



NATIONAL ENDOWMENT FOR THE

Humanities

DIVISION OF PUBLIC PROGRAMS

Narrative Section of a Successful Application

The attached document contains the grant narrative and selected portions of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and each applicant is urged to prepare a proposal that reflects its unique project and aspirations. Prospective applicants should consult the Public Programs application guidelines at <http://www.neh.gov/grants/public/americas-historical-and-cultural-organizations-planning-grants> for instructions. Applicants are also strongly encouraged to consult with the NEH Division of Public Programs staff well before a grant deadline.

Note: The attachment only contains the grant narrative and selected portions, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

Project Title: American Precision Museum Interpretive Plan

Institution: American Precision Museum, Inc.

Project Director: Carrie Brown

Grant Program: America's Historical and Cultural Organizations: Planning Grants

American Precision Museum Planning Grant Project Narrative

1. NATURE OF THE REQUEST

At a site uniquely positioned to tell the story of precision manufacturing in America, this project will interpret the American Precision Museum through a major, permanent exhibition on the history of the machine tool and the rise of the “American System.” This will be the first major, permanent exhibition to explore Vermont’s industrial history in any depth, and it will overturn many a visitor’s pre-conceived notions about New England industry. **Ours is not the well-known story of the New England textile mill operators, but the lesser-known story of inventors and machinists who made possible the mass production of interchangeable parts.**



The museum (APM) is housed in the 1846 Robbins and Lawrence Armory, a National Historic Landmark, in Windsor, Vermont. It was here in this building that Robbins, Lawrence, and their associates perfected the system of making guns with interchangeable parts. Windsor is considered the cradle of “Precision Manufacturing,” and developments here led to the foundation of the machine tool industry in America. That industry in turn led to the development of mass production, which makes possible mass communication, rapid transportation, modern standards of sanitation and medical care, abundant food and clothing, and the leisure for universal education.

Building upon one of the finest collections of machine tools in the nation, the museum has begun to plan a new, permanent exhibition that not only will illuminate the machines but also will explore the lives of the people who made and used them. Through collaboration and consultation with leading scholars of industrial history and with teachers and museum educators, a new interpretive plan was developed in 2006. The major themes identified by the interpretive planning team are (1) the Robbins & Lawrence armory as an example of the transformation of industry that occurred in the mid-nineteenth century, (2) the story of machinists, innovators, and workers in the factory, (3) the interplay of precision machining with mass production and the consumer culture in America, and (4) the spread of modern industry from New England’s “Precision Valley” across the country and around the world. The new plan has already led to creation of a traveling kit that has begun to take the museum’s story and themes to students in Vermont and New Hampshire. To complete the plan for a total re-design and re-installation of the main exhibit floor, which occupies nearly 4,000 square feet, APM has developed a planning project with a total budget of \$92,184, of which \$39,642 is requested from the NEH.

2. PROJECT INTRODUCTION

The Robbins & Lawrence Armory building provides the ideal site for telling the story of how precision manufacturing transformed American industry and American culture. The first phase of the Industrial Revolution had been imported from Europe to America in the late eighteenth century and was largely modeled on the English system of textile manufacturing. In 1846, when the Robbins & Lawrence Armory was built, the second phase—the American System—was about to be launched. In the remote village of Windsor, entrepreneurs and artisans had already constructed a series of dams on Mill Brook, to power sawmills and a gristmill. Census records also list a stonemason, several carpenters, a printer, a bookbinder, and the owner of a foundry. Asahel Hubbard was building his patented water pump, and there were at least two gun shops in

town. In small workshops such as these, inventors came up with new ideas about how to make new products and how to make both new and old items more quickly. In Windsor and other towns up and down the Connecticut River Valley, new industries attracted more people and stimulated the creation of commercial downtowns. Mills and stores and homes were clustered together in what level ground was available between the river and the steep hillsides.

In 1846, Samuel Robbins, Nicanor Kendall and Richard Lawrence took the bold step of bidding on a government contract for 10,000 rifles. Having won the contract, they constructed a handsome, four-story brick armory building on the south side of Mill Brook. They brought in workers and mechanics, invented new machines, adapted old ones, and perfected techniques for producing interchangeable parts. Within a few years, they were exporting not only rifles but also their new machines and techniques to England and around the world. The technology they had developed for making guns was quickly adapted to the making of consumer products such as sewing machines and typewriters, as well as parts for other kinds of machines.

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The armory building itself is significant for its architectural integrity. Both inside and out, it shows visitors the size, scale, and operation of a 19th century factory. Mill Brook, which still rushes by just outside, provides the opportunity to explain how early factories were powered. The museum's most important collection consists of industrial machinery spanning the first hundred years of precision manufacturing, along with fine examples of early products of precision machining, including rifles, sewing machines, and typewriters. Photographs and archival holdings provide additional resources for interpreting this critical phase of the Industrial Revolution.

The building is a National Historic Landmark. In 2001, it was designated a special project of *Save America's Treasures*; and in 2003, APM received a *Save America's Treasures* award of \$200,000, enabling the installation of a new slate roof to replace the deteriorated original. In 2007, APM is participating in a *Preserve America* interpretation project with other community partners in Windsor, Vermont, creating signage and an architectural walking tour. APM is a heritage site along the *Connecticut River Scenic Byway*, designated a national scenic byway by the federal Highway Administration in 2005. The museum was designated an International Heritage Site and Collection by the American Society of Mechanical Engineers in 1987. For each of these designations, the site was deemed not only a place where pivotal events occurred in the history of American industry, but also a site that lends itself to thorough interpretation of that history.

Despite the significance of its site and its collections, this small museum has never been able to fully interpret its own story. For many years, the collection of historic machine tools has occupied most of the main exhibit hall. Each machine has had its own label, but over-arching themes were never developed to provide context. Only visitors who already know and care about machine

tools—mostly machinists and engineers—can appreciate the significance of what they are seeing. The school children, the families, and the ordinary person on the street see only large hunks of inscrutable metal, interspersed with small displays of guns and sewing machines and the occasional micrometer. And yet the museum *could* speak to all of these audiences. We need to develop themes that resonate with all visitors; and we need to create a compelling story and dynamic, interactive displays that help explain our major artifacts and illuminate our themes.

The interpretive plan to be developed by our team of historians, curators, and educators will focus on connecting the machines to people. The new exhibition will show what the machines are for and how they shape not only metal but also the lives of the workers, the character of the town, and culture of America at large.

When Robbins, Kendall, and Lawrence took their rifles to the Crystal Palace Exhibition in London in 1851, the British reaction was two-fold. First: astonishment that the Americans had succeeded in creating a product with truly interchangeable parts. Second: a realization that the American political and economic system had created an *industrial* system focused on creating quality products for everyone, rather than ornate, expensive products for the wealthy elite.

The new interpretation of the APM site will explore the development of this new system of manufacturing and its roots in American geography, government, and social systems. Themes to be covered include the development of the tools, machines, and techniques that made mass production possible; the nature of invention and creative problem solving; and the connections among invention, machinery, work, and the availability of consumer products. Through a close examination of a particular site in Vermont, visitors will learn—first—about the Vermont that nobody knows: a Vermont that was at the forefront of technical innovation during the second phase of the Industrial Revolution. Second, they will learn how technologies that were developed in a remote region of a brand new country led eventually to the United States becoming a world economic power. Finally, they will learn about their own connection to the machines and the manufacturing methods developed here.

While many APM visitor comments express satisfaction and even joy at finding a world-class collection of machinery in one place, other visitors have highlighted the need for fuller interpretation:

“APM has a truly great collection of machine tools—the best in the U.S. in my opinion. But the quality of exhibiting these artifacts needs improvement so that the ordinary layman will visit the museum and leave it with a better understanding of the significance of machine tools to American industry.”

“I would have liked to know much more about the context of each. Why was it made? What was previously available? What were the consequences? Each new machine tool had to be made using previous machines—the historical progression...”

“Today’s children (and probably many adults as well) are so adept at flicking switches. However, very few of them understand what is behind the switch. And in this time of electronic and computer-based technology, the mechanical world is a mystery of which they know little or nothing.”

“The museum has a vital role in attempting to inform us all, not only about the past history of industrial technology, but hopefully something of the present role of tools in producing the society we live in.”

By addressing these visitor concerns, the museum’s new interpretive plan will engage much larger audiences, and will draw them more deeply into the exploration of how technology is driven by culture and how technology in turn drives cultural change. They will learn not only about the historic machines, but about the people who built and used them, and about how those machines have shaped the world that we live in.

3. PROJECT HISTORY AND RELATION TO OTHER PROJECTS

APM interpretive planning efforts were formally launched in July 2006, with a 2-day convening of scholars, historians and educators, supported by the Vermont Humanities Council and the Walter Cerf Fund. Members of the planning team brought expertise and experience in industrial history, social history, museum interpretation, and museum education and curriculum development. Many of the team members were already well acquainted with both the building and its collections. The objective for the weekend was to define the significance of the building and its collections in American history and to develop ideas for interpretive themes and stories that can be told well by the museum. By the end of the weekend, the group had identified themes and had proposed the overall concept and organization of a major, permanent exhibition that would illuminate those themes. The resulting **Interpretive Planning Report** (Attachment 9) was adopted by the museum’s Board in the fall of 2006.

During 2006-2007, a subgroup of the planning team (with the addition of a high school teacher and with input from a teacher advisory group) developed our traveling kit on the Industrial Revolution in Northern New England. The current planning project will draw substantially upon the kit research conducted by historian/curator Carrie Brown and upon the activities and lesson plans developed in collaboration with teachers and museum educators (See **Kit Outline**, Attachment 10). The development and production of the traveling kit has been supported by *Flow of History* and *History Harvest*, which recently received its third U.S. Department of Education “Teaching American History” grant. *Flow of History* is an education network for Vermont and New Hampshire communities along the Connecticut River watershed, and focuses on linking local and regional history to the national experience. The *Flow* is led by Sarah Rooker, who also served on the original advisory team. Dr. Merritt Roe Smith of MIT advised on the kit’s introductory essay.

In addition to the traveling kit for schools, APM is developing two Quests, with support from the Challenge Cost Share Program of the National Park Service. A Quest is a place-based learning exploration for students and families. Each Quest has a written script in rhyming form with route and information clues that guide a walk to a community asset such as a cemetery, historic building, natural or cultural site. Our “Windsor in the 1860’s Quest” explores the water-powered factory elements of our site, in the context of the immediate neighborhood around the museum, with its historic worker housing, boarding house site, and our own bell tower that signalled the change from agricultural time to village “factory” time.

As a result of the July interpretive planning session, Dr. Steve Lubar developed a panel session on *The Challenge of Relevance: Industrial Museums and Post Industrial Audience*, for the November 2006 New England Museum Association annual conference. The workshop attracted 45 participants and provided an opportunity for APM’s Executive Director to share with colleagues some of the ideas in our interpretive plan, and to learn the approaches of other

industrial history museums, the Eli Whitney Museum, Slater Mill, and the Charles River Museum of Industry.

APM engaged an industrial historian to study the factory's wheel pit, following the guidelines of the Historic American Engineering Record, whose lead staff is also engaged in the project.¹ The project report, to be completed in December 2007, will include interpretive drawings of the original armory basement, showing how it might have operated in 1846, based on archeological evidence and historical research. This report will also inform the new interpretation for the museum at large. The project has been supported by the Society for Industrial Archaeology, several individual donors, and Hollis Line Machine Company.

In 2006, APM was one of the lead partners in a collaboration of municipalities, museums, historic sites, and chambers of commerce in seven historic industrial villages along the Connecticut River Byway. The group created a new print brochure called **"From Mills to Main Streets on the Connecticut River Byway"** (Attachment 11) and an accompanying distribution plan. This project places the museum, Mill Brook, and the surrounding neighborhood in a context that allows travelers to explore the industrial past of this region of New England. The exhibits that will be developed through APM's new interpretive plan will strengthen the visitor's understanding not just of Windsor but of all the towns along the route.

No other museum in Vermont treats Vermont's industrial history in any depth. Displays of beautiful and historic carriages, the occasional exhibit on a local inventor or a local industry, and exhibits that explore the changing Vermont landscape and workplace all suggest the connection between Vermont industry and the larger national experience. For example, The Heritage Winooski Mill Museum, which shares space with retail shops and restaurants in the refurbished Champlain Mill, commemorates the millworks of the 19th and 20th centuries and the history of the woolen goods produced there. The Vermont Historical Society Museum has mounted exhibitions that focus on lumbering and mining, and on the impact of changing transportation, trade, religion and politics in the early nineteenth century. The APM site and collections offer the unique opportunity to treat Vermont's industrial history more fully. And while other museums and historic sites in New England, most notably the Lowell National Historical Park, do a wonderful job exploring and illuminating the early textile industry in New England, the APM story is not primarily about the textile industry. The textile model was developed in England and imported to the New World. The American System, which used precision machines and techniques, was indigenous to America and was exported back across the Atlantic. While textile mills were staffed primarily by low-skilled, transient labor, the workers who built and operated precision machine tools were often highly skilled, lifelong craftsmen. Furthermore, the concepts of technical change and innovation are not well developed at Lowell, whereas invention and innovation are key themes in our project.

The National Park Service site at the Springfield Armory, in Massachusetts, does offer the opportunity to examine the development of precision manufacturing, and curator Carrie Brown has collaborated with and consulted for their staff. Their focus, however, is necessarily on the military uses of the technology, while the APM site allows for expansion to other industries. In fact, our armory building was at various times used to produce sewing machines, quarrying equipment, and railroad cars, as well as guns and machine tools. Furthermore, workers trained in our building moved on to work in other industries, including Brown & Sharpe (makers of precision measuring equipment), Weed sewing machines, Pope bicycles, and a long line of machine tool makers, including Jones & Lamson of Springfield, Vermont. The wide-ranging

¹ <http://www.nps.gov/history/hdp/haer/index.htm>

influence of the old Robbins & Lawrence shop allows us to demonstrate how the original work done here helped transform industry and material culture in America.

The Eli Whitney Museum is grounded in a similar subject matter, but their focus is almost entirely on education programs that foster the inventive spirit, rather than on exhibits and interpretation of historic artifacts. The Mattatuck Museum's kiosk and on-line project on *Brass Valley Ingenuity* also explores industries and themes similar to those featured at APM; but it focuses on the twentieth century and it does not give visitors a direct connection to artifacts. The Charles River Museum of Industry has a scope similar to ours, tracing industrial development from the nineteenth into the twentieth century and treating themes that connect the worker with the machine. But the original mill building has been converted to apartments, and the museum itself is housed in an addition built in 1911. At the American Precision Museum, we have the ability to create a unique experience for visitors by combining the atmosphere of a genuine nineteenth century factory building with a world-class collection of historic machines; to interpret "the other" Industrial Revolution (precision manufacturing as opposed to the textile model); and to overturn common perceptions about Vermont history by placing a comprehensive exhibition on industrial history at the foot of the Green Mountains.

In developing the new interpretation of our site, we will not discount the work of these other institutions, but rather will draw on their resources and learn from their successes. Our project team, staff, and advisors have close connections with Lowell, the National Museum of American History at the Smithsonian, the MIT museum, the Henry Ford Museum, the Springfield Armory, the Fairbanks Museum and Planetarium, and the Roberson Museum and Science Center. We will reach out to staff at the other organizations mentioned in the preceding paragraphs, and we will also draw inspiration and ideas for educational and hands-on components from the Tsongas Center at Lowell and from the Rochester Museum and Science Center.

As we draw inspiration and specific ideas from other institutions, we will also provide benefits back to them. By overturning preconceived notions about industry in New England, we hope to inspire visitors to further investigation. Through the APM web site, through brochures and other literature (such as the "From Mills to Main Streets" brochure, Attachment 11), through our newsletter, and through our teaching kit and our outdoor Quest, APM will become a starting point for visitors in search of the larger story of American industry that can be found by visiting other museums and historic sites in the region. We will also be exploring opportunities for creating educational networks with other sites. Michael Creasey, the new Superintendent at Lowell NHP, is interested in partnerships and collaborations with institutions treating similar subjects and themes. Jointly sponsored teacher institutes and other cooperative activities may result from the planning phase of our project. On a broader national level, we hope to create links with the National Museum of Industrial History, a Smithsonian affiliate being planned in Bethlehem, Pennsylvania, and with the Henry Ford Museum in Michigan. Our site, which represents the birth of precision machining in New England, actually provides the background for the later industrial stories told at those two sites.

Previous projects at APM have explored some of the themes in the new Interpretive Plan, but have never pulled together the entire story. Several temporary exhibitions in 1992, '94, and '96 were successful in attracting new audiences, but relied heavily on borrowed artifacts, made slender use of the museum's primary collections, and could not fully develop the museum's larger themes. For example, *Pedal Power: The Bicycle in Industry and Society* (1997), made important connections between precision manufacturing and the transformation of American material culture in the late nineteenth century, and the exhibition catalog won first place in the 1998 New England Museum Association publications competition for books under \$10. When

the exhibition ended, however, all trace of those larger themes disappeared. In 2004, our *Building for Invention* exhibit focused on the historic building and how it functioned as a factory, but the exhibit was text driven and suffered from inadequate funding and consequently from uninspiring design. Another very low-budget attempt at interpretation was made in 2006 with the exhibition *The Cutting Edge: Machines that Shape Our World*. That project focused almost entirely on the machines and their functions, with little emphasis on the people behind the machines and on the products made possible by the machines. Our new interpretive plan calls for a rich mix of themes that focus on people, their relationship to precision machinery, and their connection to their work.

Our interpretive plan has been strongly shaped by scholarship in the field of industrial history. From Joseph Wickham Roe's *English and American Tool Builders* (1916), through David Hounshell's *From the American System to Mass Production* (1984) and Hindle and Lubar's *Engines of Change* (1986), to Diana Muir's *Reflections on Bullough's Pond* (2000), to the latest presentations and papers by Merritt Roe Smith of MIT, our planning team knows (and in some cases have written) the best of the literature on this topic. Attachment 6 contains a representative bibliography.

The museum has, at this moment, the opportunity to continue the work of a group of scholars and educators uniquely qualified to interpret a site and a subject that have never before been adequately interpreted. Our planning team includes scholars who are leaders in the field of American industrial history. They have written college texts, books for the general reader, and myriad scholarly articles, and have curated exhibitions at significant historic sites and museums. They share a deep commitment to telling our story. The work begun in the summer of 2006 has laid the foundation for connecting the local Vermont story with a story of national significance.

4. DESCRIPTION

The 4,000 square foot exhibition plan that will result from this project will be based upon continued meetings of the team of scholars and educators assembled in 2006; additional local research; visits to other sites and museums; an oral history project; the participation of an exhibit designer; and collaboration with engineering students, a local machinist training program, and representatives of the machine tool industry.

4(A) Site Assets

The key assets of this historic site—the armory building and its setting—are and will continue to be accessible to visitors. Both inside and out, visitors can experience how the armory's design contributed to the efficiency of the factory. The tall four-story structure rises from a stone foundation adjacent to the waterpower source, providing immediate and efficient use of the rushing brook. Inside the building, power was distributed throughout each floor with line shafting, and the shafts were connected to individual machines by leather belts. The overhead shafting and belting still exist, and a few of the machines can be made to run. Repetitive and ample windows, and the building's narrow width relative to its length (40' x 100'), brought daylight into the interior work areas. The frequent spacing of interior posts supporting both lengthwise and cross beams was appropriate for the size of machine tools which, while massive, are small relative to textile machinery. Atop the building, the cupola with bell tower signaled the change from agricultural to factory time. The immediate neighborhood is still home to worker housing that was built at various times in the factory's history. The nearby Connecticut River and the still-operating railroad tracks attest to the importance of transportation in the development of the site.

4(B) Project Components

Research

Carrie Brown's research conducted for development of APM's teaching kit and for previous APM temporary exhibitions will inform this project. She has also conducted extensive research into the work of women in machine tool factories in Vermont during World War I, for her book *Rosie's Mom*. New research will draw on resources at the Vermont Historical Society, Norwich University, Lowell National Historical Park, the Springfield Armory, local libraries and archives, private collections, and the archival and photograph collections at the American Precision Museum. She will draw on the wealth of knowledge accumulated by Vermont gun historian Ken Aiken, who has made a specialty of the Robbins & Lawrence story and the people who played major roles in that story, and she will have the benefit of wheelpit research that is currently underway. The archival collections of the Windsor Public Library and the Windsor Historical Society will also be available. The Vermont Historical Society collections include the papers of Nathan Stone (d. 1795) and David Hall (1755-96), both early settlers and businessmen in Windsor. The VHS also has a large collection of materials from the Sam Daniels Manufacturing Company, including photos, diaries, brochures, scale models, a baseball team jacket, and other artifacts. VHS collections also include FBI surveillance reports of immigrant labor radicals in Vermont in 1919-1920, at the height of the first Red Scare. The University of Vermont holds the papers of James Hartness, who led the Jones & Lamson Company to the peak of its power as a machine tool manufacturer of international importance.

Oral History Component

Because "Precision Valley" played an important role in the machine tool industry through the first half of the 20th century, there are still many living residents who can share their memories of machine work. The exhibition will draw on oral history interviews to be conducted by Greg Sharrow of the Vermont Folklife Center. His research will provide background and insight into the experiences and traditions of machinists and will explore life in a machine tool town.

Informant selection criteria include

- significant duration of employment in the industry
- key vantage point within the industry
- specialized knowledge within the industry
- active at key junctures in the evolution of the industry, reaching back to the WWII era
- representatives of various shops
- locally acknowledged authorities who are known for their involvement with the industry
- fluid speakers with an eye (and memory) for detail
- leadership role both labor and management
- "emeritus" community leaders who can reflect on the industry's impact on the region—both in its heyday and its decline

Dr. Sharrow will locate potential informants by working through networks—beginning with the American Precision Museum staff and the current and former staff of the Miller Art Center/Springfield Historical Society, Springfield manufacturing retirees, and the local chapter of the Society of Manufacturing Engineers. Tapping the knowledge of town clerks, it will be possible to survey potential informants in a specific geographic area on a town-by-town basis. He will work with current and retired journalists in southeastern Vermont who know the key players in their reporting area. Because many of the potential interviewees for this project will be elderly, people involved with elder care services and senior citizen centers will be well positioned to refer people to the project. Church groups are also potential resources. Once the process of locating informants is underway, Dr. Sharrow expects to encounter former-employee affinity groups, such as bowling teams or shop-specific reunion groups. Direct talks with potential informants will in turn suggest people, and the list will quickly build.

The Vermont Folklife Center (VFC) research staff consists of five university-trained folklorists, all of whom are familiar with the Oral History Association's (OHA) research guidelines and are professionally bound by the American Folklore Society's Statement of Ethics. Use of interview recordings, transcripts, and related materials will be limited to those specified by interviewees on the release form.

Since 1988 the Vermont Folklife Center has maintained a climate-controlled storage environment for its archival holdings and a professionally staffed archive reading room. Digital audio and still images generated through the course of this research project will be stored in compliance with best practices outlined by the International Association of Sound and Audio-Visual Archives on a RAID-enabled, multi-terabyte file storage server. Back up copies will be created on LTO data tape and gold CD-R discs. Access to archival materials will be provided in accordance with release agreements on-site or via VFC's digital interface on the World Wide Web.

Additional Resources

A sub-group of the planning team will be in contact with and will visit several other museums to collect ideas and information on the use of interactive elements to explain our themes and to illustrate the mechanics of machine tools. Our contact at the Rochester Museum and Science Center has already shared with us lessons learned in developing two recent exhibitions that bring together science and the humanities. Most important, he says, is talking to visitors as you develop exhibition concepts. Following his advice, we will test our themes, our interactives, and sample label copy with visitors, teachers, and museum members as we proceed through the planning and implementation of this exhibition. At the Tsongas Education Center and the Boott Mills Museum in Lowell, we will be looking at the combination of exhibitions and educational programs as a model for a blend of traditional exhibit elements, hands-on interactives, and take-away curriculum and activity packets. Activities for school and family groups at the Museum of Science in Boston will also serve as resources as we develop exhibit elements that allow visitors to learn by doing.

A final but significant resource will be retired machinists and current professors, engineering students, and vocational technology teachers. One professor at the University of Vermont has already suggested that a shop demonstration in the contemporary section of the exhibition would be an ideal opportunity for collaboration between electrical and mechanical engineering students. We will explore many avenues of collaboration with people who can bring technical expertise to the project.

Elements of the Exhibition

The planning team has developed a preliminary proposal for dividing the exhibit area into six zones.

I. Machine Shop. In the outer lobby, there will be a small, working machine shop that will be staffed during public hours, perhaps with a local artisan creating actual products of his own or with a series of machines from different time periods making parts that can be assembled into a whole item for sale in the museum shop. This dynamic display will entice visitors inside and will demonstrate to them that this exhibition is primarily about people working with machines.

II. Vignettes. The largest area, and the section most heavily populated with artifacts, will focus on machinists, innovators, and work culture. It will consist of a series of vignettes, each from a particular time period. Preliminary planning has suggested the following subjects:

- The pre-industrial farmer with a small machine shop or blacksmith shop where he builds, invents, and fixes various items necessary for his own use and for his neighbors. His use of “Yankee ingenuity” set the stage for the transformation from artisan-based craftsmanship to a machine-made products and standardized processes.
- The mid-19th century Robbins & Lawrence gun-making story and factory life in a village center. Here the visitor would see the earliest machines that made guns with interchangeable parts, alongside the guns themselves, engravings of the village of Windsor at the time. The section would also include an excerpt—perhaps recorded by a local actor—from Richard Lawrence’s memoir.
- The maturation of the machine tool industry, through the work of industry leader Jones & Lamson. Artifacts and images will include early J&L machines, precision tools, James Hartness drawings, and photos of J&L workers from the APM collections. This section will also note the arrival of new ethnic groups to work in the shops. Census records and insurance maps show us who lived where in the village and what kind of work they did.
- An early 20th century vignette could focus on a resident of the NAMCO block, located across Mill Brook from the museum. Still one of the largest apartment houses in northern New England, this structure was built in the 1920’s to house single, young workers flocking to work at the National Acme Manufacturing plant in Windsor, and its successor, Cone-Blanchard. The NAMCO block is listed on the National Register, and is currently targeted for a \$17 million redevelopment.
- A World War I vignette would show women who entered the machine shops, learned to do skilled work, and helped win the war that was supposed to end all wars. Our research in the local newspapers of the time allows us to tell who they were, where they came from, how they felt about their war work, and what they did in their spare time.
- A mid-twentieth century vignette might show the transition from analog to digital control. Making use of oral history interviews, this section will also explore the pride of workmanship of the skilled machinist and further explore the culture of the machine shop.
- Finally, a modern vignette would demonstrate the new skills required in the world of manufacturing today.

Placed within the actual factory building—where the overhead line shafts still power a few select machines, creating the clatter and smell of a real machine shop—these vignettes will have a compelling authenticity that is unavailable in a conventional museum gallery. Each vignette will portray a real historical person or a fictitious composite. Artifacts, images, and text will explore his or her background, skills, training, and job responsibilities. Each vignette will include one important machine tool—showing what it was used for and something of how it worked. Other artifacts might include a toolbox, shop drawings and blueprints, stock racks, and a work apron. Video monitors in each section might show the machine in operation and a machinist explaining how it works. A video animation could show the primary motions and function of the machine in simple,

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schematic form. Each section would also include actual examples of the final product of the work—whether a gun, a sewing machine, a typewriter, an aircraft engine, or a tool that would be used to make another product.

The historical progression of these vignettes will illuminate the project’s main interpretive themes: (1) the role of the R&L Armory in the development of precision manufacturing, (2) the story of machinists, innovators, and workers in the factory, (3) the interplay of precision machining with mass production in America, and (4) the spread of modern industry from New England’s “Precision Valley” across the country and around the world.

We also hope that the vignettes will strengthen visitors’ connection to their own family experiences and will increase their personal connection to history. While few of our visitors have direct personal experience with manufacturing, many of them mention a father, uncle, or grandfather’s recollections of the industry. A visit to the museum often seems to trigger interest in and exploration of a family’s manufacturing past.

III. Exploration. The next zone would be the main “interactive” area where visitors can themselves be machinists and problem solvers. In this section, basic machine terminology could be explained, visitors could try out precision measuring devices, and objects could be assembled and disassembled. For example, we are already experimenting with a large wooden clock assembly. Visitors, under careful guidance, will be able to cut out the pieces for a clock movement and assemble them to create a working clock. The interactive area will re-emphasize the themes of innovation and problem solving and will give visitors the opportunity to understand our themes through their tactile senses.

IV. The Art of the Machine. Sketches and drawings, scale models, and some of the museum’s more ornate and strikingly decorated machines would be displayed here. This section is designed to increase understanding and appreciation of machine design, innovation, and the pride of workmanship that are all parts of machinist culture. Visitors who struggle to understand the “beauty” of an elegant mechanical device or a finely-crafted precision measuring tool may nevertheless be able to appreciate the artistry of machine decoration, the intricacy of working scale models, and the skill required to produce design drawings.

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V. Factory Design and Operation. This fifth zone will highlight the building’s design as a working factory and its power train. Visitors frequently ask questions about how the factory was powered at various periods of operation. Logistical challenges (safety, staffing, cost) unfortunately make it extremely unlikely that APM will ever open the museum’s basement to visitors. The wheel pit research currently underway may instead point to the value of an exhibit in the main hall to interpret the building’s original use of waterpower, the introduction of steam power in 1849 (only three years after the building was erected), and the subsequent installation of turbines, first to improve efficiency of the water wheel and later to harness power from the dam immediately downstream. This zone will interpret the special skills and experience needed to finance and erect a working factory and keep it running. By the early 19th century, developers had the benefit of a body of knowledge, both written (the work of Oliver Evans and others) and oral, about factory dimensions, building construction and power technology. This exhibit component will illustrate how this knowledge grew and spread among a community of practice.

VI. Other Components Not Included in the Current Project. Two components of the overall interpretive plan will not be fully developed as part of the current project: (1) A space will be reserved for temporary exhibits that will encourage repeat visitors, provide an outlet for new interpretations, and allow for elaboration of various themes from the main exhibition. (2) The development of the foregoing zones will necessitate removing many of the museum’s historically important machines from the main exhibit floor. In order to make more of the collection available to the true machine tool enthusiast, the second floor of the armory building will become a “Machinery Hall” available for special events or by appointment. Labels will provide only simple identification and provenance.

5. AUDIENCE

5(A) The museum’s strategic plan calls for increased attention to both local and national audiences. Our audience consists of (1) school groups and the general public, (2) heritage tourists, and (3) machine tool enthusiasts.

5(A).1 School groups and the general public. The Upper Connecticut River Valley is dotted with former manufacturing towns struggling to find a new economic base in the twenty-first century and to maintain civic pride in the face of economic difficulty. One of our consulting teachers, who teaches high school social studies in nearby Claremont, New Hampshire, saw that her students had internalized a negative self image from the empty mill buildings, high unemployment, and inadequately funded schools of their town. When she began teaching a course on the Industrial Revolution, she had her students use primary source documents, local sites and artifacts, and their own ingenuity to explore the industrial past of their town. Her hands-on history approach conforms to the latest research into best practice for teaching, builds a strong sense of accomplishment in her students, and allows them to connect the history of their own community with national and world-wide themes. This teacher already brings her students to the American Precision Museum, and she has helped APM develop a teaching kit that is now going out to schools across both states. In a region with many under-resourced schools—in rural communities and in former factory towns—the proposed exhibition at APM will help students understand the industrial past of northern New England. As the museum becomes more “student friendly,” it will also become more family friendly. One of our goals is to make APM a place where families come to learn together about Vermont’s industrial heritage and to explore their own connections to machinery, mechanical ingenuity, and mass production.

The decline of the Vermont machine tool industry resulted from the rise of a similar industry in the Midwest and, eventually, overseas. Today, however, Windsor seems on the verge of a machine-related resurgence. Selden Labs is now making nano-technology water filters for the US military in Windsor; and the National Center for Precision Manufacturing, funded in part through Defense Department appropriations, will be established in Windsor for the development of new manufacturing techniques. As new industry, new training centers, and new think tanks arrive, the APM exhibition will highlight Windsor’s machine tool heritage and place new industries in their accurate historical context.

5(A).2 Heritage Tourists. Windsor is the birthplace of the Republic of Vermont, an independent entity formed in 1777, before Vermont joined the union as the 14th state. The Republic was characterized by opposition to slavery, universal manhood suffrage, and public education for all. The Windsor Historic Village District was admitted to the National Register in 1975, and was recently expanded. The Saint-Gaudens National Historic Site is just across the river, and the Cornish-Windsor Covered Bridge, the longest covered bridge in the United States,

draws tourists from around the globe. The American Precision Museum has the opportunity to be an anchor for heritage tourism, not just in Windsor, but in the entire Upper Connecticut River Valley. What is lacking is a major exhibition that will place the museum's story in a large context relevant to visitors from outside New England. Tourists who come to Vermont for its rural beauty, covered bridges, rich artistic heritage, and spectacular fall foliage should not go home without also learning about the region's key role in the development of American industry. Furthermore, the museum will explore the connections between entrepreneurship and innovation and will examine the relationship between the worker and his or her work. Finally, sections of the exhibition that feature the work of immigrants in New England factories will make it clear that even in communities that today seem homogeneous, there were once strong ethnic divisions.

5 (A).3 Machine Tool Enthusiasts. The museum will not forget the group that has been its primary audience for forty years. Retired machinists and their families, scale model enthusiasts, and those interested in industrial archaeology will continue to find satisfaction in exploring our building and our collections. The new exhibition will add new dimensions to their experience by describing the historical importance of the armory and of the machines that it houses. Visiting enthusiasts often note with regret that the general public—and even their own families—do not understand and appreciate the special culture and way of life that machinists love, value, and fear losing. We expect that they will appreciate and support APM's effort to address their concerns.

Visitors who have experienced this exhibition, examined the text and photos, viewed the videos, and partaken of the interactive elements will walk away with new knowledge and—more importantly—with new things to think about. They will have a better understanding of the role of Vermont in creating modern industry and of how innovation and creative problem solving have shaped modern material culture. They may gain new insight into the interactions between people and machines. We hope that they will also leave thinking about the role of machines and tools in their own lives and with an interest in further exploration of the connection between industry and American culture.

Exemption B4

5(B) Audience/Evaluation. Beginning in the summer of 2007, with funding from the American Association of Museums' *Museum Assessment Program*, APM is conducting a comprehensive "Public Dimension" assessment project. The project consists of (1) completing a self study workbook after a series of community engagement activities – surveys, community forums and focus groups, intended to assess public perceptions of the museum, (2) a site visit from a museum professional and (3) a report and recommendations. The results of this study will inform development of the new exhibition, and we will re-visit and re-use the study instruments to evaluate the project after completion.

We will invite our teacher advisory group to participate in the mid-project review (Nov.2008) and will also solicit their feedback on the draft script and design plans in March 2009. We will also

put together an advisory group of museum members who will help test various elements of the exhibition as they are developed. Hands-on interactive elements will be prototyped and tested before final fabrication and installation of the exhibition. After the exhibition opens, we will continue to request comments from museum visitors and feedback from teachers.

5(C) Audience/Publicity.

We will feature the planning phase in our newsletter and website, recently redesigned with support from the Vermont Community Foundation.

The museum now places print brochures at standard distribution sites in Vermont, New Hampshire, Massachusetts, and Connecticut. We have display boxes at three visitors' centers in Vermont, and we participate in digital marketing through Vermont Tourism and Marketing and Vermont Attractions Association. The new exhibition and new activities will be featured in each of these locations.

Because this is a major overhaul designed to make the museum more family friendly, more interactive, and more understandable to the general public, we will mount a region-wide publicity campaign about the new exhibit, reaching out to our statewide media network, which includes two regional television stations; a multitude of newspapers; the magazines *Vermont Life*, *Upper Valley Life*, *Yankee*, and *Vermont Magazine*; and both New Hampshire Public Radio and Vermont Public Radio.

6. ORGANIZATION HISTORY

Mission Statement: The American Precision Museum is a national center for the collection, preservation and interpretation of the history of precision manufacturing. Our mission is to enhance public understanding of the importance of precision manufacturing, the ingenuity and entrepreneurial spirit that drive it, and its effect on our everyday lives. (April 30, 2007)

APM was founded in 1966 by Edwin A. Battison (formerly Curator of Mechanical Engineering, National Museum of American History, Smithsonian Institution), who secured the old Robbins & Lawrence Armory to house the museum and assembled a world-class collection of historic machine tools, along with significant photographs, archival materials, books, and products of early precision manufacturing. The building was designated a National Historic Landmark (1972) and an International Heritage Site and Collection (American Society of Mechanical Engineers, 1987). Beginning in 1999, the museum devoted itself to professionalizing its museum operations and refocusing on preservation of the collections and the armory building, the single most significant item in the collection.

Based on a 1999 Conservation Assessment Program (CAP) report on the building, Phase I of the preservation program, completed in 2005, included raising \$450,000 for installation of a new slate roof to replace the deteriorated original, restoration of 70 of 166 historic wood windows, and architectural plans for interior structural repairs to stabilize all four floors of the armory and the cupola framing. Phase II, completed in spring 2007, included restoration of 50 more windows, interior structural repairs designed in Phase I, and safety and access improvements (total \$150,000). Phase III, to be completed in 2008, includes masonry restoration planning, wheel pit documentation, new code wiring, a new security and fire detection system to replace existing (which is 25 years old and does not meet code), and solving a drainage problem at the west end (total est. \$100,000). Phase IV will include completing the remaining 46 windows, storm windows, masonry restoration, and installing a sprinkler system (est. \$1,000,000- \$1,500,000).

During the past five years, the museum strengthened governance and financial operations. A new strategic plan was adopted in January 2003, revised in 2006, and is scheduled for an update in 2008. Revised Bylaws, a new Code of Ethics, and Policies and procedures regarding Personnel, Gift Acceptance, Membership and Financials, along with revisions to the Collections Management Policy were completed in 2004-2005. The museum contracted with a development and public relations professional to support fundraising and communications.

Through a three-year grant from the Institute of Museum and Library Services, in January 2007, we hired our first-ever Collections Manager, who has undertaken a full inventory of the object collections and is improving collections management practices. Additional funds are in place (\$100,000) for the cash match and to allow the project to extend into a fourth year.

Because the main section of the armory building is unheated, the museum is open to visitors only from Memorial Day weekend to the end of October. Through two recent projects, we have begun to work on serving audiences throughout the year. First, the school kit, mentioned several times above, will bring our main themes to school groups over the winter. Teachers will be able to teach our unit on the Industrial Revolution and visit the museum pre- or post-study in the fall or spring. Our new "Windsor in the 1860's Quest," created in collaboration with Valley Quest with support from the National Park Service, can be explored whether the museum is open or not. Instructions are available at the local library, in schools, on the front door of the museum building, and on our website. The quest will also appear in the third book published by the Valley Quest group.

During the museum's public season, we have had a number of special exhibitions over the years, ranging from the mechanical ingenuity of the artist Maxfield Parrish to a display on the mechanization of woodworking. In 2007, we are featuring a Smithsonian Institute Traveling Exhibition Service exhibition *Doodles, Drafts and Designs: Industrial Drawings from the Smithsonian*, along with an exhibition of paintings by Vermont artist Charlie Hunter, entitled *Windsor Post-Pastoral: The Changing Landscape of the Birthplace of Vermont*. For interpretation of our primary collection, we have a guidebook entitled *The Cutting Edge*, with color-coded explanations of the different types of machine tools. Whenever possible, we have museum staff or volunteers demonstrating machinery.

Visitation during our five-month season ranges from three to five thousand. Peak visitation occurs July through September, and we hope that our deeper exploration of our themes will allow us to greatly increase the number of visitors each season. The museum has nearly 400 individual and family members.

The museum's operating budget for the current fiscal year (ending April 30, 2008) is \$305,392. A detailed budget for the year may be found in Attachment 12.

7. PROJECT TEAM

APM Staff:

Ann Lawless, has served as APM Executive Director since 2003. Prior to coming to APM, she has been a registrar, collections manager, and curator of a permanent art collection. She also founded and managed a three-year community archives project (funded by National Historical Publications and Records Commission, NHPRC) that involved five institutions and supervision of a project archivist. She has brought to the museum both leadership skill and a solid understanding of museum practice. Through her efforts, the armory building has been stabilized and significant restoration has occurred, museum operations have been overhauled, fundraising

efforts have been expanded, and collections care and management have been improved. On the planning team, she has been prime mover and facilitator. For this project, she will coordinate the museum advisory group for testing and evaluation described in Section 5.B, help identify artifacts and archival materials, be responsible for grant reporting, and lead the effort to find implementation funding.

Melissa Wilson, Collections Manager, holds an MA in Applied History from George Mason University and a BA in History from Mary Washington College. She has been a registrar, an interpreter at a national park, and an adjunct professor of history. She has also served internships at Colonial Williamsburg and at the Fredericksburg Area Museum. Melissa will bring to the project team an intimate knowledge of the museum's object collections, as well as a broad historical perspective from her training as a historian. For the planning phase, she will identify suitable artifacts, conduct loan research, and help negotiate loan agreements.

Hub Yonkers, a member of the APM Board, is a volunteer member of the project team. He is President of Innodyne, Inc. of Contoocook, New Hampshire. His company provides creative product conceptualization and development services to clients in the bio-tech and medical device areas as well as other fields. He has served as APM Vice Chair since 2004, chairs the Exhibits/Education Committee, and serves as co-chair of the Development Committee, where his creativity, skill, and persistence have proven him to be one the board's best fundraisers. He brings to the project the perspective of entrepreneurship and innovation, as well as his skill in conceptualizing and constructing mechanical devices. Hub has donated countless hours to the APM exhibits—planning, fabricating displays, selecting and rearranging machinery, and developing interactive opportunities for visitors. He participated in the 2006 interpretive planning initiative and his continuing work on this project will also be carried forth as a volunteer. He will participate in the three meetings, the museum visits, and the member-group testing and evaluation, and he will be involved in the planning of interactive elements and fundraising efforts.

Consultants and Contractors on the Planning Team

Susan Bonthron is an educator and documentation consultant who has worked with several Vermont educational programs, including *Flow of History*, Vermont Community Works, and the Vermont Rural Partnership, on curriculum development and service learning initiatives. APM contracted with Susan in January 2006 to form a Teacher Advisory Group and to help us make APM a more teacher/student friendly place. She helped develop the traveling kit and helped write the original Interpretive Planning Report. She also brings 25 years of experience as a technical writer. She will participate in the team meetings and exhibition development and will coordinate the audience feedback with the Teacher Advisory Group.

Carrie Brown, Ph.D., is a consulting curator and independent scholar. She is the author of *Rosie's Mom: Forgotten Women Workers of the First World War* and of many articles exploring the connections between technology and culture. She has curated four temporary exhibitions for APM, and she wrote for and edited the APM newsletter for several years in the 1990s. For the APM teaching kit, she developed many of the activities, assembled artifacts and images, and wrote several historical essays. Dr. Brown also has eight years experience at the assistant director level in nonprofit agencies, including work in project management at the Roberson Museum and

Science Center, Binghamton NY, and the Upper Valley Teacher Institute in Lebanon, New Hampshire. She will serve as the Project Director, local researcher, and lead curator for this project.

Gray Fitzsimons served as Chief of Interpretation and as Historian at Lowell National Historical Park. His major duties as Chief of Interpretation included overall supervision and direction of the Park's interpretive, educational, and community cultural programs; budget planning and oversight for the division; staffing and program planning; and completion of the Long-Range Interpretive and Educational Plan. As Historian, he conducted and directed historical research and writing related to Lowell's social, labor, and technological history; administered oral history in Lowell; and disseminated historical work to park staff, the Tsongas Industrial History Center, teachers, and the public. He also directed curatorial staff on rehabilitation of permanent exhibits in the park's museums. His interest in labor history and social history is enhanced by his initial training as a civil engineer. He served as a key member of the APM interpretive planning team in summer 2006. He brings to the project a deep understanding of New England industry and its effects on everyday life, as well as extensive experience in how to interpret our themes to the museum-going public. He will participate in the three team meetings at both the conceptual and the design stages, will comment on the narrative and will review artifact selection, spending a total of 5 days on the project.

Steve Lubar, Ph.D., is Director of the John Nicholas Brown Center, Brown University. He has written several books on industrial history in America, including *Engines of Change: The American Industrial Revolution, 1790 to 1860*. Before taking on the new position at Brown, he worked for more than 20 years at the National Museum of American History, Smithsonian Institution, first as historian and curator, and then as Chairman of the Division of the History of Technology. Concurrent with his museum work, he has significant academic teaching and museum consulting experience. He served on APM's preliminary interpretive planning team in the summer of 2006 and will continue in an advisory capacity for the coming phase of planning. Dr. Lubar is a recognized leader in the history of technology and brings to the project a national perspective on our subject. He will attend two planning meetings and provide on-going support by phone and email.

Greg Sharrow serves as the Vermont Folklife Center's Folklorist and as its Director of Education. He holds a BA from Oberlin College, an MEd from the University of Vermont, and a PhD in Folklore and Folklife from the University of Pennsylvania. Sharrow taught at the Braintree School in the Orange Southwest Supervisory Union (Vermont) for several years and was named Outstanding Teacher of the Year for that district in 1983. His work will inform the twentieth century component of the exhibition. He will conduct oral history interviews with retired workers from the precision manufacturing industries in New Hampshire and Vermont and will participate with other team members in exploring how to integrate his findings with the overall exhibition narrative.

Merritt Roe Smith, Ph.D., is professor of the History of Technology at MIT and currently the Director of MIT's Program in Science, Technology, and Society. His book *Harpers Ferry Armory and the New Technology* received a number of awards and was nominated for the 1977 Pulitzer Prize in History. He is the author of many other books and essays, including the text *Inventing America* (co-authored with Pauline Maier et al.) and the essay "Technology, Industrialization, and the Idea of Progress in America." Professor Smith is a Fellow of the American Academy of Arts and Sciences and past president of the Society for the History of

Technology. He will serve as a consultant to the project, attending the initial planning meeting and reviewing the narrative.

DESIGNER. The preliminary planning conducted in 2006 did not include a designer. We investigated several New England design firms recommended by various members of the original interpretive planning team. After interviewing members of the three firms, soliciting proposals, reviewing resumes, and checking references, we have narrowed the field to two: Abrams Associates in Cos Cob, Connecticut; and Wondercabinet in Lexington, Massachusetts. We have comparative proposals in hand and plan to conduct some site visits and in-person interviews before we make a final selection. We anticipate making the selection no later than November 2007. The designer will review the Interpretive Plan, visit the museum, and become acquainted with the subject matter, themes, and physical layout of the museum before the kickoff meeting in June. From that point on, the designer will be an integral part of the project team. He will participate in fleshing out the interpretive plan, help guide discussion of the physical manifestation of the narrative, produce a floor plan drawing, and develop an overall point of view and “look” for the exhibition.

Cliff Abrams of *Abrams Associates* has worked extensively for the Field Museum in Chicago, and has designed and installed exhibitions for the Northern Indiana Historical Society, the Zell Holocaust Memorial in Chicago, the John G. Shedd Aquarium in Chicago, and the Museum of Military Gliders in Lubbock, Texas. After extensive work in the Midwest, he has recently relocated to New England.

Wondercabinet is a museum design group that has developed exhibitions for the Lowell National Historical Park, the Staten Island Children’s Museum, the Tellus Science Museum in Georgia, the Fairbanks Museum and Planetarium in Vermont, and the Kentucky Center for African American Heritage. They have a strong interest in mechanical interactive exhibit elements. Neal Mayer is Wondercabinet’s lead designer and he will be assigned to the project if they are selected.

Resumes of both Mr. Abrams and Mr. Mayer are included in Attachment 4.

Additional Research Support:

Ken Aiken is a writer noted for his extensive research into early gun making in Vermont, and especially the early work of Nicanor Kendall, one of the founders of the Robbins & Lawrence company. He frequently lectures for special events at APM and will provide research support for this project. His research focuses on the early years at the Robbins & Lawrence Armory, leading up to the original company’s dissolution and re-establishment. This is a key element in the story of how the knowledge and expertise of machinists and machine designers was transmitted to other sites, as those laid off in Windsor sought other employment elsewhere. The lead curator will consult with him primarily in the early stages of project research. We plan an honorarium to thank him for his time.

Christopher Gray of the CNC Institute and also of the River Valley Technical Center (both in Springfield, Vermont) teaches machining to young people preparing for careers in the industry. His program carries the institutional memory of the industry training programs from the early 20th century. He starts his students with historic machines, where the processes are more visible and easier to understand, before moving them onto the modern, computer-controlled versions. Currently he is consulting with Vermont HiTech, which has developed an innovative employment

readiness program now in its third session with Connecticut River Valley manufacturers. Chris will assist APM in planning and implementing a machine shop demonstration that can be staffed and operated during public hours, and his expertise may also inform discussion of how 20th century machinists and engineers learned their craft. We plan an honorarium to thank him for one day of his time.

John Johnson is an industrial historian now residing in Marshfield, Vermont. He is our consultant on the wheel pit documentation project, for which he has completed extensive background research leading up to the site visit in September 07. On that visit he will be accompanied and assisted by the lead architect of the HAER team from Washington DC. Earlier in his career, in the 1980s, Mr Johnson led a team of historians completing a HAER documentation of a multi-building mill complex in nearby Claremont NH. He consulted for the emerging Vermont Granite Museum in Barre, Vermont, interpreting their collections to create a public program that he now presents as part of the Vermont Humanities Council speakers roster. The lead curator will consult with him on his background research, and he MAY participate in planning the section on the building's power train, a total of one half day for which he will receive an honorarium.

8. WORK PLAN

Date	Task	Personnel	Product
May-June 2008	Background Research	Brown Sharrow	Notes on key historical figures Begin Oral history interviews
Late June 2008	<p>Kickoff Meeting</p> <p>1. Review school kit, MAP public dimension results, wheel pit research, oral history interviews, and historical figure research.</p> <p>2. Refine and reaffirm exhibition themes.</p> <p>3. Explore design options</p> <p>4. Refine task assignments.</p>	<p>Lawless Wilson Bonthron Brown Fitzsimons Lubar Sharrow Smith Yonkers Designer</p> <p>Brown</p>	<p>Revised Interpretive Plan and updated Work Plan</p> <p>Written summary of meeting results</p>
July-September 2008	<p>1.Ongoing Research</p> <p>2.Museum Visits & interactives</p> <p>3. Machine shop planning session</p>	<p>1.Brown, Sharrow</p> <p>2.Brown, Lawless, Bonthron, Yonkers, Fitzsimons</p> <p>3.Brown, Lawless, Yonkers, Chris Gray</p>	<p>1.Further exploration of vignette materials; oral histories</p> <p>2.List of potential hands-on elements</p> <p>3. Machine shop proposal</p>

October 2008	Design Consultation	Designer, Lawless, Brown, Bonthron, Yonkers, Fitzsimons, Johnson	Preliminary floor plan
November 2008	Mid-Project Review: Circulate preliminary floor plan and script outline	All team members and Teacher Advisory Group	Written comments from each team member and consultant
December '08-February '09	1.Script Development 2.Continuing design work	Brown Designer	1.Draft Script 2.Sample design elevation
March 2009	Team Meeting: Review draft script and design plans	All team members Brown	1.Refinement of narrative and design 2.Written summary of meeting circulated
April-July 2009	1.Script revisions, artifact selection, loan agreements 2.Design refinement 3.Implementation Planning	1.Brown 2.Designer 3.Lawless, Hoggson, Brown, Designer	1.Preliminary Text & artifact list 2.Preliminary Design 3.Preliminary budget for Implementation
April-August 2009	Fundraising for Implementation	Lawless, Hoggson, Brown, Yonkers	Grant applications and donor commitments

9. FUND-RAISING PLANS

Exemption B4