HFR-650

United States Department of the Interior

NATIONAL PARK SERVICE
Historic Preservation Training Center
4801A Urbana Pike
Frederick, MD 21704

IN REPLY REFER TO:

D18 (HPTC)

June 29, 2001

Memorandum

To: Superintendent, Harpers Ferry National Historical Park

From: Superintendent, Historic Preservation Training Center

Ref : Historic Plaster Conservation Workshops, August 28-September 22, 2000, Buildings 16 and 16A

Subject: Transmittal of Condition and Treatment Record

We are pleased to transmit the final documentation for the Historic Plaster Conservation Workshops that were held August 28-September 22, 2000 at Buildings 16 and 16A

Please note, a copy of the report has been submitted to the Chief, Technical Information Services, Denver Service Center, for permanent inclusion in the National Park Service archives.

If you have any questions regarding this transmittal, please do not hesitate to contact Dorothy Printup, Training Manager, at 301-663-8206 X101.

Douglas Hicks for

H. Thomas McGrath, Jr.

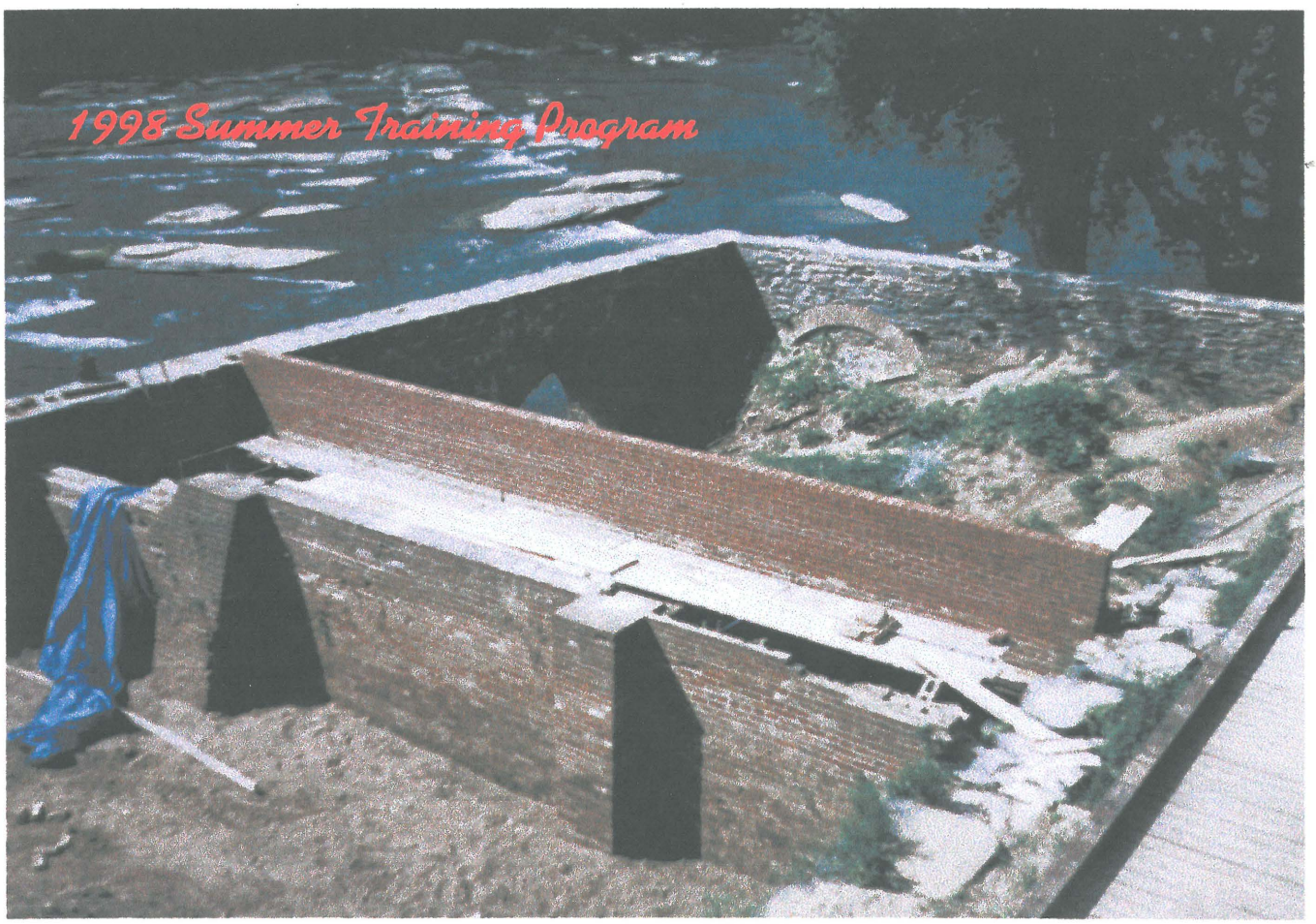
cc: (w/enclosure)
Peter Dessauer, HFC
Chief, Technical Information Services, DSC
Judy Jacob, NER
Doug Hicks, HPTC
Dorothy Printup, HPTC
Library, HPTC
Library, HFC
Tom McGrath, HPTC (w/o enclosure)

HFR-650

Record of Treatment

**Preservation Treatments of Building 10A Patio,
Building 48(Armorer's House) Patio &
Cotton/Flour Mill Ruins**

Harpers Ferry National Historical Park



Work Performed by:

Institute for Preservation Training

In Cooperation With:

Brand Construction

Author: Peter Dessauer at np--ncr
Date: 2/8/99 2:40 PM
Priority: Normal
TO: Robert Cagnetta
TO: Donald Campbell at np--ncr
TO: Bob Wilhide at NP-HFC1
TO: Bruce Noble at np--ncr
TO: Peter Dessauer at np--ncr
TO: Tim Fox at np--ncr
TO: Lynne Wigfield at np--ncr
TO: Nancy Hatcher at np--ncr
TO: Gayleen Boyd at np--ncr
Subject: Re: IPT 1998 COMPLETION

Nancy - For Library Thanks! Bruce

---------- Message Contents ----------

Monday, February 8, 1999

Ref: HAFE Flood/Storm Recovery Program

Sub: IPT 1998 COMPLETION REPORT

Superintendent Campbell:

Robert Cagnetta of IPT has sent me 6 copies of the Institute for Preservation Training Record of Treatment, HAFE projects, 1998.

Copies will be distributed in the Park as follows:

Supt. Campbell - 1 spiral copy
Lynne Wigfield - 1 spiral copy
Tim Fox and Bob Wilhide - 1 spiral copy
Bruce Noble and Nancy Hatcher - 1 spiral copy
Peter Dessauer - 1 spiral copy
Judith Mueller - Original 3 ring Notebook for ARCHIVES.

The Institute did a great job for HAFE Park last year, as attested by the record of work in the report. Hopefully, our future funding will permit more HAFE/IPT cooperations.

HAFE/IPT COOPERATIVE AGREEMENT: We need to finalize this document so that future IPT contracts of whatever size can be expedited.

Thanks IPT.

Peter F. Dessauer, HAFE Architect

---------- Reply Separator ----------

Subject: IPT 1998 COMPLETION
Author: Peter Dessauer at np--ncr
Date: 9/2/98 8:59 AM

September 2, 1998

Ref: IPT SCHEDULE COMPLETION 1998 AT HAFE PARK

Sub: Thursday, September 10 = Final Day of Field Work.

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Project Information

The Intitute for Preservation Training's(IPT) 1998 Summer Training Program was accomplished through **Cooperative Agreement Number 1443CA3850-98-001, Modification Number 1 &2**, between Harpers Ferry National Historical Park(HAFE) and IPT's parent organization, Goodwill Industries of Rhode Island. The function of the agreement was to provide historic preservation crafts training through hands-on field experience to apprentice and students pursuing careers in the field of historic preservation.. The Summer Training Program accomlished the restoration of several HAFE historical elements, including: Building #48, Building #10A and the Cotton Flour Mill ruins.



West elevation of Cotton Flour Turbine Pit Wall.

Billy Hildebrand, of Brand Construction, Harpers Ferry, West Virginia, was the masonry specialist for the project. Several masons from Brand Construction assisted in training and execution. IPT and Brand Construction previously collaborated in the 1998 Spring Training Program.

The 1998 Summer Training Program in HAFE Park was inspired by the previous successes of HAFE/IPT's Spring Training Program in March 1998. The Spring Training Program at Building 10A involved 11 students from two undergraduate historic preservation programs: Mary Washington College in Fredericksburg, VA; and Roger Willimas University in Bristol, Rhode Island. The enthusiasm of the student participants encouraged the continuation of crafts training internships in HAFE Park through IPT. The crafts training objective was to expose students to craftspeople, who would provide their skills and techniques of professional preservation practices.

The project sites were identified by Peter Dessauer, HAFE Historical Architect. The training program was arranged by IPT and managed by Robert Cagnetta, IPT Project Manager. Lucas Flickinger and Holly Hanney, Mary Washington College alumni, were selceted to train for the duration of the summer projects. Their responsibilities were to engage with all on-site preservation activities, as well as to perform selected hours of research and development for this Record of Treatment.

The purpose of the projects were to restore identified brick and stone features in the park. Upon completion, the project successfully stabilized and preserved the integrity of the historic elements, while ensuring longevity through appropriate construction techniques. The project was accomplished through the successful collaboration and leadership of IPT, HAFE, HAFE's Flood/Storm Recovery Project, Historic Preservation Training Center and Brand Construction crew.

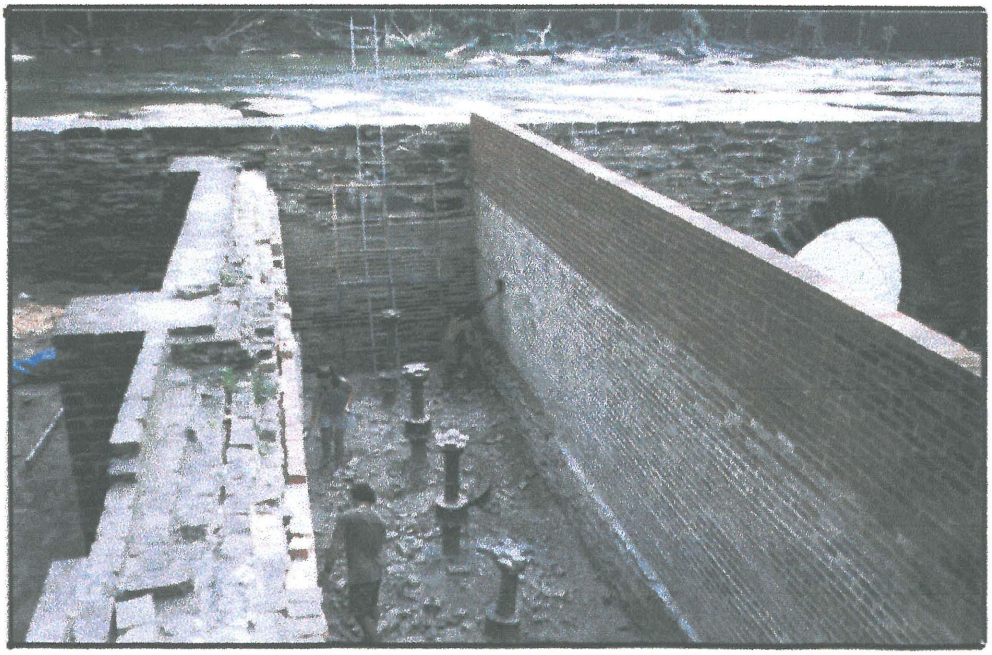
Project Narrative

In May 1998, IPT and HAFE signed **Modification 1** and **Modification 2** of **CA 1443CA3850-98-001**, each exclusive to specific task directives(SEE Appendix). The task directives were designed to provide students and apprentice hands-on historic preservation field training for a term of twelve weeks. The project was IPT's fourth such agreement with HAFE, and among a continuing relationship to utilize crafts training as the means for the preservation and conservation of HAFE's built environment. The project was funded through the HAFE Flood/Storm Recovery Program, and compliance was performed under the 1997 Flood/Storm Programatic Agreement between West Virginia Historic Preservation Office and HAFE Park.

Housing was arranged for Rob, Holly and Lucas in 1-D, where they shared quarters with a visiting Historic American Engineering Record Crew, and a living history participant. The project began on June 15th, 1998, and was completed on September 11th, 1998.

Modification 1 began on June 15th 199, and was completed on July 30th, 1998. A project schedule was provided to HAFE Park personnel, identifying the crew size, potential start and completion dates, equipment and material needs for each task. The project began at the Cotton/Flour Mill Ruins, where the students and masons removed all of the excesive debris collected in the Turbine Pit. The project then moved to Building 10A, where the crew began to perform miscellaneous work on the patio. The work was interupted by overhead work of the Historic Preservation Crew on Buildings 9, 10 and 11, and was later completed at the end of **Modification 2.**

The second phase of **Modification 1** was Building 48's front patio. Despite some hot weather, the crew was able to document, remove and prepare the base of the patio. A Bobcat borrowed from HPTC enabled the crew to move the stones with little effort. The original patio stones were reset in their original configuration, and the joints were filled with the proper mortar mix ratios. Modifications were made from the original design, to allow for proper water runoff and presentation of the stone retaining walls.



Final cleaning of Cotton/ Flour Mill's interior Turbine Pit walls.



Completed west elevation of Cotton Flour Turbine Pit wall.

Modification 2 began on August 3rd and was completed on September 11th. Project equipment and materials were provided by the Park, while additional project needs were provided by the Flood/Storm Recovery Project crew. Since the project was part of several projects at the Cotton/Flour Mill and Virginius Island, the crews from HAFE maintenance, the Flood/Storm Recovery Project, IPT and Brand Construction were able to share resources, enabling the execution to become more efficient. The use of the HAFE crane, trucks, mixers and other equipment, as well as Brand Construction's equipment, made work such as cleaning the turbine pit and moving materials around more effective.

The project's intent was to assess work required to reconstruct the entire Turbine Pit walls. **Modification 2** provided a team of 5 for approximately 6 weeks, where the accomplished work within that term would determine amount of labor, materials, and equipment necessary to complete the entire Turbine Pit Wall restoration. The project completed repointing the brick on the interior of the turbine pit walls, reconstructed: about 7 feet by 48 feet of the east interior wall; two full buttresses and 20 feet of the cap.

- Appoximately 3,000 new brick were used
- Approximately 25 bags of lime, 25 bags of cement and 2 yards of sand were consumed
- Approximately 180 cubic feet of buttresses were reconstructed
- Approximately 1400 square feet was repointed
- Approximately 250 cubic feet was reconstructed

The final assessment of the completed scope for **Modification 2** assumes approximately 1/2 of the Turbine Pit walls were completed. The east wall of the Turbine Pit was the worst, receiving most of the flood/storm damage to the buttresses and wall. With about 2/3 of the west wall and about 7/8 of the interior walls complete, it would be a fair estimate that 50% of the Turbine Pit walls were completed. There are enough brick (about 2,500) to complete the walls. The Turbine Pit Walls will require about another $50,000.00 for completion.

Financial Summary

IPT COSTS FOR THE COMPLETION OF MODIFICATION #1:

Labor	$36,646.00
Travel	$ 750.00
MI&E	$ 2,280.00
Reicepts	$ 263.50
Contingency	$ 500.00
Total Project Costs	$40.439.50
Original Contract Price	$40.439.50
Total IPT Billing	**$40,439.50**

MATERIAL EXPENSES TO HAFE FLOOD STORM ACCOUNT:
(All lime, cement , sand and bricks were purchased seperately through HAFE Flood/Storm Recovery accounts)

Rentals Unlimited, Inc.	$ 165.00
Total Material Expenses	**$ 165.00**

Gross Project Costs **$40,604.50**

Financial Summary

IPT COSTS FOR THE COMPLETION OF MODIFICATION #2:

Labor	$46,591.00
Travel	$ 700.00
MI&E	$ 1,475.00
Reicepts	$ 238.50
Contingency	$ 800.00
Total Project Costs	$49,804.50
Original Contract Price	$49,804.50
Total IPT Billing	**$49,804.50**

MATERIAL EXPENSES TO HAFE FLOOD STORM ACCOUNT:

(All lime, cement , sand and bricks were purchased seperately through HAFE Flood/Storm Recovery accounts)

A.C.&T. Co, Inc.	$ 58.50
Ingalls Lumber Supply Inc.	$ 154.78
Total Material Expenses	**$ 213.28**

Gross Project Costs **$50,017.78**

Accomplishments

The cooperative agreement between the National Park Service and Goodwill Industries of Rhode Island provideed a unique opportunity to incorperate building preservation/restoration with education/ training. Goodwill Industries of Rhode Island's Institute for Preservation Training provides professional historic preservation services through crafts training for those pursuing historic preservation careers. The project was strengthened by the cooperation and engagement of praticing preservation professionals. The nature of the cooperative aggreement is to provide a vehicle towards the cost-effective preservation of threatened national historic resources.

The cooperative agreement between Harpers Ferry National Historical Park and the Institute for Preservation Training provides professionals and students an opportunity to be exposed to the professional historic preservation practices of the National Park Service. The agreement enables a tangible building restoration product to be recocognized through the process of historic resource preservation. The work exposure provides a vital link from education to practical application, identifying the means of conservation and preservation within the concepts of cultural resource management program. For interns, the experience is part of the professional maturity, where career choices are made from experience. For the apprentice, the experience builds on the skills of the craft, empowering them with the ability to maintain appropriate building preservation techniques.

Modification 1 & 2 of **CA 1443CA3850-98-001**, accomplished the task directives on time and on budget. **Modification 1's** statement of work summarized work at two sites: Building 10A; and Building 48. At Building 10A, IPT accomplished approximately 1/2 of the patio repointing, resetting brick at poor draininge areas, reparging the east elevation of the east wall, repointing of selected brick on Building 10, regrading of the east area of east wall and the reseting of stones adjacent to Building 11.

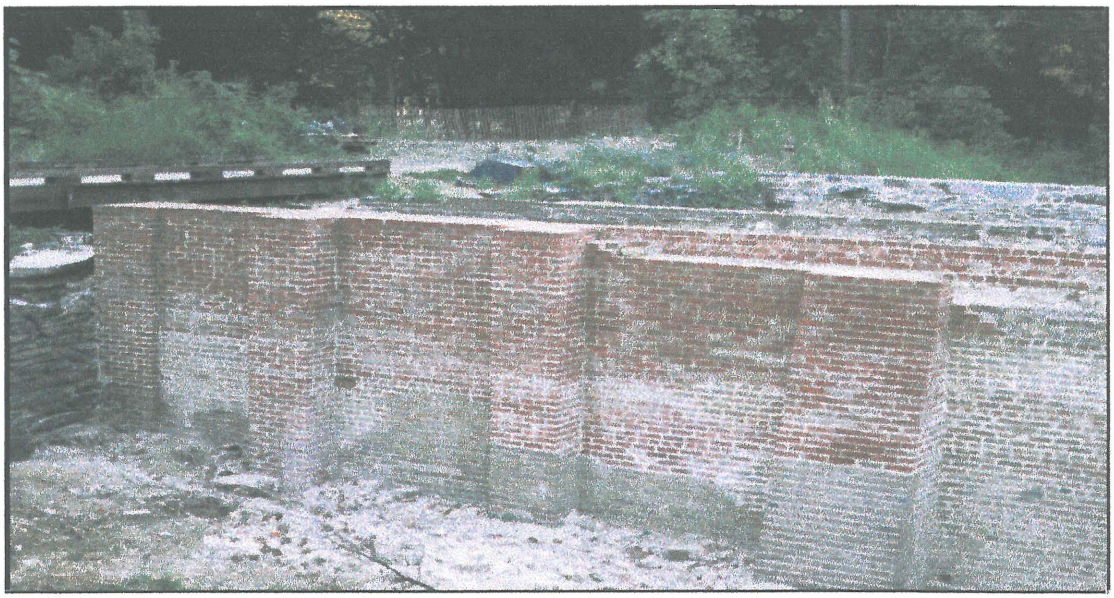


Completed restoration of patio, cisterns, and wall of building #10.



At Building 48, IPT accomplished the complete documentation and exact resetting of the patio's Harpers Ferry shale stones. The retaining walls were also restored using HAFE Park construction techniques(w/out exposed mortar).

Building #48 patio after restoration.



Completed west elevation of Cotton/Flour Mill turbine pit wall.

Modification 2's task directive summarized the scope at the Cotton Flour Mill's Turbine Pit walls at Virginius Island. At the Turbine Pit walls, IPT accomplished about 1/2 of the wall's complete restoration, beyond the original expectations. Accurate assessments of the remaining work enables the park and IPT to forcast the future funds necessary for proper completion.

The sucessful planning and implementation of each **Cooperative Agreement Modification** would not be possible without the generosity and professionalism of all Harpers Ferry National Park personnel, especially: Superintendent Donald Campbell; Peter Dessauer; Rita Mihalik; Bob Wilhide; Ann Shuey; Tim Fox; Dennis Ebersole; Gayleen Boyd and Lynn Wigfield; Goodwill Indutries of Rhode Island and Intitute for Preservation Training; Billy Hidebrand and all the masons from Brand Construction.

Summary of Training



Interns Holly and Lucas recieve instruction from Larry Trail at Building #48.

The Cooperative Agreement between IPT and the National Park Service enables the implementation of training and education programs under the scope of specific national historical site preservation projects. As part of the cooperative agreement's scope of work, a training and research curriculum was developed for the interns.

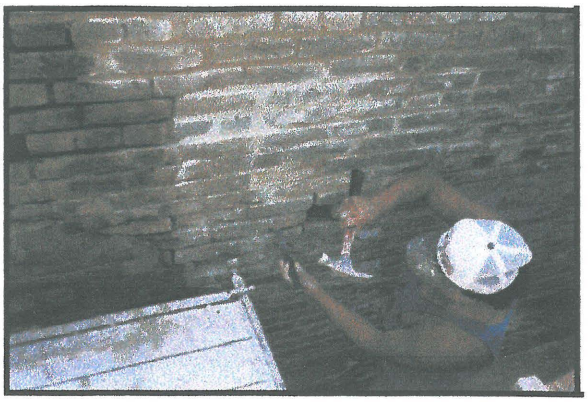
The training aspect of the HAFE project was essential to understanding the tools and techniques of building preservation. The trainees were given instruction by professional masons during the twelve weeks of on-site skills training. The project utilized Lucas Flickinger and Holly Hanney (graduates of Mary Washington College's Historic Preservation program) as the interns. Instruction and training was provided by NPS and IPT staff, as well as various preservation professionals.

Breakdown of Training

Hand Tools

The interns were shown the proper care an use of typical masonry hand tools that were used during the project.

Tool List: Rock hammer, two pound hammer, bush chisel, point chisel, joint chisel, masonry brush, slicks, shovel, masonry hoe



Removing heavily damaged brick from interior east wall.

Safety/OSHA Guidelines:

Review of proper safety procedures for maintaining a safe work environment as recommened by OSHA provided a safe work environment.

Staging:

The staff taught the proper procedures for erecting scaffolding. The importance of a level base and proper spacing were stressed.

Worker Comfort:

The staff taught the proper procedures for increasing worker output through more conducive working conditions. Climate and circulation control sytems were integral parts of this training. Wildlife identification was included.



Tarping on interior west wall of Cotton/ Flour Mill Turbine Pit walls.

Tarping:

The staff taught the proper procedures for tarping and burlaping masonry areas during the curing period to insure consistant color and to avoid cracking.

Mortar Removal:
The staff taught the proper technique in removing mortar from joints without damaging the brick face.

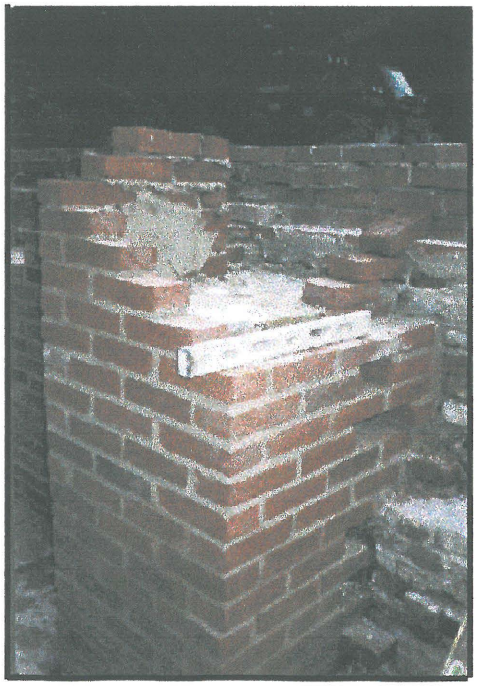
Mortar Preparation:
The staff taught the proper technique for preparing mortar to the proper consistency for laying brick and repointing, to insure the correct strength, and color consistency.

Repointing:
The staff taught the proper technique in replacing new mortar into joints. Repointing was done on both vertical and horizontal surfaces.



Repointing of cistern adjacent to east wall.

Laying Stone:
The staff taught the proper technique in laying a dry laid stone wall. Stone selection was also emphasized.



Laying Brick:
The staff taught the proper techniques used in restoring and reconstructing the brick walls.

Center pier of exterior west Turbine Pit Wall. showing openings left for ties.

Research Components

The second component of the training program was to utilize the research resources at Harpers Ferry. The research provided the interns an alternate source for understanding the building's construction chronology. Research was assisted by Nancy Hatcher, HAFE Archives Assistant, and Mia Parsons, HAFE Archeologist.

Resources

Use of primary and secondary resources
Photographic documentation
Historic Structures Reports
Condition Assesments
On site observations

The main research of Buildings #10A, #48 and the Cotton/Flour Mill involved using the Historic Structures Report prepared by Charles Snell. These documents included both past and present photographs of existing conditions. Photographs and text provided a full understanding of the buildings and their history. The *Virginia Free Press* was cited several times and provided a pimary source for information about the daily history of HAFE as it related to Building #48. David Hannah's report *Archaeological Excavations on Virginius Island, 1966-68* on the JobCorps Conservation Project proved to be a valuable resource in researching the history of the Cotton Flour Mill.

Documentation

The Record of Treatment represents the work process, including all project documents: specifications, photographs, written documentation and drawings. The specifications act as a guide towards understanding the approach of the existing conditions. The specifications define the methodology and is interpreted into a work process, leading to a greater longevity of the work product. The photographic documentation becomes part of a structure's timeline of changes, providing the visual representation of execution and treatments. Therefore the project documentaion provides a context of understanding towards the execution process, as well as understanding how the materials and construction techniques react to time and weather.

There were over one hundred photographs and slides taken during the project. Documentation was completed by IPT, while additional photgraphs were taken by Peter Dessauer, HAFE Historical Architect. The original project photos are labeled and stored in HAFE's archives, under the 1998 Summer Training Porgram Record of Treatment. Doubles of the photographs are stored in IPT's archives.

The research, as noted in the **"Research of HAFE Archives"** section, created a context of understanding the past and present methodology of restoration/ reconstruction. Interns Holly Hanney and Lucas Flickinger reviewed historic photographs and written documentation on each project. The results of the historic research provided an understanding of exisitng conditions and alterations of each building, so the crew could interpret the existing conditions, and provide sound restoration methodologies.

Building #48-History

Building #48 was a typical armorer's dwelling built around 1821. Photographic evidence, condition assessments, and historic structure reports provided information relating to the change in appearance of the south elevation's patio. According to this evidence, a one-story covered porch was constructed between 1898 and 1956 along the south elevation. Four wooden columns supported the wooden porch roof.

In 1959, after the HABS Survey was completed, the Individual Building Report suggested that the exterior of Building #48 be restored. As part of the restoration process, the front porch was removed in the spring of 1968 leaving stone steps leading up to a flagstone patio. Evidence implies that the flagstones were original to the patio, having been covered by the concrete, and were therefore repaired during the removal of the concrete, columns, and the roof of the porch.

An historic photograph from 1898 shows a wooden fence directly to the west of the patio, parallel to Shenandoah Street. A stone wall that stopped several feet from the house replaced the wooden fence by the early 1950s. In May 1986, a draining pipe running parallel to the west wall of building #48 was covered with stone, extending the stone wall to the edge of the front patio. Topsoil added to the area parallel to the west wall created a slope for better drainage.



Building #48's patio; the first flagstone has been removed from southeast corner.

Building #48's Patio-Existing Conditions



Building #48; view of southwest corner.



Detail of chalk-line grid pencil marks drawn on edges of stones.

Upon examination of the patio the following conditions were identified:

1. Flagstones were laid in a base of dirt
2. Standing water in low areas of patio
3. Flagstones rocked
4. East end of patio was not flush with east wall of the building
5. Stone steps were too high
6. Improper height from top of patio to step inside front door
7. Foundation walls were laid with large amounts of mortar
8. Loose stones and cracked mortar on west wall
9. Plant growth through mortar



East wall of Building #48 patio.



View of west wall of patio.

Building # 48's Patio-Project Execution

The IPT crew began work on the restoration of the stone patio of Building #48 by first drawing a sketch map of the patio indicating the approximate location and shape of the flagstones(See Appendix). The flagstones were numbered 1- 22 using chalk and then recorded on the sketch map. A chalk line grid, in addition to the numbers, assisted with exact relocation of the stones. The chalk line grid was first established 9" in from the outside corner of Building #48. The vertical lines then came off the building in 1'- 0" increments. The horizontal lines of the grid were drawn at 2'- 0" increments. Small pencil marks were drawn at key locations for more permanent indicators of the grid.



Making chalk-line grid.



Measuring for chalk-line grid.



Larry Trail marking 2' intervals for chalk-line grid.

A transit was used to guarantee that the front height of the patio was the same after restoration. The transit was fixed on the west drain adjacent to Shenandoah Street where readings of all four corners and the two steps were taken and recorded. The positions were all marked on the stones with pencil so readings could be taken later from the same locations.



Preparations for transit readings.



First flagstone has been removed from southwesy corner.



Removal of flagstones.

Stones were then removed and joints were cleaned along the patio foundation. The stones were stacked on the west side of Building #48. An additional load of stones was brought in from Virginius Island and stacked on the east wall of Building #48. A line was then set up along the front wall of the patio as a reference for the final height and to keep the wall square. The stones laid along the foundation walls (south and east) were laid with a dry appearance. To increase stability of the wall, mortar was placed out of sight on the rear portions of the stones.

The IPT crew removed the mortar from the flagstones using joint chisels and rock hammers. The stones were then lifted and moved away from the building. The stones were placed in their respective positions in an area west of Building #48 using the sketch map. After the flagstones were removed, the crew found that the stones had been laid in a base of dirt. The HAFE archaeologists were contacted at this point to conduct a shovel test pit. Approximately 6" of dirt was removed from the top of the patio to make room for the placement of stone dust. The stone dust was used for better drainage and stability.



Before 6" of dirt and rubble were removed.



Relaying south wall.

Park maintenance provided approximately five tons of stone dust to provide a base for the flagstones. The transit was used to make sure that the stone dust was level with the stone wall foundation. The stone dust was packed down with a tamper to create a flat surface. The flagstones were then carried back to the patio area and reset. A dry mixture of stone dust, lime, and portland cement in a ratio of 3: 1/2: 1 was used to set the stones starting with the front east corner. The remaining stones were then laid by matching the chalk lines. A chalk line was drawn on the front of Building #48 so that the stones were set at the correct slope. A corner pole was used to make sure the stones were level by placing one end of the pole on the chalk line and the other on the front stones.

As the flagstones were relaid, the IPT crew shifted them to the east in order to line up with the east side of the building. New flagstones were added to the left portion of the patio. The crew sprayed the patio with water after all of the flagstones were relaid in the dry mixture. The water made the stones set better and caused the dry mix to harden. A wet mixture of crushed 3 stone, 2 lime, and 1/2 portland cement was used to point the flagstones. Starting from the back of the porch, the IPT crew worked towards the road. Mortar was placed in the joints so that transitions between stones were smooth. A mason's brush was used to remove tool marks from the mortar. Then a wire brush was used to clean off the stones and give the mortar an older appearance.



Raking out of crushed stone.



Relaying flagstones.

Cotton/Flour Mill
Turbine Pit Wall-History

Construction of the Cotton Mill on Virginius Island began by late 1846. HAFE Archive's photographic evidence, condition assessments, historic structure reports, and histories of Virginius Island provided information relating to the deterioration and stabilization of the brick turbine pit walls. The four-story brick Cotton Mill with a stone foundation began operating in 1848. The building measured 104' by 48' with a 14' by 34' one-story wing. The turbine pit measured 29' by 48' and was approximately 12' high from the stone foundation.

As a Cotton mill, the building had two iron turbine wheels 5' 10" in diameter made by E. C. Kilburn & Co. of Fall River Massachusetts. In 1867, the mill was converted to a Flour mill and four turbines manufactured by the James Leffel Company of Springfield Ohio were added. The flood of 1889 put the flour mill out of business. The ruins of the four-story structure were later completely knocked down leaving the foundation rooms, including the turbine pit, completely exposed to the weather. After the building was knocked down, the original handmade bricks were carted away and sold off to different people who reused them for houses, foundations, etc.

The JobCorps Conservation Project began in 1966 with the removal of fill from the turbine pit. Sections of the interior brick walls were repointed using portland cement. There were large areas of missing bricks, mostly located along the base of the brick wall directly above the stone foundation. The walls were repaired using salvaged bricks wherever possible.

In 1977, the Historic Structures Report for the Cotton/Flour Mill was completed as part of Package 123. The report called for measured drawings as well as ruin stabilization. West Virginia University's Institute for the History of Technology and Industrial Archaeology completed the measured drawings. in 1992 - 93.

Existing Conditions

Upon examination of the turbine pit walls the following conditions were identified:

1. Turbine pit was filled with sand, bricks, and debris

2. Plants were growing throughout the walls

3. Lack of sunlight and excess moisture caused moss and algae growth on the interior north wall.

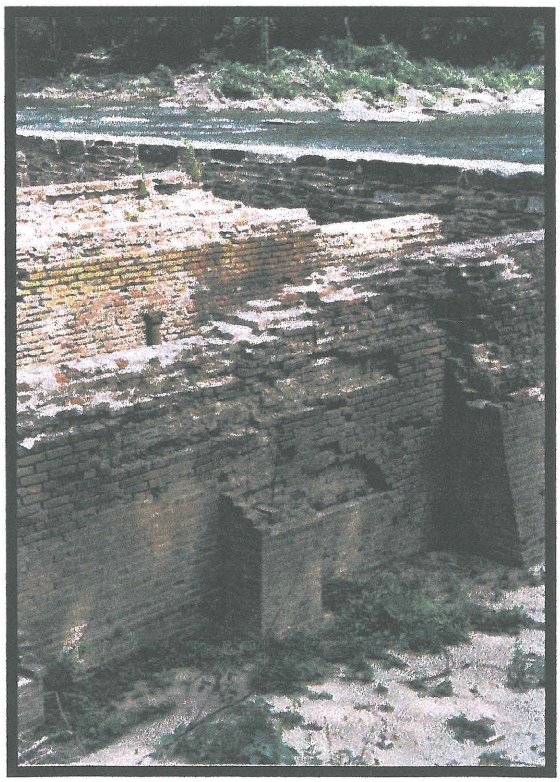
4. Mortar was either missing or severely deteriorated



Interior of Turbine Pit Walls prior to debris removal



East Turbine Pit Wall, looking south, prior to restoration



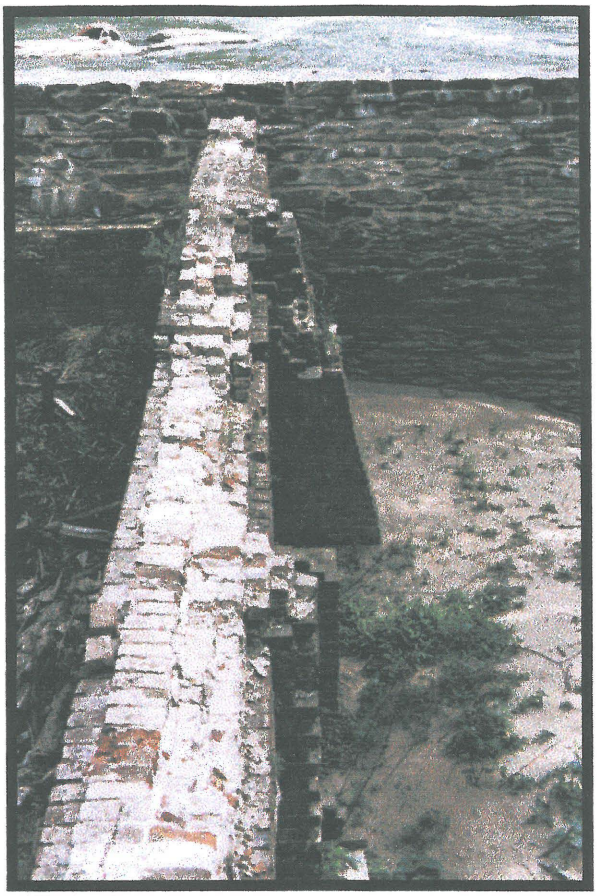
Exterior of west Turbine Pit wall with buttresses, looking southeast, before restoration

5. Bricks were heavily spalled or missing

6. The height of the west wall was several feet below its original height

7. Large sections of the piers on the east exterior wall were missing

8. Previous repointing was done with portland cement



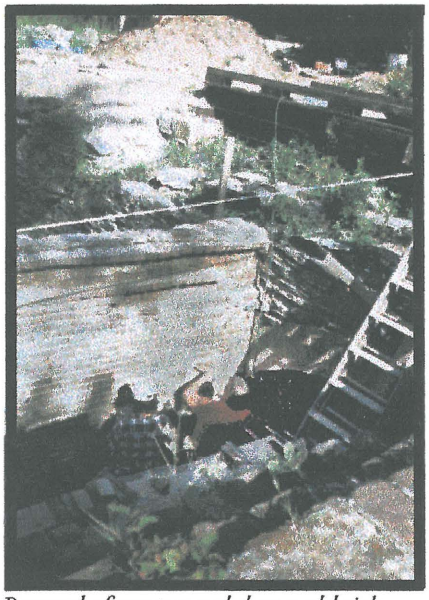
West Turbine Pit Wall, looking south, prior to restoration



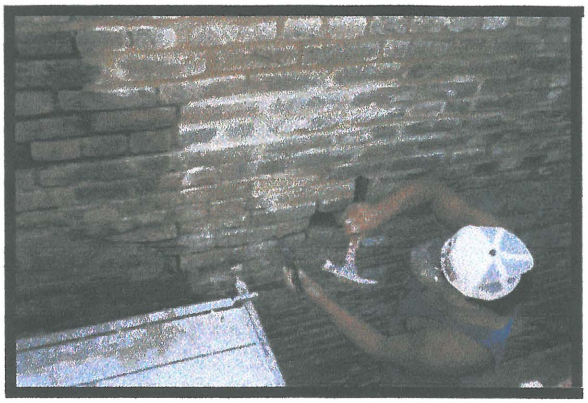
Interior of east Turbine Pit Wall, looking east, prior to restoration

Cotton/Flour Mill
Turbine Pit Walls-Project Execution

The IPT crew began work on the the Cotton/Flour Mill by removing dirt and debris from the turbine pit. The trainees shovelled dirt, bricks, sand, trash , and other debris that had accumulatd in the pit after the 1966 excavation. The debris was lifted from the pit by a crane. After most of the debris was removed, the IPT crew was able to begin work on the interior brick walls. The crew painfully spent an entire week chipping out the old cracked mortar and damaged brick from the interior of both walls using rock hammers and joint chisels. As the work progressed Park maintenance provided scaffolding which was erected to continue work on the upper portions of the walls.



Removal of mortar and damaged brick from east interior wall.



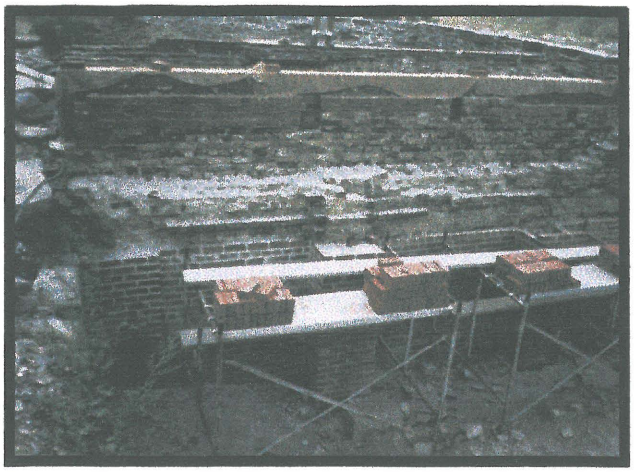
Removal of heavily damaged brick from interior east wall.

A mortar mix of six parts sand to one part lime and one part Portland cement was used to repoint. Several sections of brick were replaced due to their deteriorated nature. Park maintenance provided the necessary brick for the entire project.



Interior west wall at final height.

Once the interior of both walls had been repointed to a uniform height it was decided that work would concentrate on the west wall. Using a long board and a level the proper height was determined for the wall. The interior side of the west wall was then built up to the specified level. Holes were left in the interior courses to enable the wall to be tied together. Once the interior wall was built back to the original height, work began on the exterior side of the west wall.



Northwest corner of west wall.

Work began on exterior, or west side, with mortar removal and repointing. Scaffolding was then erected along the length of the wall. The buttressess and wall were cleared of all failed brick and mortar, and reconstructed based on the existing brick patterns. The north buttresses were completed to their original height, as was approximately 20 feet of the 48 foot wall. The brick pattern on the top of the buttresss was designed based on the available space on the cap.



Completed west wall looking north.



View of west elevation of west turbine pit wall looking east.

Building #10A -Patio History

Documentation for the patio exists primarily in photos and in the Building History file at the Morrell House. Photographs from 1956 and 1978 indicate the absence of the brick patio. The photographs reveal a cement shell covering the cistern. The Building History file states that work was done from April 1981 to September 1981 on the back yard area of Buildings #9, #10, #11, #11A, and #12. The work described involved replacing flagstones, adding paving bricks, and removing rubble. While there is no specific mention of the exact areas involved in the work, the research indicates that the patio and brick cistern covering were constructed in 1981.

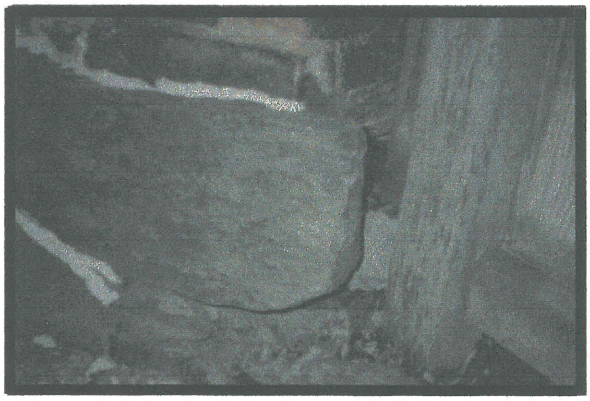


Southeast corner of 10A looking southeast.

Building #10A-Existing Conditions

Upon initial inspection of the Building #10 A work area the following conditions were noted. As worked progressed addtional conditons were found and noted. These conditons contributed to the deterioration of the motar on the 10 A ruins.

1. Poor prepartion, during a previous repointing, of the patio and cistern top area resulted in a thin layer of mortar over a sand base.
2. Poor prepartion resulted in water penetration behind mortar and the resulting freeze thaw cycles loosened many of the mortar joints.
3. Uneven settling and the lack of a consistent grade caused a back up of water at the end of the patio.
4. Pointing was not flush with the brick face resulting in water penetration and craking of mortar joints.
5. Overloaded gutters, runoff from the roof, and lack of direct sunlight produced moss and algae growth on the wall of 10 A.
6. Moisture on the wall of 10 A increased the mortar joint deterioration.



North corner of east elevation of the east wall before restoration.



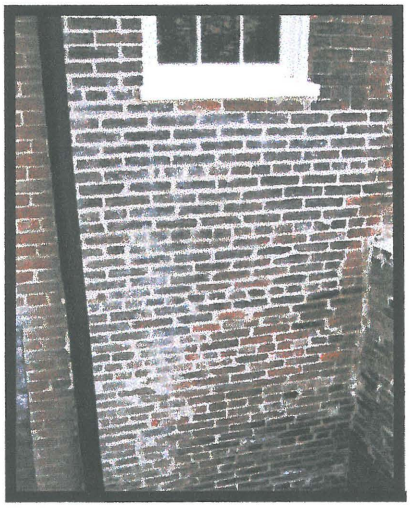
North corner of east elevation of east wall after restoration.



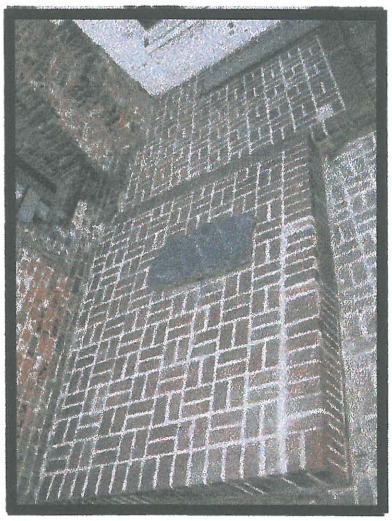
Detail showing moss growing on south wall next to the east elevation of the east wall.

Building #10A Patio-Project Execution

The IPT crew removed debris from the Patio 10A area in preparation for repointing. Once cleared, the crew removed mortar in the joints of the cistern tops and a small section of the main patio using rock hammers and joint chisels. After the mortar was removed, the crew discovered that the bricks had been laid in a base of sand and dirt. Water was used to clean all joints of the loose sand and dirt. Once the joints were cleaned mortar was mixed using sand, portland cement, and lime in a ratio of 6: 1: 1. The mix ratios used for this project were provided by HAFE maintenance staff. The joints were then filled in flush to the patio surface. A masonry brush and a wire brush were used on the hardened mortar to clean the brick and provide a uniform finish. A tarp was used to cover the work area each evening to protect the mortar from inclement weather.



North wall of Building #10.



Cisterns in southeast corner of Building #10A.

Scaffolding was erected on a section of the north wall of building 10. The mortar was removed from the joints and a water hose was used to clean out the dust and dirt leftover from the removal. Mortar was mixed using an 8:1:1 ratio to create a darker color than the mortar on the patio. A masonry brush and wire brush were used to clean off excess mortar once the mortar had hardened. Tri Sodium Phosphate(TSP) was mixed with water and bleach, to scrub off the algae growth from the bricks. TSP was used since it would not affect the paint on the wooden porch adjacent to the wall.

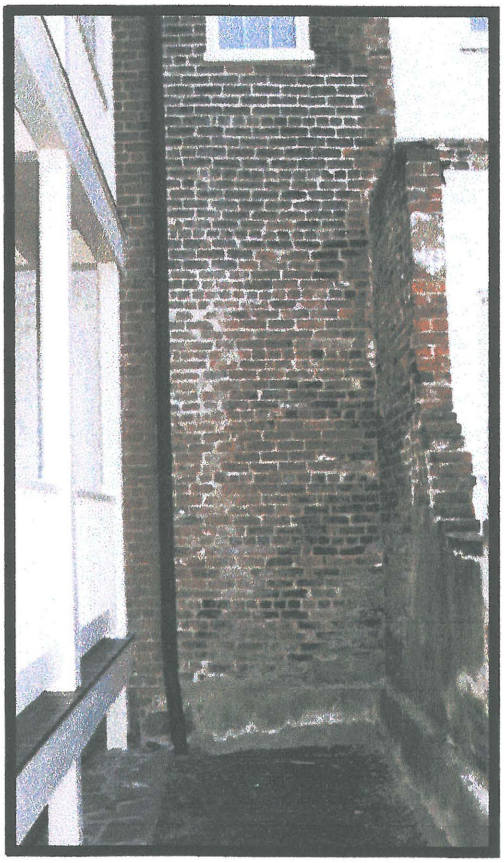


Repointing cistern patio view facing north.

The crew removed approximately 6" of dirt along the east elevation of Building #10A's west wall in preparation for parging. The wall was then parged using a mortar mix of 7: 1: 1. The wall was sprayed gently with water every two hours to keep the mortar moist and to slow down the drying process. In the final phase of work in the 10A area, topsoil and stone dust were brought in to create better drainage in the alley between Building #9 and the #10A ruins. The crew constructed a simple wooden guard to place around the downspout along the north wall of Building #10 before adding the topsoil to the alley. The soil/stone combination was raked out so that water would flow away from Building #10.



Alley between Building #9's porch and east wall of 10A's ruins.



North elevation of Building #10 loking south.



Removal of brick from patio next to east wall.



Replacemnent brick for patio

Certain portions of the patio were dry laid pavers, where an improper pitch caused water to puddle. In the north-east corner of the patio, the bricks were removed from their sand base, and a new base of stone dust was laid to provide better drainage. The bricks were then relaid, with some new brick introduced to complete the pattern against the east wall. The brick joints were then filled with sand.



Completed pavers in patio

The last project around Building #10A was on the west side of the west wall, adjacent to Building #11. Some of the foundation and retaining wall stones were pitched towards the west wall of Building #10A. The water intrusion caused some moss and litchen, as well as some previously failed mortar. So, the crew removed the mortar, dirt and debris from against the west wall, and set new stones against the west wall of 10A, pitching the cap towards the stairwell.



West elevation of west wall of Building #10 A after restoration

Index of Principles and Trainers

Harpers Ferry National Historical Park
National Park Service
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Harpers Ferry, WV 25425

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Billy Hildebrand
Masonry Specialist/ Site Supervisor

Robert Dutrow
Mason

Larry Trail
Mason

Jose Lopez
Mason

Mark Kelly
Mason

Delmar Stotler
Mason



Relaying brick on east interior wall, view looking south.

Maintenance Data

Building #10A Patio

The patio's brick were set in sand, and the joints were mortared in a 6:2:1 ratio. The use of such mortared joints require periodic removal and replacement, ensuring a proper sealant of the exposed joints and substrate. Neglecting such maintenance will result in frost heaves and unven patio surfaces. The remaining 1/2 of the mortared joints should be repointed next season. Maintain removal of all plant and weed tap roots from the mortar joints.



Southeast corner of 10A patio looking south.

Building #11 and Building #10A Walls

Any masonry wall should be inspected for water infiltration annually. Signs of infiltration are spalling brick, excess moss and litchen and cracks in joints or through the building material. Any cracks or movement should be monitored with "tell tales" or guages, to identify sources of movement. Any other spalling or mortar deterioration should be repaired seasonally, ensuring longevity through a cost-effective building resource management program.



North elevation of north wall of 10A and alley.

Building #48 Patio

Any masonry surface should be inspected for water infiltration annually. The patio's motar joints should be inspected for cracks or failure, and repaired immediately to prevent future infiltration. Frost heaving will cause the patio to become uneven, collect additional water and create an uneven patio surface. Maintain removal of all plant and weed tap roots from the mortar joints.



Patio after restoration, view looking north.

Cotton Flour Mill's Turbine Pit Walls

Floods are a greater threat than just frost heaves and minor water infiltration. Prevention of such events are quite difficult, so maintenance in and around such events can provide greater strength for protection. Maintaining the brick cap joints will prevent water from infiltrating the interior of the walls, so the wall will not have "weak points" when challenged by the river. Of course, periodic removal of vegetation will also assist in greater longevity.



Completed west wall with cap, looking south.

Vendors

All purchases were made through HAFE Flood/Storm Account # 3851-7606-515 N 2330.

A.C.&T. Co., Inc.
P.O. Box 4217
Hagertown, MD 21741-4217
(301) 582-2700

*Portable Toilet Rental

Ingalls Lumber and Supply Inc.
203 E. Main St
Middletown, MD 21766
(301) 371-6300

*Miscellaneous Supplies

Rentals Unlimited
24000 Frederick Ave
Clarksburg, MD 20871
(301) 971-6200

*Compact Loader/Backhoe

BIBLIOGRAPHY

Barlow, W. Lewis, Project Historical Architect. Task Directive, Package 123: Ruin Stabilization, Virginius Island. Harpers Ferry National Historical Park: Denver Service Center, Nov 1977.

Gilbert, Dave, Where Industry Failed: Water-Powered Mills at Harpers Ferry West Virginia. Charleston: Pictorial Histories,1984.

Halchin, Jill Y, The Island of Virginius, 1800 - 1936. Version 1.3 Package 123, 5 May 1992.

Hannah, David, Archaeological Excavations on Virginius Island, 1966 - 68. Harpers Ferry: Job Corps Civilian Conservation Center, 1969.

Johnson, Mary Edith and John Barker, Virginius Island: The Transformation Of A Small Industrial Community, 1800 - 1936. National Park Service and the University of Maryland Cooperative Agreement, 15 Dec 1992.

Kreh, R. T., Sr., Advanced Masonry Skills. Albany: Delmar Publishers, 1978.

Shackel, Paul A., ed. Domestic Responses To Nineteenth-Century Industrialization: An Archeology of Park Building 48, Harpers Ferry National Historical Park. Washington, D.C.: National Park Service, 1994.

Snell, Charles, A Compendium of the Commercial and Industrial Advertisements of the Business and Manufacturing Establishments of Harpers Ferry and the Island of Virginius, 1824 - 1861. Denver: National Park Service, 1973.

Snell, Charles, Historic Building Report,Part I & II Bldg. No. 48, An Armorer's Dwelling House, Lot No. 2, Shenandoah Street. Harpers Ferry: National Park Service, 1958.

Snell, Charles, Historic Structure Report- An Armorer's Dwelling House Bldg. No. 48, on U. S. Lot No. 2 North of Shenandoah Street, Harpers Ferry National Historical Park, West Virginia. Denver Service Center, 1980.

U. S. Department of the Interior, National Park Service, Harpers Ferry National Historical Park, Cultural Landscape Report: Lower Town, Harpers Ferry National Historical Park. Washington, D.C.: National Park Service, 1993.

U. S. Department of the Interior, National Park Service, Harpers Ferry National Historical Park, Cultural Landscape Report: Virginius Island, Harpers Ferry National Historical Park. Washington, D. C.: National Park Service, 1993.

Department of the Interior
National Park Service
Supplemental Agreement/Amendment

Modification No. __1__

Effective Date: Date of last signature through September 30, 1998.

To Provide Project Funding Under Cooperative Agreement Number: 1443CA3850-98-001

Cooperator: Vocational Resources/Goodwill Industries of Rhode Island
Institute for Preservation Training (IPT)
100 Houghton Street
Providence, Rhode Island 02904

Project Title: COOPERATIVE AGREEMENT 1443CA3850-98-001 between the UNITED STATES DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE, and VOCATIONAL RESOURCES/GOODWILL INDUSTRIES OF RHODE ISLAND INSTITUTE FOR PRESERVATION TRAINING. Project work associated with the Park Flood/Storm Recovery Program 1998.

Funding: HAFE Flood/Storm Recovery Program (FSRP)
Account 3851-7606-515

Modification No.1 Total Not To Exceed: $40,439.50

Total Funding Provided for this Cooperative Agreement in FY98 will be: $74,529.50
Initial Cooperative Agreement Amendment.....$34,090.00
Cooperative Agreement Modification No. 1 ..... $40,439.50

This Modification No.1 increases the funding provided under Cooperative Agreement Amendment 1443CA3850-98-001 an additional $40,439.50 to be derived from HAFE Account 3851-7606-515. These additional funds will be used for repairs to brick and stone masonry features which are part of the Harpers Ferry National Historical Park Flood/Storm Recovery Program, as described in the attached Statement of Work. All other provisions of this Agreement are unchanged.

ARTICLE I. AUTHORIZING SIGNATURES

IN WITNESS WHEREOF, the parties hereto have caused this Modification to the Cooperative Agreement to be executed by their respective duly authorized officers or representatives the day and year written below.

VOCATIONAL RESOURCES/GOODWILL INDUSTRIES
OF RHODE ISLAND
INSTITUTE FOR PRESERVATION TRAINING

Paul Pickens, President CEO Date

NATIONAL PARK SERVICE

Donald Campbell, Superintendent Date
Harpers Ferry National Historical Park
National Park Service
P.O.Box 65
Harpers Ferry, West Virginia, 25425
telephone 304-535-6224

Ms. Rita Mihalik, HAFE Procurement Officer Date
Contacting Officer
National Capital Region
National Park Service
1100 Ohio Drive, S.W.
Washington, D.C. 20242
telephone 202-485-9732

ARTICLE II. STATEMENT OF WORK

HAFE/ IPT Building #48 Platform and Building 10A Stone and Brick Reconstruction

1. HAFE/IPT Summer Training Program '98; June 8th- July 16th:

The HAFE/IPT Summer Training Program '98 in Harpers Ferry National Historical Park seeks to provide undergraduate students and apprentice exposure to the professional practices of the historic preservation field. The project will begin on June 8th, 1998 and finish on July 16th, 1998. The project encompasses the education and training of apprentice selected undergraduate students on the repairing of Building #10A's patio and Building #10's north wall, and reconstruction of the Building #48 stone platform. Instruction will be provided by IPT where participants will learn the conservation and masonry techniques in carrying out the scope of work.

2. Quantity Scope of Work at Building #10A and Building #10's north wall, and reconstruction of Building 48 stone platform

IPT will provide a masonry specialist, a field technician, a student, and an apprentice to perform the work. The scope of work at Building 10A:

- west wall, west elevation, adjacent to Building 11; reconstruction of stone "shoulder" to properly shed water
- center patio, east step; repoint failed mortar joints
- center patio, north-east corner; remove and relay patio brick to properly shed water. reconstruct corner to better shed water runoff
- east wall, east elevation: clean debris from in front of lower parging, removing any failed parging and reapply with proper mix ratio
- east wall, east elevation in south corner; remove additional failed mortar and brick, and reinstall
- Building 10, north wall, adjacent to east wall of 10A, behind downspout; remove failed brick and mortar to approximately 12' from grade

The scope of work at Building 48:

- documentation of stone layout
- removal of cap stones
- provide access for archeological investigation
- remove inadequate rubble
- reconstruct "cheat" wall, recessing joints
- lay gravel base
- lay sub-base of dry portland and stone dust mix

- relay patio stones, refitting where necessary
- point stones with 1:2:6 mortar mix

3. Project Contingencies

The expediency of work on Building #10A's patio and Building #10's north wall, and reconstruction of Building 48 stone platform is dependent on weather. If additional work is required to create protection from inclement weather, then reconstruction/repointing productivity may be effected. Every effort will be made by HAFE/NPS, IPT and student trainees in providing a professional, safe, quality and cost effective work product.

4. IPT agrees to:

- Providing all material and equipment lists to HAFE for purchase or rental
- Supply of all hand and light power tools
- Arrange and distribute HAFE provided subsistence and travel
- Provide supervision; maintain HAFE dormitories safe and clean at all times
- Maintain work sites, equipment, and materials in clean and safe order
- Maintain weather protection on work site
- Provide personal protective equipment
- Build and provide cover for work progress during rainy weather
- All personal and personnel transportation
- First Aid and Safety Program
- Compile, print, and distribute the final Completion report

5. HAFE agrees to provide:

- Mortar mix ratios and brick samples
- Temporary Housing in 1C or 1D
- Material and equipment procurement
- Heavy equipment/scaffolding use

6. Project Schedule:

Work will begin on June 8th and be completed no later than July 16th 1998. IPT crews will work 4, 10 hour days, Monday through Thursday of each week, 7:00 AM-5:30 PM. Two hours of each week will be spent on travel between Providence, RI and Harpers Ferry.

7. Accommodation Schedule:

6/8-7/19- 2 IPT employees
6/8-6/11- 1 IPT employee
6/22-6/25- 1 IPT employee
7/6-7/9- 1 IPT employee

8. Compliance:

The scope of work shall be performed under the 1997 Flood/Storm Programmatic Agreement between the West Virginia State Historic Preservation Office and HAFE Park . Written and photographic documentation will provide the appropriate compliance factors necessary for any listed historic structure, under continuum of previous work completed in the '96-'97 season.

IPT Cost Estimate

IPT Crew Labor

Robert Cagnetta, Project Manager	120 hrs @ $45.00/hr	$ 5,400.00
Bill Hildebrant, Mason	240 hrs @ $45.00/hr	$10,800.00
Masonry Technician	240 hrs @ $32.00/hr	$ 7,680.00
Apprentice	240 hrs @ $22.00/hr	$ 5,280.00
Laborer, Student #1	240 hrs @ $20.00/hr	$ 4,800.00
	Total: 1080 hrs	Total Labor: $33,960.00

Travel		
Automobiles		
Miles	3,440 Miles @ $.30/mi	$ 1032.00
Gas receipts		$ 120.00
Car rental		
Sedan	6 @ $300.00/wk	$ 1,800.00
Plane Fare		
Robert Cagnetta	3 Flights @ $130.00	$ 390.00
Apprentice	3 Flights @ $130.00	$ 390.00
	Total Travel:	$ 3,732.00

Lodging and Subsistence			
Food Allowance			
Robert Cagnetta	12 days @ $22.50/ day		$ 270.00
Apprentice	33 days @ $22.50/ day		$ 742.50
Laborer, Student #1	24 days @ $22.50/ day		$ 540.00
		Total Food	$ 1,552.50
Housing			
Robert Cagnetta	3 weeks @ $25.00/wk	$ 75.00	
Apprentice	6 weeks @ $25.00/wk	$ 150.00	
Laborer, Student #1	6 weeks @ $25.00/wk	$ 150.00	
		Total Housing:	$ 375.00
Contingency		Total Cont.	$ 500.00
Receipts		Total Receipts	$ 320.00
Contract Total			**$40,439.50**

Products and Reports:

IPT shall submit a weekly project report to Harpers Ferry National Historical Park (HAFE) detailing project costs, work accomplished, site conditions, and individual staff hours.

Upon completion of the project, IPT shall submit a Record of Treatment to Harpers Ferry National Historical Park copies of existing conditions documentation, project photos and negatives, as-built drawings, and cost accounting data.

49804.50

Department of the Interior
National Park Service
Supplemental Agreement/Amendment

Modification No. __2__

Effective Date: Date of last signature through September 30, 1998.

To Provide Project Funding Under Cooperative Agreement Number: 1443CA3850-98-001

Cooperator: Vocational Resources/Goodwill Industries of Rhode Island
Institute for Preservation Training (IPT)
100 Houghton Street
Providence, Rhode Island 02904

Project Title: COOPERATIVE AGREEMENT 1443CA3850-98-001 between the UNITED STATES DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE, and VOCATIONAL RESOURCES/GOODWILL INDUSTRIES OF RHODE ISLAND INSTITUTE FOR PRESERVATION TRAINING. Project work associated with the Park Flood/Storm Recovery Program 1998.

Funding: HAFE Flood/Storm Recovery Program (FSRP)
Account 3851-7606-515

Modification No.2 Total Not To Exceed: $49,804.50

Total Funding Provided for this Cooperative Agreement in FY98 will be: $124,334.00
Initial Cooperative Agreement Amendment.....$34,090.00
Cooperative Agreement Modification No. 1 ..... $40,439.50
Cooperative Agreement Modification No. 2 .....$49,804.50

This Modification No.2 increases the funding provided under Cooperative Agreement Amendment 1443CA3850-98-001 an additional $49,804.50 to be derived from HAFE Account 3851-7606-515. These additional funds will be used for repairs to brick and stone masonry features which are part of the Harpers Ferry National Historical Park Flood/Storm Recovery Program, as described in the attached Statement of Work. All other provisions of this Agreement are unchanged.

ARTICLE I. AUTHORIZING SIGNATURES

IN WITNESS WHEREOF, the parties hereto have caused this Modification to the Cooperative Agreement to be executed by their respective duly authorized officers or representatives the day and year written below.

VOCATIONAL RESOURCES/GOODWILL INDUSTRIES
OF RHODE ISLAND
INSTITUTE FOR PRESERVATION TRAINING

Paul Pickens, President CEO Date

NATIONAL PARK SERVICE

Donald Campbell, Superintendent Date
Harpers Ferry National Historical Park
National Park Service
P.O.Box 65
Harpers Ferry, West Virginia, 25425
telephone 304-535-6224

Ms. Rita Mihalik, HAFE Procurement Officer Date
Contacting Officer
National Capital Region
National Park Service
1100 Ohio Drive, S.W.
Washington, D.C. 20242
telephone 202-485-9732

ARTICLE II. STATEMENT OF WORK

HAFE/ IPT Cotton Flour Mill Turbine Pit Wall Reconstruction

1. HAFE/IPT Summer Training Program '98; July 20th-September 3rd:

The HAFE/IPT Summer Training Program '98 in Harpers Ferry National Historical Park seeks to provide undergraduate students and apprentice exposure to the professional practices of the historic preservation field. The project will begin on July 20th, 1998 and finish on September 3rd, 1998. The project encompasses the education and training of apprentice and selected undergraduate students on the repointing and reconstruction of the Cotton Flour Mill's west outside turbine pit wall. Instruction will be provided by IPT where participants will learn the conservation and masonry techniques in carrying out the scope of work.

2. Quantity Scope of Work at the Cotton Flour Mill Turbine Pit Wall Ruins

IPT will provide a masonry specialist, a field technician, a student, and an apprentice to perform the work. The scope entails reconstructing, repairing and repointing identified areas on the west elevation of the west turbine pit wall. The extent of deterioration and preparation necessary to perform such work will dictate the volume of work completed. The eight week project will assess the extent of reconstruction necessary for the entire reconstruction of the cotton flour mill turbine pit walls and project the quantity and cost estimates required for such completion.

3. The Methodology for Scope of Work for the Cotton Flour Mill Turbine Pit Wall Ruins:

- assembly of scaffolding to access areas to perform work
- removal of deteriorated/failed mortar.
- removal of inferior brick, or loose brick.
- relaying/repointing with 1:2:6 mortar mixes, color to match.
- capping wall with mortar to prevent water seepage.

5. Project Contingencies

The extent of work on the Cotton Flour Mill Turbine Pit Wall Ruins is dependent on the levels of deteriorated exposed brick and substrates. Completion of the work will also depend on proper weather conditions for laying brick. If additional work is required to create protection from inclement weather, then reconstruction/repointing productivity may be effected. Every effort will be made by HAFE/NPS, IPT and student trainees in providing a professional, safe, quality and cost effective work product.

6. IPT agrees to:

- Providing all material and equipment lists to HAFE for purchase or rental
- Supply of all hand and light power tools
- Arrange and distribute HAFE provided subsistence and travel
- Provide supervision; maintain HAFE dormitories safe and clean at all times
- Maintain work sites, equipment, and materials in clean and safe order
- Maintain weather protection on work site
- Provide personal protective equipment
- Build and provide cover for work progress during rainy weather
- All personal and personnel transportation
- First Aid and Safety Program
- Compile, print, and distribute the final Completion report

7. HAFE agrees to provide:

- Mortar mix ratios and brick samples
- Temporary Housing in 1C or 1D
- Material and equipment procurement
- Heavy equipment/scaffolding use

8. Project Schedule:

Work will begin on July 20th and be completed no later than September 3rd, 1998. IPT crews will work 4, 10 hour days, Monday through Thursday of each week, 7:00 AM-5:30 PM. Two Hours of each week will be spent for employees traveling between Providence, RI and Harpers Ferry.

9. Accommodation Schedule:
7/20-9/3- 2 IPT employees
7/20-7/23- 1 IPT employee
8/3-8/6- 1 IPT employee
8/17-8/20- 1 IPT employee
8/31-9/3- 1 IPT employee

10. Compliance:
The scope of work shall be performed under the 1997 Flood/Storm Programmatic Agreement between the West Virginia State Historic Preservation Office and HAFE Park . Written and photographic documentation will provide the appropriate compliance factors necessary for any listed historic structure, under continuum of previous work completed in the '96-'97 season.

IPT Cost Estimate

IPT Crew Labor

Robert Cagnetta, Project Manager	160 hrs @ $45.00/hr	$ 7,200.00
Bill Hildebrant, Mason	280 hrs @ $45.00/hr	$12,600.00
John Vegas, Preservation Technician	56 hrs @ $32.00/hr	$ 1,792.00
Masonry Technician	280 hrs @ $32.00/hr	$ 8,960.00
Apprentice	280 hrs @ $22.00/hr	$ 6,160.00
Laborer, Student #1	280 hrs @ $20.00/hr	$ 5,600.00
Total: 1336 hrs	Total Labor:	$42,312.00

Travel

Automobiles		
Miles	2,400 Miles @ $.30/mi	$ 720.00
Gas receipts		$ 120.00
Car rental		
Sedan	7 @ $300.00/wk	$ 2,100.00
Plane Fare		
Robert Cagnetta	4 Flights @ $130.00	$ 520.00
Apprentice	4 Flights @ $130.00	$ 520.00
	Total Travel:	$ 3,980.00

Lodging and Subsistence			
Food Allowance			
Robert Cagnetta	16 days @ $22.50/ day		$ 360.00
Apprentice	37 days @ $22.50/ day		$ 832.50
Laborer, Student #1	28 days @ $22.50/ day		$ 630.00
		Total Food	$ 1,822.50
Housing			
Robert Cagnetta	4 weeks @ $25.00/wk	$ 100.00	
Apprentice	7 weeks @ $25.00/wk	$ 175.00	
Laborer, Student #1	7 weeks @ $25.00/wk	$ 175.00	
		Total Housing:	$450.00
Contingency		Total Cont.	$ 800.00
Receipts		Total Receipts	$ 440.00
Contract Total			$49,804.50

Products and Reports:

IPT shall submit a weekly project report to Harpers Ferry National Historical Park (HAFE) detailing project costs, work accomplished, site conditions, and individual staff hours.

Upon completion of the project, IPT shall submit a Record of Treatment to Harpers Ferry National Historical Park copies of existing conditions documentation, project photos and negatives, as-built drawings, and cost accounting data.

Shenandoah St

Notes:

-|- Trennon Mark

ROGER WILLIAMS UNIVERSITY

One Old Ferry Road
Bristol, Rhode Island 02809-2921 USA
401-254-3580 FAX 401-254-3501

School of Architecture
Center for Historic Preservation

14 April 98

Donald Campbell, Superintendent
Harpers Ferry National Historical Park
National Park Service
P.O. Box65
Harpers Ferry, West Virginia 25425

Dear Mr. Campbell:

On behalf of the School of Architecture, I wish to express my gratitude for HAFE hosting the RWU student 'spring break' preservation workshop, which helped stabilize the masonry of Building 10A. We are pleased to work with the park in its ongoing, exemplary preservation efforts.

Through this endeavor, students strengthened more than bonds between brick and mortar. This HAFE/IPT/RWU project strengthened their capacity to contribute to such cooperative, meaningful work and contributed to their greater understanding of preservation—and themselves. Student's newfound insight was applied directly upon their return during advising period, as they selected their summer and fall courses. Through the HAFE project, a number of participants were able to define and focus their career goals, and explore ways to achieve them through internships, senior projects, and potential employment.

I hope we can respond to the tremendous success of this endeavor by exploring future avenues of cooperation. In particular, I wish to express my sincere gratitude to Rob Cagnetta of the Institute for Preservation Training for his dedicated, altruistic efforts that helped realize this meaningful initiative.

Sincerely,

Philip Cryan Marshall

Philip Cryan Marshall
Associate Professor

copy: Rob Cagnetta, Project Manager, Institute for Preservation Training
Peter Dessauer, Historical Architect, HAFE
Stephen White, AIA, Dean, School of Architecture, RWU
RWU Historic Preservation Program faculty
RWU Historic Preservation Society
RWU Historic Preservation program HAFE participants

A34



MARY WASHINGTON COLLEGE

DEPARTMENT OF HISTORIC PRESERVATION

Peter Dunkerson

April 29, 1998

Donald Campbell
Superintendent
Harpers Ferry National Historical Park
P.O. Box 65
Harpers Ferry, WV 25425

Dear Sir:

Over the Mary Washington College Spring Break from March 9th through the 13th, five Mary Washington students worked as interns of Goodwill Industries of Rhode Island, repointing two of the surviving walls of Building 10A at Harper's Ferry National Historical Park. The internship was remarkable for the fit with our program and for the opportunities that it offered this students to directly experience the techniques of architectural conservation in a short term project. Your support for the project's goals, both teaching and conservation are appreciated. Every student who participated was very positive about the experience, despite the inclement weather that truncated the application of mortar. I hope that as the staff of Harper's Ferry National Historical Park continues to consider the conservation of its resources that these kinds of teaching events can be part of the process.

Sincerely,

Gary Stanton

Gary Stanton
Chair
Associate Professor of Historic Preservation

1301 College Avenue • Fredericksburg, Virginia 22401-5358
(540) 654-1041
TTY (540) 654-1104 • FAX (540) 654-1068

A34

Box MWC-1176
1701 College Avenue
Fredericksburg, VA 22401
March 22, 1998

Mr. Donald Campbell
Superintendent
Harpers Ferry National Park
P.O.Box 65
Harpers Ferry, WV 25425

Dear Mr. Campbell,

I am writing to express my gratitude for the opportunity that was made available to my Mary Washington classmates and I at Harpers Ferry Park the week of March 9-12. Working with the Institute for Preservation Training on Building 10A was a great experience. The Historic Preservation curriculum at Mary Washington covers many different aspects of the field, but lacks real hands-on experiences in craft related fields.

I learned so much in four days and had a great time. Harpers Ferry is a beautiful park and I enjoyed my first visit very much. It was interesting to see behind the scenes activities and be part of the work that is going on there. Also thank you for the wonderful "A Walker's Guide to Harpers Ferry," it was an unexpected reward.

I hope this is a program that will continue in the future. It is definitely something that enriches all the classroom work that is done in the Historic Preservation major. Speaking as a Senior, graduating in May, this was a program that I was happy to take part in. It showed me many areas in which I might become involved with in the future. I also hope that the Mary Washington program can be of further assistance on projects to come. I know I would enjoy working at Harpers Ferry again.

Thank you again for this opportunity.

Sincerely,

Lina Marunas

Lina Marunas
Mary Washington College

Institute for Preservation Training

Goodwill Industries of Rhode Island

April 29, 1998

Donald Campbell
Superintendent
Harpers Ferry National Historical Park
Harpers Ferry, West Virginia 25425

Superintendent Campbell,

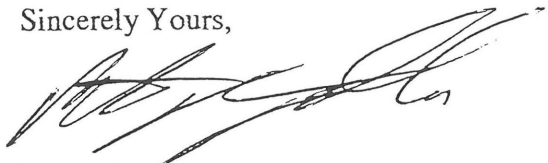
I would like to take this opportunity to again thank you for the park's support of our program. Over the past year, IPT performed several projects, ranging from wood shingle roofs to masonry, while providing training to our apprentice and over a dozen historic preservation students. The success of these training projects is a tribute to the park's personnel, and the continuing avocation of the IPT community.

As you know, we have recently signed 13 weeks of training this summer in HAFE. The training will take place on three different park projects. For these projects, we will continue to utilize the services of a local mason, Billy Hildebrand, and employ two students for project assistance and training. These projects enable the students to have long term trades exposure, refining their skills as future preservationists.

Mr. Hildebrand was first hired to assist in the training of the Mary Washington College and Roger Williams University students in March. The success and continued presence of IPT in HAFE created another great opportunity for our program, a new working relationship with the Historic Preservation Training Center. For the past two weeks, we have been working along side the HPTC crews on Blg #5 and #7, and anticipate assisting additional projects on Virginius Island and on Package 110. This ability to exchange our experiences and initiatives may foster stronger, more diverse training programs.

Lastly, I must commend the park's personnel, especially Peter Dessauer, for their overwhelming endorsements. Such high recommendations have lead us towards our first agreement with the state of New York's Parks, Recreation and Historic Preservation Office. The early visions of our program only three years ago have evolved through the tremendous outreach and support by the National Park Service, and for the past year, Harpers Ferry National Historical Park.

Sincerely Yours,



Robert J. Cagnetta
Project Manager, IPT

cc: Peter Dessauer

100 Houghton St.
Providence, RI 02904

Phone (401)-861-2080
Fax (401)-454-0889

CARF -Accredited
United Way Member Agency

MARY WASHINGTON COLLEGE
DEPARTMENT OF HISTORIC PRESERVATION

8 April 1998

Peter F. Dessauer, Historical Architect
Harpers Ferry National Historical Park
National Park Service
P.O. Box 65
Harpers Ferry, W.V. 25425

Dear Mr. Dessauer:

On behalf of the Center for Historic Preservation and our faculty here in the Department, let me thank you for the Harper's Ferry guide and map, and the kind words with regards to our students. We appreciate you taking the time to do both, and will add the guide book to our seminar room's reference collections.

We're glad and proud that our students did well in the program. More importantly though, we want to express our gratitude for your office and staff making the opportunity to do hands-on stabilization available. Our students are motivated by such experiences, and for your information, they returned with nothing but positive remarks about the workshop.

We hope that such opportunities will occur in the future, and that our program will be able to provide cooperation and interested students.

Sincerely,

Douglas W. Sanford

Douglas W. Sanford
Asst. Professor
Center Director

1301 COLLEGE AVENUE • FREDERICKSBURG, VIRGINIA 22401-5358
(540) 654-1041 • TTY (540) 654-1104 • FAX (540) 654-1068

Holly L. Hanney
22 Noyes Ave.
Bristol, RI 02809

September 23, 1998

Donald Campbell
Superintendent
Harpers Ferry National Historical Park
PO Box 65
Harpers Ferry, WV 25425

Dear Mr. Campbell,

I would like to take this time to thank you for the opportunity to work in Harpers Ferry this summer through the Institute for Preservation Training. The program allowed me to gain valuable hands-on training in the field of masonry restoration. Although I do not plan on becoming a professional mason, I eventually intend to pursue a masters in architectural conservation. I strongly believe that in order to be an effective architectural conservator, one needs to experience the manual labor that is involved in the conservation process. IPT's program with HAFE allowed me to achieve this experience.

The partnership between students and professional masons proved to be beneficial for both parties throughout the summer. The masons seemed to take pride in the fact that they could pass on their skills and the fact that the students brought a new element to the projects, that being historical research. I will not forget the way many of the masons studied the historic reports and photographs that I brought to the site to show them. The research provided them with a greater appreciation for the historic site and resulted in a greater pride for the historic accuracy of their work.

In addition to my restoration experience this summer, I was also able to learn a lot about the structure of the National Park Service. The Park Service staff were extremely friendly and helpful throughout the summer.

I would also like to thank you for the Walker's Guide to Harpers Ferry. Thanks again for this wonderful experience.

Sincerely,

Holly L. Hanney

Holly L. Hanney

cc: Peter Dessauer
Rob Cagnetta

Institute for Preservation Training

A Program of Goodwill Industries of Rhode Island

Training Evaluation

Date: September 1998

Name: Holly L. Hanney

Address: 22 Noyes Ave.
Bristol, RI 02809-2107

Title: Intern

Supervisor: Rob Cagnetta

Project: 1998 HAFE Summer Training Program

Summarize the project

The 1998 Summer Training program included work on the Building 48 patio, the 10A patio area, and the Cotton/Flour Mill Turbine pit walls. The Building 48 patio project consisted of resetting the flagstones and reconstructing the stone foundation walls. In the 10A area, we repointed brick patios and walls, and parged the lower section of a wall. Finally we worked on repointing + reconstructing the Turbine pit walls.

Describe the training components as related to the project

I learned how to use typical masonry hand tools. I was shown how to chip stone, creating a flat surface for use in stone walls. I learned how to remove mortar from the interior brick turbine walls for more than a week. I learned how to mix mortar using different mixes depending on the project, and also how to repoint. Another training component related to the project was how to cut and lay brick. A final training component was how to lay stone using only a small amount of mortar so that a dry-laid appearance was achieved.

List the relationship between the training experience and the participating professionals

The relationship between the training experience and the participating professionals was good. The professionals were available for questions and help, but they didn't initiate any "training", with the exception of two masons who really made an effort to train us. The most training gained through working with the professionals was through observation.

Describe the *most* beneficial portion of the training experience

I think that the most beneficial portion of the training experience was during the Building 48 patio restoration. One reason was because we had contact with the architect before and after restoration, enabling us to understand what needed to be done & if we met project goals. The main reason was that we had one consistent supervisor, (cont. @ bottom)

Describe the *least* beneficial portion of the training experience

The least beneficial portion of the training experience was that there was no formalized training where a professional sat down explaining the benefits of different tools + techniques related to repointing.

Explain how the experience helped define your career goals

The experience reinforced the fact that I do not want to become a professional mason. The experience also gave me background experience if I decide to definitely pursue a career in architectural conservation.

Most beneficial cont...

- Larry Trail, who worked with us through completion. I think Larry did an excellent job of teaching and explaining what needed to be done and why it should be done a certain way. He was able to make even the simplest parts of the project educational.

What is your overall impression of the project and the training experience

My overall impression of the project and training experience was excellent. All of my goals and expectations were met. The project allowed me to gain valuable hands-on-training in the field of masonry restoration that was not possible in the classroom. I learned a lot about restoration, masonry, + the Park Service that would not have been possible without the cooperation of IPT.

Additional Comments

Record of Treatment

Record of treatment
Building 10a Student
Training Program
March 1998

Goodwill Industries of RI
Institute for Preservation
Training

Edited by John O Vegas



Mary Washington College HP Students
March 1998

Authors: Robert Cagnetta, Aaron Crocker, and John Vegas

A joint Historic Preservation effort of
Goodwill Industries of RI and Harpers Ferry National Historic Park

Financial Summary

IPT COSTS FOR THE COMPLETION OF BUILDING 10A:		
Labor	$27,290.00	
Plane Fares	$1,850.00	
Housing	$385.98	
Auto Expenses	$1,054.46	
MI&E	$3,509.56	
Total Project Costs	$34,090.00	
Original Contract Price	$34,090.00	
Change Orders	$0.00	
Total IPT Billing		**$34,090.00**
SUPPLY AND SERVICES EXPENSES TO HAFE FLOOD/STORM ACCOUNT 3851-7606-515:		
Supplies		
Ingles Lumber and Supply Inc.	$678.00	
Kable Photo	$54.20	
The Roof Center	$144.41	
Frederick Brickworks	$11.99	
Total Supply Expenses		**$888.60**
TOTAL EXPENSES:		**$34,978.60**

Project Narrative

On March 2, 1998, IPT began the work on building 10A with three IPT staff, Aaron Crocker, Robert Cagnetta, and John Vegas, and masonry specialist, William Hildebrand. The following week, March 9, students from Mary Washington University of Fredericksburg, Virginia were scheduled to begin training on building 10A. On March 16 students from Roger Williams University arrived to complete another week of masonry training provided by IPT staff and Mr. Hildebrand. The entire project lasted five weeks and the estimated cost of the project for those five weeks, including travel, labor, MI&E and contingencies was $34,090. The scope of work dictated the requirements of the job which were outlined in the Cooperative Agreement.



MWC Students and Master Mason Billy Hildebrand

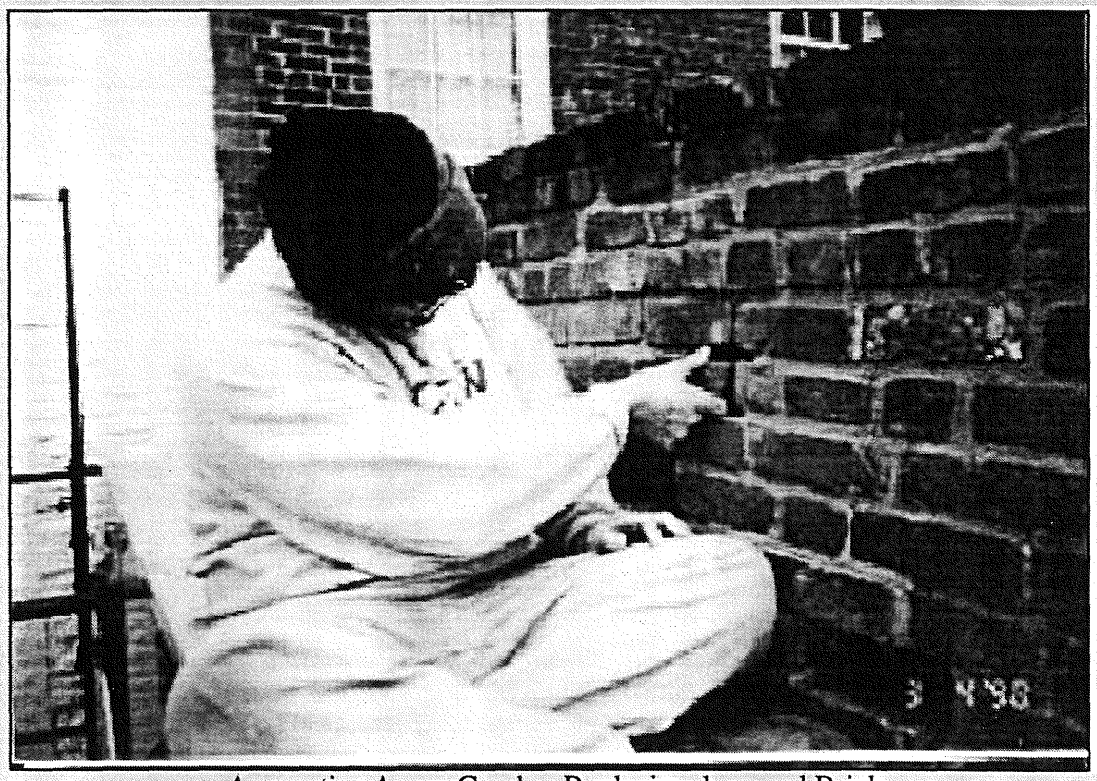
The first week, beginning March 2, allowed the IPT staff and masonry specialist William Hildebrand to prepare for the next two weeks of training. Materials had been requested and delivered prior to the beginning of the project. The walls were staged using park provided scaffolding, in compliance with OSHA regulations, and work began for the IPT staff and Mr. Hildebrand. The old mortar was raked out using masonry chisels and hammers. Mortar was mixed, under instruction from Mr. Hildebrand, using the ratio of 6:2:1 (6) sand to (2) lime to (1) Portland Cement. This mortar was pointed into the joints using a trowel and pointing tool. When necessary, old brick that spalled or had deteriorated beyond structural soundness, was replaced in kind with hand made salvaged brick

from the Cotton/ Flour Mill on Virginius Island. Each brick replaced matched in color, size and texture.

Beginning the week of March 9, students from Mary Washington University arrived to receive training based on site specific curricula focusing on brick pointing, mortar mixes, and brick re-placement. In addition to their on site training, the students were given a lecture by IPT Project Manager, Robert Cagnetta, on OSHA safety regulations and issues surrounding Section 106 of the Historic Preservation Act of 1966. A tour of the park was provided by Park Interpreter Michael Wilcox and gave the students historic context from which to understand the reason for their training. Masonry specialist William Hildebrand, instructed the students on the proper use of the masonry tools; brick hammers, chisels, trowels and pointing tools. Students were required to wear safety equipment such as gloves, hard hats, and eye protection. Weather created a problem for the pointing because temperatures were below freezing for most of the week and the threat of the mortar freezing was too great. However, the students did complete most of their intended training. Their week ended with a presentation of the Walking Guide to Harpers Ferry, presented by Peter Dessauer, HAFE Park Architect.

March 16 brought a new group of students from Roger Williams University for similar training in brick pointing and replacement.The same lecture was given by Mr. Cagnetta on the safety issues regarding OSHA regulations and the Section 106 information. A similar tour was provided by Park Interpreter William Banks, to give the historical context of Harpers Ferry to the students. Again weather posed a problem, this time rain, but IPT staff trapped off sections of the walls and the students were able to receive their full complement of training. As before, the students learned the proper methods for pointing using the masonry tools and this instruction was provided by Mr. Hildebrand. Each student wore eye protection, hard hats, and gloves during the time that they were on site. On Thursday, Peter Dessauer gave each of the students copies of the Walking Guide to Harpers Ferry and the training was completed for the college students. Work continued on site for IPT staff, during the next two weeks, replacing brick and rebuilding sections of building 10A using in kind brick. After all of the pointing work was completed, a mortar cap was installed to prevent water infiltration. Sixteen ounce lead coated copper flashing was installed prior to the cap's installation to provide increased protection from water.

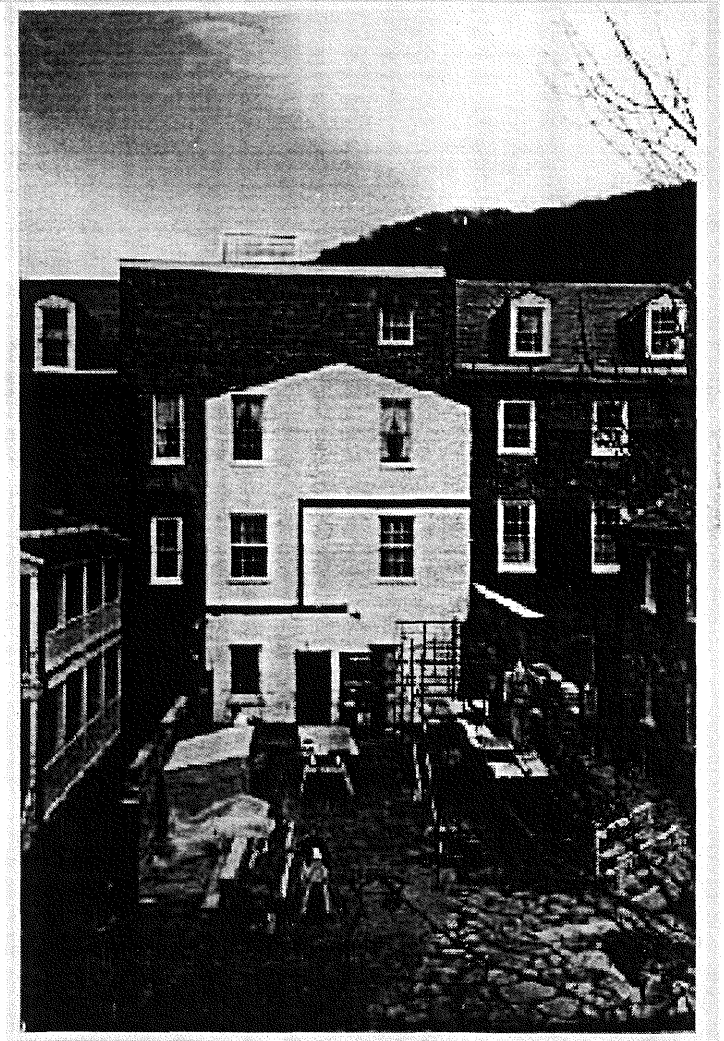
The work was concluded when the site was broken down, the staging disassembled, and the patio area cleaned for final inspection. Peter Dessauer gave the final approval of the project during the fifth week and work then began on the completion report.



Apprentice Aaron Crocker Replacing damaged Brick

Existing Conditions

Building 10A is located at the rear of the buildings 9, 10, 11, at Harpers Ferry National Historical Park. The building consists of two walls that were keyed into building 10 as an addition. The structure was never rebuilt after being destroyed by a fire and the park chose to keep the exhibit as ruins. Two fireplaces exist, having been filled and capped long ago. The east wall measures approximately four feet rising to ten feet on the east elevation as it keys into building 10. On the west elevation of the east wall, the wall measures approximately eight feet high and rises to about thirteen feet as it keys into building 10. The west wall is the larger of the two and measures ten feet and rises to fourteen feet high as it keys into building 10. Both of the walls are approximately thirty-five feet long. Building 10 A mid-Project Building 10A is known as the training wall at HAFE and many different hands have had an effect on the wall. Many of the brick were spalling, either from the use of

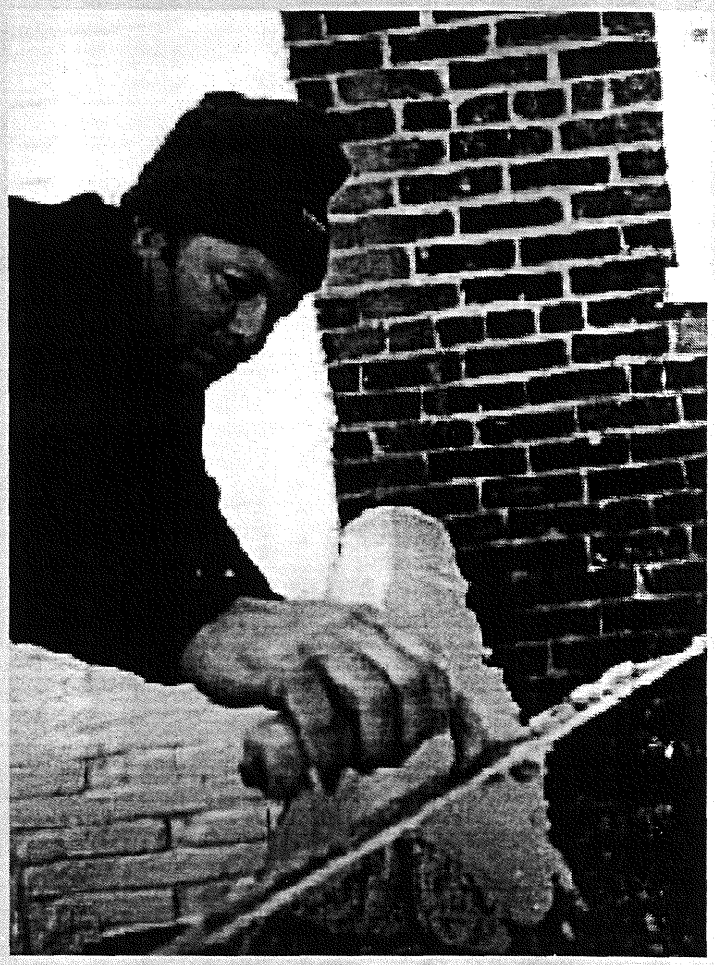


Building 10 A mid-Project

improper mortar, simply poor firing, excessive impurities in the clay, and age. The lack of a cap on either of the walls has had a detrimental effect on the condition of the brick. The wall most effected by this freeze-thaw process was the west wall. In two separate areas the brick has buckled, most probably from the expansion of ice behind the brick. Because of the location of the two walls, an area that does not receive more than two to three hours of sunlight a day, and poor drainage, lichen and moss have grown up along the lower courses of each wall. The moss and lichen are bad for the brick because of water retention and the lime robbing qualities of this type of vegetation. Finally, fifty percent of the mortar had to be replaced due to age and climatic erosion. All of these conditions made it necessary to replace about one hundred brick at projects end. During the floods that have plagued Harpers Ferry, the walls have been subject to a lot of running water that tended to wash away mortar and create structural problems. The most recent floods of 1996 have especially weakened the end of the east wall of building 10. During the flood, water flowed around the end of the wall and took away part of the foundation stones. Although this problem was not directly dealt with during the training period, plans to fix this problem are currently underway and scheduled for the summer of 1998. In general, the flood waters have accelerated the aging process of the mortar and brick, especially on the lower courses.

Project Execution

The five week project was assigned through a Cooperative Agreement between Harpers Ferry National Historic Park and the Institute for Preservation Training. Work began on March 2 for IPT staff and masonry specialist, William Hildebrand. Staging was erected in compliance with OSHA guidelines in order to perform the work on building 10A. IPT staff and Mr. Hildebrand began the project by raking the mortar out of the joints on the west wall on building 10A. Mortar was mixed with the ratios of sand to lime to Portland cement as 6:2:1. This mortar was then pointed into the joints using a trowel and pointing tools. When necessary, brick was replaced in kind using hand made salvage brick from the Cotton/Flour Mill on Virginius Island. The brick matched existing brick in color, size and texture. Upon arrival on March 2, Mary Washington students were



Master Mason Billy Hildebran

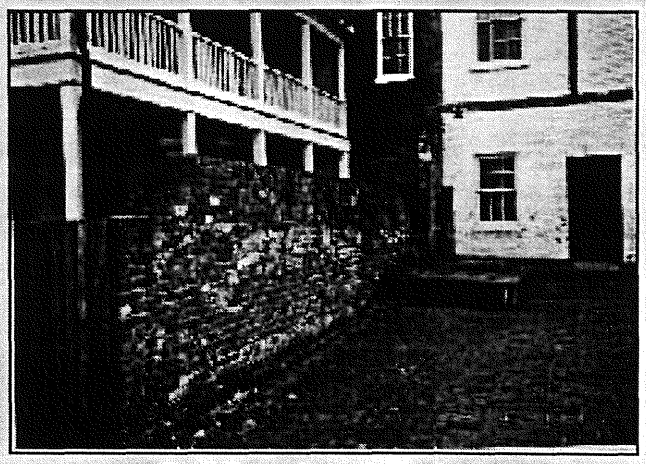
provided a lecture on OSHA safety guidelines and the importance of employing this information on site at building 10A. Students were told about the use of eye protection, hard hats, and gloves while working on site. The on site work progressed the next day with the students learning about the proper use of the masonry tools; hammers, chisels, and pointing tools by Mr. Hildebrand. After becoming comfortable with the tools, the students proceeded to rake out the joints and then point them with the new mortar; ratios were the same, as Mr. Hildebrand directed them. The following day the weather became too cold and the pointing had to cease because of the threat of freezing. Raking the joints however was focused on due to the adaptability of this process to the cold temperatures. Thursday was a summation day and no work was done on site. When the Roger Williams students on arrived on March 9 they were lectured on the same OSHA compliance issues and use of safety equipment on site. Site work began with the students from Roger Williams students pointing the joints that Mary Washington students had not completed because of the cold weather. Weather was again a problem, rain this time, so IPT staff erected tarps to keep the work areas dry. The pointing process was monitored by Mr. Hildebrand and IPT staff, and advice was given when asked for by the students. Roger Williams students received a concentration of pointing but also raked out old mortar to balance their training. Again, like Mary Washington, the students filled out evaluations, provided in the Appendix, on Thursday and did not perform site work. This concluded the training for both universities. Work did progress for the next two weeks, and IPT staff and Mr. Hildebrand completed the brick replacement and pointing. After completion of the pointing, a mortar cap, flashed with lead coated copper, LCC, was applied to the entire west wall and the tallest portion of the east wall. The 16 oz. LCC was cut 1-1 1/2" from the edge of the cap, for better mortar adhesion to the brick, and fastened with copper nails in every other mortar joint. Upon completion of all masonry tasks, Peter Dessauer, Park Architect, gave the final inspection and the staging was dismantled. Clean up of the patio area and related space to building 10A was then executed. All necessary measures were taken to ensure the site was completely tidy and the historical context was not damaged, only improved.

Documentation

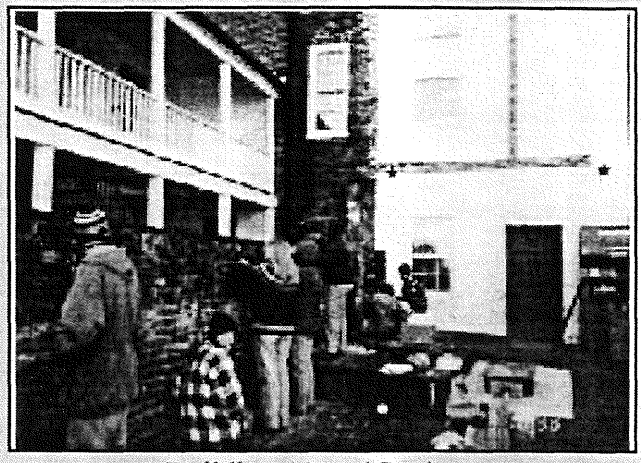
The documentation of the work process consisted of photographs, written weekly status reports, and training evaluations completed by the students (not included in this report). Six rolls of film, three of slides and three of print, were taken at various intervals as the project progressed. These photographs include existing conditions and completion photos. Written weekly status reports completed by IPT project manager, Robert Cagnetta, summarized the daily work process. Finally, as part of the training curriculum, the students from both Roger Williams and Mary Washington Universities completed training evaluations to assist IPT in gauging the effectiveness of the training experience.

Accomplishments

The primary focus of the five week training program was to provide the students from both Roger Williams University and Mary Washington University the opportunity to apply their course studies in the field. The students all seemed to agree that this component was missing from their respective programs. IPT seeks to provide training for students and trainees in the field of historic preservation through the use of site specific curricula. This was accomplished by using William (Billy) Hildebrand, masonry specialist, to provide the expertise needed on this project. IPT project manager, Robert Cagnetta, provided the students with an overview of OSHA regulations and guidelines in order to prepare them for proper safety procedures on the job. In addition to learning about historic brick pointing and replacement, the students received a behind the scenes look at the methodology and presentation of a National Historic Park like Harpers Ferry. All the students



Building 10a w/o Students



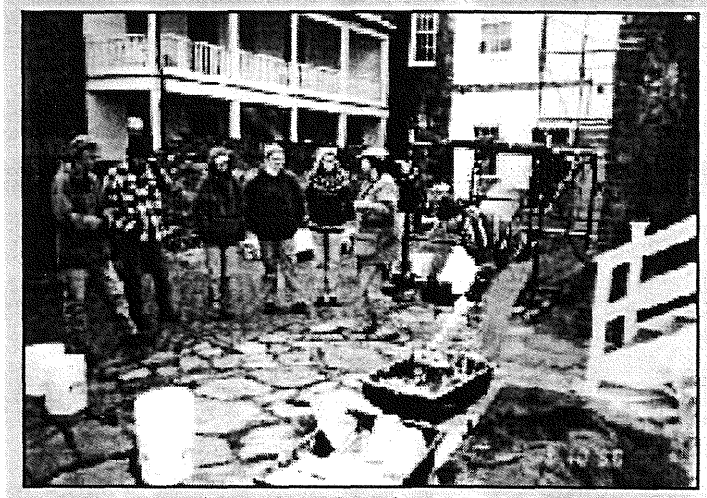
Building 10a w/ Students

left with a deeper understanding of the national park system and the inner workings of a governmental structure. Finally, HAFE, through IPT, was able to accomplish the stabilization and pointing of building 10A, on time and on budget, while providing training to students studying the field of historic preservation.

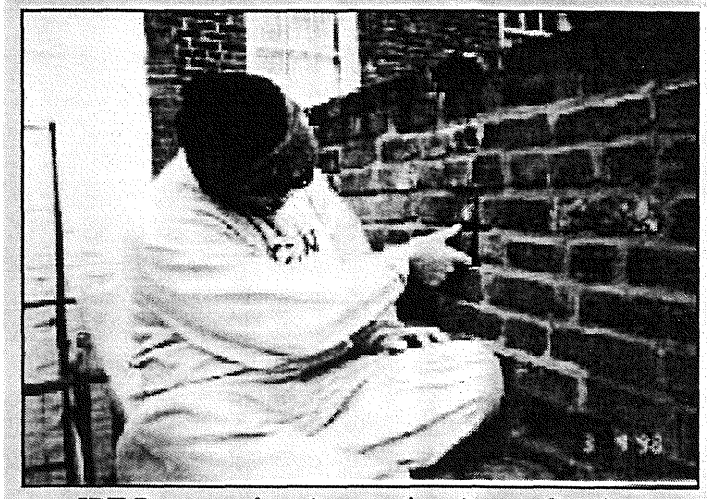
Training Summary

The training for Roger Williams University and Mary Washington students focused on the stabilization and repointing of building 10A, Harpers Ferry National Historical Park. Due to the building material, the training was exclusive to issues involved with brick. William Hildebrand acted as site expert on masonry, utilizing over thirty years and two generations of experience in the field. In addition to site specific training, the students gained exposure to the National Park Service archives, OSHA safety training, issues involving Section 106, compliance, and other local sights. Both groups of students followed the same outline of training, but in each case weather caused some alternate training to be incorporated.

Mary Washington University students arrived on March 2, 1998. After all of the students had assembled, a brief orientation was given in regard to park housing and etiquette. An overview of the project was presented on site to allow the students to see and understand what they would be working on



Mortar demonstration for MWC Students



IPT Preservation Apprentice Aaron Crocker

during the week. Following this meeting, a tour of HAFE, given by Park Interpreter Michael Wilcox, explained the historical context of the park and gave insight into the town as a 19th century manufacturing town. Next, the students received a detailed lecture by Robert Cagnetta, IPT Project Manager, on the importance of safety on the job and compliance with OSHA regulations. Also included in this lecture period was a review of Section 106, part of the Historic Preservation Act of 1966.

For the next two days the students from Mary Washington received on site training supervised by IPT staff and Billy Hildebrand, masonry specialist. Each student was trained in the use of masonry tools which included; brick hammers, gauging chisels, trowels, and 1/4" and 1/8" pointers. In conjunction with their safety training each student wore safety glasses, hard hats, and gloves. The training began with raking out the joints using the hammers and chisels. After the old mortar had been removed, the students learned the proper ratio of sand to lime to Portland Cement, 6:2:1, involved in the new mortar mix. William showed the students how to mix the mortar using a hoe and mortar trough. This mortar was then pointed into the old joints using a trowel and pointing tool as they were shown by William and IPT staff. The students from Mary Washington learned the hardest lesson about contracting; there is no controlling Mother Nature.
Wednesday brought temperatures of 20 degrees with the wind chill making it below zero. Because of the nature of the mortar, no more pointing could be done because of the definite freezing problem. The students completed their on site training by re-moving more old mortar which was completed by Roger Williams students.

Thursday was used as a summation day so that the students could give their evaluations of the training. These evaluations are included in this report in the Appendix. A short walking tour of Virginius Is-land and the masonry reconstruction of the Head Gates took a portion of the time in the morning. Evaluations were completed and as a show of gratitude from the park, Park Architect, Peter Dessauer gave each of the students a Walking Guide to Harper's Ferry signed by the Park Superintendent, Donald Campbell. After this period of gift giving and idea sharing about the training experience the students were released by the IPT staff to explore Harpers Ferry by themselves, and the training week was completed.

Roger Williams students flew down the following week, beginning March 9, 1998 with IPT staff from Rhode Island. Monday orientation was very similar to that of the Mary Washington students. Students received an overview of the park and rules about the park housing.

Asafety meeting followed this orientation that included all of the same information given to the other students about OSHA safety regulations. A brief review of Section 106 from the National Historic Preservation Act ended the meeting.

As before, the students were led down to the site and given an explanation of what was going to occur during the week of training. A guided tour, given by Park Interpreter William Banks, helped to acquaint the students with the Harpers Ferry's rich past and building history. Finally, the students explored the park and surroundings by themselves and got settled into housing. As with the students form Mary Washington, weather posed a problem for the on site training component of the week. This week it was rain, but IPT staff created a dry environment by tarping off sections of the wall. Again, the students from Roger Williams were educated on how to use the masonry tools safely and effectively. They began on Tuesday by pointing in the joints that had been worked on by the Mary Washington students and then moved on to raking out more of the old mortar. Wednesday again proved to be inclement but the students stuck with the job and completed the areas designated as theirs by IPT staff.

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Maintenance

The ruins of building 10A are composed mainly of brick with stone footings visible on the east elevation of the east wall. Spalling brick should be replaced if this condition occurs from age and climatic erosion. Mortar joints should be inspected and if the mortar becomes soft it should be replaced with the mix provided in the report; sand to lime to Portland cement, 6:2:1. The major maintenance issue for 10A is the poor drainage of the patio area. This issue has been addressed and the situation will be worked on during the summer of 1998 by IPT and masonry specialist William Hildebrand. The cap on top of the walls needs to be inspected every fall and spring to check for cracking. If cracking does occur, the area should be replaced with a 6:2:2 ratio, to prevent excessive moisture penetration. Finally, the lichen and moss was removed by IPT staff using two ounces Tri-Sodium Phosphate, one quart of bleach, and two gallons water. The mixture should be reapplied if the lichen and moss begin to grow again, since the moss and lichen can accelerate the deterioration of the mortar.

List of Vendors

The materials required for completion of the project were ordered through the procurment office at HAFE and purchased through the HAFE Flood/Storm Account # 3857-7606-515 N 26.4A. All materials were delivered to the Taylor Street maintenance yard. These materials were purchased prior to IPT's arrival on site. The suppliers were:

Kable Photographics
219 Washington St.
Charles Town, WVA 25425
Phone: (304) 725-2292
*photo development

Frederick Brick Works
184 East South St.
Frederick, MD 21704
Phone: (301) 662-1153
*brick tools, safety equipment

Ingalls Lumber and Supply Co.
203 East Main St.
Middletown, MD 21766
Phone: (301) 371-6300
*framing lumber, misc. supplies, lime, cement

Roof Center
5752 Industry Lane
Frederick, MD 21701
Phone: (301) 698-9765
*lead coated copper, snips

Building #48 Amteco Application

On Monday, March 30th and Tuesday, March 31st, IPT staff applied a wood shingle preservative to Building #48's roof. The product "Amteco" , is an architectural-maintenance and technical coating, is "specifically designed to extend the service life of shakes and shingles", while its "primary function is to enhance structural integrity and appearance of aged roofing". Since the roof was applied in November of 1997, and the product data recommends the product to be applied to "aged" shingles, the application was scheduled to be completed during IPT's March Training Program. The shingles had considerably dried since their application 6 months ago, where the 1/8" original keyways have become 1/4", allowing the preservative to be sufficiently absorbed into the wood. In comparison to the previous application on Building #38's new roof, the Amteco seemed to absorb at a much faster rate. Building #38 was approximately 20 squares, consuming about 8 gallons of Amteco. In comparison, Building #48 was about 12 squares and consumed approximately 8 gallons of Amteco. This comparison suggests that an "aged" roof will absorb more preservative, thus obtaining additional protection from "grain cracking, cupping, surface erosion, water absorption and surface attack from mildew and algae". The Amteco product should be applied based on the environmental conditions that effect the roof, not so much on a set schedule. The roof should be inspected each year for wear, cracking and fungal growth, perhaps when the gutters are cleaned. When conditions suggest excessive wear on the roof, then the roof should be cleaned, repaired and preserved with the Amteco or an equivalent product . This will extend the wood shingle roof's protection to the building , thus becoming more cost-effective and less disruptive to the park's historic setting.