Preservation is an umbrella term that includes conservation, restoration, rehabilitation, adaptive reuse, etc. Identifying someone with specialized training as a Masonry Craftsman, Journeyman, Mechanic, Master, Specialist, or Technician is fine, but it should not be called conservation unless they are working under the direct supervision of a Conservator, as defined by the Secretary of the Interior's Professional Qualification Standard for Conservation.
22	I do not think the Professional Qualifications Standards developed by the Sec. of the Interior are helpful--they do not guarantee good results. They have had little impact on the private sector. I doubt setting similar standards for "craftworkers" will have better results. Architectural conservators should be skilled in the historic trades as well as the application of materials science in diagnosing and treating significant historic structures. I think architectural conservators should hire masons with preservation training. I think it will be nearly impossible to get a card carrying mason to acknowledge that he/she is not qualified to work on historic structures--not unlike many architects in the 1970s who refused to acknowledge that historic preservation required special skills.
24	The two important concepts in historical restoration are that the workers 1) have learned and can execute the skills and knowledge of building repair on the type of structural components that they are working on, and 2) have knowledge of the vast factual and reliable resources that are available to tap into for information that they may need if they approach something that they are not completely familiar with.
32	The sooner something like this is implemented the sooner our historic buildings will have a better chance of not being destroyed, whether intentionally due to individuals being able to hire anyone because no standard exists or unintentionally because there are no nationally recognized standards.

Figure 10: Question #24 sample comments to benefit the study. [Downloaded through SurveyMonkey, August 2010.]

Question #25**:**

May I contact you for further feedback?

Fifty-eight respondents (78%) were willing to be contacted (see Table 10.) Due to confidentiality, the names of the survey respondents will not be included in Appendix VI.

Answer Options	Response Percent	Response Count
Yes	78.4%	58
No	21.6%	16
If so, indicate how you'd like to be contacted: Please include your name, phone number and/or email. Thank you.		53
answered question		74
skipped question		3

Table 9: Computerized results for question #25 (Downloaded through SurveyMonkey, August 2010.)

Conclusion

The results of the survey show how the preservation community would welcome a preservation professional standard classification for craftworkers. Although, my thesis research is a starting point, there will surely be much more research and discussion needed before there can be any standard can be established. Remember, it was almost twenty years after the issuance of the National Historic Preservation Act of 1966, that the Secretary of the Interior established a Professional Qualifications Standards and these original standards only included four professions.

I feel, that with the enormous amount of discussions regarding the qualifications of the craftworker. A qualification standard can certainly be implemented if major groups like the Preservation Trades Network, International Unions, Association for Preservation

Technology International and other trade preservation program leaders can set aside any differences and get together to develop the standard. The involvement of these groups is essential in order to get a new standard approved through the extreme red tape that exists in government.

Nevertheless, for the purpose of this thesis research, I am quite pleased with the responses as the results reinforce how important a craftworker is to a project and to the preservation team. As the thesis research continues, other questions may come up that I hope to answer but many will need to be answered in future research. Some questions that have come up are listed below**:**

a) Can you implement a test-out option for those who have attained the necessary skills?

b) How do you gauge someone who claims to be qualified?

c) What are the qualifications of the evaluator?

d) Should preservation craftworkers be certified regionally or nationally?

e) What are the advantages for persons who meet a designated preservation classification?

f) Should you mandate an expiration of those who reach a certification, so that they must be recertified or updated?

g) What incentives can be implemented to promote such a classification?

CHAPTER IV
DEFINING A CLASSIFICATION

Introduction

The purpose of this chapter it to provide a general understanding of how to create a new job classification. This understanding is essential in order to differentiate one profession from another. For example if one person is given a title of Restoration Specialist, how different would this person's differ from a Building Envelope Specialist?

This chapter will go into detail on how a new job title is classified within the Standard Occupation Classification System (SOC), a system that is utilized by all federal and state governments. "The SOC is the federal government's official classification structure for occupations. All federal programs that classify workers use or are based on the SOC."[59] As there are certain job titles such as cashier or accountant that are simply not considered Apprenticeable occupations, this chapter will also provide an overview as to what is required in order for an occupation to be considered Apprenticeable.

In addition, this chapter includes a discussion on various definitions utilized in preservation and a discussion on the process of adding new job title into the SOC system. This discussion will also include survey responses from question #19, which introduced a new job classification titled Masonry Preservation Craftworker. Other job titles such as Restoration Specialist, Pointer, Caulker Cleaner, Technician and Master Craftsman will also be discussed.

Background

Since the mid 19th century, the federal government has collected data on all occupations. "There were 322 occupations listed, including such interesting jobs as daguerrotypists (photographers) and salaeratus (baking soda) makers."[60] These jobs titles and many others such as the carpenter, plasterers, masons, and caulkers are still found today.

As there was a huge rise in the manufacturing industry and construction industry, thousand of new jobs along with new job titles were created. In order to have some sort of organization among these new job titles, it was necessary for system to be created that would classify or categorize these thousands of job titles within their respective industry.[61]

It was not until 1930, that such a system named the SIC (Standard Industry Code) system was introduced. This system was designed to classify job titles by the industry they are involved in, for example: workers for the railroad would be classified under Railroad Transportation. As more data was collected, many revisions were made to the "occupational taxonomy" which led to the publication of the "Department of Labor's Dictionary of Occupational Titles (DOT) in 1965.[62]

"By 1992, however, it was clear that a new classification system will be needed to accommodate the newly developed job categories in such areas as information services, health care services, and high-tech manufacturing."[63]

A report issued by the Department of Labor 1999 stated that:

In early classification systems, too much emphasis was placed on the industry in

> which one worked. While it is true that the work setting can influence the job, it is the hallmark of more recent classification systems that characteristics of the work performed comes first.[64]

Shortly following this report, the new SOC system (Standard Occupational System) based on duties performed was introduced. This system has been modified in the year 2000 and 2010 to reflect changing occupations as well as a listing any new occupations that occur due to changing technology. A good example of a new occupation due to technology would be a Wind Turbine Service Technician. This new occupation will be discussed later in the chapter.

According to the SOC, the term occupation is defined as: "jobs that are similar with respect to the work performed."[65] In the SOC 2010 edition, all occupations are indentified using a six-digit code with each categorized in one of twenty-three major categories listed below.

Code	Title

1. 11-0000 Management Occupations
2. 13-0000 Business and Financial Operations Occupations
3. 15-0000 Computer and Mathematical Occupations
4. 17-0000 Architecture and Engineering Occupations
5. 19-0000 Life, Physical, and Social Science Occupations
6. 21-0000 Community and Social Service Occupations
7. 23-0000 Legal Occupations
8. 25-0000 Education, Training, and Library Occupations
9. 27-0000 Arts, Design, Entertainment, Sports, and Media Occupations
10. 29-0000 Healthcare Practitioners and Technical Occupations
11. 31-0000 Healthcare Support Occupations
12. 33-0000 Protective Service Occupations
13. 35-0000 Food Preparation and Serving Related Occupations
14. 37-0000 Building and Grounds Cleaning and Maintenance Occupations
15. 39-0000 Personal Care and Service Occupations
16. 41-0000 Sales and Related Occupations
17. 43-0000 Office and Administrative Support Occupations

18. 45-0000 Farming, Fishing, and Forestry Occupations
19. 47-0000 Construction and Extraction Occupations
20. 49-0000 Installation, Maintenance, and Repair Occupations
21. 51-0000 Production Occupations
22. 53-0000 Transportation and Material Moving Occupations
23. 55-0000 Military Specific Occupations[66]

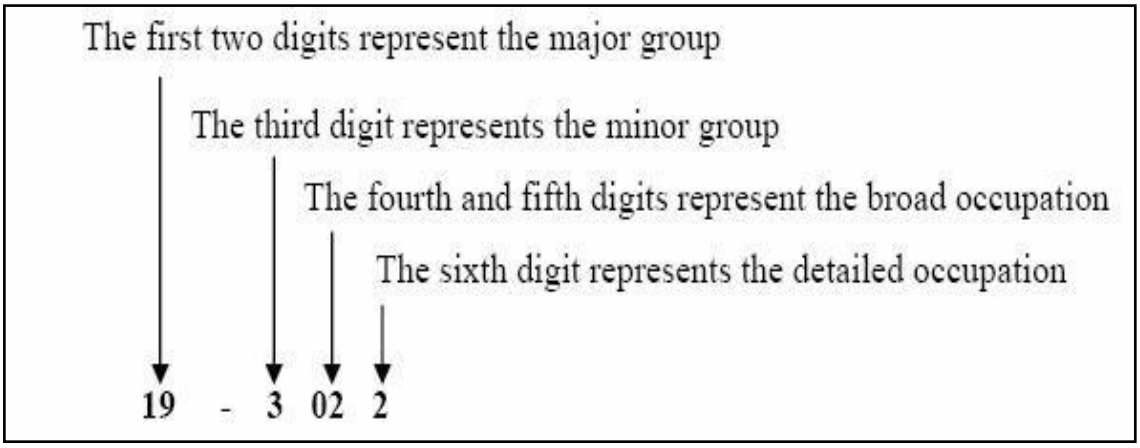


Figure 11: Bureau of Labor and Statistics Standard Occupational Classification. [Figure obtained from http://www.bls.gov/soc/soc_2010_class_and_coding_structure.pdf.**]**

Each of these major categories can be broken down into four different levels, with each level becoming more and more detailed depending on the needs of the particular occupational class. Take for example the job of a "toll collector." We would generally think of toll collectors as employees of state transportation authorities. One would assume then, a toll collector would be categorized under the listed category 53-0000 Transportation and Material Moving Occupations.

However, it is not that simply, as the duties associated for the job of a toll collector includes the use of cash registers, scanning equipment, and completing financial transactions. Since these duties are also associated with persons in sales, a toll collector

would be found under the major category Sales and Related Occupations 41-0000 (as listed on the previous page).

As Sales and Related Occupations are listed as a major group within the SOC, it is split into several minor groups, with one being Retail Sales Workers (41-2000). This group is then broken into yet another group or broad category: "cashier" (42-2010), and then divided once again to better represent a given occupation, so a toll collector would be classified as (41-2011), a more defined job classification.[67]

In the current 2010 SOC edition, the 23 major categories (listed previously) are currently broken down into 97 minor groups, 461 broad occupations, and 840 detailed occupations.[68] Every employee in the U.S. is assigned into one of these detailed occupations based on the duties assigned for the job and not by the title of the job. The current edition reflects a total of 61 occupational revisions which may include editorial changes in the occupation definition or even a listing of new "Illustrative examples."

These "illustrative examples are job titles classified in only that occupation" and are considered a direct match based upon the duties performed for that particular title. [69]

Below is an example taken from the Standard Occupation Classification User Guide, which show changes between the 2000, and 2010 version in the job descriptions, which includes any illustrative titles, which are considered direct matches.

> 47-2181 Roofers (SOC 2000 Version)
> Cover roofs of structures with shingles, slate, asphalt, aluminum, wood, and related materials. May spray roofs, sidings, and walls with material to bind, seal, insulate, or soundproof sections of structures.
>
> 47-2181 Roofers (SOC 2010 Version)

> Cover roofs of structures with shingles, slate, asphalt, aluminum, wood, or related materials. May spray roofs, sidings, and walls with material to bind, seal, insulate, or soundproof sections of structures.
> *Illustrative examples:* Terra Cotta Roofer, Shingles Roofer, Hot Tar Roofer

All persons who are currently in an apprenticeship program are assigned with the same classification code as to what they are being trained. [70] Workers who perform activities not described in any distinct detailed occupation in the SOC structure should be coded in an appropriate "All Other or residual occupation. These residual occupational categories appear as the last occupation in a group with a code ending in "9" and are identified by having the words "All Other" appear at the end of the title."[71] An example of an "Other" occupation would be a "Waterproofer", this classification would still be listed under the major category of "Construction and Related Workers" with the SOC six-digit code 47-4099.[72] The system is relatively user friendly and anyone having basic computer knowledge has the ability to look up a profession in order to locate the assigned occupational code.

Using the Departments of Labors website: www.bls.gov/soc/major_groups.htm**,** there are 23 major groups of occupations. As the focus of this thesis research is masonry, and that masonry is a occupation found in construction. All construction occupations will be listed under the major category group titled: Construction and Extraction Occupations 47-0000. Upon viewing this group of construction occupations, the SOC six-digit code for a Bricklayer-Block Masons is 47-2021.

During the research of this thesis, I have come across numerous job titles such as preservation specialist, building doctor and building envelope specialist. These titles have

not been found within the SOC system, as the system is designed to be a broad classification of occupations. There are virtually thousands of job titles, and not every job title will be assigned with their own specific code. However, with every detailed occupation, there is a list of other job titles that are considered as either as a crosswalks or a related title based upon the similarities found in their definition.

A crosswalk is a term used to describe a "direct match", whereas by taking a new job title and comparing the duties to be performed for that title against an existing coded occupation, however all decisions in determining whether or not a job title is a direct match are made by the SOC Policy Committee (SOCPC). One of the job titles commonly found in masonry, the Pointer Caulker and Cleaner (PCC), does not appear as a job title in the SOC system. However using the system created by the U.S. Department of Labor, Employment & Training Administration, named as the Occupational Information Network (O*NET) system. The title PCC can be found as a related occupation or cross-walk to detailed occupation 47-2060 Construction Laborers.[73]

Question #19:

Please rank the terms below according as to what most accurately represents the masonry craftworker engaged in the conservation of buildings. Please rank the terms 1 through 8, with 1 being the most accurate. (See Figure 8.)

As illustrated in Figure #12, the title "Masonry Preservation Craftworker" was chosen by 53% of the respondents as the most preferred title for a craftworker engaged in preservation. This was followed by the title "Masonry Preservation Technician." The title "Preservation Specialist" ranked third, "Preservation Technician" fourth (with the term

"Restoration Specialist" ranking closely for fourth place), and "Master Craftsman" ranked fifth. The name "Preservation Technician" ranks both fourth and sixth. "Pointer Caulker Cleaner" ranked seventh and "Mechanic" ranked last. (The terms "specialist", "technician", "mechanic", and "master" will be discussed in detail later in this chapter.)

	1	2	3	4	5	6	7	8
Restoration Specialist	11.8% (8)	10.3% (7)	13.2% (9)	**19.1% (13)**	14.7% (10)	14.7% (10)	13.2% (9)	2.9% (2)
Pointer, Caulker, Cleaner	9.9% (7)	7.0% (5)	5.6% (4)	8.5% (6)	7.0% (5)	8.5% (6)	**40.8% (29)**	12.7% (9)
Mechanic	2.9% (2)	2.9% (2)	5.9% (4)	0.0% (0)	8.8% (6)	8.8% (6)	13.2% (9)	**57.4% (39)**
Master Craftsman	8.7% (6)	11.6% (8)	11.6% (8)	15.9% (11)	**21.7% (15)**	15.9% (11)	5.8% (4)	8.7% (6)
Preservation Specialist	5.9% (4)	10.3% (7)	**29.4% (20)**	17.6% (12)	16.2% (11)	10.3% (7)	7.4% (5)	2.9% (2)
Preservation Technician	3.0% (2)	3.0% (2)	16.4% (11)	**23.9% (16)**	14.9% (10)	22.4% (15)	10.4% (7)	6.0% (4)
Masonry Preservation Technician	9.9% (7)	**42.3% (30)**	9.9% (7)	9.9% (7)	8.5% (6)	9.9% (7)	5.6% (4)	4.2% (3)
Masonry Preservation Craftworker	**52.9% (36)**	13.2% (9)	8.8% (6)	4.4% (3)	7.4% (5)	5.9% (4)	1.5% (1)	5.9% (4)

Figure 12: Scanned copy of computerized results for question #19. [Downloaded through SurveyMonkey, scanned copy provided by Michael J. Kassman, August 2010.]

Process of Adding a New Classification

As the survey respondents concluded that, the preferred job title for a masonry worker engaged in preservation is to be "Masonry Preservation Craftworker." In order to get this title categorized in the appropriate classification, the following must be submitted

by email to: soc@bls.gov.

a) The proposed name of the job title

b) The SOC occupation that you feel it is a direct-match for and

c) A description of the work being performed.[74]

If the SOC determines that the proposed title Masonry Preservation Craftworker does not perform the duties to that of an existing job category then a new job classification will have to be created. In order to add a new classification, a detailed description of the proposed job title will need to be submitted.

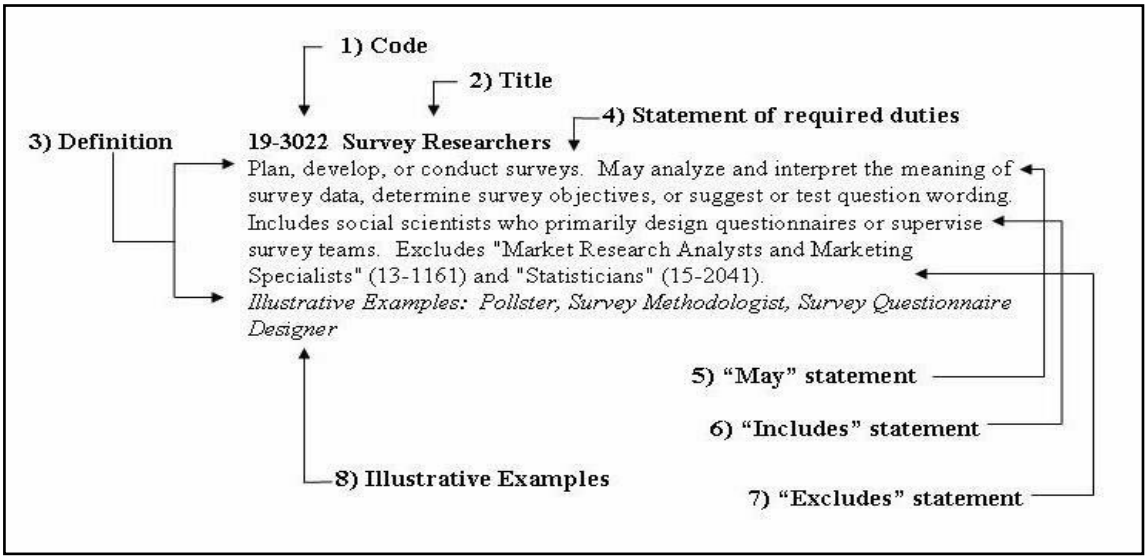


Figure 13: Bureau of Labor and Statistics Standard Occupational Classification. The "may" statement describes tasks that workers in that occupation may – but are not required to – perform in order to be classified with Survey Researchers. The "includes" statement identifies particular workers who should be classified with Survey Researchers. The "excludes" statement indicates other detailed occupations that may be similar to Survey Researchers and clarifies that workers who fall into those occupations should be excluded from Survey Researchers. [Figure and text was obtained from: http://www.bls.gov/soc/soc_2010_class_and_coding_structure.pdf.]

Using the SOC User Guide, the following indentifies the eight elements that must be included in a detailed job description.

> All six-digit, detailed occupations have a SOC code (1), a title (2), and a definition (3). All workers classified in an occupation are required to perform the duties described in the first sentence of each definition (4). Some definitions also have a "may" statement (5), an "includes" statement (6), and/or an "excludes" statement (7). Many occupations have one or more "illustrative examples" (8), presented in alphabetical order. Illustrative examples are job titles classified in only that occupation, and were selected from the Direct Match Title File.[75]

As most practicing masons are familiar with the job titles: Tuckpointer and Pointer Caulker Cleaner (PCC), and that these titles are mostly related to masonry preservation. Using the SOC system, the following information was obtained:

> PCC is coded as Construction Laborer 47-2061.00.
>
> Perform tasks involving physical labor at construction sites. May operate hand and power tools of all types: air hammers, earth tampers, cement mixers, small mechanical hoists, surveying and measuring equipment, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, and clean up rubble, debris and other waste materials. May assist other craft workers. Construction laborers who primarily assist a particular craft worker are classified under "Helpers, Construction Trades" (47-3010). Excludes "Hazardous Materials Removal Workers" (47-4041).
> Illustrative examples: Construction Craft Laborer, Air Hammer Operator, Construction Trench Digger[76]

Using the O*NET system, there are "5 recognized Apprenticeable specialties associated with this occupation: Construction Craft Laborer; Tuckpointer, Cleaner Caulker, Pointer Caulker Cleaner, Maintenance Technician Municipal (Roadway Technician)"[77]

Based on the above definition obtained from the website, it is clear that the proposed name of Masonry Preservation Craftworker will not be a direct match to this

occupation. It is possible that a direct match can be made to that of Brick masons and Block masons (47-2021.00). The definition obtained from the SOC for Brick masons and Block masons states that persons performing this work:

> Lay and bind building materials, such as brick, structural tile, concrete block, cinder block, glass block, and terra-cotta block, with mortar and other substances to construct or repair walls, partitions, arches, sewers, and other structures. Excludes "Stonemasons" (47-2022). Installers of mortar-less segmental concrete masonry wall units are classified in "Landscaping and Grounds keeping Workers" (37-3011). Illustrative examples: Refractory Bricklayer, Brick Chimney Builder, Adobe Layer[78]

There are several items in the above job description that may enable the proposed title Masonry Preservation Craftworker to be considered a direct match such as:"bind with mortar", "repair walls, partitions, arches and other structures", and "adobe layer." This discussion will continue in Chapter IV as the definition of a Masonry Preservation Craftworker is better defined.

Apprenticeable Occupations

Although the number of job titles can actually be in the thousands, only a certain number of these titles can actually be considered an Apprenticeable Occupation since some jobs such as grocery clerk, ground maintenance are taught solely on the job.

The total number of Apprenticeable occupation will continue to vary from year to year. For example: In 2006, the Office of Apprenticeship (OA) listed officially the number of recognized Apprenticeable Occupations to as many as 1040, today there the number has dropped to 840.[79] This is largely due to the rapid changes of technology, which renders some occupations obsolete and others to emerge.

An Apprenticeable Occupation is defined as "a skilled trade(s) or craft(s), which has been recognized by the United States Department of Labor, Office of Apprenticeship, Training, Employer, and Labor Services and by the Department of Workforce Development."[80]

Using the 2003 Webster's *Dictionary for Students*, the term "craft" is defined as a "skill in making things, especially with the hands." The term of Craftsman is defined as "person who works in a trade, a highly skilled worker in any field." Other closely related terms that were not included in the survey question are the terms "trade" and "Tradesman." The term of trade is defined as "any occupation requiring manual or mechanical skill." The term of tradesman is defined as "a person who runs a retail store: craftsman."[81]

As these definitions started to create some confusion, using the website Dictionary.com website it was quite interesting to find that the term of tradesman is defined as "a worker skilled in a particular craft", the term of trade is defined as "some line of skilled manual or mechanical work; craft: the trade of a carpenter; printer's trade.

The term craft is defined as 'an art, trade, or occupation requiring special skill, esp. manual skill: the craft of a mason."[82] I believe that although there are some similarities between the terms of trade and craft. Any persons who are skilled and work with their hands are considered tradesman, this includes the plumber, electrician, HVACs and even an auto mechanic. The real difference comes into play when certain trades can become artistic in nature or demand special skills as found in masonry, carpentry and blacksmithing these are crafts. Those who practice in these crafts are craftworkers.

However, not all craftworkers are considered craftsman, this reinforces the notion of how a masonry worker who has the necessary skill sets to practice in the masonry trade, but may not have attained the special skills or highly artistic skills needed to repair a detailed piece of masonry such as a monument. Another example can be found in carpentry, as a person may be considered as a rough carpenter not a finish carpenter.

Upon reviewing comments submitted by the respondents of the survey, I came across this related comment from respondent #68. “I believe that use of the term "craft" has lost much of its original meaning and become devalued as a dilettante or hobbyist activity.” A “craft therefore is a skill” developed from within a specific trade.[83] It may take years to develop skills in a craft in order to be labeled as a true craftsman.

Some trades are made up from several different crafts, so for example crafts such as bricklayers, stonemasons, plasterers, tile setter, cement mason and pointer, caulker, cleaner make up the masonry trade. In my view, all persons who are engaged in the different crafts or trades can be called tradesman or craftworkers, but not all are indeed “true craftsman” as by definition this is “one who practices a craft with great skilling.”[84]

As I search over the internet to find the origins and perhaps define these terms a little clearer. There is an interesting article titled “The Arts and Crafts of Trades”, written by Preservation Trades Network (PTN) Executive Director Rudy Christian. In this article, Rudy was debating some of very same terms as well. In his views, “a craftsman or artisan isn’t necessary a tradesman, but a tradesman by definition is a craftsman and artisan.”[85]

It turns out that my dilemma in defining the terms is not something new; terminology has been discussed among not only the practicing craftsmen or tradesman

but in the entire preservation community. These terms are just a few of many terms, which will need to be further explored, in future research.

Department of Labor

Using the departments Code of Federal Regulations (CFR) section 29.4 Criteria for Apprenticeable occupations. An Apprenticeable Occupation is one which is specified by industry and which must:

> (a) Involve skills that are customarily learned in a practical way through a structured, systematic program of on-the-job supervised learning;
> (b) Be clearly identified and commonly recognized throughout an industry;
> (c) Involve the progressive attainment of manual, mechanical or technical skills and knowledge which, in accordance with the industry standard for the occupation, would require the completion of at least 2,000 hours of on-the-job learning to attain; and
> (d) Require related instruction to supplement the on-the-job learning.[86]

Apprenticeships programs need to be sponsored by employers, labor groups, and employer associations. Depending on the state, all applications submitted by sponsors for new Apprenticeship programs are posted for a period (usually 30days) in order to receive public comment. To see examples of proposed programs waiting public comment see the following link: http://www.labor.ny.gov/apprenticeship/pdfs/rptActiveProgsWebPg.pdf.

In order to be a participant in a program all applicants must fulfill the eligibility requirements established by the apprenticeship sponsors. Below are a few building trades' apprenticeship requirements that were extracted from the Center for Research and Training (CPWR) Construction Chart Book, Fourth Edition

> Brickmason 3 years of on-the-job training in addition to a minimum of 144 hours of classroom instruction each year in subjects such as blueprint reading, mathematics, layout work, and sketching. High school education is preferable.

> Painter 2 to 4 years of on-the-job training, supplemented by 144 hours of related classroom instruction each year with topics such as color harmony, use and care of tools and equipment, surface preparation, application techniques, paint mixing and matching, characteristics of finishes, blueprint reading, wood finishing, and safety. Must have a high school diploma or G.E.D.with courses in mathematics.
>
> Roofer 3-year program with a minimum of 2,000 hours of on-the-job training annually, plus a minimum of 144 hours of classroom instruction a year in subjects such as tools and their uses, arithmetic, and safety. High school education and courses in mechanical drawing and mathematics are preferable.
>
> Carpenter Usually 3 to 4 years depending on skill level. On the job, apprentices learn elementary structural design and common carpentry skills. Classes include safety, first aid, blueprint reading, freehand sketching, mathematics, and carpentry techniques. Must meet local requirements.
>
> Plumber 4 or 5 years of on-the-job training about all aspects of the trade, in addition to at least 144 hours per year of related classroom instruction such as drafting and blueprint reading, mathematics, applied physics and chemistry, safety, and local plumbing codes and regulations. High school education is preferable. Most communities require a plumber to be licensed.[87]

Among the apprenticeship programs listed above, there are some similarities. One major difference can be found, in the minimum educational requirements. Over the last few years, many programs have either reduced the educational requirement of mandating that all applicants have a "high school diploma or G.E.D" to having "High School Education Preferable" or in some cases, this requirement has been removed. I wonder what is to become of the next generation if we keep lowering our standards.

As mentioned in Chapter I, the apprenticeship programs are overseen by the Bureau of Apprenticeship & Training (BAT)**.** The BAT has the responsibility of making sure that all programs comply with the provisions dictated in the approved program. Over the years, there have been many Apprenticeable Occupations that have been discontinued

or deregistered due to changing technology. In some cases, some programs have been formally discontinued by the BAT due to failure to abide by the regulations or simply discontinued by the employer or sponsors voluntarily.[88]

Another important item that must be followed is the excepted ratio between apprentices and journeyman. Having too many apprentices in a trade can flood the market thereby diminishing the wages for the journeyman. Too few apprentices can cause journeyman wages to skyrocket as highly skilled journeyman workers will be in high demand. In addition, having too few apprentices will also cause a great deal of shortage of qualified workers in the future. Generally, apprenticeship sponsors will be allowed some flexibility based upon demand in respective areas.

During my thesis research, the following relevant text was found written in 1894 by George C. Sikes:

> It is a law of self-preservation to the craft, and of equal interest to the responsible master mason, that there should be some limitation on the number of apprentices. If the number is unlimited. Unscrupulous contractors may secure a large number of apprentices. And with the help of a few journeymen underbid all contractors who employ journeymen skilled in their craft, and also necessarily throw upon the journeymen large additions of unskilled workmen, thereby making the supply of labor largely in excess of the demand and destroying the standard of the craft for good work. It is not a question whether everybody shall have the right to learn a trade, but whether the craft will teach every boy a trade, to its own destruction.[89]

Below are just a few examples of how a ratio is determined by trade. The "ratios are established to ensure the proper safety, training and supervision of apprentices. A ratio establishes the number of journey workers required for each apprentice in a program and on a job site. Ratios are interpreted as follows: in the case of a 1:1, 1:4 ratios, there must be one journey worker for the first apprentice, and four additional journey workers

for each subsequent apprentice." [90]

TITLE	Term in Months	*Ratio
Bricklayer Mason & Plasterer	48	1:1;1:4
Automobile Mechanic	36	1:1;1:1
Carpenter (Residential)	36	1:1;1:3
Elevator Servicer & Repairer	48	1:1;1:2

Table 10: Table showing apprentice to Journeyman ratios for the state of New York. (Obtained from http://www.labor.state.ny.us/apprenticeship/general/occupations.shtm, August 2010.)

Incentives

In order to draw apprentices, many programs now implement incentives such as providing the apprentice with a set of tools, a modest stipend while in school and a guarantee of employment upon completion of training. One of the major benefits of entering an apprentice program is the "career lattice system." This is where an apprentices will receive raises based on five or ten percent of the journeyman wages. Theses increments are paid based upon the number of hours and competencies achieved for the job. Once a person completes a state approved apprenticeship and is granted the status "journeyman", they will be recognized nationally. As soon as programs are properly registered, the sponsors of the program can create the next generation work force, by modifying the program based on the changing needs of the industry. [91]

New Trades under Review

Over time, existing Apprenticeship programs will need to be adjusted in order to account for the ever changing building technologies. In many cases there will not only be

new job titles created, but entirely new apprenticeship programs. Take for example, wind energy; this new innovative technology is beginning to dominate many landscapes in the U.S. This new technology comes with additional specialized occupations, which include heavy equipment operators, equipment repairers, Wind Turbine Mechanic and Wind Turbine Technician.

A new apprenticeship program has emerged from capitalizing on wind energy, the Wind Turbine Technicians. The first approved apprenticeship program for this job title was developed in Wilmington, Illinois.

According to the website of Local 150 Operating Engineers all:

> Apprentices are required to receive at least 80 hours of classroom and 64 hours of field training during every year of training, for a total of 6000 hours of on the job training (OJT), 240 hours of classroom related training and 192 hours of field training. The subjects taught in the classroom complement the hands-on training received in the field.[92]

Using the Standard Occupation Classification (SOC), the job code for these occupations is 49-9081 for Wind Turbine Service Technicians. Based upon the state, there are many other programs under review, approved and discontinued. These can found by state by visiting the website: http://www.doleta.gov/oa/sainformation.cfm**.**

Overview of Definitions

As I begin to discuss some of the common definitions used among the preservation community, I found that it is important to begin with defining the terms preservation and restoration since these are often used interchangeably. Preservation "refers to the maintenance of the property without significant alteration to its current

condition."[93] Restoration refers to "the process of returning a building to its condition at a specific time period, often to its original condition."[94]

Given the above definitions, we can say that "Maintenance is Preservation."[95] A person performing maintenance to a building, its grounds, or its adjoining structure (s) is performing preservation. I felt that it was important, to clarify these two terms as there are many individuals who are involved in restoration, may think that what they are doing is preservation. Hugh Miller, FAIA best defines these terms as "Restoration is generally a one-time treatment, while Preservation is performed as a continuum." [96]

In the past few years as the preservation movement has increased dramatically, conversations among professionals regarding the traditional building trades are high on the list. As the qualified professionals, who oversee the conservation of historic structures; realize the importance in having qualified, highly skilled craftsman, to carry out the necessary treatments. They also realize that a modern mason may not have the complete understanding of traditional masonry. At the same time, they have the understanding that a typical carpenter does not understand masonry, and a mason does not understand carpentry.

Question #21

Requested that the respondents define the following terms: Craftsman, Journeyman, Mechanic, Specialist and Technician.

Due to the number and length of responses to this question, only a few will be selected in this section. All complete responses can be found in the Appendix VI. Out of the 56 persons who attempted to answer this question as a whole, only 52 (92.9%)

defined the term of Craftsman. Notice that the response to this question reinforces the definition of the term of craftsman which was previously discussed in this chapter.

Question #21 Term of Craftsman Responses	
9	Someone who can thread a needle in the dark
12	Has achieved a high level of proficiency in their trade.
17	Someone with experience and training in a specific trade and who is using his/her skills in an artistic way.
24	Person performing a craft at a professional level
35	A person who has achieved a certain level of craftsmanship in his or her trade.
40	A person with excellent skills and a deep understanding of the trade.
52	A person operating at the highest level of skill, judgment and dexterity.
53	Skilled tradesman

Figure 14: Comments from Survey Respondents for question #21: Term of Craftsman. [Downloaded through Survey Monkey, August 2010.]

As dictated for the term craftsman, out of the 56 persons who answered this question as a whole, 52 (92.9%) defined the term of Journeyman.

Using the dictionary.com website, the term Journeyman is defined as "a person who has served an apprenticeship at a trade or handicraft and is certified to work at it assisting or under another person."[97] This term is often debated, as many persons practicing in an Apprenticeable craft do not complete a formal apprenticeship and continue to label themselves as journeyman. The main purpose of the apprenticeship is to expose the apprentice to all the duties of that occupation. Just having spent time in a specific trade does not mean you have attained Journey level skills especially when those skills attained have not been evaluated by some accrediting body. If a person, who claims to have practical experience in a trade is given a status of journeyman without having been evaluated as having those same craft skills as a 4^{th} or 5^{th} year apprentice. The

industry will eventually water down the very meaning of the term of journeyman. The evaluation of practicing tradesman will continue in Chapter IV. (See figure #15 for respondent's comments for the term of journeyman.)

Question #21 Term of Journeyman Responses	
9	Someone who has completed a formal apprenticeship in a certain trade; ie masonry or carpentry
12	worker who has had a defined amount of training under tutelage of another Journeyman and who can then operate independently
15	journeyman-level craftsmanship
17	Someone with experience and training in a specific trade. A person who can handle most conditions in the field.
26	One step below master - person with strong understanding of historic building trades
28	someone who has achieved competence in a specific trade
31	One who has met the standards established
39	professional tradesperson having completed a union apprenticeship and worked minimum number of years
45	A person who has particular skills and knowledge but who has not formalized their training to achieve a specific certification.
46	Completed an apprenticeship
48	A builder that has received in depth education in their field, has an intimate knowledge of their trade in various applications, and has practiced his/her trade for several years.
52	A fully qualified trades worker capable of working independently with a fully range of skills in trade

Figure 15: Comments from Survey Respondents for question #21: Term of Journeyman [Downloaded through SurveyMonkey, August 2010.]

There were 56 out of 77 respondents who answered question #21, but only 49 or 87.5% defining the term "mechanic" .

Using the Dictionary.com website, the term mechanic is defined as "a worker who is skilled in the use of tools, machines, equipment etc." It appears this term gradually expanded from the manufacturing and engineering sector to the building trades as a way

of complimenting a journeyman, as many crafts now incorporate several types of hand tools and power tools and many seasoned journeypersons attain additional craft skills from one or more trades.

Question #21 Term of Mechanic Responses	
1	Someone who works on mechanical systems
3	Workman who handles the trowel or tool
6	A person who achieved journeyman status and is well rounded
12	Wide range of KSAs, and is able to do quality work, as directed.
16	Modern term usually applied to someone who can install something the way the label reads
21	Repair man
22	Someone skilled at a very specific task; (too connected with the automobile to be useful here)
25	A well trained Craftsman that has experience in more than one trade
34	Someone who works on vehicles, engines or mechanical equipment
36	A jack of all trades
44	Experienced at a master level, competent respected and well versed. antiquated term should be revisited
46	Highly skilled
47	Works on cars?
51	One who uses tools properly
52	A highly skilled trades worker, frequently self-taught, capable of applying judgment and skill in a variety of trades
56	the public associates this with cars although it certainly was a term used in the 19th century for this type of work

Figure 16: Comments from Survey Respondents for question #21: Term of Mechanic. [Downloaded through SurveyMonkey, August 2010.]

Out of the 56 persons who attempted to answer this question as a whole, only 52 (92.9%) defined the term Master. Although this term is widely used in the European guild system, in the U.S., the term master is only used in the Electrical and Plumbing trades. This will be discussed in further detail in Chapter V.

Question #21 Term of Master Responses	
10	Can teach and do
12	Has achieved mastery in their trade.
13	Expert knowledge of masonry trades, masonry characteristics and science, materials and material performance aspects
17	Top of the field. A person who can handle all conditions in the field and consistently produces quality work.
18	A term used in Europe to designate a tradesman who has reached the highest level of skill in a craft and can teach and supervise others in that craft.
19	10 years + of experience
26	The most knowledgeable craftsperson on specialty building trades
32	Someone with significant experience and expertise -- breadth and depth
34	Someone who has reached the supreme level of experience and who probably teaches, writes and trains others
36	Someone who is starting to know what it is he does
42	Has been in the field for several decades...knows the basic skills and has extensive experience with the more technically demanding and complicated projects
44	old antiquated term often misused abused and certainly misapplied
48	A builder that has received in depth education in their field, has an intimate knowledge of their trade in various applications, has practiced his/her trade for several years, and is certified to perform that work.
54	Someone who has achieved the highest level of training available in a given trade plus maybe some extra area of expertise

Figure 17: Comments from Survey Respondents for question #21: Term of Master. [Downloaded through SurveyMonkey, August 2010.]

Out of the 56 persons who attempted to answer this question as a whole, only 50 (89.3%) defined the term of Specialist. Using the website Dictionary.com the term Specialist is defined as "a person who devotes himself or herself to one subject or to one particular branch of a subject or pursuit."[98] By definition, it is quite difficult for a typical preservation craftworker to meet this definition as the workers are exposed to a number of tasks in the field of preservation.

Question #21 Term of Specialist Responses	
2	Someone with a conceptual knowledge of historic preservation but may not have a high degree of craft skills
3	Workman who only focuses on one particular medium or method
7	Anyone that has elected to specialize, with proven experience, in a particular discipline.
12	KSAs limited to a specific type of work, but is very proficient in that type of work.
17	Someone with special skills in a specific area. A person who can make some judgments' in the field, but who is under the supervision of a conservator or master
18	Someone who is very skilled at a limited task.
24	Person performing a part of a building trade but not all of the building trade at high level
25	An educated worker who has a well rounded understanding of the needed trades to preserve historic structures. Generally educated through a college or trade school.
28	Someone who specializes in a narrow area of work within a larger category of work.
31	Highly skilled at targeted areas
34	More academic title or degree holder who may or may not have hands-on experience
35	A person who specializes in only a certain category of work
48	A builder that has received in depth education in their field, has an intimate knowledge of their trade in specific areas/applications, has practiced his/her trade for several years, and is certified to perform that work.
50	One who excels in a particular area/ field
52	Frequently a generalist skilled in one or more trades with the ability to manage projects, communicate with other project team members, etc.
54	Someone with specific training, sometimes in depth but limited in scope

Figure 18: Comments from Survey Respondents for question #21: Term of Specialist. [Downloaded through SurveyMonkey, August 2010.]

Out of the 56 persons who attempted to answer this question as a whole, only 50 (89.3%) defined the term of Technician 82.1 or 46 persons. Using the website Dictionary.com, the term technician can be defined as "a person who is trained or skilled in the technicalities of a subject."[99]

Question #21 Term of Technician Responses	
1	Someone who serves to troubleshoot problems
6	A person who received the technical aspects of a subject
10	Generalist
17	Someone who has been trained to do a routine task. A person who is under the supervision of a conservator or master
20	Someone who works on TV or Radio sets. Less than a journeyman
22	Someone skilled at a very specific technical task; (too connected with the medical professions to be useful)
26	Tradesperson some knowledge of historic building mechanics
28	Someone who is technically competent to carry out work directed by others.
32	Someone who has specialized knowledge in a limited area and repeatedly uses the same solutions.
36	A low-level academic designation
38	Just higher then a helper
40	A person who has technical information, but not necessarily a deep understanding.
41	One who is training in technical aspects of the trade
42	Learning the craft, but more about the details/science of the work.
50	A person who is trained in a specific technical task/ or process.
52	A trades worker skilled in one or more trades techniques (i.e., pointing, cleaning.
54	Somewhat obsolete term coined in the '70s that is fast going out of date. Usually semi-skilled individual performing a limited range of tasks

Figure 19: Comments from Survey Respondents for question #21: Term of Technician. [Downloaded through SurveyMonkey, August 2010.]

Conclusion

There were many things learned in this chapter research are of value to my study. As anyone can create a job title, it is important to ensure that such a title will be recognized in the very field that it is intended to represent. As my study continues and the Masonry Preservation Craftworker is more completely defined, we may find that there just is not a current classification or appropriate crosswalk for this title. Perhaps there should be a category for preservation on its own and all the preservation craftworkers can

be defined under this heading based upon their respective discipline. For example: Preservation Bricklayer, Preservation Carpenter. I believe if this can be done, then perhaps it may eventually lead some sort of state licensing as administered for licensed plumbers and electricians.

We must remember the National Historic Preservation Act 1966 was not that long ago in terms of preservation. It took several years after that to develop a professional qualification standard, which at that time, only included four occupations, as it was still new. It was not until 1992 that the Secretary of the Interior expanded the list of Qualified Professionals. Perhaps the inclusion of qualifications for the preservation craftworker is not too far off.

CHAPTER V
OVERVIEW OF APPRENTICESHIPS AND PRESERVATION PROGRAMS

"Wanting to preserve our county's historic structures is one thing.
Having the skilled people who can do it is another."[100]

Introduction

There have been a number of preservation initiatives since the Whitehill Report Committee reported the following finding:

> We do not know of any training centers for the traditional building crafts within the United States. Neither the vocational schools, nor the unions, nor the preservation agencies have developed any systematic training to preserve skills, and to maintain and replenish the supply of carpenters, masons, plasterers, wood carvers and painters increasingly needed in preservation and restoration work. The craftsmen who possess and use these skills have been trained as apprentices either here or abroad, are self-taught in part, or were guided to their special skills, by the architects and craftsmen of the large preservation agencies.[101]

The purpose of this chapter is to provide an overview of a few types of Preservation training programs. The Preservation programs that will be discussed in this chapter include the International Bricklayers Apprenticeship Program, International Masonry Institute, Historic Windsor, Inc./Preservation Education Institute Certificate Program, Preservation Trades Technology Program at Thaddeus Stevens College and Timber Framers Apprenticeship Program In addition, this chapter will include an overview of a few newly introduced, preservation job titles.

The job titles discussed in this chapter are the Pennsylvania Preservation

Construction Specialist (PCS), and the Preservation Carpenter. There are certainly many other preservation programs as well as job titles that exist in preservation. However, due to the focus of this study and time restraints, the previously named job titles and preservation programs will be the only titles discussed in this chapter.

The International Bricklayers and Allied Craftworkers Apprenticeship Program

The International Bricklayers and Allied Craftworkers Union (IUBAC) has a long history dating back to the mid 1850's and it is considered to be one of the oldest operating labor unions in North America. The IUBAC currently represents over 90,000 craftworkers from the following trowel trades: Bricklaying, Stone masonry, Tile Setters, Terrazzo, Plaster, Cement, Refractory, Plaster, Marble Mason and Pointer, Caulker Cleaner.

Although, all of these trowel trades are important in determining the qualifications for the Masonry Preservation Craftworker. For the purpose of this thesis research, this section will focus primarily on the trowel trade mostly related to preservation; the Pointer, Caulker and Cleaner (PCC).

Originally, this job title PCC is really three jobs rolled into one, a person would point a masonry wall, clean the masonry wall and caulk any penetrations within that masonry wall. The job title of Caulker was one of the original 322 jobs listed on the federal government's list of occupations. The job title of pointer and cleaner evolved from the brick and stone masons as these tasks seemed far too tedious and in some cases it was thought to be beneath them.

This notion can still be found in today's modern masons, as many bricklayers would rather rebuild a brick wall versus having to grind, use a hammer, and chisel in

order to remove the deteriorated mortar and re-point a masonry wall.

Although, the job duties of bricklayers and stonemasons included the tasks of masonry pointing and cleaning, there were other issues, which created the need for a new job classification. These included that "older buildings built with straight lime mortar needed repointing as the old mortar joints became leaky. Second, the use of architectural terra cotta, which, in the early years, was all white or cream colored, required periodic cleaning, especially in the industrial cities where such white terra cotta soon became dirty and grimy."[102]

In addition, this was a time when masonry construction was booming due to events like the great Chicago fire in 1871 as well as the increasing number of immigrants moving into urban centers. It was necessary to keep the highly skilled masons moving onto newer projects while the semi-skilled masons remain on the project to point and clean the finished masonry and even take down the scaffolding.[103]

The "Tuckpointers Journeymen's Association of Chicago" formed in 1886 is noted as being the first formed union representing the new trade.[104] The originally name "Tuckpointer" is derived from the process of "Tuckpointing." "This is an English craft term and was originally seen towards the end of the seventeenth century; when it then referred to as 'Tuck and Pat."[105] One meaning of the term of Tuck pointing is defined as "a way of using two contrasting colours of mortar in brickwork, one colour matching the bricks themselves, to give an artificial impression that very fine joints have been made."[106]

According to Master Bricklayer and Educator Dr. Gerard C. J. Lynch, the term

tuck pointing is best defined as "a highly skilled, refined method of pointing brickwork in which a pigmented base mortar joint – or 'stopping' – is flushed-in to the joints to match the bricks. Once sufficiently stiffened, it is then 'grooved' to directly receive a carefully placed 'ribbon' of lime putty: silver sand mortar, precisely trimmed to size."[107]

The practice of this style of joint finish as well as its very true meaning has been virtually lost in a modern mason's vocabulary.

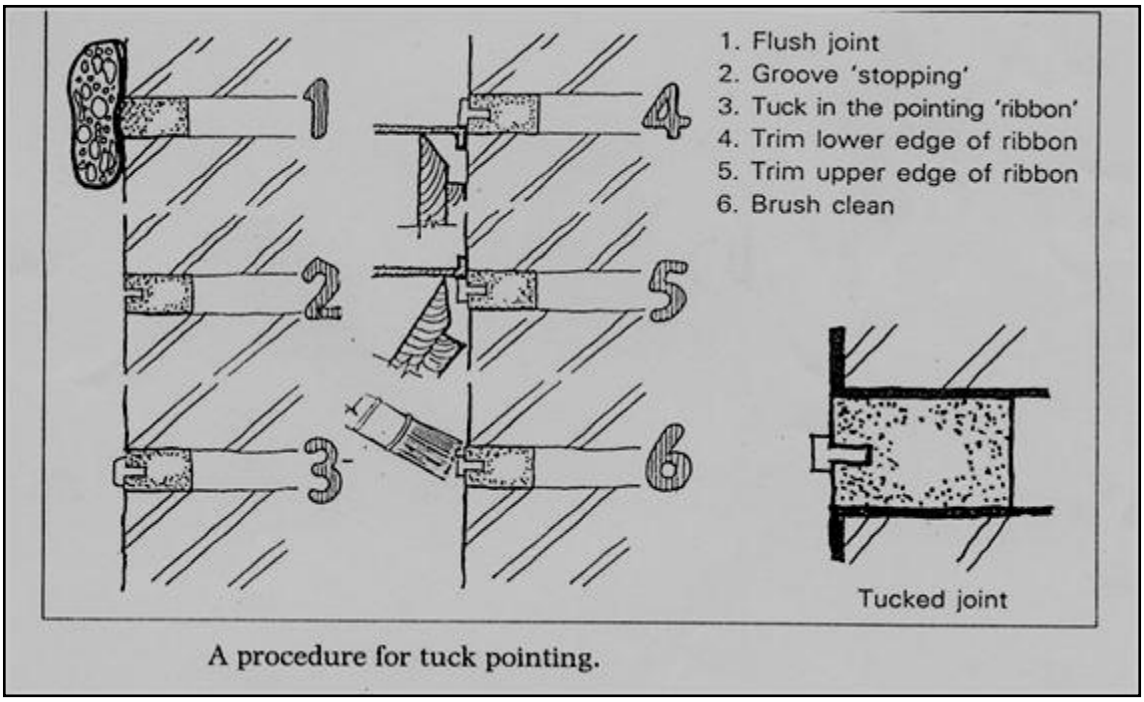


Figure 20: Photo showing true meaning of Tuck Pointing. [The use of this photo was permitted by its creator Master Bricklayer and Educator Dr. Gerard C J Lynch, 2002.]

As Gerard Lynch explains, "With the emigration of native craftsmen, tuck pointing is seen from this period onwards in many former British colonies like Australia, New Zealand, Africa and Hong Kong. It is seen in parts of Canada and the USA too, where from the late nineteenth century, confusion with the term arose. "Tuck pointing"

came to be used as the name for all raised profiles like ‘beaded’, ‘reeded’ or ‘double-struck’ on neutral or pigmented mortar. Later, in many US regions, it also came to mean all types of repointing on older properties.”[108]

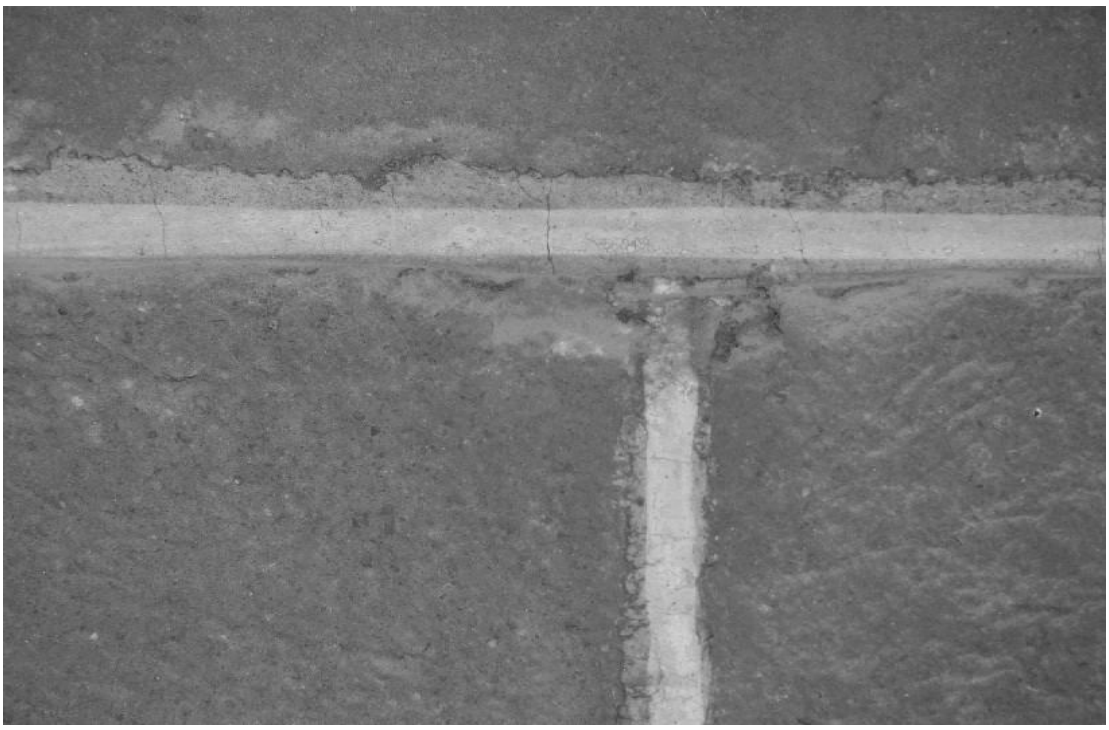


Photo 21: Pictured is a mortar joint displaying two colors, this joint finish is one of several finishes that was applied by a Tuckpointer. This original mortar joint finish was found to be intact under the front porch on the Snively/Harbaugh home, which was built in the 1870’s. The home is located in Shady Grove Pennsylvania. The. [Photo taken by Michael J. Kassman, October 2007.]

“Tuckpointing may seem as a pretty straightforward task but it is one that demands a high level of skill on the part of the professional Tuckpointers involved.”[109] There are other a few joint styles but those finishes that required different colors were the most time consuming and very costly.

The added costs in applying these finishes eventually led them to be non-existent

as it was no longer in practice and the knowledge of applying the finish was fading. Today, just a few buildings remain in the U.S. that have these joint finishes intact. [110]

As new masonry work was scarce during the Great Depression, the Union Bricklayers and Stonemasons demanded that the restoration work conducted by the Pointer, Caulker and Cleaner be under the jurisdiction of the IUBAC. However, the inclusion of the PCC's craftworkers in the IUBAC was not completed until the St. Louis International Union convention in 1940. Following this convention, all restoration work remained under the PCC classification while the bricklayers and stonemasons carried out the work of pointing and cleaning on new projects.[111]

In was not until 1982, that the PCC trade was recognized as an Apprenticeable occupation. However, in order to ensure that the bricklayer and stonemasons will not be excluded in this work in the future, the approved PCC Apprenticeship program states that "This has not eliminated training in the work of cleaner, pointer and caulker from the total training that is required for the trade of bricklayer."[112]

In 1982, the Apprenticeship for the PCC craftworker consisted of a minimum of 2500 hours and this must not be completed in less than one year. The work processes for the PCC Craftworker are listed below with the hours required for training.

Approximate Hours

1) Cleaning 1000 hrs.
    a) Use, care and maintenance of tools and equipment
    b) Sandblasting
    c) Grinding
    d) Chemical Washing
    e) Etching
    f) Pressure Cleaning
2) Pointing 250 hrs.

a) Mixing Mortar
b) Tuckpointing and Striking Joints
c) Dry Packing

3) Caulking 1125 hrs.
   a) Use, care maintenance of tools and equipment
   b) Mixing and applying primers
   c) Mixing and applying sealants
      i. Oil Base
      ii. Butyls
      iii. Neoprene
      iv. Acrylics
      v. Polysulfide
      vi. Urethanes
      vii. Silicones
   d) Masking
   e) Waterproofing
4) Scaffolding and Rigging 125 hrs
   a) Swinging Stages
   b) Single Basket

   Total 2500 Hours[113]

Please note that several of the tasks listed above such as sandblasting, are no longer an acceptable practice in preservation, and have been replaced primarily with masonry cleaning detergents.

The PCC classification can be found under the SOC and O*NET job classifications systems using the assigned job code 47-2061.00. During this thesis research, it was discovered, that the PCC is classified under the job title of Laborer. Below is the description for Laborer found on the O*Net website.

> Perform tasks involving physical labor at building, highway, and heavy construction projects, tunnel and shaft excavations, and demolition sites. May operate hand and power tools of all types: air hammers, earth tampers, cement mixers, small mechanical hoists, surveying and measuring equipment, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, clean up rubble and debris, and remove asbestos, lead, and other hazardous waste materials. May assist other craft workers.[114]

Although some of the duties described in the above definition, are duties that fall under the PCC occupation. However, over the years, as the PCC craftworker took on more extensive masonry restoration tasks. The current job duties have expanded tremendously. Today, in addition to the majority of the tasks listed in the 1982 PCC Apprentice work processes. The PCC craftworker job duties include the following: brick patching, stone patching, application of dutchman, concrete patching, casting, mold making, deck coating, weatherproofing, below grade waterproofing, epoxy injection, remove and replacing deteriorated brick, removal and replacement of deteriorated stone, and removal and replacement of deteriorated terra cotta.

In comparing the current job tasks for the PCC craftworker against the assigned job description listed on the SOC and O*NET system, it is quite apparent that the current job description does not fully represent the modern PCC craftworker. As a second-generation PCC craftworker and employee of the International Masonry Institute (IMI), I have reported this discovery to the IUBAC officials and the IMI National Training Director Steve Martini. Currently, the IUBAC and the IMI is working on not only re-defining the PCC job description, but they are also creating a new job title that will mostly represent today's duties within this job classification.

International Masonry Institute

The International Masonry Institute (IMI) was created in 1970 and is a non-profit joint trust of the International Union of Bricklayers and Allied Craft Workers (IUBAC). The "IMI programs are funded by contributions collectively bargained by BAC members and their contractors. These funds are used to develop and conduct apprenticeship and

training programs for BAC trowel trades craftworkers, as well as safety training."[115]

The IMI staff includes architects, engineers, educators, and master craftworkers who serve as trade instructors. All masonry training as well as specialize masonry training can be conducted in any one of the 40 training centers found throughout North America.

In recent years, the IMI has been on the forefront in a number of training initiatives for the masonry trades. Most notably was the IMI's involvement in the 2001 Smithsonian Festival of the Building Arts. "Through living presentations, demonstrations, and hands-on educational activities, "Masters of the Building Arts" will explore the skill, knowledge, and experience of craftsmen in the building trades and examine the critical issues that on front craftspeople today as they work to preserve our nation's past and build for the future."[116]

This Smithsonian Festival was held at the National Mall in the summer of 2001 and it was largest demonstration of union masonry craftsmanship in the United States. During the weeklong event, selected Master Craftworkers were on hand to lecture as well as to demonstrate continually their skills through ongoing demonstrations. There were many other craftworkers from other trades present during this event and who also demonstrated their skills. These include "adobe workers, ornamental blacksmiths, architectural woodworkers, ornamental plasterers, terrazzo, tile, and mosaic artisans, terra cotta craftsmen, timber framers, decorative painters, stained glass artisans, slate roofers, sheet metal craftsmen, and others."[117]

Figure 22: IMI National Safety Coordinator, Anthony J. Kassman and IMI's PCC Instructor, Michael J. Kassman demonstrating their skills in mold making and casting at the Smithsonian Festival of the Building Arts July 1st –July 8th 2001 in Washington D.C. [Photo taken by IMI Director of Communication Hazel Bradford, July 3, 2001]

Another IMI annual event created in the mid-1990s is Masonry Camp. The objective of the masonry camp program is to promote the makings of a masonry team, and break down any barriers that may exist between the architects and craftworkers, as the combine group takes part in a masonry challenge. The masonry challenge is a masonry design problem, which is given to the masonry campers. Once the campers are given the masonry problem, they begin to work together as a team in designing and building a solution to the problem.[118]

During the weeklong session, the architects and the craftworkers find themselves switching roles. For example, an apprentice bricklayer begins to learn how to design a masonry wall section while an architect begins to learn the skills required in laying brick. Generally, masonry camp is conducted over a two-week period, each week having approximately 25 apprentices and 25 student architects. The masonry campers are then divided into approximately seven teams comprised of both professions. Each team then designs and builds their masonry element using what they learned during the week.

In the late 1990's, the IMI conducted several satellite programs, one program in particular was conducted at the NY Central Train Station (now Amtrak) located in Rome New York. The train station was built in 1914, and operated as part of the New York Central Railroad until its closing in the late 1960's. Following the closing, the building stood vacant and un-occupied for a number of years. As found with any building left un-maintained and unoccupied, the interior and exterior of the building were severely compromised and required extensive masonry repairs.

The required masonry restoration work involved all aspects of the masonry trade to include, brick replacement, masonry cleaning, re-pointing stone patching and stone replacement. The interior of the station also required extensive mosaic tile, terrazzo, and plaster restoration. To head up the masonry restoration was master craftworkers Anthony Kassman and Jack Reilley.

A section of the interior was partitioned off so that it can be utilized as a classroom and training room (See Figure 23). The students were required to complete several mock-ups before being allowed to tackle actual portions of the building. The

program had approximately 40 "completers" over the three-year period. Unfortunately, upon the completion of the masonry restoration, the IMI's sponsored program came to a halt due to the rising costs of travel expenses. These costs included meals, hotels, and mileage expenses as students were from throughout the country. There was also the issue of potential liability, which has limited the IMI from taking on future onsite training venues that were this extensive. Nonetheless, the train station has since reopened and "now offers a modern, safe and inviting atmosphere to approximately 6,400 riders each year."[119]

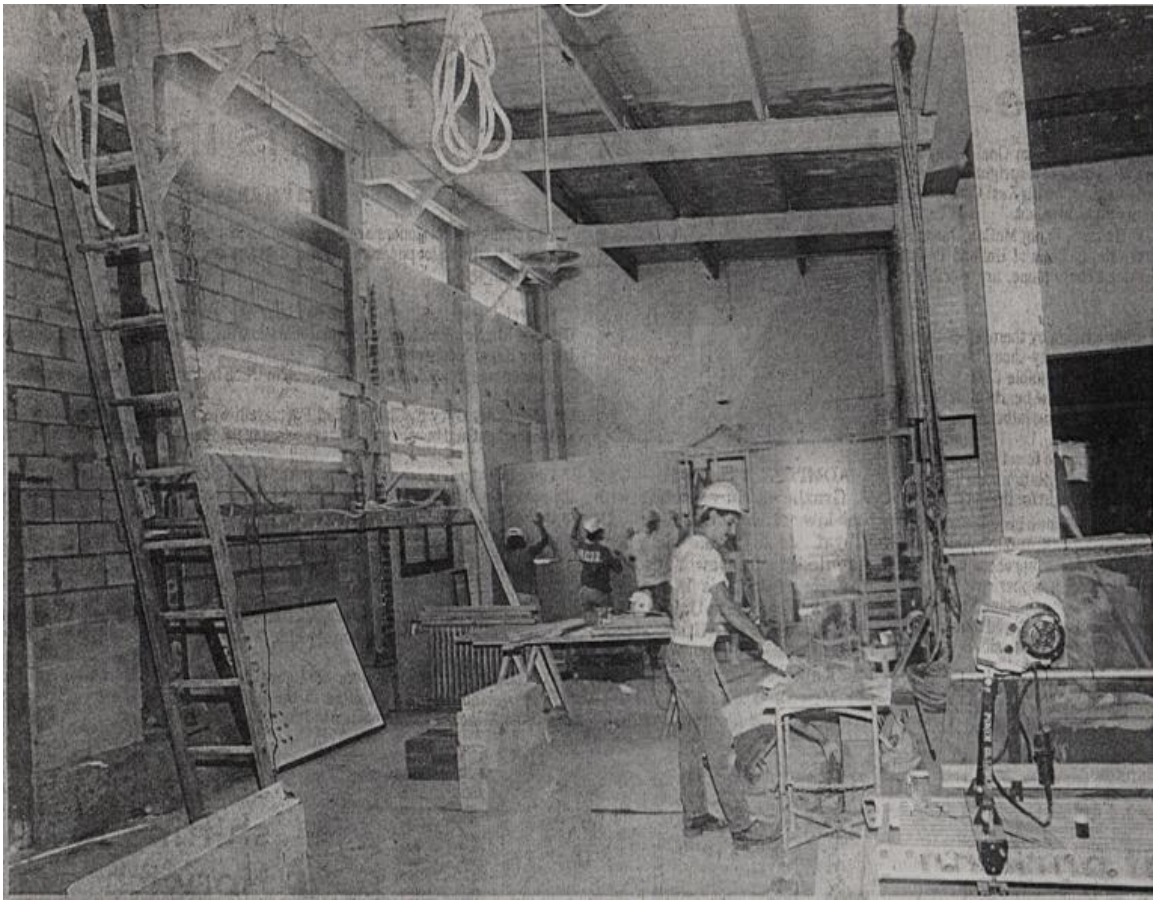


Figure 23: Photo of IMI Masonry Training Program conducted at the Rome New York Train Station. [Photo taken by Chuck Reichl, July 1990]

Shortly, following this endeavor, a new PCC program was added to the IMI National Training Center located at Ft. Ritchie, Maryland. Unfortunately, due to liability the IMI no longer provides training on an actual historic building. However, all PCC instructors create mock-ups that simulate issues or repair problems found on historic buildings.

Figure 24: BAC/IMI 2007National PCC Apprentice Contest. Contestant is applying a grapevine joint finish. The PCC contestant had to remove and replace deteriorated brick, patch the limestone coping, apply sealant in described areas and re-point open areas matching existing joint finish. [Photo taken by Todd Buchanan, September 2007.]

To show that the IMI\BAC continue to value the training of its members, another event hosted by the IMI was the 2003 National Apprenticeship contest held at the National Building Museum. This event was repeated in 2007 and 2009 but the location

was moved to the new IMI\BAC Flynn Center located in Bowie, Maryland. The event included over 140 contestants from the following crafts: Marble, Plaster, Stone, Brick, PCC, Tile and Cement.

Figure 25: IMI Instructor Certification Program. IMI National Safety Coordinator Anthony J. Kassman and PCC Instructor Michael J. Kassman instructing fellow IMI trade instructors in Health and Safety matters related to the masonry industry. [Photo taken by Nancy Rock, September 2006.]

In order to ensure that IMI trade instructors are provide quality training at a national level. The IMI launched the International Masonry Institute's Instructor Certification Program (ICP). This program is designed to assist in the craftworker transformation as a craft instructor. This is done over a five-year period, as the instructors

take part in weeklong training sessions given by, master craftworkers, architects, college professors and others. In order to complete the program, the instructor must complete a portfolio consisting of items such as lesson plans, masonry trade program, written composition and resume, the instructors are to also complete a minimum 200 hours of classroom instruction. The course outline of the ICP program and a can be found at the IMI's web site at: http://www.imiweb.org/training/certifications/icp.php**.**

Other IMI programs that need to be mentioned include the 2004 Historic Masonry Conference held in Annapolis, Maryland. This event was a combination of hands-on training and technical seminars. Attendees of the three-day event included architects, preservationists, architectural historians, and restoration contractors. Speakers at this event including Norman Weiss, and Ron Staley of Christman Company.[120] This event served as the launching of IMI Restoration series, which was developed by IMI Educational Director Larry Darling. The Restoration Series consisted a number of programs including, Building Condition Assessment, Brick Masonry Restoration, Stone Masonry Restoration, Historic Brick and Mortar, and Terra Cotta Restoration. These courses were developed to be used in journeyman upgrade and contractor programs.

The IMI has also been involved in a few Graduate Preservation Programs such as the Eastern Michigan University Historic Preservation (EMU) Graduate Students Field School. The program was organized by EMU Historic Preservation Director Dr. Ted Ligibel and IMI Larry Darling. The weeklong field school involved comprehensive instruction, demonstrations, and hands-on training to all graduate students.

These are just a sampling of the many masonry programs that IMI has conducted

over the years. Currently, the IMI new National Training Center offers a number of continuing educational programs to members and signature contractors of the IUBAC. The facility contains a state of the art training facility, a hundred room dormitory, and dining room.

Historic Windsor, Inc. /Preservation Education Institute Certificate Program

The historic Windsor House (See Figure: #26), is located in Windsor, Vermont. The building "opened for business in 1840, was considered the finest public house between Boston and Montreal."[121] In the early 1970's, this significant building came very close to being demolished. In order to save the building a group of residents, formed the non-profit Historic Windsor Inc.

In the late 1970's-early 1980's there was a huge surge in preservation and with so many projects there was soon a limited supply of craftworkers who had the necessary knowledge and skills needed to perform preservation.[122] To help curb this shortage of available craftsmen the Historic Windsor Inc formed the "Preservation Institute for the Building Crafts (PIBC)."[123]

By 1982, the Historic Windsor Inc. along with the PIBC began conducting preservation "workshops and seminars on the history, theory and practical application of traditional building skills, back by the latest in preservation technology."[124]

The primary audiences targeted for these workshops included "contractors, craftsman, building trade instructors, and architects. Secondary groups include homeowners, community rehabilitation specialist, realtors, university students and engineers."[125]

Figure 26: Windsor House, located in Windsor, Vermont. The building currently serves as home to the Historic Windsor, Inc. /Preservation Education Institute. [Photo obtained from http://www.waymarking.com/waymarks /WM1MR3_Windsor_House __Windsor_ VT, June 2007.]

Currently the PIBC is, referred to as the Preservation Education Institute (PEI). In 1996, PEI Executive Director Judy Hayward designed a preservation certification program. Soon after the PEI partnered with Norwich University of Architecture and began offering the certification program to all craftworkers and preservationist with at two east years of experience. When first introduced, the certificate program consisted of the following eight core courses:

a) Preservation Philosophy;

b) American Building Design and Technology;
c) Structural Evaluation: Timber Frame;
d) Structural Evaluation Masonry;
e) Historic Plaster Repair;
f) Paint; History and Practice;
g) The Business Side of Preservation;
h) Health and Safety for Preservation Professionals[126]

In order for students to complete the program and receive a certificate in "Skills in Preservation and Technology", the student must complete the "eight required courses choose five electives and complete a community service project."[127]

The main purpose of having the participant complete a Community Service Projects is "to remind students that although they can earn by working on a historic buildings that volunteerism and philanthropy continue to be the backbone of historic preservation in the U.S.; and to demonstrate the knowledge and skills they acquired while being enrolled in the certificate program."[128]

The certification program offered as many as thirty electives covering various materials and systems found on historic buildings such as "wood, masonry, paint, landscapes, moldings, foundations, structural systems, wall cladding, roofing, windows, flooring, mortar and repointing, plaster, stucco, mechanical and electrical systems, fire protection, and maintenance systems. Future topics will include "photography and documentation process, health and safety, access to historic properties for persons with disabilities, archeology, and computer applications for research, Internet, and project management."[129]

These workshops are generally, offered throughout the state of Vermont and depending on subject matter; all workshops are held in full eight hour, sixteen and

twenty-four block training sessions. The costs associated in taking theses workshops various on the topic as well as the length on the workshop. Typically, it may take two – five years to complete at a cost of approximately five thousand dollars. As many of these workshops offer hands-on, enrollment is typically limited based on topic and content. So depending on the objective of the workshop, class size is generally anywhere between 8-15 persons. The instructors of the certificate program have attained at least a Bachelors degree and are highly regarded preservation professionals from within the state of Vermont and surrounding region.

According to Historic Windsor's Executive Director Judy Hayward, there has been over 3000 persons who have attended the workshops, however, only a hand full have actually completed the certification program. Judy Hayward has stated that the certificate in "Preservation Skills and Technology Program" has been recently revised and will now require that each participant complete ten courses and community service project. Students will no longer be required to take electives.[130] The two additional courses added to the previously listed eight subjects are: Repointing Historic Masonry and Sustainability and historic preservation building practice.[131]

Recently, the PEI purchased the Stephen Jacob House for the sum of $80,000 with the intentions of eventually restoring the building as they continue conducting hands on-workshops. (See Figure #26). The Jacob house was "built in approximately 1784, is a good example of transitional architecture retaining elements of Georgian, Federal, and Greek Revival styles."[132]

However, the Jacob house is not only significant due to its architecture, but also

due to its association of a important persons. “When Vermont was admitted into the Union as the 14th state, President George Washington elected Jacob as the state’s first district attorney, a position he held from 1791 until 1797”[133]

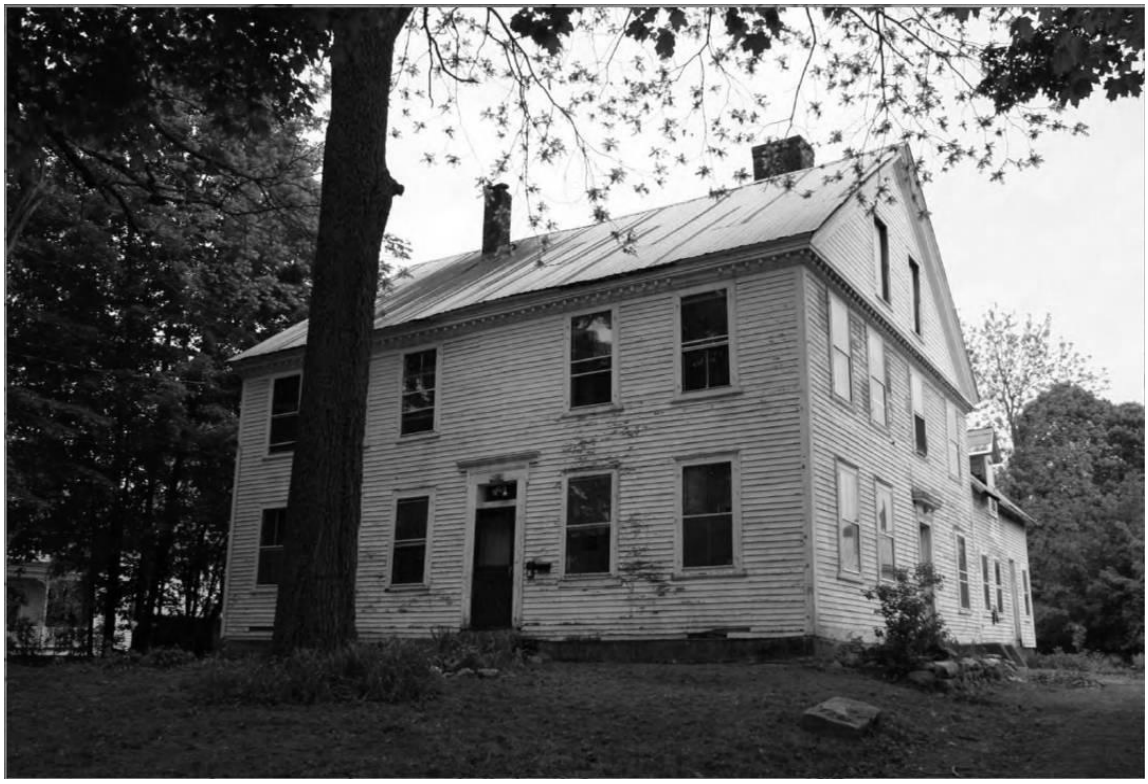


Figure 27: Jacob House--- Historic Windsor, Inc./Preservation Education Institute, located in Windsor, Vermont. [Photo by Heather, Cox, July 2009.] http://www.waymarking.com/waymarks/WM1MR3_Windsor_House__Windsor_VT

As the PEI operates as a 501(c)(3)non-profit organization, Judy mentions that to help curb some of the costs in restoring the Jacob house, the PEI intends on seeking additional funding through private foundations as well as with available federal and state programs such as the “Slums and Blight program.”

According to Judy Hayward, the Vermont State College System (VSCE) is

currently evaluating the certificate program, and if approved, participants would be able to receive one credit per course. In the future, the PEI intends to increase the content and contact hours of the certificate-required courses, which upon approval by the VSCE, they will be able to issue three credits per program.[134]

Persons from all over the country continue to attend the programs workshops and currently there are twenty-five students enrolled in the program. "The Institute also maintains lists of consultants, contractors, and craftspeople with preservation skills. For a minimal fee, they provide names of qualified specialists."[135]

Figure 28: Historic Plaster Repair at Harpers Ferry, West Virginia. [Photo provided by Judy Hayward taken May 2010.]

The Preservation Trades Technology Program at Thaddeus Stevens College

The need of developing a Preservation Program allocated for the building trades was indentified during the development of the Lancaster County, Pennsylvania Comprehensive Plan. "As part of the planning process we discovered that there is a scarcity of people who have skills in the preservation trades and a multitude of historic property owners who are searching for people with preservation trades skills. To address this disparity, the concept of starting a preservation trade's technology educational program became a goal of the plan."[136]

This newly developed training program is one of a small number of preservation programs found during this thesis research that combines trade education with historic preservation. The program was developed in collaboration of the Lancaster County Workforce Investment Board, Lancaster County Historic Preservation Trust and the Pennsylvania Historical Museum Commission (PHMC).[137] This preservation program is the only program offered through-out the state of Pennsylvania. [138]

Located in Lancaster, Pennsylvania, the Thaddeus Stevens Preservation Technology Program was launched in 2009 as "many owners of historic houses and buildings throughout Pennsylvania wrestle with the same dilemma—where do they find someone who possesses the necessary skills and knowledge of historic preservation to work on their buildings?"[139]

The program is "directed toward those individuals entering or already employed in the building trades who seek the specialized skills in traditional and preservation trades needed to prepare them for this growing segment of the construction industry."[140]

According to the PHMC website, persons entering the program generally fall into one of the categories listed below:

a) Incumbent workers already in the building trades who want to supplement their knowledge and skills to work on historic preservation projects
b) Building contractors who want to expand their business into historic preservation work
c) Students enrolled in a building trades program who want to expand their education to work on historic preservation projects
d) Maintenance employees who have responsibilities to maintain and repair older buildings
e) Historic building owners and others with basic building trades skills who want to learn how to preserve and maintain their buildings.[141]

The program was developed with a team of preservation educators that included PHMC Architecture and Preservation Division Chief Barry Loveland and building trade's experts John Fugelso and David Mertz. John Fugelso, was PMHC Chief of the Preservation Construction and founder of the Durham Preservation Program mentioned in Chapter II. David Metz currently serves, as training Director of the Preservation Trades Program at the Belmont Technical College located in St. Clairsville, Ohio.[142]

According to Barry Loveland, all students enrolled in the program are required to take the following three core programs: Fundamentals of Historic Preservation, History of Pennsylvania Architecture, and Pennsylvania Building Technology. These core courses are described below using the Thaddeus Stephen's College website.

a) Fundamentals of Historic Preservation
The student will learn that repair is preferable to replacement and to match the old in design, color, texture and other visual qualities. Over time an appreciation of our nation's heritage has resulted in the gradual adoption of preservation laws and practice by federal, state and local governments, some familiarity with these statutes especially at the local government level is essential. A living laboratory of preservation practices is the City of Lancaster where the student can personally witness its impact while touring several of the city's historic districts.

b) History of Pennsylvania Architecture

This course will cover the development of American architecture (focusing on architectural styles common to Pennsylvania) with an emphasis on how technology, cultural trends, and economics affect how Americans build and why buildings look the way, they do. Geared toward people in the building trades, emphasis is placed on developing an architectural vocabulary. The course will include tours of local historic neighborhoods and homes representing different eras.

c) Pennsylvania Building Technology

This course will examine the evolution of building materials and their use in Pennsylvania. Emphasis will be placed on traditional materials common to Lancaster and the surrounding counties. A tour of various historic properties will examine construction details and how historic architectural features and woodwork were installed. A visit to a working restoration project and a tour of an old barn will be featured. [143]

In order to complete the program, the students will also need to take additional hands-on courses. These hands-on courses are only offered in preservation carpentry and preservation masonry disciplines. The hands-on carpentry courses include "Wood Repair, Wood Window Repair, Preservation and Repair of Porches, and Complex Moldings." While the masonry preservation courses include "Mortars in Preservation, Masonry Repair and Repointing, and Masonry Cleaning."[144]

A major contributor to the Thaddeus College Preservation program was a $40,000 grant given by the 1772 foundation. The 1772 foundation provides funding for a number of programs including "endangered properties, preservation trades and crafts schools and programs, agricultural endeavors, and historic site sustainability."[145] The grant will be utilized for the development of additional courses that will be implemented in the future.

While the entire program can be completed in a nine months, the programs core courses as well as the hands-on training sessions are generally, conducted twice a week in the evenings along with a full day of activity on Saturday's. Each course is to be

completed over a three-week period. The courses are “geared toward restoring rather than replacing. That's the whole premise," said Byers Charles Byers, Stevens' project manager for the preservation technology program.[146]

Figure 29: Photo showing hands-on session at the Thaddeus Stephens College. Student is displaying wooded window undergoing treatment. (Photo obtained from Preservation Heritage Journal article titled “A New Way of Learning How to Preserve the Past.” by Barry A. Loveland. [Photo taken by John Fugelso, 2009.]

The cost of attending each training course is $475.00 and currently, those who have two years experience in construction are credited with a discount totaling $285.00.

This discount is administered through the Pennsylvania Workforce Investment Board.[147] Others persons may qualified for financial aid through "Lancaster County Workforce Investment Board**,** as well as through the college."[148]

The Timber Framers Apprenticeship Program

Even though the practice of Timber Framing in the United States occurred for centuries, the Timber Framers Guild was not formed until 1984. The guild is a non-profit organization committed the craft of Timber Framing through publications and educational programs such as workshops. Timber Framers guild currently has 1500 members throughout the United States. [149]

> "We cannot rely on short-term programs or a declining educational system to provide the highly skilled and dedicated timber framers we need for the future. By creating, maintaining and supporting our own program we can secure the future of our industry and provide a model for others as well."[150]

After fifteen years of discussions, the Timber Framers Guild launched National Apprenticeship Program in August 2009. This new Apprenticeship Program will further prevent the great loss of knowledge of Timber Framing due to a ageing workforce. One guild member states observation from a recent conference: "One can't help but notice the aging of the typical timber framer and the graying beards on those who started this organization."[151]

As the occupation of Timber Framing, represents a small number of workers. The new apprenticeship program will be sponsored, and administered by the Timber Framers Guild. The Standard Occupational Classification (SOC) and Occupational Information Network (O*NET) Code for the Timber Framer is 47-2031.02. The code categorizes the

Timber Framer occupation under the broad occupation Carpenter, and then a detailed occupation Rough Carpenter. (See Chapter IV, Figure 11 for code explanation.)

The job title Timber Framer is classified under Rough Carpenter because the duties performed in the Timber Framer's occupation include the construction of "rough wooden structures, such as concrete forms, scaffolds, tunnel, bridge, or sewer supports, billboard signs, and temporary frame shelters, according to sketches, blueprints, or oral instructions."[152]

As seen in other apprenticeship programs, the Timber Framers Apprenticeship Program has outlined the following roles:

a) The Apprentice
   Must meet certain minimum application requirements as outlined in the Standard; some requirements may be waived if currently employed by a supporting company. Agrees to meet certain requirements and milestones during the term of apprenticeship. Becomes a Journey worker upon completion of the program

b) The Journey worker
   Must meet certain application criteria and agrees to train the apprentice following: the work processes and skills outlined in the Standard, or makes sure the apprentice receives such training. Is eligible for Master status after fulfilling advanced requirements, including being a Journey worker for a set period.

c) The Employer
   Maintains a proper work environment to support the apprentice and Journey worker. Employs enough journey workers to properly mentor the apprentice. Manages the wages of the apprentice and Journey worker to meet targets in the Standard and assessments to support the apprenticeship program.

d) The Guild
   Manages the apprentice through the Apprentice Training Committee (ATC). Provides materials and educational opportunities for related training. Assists with placement of apprentices when needed. Conducts assessments and testing of apprentices and journey workers.[153]

The Apprenticeship program is depended upon a On-the Job Learning (OJL) consisting of 5000-7000 hours over a period of three years. The requirement for entry in this apprenticeship program differs from previous programs described in Chapter III. As the Timber Framer apprentice must meet the following qualifications as dictated by the U.S. Department of Labor Office of Apprenticeship and Training:

a) Age-Apprentices must not be less than 18 years of age.

b) Education- Applicants shall be high school graduates or provide proof of equivalent educational attainment such as successful completion of the General Education Development (GED) tests. Each applicant shall submit, with the completed application, a high school transcript or an official report of GED test results.

c) Physical -Applicants will be physically capable of performing the essential functions of the apprenticeship program, with or without a reasonable accommodation, and without posing a direct threat to the health and safety of the individual or others. Applicants will pass a physical exam and pass a valid drug test upon acceptance into the program and prior to being employed. These tests will be paid for by the employer

d) Aptitude Test-All applicants shall pass an examination designed to test the applicant's reading and math skills and aptitude for employment in the Timber Framing industry.

e) Resume-All applicants must submit a resume.

f) Interview- Applicants not eligible for Direct Entry are required to interview with the sponsor. This requirement may be waived at the sponsor's discretion.

g) Guild Membership-Applicants will be members in good standing of the Timber Framers Guild.[154]

Once finishing the training requirements and becoming a full fledge Journeyman, a Timber Framer can expect to earn a minimum wage rate of $20/hour, this wage is set nationally.[155] This new apprenticeship program is divided into the following eleven sections: Drawings and Specifications, Timber Conversion, Trade Practices, Timber

Framing Techniques, Tools and Equipment, Related Materials, Related Trades, Related Skills, Finishing Timbers, Raising and Rigging and Conservation Techniques. These titled sections list competencies as well as dictate a minimum and maximum set of hours that an apprentice must perform in each task in order to complete the program. Additional information can be found on the Timber Framers website using the following link: ww.tfguild.org/Apprenticeship/TFGApprenticeshipStandardsWorkProcesses.pdf

For those craftworkers who are currently in the practice of timber framing, the program has as a "carrot." This allows those persons who reach journeyman status, the opportunity to obtain the title of "Master Timber Framer." This is done by; completing all competencies as described in the program, must have at least ten years work experience and must provide a portfolio which describes this experience.[156]

Utilizing the Dictionary of Occupational Titles (DOT), it was discovered that the Timber Framers code: 869.381-034 was linked to the Mine & Quarry Industry. This job title became linked, to the mining industry as balloon framing became the method of choice in construction and Timber Framers were no longer in demand. The timber framers remained highly utilized in the mining industry to shore up tunnels and entrances in the mines. This also helped ensured that the trade remained in practice. Below is the job Timber Framer description obtained using the DOT website:

> Cuts, fits, installs, and repairs supporting timbers and other framework in underground mine, using carpentry tools: Measures and cuts timbers for roof supports and framing, such as ladders, chutes, walls, and ventilation doors, using handsaw or power saw, square, and rule. Sets roof timbers and inserts wedges to hold them in place. Erects cribbing to increase support or control ventilation Mortises joints with saw, chisel, or adz, and bores bolt holes with brace and bit or power drill. Installs braces to repair or shore up loose timbering, using hammer and spikes. May set and wedge props (posts) in place as temporary support for

> roof or working face. May cut timbers to size and load them onto cars for haulage to mine. May build wooden forms, and mix and pour concrete supports. May set and bolt together steel roof supports and insert wedges to hold supports in place.

Using O*NET, it was found that the Timber Framer occupation did not appear under the Rough Carpenter category until 1996. These findings clearly show how important job descriptions have in regards to the creation of job titles. In addition, the information contained in this section supports the need in having job titles as well as their descriptions re-evaluated in order to be sure they reflect today's trends.

Pennsylvania Preservation Construction Specialist (PCS)

The Preservation Construction Specialist is a relatively new job title and new job classification created in 1998 by John Fugelso of the Pennsylvania Historical and Museum Commission. There is currently no testing required for this new job title as it is currently listed as non-civil service occupation. However, there are certain requirements that all applicants, must fulfill in order to qualify in this job classification.

> A Bachelor's degree in
> Architectural History, American History, Historic Preservation, Architectural Conservation or a similar field; and two years of experience in historic preservation construction work which has directly involved hands-on construction work in the restoration or preservation of historic buildings in one or more skilled trades.
>
> Or
>
> Two years of post-secondary education and training in the above designated fields of study and four years of experience in historic preservation construction work which has directly involved hands-on construction work in the restoration or preservation of historic buildings in one or more skilled trades;
>
> Or
>
> Any equivalent combination of experience and training that includes two years of experience in historic preservation construction work which has directly involved hands-on construction work in the restoration or preservation of historic buildings in one or more skilled trades.[157]

Using Pennsylvania's library of non-civil service job titles, the job tasks defined for the PCS is described below.

> Employees in this class are responsible for special projects involving preservation issues, preservation technologies, and preservation maintenance oversight. Work includes responsibility for evaluating, planning, overseeing and performing specific preservation craft trades such as carpentry, roofing and masonry in order to restore and preserve historic buildings. Highly specialized skills, preservation techniques and technology are employed to ensure that all work is consistent with, and does not jeopardize, the historic integrity of the structures and that the work meets the Secretary of the Interior's Standards for the Treatment of Historic Properties. In addition to actually planning and performing the work, employees in this class typically provide technical assistance and training to historic site maintenance personnel and/or job trainees assigned to restoration projects. Positions assist in special cooperative programs and initiatives, such as the Department of Labor and Industry's Pennsylvania Conservation Corps Program and the National Park Service Preservation Training Center, at PHMC historic sites and museums engaged in preservation planning, construction and/or maintenance work. Employees in this class also work in partnership with Architectural Designers to provide technical assistance in project planning, research, design and construction observation. Work is performed under the direction of the Preservation Construction Supervisor and reviewed while in progress and upon completion for compliance with appropriate methods and results.[158]

Currently, there are only three persons who hold this designation, however, the PHMC continues to explore new innovative ways to draw in additional persons. Another program launched by the PMHC along with several partners is the Preservation Conservation Corps (PCC). This is a paid apprenticeship program conducted over a period of twelve weeks usually in the summer.[159] Persons who enter this paid program apprenticeship program are generally between the ages of 18-25 and work under the PCS. The PCC program has trained more than 12,000 young adults since inception.[160]

Preservation Carpenter

During this thesis research, the job title of Preservation Carpenter was found in the state of Rhode Island. This job title meets the requirements for an Apprenticeable occupation. In 1995, the programs sponsor, the Heritage Restoration Inc (HRI), submitted the Preservation Carpenter training program to the Rhode Island Apprenticeship and Training Bureau (RIBAT). The "HRI is a proud sponsor of the apprenticeship program as a structured training option to further the skills and disciplines necessary in today's building preservation trade"[161]. Upon reviewing the contents of the program, the HRI Preservation Carpenter apprenticeship program was approved by the RIBAT as it contained all the necessary requirements.

In order to complete this program, the Apprentice must complete "8000 hours of on the job training" (OJT) along with an additional 576 hours of classroom related instruction. The required OJT spent in each task listed in the training outline is flexible, however, the skill level attained in a task, should be at a level that is acceptable in the carpentry trade. [162] The creator of this new job classification was HRI owner and current President of the Preservation Trades Network (PTN) Robert J. Cagnetta.

Robert Cagnetta provided the following training outline for the Preservation Carpenter.

Work Processes	Total hours
a) Research,	200
b) Layout, From drawings or existing conditions Conventions and drafting	300

c) Use and care of hand tools, 300

d) Use and care of power tools, 400

e) Bench work, 700
Millwork, cabinet fabrication, etc.

f) Erection of scaffolds and staging, 500
OSHA compliance

g) Demolition, 400
Destructive analysis
Labeling and recording

h) Platform framing, 550
With dimensional lumber, engineered wood, plywood, etc.

i) Traditional framing structural restoration, 800
Of balloon frames, timber frames, plank frames, etc.

j) Exterior fabric restoration, 1000
Siding, trim, porches, stairs, etc.

k) Roofing, 750
Wood, slate, metal, asphalt, rubber, etc., and flashing

l) Masonry, 200
Use of historical mortar mixes

m) Interior fabric restoration, 1000
Trim and finish cabinetry, stairs, plaster, insulation, etc.

n) Window, door, and hardware restoration, 500

o) Flooring 400

Although, the program may list some items that may be transferrable to new construction, the core of the program is focused primarily on historic preservation. The program provides an overview of some of the adjoining substrates that a preservation carpenter may disturb such as masonry and window and door hardware.

An important module listed in the Preservation Carpenter outline, that is often not found in other preservation programs is the safety module. This module consisting 500 hours is sufficient amount of time in order to provide all the necessary safety related instruction in regards to scaffolding and OSHA regulations. Although not listed individually, additional instruction should include at the very least, a safety awareness to some of the leading health hazards found in working on historic buildings.

Key Challenges in Developing a Preservation Trades Training Program.

In the last few years, there has been a decrease in spending on new construction, but increase in preservation. It is a well-known fact that even in a slowed economy, there are good paying jobs in preservation and restoration. In addition, it is apparent that the demand for skilled craftworkers who have the necessary knowledge of historic buildings will continue to rise as more buildings become listed in the National Register. In "the past 20 years we have seen many positive changes in construction and preservation trade and management education, preservation technology, and contract delivery, all key components in taking design concept to field implementation — making the project real."[163] The need for training is there, and the will for training is there, however one of the key challenges in developing a preservation program is sustaining the necessary funding. Many preservation programs start out strong, but then eventually fizzle out as maintaining the necessary funding becomes an issue. Robert Cagnetta, the administrator of the Preservation Carpenter program reports that they "could not cost effectively provide classroom training, and resorted to a lot of site related readings and independent studies."[164]

Several programs such as Historic Windsor's Certificate Program, RESTORE, NPS, and the IMI have all seen some difficulties over the years. Nonetheless, these preservation programs have remarkably survived and continue to offer training to practicing craftworkers as well as contractors and historic property owners.

Another key challenge for a preservation program is obtaining accreditation. Not all programs are accredited and those that have had partnerships in the past with Universities or Community Colleges are finding it hard to maintain their status. Programs without accreditation can hinder enrollment efforts, as students may not be able to receive financial aid.

There are also continuing challenges between the union and non-union shops. The goal of creating a certified preservation craftworker either nationally, regionally or even a state level may be a long road. What needs to be done for the preservation craftworker is the same that is currently being done for the Electrician and Plumbing trades.

As defined by the licensing bureau, a person may take the Journeyman license exam once the plumber and electrician completed the amount of on-the-job hours under a licensed Journeyman After passing this test, the person will be recognized as a Journeyman and is free to practice the trade independently but under a license “master electrician” or “master plumber.” A journeyman will be allowed to take the “masters” license exam as soon the numbers of hours and other items have been completed as defined by the licensing bureaus.

As currently seen for the electrician, plumber, HVACs and even auto mechanics, can organizations such as the IMI, PTN, Historic Windsor, Inc./Preservation Education

Institute, NPS and other stake holders come together to create a standard of practice which may in turn will create a recognized level of licensing for the preservation craftworker? The first step in this process is to create and define the qualifications of the preservation craftworker; this will be discussed in further detail Chapter VI.

CHAPTER VI
PROPOSED MASONRY PRESERVATION CRAFTWORKER QUALIFICATION STANDARDS

Introduction

This chapter will discuss qualification standards for the preservation craftworker. Although the focus of this thesis research was primarily directed toward the masonry craftworker, the findings contained in this research can be used as a model for future research on qualification for other preservation trades.

This Chapter begins with an evaluation of the responses to the survey questions #22 and question #23. These two survey questions are extremely valuable to this thesis research as they provide a full understanding as to what knowledge, skills and abilities are required for the masonry preservation craftworker. One question asked the survey respondents to rank by importance, topics a masonry craftworker are expected to fully understand while engaged in preservation. Another question allowed survey respondents list additional topics they deemed should be included in the study.

This chapter also includes a discussion about the development of a craftworker preservation certification. This certification discussion also propose the creation of a directory for those who have achieved certification and a discussion of continuing education. The discussion on continuing education includes a proposal that mandates that a preservation craftworker attend workshops or seminars in order to maintain his or her certification.

Survey Question #22

If a qualification standard for Preservation Craftworkers can be established, what would be the key elements in defining the knowledge, skills and abilities (KSA's) for a Craftworker practicing Masonry Conservation? Please rank the following 16 items by importance with (1) being the most important.

a) Architecture
b) Terminology
c) Material Science
d) Masonry Mortars
e) Water Proofing Damp Proofing
f) Masonry Cleaning
g) Epoxy Injection
h) Terra Cotta Restoration
i) Caulking and Sealants
j) Stone Patching/Dutchman
k) Inspection and condition assessment
l) Rigging (Scaffolding, ladder etc)
m) Safety programs (such as Lead, Asbestos, PCB, Silica)
n) Proprietary Masonry Patch materials (Edison, Jahn, Mimic etc)
o) Secretary of Interior standards for treatment of historic properties

All 77-survey participants answered this question; however, some participants did not completely list the topics by priority. In my observation, the list of subjects was probably too long, requiring additional time for the respondents to answer. In addition, a few of the topics listed above may have been too closely related, and considered equally important. Listed below, are the sixteen topics ranked accordingly by the survey respondents.

1. Secretary of Interior Standards for treatment of historic properties. 29.7% of the survey participants selected this topic as being the most important.

2. Inspection and Condition Assessment. 28.8% of the respondents selected this topic as being the second most important.

3. Material Science. 15.8% or 12 respondents ranked this topic as being third.

4. Masonry Mortars 20% or 15 respondents ranked this topic fourth.

5. Masonry Mortars ranked fifth place as well, but since Proprietary Masonry Patch materials (Edison, Jahn, Mimic etc) came in second to Masonry Mortars and it did not come any closer to other rankings. Propriety Masonry Patch Materials will be considered in fifth place with having 11.9% or 8 respondents selecting.
6. Masonry Cleaning 18.3% or 13 respondents selected this topic as being sixth
7. Stone Patching/Dutchman 13.6% or 9 respondents selected this topic seventh.
8. Safety programs (such as Lead, Asbestos, PCB, and Silica) 11.1% ranked this item as being eighth.
9. Caulking and Sealants. 16.2% of the participants selected this item as being ninth.
10. Damp Proofing. 12.9 % of the participants selected this topic as being tenth.
11. Terra Cotta Restoration. 14.9% selected this topic as being eleventh.
12. Water Proofing. 13.2% of the participants selected this item as twelfth.
13. Terminology. 12.5% of the participants selected this topic as the thirteenth item.
14. Epoxy Injection. 26.5% of the participants ranked this item fourteenth.
15. Rigging Ladders and Scaffolds. 11.8% of the participants selected this topic.
16. Architecture 18.8% of the participants selected this topic as last or sixteenth.

The fact that respondents selected the Secretary of the Interior (SOI) Standards for Treatment of Historic Properties as the number one topic was not surprising. Regardless of one's discipline in preservation, having a base knowledge of the SOI standards and guidelines are essential. This topic was not found in the building trades apprenticeship programs.

It was found that some of the topics listed are not included in apprenticeship or preservation programs. I believe that the main reason why these topics may have been

excluded may lie in the fact that current apprenticeship programs are already filled with content requirements and in order to add additional topics, some other topics would have to be completely removed or even reduced greatly in time.

In order to gain more information as to the adequacy of question #22, the survey included a follow up question that allowed participants to list additional topics or add additional comments that would help this study. Below are a few of the responses.

Question #23

Please list any other topics; methods or materials that you feel that should have been included above in question #22.

Question #23 Responses to Question #22	
1	Skills, skills, skills. Preparation and installation of mortars, installation of masonry units, stone drafting, shaping and carving
7	History of building in the geographical area that the crafts person is working. New Mexico buildings are very different from Boston buildings.
8	It is VERY difficult to rank the above items, because almost ALL of them are EXTREMELY important.
14	Pointing, Brick and Stone Repair and Replacement, Dry Laid Stone
18	History of masonry technology and techniques.
19	Perhaps should have divided question 22 into two questions? Hard to rate architecture (a background study) against lead, asbestos and silica (life safety).
21	When not to use any of the techniques listed above, as well as when to use them -- such as waterproofing.
22	Lime putty, Hydraulic lime, lime burning/making, know when it is appropriate to use hand tools versus power or pneumatic tools, how to pick appropriate masonry patching material or replacement bricks, how to identify sand/lites in mortar to determine color
23	Add the topics of power tool usage, anchorage technology, lintel restoration, and joint sealant systems.
34	Structural properties of masonry materials and systems, masonry pathologies and mechanisms of decay/deterioration

Figure 30: Question #23 sample comments to benefit the study. [Downloaded through SurveyMonkey, August 2010.]

Some of the comments made by survey respondents are a clear indication that the list was perhaps too long and that a few of the listed items are too closely related in order to rank them properly. Respondent #8: “it is very difficult to rank the above items, because almost all of them are extremely important.” Respondent #6: “I am sorry I cannot go through the whole list - many are equally important in my opinion.” Respondent #19: “Perhaps I should have divided question 22 into two questions? Hard to rate architecture (a background study) against lead, asbestos and silica (life safety).”

Other reasons that participants were not able to fully rank the items was that there was some confusion in understanding the question and in selecting the item. The Monkey Survey program only allows one item to be selected in each column. Those who selected two in each column, soon found that there previous selection was overridden. This problem was found as respondent #12 left the following comment: “The survey is broken for question #22. If you check an item, the last item you checked disappears.” Other participants were confused with the reasoning for the survey, as respondent #25 stated that Question #21 “is only applicable to masons. Framers, finish carpenters, glass masters, faux painters, etc. would have very different skill sets.”

After reviewing the comments left by survey participants, it is quite clear that additional topics are needed in order to fully address all areas that a masonry craftworker may encounter while performing preservation. This reinforces how involved the practice of masonry preservation can be, which strengthens the quest of developing a standard of practice for the masonry preservation craftworker.

In reviewing the survey responses, it was determine that the introduction should

have contained a little more detail in order to eliminate this type of confusion. Overall, regardless of these few mentioned mishaps, it is believed that for the purpose of this study, the participation was more than adequate.

Standards for Practice

As the thesis research continued in order to answer my hypothesis, there were several discussions among Subject Matter Experts (SME"S). One person in particular was Pennsylvania's Historical and Museum Commission Chief of Architecture and Preservation, Barry Loveland, who helped create the preservation program at Thaddeus Stevens College.

Barry has been a strong advocate for trade's education for the Commonwealth of Pennsylvania as well as for the Preservation Trades Network (PTN). For many years, Barry has been in numerous discussions with various stakeholders in developing a standard of practice for the preservation craftworker. As the focus of the thesis research is to define the qualification standard for the preservation craftworker, the following draft document is used with permission from its creator Barry Loveland. I believe this document is well designed and can be used as a model for all trades involved in preservation.

Standards of Practice for the Preservation Trades
Draft 12/30/03

Definition

Preservation Trades Professional: Any individual, engaged in one or more of the customary building trades, who proposes to work on projects involving the treatment of historic resources and who possesses the knowledge, skills and abilities outlined in these standards contained herein.

Scope of Services, and Knowledge of the Preservation Trades Professional

Have a thorough knowledge of the history of materials and building technology in chosen trade(s)

Have a thorough knowledge of the historic and traditional tools and their use in chosen trade(s)

Have a thorough understanding of the various levels of treatment of historic resources: restoration, preservation, reconstruction, rehabilitation and maintenance and how each specifically relates to the chosen trade(s)

Have a thorough understanding of the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and associated treatment guidelines and how they specifically relate to the chosen trade(s) when practicing in the United States, or any other applicable national or international treatment standards when practicing in other countries

Have a thorough understanding of the goals and selected treatment level and applicable treatment standards of each project in which he or she is involved

Have the ability to conduct an investigation of existing conditions of an historic resource including the identification of types of deterioration and their potential causes, use of tools and techniques of investigation, removal of samples of various materials for testing and selective removals and replacement of materials to observe concealed conditions, within the bounds of the chosen trade(s)

Have the ability to apply knowledge of the history of building materials, technology, tools and methods to the investigation of resources to understand and interpret what is observed including the evolution of historic fabric within the bounds of the chosen trade(s)

Have the knowledge and skills of methods of documentation (graphic, photographic and written) and the ability to document the condition of all features that are the subject of the investigation of existing conditions, or are encountered in the course of project work that was previously concealed or not observed

Have the ability and purpose to document all aspects of the work of the chosen trade(s) that are practiced on each project

When encountering undocumented features or conditions that were previously concealed or not observed on a project, have the ability and purpose to elevate the issue to other decision makers on the project team and/or the client so that these features or conditions can be properly evaluated and taken into account in the scope and goals of the project work

Have the ability and purpose to advocate for adherence to project goals and treatment standards when contract documents, clients or other decision makers on the project team deviate from these goals or treatment standards, within the bounds of contractual requirements and applicable building codes

Have ability and purpose to self-assess professional limitations and recommend to clients and/or decision makers on the project team additional expertise needed to accomplish project goals and scope of work, especially for work considered outside of chosen trade(s)

Have the ability to use and care for original or reproductions of historic and traditional tools and methods in chosen trade(s) where possible and important for the goals of the project

Have the ability to use modern tools and methods in the chosen trade(s) that replicate the results of traditional tools and methods where necessary and important for the goals of the project

Keep current in developments of new preservation technologies, and improvements to known technologies, and evaluate their application to work in the chosen trade(s). Acquire the skills in applying these technologies into practice if and when appropriate.

Have a level of skill in the chosen trade(s) that can achieve a resultant quality equal to or greater than those who practiced the chosen trade(s) on the historic resource originally

Have adequate knowledge of occupational, health and environmental hazards and regulations and take all required safety precautions of the building trades in general and of the chosen trade(s) in specific to comply with OSHA and/or other applicable authorities or regulating bodies or codes in the jurisdiction the project is located.

Have the ability to work cooperatively on a project team, with clients, with employers and/or as a sub to other contractors and encourage them to review and adopt these standards as their own in working with all preservation trades professionals.

Have the ability to in some cases act as project manager or team leader where appropriate for the specific project and assume the responsibilities to work with the client or employer to formulate and document the goals, planning, scope and design of the project within the bounds of the chosen trade(s) and applicable laws and building codes in the jurisdiction the project is located.

Have the knowledge and ability to select treatments that are appropriate to the conditions encountered in the project.

Have the ability and purpose to train others and share the knowledge and skills acquired in the chosen trade(s)

Have an understanding of preservation laws and regulations that may affect work in the country in which the work is being done and comply as required

Have the journey level of skills in the chosen trade(s) including layout of work, selection and use of proper tools and materials, interpretation of construction drawings and specifications, procurement of materials and supplies and execution of work

Have the knowledge to recommend maintenance treatments and develop maintenance manuals for completed work

Have the ability to research and an awareness of, the body of technical literature available in the field of historic preservation to increase knowledge and understanding of professional practice especially in the chosen trade(s).

Have the knowledge and ability to protect and prevent damage or destruction of historic and/or archaeological evidence and to remove, identify, label, salvage and store historic structure materials and artifacts, during treatment/construction projects.[165]

Upon reviewing this document, it is apparent that it is extremely relevant and valuable to my thesis research. What is most important is that this Preservation Trades Professional Document is generic in nature, designed in such a way that it can be implemented in virtually every preservation trade.

Unfortunately, these drafted standards for the Preservation Trades Professional was never implemented as discussions among key persons from the PTN and other educators came to a halt. A few reasons that the document never went any further was that there remained some disagreements and the project simply exceeded the allowable time for all those involved. Thereby having fewer and fewer persons in the discussions,

which eventually resulted in having these proposed standards placed on hold.

ICOMOS Standards

As the thesis research continued, another list of qualification standards for craftworkers was found in a book titled "*Conservation of Historic Buildings*" written by renowned conservation architect Bernard Feilden. This book included the "ICOMOS (International Council on Monuments & Sites) Guidelines for Education and Training for the Conservation of Monuments, Ensembles and Sites."[166]

ICOMOS Guidelines para. 5

Profession	**Tasks**															
		A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*	*L*	*M*	*N*	*score*
01	Administrator/owner			x	x				x	x	x		x	x	x	8
02	Archaeologist	x	x	x	x				x	x	x	x	x	x		10
03	Architect	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14
04	Art/architectural historian		x	x	x	x	x	x	x	x		x	x	x		11
05	Builder/contractor		x			x	x	x	x	x		x	x		x	9
06	Conservation officer	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14
07	Conservator	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14
08	Engineer		x		x	x	x	x	x	x			x	x		9
09	Environmental engineer			x	x	x	x	x	x	x		x	x	x		10
10	Landscape architect	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14
11	Master craft worker		x				x	x	x	x				x		6
12	Materials scientist		x		x	x	x	x	x	x		x	x	x		10
13	Building economist				x			x	x	x	x	x	x	x	x	9
14	Surveyor	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14
15	Town planner			x	x			x	x	x		x	x	x	x	9
16	Curator	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14
		7	12	11	14	11	12	14	16	16	9	13	15	15	10	

Figure 31: Scanned chart illustrating the roles that each professional practice has in conservation. [This chart is used with permission for the purpose of this thesis, has been extracted from Conservation of Historic Buildings by Bernard M. Feilden.][167]

These conservation guidelines list as many as sixteen conservation professionals along with breakdown of competencies based on the profession. Below are the ICOMOS competencies.

> Conservation works should only be entrusted to persons competent in these specialist activities. Education and training for conservation should produce from a range of professionals, conservationists who are able to:

A. Read a monument, ensemble or site and identify its emotional, cultural and use significance;

B. Understand the history and technology of monuments, ensembles or sites in order to define their identity, plan for their conservation, and interpret the results of this research;

C. Understand the setting of a monument, ensemble or site, their contents and surroundings, in relation to other buildings, gardens or landscapes;

D. Find and absorb all available sources of information relevant to the monument, ensemble or site being studied;

E. Understand and analyze the behavior of monuments, ensembles and sites as complex systems;

F. Diagnose intrinsic and extrinsic causes of decay as a basis for appropriate action;

G. Inspect and make reports intelligible to non-specialist readers of monuments, ensembles or sites, illustrated by graphic means such as sketches and photographs;

H. Know, understand and apply UNESCO conventions and recommendations, and ICOMOS and other recognized Charters, regulations and guidelines;

I. Make balanced judgments based on shared ethical principles, and accept responsibility for the long-term welfare of cultural heritage;

J. Recognize when advice must be sought and define the areas of need of study by different specialists, e.g. wall paintings, sculpture and objects of artistic and historical value, and or Studies of materials and systems;

K. Give expert advice on maintenance strategies, management policies and the policy framework for environmental protection and preservation of monuments and their contents, and sites;

L. Document works executed and make them accessible;

M. Work in multi-disciplinary groups using sound methods; Be able to work with

inhabitants, administrators and planners to resolve conflicts, and to develop conservation strategies appropriate to local needs, abilities and resources.

N. Be able to work in inhabitants, administrators, and planners to resolve conflicts, and to develop conservation strategies appropriate to local needs, abilities, and resources.[168]

According to Feilden, a professional is defined as a "person who can contribute artistically, intellectually or practically to the process of conservation, and so includes craft workers, contractors and builders."[169] In addition, Bernard Feilden writes that a "master craftworker is a specialist who supplements the general skills available to the contractor."[170]

Using the chart in figure #31 a master craftworker would be required to perform the duties outlined in B, F, G, H, I, K, L and M.

Other required knowledge for the master craft worker listed by Bernard Feilden includes:

1. Supervise a group of related trades and produce replicas of high quality.
2. Guide and lead a small group of craft workers.
3. Know the history of his trade and how it has developed.
4. Know the characteristics of the relevant materials and how these affect workmanship and design.
5. Sketch details and take all relevant dimensions allowing for tolerances, shrinkage and movements.

For conservation

6. Understand that repair is always better than renewal although it may take more time and skill.
7. Advise other members of the conservation team at the outset of the project and explain the scope of craftsmanship and efficient working methods.

Often in conservation normal building practice fails due to the complexity of the problems, and the master craftsman should be asked to lead in reviving historic practices.

8. Command a group of related historic trades and repair, and contribute to the conservation of. Objects and building elements as well as produce original work and replicas of high quality. [171]

Proposed Code of Practice

Another set of competencies discovered during the thesis research was found during a interview with a strong advocate of the trades, NPS Historic Preservation National Training Center Superintendent Thomas McGrath. During the interview, he directed me to a speech he presented during the 1996 "The State of Craftsmanship" conference held in Baltimore, Maryland. An article written by McGrath titled "Qualification Standards for the Trades", contains a summary of that discussion along with a proposed list of "Code of Practice" for the preservation trades."[172] Below are the proposed standards from that article:

> The preservation tradesperson shall demonstrate journey-level skill in his/her selected trade as defined by traditional hand tool skills and methods. The preservation tradesperson shall have a minimum of three years full-time journey-level trade experience that demonstrates the knowledge and ability to apply those craft skills appropriately to a wide range of historic resource types and examples.
>
> The preservation tradesperson shall demonstrate knowledge of the field of historic preservation. He/she shall have a working knowledge of historic preservation laws, regulations, philosophy, and practices as they apply to their specific trade. The preservation tradesperson shall have ability to demonstrate an awareness that work in the field of historic preservation is an interdisciplinary process. There are normally many disciplines involved in preservation project work and the trade's technician shall demonstrate the ability to know when his/her work could have an adverse effect on a resource. The tradesperson shall demonstrate the knowledge to know when to stop work and seek guidance or consultation from preservation professional.
>
> The preservation tradesperson shall demonstrate the skill and ability to document his/her own contributions to a preservation project. The trades technician shall demonstrate knowledge of the methods of documentation and the skill to provide appropriate documentation for his/her work when the tasks are completed.
>
> The preservation tradesperson shall have the ability to demonstrate a comprehensive understanding of sets of treatments and apply appropriate treatments as defined by the Secretary of the Interior's Standards for Historic Preservation. The work of the preservation technician shall reflect the hierarchy of

> preferred treatments that start with protecting and maintaining building features and then moves through repair treatment alternatives to replacement in-kind treatments. The preservation trades technician shall demonstrate the knowledge and ability to avoid irreversible damage that could result in diminishing {the historic character of a structure.
>
> The historic preservation tradesperson shall demonstrate the ability to identify, evaluate and document both contemporary and historic building materials, methods, and construction techniques. The preservation tradesperson shall demonstrate knowledge and skill in recognizing potential life safety hazards common to historic resources and preservation projects. The preservation trades technician shall demonstrate the ability to mitigate hazards in the course of his/her work.
>
> The preservation craftsperson shall demonstrate the knowledge and ability to apply and utilize sustainable practices in the execution of his/her preservation trades work.
>
> A master tradesperson shall demonstrate the knowledge, skill, and technical proficiency in the trade, as well as the knowledge in the business administration of the trade and laws relating to construction, occupational safety, historic preservation, as well as teaching skills in the trade. A person who successfully demonstrates master level competency and experience (master craftsperson) is thus also certified to train apprentices.[173]

Evaluation of Proposed Standards

Upon evaluating these standards created by Thomas McGrath, Barry Loveland and Bernard Feilden, one cannot help notice that there are many similarities. For example: Barry Loveland's and Thomas McGrath's guidelines both require that a professional tradesman have an "adequate knowledge of occupational, health and environmental hazards and regulations and take all required safety precautions of the building trades." Safety is extremely important on any project; however, as many historic buildings can contain harmful substances such as polychlorinated biphenyls, asbestos, and lead, there should be an enhanced safety program designed for those

workers who will be employed in preservation. Other safety topics such as rigging or scaffolding historic structures are equally important.

Typically, construction workers are required to take an OSHA 10 hour safety program, while all supervisors are required to take an OSHA 30 hour program. However, these programs do not mandate that instructors cover these harmful substances. A safety program specifically designed for preservation craftworkers should also include but not be limited to sessions on rigging or scaffolding historic buildings, rodent's infestations, pigeon and bat feces and mold awareness as well as other toxic materials used historically in building materials. The Historic Windsor's Certificate Program offers a program that covers some of these very topics. Below is a description of the program:

> Health and Safety for Preservation Professionals
>
> This workshop will address the basics of keeping workers and property owners safe during preservation projects including, but not limited to, ventilation, protective clothing and equipment, fire prevention, and lead abatement. 16 hours. Faculty varies for this topic but has included or will include an industrial hygienist, a PhD in Fire Protection Engineering, and OSHA staff working in Vermont.[174]

Other similar items found in the proposed standards include that the craftsmen should "know their limitations and know when to stop and seek guidance or consultation from a preservation professional." These statements are well written and should be included in all training programs. There are certain times when one should stop and reevaluate the situation, but the challenge is knowing when to stop. Another key element found was that the craftsman should know the history of his trade and how it has developed. Knowing the history of one's trade is very important. As an example: there are many Tuckpointers do not know the true meaning of the term and how it is done.

Preservation Certification

The Dry Stone Conservancy (DSC) was created in 1996, and the "program was modeled after the highly successful professional registry of the Dry Stone Walling Association of Great Britain (DSWA). It was tailored to the needs of preservationists and professional designers in the United States including the Kentucky Transportation Cabinet and the National Park Service."[175]

The DSC continues to be the only nationally recognized program dedicated to dry stone masonry and is designed so that a mason can achieve multiple levels of certifications. The levels of certification are "drystone masons, journeymen, master craftsmen, drystone authorities, examiners, instructors, and garden masons. All levels in the certification program are for professional drystone masons" [176]

In examining this program, I found that the term "professional" was used quite often. An occupation is defined as "the principal activity one engages to earn money" and the term profession is defined as "occupation requiring special knowledge or skill."[177] Can it be that stone masonry is becoming a profession rather than an occupation?

In conducting this thesis research, it was found that the same quest for professional recognition can also be found in many other occupations such as art teachers, music teachers, welders, and auto mechanics. In the last decade, another related occupation that has clearly moved from being an occupation to a profession is "safety". It's been forty years since the passing of the OSH Act of 1970 and today, anyone wanting to gain entry into the safety profession must be evaluated through testing conducted by a third party or accrediting agency.

In an article titled “Development of a Profession” written by Lon H. Ferguson and James D. Ramsey. The authors list the following criterion that must be established in order to have an occupation recognized as a profession.

> 1) Establish a set of widely acceptable professional qualifications. Professional qualifications are usually observed by the existence of an accrediting organization, and a set of educational outcomes applied to all students in accredited curricula. The students must demonstrate some level of competence in these outcomes prior to graduation.
>
> 2) Establish barriers to entry (occupational closure). That is, establishing a metric(s) that can discern the qualified from the unqualified.
>
> 3) Establish professional associations. One role of professional associations is socialization/collegiality. A common characteristic of a profession. However, these associations also help establish and regulate continuing education in order to ensure that practicing professionals continuously improve skills and knowledge. Associations also typically develop and lobby for specific policy and or legislation that affect the practice of the profession, the credentialing of its members or the education of its students.
>
> 4) Establishing and enforcing a professional code of ethics, another common characteristic of a profession.[178]

In reviewing the DSC program, it is apparent that its organizers have carefully taken into account the professional criterion as listed above. In order to preserve the programs integrity and professionalism, the DSC program maintains a strict certification process and enforces professional code of ethics. Listed below are the conditions of certification as found on the DSC website:

> In order to insure that employers retain confidence in the Conservancy’s List of Certified Dry Stone Craftsmen, we ask that every applicant carefully note the following Conditions of Certification:
>
> 1) Certified masons may not represent themselves in any way that implies a higher level of certification than they have earned. This includes advertising, business cards and letterheads, as well as word of mouth.

2) Certified masons may not represent themselves or practice as Dry Stone Conservancy examiners or instructors until they have completed and passed the training and requirements to complete the examiner and instructor certifications.

3) Certified drystone masons whose subsequent work falls below that produced for their tests may have their certifications revoked by the Conservancy. They will be removed from the certified list until their work improves to the required standards and they have passed re-testing.

4) Certified craftsmen are expected to conduct themselves as professionals, and to manage their businesses in a reliable, ethical, skilled, and sober manner. The Conservancy will investigate complaints from employers, agencies, and the public, and valid complaints will result in de-certification. The DSC will remove from the certified list anyone who brings the Conservancy and/or the Certification Program into disrepute.[179]

Record Keeping

For those craftworkers who achieve such a preservation certification, a sponsoring partner should take charge and create a database on those who have completed certification. During the Restoration Specialist discussion at the PTN annual meeting, it was noted that the PTN could easily place the status of a craftworker alongside the member listing. Ideally, a more sophisticated data system would be needed, so it can not only indicate the craftworkers status, but also list what individuals who are in need to re-certify or attend continuing education.

There are organizations such as Repoint.com, Dry Stone Conservancy, and several SHPO's that maintain directories for preservation craftworkers and preservation contractors. However, due to potential liability, most SHPO's directories have placed a disclaimer stating that the organization does not endorse any of those persons listed.

Continuing Education

In order to uphold any certification, there must be some form of maintenance requirement established with in the program order to keep those who have certified, abreast to the ever-changing technologies, and to have those certified learn in other preservation areas that they have yet ventured into.

Every certification that wants to be recognized on a professional level has established a continuing education requirement. Those persons who have failed to comply with these requirements have found themselves needing to recertify by retaking the exam. Those that have had to retake the exams soon found that the exam is perhaps even harder, as the exam has been modified to the changing technologies.

Contractor and Employee's Qualifications

I highly recommend that historic building owners evaluate the qualifications of contractors as well as the employed craftworkers. Karen Arnold, the Administer of Pennsylvania's Historic Preservation Grant, issued the following document, which can assist property owners in evaluating the qualifications of contractors and craftworkers. There are indeed other contractor qualification documents that can be found on the internet, but after hours of research, this document appears to be the most thorough as it mandates that mock-ups are to be built to replicate the work needed to be done and each craftworker is to demonstrate his or her skills on the mock-up.

Contractor Qualifications

1. General Contractor: The General Contractor shall have a minimum of (10) years experience with specific experience in the restoration of historical structures of comparable size and directly relevant scope. The General Contractors project manager and superintendent each must possess relevant

experience on comparable projects involving restoration of historic structures meeting the secretary of the Interiors Standards for the treatment of Historic Properties. The General Contractor, project manager and superintendent shall each have completed at least three (3) historic renovation/restoration projects within the past ten (10) years that are in comparable size and comparable scope.

2. Masonry Contractor: Must be skilled and experience in the restoration of historic brick and stone masonry including: stone consolidation, re-pointing, cleaning and replacing individual brick and stone work. Three (3) projects with-in the last ten (10) years of similar scope.
3. Carpentry Contractor: Must be skilled and experienced in the restoration of historic woodwork including: fabrication, fitting, installation and restoration of woodwork including flooring, windows siding and consolidation of pieces. Three (3) projects with-in the last ten (10) years of similar scope.
4. Roofing Contractor: Must skilled and experienced in the restoration of historic roofing including: installation of wood shingle roofs. Three (3) projects with-in the last ten (10) years of similar scope.
5. Plastering Contractor: must be skilled and experienced in the restoration of historic plaster including: finish preparation and plastering of historic interior flat plaster walls and ceilings and ornamental plaster architectural elements. Three (3) projects with-in the last ten (10) years of similar scope.
6. Painting Contractor: Must be skilled and experienced in the restoration of historic painting finishes including: finish preparation and painting of historic interior and exterior architectural elements. Three (3) projects with-in the last ten (10) years of similar scope.
7. Electrical Contractor: Must be skilled and experienced in the installation of new wiring and fixtures with-in a historic structure. Three (3) projects with-in the last ten (10) years of similar scope.

Samples and Mock-Ups

A. After award of the contract and before the work begins; the contractor must demonstrate the acceptable skills of its tradesmen and craftsmen to be employed on specific items of work by constructing samples or mock-ups.

Acceptable sample work, as determined by the Commission shall be the minimum acceptable standard of work for those items of work. Work not conformed to the accepted standard shall be rejected and redone to the accepted standard at no cost to the Department. The accepted sample or mock-up shall remain in place until directed by the Project Manager to remove. Where sample work is built into the work of the project, it shall remain.

B. Each sample or mock-up shall use the exact methods and materials specified in the contract documents. The Project Manager shall review with the contractor the methods and materials of the project. Deviations from the specified methods and materials must have the prior written approval of the Project Manager.

C. The contractor shall rework and reinstall any initially unacceptable sample or mock up to a total of three (3) times. Failure to install an acceptable sample with-in three re-workings or re-installations shall indicate unacceptable skill of the proposed employee's. In such event, the contractor must furnish craftsmen or tradesmen until the acceptable skill level is employed. The Commission shall not be responsible for any additional cost for reworking or reinstalling unacceptable samples or mock-ups, or any labor cost occasioned by the requirement to employ the necessary skilled labor force required to meet the acceptable standard.

D. Samples and Mock-ups required:

1. Masonry:

a) Restoration of existing stone masonry foundation and brick: Remove existing mortar and re-point as specified. Samples shall be 3ft x 3ft or equivalent area as selected by the Commission, performed in place on the building.

b) Remove and replace two (2) bricks as selected.

c) Consolidate and seal a 5ft x 3ft area of stone as selected by the Commission and performed on the building.

2. Carpentry:

a) Repair and replace up to a 10ft x 5ft section as selected by the Commission in place on the building.

b) Consolidation of beams and deteriorated wood: treat one beam, selected by the Commission in place on the building.

c) Windows, sills and frames: treat as specified one window selected by the Commission, including sill sash, frame and glass performed in place on the building. Sash shall be removed from work and re-installed for mock-up.

d) Dormer: Treat, as specified one dormer, selected by the Commission including siding and roofing performed in place on the building.

3. Roofing:

a) Construct a mock-up of at least one square demonstrating the eave, field, and ridge details. This work is in addition to the dormer of 2.d Carpenter.

4. Plastering:

a) Prepare and patch plaster as selected by the Commission one hole, one crack (12" minimum) and one each outside/inside corners, on a wall and on a ceiling performed in place on the building interior.

5. Painting:

a) Prepare finish and paint as selected by the Commission one wall, one ceiling, one door and frame, one window and frame etc.

b) Prepare finish and paint, as selected by the Commission exterior surface of one door, one window and frame, one eave, soffit and fascia, one dormer performed on the building exterior. [180]

In my thesis research, a very good example of a preservation masonry program was found in Ontario, Canada. Just as dictated in the Whitehill Report and in the proposed standards, the Ontario Program is designed for the practicing journey level mason. (See Figure #32). This masonry program was designed to be delivered in "two phases, the first of 12 weeks (360 hours), and the second of 10 weeks (300 hours)."[181] The Guild Institute of Stone and Restoration Masonry conducts the training program usually in the winter months. Students are generally from Canada, but several have come from the United States.

WEEK	CLASSROOM	WORKSHOP
1	**History of the Masonry Trade** • from earliest times to the present. **Geometry I** • traditional methods of setting out using compass and square.	**Basic Stone Cutting** • Boning in. • Tools selection.
2	**Stonecraft I** • Tools, equipment & safety • Basic geology, selection of stone, quarrying techniques. • Basic stonecutting; squaring, truing & boning in.	**Basic Stone Cutting** • Boning in continued. • Rough drafting [margins]. • Roughing out. • Quarry visit.
3	**Geometry II** • Problem solving with geometry. Setting out arches & tracery. • Plans & specifications. • Hand sketching, drafting & recording.	**Basic Stone Cutting** • Working a true surface • Squaring stone. • Geologist–guest speaker. Examination of thin sections.
4	**Stonecraft II** • Traditional bonding methods; dry stone, ashlar & rubble-snecked, brought to courses & random. Recognition & building. • Traditional surface finishes. Recognition & execution. • Evolution of masonry construction; monumental, solid, transitional & veneer. • Setting out, building lines. • Arches, lintols. • Engineering; design considerations.	**Building Walls** • Building using range of traditional bonding techniques using prepared stone and stone squared by student.
5	**Issues in Conservation** • Value judgements, evaluation criteria. • Scrape / antiscrape debate. • Legislation, conservation organizations; APT, ICOMOS, SPAB. • Conservation charters, international & national; Ontario Heritage Act.	**Building Walls cont'd** **Working Moulding Profiles** • Templates. • Straight through mouldings. • Ashlar stops, internal mitres & return ends. • Visit to stone fabrication plant.
6	**Restoration Techniques I** • Mortars; materials & mixing. • Methods of repair; grouting, take down & rebuild, replacement, dutchmen, repointing.	**Building Walls and Working Moulding Profiles cont'd** **Repair Techniques** • Take down & rebuild • Indenting stone-complete blocks. • Cutting out & repointing.
7	**History of Building I** • Evolution of masonry construction & technology from Neolithic man to the end of the Roman period.	**Introduction to Stone Carving** • Application of geometry. **Building Project** • E.g. Gothic window in rubble wall.
8	**Restoration Techniques II** • Cramps, anchors, grouts and cladding. • Cleaning methods. • Cladding & monument repair. • Proprietary mortars, sealants & flashings. • Water repellants & consolidants.	**Repair Techniques cont'd** • Dutchmen in ashlar, moulded planes. • Surface finishes. • Stitching techniques. **Individual Projects** e.g. Stone Carving.
9	**History of Building II** • From early Christian & Byzantine developments through Romanesque, Gothic and Renaissance. • Evolution in design, construction and technology through the transition from mass masonry to thin veneer systems in North America.	**Repair Techniques and Individual Projects cont'd** **Geologist visit — walking tour.** **Art Historian visit-lecture: The Gothic Tradition in France.**
10	**Business Studies** • Types of businesses. • Contracts, bonds, liens & holdbacks. • Bookkeeping, records, estimating. **Conservation Principles & Practice I** • Conservation as a management tool. • FHBRO evaluation exercise. • Materials characterization [review].	**Individual Projects cont'd** **Product Representatives and demonstrations** E.g: cleaning systems, proprietary mortars, anchoring systems. **Materials Laboratory.** Stone, brick, mortars.
11	**Conservation Principles & Practice II** • Site investigation. • Building pathology. • Conservation Principles; Historical examples, modern interpretation. • Conservation Practice; Case studies	**Building Evaluation** — walking tour. **Treatment Evaluation** — visits to conservation projects. **Philosophical & technical solutions.**
12	**Site Visits, Guest Speakers, Final Exams.**	**Completion of assigned projects.**

Figure 32: Scanned Outline program for 12-week skills upgrade course. This program introduced Apprenticeship Training Standards for the Trade of Restoration Mason [Document obtained from Blades, Keith, "The Development of a Masonry Training Programme in Canada", 2010.]

Conclusion

In this Chapter, my thesis research has presented additional information on standards for the practicing masonry preservation craftworker. In evaluating the data from survey questions #22 and #23 on the KSA's for the masonry craftworker, it is apparent that additional surveys as well as research will be needed before any standards for the masonry craftworker can be finalized. Based on a few of the comments received from the survey respondents, there was some confusion on how to rank these topics based on priority. There were also a few respondents who thought that some of the items listed were too closely related which created some difficulty for some of the respondents to choose and others to not complete the entire question. These comments and suggestions are quite useful and should be reviewed in order to eliminate any issues in future researches.

The proposed standards presented in this chapter will certainly serve as the framework in sorting out "What Defines" a preservation craftworker. Although, there certainly will be a need to conduct additional research on the KSA's of other crafts, the information contained in this chapter can certainly serve as a model in those studies. The real issue is "how to make this all happen." This will be discussed in further detail in Chapter VII.

CHAPTER VII
CONCLUSION AND RECOMMENDATIONS

Findings

As the preservation community continues to recognize the value in having preservation training programs, the more likely the occupation of a preservation craftworker will become recognized as a profession. The fact that there are a number of these programs targeted for the craftworker confirms that preservation requires additional knowledge, skills and abilities than those found in new construction.

After conducting this research, I must agree with the findings issued well over forty years in the Whitehill Report. As written in the Whitehill Report is finding #8:

> The best method of training a craftsman is the oldest method – apprenticeship – for the hand must be trained as well as the mind. In specialized work, this means beginning the apprenticeship as an already qualified journeyman carpenter, and training for the special skills required for preservation and restoration work. A craftsman should have training and experience in every phase of the cycle of restoring a building from its initial state to its completion. He should also have the benefit of experience of working, as a member of a restoration team, with other specialists. Such a team might include a preservation architect, an architectural historian, an historic sites archaeologist, and an historical horticulturist.[182]

Although many preservation programs have been developed based on these findings, it may be best to isolate individual trade disciplines in order for one to achieve mastery of the trade. Isolating these trades may also increase the chances of turning the occupation into a profession.

One of the components in developing qualification standards for the mason engaged in preservation was the creation of a title. As the job title proposed in the thesis research was "Masonry Preservation Craftworker", I contacted a Standard Occupation Classification Information Specialist named Alissa Emmel. During our phone conversation, I was informed, that "the SOC Policy Committee (SOCPC) is no longer accepting new occupations or revising the current occupational codes, titles or definitions. They will not begin to accept any new occupations until 2013 in preparation for the 2018 SOC publication".[183]

Figure 33: Picture from Structural Group Preservation Apprenticeship brochure. Apprentice finishing decorative ribbon or square bead joint style. [Photo was obtained from http://www.structural.net/Portals/3/SG_lit/sg_preservation_apprentice.pdf, 2010.]

During this conversation, I was also informed that if the name was changed to: *Brick* Masonry Preservation Craftworker, this title can be a direct match to the existing SOC code 47-2021 Brickmasons and Blockmasons. However, this would exclude the duties performed for stone and concrete restoration.

It is quite possible that by 2018, a new SOC minor occupation can be created with the title Preservation Trades, and other trades like carpentry, painting, masonry, can be listed directly under that heading. For example, the Preservation Trades coded as 47-2190 and Masonry Preservation Craftworker 47-2190-01, Carpentry Preservation Craftworker 47-2190-02, and so forth. Establishing a new classification and defining the duties within the respected trade disciplines would aide in establishing recognition for the trades.

In reviewing the professional criterion listed in the model (see discussion on the article titled "Development of a Profession" in Chapter VI), it appears that the biggest hurdle will be to establish accreditation through partnerships. Although this may seem difficult, I believe this can be accomplished through partnerships with some of the national recognized organizations such as the National Trust for Historic Preservation, the Preservation Trades Network (PTN), and Association for Preservation Technology International (APT), International Masonry Institute, and International Brick Institute of America. Other stakeholders may include community colleges such as Thaddeus Stevens Community College, Belmont Technical College, College of the Redwoods and the American College of the Building Arts and the National Council on Historic Preservation Education. These listed stakeholders can also be used to regulate and impose continuing education requirements.

There is no question that the standards described in Chapter VI can serve as a base model or a starting point in establishing a recognized qualification for the preservation craftworker. Once adopted by stakeholders, only then will a qualification standard lead to licensing or its inclusion in the Secretary of the Interior's Professional Qualification Standard. In this research, there have been a number of programs that can

be used as models;, I believe the best model may be that of the Dry Stone Conservancy.

Most Recent Discussion Among Preservation Professionals

It is my belief that the PTN will continue their discussions, held during the Preservation Trades Network, annual conference held October 21-23, 2010 in Frankfort, Kentucky. During the conference, Jamie Gibson of Gibson/Magerfield Corp chaired a session titled "Wouldn't You Rather Hire a PTN Certified Restoration Tradesperson?" Attending this session were various members of the PTN, which included, students, craftworkers, educators, contractors and architects. Even though this discussion was conducted several times before, it was deemed important to keep the conversation alive and active. This conversation was perhaps different from those of the past, as many of the attendees were new to PTN these people are potential stakeholders from various preservation organizations.

Some members spoke of initiatives of the past such as Lyndhurst and the Durham program as well as some of the current programs such as Thaddeus Stevens College and the American College of the Building Arts. The room was filled with many Subject Matter Experts (SME's) who knew some of the pitfalls in creating a program. Some pitfalls discussed were how to obtain and maintain funding, how to obtain sponsorships, and how to get accredited. Even though, many past and present preservation programs can be used to answer these questions. The conversation quickly steered towards the successes of the Dry Stone Conservancy (DSC). (See Chapter VI).

Conclusion

In answering my hypothesis "How can the preservation community create and

define a qualification standard for the Preservation Craftworkers" I believe the information contained in this thesis research has revealed not only "What" defines a Preservation Craftworker, but "How" to get it implemented. Once a job title and the KSA's are defined and professional ethics are created; sponsors will then need to adopt the certification in order to get preservation trades accepted as a separate classification. Once this has been established it can then it can be considered as a "profession" as seen in the Dry Stone Conservancy (See Chapter VI). In addition, I believe that once a national organization such as the PTN or the National Trust for Historic Preservation adopts the program, others would soon follow. It will only be then, that the Secretary of the Interior and the National Park Service can "consider" accepting or adopting a qualification standard for the trades.

There is a lot of additional research, surveys and group discussions that need to be done in order to present the new classification in the Standard Occupation Classification 2018 issue. I believe that the work presented in this thesis research will aide in these discussions in order to improve the chances of further protecting our historic resources.

Although there certainly is much more research needed in indentifying key components of the other crafts. This thesis research has identified several key components for the masonry craftworker, which I believe will serve as a good basis in aiding those future studies.

It is apparent that the list of historic buildings will continue to escalate. It is our responsibility to ensure the continued survival of our heritage by implementing a qualification standard for the very people who will be employed in applying treatments to our national treasures.

My thesis research has demonstrated that the preservation community has more than ample information and resources to create qualification standards for the preservation craft worker who will restore, conserve and maintain our historic buildings and structures. It is now time to recognize the need for defining the minimum qualifications of craftworkers engaged in preservation and enact a national preservation craftworker standard. Otherwise, buildings will certainly continue to lose their integrity at the hands of craftworkers who lack the knowledge and understanding of historic materials and mistakenly apply treatments that are incompatible with historic buildings.

APPENDIX I

There was only one civil service job classification with the job title Restoration Specialist found during this thesis research. This job classification was only found in New York and is reproduced below. Currently there are only three persons who hold this designation. Additional information can be found using the links below:
http://www.cs.state.ny.us/tsplan/tsp_display2.cfm?speccode=7108100F
http://careermobilityoffice.cs.state.ny.us/cmo/gotit/titleinfo.cfm?jobcode=7108100

Occ. Code 7108100

BUILDING RESTORATION SPECIALIST, GRADE 18

New York State Department of Civil Service

Classification Standard

BRIEF DESCRIPTION OF CLASS

Building Restoration Specialists supervise, coordinate and provide technical direction to a regional historic restoration program. Incumbents are responsible for all historic maintenance/rehabilitation activities relating to the preservation and restoration of State Historic Sites and other historically significant structures in a Park Region.

These positions are found only in the Office of Parks, Recreation and Historic Preservation.

DISTINGUISHING CHARACTERISTICS

BUILDING RESTORATION SPECIALIST: non-competitive; one position per Park Region. Requires unique knowledge and skills specific to historic construction techniques and modern methods of stabilizing and preserving old building fabric that is atypical of building trades or museum exhibit work. Restores facilities in compliance with Secretary for the Interiors Standards for the Treatment of Historic Properties.

RELATED CLASSES

Regional Park Maintenance Supervisors are responsible for the total direction and supervision of a regional maintenance and capital construction/rehabilitation program. Incumbents supervise crews of permanent and temporary trades people, coordinate daily and long-range maintenance/rehabilitation projects, perform various administrative duties and actively participate as a member of regional administration.

ILLUSTRATIVE DUTIES

Supervises and leads the Historic Preservation and Restoration Crew.

- Directs highly skilled craftsmanship peculiar to a restoration such as cabinet work, duplication of original features, and fabrication of special hardware.
- Reviews projects to evaluate and set priorities with measurable objectives.
- Evaluates individual work performance.
- Assures effective work practices and maintains high quality standards.
- Trains the crew in appropriate historic preservation techniques and provides training related to safety and health.
- Prepares and maintains records of the Crew; i.e., time sheets, annual leave, sick time, personal leave, etc.
- Resolves emergency problems that may arise when notified by the site managers and other responsible personnel.
- Interprets blueprints, drawings, and verbal visualization of restoration projects so that specific tasks can be accomplished and met.
- Uses the Secretary of the Interior s Standards for the Treatment of Historic Properties, blueprints, and sketches to lay out and plan the type and amount of preservation/rehabilitation work required for a particular project.
- Monitors sites to spot building deterioration.
- Monitors site to assess complex structural and architectural conditions and recommends comprehensive treatment programs.

- Oversees the ordering of materials, inventorying supplies, vehicle usage/maintenance and preparation of reports.

- Prepares labor and material costs for each project undertaken by the Restoration Crew for budget preparation purposes.

- Prices, orders, and purchases all materials and equipment necessary to complete projects on time and within or below estimate submitted.

- Prepares monthly progress reports.

- Assures the maintenance of all Restoration Crew vehicles and shop equipment for the purpose of safe and efficient operation.

SUPERVISION

Building Restoration Specialists may report to a Regional Manager, Assistant Regional Manager, or, depending upon how a Park Region is organized, the Capital Facilities Regional Manager. Incumbents operate with a great deal of independence and are responsible for crews of several permanent and seasonal staff made of trades employees ranging from highly trained/specialized to relatively unskilled, to labor-oriented. Incumbents may supervise all or part of the Regional Maintenance Crew.

MINIMUM QUALIFICATIONS

Six years of journey-level skilled trades experience involving historic construction techniques and modern methods of stabilizing and preserving old building fabric and materials. Candidates must possess journey-level skill in at least one or more trades applicable to the repair of historic building fabric and materials. Candidates must be competent in differentiating between contemporary and period fabrication/construction and in using period and contemporary tools/ methods to protect period work.

Date: 2/05

NOTE: Classification Standards illustrate the nature, extent and scope of duties and responsibilities of the classes they describe. Standards cannot and do not include all of the work that might be appropriately performed by a class. The minimum qualifications above are those which were required for appointment at the time the Classification Standard was written. Please contact the Division of Staffing Services for current information on minimum qualification requirements for appointment or examination.

APPENDIX II

This document for the KSA's and job description was developed by the NPS in the early 1990's. It was obtained from Lisa Sasser, February 2010. Additional research will be needed to ensure its accuracy for further use.

HISTORICAL CRAFTSPERSON MASON, CARPENTER, PAINTER, ETC.

Essential Competencies

ENTRY LEVEL

Description: These competencies identify the knowledge, skills, and abilities required to perform preservation maintenance tasks and the treatment of historic structures at the entry level. Work is performed under close supervision with emphasis on safety and developing knowledge of historic preservation.

I. Trade/Craft Skills

A. Interpret construction drawings and plans

B. Selection of proper tools and equipment

C. Working knowledge of construction techniques

D. Use of Tools and Shop equipment

II. Preservation Policies, Standards, and Guidelines

A. National Historic Preservation Act of 1966, NPS -28, and other guidelines

B. Secretary of the Interior's Standards for the Treatment of Historic Properties

III. Preservation Skills

A. Basic knowledge of preservation treatment techniques

IV. Health and Safety Awareness

A. Environmental practices

Knowledge, Skills, and Abilities

Ability to understand the Secretary of Interior's Standards for the Treatment of Historic Properties and NPS-28, Cultural Resource Management Guidelines

Ability to address compliance with the law in preservation craft work

Ability to layout work and select proper tools and materials

Ability to interpret construction drawings and plans into own work

Skill and ability to execute a range of appropriate preservation treatments; knowledge and ability to recognize treatments that offer potential for damage

Working knowledge of various types of architectural, structural, mechanical, electrical, and protection systems, components, and hardware

Ability to recognize materials safety, environmental, and other workplace hazards and respond appropriately

Ability to use and maintain a variety of tools and shop equipment

Ability to develop beyond apprentice level craft skills in at least one trade

DEVELOPMENTAL LEVEL

Description: These competencies identify the knowledge, skills, and abilities required to perform state-of-the-art preservation and restoration work on historic structures at the developmental level. Work is performed under normal supervision with emphasis on traditional and historical craft skills.

<u>All competencies at the entry level plus:</u>

I. Journeyman-level Trade/Craft Skills

A. Framing building additions

B. Performing masonry repairs

C. Performing roofing repairs

D. Painting

E. Working with traditional building materials and finishes

II. Preservation Policies, Standards, and Guidelines

A. Sources of technical information

B. Preservation Briefs and Tech Notes

III. Preservation Skills

A. Reassembling historic building components

B. Identifying wood deterioration

C. Identifying masonry deterioration

IV. Health and Safety Awareness

A. Awareness of Environmental Hazards

Knowledge, Skills, and Abilities

Ability to identify sources of additional knowledge, skills, and expertise; who the sources are, where to find them, and when to call them for help

Working knowledge of traditional building materials and finishes such as wood, masonry, metals, mortar, stucco, plasters, paints, etc

Ability to recognize materials safety, environmental, other workplace hazards and respond appropriately

Working knowledge of traditional and historical craft skills

Ability to differentiate between contemporary and historic building materials and methods

Ability to work accurately from blueprints, sketches, shop lists, and written and oral instruction to procure supplies, materials, and equipment for work assignment

Ability to reassemble historic building components after they have been dismantled for a period of time

Ability to identify deteriorated building materials and skill in replacing the deteriorated component as needed

Ability to understand technical information produced as reference materials by the National Park Service

Knowledge of how to prevent damage or destruction of historic and/or archeological evidence during treatment/construction projects

Knowledge of how to remove, identify, salvage, and store historic structure materials and artifacts during treatment/construction projects

Knowledge of how to remove, identify, salvage, and store historic structure materials and artifacts during treatment/construction projects

FULL PERFORMANCE LEVEL

Description: These competencies identify the knowledge, skills, and abilities required to perform state-of-the-art preservation and restoration work on historic structures at the full performance level. Work is performed with little direct supervision and with oral and written instructions.

All competencies at the entry and developmental levels plus:

I. Trade/Craft Skills

A. Multi-disciplinary craftsperson with journeyman-level; skills in one trade

II. Preservation Policies, Standards, and Guidelines

A. Interdisciplinary preservation process

B. Levels of Treatment

III. Preservation Skills

A. Current technologies in historic preservation

B. Dealing with vegetation overgrowth in and around historic structures

C. Photographic documentation

IV. Health and Safety Awareness

A. Personal protective equipment

Knowledge, Skills, and Abilities

Ability to translate and explain to others the levels of treatments that are consistent with the Secretary of Interior's Standards for the Treatment of Historic Properties and NPS-28, Cultural Resource Management Guidelines

Knowledge of the interdisciplinary preservation process in NPS

Ability to perform preservation maintenance related to problems associated with vegetation overgrowth, biological agents, pests, and water problems for various building materials and structures

Ability to accurately and completely document project work through photography and written narratives

Ability to identify, recommend and implement appropriate corrective/preservation actions for standard/routine condition deficiencies

Ability to apply preservation skills in a broad range of crafts related to the practice of historic preservation

Ability to identify period versus contemporary work

Skill in repairing or replacing period elements and using appropriate tools, methods, and materials

Ability to maintain hand tools, portable power tools, and stationary power tools in safe operating condition

Extensive knowledge of traditional building materials and finishes such as wood, masonry, metals, mortar, stucco, plasters, paints, etc

Ability to properly use and maintain personal protective equipment

Ability to apply knowledge of current technologies in historic preservation to the maintenance and repair or historic structures

APPENDIX III

This document for the KSA's and job description was developed by the NPS in the early 1990's. It was obtained from Lisa Sasser, February 2010. Additional research will be needed to ensure its accuracy for further use.

EXHIBITS SPECIALIST (RESTORATION) PRESERVATION SPECIALIST

Essential Competencies

ENTRY LEVEL

Description: These competencies identify the knowledge, skills, and abilities required to perform basic preservation maintenance, repair, and treatment of historic structures. Work is performed under close supervision with emphasis on safety and developing knowledge of historic preservation.

I. Trade/Craft skills

A. Tool maintenance, use, and operation

B. Identify period vs. contemporary work

C. Use of period tools, materials, and methods

II. Project Planning/Supervision

A. Following construction documents and instructions

B. Documenting project work

C. Assist in day-to-day direction of project work

D. Safety considerations

E. Conduct inventory and condition assessments of historic structures

III. Preservation Policies, Standards, and GuidelinesA. Follow NPS-28 and Secretary of Interiors Standards B. Differentiate levels of preservation treatment

Knowledge, Skills, and Abilities

Journey level skill in two contemporary building trades (e.g., carpentry, masonry, painting, etc.)

Ability to maintain hand tools, portable power tools, and stationary power tools in safe operating condition

Ability to differentiate contemporary and period fabrication/construction, and take appropriate steps to protect period work

Skill in assisting higher graded employees in repair or replacement of period elements

Ability to work accurately from blueprints, sketches, shop lists, and written and oral instructions to procure equipment and materials for project work

Ability to accurately and completely document project work through photography, as-built drawings, and written narratives

Skill in assisting project supervisors in day-to-direction of day labor crews

Knowledge of the levels of preservation treatment as specified in the Secretary of the Interiors Standards for Treatment of Historic Properties, and NPS-28, Cultural Resources Management Guidelines

Ability to properly use and maintain personal protective equipment

Ability to recognize materials safety, environmental, or other workplace hazards and respond appropriately

DEVELOPMENTAL LEVEL

Description: These competencies identify the knowledge, skills, and abilities required to perform advanced level preservation maintenance, repair, and treatment of historic structures. Work is performed under normal supervision with continued emphasis on safety and historic preservation treatment techniques.

All Competencies at the Entry Level plus:

I. Trade/Craft Skills

A. Diagnosis of deterioration/defects

B. Recommend treatments

C. Repair/replacement of period elements

II. Project Planning/Supervision

A. Prepare scopes of work (SOW) and cost estimates

B. Perform condition assessments

C. Direct project work

II. Preservation Policies, Standards, and Guidelines

A. Interpret and apply NPS-28 and Secretary of Interiors Standards

B. Apply requirements for Section 106 compliance

Knowledge, Skills, and Abilities

All Knowledge, Skills, and Abilities at the Entry Level plus:

Journey level skill in at least one contemporary building trade and the ability to demonstrate basic skills in at least one other trade applicable to repair of historic building fabric

Skill in developing and using tools, devices, or procedures required for fabrication or repair of historic architectural fabric

Ability to detect deterioration or defects in period work and to diagnose probable causes and recommend treatments

Demonstrate knowledge of period construction tools, materials, and methods in determining evolution of historic fabric

Ability to use period tools, methods, and materials

Skill in preparing written scopes of work (SOW), cost estimates, procuring equipment and materials, and completing post-construction documentation

Ability to assist in performing condition assessments on historic structures

Ability to provide day-to-day supervision and technical direction of day labor crews

Ability to serve as a construction inspector on preservation construction projects

Demonstrate the ability to interpret preservation policies, standards, and guidelines, and apply them to the definition and execution of preservation projects

Skill in completing Section 106 documentation for preservation projects

Ability to assess material, environmental, and other workplace hazards, and develop safety programs

FULL PERFORMANCE LEVEL

Description: These competencies identify the knowledge, skills, and abilities required for the preservation maintenance, repair, and treatment of historic structures at the full performance level. Work is performed with little direct supervision and with oral and written instruction. Individual will be able to schedule work, lead crews to perform tasks, and determine types and amounts of material.

All competencies at the Entry and Developmental Levels plus:

I. Trade/Craft Skills

A. Develop and offer preservation training

B. Evaluate/apply state-of-the-art techniques

II. Project Planning/Supervision

A. Develop treatment guidelines

B. Supervise preservation programs

III. Preservation Policies, Standards, and Guidelines

A. Instruct others in interpretation/application

Knowledge, Skills, and Abilities

All Knowledge, Skills, and Abilities at the Entry and Developmental Levels plus:

Demonstrate journey level skills in at least one contemporary building trade and the ability to apply preservation skills in a broad range of crafts related to the practice of historic preservation

Ability to assess, evaluate, and direct the work of journey level workers in the range of trades applied to historic preservation

Ability to develop comprehensive training in a range of preservation related trades

Ability to evaluate and apply state-of-the-art materials and technologies to the conservation and repair of period architectural fabric

Ability to function as part of a team of preservation professionals to assess complex structural and architectural fabric conditions and recommend comprehensive treatment programs

Ability to develop guidelines for treatment of historic structures

Ability to manage a preservation program

Ability to manage a preservation project within its financial limits

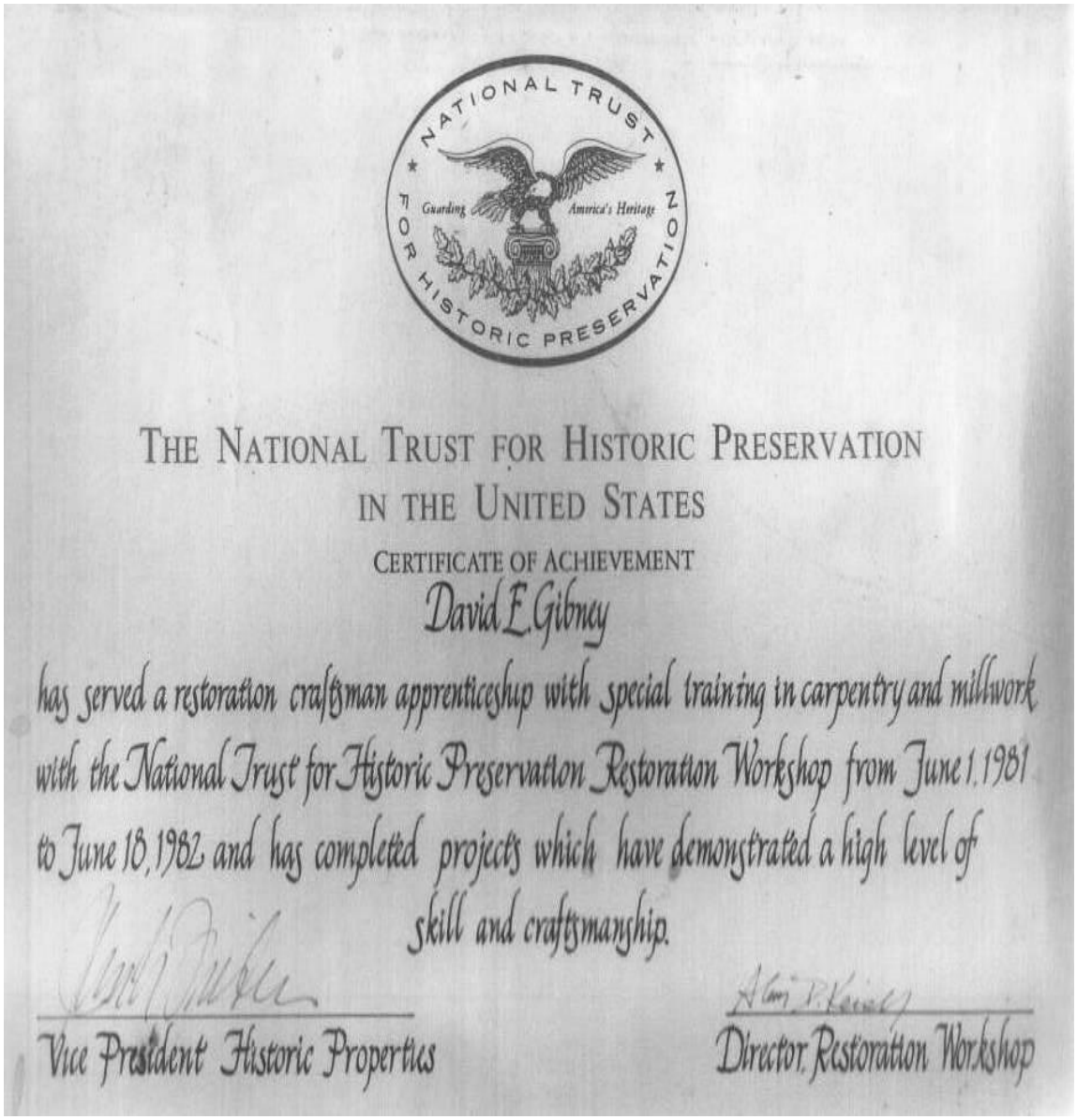
Ability to serve as a Contracting Officers Technical Representative (COTR) on complex preservation projects

Ability to instruct others in the interpretation and application of preservation policies, standards, and guidelines

Ability to develop and administer a workplace safety program

APPENDIX IV

This copy of the Lyndhurst Restoration Workshop is being used with permission from 1982 graduate David Gibney.



NATIONAL TRUST FOR HISTORIC PRESERVATION

Guarding America's Heritage

THE NATIONAL TRUST FOR HISTORIC PRESERVATION
IN THE UNITED STATES

CERTIFICATE OF ACHIEVEMENT

David E. Gibney

has served a restoration craftsman apprenticeship with special training in carpentry and millwork with the National Trust for Historic Preservation Restoration Workshop from June 1, 1981 to June 18, 1982 and has completed projects which have demonstrated a high level of skill and craftsmanship.

Vice President Historic Properties

Director, Restoration Workshop

APPENDIX V

The following "Chronology of US Preservation Trades Education Initiatives" was compiled by Lisa Sasser.

1956 National Park Service Historical Architects Charles E. Peterson and Henry Judd gain approval from the US Civil Service Commission to create a Building Restoration Specialist series for federal employment

1968 The "Whitehill Report on Professional and Public Education for Historic Preservation" submitted to the Trustees of the National Trust for Historic Preservation

1968 The National Park Service proposes establishment of the William Strickland Preservation Center at Independence National Historical Park in Philadelphia

1971 National Trust Conference on Training for the Building Crafts

1973 The National Trust completes a one-year internal review and reverses support for the regional preservation training center concept. Develops proposals for preservation skills short courses, establishment of a small training center at a Trust property, and creation of links with union and vocational training programs.

1976 ABANA – Artist/Blacksmith Association of North America established

1976 RESTORE, Inc. begins offering workshops and training programs in preservation technology and practice

1977 The National Park Service formally establishes the Williamsport Preservation Training Center

1977 The National Trust publishes a preservation trades supplement to Preservation News

1977 The National Park Service North Atlantic Historic Preservation Center begins a 2-year Preservation Maintenance Skills Training Program

1978 National Council for Preservation Education (NCPE) established on the recommendation of the Higher Education Study Group sponsored by the National Trust for Historic Preservation Higher Education Study Group

1979 The Campbell Center for Historic Preservation Studies in Mt. Carroll, IL began offering courses in museum collections care, architectural conservation. Preservation trades workshops are also offered.

1982 Historic Windsor, Inc. /Preservation Education Institute began offering preservation workshops, leading up to development of a preservation trades certificate program

1985 Timber Framers Guild formed

1986 Publication of the National Park Service "Skills Development Plan"

1986 Stone Foundation established to offer masonry workshops

1986 Report of U.S. Congressional Office of Technology Assessment published report on "Technologies for Prehistoric and Historic Preservation"

1989 Cathedral Stonework's opened craft training program at the Cathedral of St. John the Divine.

1989 The Building Preservation Technology Program offers Associate Degree at Belmont Technical College, located in Belmont, Ohio.

1992 The National Park Service establishes the National Center for Preservation Technology and Training (NCPTT) in Natchitoches, LA.

1993 National Park Service Historic Preservation Training Center begins "Preservation and Skills Training" (PAST) program to expand beyond the existing 3-year internship program.

1993 World Monuments Fund Conference on "Employment Strategies for the Restoration Arts: Craft Training in the Service of Preservation"

1994 Preservation Industry Network (PIN) established in New York.

1995 Ad hoc roundtable discussion at the Association for Preservation Technology Conference in Washington, DC leads to the creation of the Preservation Trades Network as a Task Force of APT 94.

1995 National Center For Preservation Training and Technology funds publication of a training manual for "Preservation Education Skills for Building Trades Teachers" developed by the Preservation Institute for the Building Crafts and the University of Vermont Historic Preservation Program.

1995 James Marston Fitch proposal for model program in preservation trades in Community colleges.

1995 University of Oregon School of Architecture and Allied Arts, Historic Preservation Program offers 1st Summer Preservation Field School for craftsmen and preservation students.

1996 College of the Redwoods in Eureka, CA establishes the first Historic Preservation and Restoration Technology Program certificate program west of the Mississippi within the Department of Construction Technology.

1997 The Institute for Preservation Training in Providence, RI develops Department of Labor certified apprenticeship program

1997 1st International Preservation Trades Workshop (IPTW) held in Frederick, MD

1997 Publication of the Cultural Resource Management (CRM) Preservation Trade and Craft issue

1998 School of the Building Arts established in Charleston, SC

1999 COLTS (Community Organized for Learning, Training, and Sharing) program for at-risk high school students established by the Huffman, TX School District to teach skills in timber framing, shop carpentry, and construction.

1999 The National Center for Preservation Training and Technology funds publication of "A Graphic Guide to Historic American Timber Joinery" developed by the Timber Framers Guild

2000 New York City Board of Education approved the establishment of the Brooklyn High School of the Arts

2000 IPTW 2000 co-hosted by the Pennsylvania Museum and Historical Commission with the theme "Convergence"

2001 The Preservation Trades Network, Inc. (PTN) was formed in the state of Connecticut on as a 501(c) 6 non-profit

2001 Masters of the Building Arts at the Smithsonian Folklife Festival in Washington, DC

2001 "Building Craftsmanship" Session at National Trust for Historic Preservation Conference in Providence, RI

2001 IPTW 2001 at Floyd Bennett Field, Brooklyn, NY with the theme "Partnerships"

2001 Historical Restoration and Renovation Institute in the School of Applied Technology established at Alfred State College, Wellsville, NY

2002 Proposal submitted for Associate of Applied Sciences in Historic Preservation Trades at Phillips Community College of the University of Arkansas.

2002 The NYC Department of Education drafts memorandum for the Brooklyn High School for the Arts featuring Preservation Arts as an overarching Academic theme, the first model program of its kind in the nation.

2002 Publication of special issue of the APT Bulletin, "Convergence of Architecture and Craft", Vol. XXXIII, No. 1, containing articles written by many of the presenters at IPTW 2000

2002 Quinque Foundation International Preservation/Conservation Forum: Setting an Agenda for the 21st Century, Newport, RI.

2002 IPTW 2002 co-hosted by the Vandalia Heritage Foundation with the theme "Community."

2002 Preservation Delaware, Inc. develops Wilmington Job Corps Center under cooperative agreement with the National Trust and NCPTT

2003 Establishment of a Building Preservation/Restoration Program (Associates of Applied Sciences degree) at Harford Community College in Bel Air, MD

2003 The Preservation Trades Network announces the International Trades Education Initiative in partnership with Belmont Technical College

2003 IPTW 2003 co-hosted by the Howard County, MD Department of Parks and Recreation with the theme “Futures”

2003 The National Park Service and National Trust for Historic Preservation announce plans to create the Western Center for Preservation Training & Technology at the former White Grass Dude Ranch in Grand Teton National Park

2004 Masters of the Building Arts Festival sponsored by the School of the Building Arts, Charleston, SC

2004 The American College of the Building Arts formerly (SOBA) in Charleston, SC licensed as a college by the South Carolina Commission on Higher Education

2004 “Preservation Trades Training: A New Perspective” session and Preservation Trades Group Retreat at National Preservation Conference in Louisville, KY.

2004 The World Monuments Fund initiates Preservation Arts Training Program in North America.

2004 IPTW 2004 co-hosted by the Alabama Historical Commission with the theme “Education”

2005 International Trades Education Symposium, Belmont Technical College, St.Clairsville, OH.[184]

APPENDIX VI

This is the complete download of thesis survey and survey responses. The survey was conducted through SurveyMonkey.

Question #1

Indicate Professional Status

Answer Options	**Response Percent**	**Response Count**
Craftworker	31.1%	23
Owner	13.5%	10
Superintendent	1.4%	1
Educator	27.0%	20
Conservator	6.8%	5
Architect	10.8%	8
Engineer	2.7%	2
Other (please specify)	36.5%	34
	answered question	**74**
	skipped question	**3**

Other

Manager Of Craftworkers
Resource For Texas Historical Commission, Consultant
Masonry Restoration Company Owner
Exhibits Specialist, Federal Government
Landscape Architect
Sculptor, Stone Carver, Mold Maker
Manufacturer
Research Director
Manager
Preservation Contractor
Retired
Director Of Preservation- Combines Craftworker, Superintendent & Conservato
State Historic Preservation Office Employee

SHPO Tech Staff
State Historic Preservation Office
State Historic Preservation Officer
Executive Vice President International Union Of Bricklayers & Allied Craftwor
SHPO Staff
Government
Restoration Specialist
Historic Preservation Specialist
State Government Historic Preservationis
Administrator
Architectural Historian
Deputy State Historic Preservation Office
Cultural Resource Manager
IMI Certified Stone Instructor
Graduate Of NPS, Historic Preservation Training Program
Technical Advisor - IMI
Government Preservation
Architectural Historian, Preservation Professional

Question #2

In your experience, have you discovered an historic building(s) that had its historic fabric compromised due to the application of incompatible materials or by simply having the wrong treatment applied?

Answer Options	Response Percent	Response Count
Yes	97.4%	74
No	2.6%	2
Not Applicable	0.0%	0
	answered question	**76**
	skipped question	**1**

Question #3

Do you agree that craftworkers are beginning to diminish?

Answer Options	Response Percent	Response Count
Agree	81.8%	63
Disagree	15.6%	12
No Comment	2.6%	2
	answered question	**77**

Question #4

Do you believe that today's craftworkers do not have the same skills of craftworkers of yesteryear?

Answer Options	Response Percent	Response Count
Yes	65.8%	50
No	18.4%	14
Neutral	15.8%	12
Comment:		43
	answered question	**77**
	skipped question	**0**

Question #4 Responses	
1	I think that many craftworkers have a different set of skills from previous generations. They are often using materials that are common in new construction but may not be compatible with the buildings constructed by those previous generations.
2	While fewer in number, those that are skilled are probably superior in many ways to their forebears.
3	The vast majority do not, but they have different skills that are demanded by the marketplace.
4	Yes, this is a huge problem, but it's not entirely the craftworkers fault. It depends largely upon the training and educational opportunities provided to craftworkers.
5	Type of skill identification is critical. Today's restoration craftsmen are tasked with replication methods and materials of yesterday's new construction craftsmen. These are distinctly different skills, although both have elements in common
6	Modern workers are trained differently.
7	Not diminishing rather diminished. People do not look for, understand and want to pay for good skilled work. There are many skilled people out there. And all the crap built years ago already failed, rotted and is gone.
8	continue schooling or learn about new things as time goes on, therefore if it turns out that what they are doing is incompatible with the building... they never really know. Persons concerned with historic restoration are a different bread (a subgroup) and they are in fact very interested in learning and finding the right solution for the right building
9	When you find a GOOD craftworker, they are typically very committed to their craft, and so I would say they are as good as craftworkers from the past. I believe that the skills/talent of today's GOOD craftworkers are equal to those of the past. However, a large part of being a GOOD craftworker is attitude. It is hard to find craftworkers with both skills and the right attitude. There certainly are FEWER craftworkers not only to do the work, but to train others how to do the work.
10	It's a natural, but sad progression. The craftworkers of yesteryear need interested students if they are going to pass on their skills, and interested students are hard to find.
11	We have lost at least a generation and a half of craft trade education in public school programs
12	Most modern masons don't know ,understand, or care about lime mortars. Most technicians of today have little or no respect about where their craft comes from historically. Some much is being lost in understanding basic principles.

13	Please define craftworker. I assume you are referring to a mason familiar with the historic trade.
14	Today's craftworkers have become more specialized in certain predominant fields. Those fields tend to be ones that are in the higher demand, and relate to an expanded earning potential.
15	This is true across the board, but is particularly acute for those working on historic masonry and historic wood framing and finishing.
16	I think that the ability to use modern tooling has helped in production, but some of the motor skills have been lost - tricks and techniques used before mechanization.
17	They do not have the knowledge of mason mixes or certain tools, plus what is compatible with other materials.
18	I think you should keep in mind that craftworker is just a fancy name for contractors. We preserve, conserve, restore and sometimes replicate objects, components and structures for pay
19	Yesteryear is not defined. 2010 as to 1910 skills are different.
20	Most craftworkers that take pride in their work and are conscious of what they are doing exhibit excellent skill sets.
21	While there are some competent practitioners out there, it seems to be getting harder to find craftspeople knowledgeable about historic materials, or even to find people who are interested in that type of work.
22	Yes, knowledge and skills required of the general trade focus on new products, new materials and new technologies. In that way it is no different than the way the trade was taught 100 years ago when the skills they learned are what we now refer to as traditional skills, but at that time were current.
23	You find some well-trained craftworkers, but most everyday craftsperson's are not trained in special preservation practice
24	Craftworkers are disappearing, but the skills are the same.
25	In some areas there are improvements in safety, installation and new material installations.
26	The tradition of passing down both the basic craft and the 'tricks of the trade" is diminishing because young people are not entering the family business or entering the field.
27	The answer is yes and no. There are a few really trusted craftspeople out there but not many.
28	Generally, yes, particularly in regard to historic materials. But yesteryear's craftsmen were also lazy slobs who almost always ignored the terms of the contracts they worked under in order to get the job done quickly and cheaply. I get sick of finding 19th-century mortar made of lime and dirt instead of sand. And I admire the dexterity of today's Mexican masons when I see them work.
29	Part of it is demand -- people willing to pay... etc. And the traditional education structure isn't there -- the apprentice, journeyman, etc. practice of passing on the skills and knowledge.
30	Today's craft workers have more skills and are better educated, there just aren't as many as in the past.
31	Craftworkers have been diminishing for over 6,000 years. Today's craftworkers are no different and have sometimes BETTER skills than yesteryear. Let's see how a mason from 2,000 B.C. handles a power saw! Lack of market demand prohibits all mechanics being expert at antiquated systems.
32	Many of the skills have been lost.
33	The educational systems today do not support trades training for the most part.

34	Some do and are active in trying to pass along these skills to others.
35	To define this accurately one would have to put a time frame on it... the argument that craft skills are diminishing goes back to eras with which one would normally think of as rich in craft skills available... but within that my historical perception of the same craft skills have been in a steady decline since that time referred to as Gothic
36	Another consideration is that there are just so many MORE 'bad' or 'unskilled' craftsman.. which makes it more difficult to find the 'real' craftsmen.
37	I believe there could be the same level of craftsmanship - but people need to expect to pay for it
38	Better Training is needed to properly train today's craftworkers. Union training is filling this void.
39	I think that the perception of the "vanishing craftsman" is something of a myth indirectly perpetuated by the Whitehill Report. Architects, specifies and contracting officials frequently lack the knowledge to identify or evaluate work of appropriate quality in preservation work and blame its absence on the lack of skilled workers. In reality, I believe that the supply of skilled trades workers is probably higher today than at any time in the last 30 years due in part to improved opportunities for networking and sharing skills, and the development of Educational programs and organizations concerned with the traditional trades.
40	In many cases it is due to lack of opportunity to study the techniques and lack of training programs that are comprehensive enough to pick up new and historic masonry applications.
41	While there still are many brilliantly skilled craftworkers, it seems there are fewer of them
42	yes and no I think a lot of craftworkers or a lot more school educated today than yesteryear but the volume work of yesteryear gave craftworker a edge
43	I think there are craftsmen who have comparable skills but they are fewer in number. I think the market is in part responsible and that building owners don't want preservation quality work or don't understand its value. Others are just ignorant that it exists. As a result there is a diminished demand for old craftsmanship.

Question #5

Do you agree that craftworkers engaged in preservation need additional skills sets compared to those skills needed for new construction?

Answer Options	**Response Percent**	**Response Count**
Agree	97.4%	75
Disagree	0.0%	0
Neutral	2.6%	2
Please provide your comments:		30
	answered question	**77**

Question #5 Responses	
1	They need an awareness that the old materials may not be compatible with what can be picked up at Home Depot and an understanding of character-defining features in order to determine what fabric should be maintained and what can be changed
2	Absolutely - but it's as much about the attitude as the rote skills.
3	Restoration / preservation require a much broader skill set than is required for new construction
4	Craftworkers are become mere installers
5	No doubt. Preservation requires research, and adherence to means and methods used in the original construction. New construction is focused on the most efficient and cost effective means, methods and materials currently available.
6	Really an individual understanding of each building. It's all about diagnostics.
7	Though I would not say additional so much as different skill set. A craft person doing masonry restoration of historic buildings does not really need to know how to build a modern structure.
8	Deconstruction or dismantling of existing building components is an art in itself. Utmost care must be taken to preserve the element while doing it efficiently at the same time.
9	Craftworkers in preservation need additional skills in identifying historic fabric, replicating building components, finding matching materials, finding craftspeople, and knowing State and Federal laws and guidelines about preservation work. And they need to be able to communicate the importance of what they are doing and why to fellow workers, the public, and their supervisors.
10	Reusing existing and historic buildings, along with conservation of historic materials require different skill sets from new construction.
11	If the craft worker wants to stay employed, and the company can't afford to Specialize in historic work- yes. To reverse the question, the modern mason would probably claim to know what they and their 20 years experience are doing, not knowing that you would probably want someone with 150 years experience.
12	There is certainly a difference in the knowledge and skills required in these fields, but many new construction craftworkers have also learned the techniques needed for restoration work. Maybe not as may as took it upon themselves to become well rounded in their craft as in the past.
13	Types of materials used, Where & if obtainable, (re-create), Structure Failures or causes such as cracks, movement, replacement of stone, brick, sealants, etc.
14	Absolutely - Masonry restoration is a completely different beast and to tame the angry beast, a more disciplined approach is required to peacefully subdue the beast!
15	for example: in masonry knowledge of lime mortars and soft brick, dangers of abrasive cleaning, moisture problems. What is needed is what is not in a typical trade school text book. The same goes for other trades. Many tradesmen learn their

	skills on the street and need background. I recommend incumbent worker training.
16	Craftworkers who engage in preservation must understand the materials they are working with as individual materials and how the building and its materials function as a system.
17	Tradesmen are often taught only on more modern materials both on the job and through any vocational training opportunities. Many lack the knowledge to understand that historic buildings are different.
18	Absolutely.
19	This is essential. Historic buildings were built with materials and methods and may only be rehabilitated properly by someone who understands the building science of those older methods and what modern materials and techniques may be used to repair them.
20	With regard to masonry in particular, it is amazing how few masons know how to tint mortar with natural additives or sand, rather than color tints.
21	We must have working knowledge of compatible materials, overall structural design and site conditions changing over long periods (50 - 200 years) to know how to develop treatment protocols. Some of the areas of work have never been revisited since constructed over 100 years ago.
22	New construction is often repetitive and following standard procedures. Preservation work requires identification of existing materials, identification of problems, devising solutions, and implementing treatments
23	Other then knowing how to use tools and basic construction skills, mostly it is a highly specialized skill that may have a niche -- whether it is window repair/building, real plastering/stucco work, historic masonry, etc.
24	Historic building methods by definition have used skills and often materials no longer commonly found on the jobsite.
25	Conservation work requires knowledge of different materials and techniques than are typically used in new construction.
26	Absolutely agree! Craftsman in new construction typically have minimal skills that translate to working w/ historic buildings.
27	Preservation Craftworkers need to be trained so repair work will be suitable per project.
28	The skill set for new construction is almost entirely geared to assembly of engineered systems. Remedial work, restoration and maintenance, as well as new construction using traditional methods, require understanding of materials, techniques and systems not frequently found in new construction, as well as the ability to read and interpret architectural evidence and causes of deterioration or failure. In addition, trades workers engaged in preservation need to have the experience and judgment to make decisions on how much existing work to retain or replace.
29	Materials and techniques used in modern, especially structural masonry, are very different, focused on slender but strong, where as older buildings are mostly mass and very different, even in how they distribute loads within the building fabric.

30	PCC workers get the skills they need though there local union apprentice program along with on the job training with skilled masters of the craft plus technical assistance from historic preservation specialist on special jobs

Question #6

Have you completed a program, hired employees or have worked with other employees that have completed a Vocational program, State approved Apprenticeship or Preservation program?

Answer Options	**Response Percent**	**Response Count**
Yes	76.6%	59
No	15.6%	12
Not Applicable	6.5%	5
Other Program	1.3%	1
	answered question	**77**
	skipped question	**0**

Question #7

If you answered yes to question #6, How would you rate apprenticeship, preservation, or other vocational programs as a introduction to conservation?

Answer Options	**Response Percent**	**Response Count**
Good	32.3%	21
Very Good	29.2%	19
Excellent	18.5%	12
Not Applicable	20.0%	13
	answered question	**65**
	skipped question	**12**

Question#8

Can you provide the name of the Preservation or Apprenticeship Program you or your employees have completed?

Answer Options	Response Percent	Response Count
Yes	75.7%	53
No	7.1%	5
Not Applicable	17.1%	12
Please provide name of program:		55
	answered question	**70**
	skipped question	**7**

Question #8 Responses	
1	I have completed the Historic Preservation Training Center's (HPTC) 3-year Exhibits Specialist's program as have numerous other employees at HPTC. Additionally, we have a number of employees who have completed preservation programs at Bucks County Com College, Belmont Technical Inst, North Bennet Street, Univ of Penn. A couple older employees have completed formal apprenticeship programs
2	Belmont Technical College, St. Clairsville OH
3	Union Apprenticeship program - Marble Finishing
4	Preservation Education Institute; North Bennet Street School; students from ACBA
5	International Masonry Institute PCC Apprenticeship program.
6	BAC Apprenticeship
7	School of Restore Williamsburg, Virginia Sponsored by New York College
8	I have a Masters for RPI in building conservation. Jahn certification US Heritage training Seminars at APT and Preservation Expos
9	Belmont Technical College
10	I'm currently enrolled at Savannah Technical College, in their Historic Preservation program for the summer quarter.
11	Carpenter (preservation) apprenticeship in Rhode island. Also, from north Bennett street.
12	Weymouth College in England US Heritage Lime Mortar Repointing Training Campbell Center Historic Masonry Restoration Training
13	Various - some were trained at technical schools, but most training comes from manufacturers and industry professional organizations.
14	International Masonry Institute, which runs the apprenticeship-training program for the local bricklayers union.
15	bricklayers and allied craftsmen apprenticeship
16	Belmont Technical Institute, NPS PAST program, NPS HPTC program
17	College of the Redwoods Historic Preservation and Restoration Technology program in Eureka CA
18	State Certification for the state of Pennsylvania
19	Colonial Williamsburg Foundation's Historic Trades Program/Preservation Trades Network/RESTORE
20	Campbell Columbia Jahn certification
21	BAC Registered Apprenticeship and Continuing Education
22	Have developed joint training with PTN and sponsored IPTW and ITES training.
23	Harford Community College - Associates Degree in Building, Preservation, and Restoration
24	International Masonry Institute
25	Restore
26	baclocal3ny apprenticeship training
27	Eastern Michigan University, Historic Preservation Program annual Field School

28	International Union of Brick Layers and Allied Craftworkers. IUBAC
29	Vocational High School
30	Belmont technical college, Roger Williams college, ball state
31	Belmont Technical College
32	Thaddeus Stevens Technical Institute Preservation Trades Program
33	Arkansas Institute for Historic Building Trades (no longer in operation)
34	North Bennett Street School, Goucher College, Eastfield Village.
35	Illinois District Council 1 Training Program / Local 21 IL
36	My supervisor and I have received our Masters of Science degrees in Historic Preservation from the University of Oregon. While the program was mostly academic, we worked directly on a number of projects as class projects or in partnership with other local state and local entities (mostly public or non-profit). I have also completed the Historic Masonry Preservation Course at the Traditional Building Skills Institute at Snow College in Ephraim, Utah.
37	This is an academic program, not an apprenticeship, but I have worked with the American College of the Building Arts.
38	SCAD, Mary Washington, Roger Williams,
39	Belmont University AA Program north Bennet Street School Bucks County Community College Savannah College of Art & Design
40	Bricklayers Local 21
41	National Park Service Tax Act Reviewer Training 2009 Raleigh NC
42	I am a board member of PTN (Preservation Trades Network) so have seen many...good and bad.
43	Restore, ICCROM/ICCOMOS institute of preservation Venice
44	Historic Preservation Training Center exhibit internship program
45	IMI Training programs delivered at local union training facilities nation wide
46	International Masonry Institute
47	BAC Local 1 of MO Apprenticeship and Training Center
48	Local 1 NY Restore
49	Bucks County Community College in Newton PA used to have classes about 15 years ago - not sure if they still do. Penn State Main Campus, American Studies Program with Dick Pencek - that was 20 years ago... University of Penn Masters Program in Historic Preservation
50	International Union of Bricklayers and Allied Craftworks
51	I am a graduate of the National Park Service, Historic Preservation Training Center program, formerly Williamsport Historic Preservation Training Center.
52	PHMC Apprenticeship Program in Historic Preservation
53	BAC/IMI PCC apprentice programs plus I have a BS in Industrial Ed with a Vocational Certification in Building Trades (now lapsed).
54	bricklayers & allied craftworkers
55	St.Louis local 1 apprenticeship program ,and restoration work on Anheuser-Busch brewery in St. Louis MO, also western waterproofing

Question #9

How important are craft certifications?

Answer Options	Response Percent	Response Count
Very important	43.4%	33
Somewhat important	48.7%	37
Not important	7.9%	6
	answered question	**76**
	skipped question	**1**

Question #10

Do you think that craftworkers who have taken the necessary steps to achieve certification should be compensated?

Answer Options	Response Percent	Response Count
Yes	66.2%	51
No	3.9%	3
Maybe	20.8%	16
Neutral	9.1%	7
Please provide any comments or suggestions:		29
	answered question	**77**
	skipped question	**0**

Question #10 Responses	
1	I think that preservation craftworkers require an additional level of patience, sensitivity, attention to detail and skill that generally isn't required of those working in new construction.
2	depends on experience as much as certification
3	Industry certifications demonstrate increased effort and hopefully skills, and those in possession of these credentials should definitely be compensated, and at higher rates than those without certifications.
4	If they took the time to get better educated--by all means that should mean better wages compared to a person who has not received any formal training.
5	Depends on the source of certification, criterion, curriculum, peer review, and of course proven mastery of procedure
6	It's all about the skills. Less important how they get them
7	Good work is proof enough. Education is helpful but crafts persons need lots of working hours and a bit of academics
8	Depends on their level of certification and their abilities.
9	Question #9- Certifications should be the proof that travels with the Journeyman.

	Certification without validity, proof, enforcement is useless.
10	If you mean by "certification" the attaining of journey worker status through a registered apprenticeship program I would say yes. There are other, quicker and less inclusive "programs" available that are not as effective or worthwhile
11	More than certification, workers need to be able to demonstrate preservation trades skill sets. This can be by graduating in good standing from preservation trades programs (such as those at the junior college level) or by maintaining a portfolio of successful projects. These kinds of workers should definitely be compensated at a higher level (though this can occur simply by getting more work than others).
12	Market will drive value
13	Between knowledge, or (education) + years of Experience
14	You don't go to a General Practioner for Cardiac Consultation and you pay more for that expertise. We have long recognized the value of education and training. Those who take the time to better themselves should be compensated. You get what you pay for!
15	Certification is only one aspect. Quality of work and its execution, plus the level of Professionalism are also necessary.
16	Anyone who attempts to prepare themselves professionally should be compensated. Degrees and certificates are not free to earn and the initiative should be recognized. An educated employee will save money over time and be more productive.
17	There are craftworkers who have worked alongside master craftsmen, and not had any kind of "certification" who are equally competent in a specific area.
18	If the certification process involves work that would otherwise be paid for, those doing work should be compensated.
19	Like any other skill a person who has applied their time and effort to reach a level of skilled craftsmanship should be compensated.
20	All expertise should be valued and compensated.
21	Depends on if they are good in the end at what they do or not.
22	Greater skill and speed that results in higher quality, speedier completion, and longer life cycle equate to greater worth and greater pay, given market demand exists.
23	Certification of trades people requires systems which do not exist in this country. Skill levels of trade's people are performance based and come with experience. They cannot be tested using standardized testing techniques or taught in a classroom or laboratory.
24	I believe that a craftworker is compensated in the fact that they are a more marketable person than a craftworker that does not have additional certifications. The added training they have received will equate to more job opportunities whereby they may be working more often on more different types of projects.
25	Certifications do not mean you can keep the course of a project down (examples speed, material waste, and quality work are all important on a preservation project. Most of the time you need experience along with a certification
26	Please refer to answer 4 above.

27	To some extent this is happening in the market, as highly skilled individuals find demand for their work, usually in the private sector. Public sector contracting is deficient in mechanisms to ensure that individuals with the appropriate skills are used on preservation projects. Specifiers frequently lack the knowledge to add qualifications statements to bid packages, and contracting officers are often unwilling to add additional steps to the project award process.
28	People need to be compensated to encourage them to rise to a higher level of Education/training. It is done with foreman so the system is in place to make it happen, it just needs to be defined.
29	I generally do not support certification. However, I believe that craftworkers who have achieved a higher level of craft should be compensated.

Question#11

Are you familiar with the Professional Qualification Standards outlined by the Secretary of Interior?

Answer Options	Response Percent	Response Count
Yes	70.3%	52
No	29.7%	22
	answered question	**74**
	skipped question	**3**

Question #12

Are you aware, that qualification standards do not exist for craftworkers who will be engaged in the application of treatments to historic buildings?

Answer Options	Response Percent	Response Count
Yes	87.0%	67
No	13.0%	10
	answered question	**77**
	skipped question	**0**

Question #13

Do you think that having a Preservation Craftworker Qualification standard is needed in order to continue to protect our valued historic resources?

Answer Options	Response Percent	Response Count
Yes	49.4%	38
No	7.8%	6
Maybe	40.3%	31
Neutral	2.6%	2
	answered question	**77**
	skipped question	**0**

Question #14

Do you think that if a qualification standard for craftworkers can be implemented it would aid in the successful preservation of historic buildings?

Answer Options	Response Percent	Response Count
Yes	59.7%	46
No	3.9%	3
Maybe	33.8%	26
Neutral	2.6%	2
	answered question	**77**
	skipped question	**0**

Question #15

Briefly, explain: Why do you think a qualification standard is needed? or briefly explain: Why do you think a qualification standard is not needed?

answered question	**69**
skipped Question	**9**

Question #15 Responses	
1	It is most helpful in establishing the best qualified candidates when recruiting. I am aware of a number of great preservation craftworkers who do not hold certifications and probably don't place much value on them The proof is in the skills test that don't seem to be part of any programs or selection process. Skills test are prohibited in federal recruiting practices.
2	I work for a government agency and often get calls from local residents looking for recommendations of craftsperson's. They know that the person they hire should have a certain set of skills but don't know what questions to ask to make that determination. I also think there may be a lack of awareness among the trades that historic preservation skills could apply to nearly every handyman out there. I'm sure there are many craftspeople that think if they are repointing Jo Blow's basement on his 1880's house that he isn't doing historic preservation. That's what they do on Monticello.
3	Certification of a craftworker is certainly an advantage over one who is not certified, but experience, attitude, and attention to detail are at least as important.
4	Evidence of training is a valid process to review craftworkers. Someone might be skilled in his/her area of expertise, but preservation demands knowledge of other skilled crafts as well as an appreciation for what Stewart Brand termed, " how buildings learn."
5	Qualification standards for restoration are no different than those required of plumbers or electricians. Craftworkers and contractors that can be pre-qualified

	provide a much higher level of quality and understanding of the historic fabric of structures. Also, when employing certified and highly qualified craftworkers, owners and design professionals can expect much more accurate and cost effective bids and pricing.
6	More and more you find building crafts works suffering at the hands of the inexperience and uneducated. The goal is to create a smarter craftworker.
7	Qualification standards do exist for Historic Architecture. This phase of historic preservation identifies the period, means, methods and materials incorporated in the historic fabric of each structure. The craftsman must show ability to properly execute methods. The other decisions, integral to the preservation project development process, should continue to be made by others.
8	Training should be done via private firms, be should not be a requirement to do preservation work. Owners who value their historic properties will seek out qualified workers based on reputation and past work experience. Being trained by a firm or government agency does make you qualified to do historic work, experience under a preservation craftsman does. Training will just allow people who want to make a fast buck in to do work they would not be qualified for. We have grown slowly over the past 11 years doing preservation work, and learned from project to project, training seminars, college classes, and research. Slowly growing and learning over time, and gaining the confidence of Architects, building owners, and preservation consultants. That makes a successful preservation company, and develops qualified crafts people.
9	A qualification standard would help both employers and employees to describe the work that they do, determine the skills needed and competency levels, and help identify training needed to meet the standard. It would help educators tailor training programs to meet the standards and help students understand what training they need for certain types of craft work in preservation. It would also help create more consistency of content across educational programs and consistency in qualifications for similar positions throughout the country.
10	Standards are needed because the knowledge of historic mortars for instance are not very well known throughout the masonry community. I have personally seen numerous structures severely damaged due to ignorance of masons who know nothing about or do not care about the proper way to remove deteriorated mortars. Use of portland cement mortars instead of lime mortars in historic buildings, and the use of water sealers on historic brick or softer stones that only impede, and trap moisture leading to more deterioration.
11	It's more about recognizing skill than it is a standard. We may not want to try to quantify a standard for a craft that is not easily defined. Recognize who is skilled rather than saying how they should be skilled
12	Such standards are only as good as people allow them to be. Additionally, buildings have many unique qualities that no training will address and only experimentation and a deep concern for the building and a knowledge of what not to do can make a difference. A certification is not required to do the right thing but

	it could be beneficial.
13	It is a confirmation that the craftworker has at least been exposed to the proper standards, and has also been exposed to a mindset that all buildings, especially historic buildings, must be repaired with the materials and methods that will not only not damage the fabric, but will preserve the fabric.
14	This is a broad topic of discussion. I am involved in an organization that will provide certifications for various building envelope repair tasks. Although I am in favor of the concept, the reality is that every project is unique and the most effective training there is, is on the job.
15	A qualification standard would certainly help those who work on historic buildings, as it would add more legitimacy to our work. It would also help in training those who are interested in the field, as it would give them some concrete steps towards working in this field. But who would administer the standards? Who would be responsible for the training? Who would keep the records? I think it's a great idea though!
16	As past apprenticeship training proved, focused training is important to someone entering a trade profession. All the theory in the world does little to offset hands-on training that uses materials, tools, techniques, and the building as the textbook.
17	Simply put- how can a foreman who has never worked with lime run a job efficiently if his or her experience has only been with portland cement. They don't know or care to know the differences with hydration so they will refuse to apply limes properly. I have seen this first hand. My foreman scoffed and ask me how he could ever make money with this "crap." My only response was "stop treating it like it's portland cement"
18	I do not think a qualification standard for masons is needed. Using a different label such as craftworker instead of mason will not solve the problem.
19	I once showed up at a project in Georgia to begin a very large masonry repair endeavor. The bulk of the repairs were composite patches to be applied to brownstone and sandstone. The contractor provided craftsmen to be trained in our specific line of products (Jahn Products). The bulk of the craftsmen who attended the training had never picked up a trowel. We had people who were plumbers, carpenters, etc. who were hired to fix a historic masonry church.
20	Only if such a qualification were adhered to, and any new requirements would not exclude the vast amount of skills and knowledge attained in the industry would it be effective. Too often a new rule or requirement is impossed that excludes the already learned practical skills for the sake of "learn quick courses."
21	The Secretary's qualification standards are quite general, and rely on a modicum of standardization within academic programs (e.g., basic knowledge all graduates of archeology masters degrees share). While there are now a number of excellent preservation trades programs, the field is so young that there is not a standard body of knowledge that any graduate would have. Also, there are so many preservation trades that no one is an expert in all of them; it is difficult to imagine a single program or certificate that would indicate proficiency across the trades.

	Conversely, targeted programs that prepare masons to deal with lime mortars and soft fired bricks, or carpenters to do heavy timber framing, could be useful.
22	I'm not sure that a qualification standard will help the preservation field. I think that there needs to be some minimum requirements, but most of the work is best taught/learned on the job in various environments. There are so many variables to preservation that practical knowledge and experience far outweigh book and classroom learning.
23	If you look at the standard the SI calls for design professionals, it is very basic. For the SI to issue a similar standard for trades it will not have much value.
24	Too many craftworkers & contractors use any material on hand & think this will do. They do not check for documents as to when and if repaired before. Material used before, after
25	It sets the trade apart as providing a level of scrutiny and oversight that ensures quality work and understanding of acceptable standards.
26	Yesterday I visited a masonry restoration project and watched as a worker was pounding away using a 10# hammer a cold chisel at the joints of a historic brick building. As an Architect I have seen many examples of untrained individuals how pass themselves off as restoration specialist but haven't a clue, that many of their 'techniques' are actually causing additional, usually irreparable damage.
27	Until there is a way to administer such a program, that insures that property owners vett craftworkers (contractors) through said organization, instead of just getting anyone to do the work, I don't see the point of qualification standards.
28	Standards will help define the preservation trades. Standards will be hard to do because of competing interests. Management does not want standards, as it would take the definition of what a preservation tradesman is.
29	I qualification is needed to show that people understand how to work with historic structures. However I believe it is important that the qualifications are designed appropriately. Traditional college degrees should not be the only qualification. Trade schools, certificate programs and technical colleges should be utilized.
30	There are a vast majority of historic buildings owners in lack the knowledge themselves to realize that a skilled craftsperson is necessary for many of the jobs on their buildings. They will only look at costs based on the job, their ability to pay, not necessarily on the quality of the work that will be performed. Although I agree that the qualification standard is a good idea, I'm not sure that the additional training will be enough to encourage more craftspeople to undertake additional training and certification at the expense of their bottom line.
31	One of the main reasons why our agency is unable to maintain a list of craftspeople is because there is no established standard or set of qualifications by which to judge their knowledge or competence. Unlike a master electrician or plumber, who must demonstrate a certain level of understanding of their trade, there is no equivalent for preservation-related trades. Currently, any contractor can claim to be a "preservation carpenter." While a qualification standard would be useful in establishing a proven set of skills or knowledge base, the requirements for

	qualification would have to be agreed upon by broad range of those with an interest in the qualifying process (trade unions, architects, preservation professionals, etc.) Also, a standard or qualification, by its very nature, is a method of excluding people. Care would have to be taken not to exclude those interested or competent in preservation trades because they don't have easy access to the qualification process.
32	There is no objective measure of qualifications for craftspeople who work on historic buildings so all assessments must be experience based. Since each job is unique, it is difficult to know whether a person has sufficient experience to be considered qualified. Short of having them produce a mock up, there is no adequate and objective measure.
33	We try to accomplish the equivalent by inserting a contractor qualification statement in the specifications that a potential bidder must meet. The contractor qualification statement can be tailored to a variety of situations, buildings, and work categories, as well as sub-contractors. It has worked well for us.
34	A standard would help in selecting and pre-qualifying contractors for jobs.
35	If a qualification standard is required, it would raise interest in the proper training and education for preservation personnel. I am not sure that there is enough training available to meet any qualification requirement. School funding is always the first to go in a recession.
36	I think a qualification standard is needed to ensure proper use of modern materials being applied to historic structures as there seems to be a lack of concern when using these modern materials therefore creating more problems on historic structures.
37	If the qualification standard provides that someone needs to be certified (go through some sort of training) then it would be helpful to use people that actually meet that standard rather than someone who is just able to talk about it because they've read some info about preservation.
38	The concept is sound, but my experience with the existing standards is that the "experience" qualification allows folks to work in disciplines in which they are not trained and do not do high-quality work. How could that be avoided? Or is one standard for craftworkers enough? But should a mason work on metals?
39	It will be hard to set up an exact qualification standard for craftspeople because each area is so specialized. Also with programs like the Traditional Building Skills Institute, they cover many different crafts from furniture/carpentry, log construction, historic masonry preservation, decorative plaster, wood window repair, stained glass, and blacksmithing just to name a number of their offerings. In the end, how do you qualify them as successful or not? You can still be a hack even if you completed the program. I think we need to go back to apprenticeships for almost all true trades. Clatsop Community College in Astoria, OR has just started a Historic Preservation and Restoration program with a 1 or 2 year degree which our office hopes will fill some of the holes left by the much older craftspeople I deal with currently.

40	It is needed because the skills required to successfully preserve buildings are different than the skills required to build new buildings. A thorough knowledge of many types of preservation products is also necessary. The skills to preserve are very varied from patching stone, to replacing flashings and brick to cutting out joints and repointing.
41	You can't have jacklegs screwing up good buildings. A few years ago I was doing a weekend training program at US Heritage Group in Chicago when the leader got a frantic phone call from someone in charge of work at FL Wright's Robbie House. The bozos working on the house were tearing up the brickwork with their side cutters. This is why a qualification standard is needed.
42	Long term yes. Short term no.
43	see CRM article "Qualification Standards for the Preservation Trades"
44	To Better understand the importance of the older Buildings
45	Qualification standards are needed for each of the building trades so that training objectives for each skill can be quantified, qualified, and entered as construction quality control requirements in project specifications.
46	A qualification standard is needed to ensure that proper work is done and the proper skills are known. Otherwise someone could simply claim they have the necessary skills or think they have the necessary skills, when, in fact they don't. It would also better ensure that advances in the understanding of performing the work are shared and made known.
47	Have you talked to the Preservation Trades Network? They have had allot of discussions going on on this very subject. Simeon Warren, Dean of the College of the Building Arts in Charleston, is a Board member of PTN as well as of APT, the Association of Preservation Technology. You need to talk to them about certification around the WORLD and how that info applies to this country. They're quite far along in their discussions. And yes, I'm all for it.
48	As stated earlier, standards of qualifications cannot be implemented with through academic systems which are not experientially based. Knowledge of best practice comes through experience and is best learned from people with experience in a real world environment. Certifying people with academic knowledge can only exacerbate the problem of professional architectural and engineering specifications and practices degrading the level of craftsmanship that comes through experience.
49	A minimum qualification standard is needed to weed out those individuals who call themselves experts in the field, but have limited, or no experience in dealing with, for example, historic masonry.
50	To insure quality and long term durability of the repairs
51	I think a certification would be useful in providing a minimum level of qualifications for craftsman and would be a benefit to consumers in hiring and using certified workers for projects. However, I think experience, skill, and other worker attributes are also important to consider in using workers.
52	such a national standard would eliminate the riff raff.. take the charlatans out of the system, giving validity to that the skill sets and knowledge requisite to doing good

	preservation works... and in such it would give to those in the current "professional" realm the confidence and appreciation for those essential skill sets which define a preservation craftworker...ensuring the maintenance, conservation, restoration and preservation of that our architectural heritage through the hands, minds and hearts of those properly trained in such works.
53	A qualification standard is needed in order to provide a baseline from which to evaluate a craftworkers performance, and also to provide craftworkers a standard to aspire to (or exceed). Such a standard could also serve as a certification of sorts to ensure that there is consistency across the trade and so that the special training and skills that craftworkers possess can be distinguished.
54	Standards are needed to insure integrity of work however they need to also be enforced.
55	If such a standard existed, architects would be able to determine if someone had met such standards - a new way to measure if they can, in fact, be responsible for completing such work in a professional and knowledgeable manner.
56	For the simply reason that the craft worker should know the value of the historic building that he will working on. Because the qualification would prove that yhat person knows what he or she is doing.
57	I believe that a qualification standard is needed because the historic buildings desire the best treatment that can be given them. Sub-standard work on a beautiful historic building only decreases the value of the building and can also deteriorate the outer face to the brink of destroying it. If I myself were a developer or building owner, I would want the best qualified personal working to restore my building. Having a qualification standard would assure the owners they are getting the best care for their historic building.
58	I Think that it would help if it could be done but there are so many components to the preservation of a building that it would be hard to do. Examples of some of the tasks that could be involved in a preservation project are A) restoring stone B) brickwork C) terracotta D) cleaning E) mortars F) terrazzo This is just to name a few so if it is going to be done different classifications might be needed (ex: masonry, floor finishing, roofing, stucco, metal repair) The standard would help if along with the knowledge of a specific task the ability to perform the task is assessed.
59	Serious damage can be done to a historic building if rehabilitation is done incorrectly.
60	I strongly agree that a qualification standards are needed for preservation work. Proper repair to Historic buildings is needed to be sure that compatible materials work with a building not against it. Improper use of materials not compatible with a existing building can add to further deterioration. Standards will help to get qualified workers to have the correct knowledge to restore a building correctly. Standards need to be set and followed.
61	In the absence of governmental or industry support for preservation trades education, I believe that the first step in establishing a meaningful trades

	certification program is the development of a standard for recognizing and certifying people with the trades skills to serve as instructors and educators. A principal impediment to preservation trades education is that many highly skilled individuals lack academic credentials to serve as faculty and instructors in academic and vocational programs. Developing a standard to recognize these people's skills and expand opportunities for them to educate architects and preservationists as well as trades students and apprentices would help to correct several major imbalances in the industry (i.e., lack of recognition by architects and preservationists of the value of the skills, and the danger that young trades trainees with minimal experience could graduate from programs with a certification that would erroneously identify them as having higher skills than older or self-taught, and highly experienced practitioners).
62	A qualification standard would help to restrict conservation work to people trained to do that. Hence it is for the overall, long term health of the building.
63	Without some type of a qualification standard or standardized training program there is no way for employers or preservationists to know what skills or knowledge base the craftworkers will have and what can be counted on. Without knowing what skills are inherent in the work force even bidding work becomes more difficult which in itself will drive up costs. Also if skill levels are pretty well known if special training is needed it can be designed and funded before the project is started. Just one less floating variable in the project design, estimating and management efforts.
64	A standard needs to be set because there are too many inspectors on preservation jobs who have different ideas on the proper way doing things
65	I think that qualification standards can lead to better craftworkers being selected for particular preservation projects. Qualification standards should be based on the worker's ability to do the work, based on having completed similar work in the past. While time that a person has been involved in a craft or trade may be useful as part of a qualification standard (ie - 10 years working as a mason), it should not be a determinate. However, qualification standards should never be confused with certification. The qualification standards should be performance standards and should be written in the rfp, contract, specs, etc.
66	I think in a lot of ways it existed in the apprentice program when I was coming up though the trades because of the multi-generational bricklayers I worked with when I was an apprentice although I am not sure that is the case now so in answer to question I would have to say yes it would be better for apprentice’s to have some course work in historic preservation techniques So that will able to work more closely with preservation specialist and other experts in that area
67	I would like to see SOI professional qualifications established but it may be difficult to get this done. I very much like the idea of certification for craftsmen working on historic buildings. Many historic property owners are looking for craftsmen who know what they are doing, who can complete a project without jeopardizing the property's National Register-status and do the work so that it

	meets the requirements of historic grant programs and federal/state tax credit standards (the last two typically use SOI standards). However, most state and federal preservation professionals are prohibited from recommending specific contractors. If there was some independent non-government body that could certify craftsmen, that could be a reliable list that property owners could turn to. This certification would include working knowledge of the SOI standards, compliance with SOI professional standards (if you can get this done), training/coursework and an evaluation of the craftsman's skills. I would think that you would want to put in place a program to recertify people after so many years. What is Preservation Trades Network doing on this issue?
68	A qualification stands would be one of many 'tools'. Means to assess company, not only individual, capabilities is important. As are more training programs to make this a reality. The British NVQ and Scot SVQ are great examples.

Question #16

Do you believe having a qualification standard for craftworkers will add additional costs to the conservation of buildings

Answer Options	Response Percent	Response Count
Yes	27.3%	21
No	39.0%	30
Maybe	31.2%	24
Neutral	2.6%	2
Please add any additional comment on this issue:		41
answered question		**77**
skipped question		**0**

Question #16 Responses	
1	It may add upfront costs but in long-term maintenance of a building; if the mortar isn't causing bricks to blow out, or the correctly-installed step flashing prevents moisture damage on a chimney breast, those are costs the owner is never going to see. But you can't prove a negative.
2	I think uneducated workers cost employers and clients more in the long run.
3	Higher levels of skill often contribute to greater efficiency and can greatly reduce the costs of "re-do" work. Also, owners and design professionals can prepare projects with greater confidence that their vision will be executed.
4	it will certainly cost the owner much more in the end not having a certification..
5	Certification invariably restricts available human resources. Restoration consultants and contractors realize that they must exhibit competence is selection and training

	of preservation craftsmen, or face undesired consequences that quickly eliminate incompetent consultants and contractors.
6	It may add some cost initially for training, but theoretically the investment may save money by having better quality of workmanship, and less losses from correcting mistakes or bad work.
7	Prequalify companies not individuals. Too high of an expectation and you will get much resistance.
8	A degree or additional education will add to the multi-tier system that already exists and a "qualified" person will likely be able to charge more... which will raise the cost of restoration... but this is not necessarily a bad thing.
9	If you are a federal employee, your cost wouldn't change. It might change how some of the hiring is done - maybe the person would be hired at a higher grade. I can't speak to the private sector.
10	Qualified workers may garnish higher wages, but the offset in better productivity and less damage to historic fabric through trained, traditional craft techniques will result in a more efficient preservation project.
11	they can manage the most efficient.
12	How would you integrate qualification standards with existing masonry training programs?
13	I think it will "thin the herd" of contractors bidding on the projects that are available. This is due to the limited pool of "qualified" craftsmen.
14	Leaving aside the question of qualification standards, it is cheaper to pay a knowledgeable tradesman to do competent work than to undo and repair the poor work of a poorly trained tradesman.
15	Good training can related to better productivity.
16	Qualification IF FOLLOWED would mean The RIGHT people doing the RIGHT job. Training, education, experience, will cut cost.
17	If you do it right the first time and follow-up with normal preventative care, the cost as measured over the entire life of the building, would probably be less than doing incorrectly multiple times and damaging the building!
18	A standard for what a restoration mason knows will weed out the unqualified. With quality work done the first time the owner will not have to pay for the work twice.
19	If the work is done right the first time it will not have to be repaired. While it might have a higher up front cost there will be a savings over time. It is more expensive to repair incorrect work than doing right the first time.
20	Those restoration contractors who are known within their niche audience are already charring a premium for their knowledge and skill. Additional training may increase their prices a small amount.
21	There should be some form of incentive for craftspeople to take the time, effort and money to meet a qualification standard. This may take the form of subsidizing training, testing and licensing or those people who meet the standard being able to charge more for that knowledge.
22	Sure. That time and experience must be compensated somehow and will be

	reflected in pricing.
23	Not necessarily. Contractors who have a clear understanding of a specialized area of work, and who practice it regularly, can provide a more realistic bid than someone who has little prior experience. The inexperienced contractor can overbid as easily as he can underbid. It can go either way.
24	Qualified craftworkers will always produce superior results in a shorter time than "non-qualified" labor. But - a qualified craftsman does not only come from a certification program. I have been doing this type of restoration work for almost thirty years now, and have had to pick up training where ever I could find it.
25	Craftspeople are generally repair people that are not going to replace something just because its old. They will cherish the historic materials that they deal with and take more care with the buildings they help preserve and restore.
26	You pay for quality.
27	New requirements by definition will add to the cost of doing business. Hopefully the added costs for added quality in construction will also add to life cycle of completed project and lower routine maintenance costs
28	As implied in the earlier question about compensation for certification, the more professional overhead there is, the higher the cost.
29	no.. because with little or no standards in place we are but only doing works that will need to be redone... and that is always the most expensive way to do anything... a poor performance is usually an expensive performance.
30	In many instances, any additional cost can be offset by paying to do 'bad' work twice! or in the time required by dealing w/ less than good craftsman.
31	A good job in the preservation of a building is cost effective in that the building will not only have renewed life but it will also enhance its own history and the history of its surroundings.
32	I think it would add to the cost for instance if a preservation qualification for masonry was developed the mason would need to have knowledge in brick, stone, terra cotta, mortar, stone and many other tasks that could arise in historic preservation of a masonry structure alone with the ability to perform the task.
33	In my experience qualified craftsmen may already be charging for their expertise.
34	Craftworkers properly trained with correct knowledge will in the long-run save cost be having a project repaired correctly.
35	I think that having a qualification standard for craft workers has the potential to reduce the cost of conservation of historic buildings if qualified trades workers are brought in at the earliest stages of project planning as recognized members of the preservation team. Involvement of qualified trades workers in planning, scoping and establishing project methodologies could eliminate much redundant development of drawings and specifications for project work by architects not well versed in trade techniques and set appropriate scopes and methods of work. This frequently is not done because architects do not have the familiarity with trade techniques and properties of historic materials.
36	Many effective and appropriate treatments simply cost more than big box store

	solutions
37	Quality, well trained craftworkers are usually cost neutral or cheaper due to higher productivity or in reduced cost of rework or project delays. Also the better the restoration effort the longer the time span until the next restoration/maintenance effort, which should reduce Life Cycle Costs.
38	Generally higher qualified workers earn better wages.
39	not in long run it may save costly mistakes
40	Perhaps but it costs money to do the work twice when the first contractor gets off rack and someone else has to be brought in to try to fix the project.
41	Short term: additional cost, but much better 'performance' (of workers, and resulting work) that reduces long-term cost.

Question #17

If a qualification standard can be established, how important do you think is the title of that classification?

Answer Options	Response Percent	Response Count
Extremely important	24.7%	19
Somewhat important	58.4%	45
Not important	3.9%	3
Neutral	13.0%	10
	answered question	**77**
	skipped question	**0**

Question #18

Would it be better suited to have a name defined by a specific Craft, such as the term: Masonry Preservation Craftworker?

Answer Options	Response Percent	Response Count
No	7.8%	6
Yes	77.9%	60
No Comment	14.3%	11
Please provide any comments or suggestions:		27
	answered question	**77**
	skipped question	**0**

Question #18 Responses	
1	Maybe. Could be the term you suggest or Mason, Preservation specialist or craftworker Carpenter, preservation specialist
2	Masonry Preservation Specialist or Masonry Restoration Specialist
3	It depends on the position. Some work is of a more generalist nature; some specific to one craft
4	BUT, there are many different categories under which this could fall IE Terra Cotta craftsman/stone setter, natural stone craftsman/stone setter, stone carver, etc.
5	Yes, there should be a name, but there has to be a range of titles: masonry, roofing, carpentry, bricklaying, windows, etc. And people have to be able to get more than one title - for example, I have to be able to do all of those crafts for my job.
6	Preservation Trades Network as an organization should become a resource expert in this discussion, as they are these workers and do focus education on the individual craft trades.
7	What comes first ? Experience then cert or the other way around. Certification doesn't mean qualification.
8	However, the word craftworker is unclear.
9	There must be multiple qualifications for multiple crafts.
10	each trade has specific needs. Generic would have little value.
11	Masonry Preservation Specialist (MPS)
12	First you are a carpenter second you are a preservation carpenter.
13	There could be specific Craft qualification but there should also be broad qualifications also.
14	I think this would be absolutely necessary for each trade.
15	It would need to be protected so that it could not be legally used by uncertified workers.
16	Masonry Preservation Specialist
17	this addresses my comments above
18	The name matters less than the qualifications to earn the name.
19	n order to provide clarity and transparency, yes. You don't want to hire a "Certified Preservation Craftworker" to repair wooden windows if s/he's a mason.
20	Use the terms the mechanic will be proud of on the jobsite, not in the classroom.
21	Trade is better than CRAFT, in my opinion
22	Names don't maintain historic structures. Qualified trades people do.
23	A title without true proven qualification is worthless. Workers need to prove physically, hands on, they have the knowledge complete the given task.
24	I believe that use of the term "craft" has lost much of it's original meaning and become devalued as a dilettante or hobbyist activity. Also the artificial distinction between the "preservation trades" and construction generally implies that preservation is separate from and disconnected from good construction and building practice.

25	Less trade specific at first. After that, a specialized certification could be awarded after specific study/apprenticeship and/or testing
26	Master Masonry Restoration Specialist
27	Need to assess in the context of the existing DOL classification system.

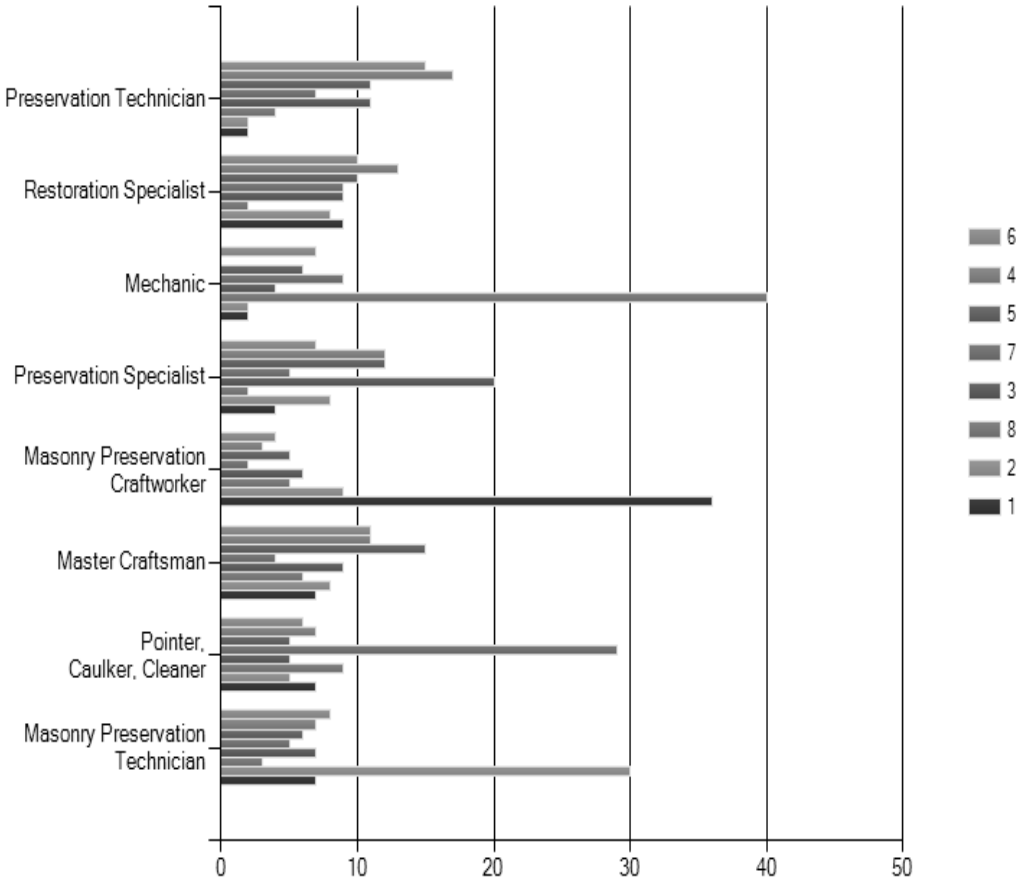
Question #19

Please rank the terms below according as to what most accurately represents the masonry craftworker engaged in the conservation of buildings. Please rank the terms 1 through 8, with 1 being the most accurate.

Question #19 Responses	
1	Title of craft, followed by preservation craftworker or specialist
2	See #18
3	Historic Masonry Restoration Specialist
4	Conservation Technician
5	In order to fit into the federal government's standards, it may have to be listed as Exhibits Specialist (Masonry)
6	Master Masonry Craftsman
7	architectural conservator
8	I don't care for any of your designations. They don't tie to any apprenticeship, journeyman, or foreman type in the trades--.Pointer, Caulker, Cleaner - this caries the least HP and Restoration Specialist there are too many masonry "restoration" firms who do not do historic work. Preservation is different in the industry over Restoration
9	Craftworker may be a better term as there are many women working in the preservation trades.
10	I do not like craft worker because crafts are the work of people not working on buildings. Crafts relate to broom makers, weavers, and others
11	Most of these titles have nothing to do with a craftworker who only deals with Masonry. The positions with Restoration or Preservation in the title infer they are trained in more than one Trade.
12	I'm not sure I understood this question.
13	Historic Masonry Specialist would be the best in my opinion because I am a Restoration Specialist at the SHPO (but my business card says Preservation Specialist) but that does not qualify me as a specialist in historic masonry but I have had some training, both hands-on and academic, in the last 15 years.
14	You can disregard these responses, as I am dissatisfied with my own replies (but I can't exit the survey without entering something). These are impossible to RANK since they are different. Apples and oranges cannot be RANKED.
15	Master Brick Mason Master Stone Mason Master Tile Setter

16	Masonry Restoration Specialist, perhaps I don't like any of these terms...it depends on what their specialty is as to what they're called. Master is a master that's practiced for a long time...anybody can call themselves a master or any of these terms but it doesn't mean they meet the definition.
17	Your survey is broke. The checks I placed disappeared.
18	What the heck is a 'restoration specialist'? Are they an expert in restoring windows, roofs, historic flooring? This a very broad area of work....
19	Masonry Preservation Specialist, Preservation Mason. I agree with the use of the term Master to denote a high level of demonstrated accomplishment and ability to train others, my concern explained elsewhere is the use of the word "craft" unless it can be rehabilitated to reclaim its form associations and remove the superficial associations it has acquired.
20	Masonry Preservation Specialist

Please rank the terms below according as to what most accurately represents the masonry craftworker engaged in the conservation of buildings. Please rank the terms 1 through 8, with 1 being the most accurate.



Question #20

If the knowledge, skills and abilities (KSA's) for craftworkers can be defined, persons who fulfill those requirements should be recognized nationally. Would you agree?

Answer Options	Response Percent	Response Count
Yes	77.9%	60
No	22.1%	17
Please explain why or why you do not think they should be recognized nationally?		38

Question #20 Responses	
1	I'm torn on this one. My gut feeling is that there are nuances to construction that vary across the country. But then again, if the craftsperson is trained properly to recognize those variations they should be able to adjust their techniques accordingly.
2	Seen in industry lists and vocational training catalogues.
3	National certifications allow the craftworker greater mobility. Despite geographic variables, overall standards are of greatest importance.
4	Similar to the Golden Trowel Competition and Awards in new construction
5	Why?
6	If these KSA's can be standardized, and individuals recognized for meeting them, then it will be easier to find, recruit and evaluate candidates for available positions that meet these KSA's.
7	There were regional variations in the techniques and materials used in the construction of buildings. A mason working nationally should be able to recognize regional differences and should be able to replicate the historic techniques using historically compatible materials for a given area.
8	Recognized nationally and according to each state and/or region.
9	Preservation and conservation expertise is global, not limited to practice in one geographical location.
10	To have all the KSA's would take a lifetime. Skill set's may need to be certified regionally.
11	Not sure what you mean by this. Do we recognize architectural historians nationally? (Perhaps in the sense that they meet the minimum qual standard?). Trade crafts have general applicability, but the US is so large and culturally diverse that the practice of the crafts necessarily varies by region. A master mason in Arizona does a lot of different work than a master mason in New England.
12	This could be a maybe ... masonry restoration in the mid-Atlantic and Midwest may be similar, but working in the Adobe world of masonry in New Mexico it would

	not apply. Craft is craft for the local area.
13	Mainly because of their years experience, on doing
14	Setting a standard that applies nationally establishes credibility and helps standardize the craft.
15	Not at all. We aren't in this business to enhance our ego's, we simply enjoy what we do.
16	do not agree with the name craftworker,
17	It is important that the qualifications have value and are recognized by people working in the field.
18	Yes - having different criteria for different states would be cumbersome and, I believe, counterproductive
19	I don't understand what you mean by recognition. Most professionals, such as architects, engineers, etc... are licensed by state. I don't know of any professions where certification automatically grants national recognition - whatever you mean by that.
20	Although there are regional differences defined both by weather and architecture, these could be recognized in a national standard.
21	If "nationally", they would have to be trained in masonry protocols for all areas of the country. the adobe of western areas is very different from east coast brick & mortar work. Humid conditions of Florida are nothing like Maine.
22	National standards are always better than regional so that everyone is using the same comparative information.
23	Preservation work is local for nearly all who work in the field -- from the historian consultant to the masonry specialist. A very small number of specialists have a national practice. Preservation budgets usually cannot accommodate travel for specialists and local consultants, builders, contractors, craftsman are sought
24	Recognized nationally be who? By the National Trust for Historic Preservation? By the State Historic Preservation Offices? The Department of the Interior?
25	To be able to work around the country without any problems
26	Certification will increase subcontractor and general contractor awareness of minimum quality standards in preservation work.
27	Yes, nationally or regionally to match specific regional practices. This would further ensure quality and ability to connect people with the proper craftsmen.
28	My answer is Perhaps, not, NO. Recognized for what? Put into a book? Given a certificate? What do you mean?
29	Building stewards need to know where to find qualified trades people.
30	These craftspeople are few and far between and need to be acceptable nationwide. However, they also need to have experience and knowledge of the specific geography/climate/characteristics of materials in certain parts of the country where they are seeking work.
31	To highlight and apply value to the special training and knowledge they possess. This might also encourage more people to pursue that special training to achieve that national distinction.

32	They earned a recognizable ability
33	Would the KSA's be defined for each geographic area of the country or be generic in nature? If the KSA's can represent every area of the country and the unique situations that can occur in different areas, then I feel that a craftworker could be recognized nationally.
34	To be recognized nationally, skills and abilities would be extremely high. There are many different regions, climates. and weather. One that has the true proven abilities and qualifications should be recognized.
35	Unlike the UK or other countries that have vocational qualification schemes there little support in government or industry for preservation related activities or qualification standards.
36	There is no way for the preservationists to specify skill sets in project documents without some definition as to what they are and who has them.
37	KSAs should be determined by the employer. Materials change regionally.
38	Workers need credentials (here KSA) and portability...so it needs to be national.

Question#21

How would you define the following:

Answer Options	**Response Percent**	**Response Count**
Craftsman	92.9%	52
Journeyman	92.9%	52
Mechanic	87.5%	49
Master	92.9%	52
Specialist	89.3%	50
Technician	82.1%	46
	answered question	**56**
	skipped question	**21**

Question #21 Responses Craftsmen	
1	General term for someone practicing a trade
2	Someone with a conceptual knowledge of historic preservation but may not have a high degree of craft skills
3	Workman who only focuses on one particular medium or method
4	skilled- undefined level of skill
5	Skilled in specific areas
6	person who practices a trade
7	Anyone that has elected to specialize, with proven experience, in a particular discipline.
8	Self directed, and knowledgeable about most tasks

9	someone who can thread a needle in the dark
10	Someone who is very skilled at a limited task.
11	A person working in a specific trade
12	KSAs limited to a specific type of work, but is very proficient in that type of work.
13	Advanced knowledge of masonry trades and relative skills.
14	
15	slightly less than journeyman-level craftsmanship
16	
17	Someone with special skills in a specific area. A person who can make some judgments' in the field, but who is under the supervision of a conservator or master
18	Any worker in a trade or craft who has attained the skill to work at a trade or craft
19	Honed their skills
20	Any person in the trades with a skillet above a laborer
21	Handy with tools
22	Skilled specialist with experience
23	A specialized mason
24	Person performing a part of a building trade but not all of the building trade at high level
25	A educated worker who has a well rounded understanding of the needed trades to preserve historic structures. Generally educated through a college or trade school.
26	a skilled work in a trade
27	Not sure what you are asking for in this question
28	Someone who specializes in a narrow area of work within a larger category of work.
29	Last step before master. Fully qualified to take on any job.
30	Practicing expert in his field.
31	Highly skilled at targeted areas
32	Some one with specialized artistic and technical skills.
33	next highest level of qualifications for a craft
34	More academic title or degree holder who may or may not have hands-on Experience
35	A person who specializes in only a certain category of work
36	someone who cares about craft
37	
38	Skilled in the trade they do
39	amateur hobbyist
40	A person with excellent skills and a deep understanding of the trade.
41	one who knows the hands-on portion of the trade
42	Knows the basic skills, has completed certifiable training, and has a few years under their belt working full time in their field
43	all about the same, these terms are pretty generic
44	nice tools

45	Someone with specialized training in a specific craft.
46	Skilled in a craft
47	Mid level person - but only works if they self identify their trade..'I'm a craftsman roofer' for example
48	A builder that has received in depth education in their field, has an intimate knowledge of their trade in specific areas/applications, has practiced his/her trade for several years, and is certified to perform that work.
49	A highly skilled person respected by their peers as well as others.
50	One who excels in a particular area/ field
51	one that has true ability to perform their task 100%
52	Frequently a generalist skilled in one or more trades with the ability to manage projects, communicate with other project team members, etc.
53	skilled tradesman
54	Someone with specific training, sometimes in depth but limited in scope
55	should be defined by employer by quality standard
56	

Question #21 Responses Journeymen	
1	General term for someone practicing a trade at a high level
2	Someone who has completed a formal apprenticeship in a certain trade; ie masonry or carpentry
3	worker who has had a defined amount of training under tutelage of another Journeyman and who can then operate independently
4	skilled at the intermediate level
5	Possessing the basic set of skills and knowledge
6	a person who has not only practice a trade for a period of time but has completed formal training
7	Craftsman that specializes in a specific medium of installation
8	Is directed by a superior and willing to learn
9	
10	Spent the time
11	A person in the masonry trade working in a larger organization such as a union or larger masonry company
12	Same as mechanic
13	General knowledge of masonry trades and relative skills
14	3
15	journeyman-level craftsmanship
16	most important. it's how we gain our experiences.
17	Someone with experience and training in a specific trade. A person who can handle most conditions in the field.
18	A craftworker who has reached a higher definable level of skill and knowledge in a

	trade or craft
19	5 years + of experience
20	One who served apprenticeship, and learned the skill of the trade
21	Travels
22	Someone studying to be a craftworker
23	An experienced mason
24	person performing a building trade at a high professional level
25	A misunderstood title from the apprenticeship system
26	One step below master - person with strong understanding of historic building trades
27	
28	someone who has achieved competence in a specific trade
29	Trained, accomplished. Next highest level, craftsman.
30	Craftsman in training.
31	One who has met the standards established
32	Someone with some experience in the field, but still acquiring experience and expertise
33	someone who is learning a craft
34	someone working on becoming a skilled specialist but hasn't had allot of experience yet and is still learning
35	Same as craftsman
36	a day worker; someone on the way to craftsman
37	At the journey level of work
38	Completed tradesmen
39	professional tradesperson having completed a union apprenticeship and worked minimum number of years
40	A person in formal training for the skill
41	one that is in training
42	Union term.
43	
44	unfortunately has lost some of it's bite or respect
45	A person who has particular skills and knowledge but who has not formalized their training to achieve a specific certification.
46	Completed an apprenticeship
47	same as above
48	A builder that has received in depth education in their field, has an intimate knowledge of their trade in various applications, and has practiced his/her trade for several years.
49	A person that has the overall skills and abilities needed to work anywhere within their respective trade.
50	A person who completed apprenticeship and is now qualified to a craft or trade
51	worker that properly completed an apprenticeship

52	A fully qualified trades worker capable of working independently with a fully range of skills in trade
53	apprenticed tradesman
54	A graduate of an apprenticeship program
55	should be defined by employer by quality standard

Question #21 Responses Mechanic	
1	Someone who works on mechanical systems
2	Someone who has rote skill; ie repointing
3	Workman who handles the trowel or tool
4	skilled- undefined level of skill
5	Skilled in several specific areas
6	a person who achieved journeyman status and is well rounded
7	Worker that performs a limited scope of material installation
8	Does what they are told to
9	
10	Understand tools and technique
11	
12	Wide range of KSAs, and is able to do quality work, as directed.
13	Basic knowledge of masonry trades with supervision required
14	6
15	labor
16	modern term usually applied to someone who can install something the way the label reads
17	Someone with general skills and minimal experience. A person who is under the supervision of a conservator or master
18	One who performs a skill or task with competency
19	Beginner
20	A journeyman
21	repair man
22	Someone skilled at a very specific task; (too connected with the automobile to be useful here)
23	Solid, experienced mason
24	person performing a part of a building trade but not all of the building trade
25	A well trained Craftsman that has experience in more than one trade
26	Apprentice level
27	
28	
29	Doesn't seem to fit here
30	Qualified and competent to work at high level.
31	

32	Someone who repeatedly solves a limited number of problems.
33	not sure
34	someone who works on vehicles, engines or mechanical equipment
35	Same as craftsman
36	a jack of all trades
37	Same as above
38	Helper
39	employee of a trade subcontractor who oversees the work of apprentices and also executes work in the field
40	I have no idea.
41	one who has some engineering and/or machine training
42	Specializes in fixing combustion engines
43	
44	experienced at a master level, competent respected and well versed.. antiquated term should be revisited
45	A person with the basic ability to complete common repair tasks.
46	Highly skilled
47	Works on cars?
48	A builder that has an intimate knowledge of their trade in various applications.
49	A person that has good hands-on skills. Works well with their tools.
50	
51	one who uses tools properly
52	A highly skilled trades worker, frequently self-taught, capable of applying judgment and skill in a variety of trades
53	practicing tradesman at any skill level
54	Very vague term indication someone who does hands-on work as opposed to design or management
55	should be defined by employer by quality standard
56	the public associates this with cars although it certainly was a term used in the 19th century for this type of work

Question #21 Responses Master	
1	General term for someone practicing a trade at the highest level
2	Requires a very high level of skill that involves an aspect of artistry--figurative stone carving or plaster molding
3	As advanced as one can get in the training cycle for that particular medium
4	expert
5	Possessing the broadest skill set and knowledge
6	Journeyman with at least 10yrs in the trade--a person who can teach
7	Anyone exhibiting proven ability to install within the scope of title. Must

	accompany the discipline, i.e, Master Mason, Master Electrician, etc.
8	Self directed, can analyze a problem, research it and come up with a proper repair
9	
10	Can teach and do
11	someone recognized as an expert craftsperson
12	Has achieved mastery in their trade.
13	Expert knowledge of masonry trades, masonry characteristics and science, materials and material performance aspects
14	1
15	top of their field
16	Someone just short of being a conservator.
17	Top of the field. A person who can handle all conditions in the field and consistently produces quality work.
18	A term used in Europe to designate a tradesman who has reached the highest level of skill in a craft and can teach and supervise others in that craft.
19	10 years + of experience
20	European classification of a trade - a journeyman with XX years in the trade
21	skilled
22	The highest level of craftsperson
23	Higher level of training & experience than a Craftsman
24	person performing a total building trade at the level of business owner and teacher
25	A well trained craftsman in a specific trade
26	The most knowledgeable craftsperson on specialty building trades
27	
28	Someone who has achieved a high level of skill in a specific area of work
29	The most trained craftsperson, a leader.
30	Has at least ten years working experience.
31	Highly qualified
32	Someone with significant experience and expertise -- breadth and depth
33	highest level of qualifications for a craft
34	someone who has reached the supreme level of experience and who probably teaches, writes and trains others
35	Someone who has achieved a higher level of craftsmanship in his or her trade.
36	someone who is starting to know what it is he does
37	Ability to both perform and instruct journeyman workers
38	Highest level of trade
39	inspector of the completed work of mechanic crews, schedules crew production, compiles estimates for new work
40	A person with extraordinary skills and experience
41	one who has LOTS of years of training and practice combined
42	Has been in the field for several decades...knows the basic skills and has extensive experience with the more technically demanding and complicated projects

43	
44	old antiquated term often misused abused and certainly misapplied
45	A person wtih exceptional abilities.
46	Seasoned and highly skilled/knowledgeable
47	Tells me he/she has reached a certain level of expertise, knowledge.
48	A builder that has received in depth education in their field, has an intimate knowledge of their trade in various applications, has practiced his/her trade for several years, and is certified to perform that work.
49	A person that Craftsman can look up to.
50	A person who can teach/ and independently do his craft at the highest level
51	individual that is the best in their field
52	A trades worker operating at a high level of skill with the ability to teach others
53	highest level skilled tradesman
54	Some one who has achieved the highest level of training available in a given trade plus maybe some extra area of expertise
55	should be defined by employer by quality standard
56	

Question #21 Responses Specialist	
1	Someone who is seen as a specialist in a particular facet of work, technical area or career field
2	Someone with a conceptual knowledge of historic preservation but may not have a high degree of craft skills
3	Workman who only focuses on one particular medium or method
4	connotes specialized training and ability to work independently
5	Possessing a specific set of skills or knowledge in a limited component
6	someone who is specialized in one particular aspect
7	Anyone that has elected to specialize, with proven experience, in a particular discipline.
8	specializes in certain areas such as cast stone, terra cotta, etc
9	
10	Refined craft
11	a person active in a field of work that is very specific
12	KSAs limited to a specific type of work, but is very proficient in that type of work.
13	
14	2
15	familiar with the field
16	
17	Someone with special skills in a specific area. A person who can make some judgments in the field, but who is under the supervision of a conservator or master

18	Someone who is very skilled at a limited task.
19	Only working in one specialty
20	A National Park Service title - Anyone who can breath.
21	knowledgeable on a item
22	Someone skilled at a very specific preservation-related task
23	A mason with certain specific training and experience
24	person performing a part of a building trade but not all of the building trade at high level
25	A educated worker who has a well rounded understanding of the needed trades to preserve historic structures. Generally educated through a college or trade school.
26	A craftsman with a specialized building material component
27	
28	Someone who specializes in a narrow area of work within a larger category of work.
29	Trained craftsman, able to take on small jobs without supervision, works with others on larger jobs.
30	Proficient in a certain area.
31	Highly skilled at targeted areas
32	Someone who has completed specialized training and has some experience
33	same as craftsman
34	More academic title or degree holder who may or may not have hands-on experience
35	A person who specializes in only a certain category of work
36	an academic designation
37	
38	One main knowledge of a certain trade
39	administrative clerk of project planning and approval process
40	A person who has specific knowledge and skills of a trade
41	one who specializes: stone cutter, mortar application, brick maker, etc.
42	Too generic a term that can refer to any skill
43	
44	could be anything.. everyone is a specialist of some sort, right?
45	A person with specialized skills or knowledge in a specific area.
46	Limited ability
47	ditto as above
48	A builder that has received in depth education in their field, has an intimate knowledge of their trade in specific areas/applications, has practiced his/her trade for several years, and is certified to perform that work.
49	A person that has received specialized or unique training to perform a specific tasks.
50	One who excels in a particular area/ field
51	one that has knowledge of a certain topic

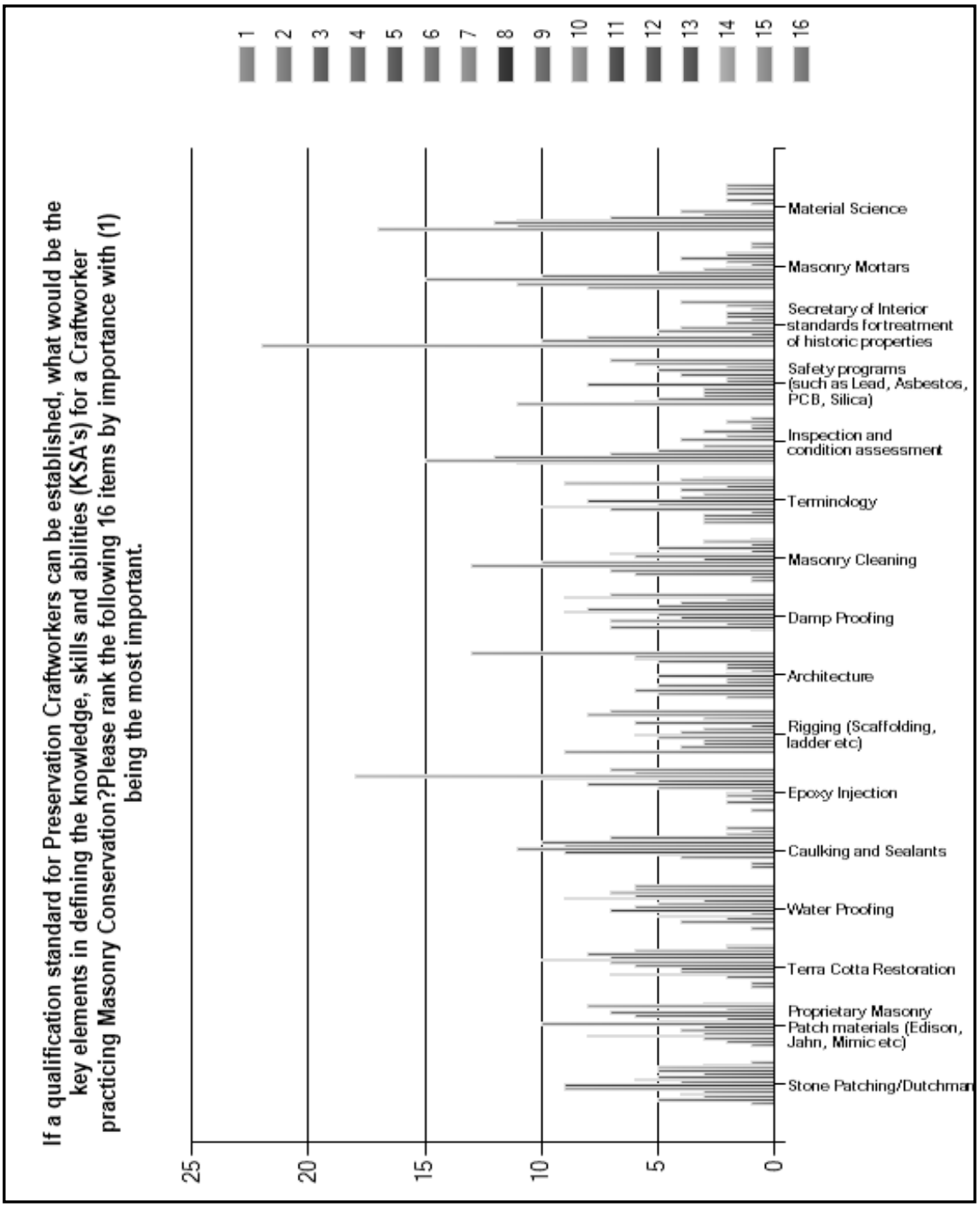
52	Frequently a generalist skilled in one or more trades with the ability to manage projects, communicate with other project team members, etc.
53	Craftsman with specialized training
54	Someone with specific training, sometimes in depth but limited in scope
55	should be defined by employer by quality standard
56	suggests technical knowledge as well as knowledge of the history of the craft

Question #21 Responses Technician	
1	Someone who serves to troubleshoot problems
2	Someone who has gained a high degree of skill in a certain material or technique; ie Jahn mortars
3	Person who is actively engaged in the execution of the work
4	specialized training - may or may not work independently.
5	Able to assist in various tasks
6	a person who received the technical aspects of a subject
7	Anyone with proven knowledge of specific means for identification and replication of form and function
8	
9	
10	Generalist
11	a person doing work in a particular building trade
12	Has achieved some level of proficiency in their field, but is till under the supervision of a Master.
13	
14	5
15	needs some direction to accomplish tasks in the field
16	
17	Someone who has been trained to do a routine task. A person who is under the supervision of a conservator or master
18	Someone who performs functional works it a given field.
19	Beginner
20	Someone who works on TV or Radio sets. Less than a journeyman
21	trouble shooter, problem solver
22	Someone skilled at a very specific technical task; (too connected with the medical professions to be useful)
23	A mason who may lend support to a Specialist or Master Mason
24	person performing a part of a building trade but not all of the building trade at high level
25	A educated worker who has a well rounded understanding of the needed trades to

	preserve historic structures. Generally educated through a college or trade school.
26	tradesperson some knowledge of historic building mechanics
27	
28	Someone who is technically competent to carry out work directed by others.
29	Someone who works under another, more trained person
30	Qualified and competent at basic levels.
31	
32	Someone who has specialized knowledge in a limited area and repeatedly uses the same solutions.
33	between journeyman and specialist
34	someone who works on mechanical equipment or computers
35	
36	a low-level academic designation
37	
38	just higher then a helper
39	clerk who undertakes detail tests and observations in the field
40	A person who has technical information, but not not necessarily a deep understanding.
41	one who is training in technical aspects of the trade
42	Learning the craft, but more about the details/science of the work.
43	
44	nerdy
45	A person with generalized skills or knowledge in a specific area.
46	Helper
47	sort a mid-level
48	A builder that has received in depth education in their field, has an intimate knowledge of their trade in specific areas/applications, and is certified to perform that work.
49	Also a person receiving special or unique training to perform specific tasks.
50	A person who is trained in a specific technical task/ or process.
51	a worker that the ability to perform a task
52	A trades worker skilled in one or more trades techniques (i.e., pointing, cleaning)
53	see journeyman
54	Some what obsolete term coined in the '70s that is fast going out of date. Usually semi-skilled individual performing a limited range of tasks
55	should be defined by employer by quality standard
56	

Question #22

If a qualification standard for Preservation Craftworkers can be established, what would be the key elements in defining the knowledge, skills and abilities (KSA's) for a Craftworker practicing Masonry Conservation? Please rank the following 16 items by importance with (1) being the most important.



Question #23

Please list any other topics, methods or materials that you feel that should have been included above in question #22.

answered question 37
skipped question 40

Question #23 Responses	
1	Skills, skills, skills. Preparation and installation of mortars, installation of masonry units, stone drafting, shaping and carving
2	None
3	None
4	Structural Evaluation of masonry buildings and architectural elements.
5	ASTM Standards for materials
6	None
7	History of building in the geographical area that the crafts person is working. New Mexico buildings are very different from Boston buildings.
8	It is VERY difficult to rank the above items, because almost ALL of them are EXTREMELY important.
9	Ability to teach! Ability to communicate techniques and topics.
10	There are too many overlaps above in order of importance for survey to allow only one choice per importance
11	Understanding each other is first. My union pres still uses the word masonary Material science and masonry mortars (is there any other kind?) are critical. Understanding lime can stick to Portland, vapor permeability, hydraulicity, and free lime content, are all terms not used collectively today.
12	Again, I have trouble with the word craftworker. I have prioritized the above items from the perspective of an architectural conservator. However, there are apples and oranges in this group. Apples: Architecture, Inspection and condition assessment, safety programs, terminology, rigging, and Material Science. Oranges: Mortars, patching materials, water proofing, terra cotta, caulking and sealants, cleaning, epoxy, The conservator must practice with a set of standards. The Sec. of Interior's Standards are a set of minimally accepted standards intended for the non-professional. A better set of guidelines for the professional are found in the American Institute for Conservation's Code of Ethics and Guidelines for Practice
13	#21 is only applicable to masons. Framers, finish carpenters, glass masters, faux painters, etc. would have very different skill sets.
14	Pointing -Brick Repair and Replacement, Stone Repair and Replacement, Dry Laid Stone
15	Too many of the above require the same rating and to try and rank is not worthy of the effort in outcome. For example Stone Patching and Proprietary Patch materials are equal in that you can't do one without the other many time’s.

16	Cutting of materials such as Brick, stone replacement compatibility
17	Re-pointing!!
18	History of masonry technology and techniques
19	Perhaps should have divided question 22 into two questions? Hard to rate architecture (a background study) against lead, asbestos and silica (life safety).
20	Contract Law, License Requirements, Insurance.
21	When not to use any of the techniques listed above, as well as when to use them -- such as waterproofing. Sec. of Interior's Standards are so general -- just a starting point.
22	Lime putty, Hydraulic lime, lime burning/making, know when it is appropriate to use hand tools versus power or pneumatic tools, how to pick appropriate masonry patching material or replacement bricks, how to identify sand/lites in mortar to determine color
23	Add the topics of power tool usage, anchorage technology, lintel restoration, and joint sealant systems.
24	I don't know enough to be able to rank these, my answer is not informative.
25	Conservation is the laboratory training, chemistry, lab work that it takes to "conserve" historic materials -- the chemical reactions that are happening with different chemicals...not "preservation" and too many masons are calling themselves "conservators" when they are not trained conservators...it sounds good thou. Yes, masons must understand the materials they're working with – as building science but not necessarily as a chemist in a lab.
26	The survey is also broken for question #22. If you check an item, the last item you checked disappears
27	Demonstrated experience with historic buildings (NR listed or determined eligible, or locally designated) that are composed primarily of masonry materials
28	N\A
29	?
30	ALL of these qualifications are important and in my opinion, cannot be ranked as such.
31	OSHA Safety Training Cast Stone Patching
32	All of 22 is important - I am sorry I cannot go through the whole list - many are equally important in my opinion.
33	I viewed question #22 in the eyes of the Craftworker. The importance of choosing the correct materials will be determined according to the job. The proper use and installation of all materials is the most important aspect that the craftworker must demonstrate.
34	Structural properties of masonry materials and systems, masonry pathologies and mechanisms of decay/deterioration
35	Question 22 is very difficult, just about everything listed is fairly critical and needs to be included in the training or background educational requirements. Probably the one area that is not mentioned is flashing insitu, in existing buildings both materials and techniques.

36	removal of old mortar re-pointing and replacement of masonry units
37	The above are so interdependent it is very hard to take a reductionist approach.

Question #24

Please provided any additional suggestions, comments, or information that you feel would be of benefit to the success of this study.

answered question 77
skipped question 0

	Question #24 Response
1	This is too difficult to answer in a questionnaire format and would be addressed in a conversation. Feel free to call.
2	I know there is a great deal of need/desire among students of historic preservation programs to learn craft skills to enhance their academic knowledge but there are not many opportunities out there. Material knowledge is important for designers, architects and planners and the best way to learn it is to work with it.
3	Ranking system architecture (Items #19 + #22) should allow for multiple assessment listings, e.g. Stone Patching, Terra Cotta Restoration, and Masonry Cleaning are all #1 in importance in our office -
4	None
5	None at this time
6	I think this is a good start on getting the craftsman more recognition
7	None
8	Just as a Preservation degree doesn't make you an expert in preservation, a training course doesn't make you a qualified preservation craftsman. Years' working with experts does.
9	No other comments
10	to do any aspect of preservation one must have the manual dexterity and the ability to perform learning skills to do a decent job,
11	None
12	None
13	None
14	There seems to be a tendency to use the terms preservation, restoration, and conservation interchangeably. Conservation is the practice of prolonging the physical and aesthetic life of material culture through documentation, preventive care, treatment, and research. Restoration is the act of restoring something, like a building, to a specific point in time. Preservation is an umbrella term that includes conservation, restoration, rehabilitation, adaptive reuse, etc. Identifying someone with specialized training as a Masonry Craftsman, Journeyman, Mechanic, Master,

	Specialist, or Technician is fine, but it should not be called conservation unless they are working under the direct supervision of a Conservator, as defined by the Secretary of the Interior's Professional Qualification Standard for Conservation.
15	None
16	Contact various industry associations and groups involved in preservation. a good source of resources is the Sealant, Waterproofing, and Restoration Institute (www.swrionline.org)
17	Certifications.
18	This would be wonderful to spread across all the preservation trades. Thank you and I hope you get some good feedback!
19	Reach out to Preservation Trades Network for participation
22	I do not think the Professional Qualifications Standards developed by the Sec. of the Interior are helpful--they do not guarantee good results. They have had little impact on the private sector. I doubt setting similar standards for "craftworkers" will have better results. Architectural conservators should be skilled in the historic trades as well as the application of materials science in diagnosing and treating significant historic structures. I think architectural conservators should hire masons with preservation training. I think it will be nearly impossible to get a card carrying mason to acknowledge that he/she is not qualified to work on historic structures--not unlike many architects in the 1970s who refused to acknowledge that historic preservation required special skills.
23	N\A
24	The two important concepts in historical restoration are that the workers 1) have learned and can execute the skills and knowledge of building repair on the type of structural components that they are working on, and 2) have knowledge of the vast factual and reliable resources that are available to tap into for information that they may need if they approach something that they are not completely familiar with.
25	Think you will get confusing feedback since the questionnaire wanders from preservation trades in general to particular crafts without signaling the change. Not sure if this notion is ready for prime time. We should be building a network of Competent trades programs fed by vocational high schools that recognize preservation. The long range goal is worthy, however. If we could institutionalize the trades in a logical way, we could direct contracts to hire the best qualified, not the lowest bidder (like used to be done when unions still functioned as gatekeepers of trades skills).
26	Talk to experienced professionals in the field to see what they see as a need for the future of preservation.
27	You are attempting to solve an issue that has many parts to trades, owners, general contractors and owners. It will be a challenge for the best in the industry and has challenged APT, NPS, and PTN for decades.
28	This is a great start for our generations to preserve what was left for us to be proud & remember what was.

29	More cross training
30	Well done Michael. Best of luck with this important survey.
31	None
32	The sooner something like this is implemented the sooner our historic buildings will have a better chance of not being destroyed, whether intentionally due to individuals being able to hire anyone because no stand exists or unintentionally because there are no nationally recognized standards.
33	Look at local Union Apprentice programs. They have specific requirements to earn your union card
34	check out the preservation program being developed at Stevens College in Lancaster PA Please come the IPTW in Frankfort KY this year.
35	Feel free to contact me for additional suggestions
36	It might be helpful to compare existing programs
37	I would definitely get with the Preservation Trades Network folks on this - and the NPS. Good Luck with this Mike - I believe it's needed. Share your findings?? Thanks, Brian
38	Nothing at this time
39	For a mason to qualify as a craftsman or specialist in historic masonry preservation and restoration, they must have hands-on experience working successfully on a variety of real world preservation projects beyond the classroom. They must have apprenticed under a master.
40	Include information from other craft schools.
41	There are many training programs available today, but nothing is tied together. A more tiered approach to education, training and job-site work is necessary.
42	Improve safety standards.
43	I have no other comments.
44	Mike - this is looking very analytical. Hope you're enjoying your project. Betsy
45	Look at the program at the American College of the Buildings Arts in Charleston.
46	Good luck with this! I have long thought that historic preservation professionals should have some sort of accreditation but since all the Historic Preservation programs vary so much, I just don't see it working. Something like AIA? Just being a member of the National Trust for Historic Preservation or the local historical society doesn't make one qualified to work on historic buildings.
47	I think rating the aspects of the importance of different topics is difficult because they are all equally important depending on which project and its requirements.
48	Sorry, I couldn't do #22. I can’t see how to rank them. A master would know all of them, and they would all be of varying importance, depending on the job at hand. But I would add knowledge of historic masonry as a crucial element. Since your survey monkey REQUIRED an answer, I made one up. Pay no attention to it.
49	Have a statistician help you develop your survey. I think that your results will have to be significantly qualified.
50	Good luck with your project
51	None at this time

52	In compilation of the KSA objectives, enlist cooperation of national materials associations and worker trade guilds such as the International Union of Bricklayers, National Masonry Institute, American Institute of Concrete, Brick Institute of America, and National Masonry Contractors Association, and Painting and Decorating Contractors of America,
53	As what level of expertise a person has to answer these questions, and allow for "I don't know."
54	Contact www.ptn.org Rudy Christian can connect you with many trades people in these discussions. Right in your backyard, at your school, perhaps your teacher, is Bryan Blundell who founded PTN, knows the field, knows the answers, is generous with what he knows. Talk to him. www.prginc.com
55	None
56	This subject is huge and has been discussed forever and will continue to be.
57	Thanks for thinking of this for craftspeople!
58	Follow up training based on new product and material development.
59	I am forwarding your survey to the WA State Conference of Mason Contractors who may be of more value in providing input for your research.
60	sketching, architectural drafting, laying out of historical sites photography,
61	N\A
62	None
63	As you have identified 'masonry' as an area of expertise for a 'preservation craftworker', there are numerous other areas of expertise for this distinction: Roofing and sheet metal Doors and windows (restoration, replications, repair, re-hanging windows, etc) Wood working and finishes (cabinetry, trim and doors, etc) Flooring (wood, stone, linoleum, concrete, etc.) Interior finishes (wall paper, paint, etc) Lighting Light fixtures and fans Stained and art glass and so on.....
64	Getting the right people in the mix.
65	Certifications are both valuable and dangerous. Often times particular industry certifications set a minimum standard of capabilities and knowledge. If certifications were to be required on historic properties, careful consideration should be given to what truly makes their industry unique and offer value above traditional training and union requirements.
66	Not being familiar with the Dept. of the Interior standards is the reason for the low ranking. I also believe a course on the preservation of buildings should include some discussions on architecture so as to bring a greater understanding of the architect's designs on the historic buildings. An appreciation of the design of an old building can bring a greater satisfaction to the "preservationist" in their duties of restoration
67	The study would help to develop a comprehensive program that will better educate and train people in masonry conservation- restoration. It would give the craftworker a better education/ training in the field of preservation.
68	If you haven't already done so, ask Historic Preservation consultants their

	thoughts.
69	The implementation of a standard is in it self very hard to execute. Care must be taken to correctly chose the topic that need to be address and correctly addressed that topic. All Craftworkers must be properly trained and be able to achieve a level to satisfy the implemented standards. All instructors need to have a very high level of expertise
70	I'm glad to have had a chance to respond. Thanks for taking on this important project.
71	This certification process has been tried and rejected by tradesman before. My wish is for your good fortune.
72	Good study...this is a pretty big field of study now to risk expanding your line of questioning. Good Luck!!
73	I think it's well covered
74	If you haven't already, you may find it useful to National Vocational Qualifications program in the UK.
75	question 19 and 22 need fixing
76	It would be good to draft a professional qualifications statement and circulate it to the preservation community for comment I'd like to see a mentorship program--that is to get the old-timers in the classroom teaching the next generation.
77	None for now.

Question #25

May I contact you for further feedback?

Answer Options	**Response Percent**	**Response Count**
Yes	78.4%	58
No	21.6%	16
If so, indicate how you'd like to be contacted: Please include your name, phone number and\or email. Thank you.		53
answered question		**74**
skipped question		**3**

Due to confidentiality, the names and contact information of survey participants will not be included.

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