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A PHYSICAL HISTORY OF THE U.S. MUSKET FACTORY PLANT, 1794 to 1885 U.S. ARMORY AT HARPER'S FERRY, VIRGINIA

VOLUNE II, 1842 - 1885

RECONSTRUCTION, DESTRUCTION, AND DISPOSAL OF THE U.S. MUSKET FACTORY.

Harpers Ferry National Historical Park, West Virginia.

by

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PREFACE:

The purpose of this study is to make available all known documentary evidence relating to the physical history of the U.S. Musket Factory buildings and grounds along the Potomac River in order to facilitate archeological investigation, accurate restoration, and interpretation of site at such time as it is included as a part of Harpers Ferry National Historical Site.

The U.S. Musket Factory site is an historic site of the first order of significance because its major and direct association with the John Brown Raid of October 1859.

The data in this volume was first presented in Charles W. Snell's "A Phyiscal History of the United States Armory at Harper's Ferry, Virginia, 1794-1885," Volume II, 1842- 1851, 346 pages, and Volume III, 1852 -1885, 406 pages(April 1981). In this present study the sections relating to the history of the U.S. Musket Factory have been restudied, expanded, and revised and amended where necessary.

The writer wishes to acknowledge his endebtedness to the historical research studies produced by National Park Service Historians Herbert L. Kissling and Arthur L. Sullivan during the years 1957 to 1961 (see Biblography, page for their reports), and also to thank Park Librarian Hilda E. Staubs of the Harpers Ferry National Historical Park staff for cheerful and important assistance is providing copies of many documents and maps used in this report.

Charles W. Snell
Washington, D.C.

July 31, 1981

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Introduction

In Volume I of this physical history of the U.S. Musket Factory of the Harper's Ferry Armory it has been demonstrated that from 1796 to December 31, 1841, the United States Government spent a total of $ 875,870.59 on the development and repair of the physical plant at Harper's Ferry, which included the U.S. Musket Factory, U.S. Arsenal, U.S. Rifle Factory, stables, powder magazine, and dwelling houses for the Armory workmen. Of the total, $ 45,477.28 had been expended to acquire 1,890 acres of land, and $ 830,383.31 for the construction and repair of buildings, bridges, canals, dams, roads and streets.

From 1798 to 1841 the Armory constructed a grand total of about 266 buildings, which included workshops, store houses, powder magazines, offices, stables, and dwelling houses, for Armory use. These structures were erected at the following sites:

	No. of buildings	
1. U.S. Musket Factory, along the Potomac:	about	53
2. U.S. Arsenal Square, Shenandoah Street	"	9
3. U.S. or Hall Rifle Factory, Lower Hall Island in the Shenandoah River	"	28
4. Armory stables, powder magazines	"	7
5. Armory dwelling houses	"	169
Grand Total built, 1798 - 1841, about:		266

In 1821, when a detailed inventory of Armory buildings was prepared, there were 19 structures valued at $ 74,410.00 standing in the Musket Factory yard along the Potomac River. These included nine workshops, two furnaces, one sawmill, five storehouses, the Superintendent's office, and also his residence

During the years 1822 through 1841, the fiscal records indicate that the Arnory spent approximately $ 275,085.97 for repairs and o improvements at the Musket Factory on the following projects:

For construction of 26 new buildings:		$ 58,401.17
For repair of old buildings		56,613.14
For construction of a great river wall		40,772.30
For new machinery		53,671.00
Subtotal: Buildings and Grounds:	$	209,457.61
For enlargement and repair of Potomac Canal		54,522.96
For extension and repair of U.S. Potomac Dam		11,105.40
Total: 1822 - 1841, Musket Factory:	$	275,085.97

By 1842, however, despite the expenditures of large sums of money for repair and construction, many of the large workshops and storage buildings of the U.S. Armory and Arsenal at Harper's Ferry were no longer adequate. Most of them, dating from 1810 or earlier, were at least 30 years old and in poor condition. On November 16, 1838, in the "Special Estimates for Additional Appropriations for the Service of the Ordnance Department for the Year 1839," Col. George Bomford, Chief of Ordnance, warned Congress, : "The strongest necessity exists for the improvement of the public buildings at Harper's Ferry Armory - they are at present exceedingly unslightly and unworthy of a National Establishment, and many of them, being mere wooden sheds, are besides liable to accident from fire..."[1]

On February 2,1842, the Secretary of War ordered the Ordnance Department to make a detailed examination of the U.S. Armory at Harper's Ferry. A board comprised of Col. S. Churchill, Inspector General, and Major Henry K. Craig, the new superintendent of the Harper's Ferry Armory, were appointed by Lieut.Col.

1. Harpers Ferry National Historical Park Microfilm Reel 20, Vol. 6, p.624- from National Archives Record Gropp No. 136, Records of the Chief of Ordnance, Entry 129, Vol. II, p.6, Washington, D.C.

George Talcott, the newly-appointed Chief of Ordnance, to make this study. The board, submitting its report on February 22,1842, wrote in regards to "Permanent Improvements" at Harper's Ferry:

> From actual examination, and testimony on which reliance is to be placed, the board is fully impressed by the necessity of very extensive improvements, repairs, and additions to the buildings, machinery,&c attached to this armory; not only for the increase and quality of its production, but for the security of those productions and of the other public property, and also for the comfort and preservation of the health of the officers and workmen of the armory..." [2]

The program of rebuilding the U.S. Musket Factory on the Potomac, the U.S. Rifle Factory on the Shenandoah, and of rehabilitating the structures on Arsenal Square was to get underway in 1842 . From January 1,1842 to June 30,1860, the U.S. Congress was to appropriate $ 902,694 in special appropriations and the Ordnance Department was to expend a total of $ 911,020.42 for making improvements, repairs, and purchasing lands at the U.S. Armory at Harper's Ferry,Va., [3] (See 1, p. 4 , and Chart 2, pp. 5-6.)

2. Public Documents of the United States, published in a Serial Numbers Series by the Congress of the U.S.,1817- 1861,in approximately 1,100 volumes. Serial No. 404, Document No. 207, p. 44. Henceforth cited as Serial No. , Document No. , p. .

3. Congress, in 1856, also authorized the expenditure of an additional $ 36,606.70 to make permanent improvements at Harper's Ferry. This money was the proceeds reached from the sale of house lots and Armory Dwelling Houses in September 1852. For programed use of this money, see Chart No. p. .

CHART NO. -

Expenditures for Land, Construction, and Repair of Buildings, Canals, Dams, and Roads at the U.S. Armory at Harper's Ferry, Virginia, January 1, 1842 to June 30, 1860

(From Ordnance Department's Annual Reports of Operations to Congress)

Year	TOTAL		Serial No.	Document No.
Jan. 1, 1842 to Sept. 30, 1842:	$ 45,260.31 (1)		421	113
Oct. 1, 1842 to June 30, 1843:	32,480.06		441	23
July 1, 1843 to June 30, 1844:	35,046.06		464	43
1844-45:	28,701.10		483	96
1845-46:	62,468.77		499	41
1846-47:	55,346.27		516	22
1847-48:	75,269.63		540	25
1848-49:	55,674.70		576	37
1849-50:	38,373.24		598	20
1850-51:	62,399.44		640	36
1851-52:	60,979.25		677	26
1852-53:	47,979.19		717	19
1853-54:	60,023.04		783	33
SUBTOTAL:	$ 660,001.06		-	-
1854-55:	37,292.67		851	21
1855-56:	39,858.00		897	25
1856-57:	45,081.91		955	55
1857-58:	25,044.68		1004	32
1858-59:	32,663.07		1048	27
1859-60	71,079.03		1097	35
SUBTOTAL 1854-60:	$ 251,019.36		-	-
GRAND TOTAL 1842-60:	$ 911,020.42		-	-
Total, 1796-1860	$ 1,786,891.01			

(L)Vouchers of Paymaster indicate that only about $ 13,037.93 went to pay for Improvements and Repairs in 1842; the remaining $ 32,222.39 was apparently

CHART 2

BREAKDOWN BY PROJECTS OF ANNUAL APPROPRIATIONS FOR REPAIRS AND IMPROVEMENTS AT HARPER'S FERRY ARMORY, VIRGINIA, FROM 1842 to 1861

YEAR	Total of Appropriation	For Machinery, Water Wheel	For Repairs - General	Construction at Musket Factory (1)	Construction at Rifle Factory (1)	Construction U.S. Arsenal (1)	Canals & Walls Along	Armory Dwellings (1)	Purchase of Land
1842	$ 30,000	$ 15,000	$ 10,000	2,500	-	-	-	-	-
1843-44	$ 30,500	9,500	8,000	$ 13,000	-	-	-	-	-
1844-45	12,000	4,000	3,500	4,500	-	-	-	-	-
1845-46	18,000		-	8,000	$ 5,000	-	$ 5,000	-	-
1846-47	128.361	24,550	-	22,050	10,800	-	-	15,000	50,261
1847-48	17,770	4,700	-	10,330	-	-	2,740	-	-
1848-49	$ 53,091		1,871	20,300	23.630		3,320	170	
1849-50	62,820	27,370	2,675	30,305	440			3,645	200
1850-51	50,560	2,070	10,880	7,740	27,000		2,870		
1851-52	23,100	3,220	3,500	10,150	6,230				
1852-53	28,950	5,000	2,300	19,550	450		1,650		
1853-54	+ 63,500	7,700	24,000	25,200	2,600		5,000		
1854-55	35,100	11,100	1,700	9,400			6,000		
1855-56	52,673	7,033	800	13,721	8,480		3,739		
1856-57	38,892	13,050		3,966		5,761	8,693	422	
1857-58	34,970	34,204		766					
1858-59	101,907	15,000		11,103		27,325	8,479		
1859-60	55,000	13,000		1,600	15,820		10,730		
1860-61	65,500	39,700		13,650					
TOTAL	$ 902.694	$ 236,197	$ 69,226	$ 228,031	$ 100,450	$ 33,086	$ 58,221	$ 19,237	50,461
1861-62	64,500	27,280			12,128		23,092	2,000	
TOTAL	$ 967,194	$ 263,477	$ 69,226	$ 228,031	$ 112,578	$ 33,086	$ 81,313	$ 21,237	$ 50,461

(1) Includes Buildings and Grounds.

CHART [2]

BREAKDOWN BY PROJECTS OF ANNUAL APPROPRIATIONS FOR REPAIRS AND IMPROVEMENTS AT HARPER"S FERRY ARMORY, VIRGINIA, 1842 to 1861.

YEAR	Dams			Armory Stables & Yard	Armory Powder Magazine	Armory Lumber Shed	Rain Water Cisterns	Sources: Serial No.	Doc. No.	Pages
1842	2,500.00	-	-	-	-			Reel 20	Vol. 7	637,639
1843-44	-	-	-	-	-			Reel 20	Vol. 7	643-645
1844-45	-	-	-	-	-			439	6	94-95
1845-46	-	-	-	-	-			Reel 20	Vol. 7	652.653
1846-47	$ 900			$ 2,800	-		2,000	481	9	111-112
1847-48	-	-	-	-	-			497	9	141-142
1848-49								514	2	110-111
1849-50							1,300	538	2	117-119
1850-51								568	4	156-157
1851-52								Reel 20	Vol. 7	694
1852-53								633	2	212
1853-54								675	2	257-258
1854-55					1,000	6,000	1,000	714	2	188-189
1855-56								781	3	238-239
1856-57	7,000							865	2	244-247
1857-58								909	2	162
1858-59	40,000							941	2	193-194
1859-60	26,000							996	2	181-182
1860-61								1043	2	229
TOTAL	$ 76,400			$ 2,800	$ 1,000	$ 6,000	$ 4,300			
1861-62								1092	2	322-323
TOTAL	$ 76,400			$ 2,800	$ 1,000	$ 6,000	$ 4,300			

CHART No. 3

CASH FLOW FROM U.S. TREASURY DEPARTMENT TO THE PAYMASTER AT THE HARPER'S FERRY ARMORY, VA., FOR PERMANENT IMPROVEMENTS, 1842 to 1861

Year	Appropriated During Year	Total Available	Amount withdrawn by requisition of Paymaster during year.	Balance in Treasury at end fiscal year	
1841				$ 18,000.00	
1842	$ 30,000.00	$ 48,000.00	$ 23,000.00	25,000.00	(1)
1843	0	25,000.00	20,000.00	5,000.00	(2)
1843-44	30,500.00	35,500.00	31,600.00	3,900.00	(3)
July 1 1844-45	12,000.00	15,900.00	15,900.00	0	(4)
1845-46	18,000.00	18,000.00	18,000.00	0	(5)
1846-47	128,461.00	128,835.97*	96,600.00	32,235.97	(6)*
1847-48	17,770.00	50,005.97	50,005.97	0	(7)
1848-49	53,091.00	53,091.00	33,000.00	20,091.00	(8)
1849-50	62,820.00	85,699.86*	36,000.00	49,699.86	(9)
1850-51	50,560.00	100,259.86	45,281.98	54,977.88	(10)
1851-52	23,100.00	78,077.88	65,000.00	13,077.88	(11)
1852-53	28,950.00	13,077.88	13,077.88	0	(12)
1853-54	63,500.00	43,500.00	43,500.00	0	(13)
1854-55	35,100.00	35,100.00	35,100.00	0	(14)
1855-56	52,673.00	52,673.00	37,850.00	14,823.00	(15)
1856-57	38,892.00	53,715.00	53,625.03	89.97	(16)
1857-58	34,970.00	35,059.97	18,000.00	17,059.97	(17)
1858-59	101,907.00	123,366.97*	38,900.00	84,466.97	(18)
1859-60	55,000.00	139,466.97	88,608.40	50,858.57	(19)
1860-61	65,500.00	116,358.57			(20)
TOTAL	$ 902,694.00		$ 763,049.26		

CHART NO . 3

Sources;Chart-Cash Flow, 1842-61, for Permanent Improvements, Treasury Department to Armory Pay Master, Harper's Ferry, Va.

1. 1842- Serial No. 421, Document No. 62, p.3.

2. 1843- Serial No. 442, Document No. 114,p.3.

3. 1843-44-Serial No. 465,Document 76, p. 3.

4. 1844-45- Serial No. ,Document No. P. Volume missing.

5. 1845-46-Serial Number 550, Document No. 65, p. 4.

6. 1846-47-Serial Number 506,Document No. 27, pp. 2-3, Repair $ 474.97*

7. 1847-48- Serial Number 540-Document No. 27, p.5.

8.1848-49- Serial No. 554,Document No. 10,p.4.

9. 1849-50- Serial No. 580, Document No. 89,p.3. Repaid $ 2,988.86*.

10. 1850-51-Serial No. Document No. p. (missing.)

11. 1851-52- Serial No. 676, Document No. 8, p. 2.

12. 1852-53- Serial No. 715, Document No. 5, p.3.

13. 1852-54- Serial Number 781, Document No. 8, p. 3.

14. 1854-55- Serial No. 815, Document No. 9, p.4.

15. 1855-56-Serial No. 878, Document No. 17,p.5.

16. 1856-57-Serial No. 924, Document No. 29, p. 5.

17. 1857-58-Serial No. 1006, Document No. 64, p. 4.

18. 1858-59-Serial No. 1047,Document No. 21,p.4. Repaird $ 4,400.00.*

19. 1859-60- Serial No. 1097, Document No. 34,p.3.

20. 1860-61- Report never printed.

Between 1842 and 1861 the Harper's Ferry Armory constructed 40 new structures and purchased eight additional residences. These 48 buildings brought the grand total of Armory structures erected or purchase from 1796 to 1861 to about 314 buildings. Twenty-four new structures were erected at the Musket Factory, 1842-61, and three old buildings were remodelled and modernized during this period.

Of the total of $ 911,020.42 spent for repairs and improvements from 1842 to 1860, about $ 422,804.64 was expended for the following projects at the U.S. Musket Factory:

For construction of 24 and remodelling of 3 buildings and work on grounds.....	$ 255,861.85
For purchase of land.....	47,437.33
Subtotal: Musket Factory buildings and grounds:	$ 302,299.18
For work on U.S. Potomac Canal.....	44,258.03
For construction and report of U.S. Potomac Dam.....	76,247.43
Grand Total, Musket Factory, 1842 - 1860:	$ 422,804.64

PART I - THE MILITARY SUPERINTENDENTS, 1842 - 1854:

CHAPTER I

MAJOR HENRY K. CRAIG, 1842 - 1844:

From 1795 to 1841 both of the National Armories at Harper's Ferry, Virginia, and Springfield, Massachusetts, had been under the charge of civilian superintendents. On April 1, 1841, however, Chief of Ordnance George Bomford, in an effort to improve the efficiency of each plant and to eliminate certain abuses, was authorized by the Secretary of War to replace the civilian superintendents with Army officers selected from the Ordnance Department ranks. Major Henry K. Craig, was chosen to take command at Harper's Ferry and reported for duty on April 16,1841.[1]

In response to Ordnance Department requests, Congress, on March 3,1841, had appropriated $ 38,000 in a special fund for the purpose of making repairs, improvements, and new machinery at the Harper"s Ferry Armory.[2] The Armory Paymaster withdrew $ 20,000 of this appropriation from the U.S. Treasury during 1841, leaving balance of $ 18,000 available at the Treasury for use in 1842.[3] Most of the money spent in 1841 was utilized to make repairs and to pay off cost-over runs that the previous civilian superintendent, Edward Lucas,Jr., had run up in manufacturing arms.

In the Estimates for 1842 the Ordnance Department asked Congress to provide $ 40,000 for "Improvements at Harper's Ferry Armory," explaining

" Many of the buildings at this establishment require repairs and the machinery for the Manufacture of Arms (for the new 1842 model percussion musket and rifle) is far from being complete....and should be improved. For these purposes the estimate embraces $ 20,000. For repairing embankments, dams, and forebays at the water shops... $ 20,000. Total $ 40,000. (4)

1. For detailed discussion of the decision to use military superintendents at the armories, see Smith, Merritt Roe, Harpers Ferry Armory and the New Technology, The Challenge of Change(Cornell University Press, Ithaca and London,1977), pp.258-268. The Secretary of War who approved this change was John Bell.
2. U.S. Statues at Large, Vol. V, p.434.
3. Serial No. 402, Document No. 62, p.3.
4. Harpers Ferry NHP Reel 20, Vol. 6, p.637.

This vague and generalized request for money suggests that the Ordnance Department had not yet formulated a definite program for rebuilding the Harper's Ferry Armory by the end of 1841, when this estimate was sent to Congress. Congress did not act until August 23, 1842 and then provided only $ 30,000 of the $ 40,000 that had been asked for.[5]

The estimate for the fiscal year January 1,1843 to June 30,1844 (the Ordnance Department was changing to a new July 1 - June 30 fiscal year plan) was much more definite in detailing the use of the requested $ 30,500: $ 6,500 was to be used to construct a new boring mill at the Musket Factory, $ 16,000 for new machinery at the Musket and Rifle Factories, and $ 8,000 to repair workshops at the two plants.[6] Congress voted the requested $ 30,500 on March 1,1843.[7] An additional $ 12,000 was appropriated for permanent improvements at Harper's Ferry Armory for the July 1,1844 to June 30,1845 fiscal year on June 17, 1844.[8]

All told then, from January 1,1842 to June 30,1844, Congress provided a total $ 90,500 for construction and repairs and Major Henry C. Craig expended a total of $ 112,786.43 for these purposes during that period.[9] Major Craig left Harper's Ferry for new duties in November 1844 and was replaced by Major John Symington as Superintendent of the Armory.

Major Henry K. Craig began the process of reconstructing the Armory's old physical plant. Three major and two minor shops were erected at the Musket Factory and one important workshop was built at the Rifle Factory during Major Craig's administration, Craig also raised the previously established level of construction by insisting that the new edifices be well designed and built of the best materials, and of good workmanship.

5. U.S. Statues at Large, Vol. 5, p. 509.
6. HFNHP Reel 20, Vol. 6, 643-644.
7. U.S. Statues at Large, Vol. 5, p.605.
8. U.S. Statues at Large, Vol. 5, p.698. For estimates for 1844-45 year see Serial No. 439, Document No. 6, pp.94-95. $ 17,000 was requested and $ 12,000 was appropriated by Congress.
9. See Charts 1 and 2,pp.3-4. The$90,500 includes the $ 13,000 carried over from1841.

Appropriations for Repairs and Improvements, Harpers Ferry Armory, 1842-1845

Calender Year	Musket Factory Warehouse, built 1841-44	Musket Factory boring Mill, 1843-44	Musket Factory Proof House 1843-44	Apropriated during year- Total
1841	yes	0	0	Carry over of $ 18,000.00
1842				30,000.00
1843	yes	6,500.00	yes	30,500.00
1844	yes	4,500.00	yes	12,000.00
To June 30, 1845	no	no	no	18,000.00
Estimated Cost	$ 7,200.00	$ 10,500.00	$ 2,500.00	$ 108,500.00

Also built- frame engine house and frame lime house.

$ 21,200	estimated cost of major buildings.
1,500	estimated cost of engine and lime houses.
$ 22,700	Total estimated cost of five buildings.

SUMMARY CHART - EXPENDITURES FOR REPAIRS AND IMPROVEMENTS AT THE HARPER'S FERRY, 1842 to 1844. Major Henry K. Craig, Superintendent

Year	Musket Factory	Rifle Factory	Arsenal Square	Lumber Yard	Canals	Dams	Dwelling Houses	Total
1841	$ 1,892.82	-	-	-	-	-	-	$ 1,892.82 (1)
1842	3,353.22	630.83	18.75	0	17.00	1,747.43	606.12	6,413.35
1843	13,895.61	557.16	12.00	144.31	281.91	0	693.11	15,584.10
1844	9,351.20	367.26	75.31	475.64	1,907.03	0	745.92	12,922.36
TOTAL	$ 28,492.85	1,595.25	106.06	619.95	2,205.94	1,747.43	2,045.15	$ 36,812.63

(1) cost of foundations for new warehouse, 4th quarter of 1841.

National Archives
Record Group No. 217, Records of the United States General Accounting Office, Washington, D.C. Records of the Second Aduitor: from Paymaster of the U.S. Armory at Harper's Ferry, Virginia, Expenditures for Permanent Improvements

Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	TOTAL	Dec.31 Balance:
1842	a 3,027.14	b 3,344.99	c 6,665.80	d 14,291.61	$ 27,329.54	4,800.31
1843	e 2,875.66	f 12,303.10	g 6,518.39	h 10,100.85	31,798.00	11,945.31
1844	i 5,691.77	j 10,425.39	k 11,665.21	l 12,068.64	39,851.01	2,160.06
1845	m 4,581.13	n 403.88	o 6,061.20	p 7,279.25	18,325.46	8,778.21
	q	r	s	t		
	u	v	w	x		
TOTAL					117,304.01	

Spent on Major Henry K. Craig's programs, January 1,1842 to June 30,1845; $ 103,973.56

$ 98,988.55, from January 1,1842 to December 1,1844.

a.2nd Series, File 7045
b.2nd Series, File 7354
c.2nd Series File 7654
d. 2nd Series, File 8011
e. 2nd Series, File 8190
f. 3rd Series, File 187.
g.3rd Series, File 440
h. 3rd Series, File 630
i. 3rd Series, File 970
j.3rd Series, File 1165
k.3rd Series, File 1613
l. 3rd Series, File 1934
m. 3rd Series, File 2213
n. 3rd Series, File 2474
O. 3rd Series, File 2841-Vouchers with summary are missing.
p. 3rd Series, File 3122.

Expenditures for Repair and Improvements at the Harpers Ferry Armory, 1842 - 1845

By Fiscal Year	Expenditures by Fiscal Year		By Calender YEar	Calender Year Expenditures	Appropriated during Cal. Year
Carry Over from 1841	-		-	-	$ 18,000.00
Jan. 1,1842 - Sept.30,1842	$ 45,260.31	A	1842	$ 27,329.54 (1)	30,000.00
Oct.1,1842 - June 30,1843	32,480.06	B	1843	31,798.00 (2)	30,500.00
July 1,1843 - June 30,1844	35,046.06	C	1844	39,861.01 (3)	12,000.00
July 1,1844 - June 30,1845	28,701.10	D	To June 30 1845	4,985.01 (4)	18,000.00
Total:	$ 141.487.53		Total	$ 103,973.56	$ 108,500.00

(1). 2nd Series, Files 7045,7354, 7654, and 8011.
(2) 2nd Series, file 8190; 3rd Series, Files 187, 630, and 1440.
(3) 3rd Series, Files 970, 1165, 1613, and 1934.
(4) 3rd Series, Files 2213, 2474.

A. Serial No. 421, Document No. 113.
B. Serial No. 441, Document No. 23.
C. Serial No. 464, Document No. 43.
D. Serial No. 483, Document No. 96.

1. Construction and Repair at the U.S. Musket Factory, 1842- 1844:

The New Warehouse for Iron, Steel, and other Supplies, 1841-43:

This large two-story warehouse, built in 1841-43 of cut-stone and brick, was to be the first structure erected in a new generation of architecturally impressive and substantially-constructed workshops and storehouses that were to be built 1842-1861 to replaced the earlier(1800-10) non-discript edifices at the U.S. Musket Factory and U.S. Rifle Factory. This new warehouse is Bldg. No. 10 on Map No. 2 (1844), Bldg. No.18 on Map No. 3 (1848), and Bldg. No. 12 on the 1859 Historical Base Map.

Major Henry K. Craig's estimates to the Ordnance Department for funds to construct the new warehouse have not been found. His estimate may have been attached to the Board of Inspection's Report of February 22,1842 and then been lost. As construction on the foundations was underway in November 1841, there is a possibilty that he was drawing on $ 3,400 appropriated by Congress on July 2,1836 to erect "a store house to contain condemned component parts of arms, defective materials, scraps, of stone, 80 by 30 feet, two stories high, with slated roof."[A]

The new warehouse was to be located at the eastern or lower head of the northern line of Musket Factory workshops and adjacent to the Potomac river wall. Extensive preparations, which apparently included extending the great stone river wall eastward and considerable filling behind the wall, were required to prepare the site for the construction of the foundations of the great warehouse. A total of $ 1,892.82 was

A. Estimate in Serial No. 288, Document No. 90, pp. 7, 8.

expended for this purpose in the 4th quarter(October-December) of 1841. The mason George Mattlingly received $ 1,833.82 of the total: $ 1,119.94 for building 756 18/25 perches of dry wall,the "foundation walls of a warehouse", and $ 507.88 for "filling in 2,412½ cubic yards of embankment "for foundations of a warehouse." The balance of$59.00 was spent to acquire 29½ barrels of cement for use on the project.[1]

On March 17,1842, the following "Notice to Builders" appeared in the Virginia Free Press:

> Written proposals will be received by the Superintendent of the Harper's Ferry Armory until the 31st instant, for the erection of a BRICK WAREHOUSE, at Harpers-Ferry, Va...
>
> The builder to furnish all materials and labor, such as Brick, Mortar, Stone Window Caps and Stools, Stone Door Caps, and Sills, Stone Cornice, and Staging.
>
> The Brick, Lime and Sand to be of the best quality, and the stone to be hammered, either all lime granite, or the best quality of stone, found on the Government land at this place.
>
> Builders will state their price per thousand for the brick work, and the price per foot (superficial) of exposed stone-work,specifying the different kinds of stone.
>
> The work to be finished before the 31st July,1842, in the best manner, ,and to the entire satisfaction of the Superintendent of the Armory.
>
> The building will be erected on a foundation already prepared, and will be 93 by 30 feet, two stories high, and the walls 18 inches thick... [2]

This advertisment indicates that the plans for the intended structure had been completed by March 1842, but for reasons that are not known, actual construction on the warehouse ceased until the fall of 1842, when the masons were paid a total of $ 279.42 for making further improvements to the foundation and the stone cutters received $ 843.49 for providing approximately 1,472 feet

1. National Archives Record Group 217, Washington,D.C. U.S. Treasury Department, Records of the Second Auditor, 2nd Series, File No. 6718-Voucher No. 84 to Mattingly dated Nov.22,1841; Voucher No. 85 to George Reynolds and Co. for cement, dated December 31,1841.

2. R.G.217- 2nd S., File 1837-Voucher No. 1- Bill from J.S. and H.N. Gallagher for $ 2.00 for Proposal,March 17,1842-apparently run for two weeks. Bill not paid until April 6,1843

of cut stone for use in the new building. George Lynch received $ 57.42 on September 19,1842 for making 287 cubic yards of "embankment at the east gable end of the warebouse;[3] on December 24,1842 the stone mason Peter Litle was paid $ 222.00 for building "148 perches of stone wall to protect the embankment at the gable end of new warehouse and connect the end of the river wall with the same."[4] This expenditure brought the cost of the foundation and site to $ 2,172.24. Of the cut stone, Redmond Burke & Co. provided 1,255.3 feet and received $ 713.49 for his work.[5] The balance, 216 and 2/3 feet was purchased from Daniel Pine for $ 130.00.[6] A total of about $ 1,122.91 appears to have been expended on the construction of the new warehouse in 1842. Included in one of Burke's orders were 44 window sills, totaling 291 feet of cut stone, and four door lintels, totalling 59.8 feet., also 124.8 feet of "bases."[7]

The stone cutter Redmond Burke delivered an additional 1,781 feet of cut stone in the fall of 1843 and was paid a total of $ 1,059.63 for his work. Included were 258 feet of cut stone for "underpining of the base of the warehouse;" 110½ feet cut stone for caps for quadrant and square windows (probably at third story levels of east and west gable ends), window sills at base basement of warehouse" "Door & window sills, caps, and door posts, and 427 feet 2 inches of stone cornice.[8]

Peter Litle, the stone mason, was paid $ 196.50 on November 28,1843 for "building 102 perches of mortar stone wall, part of foundation of warehouse, for setting stone underpining,and setting cut stone window and door sills.[9]

3. R.G.217-2nd series-File 7654-V. 66.
4. R.G. 217-2nd S-V. F. 8011-V. 95.
5. Record G.217 , 7654-V.1; 8011-V.90; 8011-V. 89; all 2nd S.
6. R.G.217- 2nd S., 7654-V. 68.
7. R.G. 217-2nd S., 8011-V. 89.
8. R.G.217-3rd Series, F. 187-V. 118; F.440-V. 73 and 74, Sept. 29/1843; July 11,1843; 630-V. 93, Nov. 3, 1843.
9. R.G. 217 -3rd S., 630-V. 27.

The stone cutters and stone masons appear to have received a total of about $ 4,272.86 for their contributions to the construction of the new warehouse from 1841 to December 31,1843.

The brick walls of the warehouse were erected by the brick mason John Lambaugh in the fall of 1843 for a total of $ 1,660.10. He furnished the materials, laid 168,072 bricks for $ 1,596.68 and also set 634 linear feet 3 inches of cut-stone cornice and "window and door caps" for the sum of $ 63.42.[10]

The vouchers of the Armory Paymaster apparently did not specify the carpenters who framed the roof and put in the flooring(they may have been carried on the regular Armory payrolls and paid a daily rate). Other vouchers however, indicated that 5,068 feet of yellow pine for use as joists in the new warehouse were purchased in October 1843 for $ 76.02.[11] Also acquired at a cost of $ 70.14 was 4,008 feet oak plank"for warehouse."[12] Total cost of lumber used in the construction came to about $ 146.16, exclusive of the services of the carpenters.

William Bayley slated the roof of the new warehouse, 3,920 square feet, in November 1843 and was paid $ 431.20 for providing the materials and doing the labor.[13] The tinsmith Benjamin M. Snook made and put up the copper gutters and down spouts on the new warehouse, receiving $ 130.97 for his services in December 1843.[14]

About $ 2,368.43 had been spent on the construction of the building during 1843 and the new warehouse appears to have been largely completed by December 31, 1843.

10. R.G. 217- 3rd S, F. 630-V.100-dated November 22,1843.

11. R.G. 217- 3rd series, 630-V. 3-Oct.23, 1843.
12. R.G. 217-3rd S. 630-V.98-November 24,1843.
13. R.G. 217- 3rd S.,630-V.24- November 24,1843.
14. R.G. 217- 3rd S.,630-V. 48, December 20,1843

Final touches costing a total of approximately $ 84.14 were made in 1844 to complete the structures. James Bowen was paid $ 72.39 on May 11,1844, for plastering 580 square yards"in upper room of warehouse, two coats"for $ 58.00 and $ 14.39 "for plastering lower room, 359 7/9 square yards, one coat."[15] Benjamin Snook put up some additional copper spouting for $ 4.00.[16] Stone cutter Timothy McBrierty was paid $ 6.00"for cutting 8 stone bases for columns in warehouse."[17] Stone cutter Redmond Burke, in October 1844, received $. 1.75 "for one days work drilling holes for door irons at warehouse."[18]

Total costs of onstruction, 1841 to 1844 were approximately $ 6,725.43, exclusive of the cost of the labor of the carpenters. With this item included, the total cost of erecting the new warehouse,1841-44, was probably about $ 7,100 to $ 7,200.

In a report to the Secretary of War dated January 6,1845, Lt. Col. George Talcott, Chief of Ordnance reported that"A storehouse of two stories, 93 by 30 feet, has been built for storing iron, steel, and other supplies, s, in a location (at the Musket Factory) much more convenient to the shops than the place formerly used for such purposes."[19]

Major John Symington, who followed Major Craig as Superintendent of the Harper's Ferry Armory in November 1844, also described the new warehouse in his first annual report of operations, July 1,1844 to June 30,1845, as follows:

15. R.G.217-3rd S., 1165-V. 21-May 11,1844.
16. R.G. 217-3rd S., 1165-V.90, July 9,1844.
17. R.G.217-3rd S., 1698-V. 35, September 13, 1844.
18. R.G. 217-3rd S., 1934-V.8, October 28,1844.
19. Congressional Serial Number Series-Public Documents of the United States, Serial No. 464, Document No. 43, p.2.

"A store-house of brick, on stone foundations, 93½ by 30 10/12 feet, two stories high, and covered with slate.

The two floors of this building have been fitted up with frames, racks, and shelves suitable for exhibiting the different varieties of stores deposited, the heavy articles on the lower floor, including all the sizes of iron and steel in separate lots." 20

As has been mentioned, the new warehouse appears as Bldg. No. 10 on Map No. 2(1844) and Bldg. No. 18 on Map No. 3 (1848).

Construction of Warehouse, Musket Factory, 1841- 1844 Bldg. 12 1859 Base Map.

Project	Cost	Description of Work
Embankments for Foundations	$ 565.30	For fill and embankments of earth 2,699½ cublic yards
Building dry Walls	1,585.41	1,083 2/25 perches of stone dry wall.
Foundation Mortar walls	153.00 24.95	for laying 102 perches of mortar masonry for setting stone underpinings.
Cement	59.00	for 29½ barrels of cement
To Cut stone masons	1,922.84	for providing 3,159 feet 3 inches of cut stone and other work by stone cutters.
Bricks	1,601.43 81.97	for providing and laying 168,072 bricks. for laying 634 feet 3 inches of cut stone cornice and setting door and windows sills.
Lumber	146.16	5,068 feet yellow pine for joists, $ 76.02. 4,008 feet of oak for flooring, $ 70.14.
Carpenter Work	?	Laying floors and framing roof.
Slating	431.20	providing and slating 3,920 square feet, roof of warehouse.
Gutters & Spouts	134.97	Making and putting up copper gutters and downspouts on roof.
Plastering:	72. 39	plastering total of 939 7/9 square yards: 580 yards, 2 coats in upper room, 359 7/9 yards one coat in lower room.
Total:	$ 6,778.62	Probable total cost: $ 7,100- $ 7,200.

20. Serial No.470, Document No. 1, p. 419.

2. The New Boring Mill,1843-1844:

The second large brick structure to be designed and erected by Major Henry K. Craig at the Harper's Ferry Armory was the New Boring Mill (Bldg. No.3 on Map No. 2 (1844); Bldg. No. 3 on Map No. 3 (1848), and Bldg No. 5 on the 1859 Historical Base Map. The new workshop replaced the Old Boring Mill, a two-story brick building ,measuring 120 by 30 feet in size, that had been erected in 1799-1800 as the first "Armory" or "Factory" of the plant.

The estimate for the Service of the Ordnance Department for the Year January 1,1843 to June 30,1844 requested the appropriation of $ 6,500 "for altering and rebuilding boring shop at musket factory", explaining "The present boring mill is too low between the floor and the ceiling and too narrow, in consequence of which the shop is dark and badly ventilated and machinery too much cramped. To put the present present shop in tolerable condition would require an outlay of $ 500 or $ 600".[1] Congress provided the requested $ 6,500 on March 1,1843.[2] The additional sum of $ 4,000 was requested"for completing the erection of a new boring mill" in the estimate of funds for the service of the Ordnance Department for the Fiscal Year commencing July 1, 1844 and ending June 30,1845.[3] Congress appropriated the $ 4,000 on June 17, 1844.[4] so that the total approximate cost of construction was about $ 10,500.

The Armory Paymaster's voucher indicate that only a limited amount of work(about $ 852.27) was undertaken on the foundations of the new Boring Mill during the fall of 1843. $ 505.25 was expended to acquire 843 feet 9 inches of cut stone for use as cornice and water table on the building.[5] In addition, Edwin McGuigan excavated 270 3/4 cubic yards of

1.Harpers Ferry NHP Microfilm Reel No.20, Vol. 6, p. 643,644.
2.U.S. Statues at Large, Vol. V.p. 605.
3. Serial No. 439, Document No. 6, p. 94.
4. U.S. Statues at Large, Vol.5, p.698.

5. R.G. 217, 3rd Series, File 630, Voucher No. 101 dated December 2, 1843, to Timothy McBrierty, $ 244.40. for 407 feet 4 inches of cut stone; File 630, Voucher 102, December 9,1843, to Redmond Burke, $ 261.35,for 436 feet 5 inches of cut stone for the Boring Mill.

earth for part of the foundation for $ 43.22 [6] and the mason Peter Litle built 242 6/25 perches of dry wall at the Boring Mill.[7] Timothy McBrierty and Redmond Burke, who were providing the cut stone for the new warehouse, also furnished the cut stone for the new Boring Mill.

In March 1844 Superintendent Craig advertised in the area newspapers for a brick maker who was to provide "300,000 hard brick of the best quality". The first delivery of 50,000 was to be made by June 1 and this was to be followed by delivery of 50,000 brick at 15 day intervals.[8] The brick contract was awarded to William Lee, who made and delivered a total of 281,500 bricks as follows: 50,000 in August, 100,000 in September, 50,000 in October, and 81,500 brick in November. Lee received a total of $ 1,836.00 for these services in 1844.[9] During that spring an additional 1,440 feet 2 inches of cut stone water table, cornice, sills and lintels, as well as three door steps and 3 spout stone were purchased from Burke and McBriety at a cost of $ 725.08.[10]

The Old Boring Mill(Bldg. No. 3 on Map No. 1(1837-38) was demolished in July or early August 1844 to clear the site for the construction of the new mill. On August 19th the slater George W. Tacey (or Tracey?) was paid $ 39.04 for taking off 1,628 feet of old slate from the roof of the Old Boring Mill.[11] On August 15, the mason Peter Litle also received $ 137.83 for taking down the old Boring Mill and saving 137,836 old bricks and $ 31.50 for quarrying

6. Series 3, File 440-Voucher 72., dated Sept. 22,1843.
7. 3rd S., F-630-V. 27, dated November 28,1843.
8. 3rd S., F.970,V. 24, to A.S. Abell, March 2,1844, $ 8.67 for running adveristement.
9. 3rd S.,all to William Lee, File 1613-V. 18, Aug.20/44,for $ 325.00; F.1613-V. 24, for $ 325.00, Sept. 7,1844; F. 1934-V.33, Nov.7,1844 for $ 325.00; and F.1934-V.60, Dec, 12/4/44, for $ 536.00. File 1165, V.39, October 6,1844, $ 325.00 for 50,000 bricks.
10. 3rd S., F.-1165-V.8, April 16,1844, to Redmond Burke, $ 280.58,for 541 feet 2 inches cut stone, puls 3 door steps and 3 spout stones; F.1165-V. 35 to Timothy McBriety, June 14,1844, $ 444.50 for 889 feet of cut stone.
11. 3rd S., F. 1698, V.17, Aug.19,1844.

4 perches of heavy stone from the basin between the shops and then laying 22 perches of dry wall in the basin.[12]

Litle then worked from August through the end of October 1844 excavating the foundation and constructing the stone mortar masonry and dry wall foundations for the new mill, receivinga total of $ 1,717.25 for these contributions. This work included 511 8/27 cubic yards of excavation, building about 576 perches of mortar masonry wall, and erecting 57 perches of dry wall. In October he installed 51 feet 4 inches of cut stone, the steps to mill, 392 feet of cut stone for the head blocks of the water wheels, also 20½ perches of grouted wall for the head blocks and 102 8/25 perches of mortar wall for the head blocks. Cut stone lintels and sills were also set.[13]

In September 1844 an additional $ 702.71 was paid to Burke and McBrierty for 1,219 feet 7 inches of cut stone, some of which was also intended for use on the new warehouse and new proof house that were then under construction.[14]

The two-story brick walls of the Boring Mill were erected by Hunt and Bates, who were paid $ 430.51 on September 21, 1844, for laying 215,258 bricks in the walls of the mill.[15]

In August $ 576.48 was spent to purchase 32,027 feet of white pine lumber for use as joists in the Boring Mill.[16] The Armory carpenters, paid from days wages apparently, framed the roof and erected the wooden floors in the new mill, for no vouchers were found made out to carpenters for these services.

12. 3rd Series, F.1698, V. 14, dated August 15,1844.
13. 3rd Series,1613-V. 28, Sept.8,1844 to Peter Litle for $ 678.10; File 1698-V. 78, October 7,1844 to Litle for $ 632.22, and F.1934, V.25, dated 11/5/44, for $ 406.93.
14. 3rd Series, File 1613-V. 44, to Redmond Burke, 9/21/44, $ 539.68 for $ 980 feet 11 inches of cut stone; .F1698 V.-35, to Timothy McBrierty, $ 139.23 for 238 feet 9 inches of cut stone, Sept.13,1844; F.1934-V. 8m to R.Burke, Oct.28/44. $ 23.80 for setting 238 feet of cut stone in Boring Mill.
15. 3rd S., F.1698,V.46, to Hunt and Bates, 9/21/44, for $ 430.51.
16.3rd.S., F- 1698, V. 20, to A. Bowers, August 31,1844, for $ 576.48.

The carpenters had completed their task by October, for at the end of that month the slater William Bayley was paid $ 738.10 for providing 7,381 feet of slate and slating 73 81/100 squares on the roof of the new Boring Mill.[17]

The tinsmith Benjamin M. Snook made and put up 771 feet of "lead gutter"on the Boring Mill in September and 199 feet of"round copper spouting" on the structure in December 1844. He received $ 147.44 for these services.[18]

The ceilings of the new mill were plastered at a cost of $ 205.62. This total included $ 17.87 for 14,300 ceiling lath,[19] and $ 187.75 for the services of James Bowen, who in November plastered 1,825 1/9 square yards in the new mill and also put up 2,090 feet of joist stripes.[20]

Exclusive of the cost of the carpenter work, approximately $ 7,287.22 was spent on the construction of the new Boring Mill in 1844, with expenditures of 1843 included- $ 852.27, the grand total was more than $ 8,139.49.

In his annual report to the Secretary of War on the operations of the National Armories at Harper's Ferry and Springfield, dated January 6, 1845, the Chief of Ordnance, Lt. Col. George Talcott, informed Secretary William Wilkins, "A large workshop, 123 by 42 feet, two stories high, for barrel ›ring and other operations, has been constructed (at the musket factory) in place of a narrow and inconvenient shop, which had become much dilapidated."[21] The heating system of the completed mill was installed in the structure at a cost of $ 385.32 in the first quarter of 1845. This was comprised of 820 feet of stove pipe to distribute the heat from 10 cylinder

17. 3rd Series, F.1934, V. 5, to William Bayley, October 28,1844,for $ 738.10.
18. 3rd Series, To Benjamin M. Snook, F.-1698,V. 61, Oct.1,1844, for $ 124.13 ; F.1934,V. 32, Nov. 7,44, for $ 6.00; and F.2213,V.7, Jan.1845, for $ 17.31.
19. 3rd Series, F.1934,V. 23, to King and Pick (?),Nov.5,1844,for $ 17.87;
20. 3rd S. F.1934, V. 62, To James Bowen, Dec.6,1844,for $ 187.75.
21. Serial No. 464, Document No. 43, p. 2.

stoves, the latter including 6 large and 4 medium size stoves.[22]

Total cost of constructing the new Boring Mill, exclusives of the carpenter work, thus appears to have been about $ 8,327.95. The balance of some $ 976 was probably used to paid for the carpenter work and the cost of installing machinery. The new mill is shown on Map No.1, which was drawn in November 1844.

The work of installing the machinery continued into 1845 and in his first annual report for the fiscal year ending June 30,1845, Armory Superintendent Major John Symington, who had replaced Major Craig as superintendent in November 1844, reported of the Boring Mill; " A workshop of brick, on stone foundation, 122 by 42½ feet, two stories high,and covered with slate; bevel-geared (water) wheels, on solid cut-stone head blocks, under the lower floor, communciate motion to the lines of working shops on the two floors above.

" The various operations upon the barrel from the forged to the finished product will be done in this shop, in addition to other work; most of the machines[23] for the purpose being already in position and in operation."

The mill would produce barrels for the new model percussion muskets that were just going into production.

Later in this same report, Symington described this machinery as follows: At the Musket Factory

1st. Under the first floor of new workshop (boring mill) is heavy and permanent bevel gearing, with the main driving drum; also about 49 feet of of large iron shaft, with spur and bevel-gearing, extending into the wheel house and connecting with the large iron water wheel, There is also 179 feet of iron and lead pipe, connected with a force pump, to supply water to the machinery for boring barrels.

22. 3rd Series, F.1934,V. 108, To Hazelwood, Fox, and Co., 1/7/45, for $ 351.60; F. 2213, V.38, To Hazelwood, Fox,& Co., March 29,1845, for $ 34.72.

23. Serial No. 470, Document No. 1, p.419. Note that Lt. Col. Taclott gave the dimension of this same shop as being 123 by 42 feet.

On the first floor. 96 feet of the main line of working shafts with drum pulleys, counter pulleys, and shafts in operation. The upper room is fitted up with an inspector's office, and work benches and vices on the sides, with tool and work chests for each filer. The working shafts, &c, for this floor are in progress. 24

A year later, in the annual report for the year ending June 30, 1846, Major Symington described the "Machinery constructed and put in operation during the year" in the Musket Factory Boring mill as follows:

1st. 1 backshot water-wheel,15 feet diameter, 10 feet wide, with penstock and geared gates; also shafting, bevel, and spur gearing; large driving drum, to give the machinery in new boring shop....

4th. In the new boring shop, on the first floor, 36 feet of main driving shaft,with the necessary hangers, drums, pulleys, &c.,fast and loose, for driving the several machines; also, 103 feet of cast-iron and lead pipe,to convey water to the barrel-turning machines. On the second floor,90 feet of main driving shaft, and 28 countershafts(73 feet), 2 perpendicular shafts (21 feet), for driving drilling machines: the whole with the necessary appendages.....

The whole of the shafting,&c., in the foregoing items, is made in the most substantial manner of wrought-iron, except the main shafts, spur and beven gearing of the large water wheel, which are of cast-iron." 25

24. Serial No. 470, Document No.1, p. 420.
25. Serial No. 493, Document No.1, p. 163. The wheel pit for the 15 foot water wheel had been excavated from solid rock. The structure had a breast-wall and forebay of masonry-see Serial No. 470,Doc.1,p. 419.

Bldg. No. 5 on 1859 Historical Base Map.

Construction of the Boring Mill, 1843-44

Project:	Cost	Description of Project
Excavation	$ 129.61	Foundations-820 cubic yards excavation of earth and 4 perches of heavy rock.
Stone Mason Work	$ 405.55	For erecting 321 6/25 perches of dry wall.
	1,315.86	for erecting 678 7/25 perches mortar masonry stone foundation walls.
	51.55	For erecting 20½ perches of grouted wall.
For cut stone:	1,934.04	for 3,503 feet 6 inches of cut stone for use as water table , cornice, lintels, sills, steps, and spout stones.
Tearing Down Old Mill	176,87	saved 137,836 brick and 1,628 feet of slate from old building.
Making and Delivering Brick	1,836.00	281,500 brick made and delivered.
Laying Brick	430.51	for laying 215,258 brick in walls.
Lumber	576.48	32,027 feet white pine for joists.
Carpenter work	?	for floors and roof.
Lath	17.87	14,300 ceiling lath
Plastering	187.75	for putting up 2,090 feet of joist strips. for plastering 1,825 1/9 square yards.
Slate & Slating Roof	738.10	For 7,381 square feet of slate and putting it on the roof.
Gutters and Spouting	147.44	For making and putting up 771 fee of gutters, lead, and 199 feet of copper spouting.
Heating System	386.32	for 820 feet of stove pipe and 10 cylinder stoves, 6 large and 4 medium size.
Approximate Total Cost	$ 8,327.95	(Maxinium- $ 10,500.00)

3. The New Proof House, 1843-44:

The third new large brick structure to be designed and erected by Superintendent Henry K. Craig at the Musket Factory was the Proof House. This is Bldg. No. 14 on Map No. 3 (1848) and Bldg. No. 15 on the 1859 Historical Base Map. Sheet iron, a new building material, was used for the first time at Harper's Ferry in the construction of the Proof House.

Craig's preliminary estimates to the Ordnance Department specifically requesting funds to construct the proof house have not been found. It is possible, however, that the estimate for the structure was attached to the Board of Officers' Inspection Report of February 22, 1842, became detached when the report was printed and was lost.

Work on the structure probably got underway in May 1843, for on June 17, the mason George N. Lynch was paid a total of $ 695.03 for excavating 735 8/9 cubic yards of earth for the foundation and for erecting 432 3/4 perches of stone wall, the foundations of the new proof house.[1] The bricks, 115.297, were furnished and laid by the mason John Lambaugh in the two story high brick walls of this structure for $ 1,095.32. Lambaugh, for an additional $ 47.35, also set 475 linear feet of cut stone window caps, door sills, and cornice.[2]

Remond Burke provided at least 83 feet 3 inches of the 475 linear feet of cut stone used in the workshop at a cost of$ 35.65, the balance coming from the large orders placed with Burke and Timothy McBriety for cut stone for the new warehouse and boring mill.[3]

The carpenter bills for framing the roof and putting in the floors have not been found, suggesting that Armory carpenters, paid from day labor, did this work.

1. Record Group 217, 3rd Series, File No. 187, Voucher 110, to George N. Lynch, June 17,1843. He received $ 132.46 for the excavation and $ 562.57 for building the foundation walls.
2. 3rd S., F. 630, Vouch. 97-To John Lambaugh, Nov.11,1843, for $ 1,142.87.
3. 3rd S., F.440, V. 74, Sept.29,1843, for $ 25.25, for ' 62 feet 4 inches;

2,155 feet of yellow pine were acquired for $ 28.11 in October 1843, for use in "new building," perhaps the proof house.[4]

The new proof house was apparently ready to be roofed by October 1843, for on the 20th of that month G. & J. A. Sheenberger were paid $ 254.54 for providing 3,511 feet of sheet iron and roofing with it the proof house.[5] By mid December the tinsmith Benjamin Snook, assisted by two helpers, made and completed the installation of copper gutters and down spouts on the gable roof of the proof house, charging a total of $ 106.67 for these services.[6]

Expenditures on the structure, exclusive of the services of carpenters, in 1843, totaled approximately $ 2,248.47. An additional $ 81.98 was spent in 1844 to complete the building . The major item of the 1844 expenditure was $ 67.58, which was paid to James Bowen on May 3, 1844, for plastering 675 8/9 square yards of the interior of the Proof House.[7] Total cost of construction, 1843 to 1844, thus came to more than $ 2,330.45. In his annual report to the Secretary of War on the operations of the National Armories, dated January 6, 1845, Lt. Col. George Talcott, Chief of Ordnance, informed Secretary William Wilkins of the extensive construction that Superintent Henry K. Craig had accomplished at the Harper's Ferry Armory in the period 1843 to 1844. With regards to the proof house, Talcott wrote:

"A new proof-house has been erected, with rooms for loading and inspecting barrels, 70 by 30 feet, admirably well designed and suited to use; this is covered with a sheet-iron roof. The other new buildings [the warehouse and boring mill] are slated; and the whole are constructed in the most substantial manner, of durable materials, reflecting great credit on the officer

4. 3rd Series, F. 630, Voucher 8, to McPherson & ?..October 31,1843, a $ 28.11 item in a bill totaling $ 735.18.
5. " 3rd Series, F. 440, V. 53. dated Oct.20,1843.
6. " 3rd S. F. 440, V. 43, Sept. 30,1843,for $ 57.00; F. 630, V. 48, Dec.20, 1843, for $ 45.67, and F.1165,V.90, July 7,1844,for $ 4.00.
7. . 3rd S., F. 1165, V. 18, to James Bowen, May 3,1844, for $ 67.58.

8

"in charge of the establishment...."

Construction of the Proof House, Musket Factory, 1843-44

(Bldg. No. 15 on 1859 Historical Base Map).

Project	Cost	Description of Project
Excavation for foundations	$ 132.46	Excavating 735 8/9 cubic yards of earth
Stone foundation walls	562.57	Constructing 432 3/4 perches of stone foundation walls. Stone mortar masonry.
Providing and laying brick	1,095.32	Providing and laying 115,297 bricks in walls.
Cut Stone:	35.65 47.35	for 83 feet 1 inch of cut stone, balance used from purchases for warehouse, boring mill. For setting 475 linear feet of cut stone cornice, window and door caps and stlls.
Lumber Carpenter work	28.11 ?	For 2,155 feet of yellow pine for framing floors and roof. putting in floors and roof.framing.
Roofing	254.54	for providing and installing 3,511 square feet of sheet iron roofing.
Gutters and spouts	106.67	for making and installing ? feet of copper gutter and ? feet of copper down spouts
Plastering	67.58	For plastering 675 8/9 square yards, ceiling and perhaps interior walls.
Total Cost	$ 2,330.25	Estimated total cost: $ 2,500.00

8. Serial No. 464, Document No. 43, p. 2.

4 & 5. Engine House and Lime House, 1843-44.

In addition to the three large brick shops erected at the Musket Factory, Chief of Ordnance, Lt. Col. Talcott, informed the Secretary of War on January 6,1845, "several frame buildings, such as an engine house, lime house,... have been effected..." by Major Craig.[1] The locations of these structures in the Musket Factory yard is not known because the wooden engine house was replaced in 1848 and location of the lime house is not shown on the 1848 Map (Map No. 3). The 1844 lime house was also to be replaced, as we shall see, by a new wooden lime house in 1852. The carpenter bills for constructing the two frame structures in 1844 have not been found, so we have estimated this cost $ 750.00 each, making a total of $ 1,500 for this work. These were both probably one-story frame structures, but no data has been found describing the features of these edifices.

The engine house apparently replaced one of two buildings that had erected ca. 1834-36 to house the two Musket Factory fire engines.[2] The lime house erected in 1843 was apparently the first special store house to be built for this purpose at the Harper's Ferry Armory.

1. Serial No. 464, Document No.43, p. 2.

2. Snell, Charles W.,"A Physical History of the U.S. Musket Factory Plant, 1794 to 1885, U.S. Armory at Harper's Ferry, Virginia,- Volume I, 1794 to 1841: Establishment, Construction, and Developmen, Harpers Ferry National Historical Park, West Virginia," (NPS Typescript, National Capital Team, Denver Service Center, Colorado, July 1981), pp. 127, 276.

6. Repairs to Old Musket Factory Workshops, 1842- 44:

During the years January 1,1842 to December 31, 1844, Major Henry K. Craig spent a total of $ 6,024.24 for the following purposes: $ 3,441.40 to make repairs to the old Musket Factory workshops and storehouses and $ 2,586.84 to purchase a large supply of cement and lime that was to be used both in making repairs and for new construction.[1] The rate of annual expenditure was $ 2,060.31 in 1842, $ 3,940.70 in 1843, and $ 27.23 in 1844. The slaters William Bayley and George W. Tacey(or Tracey) were paid a total $ 191.61 for repairing the slate roofs of the old shops.[2] The stone masons received approximately $ 3,956.00 for repairing shops, laying curbs and paving Potomac Street(the main or central street between the workshops) at the Musket Factory.[3] Carpenter work repairing the old shops came to about $ 428.67 during this same period

The plasters received about $ 485.73 and the painters $ 101.92 for their work on the old Musket Factory structures.[4] Timothy McBrierty, a stone cutter, was paid $ 5.25 in 1844 for cutting the stone head blocks for the water wheel in the Old Bell or Finishing Shop.[5] In May 1843 a total of $ 875.06 was expended to make and put copper gutters and down spouts on the public buildings of the Armory.[6]

1. Cement and Lime- 2nd Series, F. 8190,Voucher 44, Abstract D, to George Shafer, February 1,1843, $ 2,586.84-for 3880 bl cement and lime.
2. To William Bayley, 2nd Series, Nov. 7,1842,for $ 172.78; To George W. Tracey,3rd S. F.1165, V. 40-6 June 1844, for$ 18.83.
3. 3rd Series, F.630,V. 27,Nov.28,1843, for $ 39.71; 3rd S., F.440 ,V.40, Sept.28,1843, for $ 156.94; 3rd S., F. 970, V.57, March 15,1844, $ 3.15.
4. Plasterers: Jerry Harris, 3rd S., F.187, June 3,1843-$ 7.75; To Hiram McKenzie: 3rd S., F.187, V.78, April 4,1843,for $ 105.09; F.187,V. 18,May 11, 1843, for $ 104.70-plastering in Stocking Shop; F. 440,V. 66, Sept. 30,1843, for $ 19.15,also in stocking shop.
5. 3rd S. F. 1698, V. 35, Sept. 14,1844, for $ 5.25.
6. 3rd Series, F. 187, V.27, May 6,1843, for $ 875.06.

Expenditures at the U.S. Musket Factory for Repairs, 1842 to 1844

Year	Slating	Painting	Plastering	Gutters & Spouts	Carpenters	Masons	Total
1842	$ 172.78	25.96	229.08	0	428.67	1,203.82	$ 2,060.31
1843	0	85.06	256.65	875.06	0	2,743.78	3,960.55
1844	18.83	0	0	0	0	8.40	27.23
Total	$ 191.61	111.02	485.73	875.06	428.67	3,956.00	$ 6,048.09

(1) Slating, 2nd Series, F.8011, V.22, to William Bayley, $ 172.78 on 11/7/42; 3rd S., F/1165,V. 40-To George W. Tracey, for $ 18.83, June 1844.

(2) Painting, 2nd S.,F.8011, V. 43, to John P. Kennedy,, for $ 25.96 on 12.8/42; 3rd S., F.187, V.55,to John P. Kennedy for $ 67.76 on 6/19/43; 3rd S., F.440, V. 40. John P. Kennedy, for $ 17.30 on 6/28/43.

(3) 2nd Scries,F.7045, V.49,to Hiram MCkenzie, 3/29/42 for $ 13.37; 2nd S., 7654,V. 36,To Hiram McKenzie, 9/21/42, for $ 170.58; 2nd S.,F.8011, V. 47, To Hiram McKenize for $ 45.13, on 12/17/42.

RECORD OF REPAIR WORK(APPROXIMATE) ON U.S. MUSKET FACTORY BUILDINGS, 1842 to 1844:

(See Map No. 1(1837-38) for location of numbered workshops).

YEAR	Bldg. 2 Old Bell Shop	Bldg.3 Old Boring Mill	Bldg. 5 Old Stock-in Shop	Bldg.8 Old Tilt Hammer Shop	Bldg.10-12 Old Smiths Shop	General Repairs	Total for Repairs
1842		10.50	1,015.66	91.18		1,117.34	$ 2,060.30
1843	17.30		123.85		115.10	256.25	738.20
1844	8.40		19.96			28.36	47.19
TOTAL	$ 25.70	$ 10.50*	$ 1,159.47	$ 91.18	$ 115.10	$ 1,401.95	$ 2,845.69

* The Old Boring Mill(dating from 1799) was demolished in 1844 and replaced by a new Boring Mill that year.

7. Musket Factory Potomac River Wall, 1842

On March 28,1842 the mason George R. Riddle was paid $ 120.00 for building 60 perches of mortar masonry wall"connecting the Government river wall to the abutment of the B. &. O R.R. wall at the east(or south) end of said wall."[1]

1.2nd S., F. 7045, V. 45, March 28,1842, for $ 120.00.

8. Musket Factory Gate and Walls, 1843:

Major Henry Craig spent approximately $ 2,581.58 constructing an armory fence and gate as follows:

To Redmond Burke, July 11,1843, $ 450.60, for cutting and setting 751 lin. feet of cut stone"for six columns,pedestal for gates leading to Armory shops."[1]

On June 28, 1843, the mason Peter Litle received $ 698.21 for executing the following work: on "Part of wall enclosing public grounds":

$ 16.92 for excavating 94.4 cubic yards of earth.
104.10 for erecting 83 perches 7 feet of dry rubble wall.
21.00 for erecting 14 perches of mortar wall.
130.20 for 217 lin. feet of cut stone water table for wall.
214.80 for 358 lin.ft of cut stone coping for wall.
35.89 for setting 358 ft of cut stone coping.
166.39 for furnishing and laying 18,488 bricks.
$ 698.21 (2)

On September 28,1843, Litle was paid $ 1,432.77 for work definitely connected with the" armory fence and gate". This included the following services:

$ 14.14 for 2,310 bricks.
104.20 for 83 9/25 perches dry wall for fence and gate.
22.68 for 16½ perches mortar wall.
361.60 for furnishing and laying 38,064 bricks.
836.35 for 1,394 3/12 feet of cut stone.
9.60 for 16 feet of cut stone.
84.20 for 842 feet ashlar and ? .
$ 1,432.77 (3)

1. 3rd S., F. 187, V. 118, July 11, 1843, for $ 450.60.
2. 3rd S., F 187, V. 112, June 28,1843, for $ 698.21.
3. 3rd S., F. 440, .V. 39, September 28, 1843, the $ 1432.77 is part of a payment totalling $ 1,466.67.

9. Wells, Reservoirs, and Pipes: 1842 - 1844:

In 1843 a "reservoir." constructed of cut stone, was erected at some unknown location" between the Musket Factory shops." On November 3, 1843, the stone cutter Redmond Burke received $ 115.00 for providing 209 feet 3 inches of cut stone for this reservoir.[1] On September 29, 1844, Burke was paid $ 51.55 for setting 515 feet 6 inches of cut stone "in reservoir at musket factory."[2] On Jannary 18,1844, Rezin Daily was paid paid $ 17.50 "for cutting on public land and hauling to armory 20 pine logs for pipes to conduct water to reservoir between the shops."[3]

Lead and cast iron pipes, however, were coming into use during this period. On September 1,1843 1,004 llbs "medium lead pipes for conveying water into shops" were purchased for $ 56.26.[4] On April 5,1844, Hugh Gilleece, who operated a iron foundry on Virginius Island, sold 1,612 feet of "casing of iron for water pipes for pumps at Musket Factory," for $ 64.48.[5]

1. 3rd S. F.630, V. 93, November 3,1843, for $ 115.00
2. 3rd S., 1613, V. 44, September 21,1844, for $ 51.55.
3. 3rd S., F. 1165, V. 53, January 18,1844, for $ 17.50.
4. 3rd S., F. 440, F. 25, To Tatha(?) and Brother, Sept.1,1843, for $ 56.26.
5. 3rd S. F.970, V. 4, April 5, 1844, for $ 64.48.

Expenditures on the Physical Plant at the U.S. Musket Factory, 1842 - 1844

Year	For New Buildings	For repair of Buildings	For River Wall	Gates and Walls	Reservoirs, Pipes	Surveying	Roads	Total
1841	$ 1,892.82	-	-	-	-	-	-	$ 1,892.92
1842	1,122.91	2,060.31	120.00	-	0	0	50.00	3,353.22
1843	6,741.50	3,960.55	0	2,581.58	171.26	93.90	346.82	13,895.61
1844	8,953.34	27.23	0	0	133.53	0	237.10	9,351.20
Total Recorded	18,710.57	6,048.09	120.00	2,581.58	304.79	93.90	633.92	28,492.85
PROBABLE Total	21,600.00							

10. U.S. Musket Factory Canal on the Potomac: 1842 - 1844

No money was spent for work on the Potomac Canal in 1842 or 1843, but a total of $ 1,907.03 was expended on two projects in 1844. In March 1844 the mason Peter Litle received $ 147.61 for building 105 1/5 perches of dry wall and making 80 15/27 cubic yards of embankment at the head of the Armory Canal.[1] A total of $ 1,759.42 was expended on the second project which involved the reconstruction of the canal locks during the fall of 1844. Expenditures included the following items: $ 391.38 for 238 barrels of cement;[2] $ 87.24 for 1,454 lbs of rolled plate iron for the new lock gates;[3] $ 13.50 for the use for 9 days of a horse and cart to clean out the bed of the canal;[4] and $ 1,267.30 to Peter Litle for rebuilding the locks.[5] The mason built 363 3/5 perches of stone mortar wall, for $ 909.00, and laid 597 feet 2 inches of cut stone work for $ 358.30.

Total expenditures on the Potomac Canal, 1842 to 1844, was $ 1,907.03.

In his annual report to the Secretary of War dated January 5,1845, Lt.Col. George Talcott, described the work on the Potomac Canal as follows:

> During the past season, the canal which supplies the power from the dam on the Potomac, has received extensive and thorough repairs in the new head gates, a pier-head and ice breaker, and new gates to the lock, which admits boats with coal and other supplies for the armory; indeed, the whole mass of masonry at the head of the canal, and the lock, have been renewed, and the canal cleared out; whereby the power will be much increased in periods of low water, and a more uniform supply of water be obtained. These repairs have been much needed for several years; the opportunity of a cessation of work (while changing to the new model percussian muskets and rifles) has been taken, and the whole has been done in a substantial manner, calculated to endure the shock of floods and ice freshets, to which they are annually exposed." [6]

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1. Record Group 217, 3rd Series, F. 970,V.57, dated 3/15/44. Litle received $ 131.50 for building the dry wall and $ 16.11 for making the embankment.
2. 3rd S., F.1698, V. 37, to Henry Shafter, Sept. 17,1844,for #$ 391.38.
3. 3rd S., F 1698, V. 74, to Henry Thompson, October 4,1844, for $ 87.24.
4. 3rd S., F. September 11,1844, to Jessie Schofield, Sept. 11,1844,for $13.50. F.1698, V.30
5. 3rd S, F. 1934, V. 25, to Peter Litle, Nov.5,1844, for $ 1,267.30.
6. Serial No. 464, Document No.43, pp. 2-3.

In the annual report for the fiscal year ending June 30,1845, Superintendent John Symington described the 1844 work on the Potomac Canal as follows:

> The works for admitting the water, at the head of the armory canal have been reconstructed,consisting of difficult excavations, heavy stone-masonry in cement laid in the breast-walls of the locks of the of the canal, and in the pier or jettee. New lock-gates and breast work of strong wood-work, with eight iron feeder-gates. A waste dam, extending from the river embankment: to the pier.

7.

Recorded Expenditures on U.S. Canal

Year	Potomac Canal	Canal Appropriations
1842	0	0
1843	0	0
1844	1,907.03	0
Total	$ 1,907.03	0

7. Serial No. 470, Document No. 1, p. 419.

11. Musket Factory Dam on the Potomac 1842 - 1844:

A total of $ 1,747.43 was spent on the Potomac Dam in 1842; 0 in 1843, and 0 in 1844, making a grand total of $ 1,747.43 expended on repairs and improvements on the dam during the years 1842 to 1844.

On December 27,1842 the firm of Randall and Galler(?) received a total payment of $ 1,747.42 for accomplishing the following mason work on the Potomac dam and canal pier head at the inlet to the Armory canal: building 418 35/100 perches of pier wall for $ 1,631.56; filling in with 51 25/100 perches with rubble for $ 35.87. Extra work of rounding two of the corners of the pier head for $ 50.00; drilling cap stones of the dam, $ 20.00, and cutting ; groves, $ 10.00.[1]

EXPENDITURES ON U.S. POTOMAC DAM, 1842 - 1844:

Year	Potomac Dam	Appropriations
1842	$ 1,747.43	0
1843	0	0
1844	0	0
Total:	$ 1,747.43	0

1. 2nd Series, File 8011, Voucher 99, dated December 27,1842, for $ 1,747.43. Record Group 217.

CHAPTER II

THE MILITARY SUPERINTENDENTS: MAJOR JOHN SYMINGTON, 1844-1851:

In his annual report to the Secretary of War, dated January 6, 1845, Lt.Col. George Talcott, Chief of Ordnance, praised the rebuilding efforts of Superintendent Henry K. Craig at the Harper's Ferry Armory, noting that Major Craig had left this position in November 1844 to assume duties at a new post. After describing the four large well-built brick workshops erected by Craig, Talcott advised that much work remained to be done. At the Musket Factory, the Chief of Ordnance wrote: "There are still several shops of large dimensions in a wretched condition; having been originally placed too low, upon insecure foundations, they are scarcely tenantable, and should all be rebuilt; some of them immediately. The experience had in relation to the river floods enables us to place all new structures at a suitable elevation, so that no injury will be sustained from them in the future, except in some very remarkable and unusual cases....

The situation was no better at the Rifle Factory, Talcott continued: Several buildings at these works require immediate reconstruction, being in a state of decay. They were originally built of perishable or inferior materials, in a cheap manner, placed on insecure foundations, and , from false economy, generally of too small dimensions..." [1]

Craig's replacement as Superintendent of the Harper's Ferry Armory was Major John Symington, who reported for duty at Harper's Ferry on November 9, 1844. Symington was an eccentric but talented West Point-trained engineer.[2] During Symington's seven year regime at Harper's Ferry, 1845-51, he was to exhibit considerable ability as a builder, architect, and town planner. Symington was to introduce architectural style to the armory buildings;

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1. Congressional Serial No. 464, Document No. 43, p. 2. The operations in the production of the Hall patent rifle at the Shenandoah works had been regarded as purely experimental from 1819 to 1827, hence most of the shops were frame and all constructed from very limited funds.

2. Merrit Roe Smith, Harpers Ferry Armory and the New Technology, The Challenge of Change (Cornell University Press, 1977), p.276. For a description of some of Symington's ecentricities, see Joseph Barry, The Strange Story of of Harpers Ferry, 3rd ed Shepherstown, W.V.a, 1959, first published in 1901. Barry had known Symington when Barry was a young boy.

he was to conceive a plan for solving the 50-year problem of providing adequate housing for armory workmen and was able to induce the Secretary of War and Congress to put the scheme into effect; and Symington also laid out the basic street and lot plan for Harper's Ferry in 1851-52 that still prevails. As a young lieutenant, John Symington had briefly served as acting superintendent of the Harper's Ferry Armory in August 1829. During this period he must familiarized himself with the land problems at the Musket Factory and the plans that were being suggested to solve them. In 1845 Symington was to revive these early schemes that had never been carried into effect due to changing ecomonic and political conditions, and was to successfully execute them.

After serving only one month on duty, Symington presented Col. George Talcott, Chief of Ordnance, with alternative plans on December 12, 1844 that requested from $ 81,909 to $ 91,555.94 in appropriations to rebuild and improve the U.S. Musket Factory. Included were 13 detailed estimates totalling $ 41,294.94, accompanied by five detailed plans for proposed buildings (the plans are unfortunately lost) for rebuilding workshops and storehouses at both the musket factory and rifle works and also for repairing old forebays and constructing new machinery.[3] These items, some of which may reflect also the thoughts of Major Craig, are dated November 30, 1844.

The two alternative land buying programs, one for purchasing 36 buildings, and 18 lots for $ 31,648 and the second for acquiring 40 structures, 22 lots, and an island for $ 50,261, were accompanied by

3. These are published in Serial No. 464, Document No. 43, pp.13- 17, 13 estimates. The five plans of buildings were not printed and cannot now be located in the National Archives.

an detailed and accurate map drawn to scale and in color delineating not only the lots but the buildings that were to be bought. Entitled "Map of the Relative Position of the Reserved (Wager Six Acre Reservation) to Public Works at Harpers Ferry, Va- 1844", this map was drawn by Symington and submitted with his letter of December 12, 1844.[4] (See Map No. 2 in this report). Major Symington, of course, strongly urged that the full $ 92,556 program be attempted.

Duly impressed with this data, Chief of Ordnance Talcott presented these packages, with maps and plans, to the Secretary of War in his annual report for operations in 1844, dated January 6,1845, commenting:

> 'The officer (Symington) who has recently taken charge of the armory has furnished plans and estimates for renewing several of these defective buildings; they have been prepared since the completion of the annual estimates submitted to Congress (for the June 1,1845-June 30,1846 fiscal year), and the importance and urgency of the case is believed sufficient to justify their presentation at this time; and I therefore respectfully recommend them to your favorable consideration..." [5]

In addition to the proposed rebuilding program, Talcott also recommended that the land purchasing program proposed by Symington be carefully considered, that one of them be adopted by the War Department and then be presented to Congress.[6] (Talcott's remarks on the land program will be considered at greater length later in this chapter under the subject dealing with land acquisition.).

The funds for the 1845-46 fiscal year, - $ 18,000 appropriated by Congress on March 3, 1845, however, reflected the reduced (from $ 27,359) recommendations of former Superintendent Henry K. Craig.[7] The first appropriation

4. The alternative land plans, known as Schedules A and B, with Symington's letter of December 12,1844, but not the map, are published in Serial No. 464, Document No. 43, pp. 6 to 12. Fortunately Map No. 4, copy made by Major Symington of his 1844 map, drawn on March 22,1847, was found in the National Archives Record Group 121 Laminated Material in 1980).
5. Serial No. 464, Document No. 43, p. 2.
6. Serial No.464, Document 43, p. 3.
7. U.S. Statues at Large, V, p. 747. , See HFNHP Reel 20, V. 7,pp.650-653, for Craig's request for $ 27,359 for the 1845-46 fiscal year.

reflect Major John Symington's 1844 suggestions appear in the 1846-47 fiscal year figures. On August 8, 1846, Congress voted the huge sum of $ 128,361.00 to make repairs and improvements at the Harper's Ferry Armory.[8]

The efforts of Col. George Talcott and Major John Symington to rebuilt and modernize the physical plant of the Harper's Ferry Armory were greatly facilitiated by the course of international events. For a third time, as had been the case in 1799 and 1808-10, war or the threats of war led Congress to appropriate large sums of money for national defense and to improve and rebuild the Armory at Harper's Ferry, On May 11, 1846, the United States declared war on Mexico and this conflict continued for about two years, ending when the Treaty of Guadalupe Hidalgo was finally signed on February 2, 1848. During this war Congress readily voted large sums of money to make repairs and improvements at the Harper's Ferry Armory.

Because of the limited appropriation of only $ 18,000 available, Symington during his first eight months as superintendent (November 1844 to June 30, 1845) was only able to put the finishing touches to Major Craig's new structures, namely the warehouse and boring mill at the Musket Factory and the filers shop at the Rifle Factory, and to construct one modest building of his own - a proof house at the Rifle Factory. A year later, however, and with the Mexican War in progress, Symington was able to report

that he had three new brick workshops, designed in a similiar

8. U.S. Statues at Large, Vol. IX, p. 69; For 1846-47 fiscal estimates requesting $ 128,361.00., see Serial No. 481, Document No. 9, pp. 111-112.

architectural style; constructed, or under construction at the Musket Factory. "The [3] buildings before mentioned," he wrote to Chief of Ordnance Talcott," all conform to the same general plan and style, and to the plans submitted with the last estimate to the Ordnance office."[10] By June 30,1847, the construction on these three structures had been completed and work was underway on two more new workshops.[11] Three more new shops were being erected by June 30,1848,[12] Symington was to keep up this pace of building until his departure from the armory in 1851.

From July 1, 1845 to December 31,1851, Major John Symington was to spend a total of $ 384,153.24 for repairs and improvements at the Harper's Ferry Armory. Of this sum about $ 200,321 was expended at the Musket Factory and approximately $ 189,851 was for buildings and the balance for the armory canal and dam. About $ 83,095 was spent for improvements at the Rifle Factory, of this $ 81,550 was for buildings and grounds and the remainder for the Shenandoah canal and dam. Expenditures on the two canals came to $ 9,110, on the two dams, $ 2,500, and $ 34,995 was spent on Armory dwelling houses. A total of 27 buildings were added to the Armory rolls by Symington, 19 by construction and eight by purchase.

At the Musket Factory, Symington designed and constructed 11 workshops and storehouses, 10 of them major, and one of them, minor structures. He

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9. Symington's annual report for year ending June 30,1845, Serial No. 470, Document No. 1, p.419-420.
10. Annual report for June 30,1846, Serial No. 493, p.164. The three buildings were the Charcoal House, north wing of the Forging or smiths shop, and a store house for stocks.
11. Annual Report, June 30,1847, Serial No.503, p.692.
12. Annual Report, June 30,1848, Serial No.537, p. 348.

also remodelled two of the old pre-1842 buildings at the Musket Factory for continued use.

At the Rifle Factory Superintendent Symington designed and constructed three major and one minor structures, and he also prepared the plans for a four important workshop that was constructed after he had left.

Finally, he designed and erected two large dwellings houses for the Commanding Officer and Paymaster at a cost of $ 21,709, also buillt one stable for the armory, one market house for the town, and acquired eight well-built dwelling houses for use as residences for the armory officers and workmen.

Major John Symington as an Architect:

Major John Symington continued that practice that had been instituted by Major Henry K. Craig, namely, of insisting that the new buildings being erected at the Musket and Rifle Factories be constructed of the best materials and of the finest workmanship . Thus the 14 major workshops and storehouses designed by Superintendent Symington from 1845 to 1851 had excellent stone foundations of mortar masonry; their solid upper walls were built of brick and were trimmed with cut-stone water table, window and door sills, and coping. The door and window frames were generally of cast-iron. The gable roofs of these structures were covered with either slate or sheet iron to lessen the danger from fire. The shops were also protected by lightning rods and roofs had copper gutters and down spouts. The exterior brick walls were also painted with two coats of oil paint and the edifices were heated by means of cost-iron coal stoves and tin and sheet iron stove pipes.

Symington applied an uniform architectural style to the exterior of his workshops and storehouses, thus rendering these structures impressive. He further used a basic floor plan that he used, with variations, in designing eight of his largest new workshops. His standard plan was for a rectangular-

shaped edifice that was subdivided into three sections consisting of a center and two flanking wings. Each section had a gable roof, but the roof of the center building was set at right angles to the gable roofs of the two wings, and the center section also often projected to the rear. The plan was flexible as to length, width, and height.

Symington's three- part structures varied length from 60 to 280 feet and in the width of the wings from 35½ to 36 feet. The number of stories in these three-part buildings also varied as follows: All three-sections of Musket Factory Blg. No. 14 and Rifle Factory Bldgs. No. 5 and 6 were one-story in heights. Musket Factory Bldgs. No. 8 and 13 had two-story sec center sections with flanking one-story wings. Finally, Musket Factory Bldg. No. 6 and Rifle Factory Bldg. No. 3 were two-stories in height in all three sections.

The exteriors of these eight- three-part buildings as well as those of the six that he designed on a simpler rectangular floor plan were treated architectural in the same manner . The gable ends of all these edifices as well as the front and rear gables of the centers of the three-part structures were adorned with brick parapet walls that were crenelated, capped with cut-stone coping, and that rose above the level of the ridges of the roofs.

The first stories of all these Symington-designed buildings were subdivided into arcaded bays. Each bay was comprised of a round arch that was supported by capped brick pilasters. Recessed within each bay was a brick panel that usually contained either a round-arched window or door. The second stories of the two-story edifices were subdivided in rectangular bays with flat arches which were also set between brick pilasters, Recessed within each of these bays was a brick panel that contained a window that was topped with a flat arch.

All of the later major structures to be erected at the U.S. Musket and Rifle Factories at Harpers Ferry from 1852 to 1861 were to be designed in this same architectural style.

At the Musket Factory, Major Symington designed and constructed 10 major and one minor buildings. At the Rifle Factory he designed four major shops, erected three of them, and also built one minor edifice.

EXPENDITURES FOR REPAIR AND IMPROVMENTS AT THE HARPER'S FERRY ARMORY, 1845 to 1851

By Fiscal Year	Expenditures Fiscal year	By Calender Year	Expenditures Calendar year	Appropriations by Calender year	Date
July 1,1845 - June 30,1846	$ 62,468.77 (1)	July 1,1845 to Dec.31,1845	$ 13,340.45 (8)	0	3/3/45
July 1,1846- June 30, 1847	55,346.27 (2)	1846	37,546.98 (9)	$ 128,361.00	8/8/46
July 1,1847- June 30,1848	75,269.63 (3)	Quarters 1-2 1847	(26,946.44)(10)	17,770.00	3/2/47
July 1,1848- June 30,1849	55,674.70 (4)	1848	(151,792.48) (11)	53,091.00	8/14/48
July 1,1849 June 30,1850	38,373.24 (5)	1849	38,368.46 (12)	62,820.00	3/3/49
July 1,1850 June 30,1851	62,399.44 (6)	1850	49,095.41 (13)	50,560.00	9/28/50
July 1,1851 - Dec.31,1851	34,621.19 (7)	1851	67,063.02 (14)	23,100.00	3/3/51
Total:	$ 384,153.24	Total	$ 384,153.24	$ 335,702.00	-

(1) Serial No. 499. Document No. 41.
(2) Serial No. 516, Document No.22.
(3) Serial No. 540, Document No. 25.
(4), Serial No. 576, Document No. 37.
(5) Serial No. 598, Document No.20.
(6) Serial No. 640, Document No. 36.
(7) 3rd Series, File [illegible] 12680 and 13017.
(8) 3rd Series, Files 2841 and 3122.
(9) 3rd series, Files 3502, 3858, 4403, and 4837.
(10). 3rd Series, Files 4967 and 5623-files for 3rd and 4th quarters missing.
(11) 3rd Series, File 8737- files for all 4 quarters of 1848 are missing.
(12) 3rd Series, Files 9093, 9307, 9895, and 10279.
(13) 3rd Series, Files 10673, 11000, 11542, and 12169.
(4) 3rd Series, Files 12169, 12680, and [illegible] 13017.

National Archives
Record Group No. 217, Records of the United States General Accounting Office, Washington, D.C. Records of the Second Aduitor:
from Paymaster of the U.S. Armory at Harper's Ferry, Virginia, Expenditures for Permanent Improvements

Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	TOTAL	Dec.31 Balance:
1846	a 3,372.75	b 5,774.39	c 14,933.43	d 13,466.41	37,546.98	17,204.18
1847	e 10,459.87	f 16,486.57	g ?	h ?	(26,946.44)	?
1848	i ?	j ?	k ?	l ?	?	?
1849	m 6,471.41	n 12,963.61	o 6,764.05	p 12,169.39	38,368.46	209.48
1850	q 4,294.56	r 15,145.24	s 10,433.69	t 19,521.92	49,095.41	13,787.51
1851	u 9,468.21	v 22,973.62	w 20,961.40	x 13,659.79	67,063.02	35,449.75
TOTAL					219,020.31	

Major John Symington, July 1,1845 to December 31,1851.
$ 232,360.76, plus 18 months,1847-48.

a.3rd Series, File 3502
b. 3rd Series, File 3858
c. 3rd Series, File 4403
d. 3rd Series, File 4837
e. 3rd Series, File 4967
f. #rd Series, File 5623
g. 3rd Series, File missing
h. 3rd Series, File missing
i. 3rd Series, File 8737 missing.
j. 3rd Series, File 8737 missing.
k. 3rd Series, File 8737 missing
l. 3rd Series, File 8737 missing.
m. 3rd Series, File 9093
n. 3rd S., File 9307.
o. 3rd S., File 9895.
p. 3rd S.,File 10276.
q. 3rd S., File 10673.
r. 3rd S., F. 11000.
s. 3rd S., File 11542.
t. 3rd S., File 12169.
u.3rd S., 12169 file-1st quarter of 1851.
v.3rd S., File 12680.
w. 3rd Series, File 12680.
x.3rd Series, File 13017.

The U.S. Armory at Harper's Ferry, Virginia, -January 1848

Musket Factory	19 Buildings	
Arsenal Square	4 Buildings	
Rifle Factory	23 Buildings	
Stables	1	
Magazines	1	
Dwelling Houses	161 buildings	, valued at $ 88,590
Market House	1	
Total of Bldgs:	210 buildings	
C.O's and P.M's Quarters	2 buildings	valued at $ 21,709.
Total:	212 buildings.	

Expenditures For Labor and Materials in Making Repairs and Improvements at the Harper's Ferry Armory, 1845-1851 from Records of the Armory Paymaster, by Calender Year.

Calender Year	For Labor	For Materials	Recorded Total	
4th Quarter only, 1845	$ 5,772.63	$ 1,507.62	$ 7,280.25	(3 months only).
1846	21,094.92	16,452.06	37,546.98	
1- 2nd qrs 1847	17,223.44	9,723.00	26,946.44	(6 months only(1)
1848			?	(2)
1849	23,561.66	14,806.80	38,368.46	
1850	27,019.01	22,376.40	49,395.41	
1851	39,272.09	27,790.93	67,063.02	
Total:	$ 133,943.75	92,656.81	$ 226,600.56	

(1) Paymaster's vouchers for 3rd and 4th quarters of 1847 are missing.
(2). Paymaster's records for all 4 quarters of 1848 are missing.

EXPENDITURES FOR LABOR AND MATERIALS IN MAKING REPAIRS AND IMPROVEMENTS AT THE HARPER'S FERRY ARMORY, 1845 to 1851 , By Fiscal Year.

Fiscal Year	For Labor	For Materials	Recorded Total	Total Spent
July 1,1845 - June 30,1846	$ 11,498.69	$ 4,928.70	16,427.39 (1)	$ 62,468.7
July 1,1846- June 30,1847	32,592.30	22,753.98	55,346,28	55,346.2
July 1,1847- June 30,1848	?	?	? (2)	75,269.6
July 1,1848- June 30,1849	10,677.33	8,757.69	19,435.02 (3)	55,674.7
July 1,1849- June 30,1850	24,790.63	13,582.61	38,373.24	38,373.24
July 1,1850- June 30,1851	34,728.12	27,669.32	62,397.44	62,397.44
July 1,1851- Dec.31, 1851	19,656.68	14,964.51	34,621.19	34,621.1
Total	$ 133,943.75	$ 92,656.81	$ 226,600.56	$ 384,153.24

(1) Does not include figures for the 3rd Quarter of 1845.
(2) Records of the Armory Paymaster July 1,1847 to June 30,1848 are missing.
(3) Record for the period July 1,1848 to December 31,1848 are missing.

APPROPRIATIONS FOR THE U.S. MUSKET FACTORY, 1845 - 1851: (1) Repairs and Improvements, Machinery.

Calender Year	1846 Charcoal House	Store House for Stocks 1846-47	Smiths Shop 1845-48	Coal Bins 1845-51	Remodelled Offices 1847-48	Engine & Guard House 1847-48	Stocking & Machine Shop 1847-50	Lumber House & Coal Bins 1848-49
1845					0	0	0	0
1846					$ 850.00		18,900.00	5,200.00
1847		750.00	4,500.00	1,800.00		1,540.00		
1848							950.00	
1849								
1850				880.00			6,300.00	495.00
1851								
TOTAL	(1)	(2) 750.00	(3) 4,500.00	2,680.00	850.00	1,540.00	26,150.00	5,695.00

(1) estimated cost of construction-$ 1,200.00.
(2) estimated cost of construction- $ 5,750.00.
(3) Estimate cost of Construction - $ 17,500.00.

APPROPRIATIONS FOR REPAIRS AND IMPROVEMENTS U.S. MUSKET FACTORY, 1845-1851(2)

Calender Year:	For Land 1847-49	Tilt Hammer Shop 1849-51	Polishing Shop. 1849-50	Grinding, Saw &Planing Mil 1850-51	Annealing Shop-Brass Foundry	Remodelled Bell Shop 1847-50	Repair Old Grinding Mill	Repair Old Tilt Hammer Shop
1845	0	0	0	0	0	0	0	0
1846	48,261						2,500.00	10,400.00
1847								2,700.00
1848			1,700.00					850.00
1849	200	43,370.00		11,630.00		2,675.00		
1850								
1851					9,550.00			
TOTAL	$48,461 (1)	43,370.00	1,700.00	11,630.00	9,550.00	2,675.00	2,500.00	13,950.00

(1) $ 9,829.67 of the appropriation for land held in the general treasury, as the land could not be purchased.

APPROPRIATIONS FOR REPAIRS AND IMPROVEMENTS AT U.S. MUSKET FACTORY, 1845-1851 (3)

Calender Year:	Entrance Gates, fences	Brick Pavement	River Wall	Grading Grounds	For force Pump	Total Musket Factory	Repair of store-house	Repair Bldg. Mach.
1845	-	-	-	-	0	8,000.00		
1846	350.00	450.00				86,911.00		
1847	1,100.00		640.00			13,030.00		
1848				500.00		4,000.00		3,600.00
1849						57,875.00		
1850						7,675.00	505.00	
1851					1,610.00	12,360.00		
TOTAL	1,450.00	450.00	640.00	500.00	1,610.00	$ 189,851.00		

Construction and Repair, 1845- 1851.

1. The new Charcoal House, 1845-46:

This one-story brick structure, completed by June 30,1846, was the first shop to be designed and erected by Major John Symington in the new architectural style. The Charcoal House is Bldg. No. 13 on the 1848 Map, No. 3, and Bldg. No. 16 on the 1859 Historical Base Map.

Major Symington's detailed estimates, submitted to the Ordnance Department on November 30,1844, contained one for a Charcoal House to be built at a cost of $ 730.00. The estimated materials and work were as follows:

185 yards of exacavation, at 18 cents	$ 33.30
220 perches masonry laid with cement, at $ 2.	410.00
4,800 feet of yellow-pine plank, at 1½ cent	72.00
3,400 feet of yellow-pine timber, at 1½	51.00
249 feet of locust scantling at 5 cents	12.45
300 lbs. nails at 4½ cents	12.75
200 lbs. hinges and fastenings for doors, at 12½¢	25.00
45 days carpenter's work, at $ 1.50	67.50
8 days calking and pitching roof, at 80 cents	6.40
Pitch and Oakum	9.00
	$ 730.00 (1)

This estimate, in the writer's opinion, however, appears to be for a stone and frame structure, and not for the brick storehouse that was actually erected.

Construction of the charcoal house got underway in the third quarter(July-September) of 1845. Unfortunately the Paymaster's vouchers (File No. 2841) for the 3rd Quarter of 1845 are missing from the records of the National Archives so that the details relating to the construction of the stone foundations and brick walls are unknown. However, the stone foundations were probably built by

1. Serial No. 464, Document No. 43, p. 14.

Peter Litle and the brick walls by Williams Collins, the two masons who were doing most of this type of work for the Armory at that time. Judging by costs of building the foundation of the armory stable in 1847, which had the same size dimensions (35½ by 35½ feet) as the Charcoal House, the cost of building the 1845 stone foundation probably amounted to about $ 400.00. Peter Litle did the following work for a total $ 397.05 on the stable foundation in 1847:

Excavating and removing 115 23/27 cubic yards of earth, at 30¢ ---	$ 34.75
Erecting 162 3/25 perches of mortar masonry for foundation, @ $ 2.00 per perch----------	324.24
Setting 140 8/12 feet of cut stone watter table----------	14.06
Setting 48 feet of cut stone arching----------	24.00
Total: (2)	$ 397.05

That the stone foundations and brick walls were completed by the end of October 1845 is demonstrated by the fact that the carpenter Jesse Schofield was paid $ 15.84 " for framing & putting in 1,056 feet of floor and joists in new Charcoal House" in December 1845.[3] The tinsmoth Dennis Snook was paid $ 18.68 for providing 18 feet 10 inches of copper gutters, 33 feet 8 inches of copper down-spouting, and two spout heads for the new charcoal house.[4] In April 1846, Jesse Schofield received $ 68.83 for making 78 circular sash and 720 square light sash for the structure. William Volkman provided and put on 1,352 square feet of sheet iron roofing at a cost of $ 54.68.[5] The sheet iron roof was then painted by Robert M. Wilson for $ 28.73.[6]

2. 3rd Series, File 5623, Voucher 48, To Peter Litle, July 2, 1847, for $ 397.05, for foundations of armory stable.
3. 3rd S., F. 3122, V. 60, Dec. 12, 1845, for $ 15.84. to Schofield.
4. 3rd S., F. 3122, V. 79, January 3, 1846, for $ 18.68.
5. 3rd S., F. 4403, V. 34, Sept. 14, 1846, for $ 54.68.
6. 3rd Series, F. 4837, V. 32, December 8, 1846, for $ 28.73.

The Paymaster's extant vouches indicte that $ 15.84 was spent on the construction of the new Charcoal House in 1845 and $ 170.92 in 1846, making a total of $ 186.76. The total cost of constructing the structure, 1845-46, has been estimated at $ 1,200.00: $ 1,029.08 in 1845 and $ 170.92 in 1846.

Under the heading of"Buildings constructed" during the year ending June 30,1846, Major Symington reported: (1)" Charcoal house, of brick, on stone foundations, one story, 35½ by 35½ feet, with cut stone water table, sills, cornice and coping; cast-iron door and window frames; sheet iron roof; the interior divided into four compartments by 2-inch partitions."[7]

Major Henry K. Craig had first used sheet iron to roof the new Musket Factory proof house in October 1845, but Symington was the first utilize cast iron door and window frames, in the third Quarter of 1845, in the construction of Armory buildings at Harper's Ferry.

Repairs and Alterations to the Charcoal House, 1847- 51:

The only known work down on the Charcoal House after 1846 occurred in 1849 when Francis Trimmous was paid $ 7.62 for coloring the exterior brick walls of the Charcoal House, 109 square yards, with a cement wash.[8]

7. Serial No. 493, Document No. 1, p.164.
8. 3rd Series, F. 10276, V. 16, dated November 3,1849, for $ 7.62.

2. Store House for Stocks, 1846-47:

The Storehouse for Stocks is Building No. 6 on Map No. 3(1848) and Bldg. No. 7,(then known as the Millwright Shop) on the 1859 Historical Base Map.

In his submission of November 30,1844, to the Chief of Ordnance, Major Symington had provided an"Estimate in detail for two lumber houses",(together with plan, No. 4) for the same." The superintendent estimated that the total cost would be $ 3,187.72 and arrived at these figures as follows:

214	yards of excavation, at 18 cents	$ 33.52
138	perches masonry laid in cement mortar, at $ 2	276.00
50,000	bricks laid in mortar one-third cement at $ 10.50 perM	735.00
34	feet of lumber, at 1½	510.00
134	feet of cut-stone water,at 60 cents	80.40
430	feet of cut-stone cornice, at 60 cents.	258.00
4,208	feet of slating, at 10 cents	420.80
800	lbs. nails, at 4½ cents	34.00
600	lbs. hinges and fastenings for doors, at 12½ cents	75.00
	Oil and paint	45.00
	Painting	65.00
	Carpenter's work	650.00
		$ 3,187.72 (1)

The superintendent, however, changed his mind and on April 15,1845 wrote to Chief of Ordnance, George Talcott,requesting and receiving permission to substitute a store house for gun stocks for the two proposed lumber sheds, adding $ 2,500.00 to the original estimate, thus increasing the total estimated cost to $ 5,687.72 for the larger structure.[2] Before the storehouse could be considered completed, Symington, in the estimates for the 1847-48 fiscal year found it necessary to request the appropriation of an additional $ 750.00 to purchase cast iron pillars to support the first and second floors of the structure.[3] Total cost of the storehouse for stocks was thus approximately $ 6,438.00.

(1) Serial No. 464, Document No. 43, p.15.

(2) Symington to Talcott, April 18,1845,on HFNHP Reel 23, Vol. 5, pp.420-421.

(3) Serial No.497, Document 3, p. 142.

The Armory paymaster's vouchers in the National Archives for the third quarter of 1845 are missing so the materials that were purchased to be used in the construction of the Stock House are not known. On November 11,1845, Redmond Burke was paid a total of $ 424.62 for providing a total of 422 8/12 feet of cut stone for use on the new charcoal house and the new stock house.[4] The order was made up of the following items:

72½ feet, superfial, of water table, for	$ 36.24
48 8/12 feet of cornice, for.....	32.60
301½ linear feet of coping, for.....	355.77
	$ 424,62

During the winter of 1845-46 the carpenter Jessie Scholfield was engaged in making window sash for the new charcoal house and new stock house. On April 8,1846 he was paid $ 148.59 for making 1,494 circular and 288 square sash for the stock house.[5]

The mason Peter Litle begain constructing the stone foundations, perhaps in March, and certainly in April 1846, for an May 2 he received $ 1,612.86 for accomplishing the following work:

1. Excavation of 1,189½ cubic yards of earth and removing from the foundation and basement of the stockhouse-	$ 356.85.
2. Excavation of 213 3/4 cubic yards of rock	10.97
3. for 555 perches of mortar wall, hewen stone, for foundation and basement.....	1,110.00
4. For 810 feet of hammered face of wall.....	81.00
5. for setting 27 lin. feet of water table	27.00
6. for labor of bailing water from the foundations, equal to 80 days work.....	64.00
7. For labor and ramming the same and the walls, and making concrete for foundation and walls, equal to 54 days work.....	27.00
Total Bill:	$ 1,692.92
Deducted $ 80.00 for 213 perches of stone	-80.00
Paid	1,612.86

[6]

4. 3rd S., F. 3122, V.27, Nov.22,1845, for $ 424.62.
5. 3rd S. F. 3858, V. 12, dated April 8,1846- $ 21.60 for 288 square and $ 126.99 for the 1,494 circular sash.
6. 3rd S. F. 3858, V. 19, May 2,1846, to Peter Litle for $ 1,612.86.

On May 2,1846, the armory purchased 4,536 lbs of cast iron window frames for use at stock house for $ 167.85 from Hugh Gilleece, who had produced them at his iron foundry on Virginius Island.[7]

William Collins erected the two-story high brick walls of the stock house in May 1846, receiving a total of $ 979.84 for providing the following services:

For furnishing lime, sand, labor, scaffolding and laying 155,317 bricks in new stock house.....	$ 901.12
For setting 292 feet cut-stone cornice.....	78.72
	$ 979.84 (8)

In June, Jessie Schofield was paid $ 160.00 for "framing and putting 16 girders into the first and second floors of the new stock house.:"[9]

By June 30,1846 , according to the Paymaster vouchers, a total of approximately $ 3,493.76 had been expended on the construction of the stock house. In his report for the fiscal year ending June 30, 1846, Major Symington informed Chief of Ordnance Talcott, in regard to the construction program at the Musket Factory: "3. Storehouse for stocks, of brick, on stone foundation, three stories- the lower(stone basement), partially under ground - 100 by 35½ feet, with cut-stone water table, sills, cornice, and coping; sheet iron roof and cast-iron door and window frames". "The roof and floors of this building have yet to be put on," he commented.[10]

In August 1846, the mason William Collins was paid $ 151.35 for providing an additional 12,000 bricks and laying 7,992 of them in the gable end walls of the stock house.[11] The tinsmith Dennis Snook reecived $ 51.00 in September for making and putting up 200 feet of copper gutters for $ 30.00.

7.3rd S., F. 3858, V. 43, dated May 2,1846, for $ 167.85.
8. 3rd S. F. 3858, V.54, June 2,1846, for $ 979.84.
9.3rd S. F. 3858,V. 69, June 23,1846, for $ 160.00.
10. Serial No. 493, Document 1, p. 164.
11. 3rd S., F.4403, V.18, dated August 31,1846, for 12,000 brick at $ 117.00 and $ 40.35 for laying 7,992 bricks.

116 feet of copper for $ 11.00, and making "4 heads of spouts," for $ 10.00.[12] The iron worker William Volkman also prepared and put on the sheet iron roof, 3,781 square feet, in September 1846 and received $ 151.24 for his services.[13] The work continued into November and December 1846.

Carpenter Jessie Schofield was paid a total of $ 194.32 for the following work:[14]

6,281 feet joists framed and put in.....	$ 94.21
6,281 feet of floor laid,,,,,.....	78.51
288 light sash made and fitted.....	21.60
	$ 194.32

The painters also finished their work: Robert W. Wilson painted the sheet iron roof and was paid $ 80.34.[15] John P. Kennedy painted 1,200 light sash in the new stock house and received $ 42.00 for his efforts.[16]

The final touches to the large storehouse were apparently done by the stone mason Peter Litle, who received $ 77.16 for installing the stone pillars and steps.[17] This work included the following tasks:

3 16/25 perches mortar masonry-platform & steps----	$ 7.28
setting 41 3/12 lin. feet of cut stone.....	4.12
setting 48 2/12 feet cut-stone plinth pillars	24.08
setting the above plinth	.93
8 flag stones set in plinth.....	6.00
22 days labor mixing and depositing concrete	19.25
3 days labor & service of horse & cart & driver...	4.50
6 days labor of a stone mason.....	12.00
	$ 77.16

Total expenditure on the new stock house in 1846 appears to have been about $ 3,516.55 and from 1845 to 1846, approximately $ 3,941.17, as recorded in extant vouchers.

In his annual report for the year ending June 30, 1847, Major Symington noted the completion of the building, writing:

12. 3rd S., F 4403, V. 32, Sept.8, 1846, for $ 51.00.
13. 3rd S., F. 4403, V. 34, Sept.14,1846, for $ 151.24.
14. 3rd S., F. 4837, V.37, Dec.15,1846, for $ 194.32.
15. 3rd S., F. 4837, V. 32, Dec. 8,1846, for $ 80.34.
16. 3rd S., F. 4837, V. 35, Dec. 14,1846, for $ 42.00.
17. 3rd S., F. 4837, V. 40, Dec. 16,1846, for $ 77.16.

"The new brick store-house for stocks (at the Musket Factory), 100 by 35½ feet, two stories high, with basement of stone, door and window frames of cast iron, and sheet iron roof; unfinished at the last report, is now completed and occupied."[18]

Repairs to the Store House for Stocks, 1847 to 1851:

The Paymaster's vouchers for the 3 and 4th quarters of 1847 and all 4 quarters of 1848 are missing from the records of the National Archives. There are therefore no extant records of repairs being made to the Stock House from 1847 to 1848. Minor repairs were made in 1849 and 1850. Henry W. Edwards was paid $ 1.31 in January 1849 for 3/4th days work repairing the gutters.[19] William Collins, the brick mason, received $ 1.75 for one-half days work of a mason, laborer, and ½ load of mortar in November 1850.[20]

In June 1851, lightning rods : two points and two leads to the ground, were installed on the stock house at a cost of $ 34.50.[21]

18. Serial No.503, Document No. 1, p.692
19. 3rd S. F. 9093, V. 7, January 29,1849, for $ 1.31.
20. 3rd S. F. 12169, V. 20, November 30,1850, for $ 1.75.
21. 3rd S. F. 12680, V. 69, to Decker and Robinson, July 3,1851, for $ 34.50.

Construction of Store House For Stocks, Musket Factory, 1846-47: (Bldg.7- 1859 Map).

Construction	Cost	Description of Work
Foundation Excavation	$ 356.85 $ 10. 97 $ 367.82	1,189½ cubic yards of earth 213 3/4 cubic yards of rock
Stone Foundation and basement walls	1,110.00 81.00 27.00 11.00 1,229.00	555 perches of mortar wall 810 feet of hammered face of stone wall setting 27 lin. feet of cut stone water table. Other costs
Stone steps and pillars in basement Total paid to stone Mason: $ 1,690.02	$ 7.28 4.12 25.01 6.00 35.75 $ 77.16	3 16/25 perches mortar masonry, platform & steps. setting 41 3/12 linear feet cut stone. setting 48 2/12 feet cut stone plith pillars setting 8 flag stones in pliuth. Other costs
Two story Brick Walls.	$ 1,072.47 78.72 1,131.19	for providing materials and laying 163,307 bricks for laying 292 lin. feet of cut stone cornice.
Cut stone	$ 424.62	For 72½ feet, sup. of water table; 48 2/12 feet of cornice, 301½ lin. feet of coping.
Iron	$ 167.85	4,536 lbs of cost-iron window and door frames.
Lumber	?	
Carpenter Work	$ 502.91	Making 288 square light, 1,494 circular sash, 288 sash made and fitted; 6,281 feet of joists framed and put in, 6,281 feet of floor laid. 16 griders framed and put in first & 2nd floors.
Iron Roof	$ 151.24	Preparing and putting on 3,781 feet of sheet iron roof.
Copper Gutters & Spouts	$ 51.00	200 feet gutters, 116 feet downspouts, 4 spout heads.
Painting	$ 80.34 42.00 $ 122.34	for painting 3,781 feet of iron roof. for painting 1,200 light sash.
Total Cost:	$ 4,225.13	-(probable total cost- $ 6,438.00).

3. The Smiths or Forging Shop , 1845-48

a. North(or west) Wing and Center, 1845-1846

This is Building No. 17 on Map No. 3 (1848) and Bldg. No. 13A-North wing and 13B, Center, on the 1859 Historical Base Map. This gigiantic shop, about 280 feet long and 35½ feet wide, was the largest single building to be erected at the Harper's Ferry Armory and it was to be constructed in two stages: the North(or west) wing and center in 1845-46 and the South(or east) wing(Bldg. 13C on the 1859 base map) in 1847-48.

In his November 30,1844 estimates, Major John Symington had submitted a item: "Estimate in detail for reconstructing Smiths'forges" and "Plan No. 1" requiring a total of $ 13,500.00 for this project.[1] This construction,he estimated would require the following labor and materials:

2,452	cubic yards excavation of earth for foundation walls of building,at 18 ¢	$ 441.36
195	yards excavation of earth for foundation of forge fires,at 8 cents	35.10
1,761	perches masonry for foundation walls of building,laid in cement, at $2	3,522
300	perches masonry for foundation walls of forge fires, at $ 2	$ 600.00
718	feet of cut stone water table, at 60 cents	430.80
762	feet of cut-stone cornice, at 60 cents	$ 457.20
360	feet of cut stone window caps, at 60 cents	216.00
175,000	hard bricks,laid in mortar, one-third cement, at $ 10.50 per M.	1,837.50
88,00	feet of lumber, at 1½ cent	1,320.00
1,200	lbs. nails,at 4½ cents	51.00
900	feet of window glass, at 8 cents	72.00
12,050	feet of tinned sheet iron roof, at 10 cents	1,205.60
548	feet of copper gutter, at 70 cents	383.60
112	feet of copper spouting, at $ 1.05	117.60
	Lock,hinges, screws,&c. 28 sheet-iron hoods, pipes, and water-troughs for forges	550.00
	Oil and paint	115.00
	Carpenter's work	1,632.00
	Painting and glazing	125.00
	Transportation of materials,and contingencies	388.24
		$ 13,500.00

On March 2,1847, Congress appropriated an additional $ 4,500.00."for finishin the south wing of the smiths shop."[2] The estimate for 1847-48 requesting this sum, explained"Until this wing is finished,with its fan-blast to drive the forge fires, one of the old(Smiths) shops must be occupied,which is subject to

1. Serial No. 464, Document No. 43, p.13.
2. U.S. Statues at Large,IX, p.151.

" inundation at high water, and the additional expense of working the forges by hand bellows."[3]

In order to construct the north(or west) wing and center of the new Forging shop, two old smiths shops, both built in 1808-09, Blg. No. 7, 80 by 30 feet, and Bldg. 8, 120 by 30 feet on Map No. 2 (1844) had to be demolished to clear the site. Bldg. No. 9, the 130 by 30 feet Forging Shop, also built in 1808-09, on Map No. 2 would also have to be torn down later to clear the ground for the construction of the south or east wing. The old forging shops No. 7 and 8 on Map No. 2 were apparently demolished during the 3rd quarter (July-September) of 1845, for the bills for saving the old bricks and slate from their roofs, as well as demolishing the structures have not been found and hence were probably paid in the vouchers of the 3rd Quarter of 1845, which are missing from the records of the National Archives. The probable cost of tearing down these two large brick structure, judging by the extant voucher for demolishing Bldg. No. 9, was approximately $ 220.00

The stone mason Peter Litle must have begun excavations for the foundations of the north wing and center of the new smiths shop in the period June to September 1845, for on November 7 of that year he was paid $ 3,526.13 for completing the following construction:[4]

for deep excavation and removing the gravel,stone, &c. from the rear and end,foundations,smiths shop, 877 17/27 cubic yards....	$ 438.81
For excavation and removal of earth &c. from front and cross walls of smiths shop, 525 cubic yards.....	157.50
Rock face masonry in abutments of arches, 300 sup. feet at 50¢....	150.00
1,015 sup. feet of hammered rock.....	101.50
laying 144 feet cut stone in face of arches.....	86.50
1,281 19/28 perches of stone masonry laid in mortar 1/3 cement....	2,563.52
Hammered stone chimney stack(of center)base 48½ feet at 40¢..	19.40
Pumping water from foundations,122 days work at 87¢.....	106.75
Labor of mason 1½ day----------	2.25
	$ 3,526.13

3. Serial No. 497, Document No.3, p. 141-142.
4. 3rd Series, F. 3122, V. 17, Nov.7,1845, to Peter Litle for $ 3,526.13

The brick mason William Collins, must have begun his work in October and completed it in November, his two payments totalling $ 1,480.09 for this construction were made in early November and early December.[5]

In October Collins apparently completed the one-story north wing and in November part of the center building and its great 90 foot tall chimney stack

Collins provided the line, sand, labor and scaffolding for laying the brick as follows for:

North Wing	Centre and Stack	Total
Brick: 86,624 for $ 502.41	159,197 for $ 923.34	245,821 brick for $ 1,424.75
Cut Stone -cornice & coping. 279 2/12 ft- $ 44.00	88 8/12 feet for cornice Charges 14.80	367 10/12 ft for 58.80
		Deduct $ 4.50 - 4.50
		Total,1845 $ 1,480.05

Some of the materials to be used in the construction of the shop must have been purchased during the 3rd quarter of 1845 and these vouchers, as has been mentioned, are missing. During the 4th quarter of 1845 the armory purchased a total of 112,000 hard bricks and 8,000 fire bricks from John Lambaugh and Thomas J. Lee for $ 891.50.[6] About 136,000 additional hard bricks and also the cast-iron door and window frames must have been been acquired during the 3rd quarter.

On November 22,1845, Redmond Burke was paid $ 122.66 for providing 245 4/12 sup. feet of cut stone, which included stone steps.[7]

In December, 3,649 feet of white pine planking was purchased for $ 100.34.[8] and 66 half boxes of 9 by 10 exterior glass for $ 366.75 and 12 half boxes

5.3rd S., File 3122, V. 18, Nov.8,1845, for $ 547.07 and F. 3122, V. 35, December 4,1845, for $ 933.02.
6.3rd S.3122,Vo. To John Lambaugh, Nov.8,1845-$ 542.00= for 66,000 hard brick at $ 462.00 and 8,000 fire brick at $ 80.00; F. 3122,V. 49, Dec. 18,1845 to John Lambaugh, $ 143.50 for 20,000 hard brick. F. 3122, V. 48, To Thomas J. Lee, December 12,1845, $ 208.00 for 20,000 brick delivered.
7.3rd S., 3122, V. 27 ,Nov.22,1845, for $ 122.66 .
8.3rd S., F 3122, V. 50, to John Gibson, Dec.18,1845, for $ 100.34.

of 10 by 12 inch and 8 by 10 glass for $ 60.90, total: $ 427.65.[9]

More than $ 6,768.37 was expended on the construction of the north wing and center of the forging shop in 1845.

Work was resumed on the structure in April 1846. 169,340 more brick were purchased for $ 1,506.07. This included 165,340 hard brick for $ 1,498.57 and 3,500"salmon and arch bricks" for $ 17.50.[10] 160 barrels of hydraulic cement were acquired for $ 240.00.[11] Working at his foundry on Virginius Island, Hugh Gilleece received $ 167.85 for casting forges for the new smith shop and also a cap for its chimney stack.[12] In April 1846 the carpenter Jesse Schofield was paid $ 192.15 for making 2,562 square light sash for use in the windows of the new shop. In May the brick mason William Collins completed his work on the center of the smiths shop and was paid $ 834.84 for accomplishing the following work:

In the chimney stack above the 40 foot level, to the top, laying 46,052 bricks at $ 10 per M.....	$ 460.52
for brick work in the residue of the chimney stack above the square of the building(center), horizontal flues, forges, and gables of the centre building: ... 55,767 bricks at $ 5.80 per M.....	323.44
for setting 243 feet cut stone coping, blocking & iron plate for cornice in the top of the chimney stack at 16 cents per ft..	38.88
For 4 days work of bricklayers & tender at $ 3 per day.....	12.00
while washing chimney stack with cement wash.....	
	$ 834.84

From January to June 30,1846 an additional $ 2,940.91 was spent on the construction of the building and the total stood at approximately: $ 9,709.28.

In his annual report for the fiscal year ending June 30,1846, Major John Symington rendered a progress report on the construction of the north wing

9. 3rd S., F.3122, V.45, to H.J. and C.J. Baden, Dec.17,1845, for $ 427.65.
10. 3rd S. F. 3858, V.7, to William Collins, April 10,1846 for $ 526.50 for 54,000 hard bricks delivered; F.3858, V. 13, to Daniel Pine, April 18,1846 for $ 368.80 for 46,840 hard bricks at $ 351.50 and 3,500 salmon & arch brick,$ 1750. for $ 17.50. F.3858, V.26, to William Collins, May 6,1846, for $ 628.87 for 64.50 hard bricks.
11. 3rd S., F. 3858, V. 35, to George Shafer, May 19,1846,for $ 240.00.
12. 3rd Series, 3858, V. 43, May 4,1846, for $ 167.85.

"Forging shop(north wing) of brick, on stone foundation, one story, 122 by 35½ feet, with cut-stone water table, sills, cornice, and coping; cast iron door and window frames; sheet iron roof. Through the centre of this wing, there is a line of double forges for burning anthracite coal, under which are two horizontial flues leading to the main chimney stack. The centre building, for inspectors' offices and model and pattern rooms, is of brick, on stone foundations, two stories, 46 by 37 feet, with cut stone water table, sills, cornice, and coping; sheet iron roof; door and window frames of cast-iron. In the middle of the back (east or north) wall of this centre building is the main chimney stack, 90 feet high, 10 feet square at base and 6 feet at top; it is built upon a massive stone arch thrown across a tail race leading from one of the water wheels and waste dam of the canal. The other(South or east) wing of this structure has yet to be erected."[13]

Also manufactured at the armory for use in the new smiths shop in 1845-46, were " 1 turbine reaction water-wheel, with penstock and cast-iron gates,shafting and bevel gearing for driving the fan-blast,for smiths' forges, and grindstones" and "1 fan-blast for smiths' forges, with 35½ feet of shafting, in position, ready for use."[14]

The roof, gutters, down spouts, windows, and other work remained to be completed before the north wing and center were finally finished in 1846. In September William Volkman was paid $ 259.14 for preparing and putting on 1,491 square feet of sheet iron roof on the center and north wing.[15]

13. Serial No. 493, Document 1, p. 164.
14. Serial No.493, Doc. 1, p. 163.
15. 3rd S. F.4403, V. 34, Sept. 14, 1846, for $ 259.14.

The tinsmith Dennis Snook made and put up 328 ½ feet of copper gutter for $ 49.27, 95 feet of spouting for $ 9.50, and two head spouts for $ 5.00, total $ 63.77; also 14 feet of copper pipe for $ 5.25.[16] The brick mason William Collins received $ 49.53 for making final adjustments, which included $ 48.53 for laying 242 8/12 feet of cut-stone window sills and $ 1.00 for ½ days service of mason in walling up air flue of new smiths' shop to seal it again.[17]

In October, 1,440 lbs. of cast iron window frames and "pull plates" were purchased for $ 50.40.[18] The carpenter Jesse Schofield was paid $ 16.00 for fitting new light sash at the smiths' shop.[19] William H. Bowin (or Bowen) received $ 164.75 for plastering 159 square yards of the ceiling in the new shop in November.[20] The painters were also at work in November: $ 135.44 went to Robert H. Wilson for painting 6,374 square feet of the sheet iron roof of the forging shop,[21] while John P. Kennedy recived $ 50.25 for glazing 2,010 new light sash for this shop.[22]

In December 1846 Litle next received $ 43.88 for finding and laying 24 stones under each set of anvil blocks for $ 36.00; $ 7.58 for 15 2/12 feet of cut stone for chimney base, and 30 cents for setting 3 lin.

16. 3rd S., 4403, V. 32, Sept. 8, 1846, for $ 63.77; F. 4837, V. 83, Jan. 19, 1847, for $ 5.25, both to Dennis Snook.
17. 3rd S., F. 4403, V. 35, Sept. 14, 1846, for $ 48.53; and F. 4837, V. 26, Nov. 30, 1846, for $ 1.00.
18. 3rd S., F. 4837, V. 2, to Ross Winans, Oct. 10, 1846, for $ 50.40.
19. 3rd S., F. 4837, V. 37, Dec. [illegible], 15, 1846, for $ 16.00.
20. 3rd S., F. 4837, V, 25, Nov. 28, 1846, for $ 164.75.
21. 3rd S., F. 32, Dec. 8, 1846, for $135.44.
22. 3rd Series, F. 4837, V. 35, Dec. 14, 1846, for $ 50.25.
23. 3rd S. 4403, V. 28, Sept. 8, 1846, for $ 1,093.21.

feet of cut stone.[24] This completed the work on the building in 1846. Expenditures during 1846 amounted to approximately $ 3,763.32 and a total from 1845 to date of $ 10,531.69.

Approximately $ 132.45 was expended in the spring of 1847 to complete the north(or west) wing and center, thus bringing the total cost of construction to about $ 10,664.14. William H. Bowin(or Bowen) was paid $ 34.00 for plastering an additional 136 square yards in the new smiths shop[25] and $ 98.45 was spent to purchase 1,405 feet of sheet iron" for the floor of the smiths shop under the forges."[26]

Construction of the South or East Wing of the Forging Shop, 1847-48:

Construction of the South or east wing of the smiths shop got underway in March 1847. The stonemason Peter Litle demolished the old brick smiths shop Bldg. No. 9 on Map No. 2(1844), which measured 130 by 30 feet and dated from 1808-09, and received a total of $ 1,079.87 on April 10,1847 for this and the construction on the foundation of the new shop. Litle performed the following work:

Labor for taking off slate roof and removing old brick smiths shop	$ 110.00
For excavating and removing 475 23/27 cubic yards of earth, gravel and stones for foundation east(or south) wing @ 50 cents	237.92
For excavating and removing 10 25/27 cubic yards of earth for forge foundation	3.27
For erecting 319 16/25 perches of mortar masonry of foundation of heavy stone @ $ 2 per perche	639.28
For 600 sup.feet of foundation wall, face hammered	60.00
For setting 294 lin. feet of cut stone water table	29.40
	$ 1,079.87(27)

On April 10,1847 the brick mason and maker, William Collins, was also paid $ 292.50 for making and delivering 30,000 hard brick for use in the south wing."[28]

24. 3rd S., F.4837, V.40, Dec.16,1846, for $ 43.88.
25. 3rd S., F, 5623, V. 21, May 13,1847, for $ 34.00.
26. 3rd S., F. 4967, V.67, To Jacob Albertm April 24,1847, for $ 98.45.
27. 3rd S., F. 5623, V. 48, April 10,1847, for $ 1,079.87.
28. 3rd S. F. 5623, V. 1, April 10,1847, for # $ 292.50.

In his annual report for the fiscal year ending June 30,1847, Major John Symington described this construction as follows:

"At the Musket Factory.... The stone foundation, up to the water table of smiths' shop 121 by 35 feet, with the arched horizontal flues for forges, completed."[29] Total cost (recorded) of construction on the great shop,1846 to June 30,1847 was approximately $ 12,036.51.

The Paymaster's vouchers for the 3rd and 4th quarters of 1847 and all four quarters of 1848 are missing from the National Archives Record Group 217, so that the details of the construction of the south or east wing of the forging shop cannot be narrated. The same workmen who constructed the north and center of the structure, however, undoubtedly also built the south or east wing. Probably a total of about 100,000 hard bricks went into its one-story high walls. Total cost of construction of the two wings and center was approximately $ 18,000.00.

During the year ending June 30,1847, the superintendent also reported that 283 feet of 12 and 8-inch cast-iron air pipe, 750 feet of 4 and 3 inch cast iron water pipe, and 522 feet of lead pipe, jointed and laid, for conveying blast to forges and water through the armory yard, and to different shops, had been made and put into operation.[30] Much of this was probably for use in the new forging shop.

On June 30,1848, Major Symington recorded the completion of the Forging shop, writing: " Musket Factory: The south wing of new smith's shop, 121 by 35½ feet, one story brick, with cut-stone water table and cornice, cast iron door and window frames, and sheet iron roof, has been completed and is now occupied. The foundation for this shop was prepared during the previous year."[31]

29. Serial No. 503, Document No. 1, p. 692.
30. Serial No.503, Document No.1, p.691.
31. Serial No.537, Document No.1, p.348.

Among the machinery made during the fiscal year ending June 30, 1848, the superintendent reported tha "10 forge fires(were) completed, in new south wing of smith's shop, with cast iron hearths, coal, and water troughs." Also made were" 88 feet main branch cast iron air pipe, 8-inch bore; 30 feet main branch cast iron air pipe, 3-inch bore, with cast iron valve boxes and air chests. 262 feet lead pipe, for water, adapted to the ten new forges first mentioned."[32]

Repairs and Improvements to the Forging Shop, 1849 - 1851:

In 1849 a total of $ 328.48 was spent to make repairs and improvements to new forging shop. Of this sum, $ 153.92 went to purchase 2,368 lbs of sheet iron for floor of the new smiths shop;[33] $ 44.75 to color the exterior brick walls of the building with cement wash;[34] and $ 4.81 to repair the copper gutters.[35] The remaining balance of $ 125.00 was paid to the masons William Collins and Peter Litle (the latter dying during 1849), for making repairs to the forges and for stones for the anvil blocks.[36]

In 1850 a total of $ 124.28 was spent on the forging shop. Of this sum $ 109.75 went to the mason William Collins for repairs to the forges(Collins died in 1850)[37] and $ 14.53 to the tinsmiths Dennis Snook and Alexander S. Vernon, who repaired and put up 121 feet of copper gutter and put on 242 feet of sheet iron roof.[38]

32. Serial No. 537, Document No.1, p.346.
33. 3rd S.,F. 9093, V. 7, To Albert & Bro., April 1849, for $ 153.92.
34. 3rd S.,F. 10276, V. 16, To Francis Trimous, Nov.3,1849, for $ 44.75.
35. 3rd S.,F 9093, V. 7, To Henry V. Edwards, Jan. 27,1849, for $ 4.81.
36. 3rd S., F. 9093, V.23, To William Collins, 2/23/49, for 75 cents; F. 9307, V. 36, To Edward Tearney,partner andexecutor of the estate of the late Peter Litle, June 11,1849, for $ 9.00; To Wm. Collins, F. F.9037, V.35, 6/9/49, for $ 24.50; F. 9895, to W. Collins,V.23, 8/31/49, for $ 9.00; F.10276, V. 8, to W. Collins, 10/26/49, for $ 9.50; and F. 10276, V.33, to William Collins, 11.29.49, for $ 75.25.
37.3rd S. F.11000, V.52, to William Collins, 6/26/50, for $ 4.00. F/11000,V.24, to W. Collins, 6/26/50, for $ 97.00; F. 12169. V. 4, to executor of Wm. Collins estate, 10/24/50 for $ 7.75; F.1219,V. 20, to estate, 11/26/50,for $ 1.00
38. F. 12169, V.28, to Alexander S. Vernon, Dec. 3,1850 for $ 8.47-work on sheet iron roof and gutters; F. 12169,V.77, to Dennis Snook, 11/20/50,for % 6.06.

In 1851 the sum of $ 327.39 was expended making repairs to the Forging shop. This included $ 79.20 for 1,780 lbs of sheet iron for flooring ;[39] $ 80.00 for the painting and pointing of the 90 foot high chimney stack with three coats of paint;[40] $ 87.45 for putting lightning rods- 8 points and 4 leads to the ground, on the shop;[41] and $ 80.74 to Dennis Snook for taking off, altering, and putting up 367 feet of copper gutter.[42]

Summary Data on Construction of South Wing, 1847-48 *

Construction	Cost	Description of Work
Demolition	$ 110.00	for demolishing old smiths shop, saving slate, brick.
Excavation for Foundation:	241.19	for excavating 486 21/27 cubic yards of earth, gravel and stone
Basement masonry walls	639.28	for erecting 319 16/25 perches of mortar masonry of heavy stone.
Hammered stone	60.00	for 600 sup.feet of face hammered foundation wall.
Cut stone	29.40	for laying 294 lin. feet of cut stone water table.
Total:	$ 1,079.87	paid to stone mason Peter Litle for foundation work.

* Paymaster's vouchers detailing the construction, July 1,1847 to Dec.31,1848 are missir

39. 3rd S.,F. 12680, V. 35, to Robert & Magraw, June 27,1851, for $ 79.20.
40. F. 12680, V. 69, to Decker & Robinson, July 3,1851, for $ 80.00.
41. F. 12680, V.69, to Decker & Robinson, July 3,1851, for $ 87.45.
42. F. 12680, V. 72. to Dennis Snook, July 3,1851, for $ 80.74.

CONSTRUCTION OF THE NORTH(WEST) AND CENTER BUILDING, Forging Shop, MUSKET FACTORY, 1845-1847

Construction	Cost	Description of Work
Excavation for Foundations:	$ 438.81	877 17/27 cubic yards of earth, gavel, stone.
	157.50	525 cubic yards of earth, rock gravel.
	$ 596.31	1,402 17/27 cubic yards of excavation.
Basement masonry walls	150.00	for 300 sup.feet rock faced masonry in abutment arches.
	101.50	for 1,015 sup.feet hammered rock.
	86.50	for 144 feet cut stone laid in face of arches.
	2,563.52	for 1,281 19/28 perches of stone masonry in mortar one-third cement. Foundation walls.
	19.40	for 48½ feet hammered stone in chimney stack.
	109.00	Other labor costs
	$ 3,029.92	(minius $ 100.21 for charges from total).
Anvil Blocks		
1st story	36,00	for laying 24 stones under anvil blocks.
	7.58	for cut stone, chimney base.
	.30	for laying 3 lin. feet of cut stone.
	$ 43.99	
Subtotal paid:	$ 3,570.01	to stone mason Peter Litle
Brick work	2,712.02	for laying 347,640 bricks.
	13.00	for other laborer.
	107.06	for setting 610½ feet of cut stone.
	2,832.08	paid to brick mason William Collins.
Tearing down old buildings	220.00	Estimated cost of tearing down two old smiths shops, saving bricks and slate.
Brick	2,397.57	For making and delivering 289.340 hard bricks.
Cut stone	122.66	For cutting and delivering 245 4/12 feet of cut stone.
Cement	240.00	for 160 barrels of hydraulic cement.
Lumber	100.34	for 3,649 feet white pine planking.
Carpenter work	208.15	for making 2,562 square light sash and fitting same.
window glass	427.65	for 78 half-boxes of panes for windows.
Iron roof	259,14	for preparing and putting on 1,491 square feet of sheet iron roof.
	50.40	for 1,440 lbs cast iron window frames,etc.
Iron widows frames	167.85	for 4,536½ lbs cost iron window and door frames.
Iron flooring	98.45	for 1,405 for sheet iron flooring,
Plastering	198.75	for plastering 295 square yards of ceiling.
	135.44	for painting 6,374 square feet of sheet iron roof.
Painting:	50.25	for glazing and painting 2,010 light sash.
	185.69	
Copper gutters	69.02	for 328½ feet copper gutters,95 feet down spouts, and 14 feet of copper pipe.
Total	$ 11,147.76	Total cost of construction,$ 18,000,1845-48.

4. Coal Bins Under the Baltimore and Ohio Railroad Tracks,. 1846 - 1851:

In November 30, 1844, submission of estimates for proposed construction, Superintendent John Symington had included an Plan(No.2) and "Estimate in detail for coal houses or bins(see plan No.2)" in the amount of $ 1,300.00.[1] An examination of this document reveals that it was proposed to erect a stone and brick structure, with a wooden roof. The superintendent did not build a coal house of this description, apparently because he devised what he considered to be a better plan. Thus in his annual report for the year ending June 30,1846, under the heading of construction at the Musket Factory, Symington recorded: "Coal bins and storerooms for heavy stores:

> Seventeen compartments, each 17 by 15 feet, have been constructed under the trestle work of the Baltimore and Ohio railroad, for storing anthracite and bituminous coal, and other heavy stores. The floors are of two-inch oak plank, and strong oak joist on heavy heavy oak sleepers; these rest upon stone piers...

He further reported: " 2,300 cubic yards of filling (have been made) under the trestle work of the Baltimore and Ohio Railroad, to make depositories for heavy articles- such as castings, grindstones, old iron, &c...:" [2]

This work was probably done during the 3rd quarter of 1845. (2A)

The stone mason Peter Litle was engaged in constructing more coal bins of this type during the fall of 1846, receiving a a total of $ 223.64 for building 45 20/25 perches of dry wall and 95 22/25 perches of mortar stone wall under the railroad tracks.[3] The 15 compartments formed a line 289 long by 15 ft wide The estimates for the 1847-48 fiscal year requested and received, March 2,1847, an appropriation of $ 1,800.00 "for converting into store rooms the space under the tressel-work of the railroad.," explaining that " This space may be advantageously converted into good storage places for coal, castings, grindstones, and other heavy articles, which are now exposed, and encumber the grounds around the shops."[4] On July 2,1847, Peter Litle was thus paid $ 168.72 "for erecting 112 12/25 perches

1. Serial No. 464, Document No. 43, p. 13.
2. Serial No. 493, Document No.1, p. 164.

2A. The vouchers for the 3rd quarter of 1845, in file 2841, are missing from the National Archives records so that no details on the cost of this construction are available.

3. 3rd Series, R.G. 217, File 4403, September 8,1846, for $ 109.05, V/ 28; and File 4837, V. 40, Dec. 16, 1846 for $ 113.59.

4. Serial No. 497, Document No. 3, p. 142. U.S.Statues at Large, IX, p.151 for

of dry masonry for storehouse,etc.under railroad tracks."[5]

The Paymasters vouchers for the 3rd and 4th quarters of 1847 and all four quarters of 1848 are missing, so that it is impossible to trace the construction of additional coal bins in detail during this period.

In the spring of 1849, Edward Tearney, partner of the lately deceased mason Peter Litle, was paid $ 51.85 for constructing coal bins under the tracks. This work included 3 12/25 perches of stone mortar masonry and 30 perches of dry wall.[6] In the annual report for year end June 30,1849. Major Symington reported: "A store room 15 by 45 feet has been constructed under the B. & O. railroad, for depoiste of scrap iron,steel,&c."[7] On December 10,1849, Edward Tearney was paid $ 221.44 for building 80 24/25 perches of dry wall and making 400 cubic yards of embankment for coal bins under the railroad tracks at the Musket Factory., thus bringing the[8] total expenditures for construction of coal bins to $ 272.29 during 1849.

On June 30,1850, Superintendent Symington reported additional work,writing: "A number of permanent places of deposite for coal and other heavy articles,not liable to injury from weather, have been made under the superstructure of the Baltimore and Ohio railroad, by filling up with quarry rubble and flooring with rough boards."[9] In the estimates for the fiscal year 1850-51, the sum of $ 880.00 was requested for filling up low grounds and grading around the buildings at the musket and rifle factories, and for filling under the Baltimore and Ohio Railroad to make a depository for coal.[10] The money requested was appropriated on September 28,1850.[11]

5. 3rd S., F. 5623, V. 48, July 2,1847, for $ 168.72.
6. 3rd S. F. 9307, V. 22, May 19,1849 to Edward Teanry as executor of Peter Litle deceased, for $ 20.22; and F. 9307, V. 36, June 11,1849, for $ 31.63 to Tearney.
7. Serial No. 549,Document No.1, p. 366.
8. 3rd Series, F.10276,V.36, for$ 221.44
9. Serial No. 587, Document No. 1, p. 476.
10. Serial No. 568, Document No. 4, p.157,157.
11. U.S. Statues at Large, IX, p. 507.

Tearney went back to work constructing additional coal bins and on December 20,1850 was paid $ 401. 87 for this work which involved constructing 88 3/4 perches of stone masonry rubble for $ 133.12 and $ 268.75 for making 1,075 cubic yards of fill with earth and spalls.[12]

Symington described this construction in his annual report of June 30,1851 as additional bins made "by filling up with quarry rubble, covered with a rough floor of old plank."[13]

During the fall of 1851, Edward Tearney was paid a total of $ 245.20 for constructing more coal bins under the B. and O. railroad tracks at the Musket Factory For this sum he built 38 10/25 perches of heavy dry wall, erected 7 5/25 perches of mortar masonry, and filled in the space under the track with 700 cubic yards, enough for five bins.[14] In his annual report for the fiscal year ending June 30,1852, Col. Benjamin Huger reported of this work: " The open space under the trestle-work of the Balitmore and Ohio railroad, 13 feet deep, by 17, feet, has been filled in with rubbish and earth, for eight coal-bins, or places of deposite for other heavy materials."[15]

These eight coal bins, probably 15 feet wide, 13 feet deep, and 17 feet long, formed a line under the tracks that was 136 feet long.

11. 3rd Series,F. 12169, V. 43, Dec.20,1850, for $ 401.87.
13. Serial No. 611, Document No. p. 459.
14. 3rd S. F., 12680, V.54,Sept. 30, 1851, for $ 210.20, for 4 bins; also F. 13107, V.41, Dec.124,1851, for $ 35.00 for filling up space under railroad, quanityt not given.
15. Serial No. 659, Document No.1, p. 254, item no.8.

National Archives Record Group No. 217- Records of the United States General Accounting Office, Washington, D.C. Records of Second Auditor: Reccords and Accounts from the Paymaster of the U.S. Armory at Harper's Ferry, Virginia, relating to expenditures for Permanent Improvements:

Construction of Coal Bins at the Musket Factory

YEAR	Cost	Perches Mortar Wall	Perches Dry Wall	Cubic yards embankment	No. of compartment built	Size in feet		
1842	-	-			0			
1843					0			
1844	-				0			
(1)1845	?	?	?	2,300	17	17 by 15	Vouchers missing for 3rd quarter	
1846	$ 223.64	95 20/25	45 20/25					
(2)1847	168.72	-	112 1/25	0	1(?)	store-house	vouchers missing for 3 & 4th quarters	
(3)1848	?				0		vouchers missing for all 4 quarters	
1849	272.29	3 11/25	110 24/25	400	store room coal bins	-15 by 45		
1850	401.87		88 3/4	1,075	?			
1851	345.20	7 5/25	38 10/25	850	5			
TOTAL:	$ 1,311.72	176 11/25	395 23/25	4,625	24 + ?			

(1) Vouchers for the 3rd quarter of 1845 are missing.
(2) Vouchers for the 3rd and 4th quarters of 1847 are missing.
(3). Vouchers for all four quarters of 1848 are missing.

5. Remodelled Dwelling for Offices, 1847 - 48:

This is Building No. 1 on Map No. 2 (1844), Bldg. No. 1 on Map No 3 1848) and Building No. 2 on the 1839 Historical Base Map. This two-story brick residence had been erected by Superintendent James Stubblefield in 1808-09 and served as the Armory Superintendent's dwelling from 1808 to 1844. It was repaired and then served from November 1844 to 1847 as the residence of Richard Parker, the Armory Paymaster.

As built in 1808-09, the structure was a two-story brick residence with a cellar kitchen and dimensions of 36 by 30 feet. In 1828-29, a large brick addition, which contained a kitchen wing, was added to the south (or east) end of the original house and the interior of the main house was extensively remodelled. The gable roofs of house and wing were also slated. Dimensions of the residence after the 1829 enlargement appear to have been approximately 100 by 30 feet.

In the estimate for the 1846- 1847 fiscal year Major John Symington requested the sum of $ 850 for "altering old quarters in offices," explaining: "The situation of the house formerly occupied by the superintendent (Bldg. No. 1) renders it unsuitable for a dwelling, and its vicinity to the (Musket Factory) shops fits it well for armory offices, which are wanted..." "The present offices", he continued, "are widely separated, and distant from the shops." The Superintendent's Old Office was located at the northeast corner of Arsenal Square and the Paymaster's Old Office at the northwest corner of that same square. The Master Armorer's Office was then located in Bldg. No. 4 on Map No. 2 (1844). Symington's estimate also included a request for $ 15,000 to build new dwellings for the superintendent and paymaster which were to be located on Camp Hill.[1]

The sums requested for these projects was appropriated by Congress on August 8,1846.[2] Work on remodelling the old residence got underway

1. Serial No. 481, Document No. 9, p. 111-112.
2. U.S. Statues at Large, IX, p.69.

during the 3rd or 4th quarters of 1847 and was largely completed by June 30, 1848. Because the paymaster's vouchers for the 3rd and 4th quarters of 1847 and all four quarters of 1848 are missing from the National Archives records, details of the work, including costs and names of the workmen, are unknown. Superintendent Symington, in his report for the year ending June 30,1848, proudly described this improvement as follows:

"The old quarters inside the armory yard have been suitably arranged for offices for the commanding officer, the paymaster, and storekeeper, and the master armorer, by considerable alteration and repairs necessary to fit it for above named purpose. The kitchen connected with this building has been converted into a money vault, perfectly secure, with walls of heavy masonry 3 to 3½ feet thick, covered with flag-stones of very great size and weight."[3] The cost of these alterations were probably about $ 850.00 . During 1849 a total of $ 46.50 was spent as follows on the new Office building:

$ 24.00 for making new porch(wooden) to front of offices and for putting up hand rail & banister, stairs of storehouse (probably Bldg. 4 on Map No 2). [4]
4.50 for repairing fireplaces and resetting three coal grates in Armory Offices. [5]
18.00 'for making doors, floors, and ceiling of privies for the Armory Offices. (6)

In 1851 $ 65.81 was spent on the Office Building: $ 25.50 was paid to Decker and Robinson on July 3,1851 for installing lightning rods- two points and two leads to the ground- on the Office building.[7] The stone mason Edward Tearney received $ 16.93 on June 24,1851 "for building new file room-Office".[8] This construction required the excavation of 4 21/27 cubic yards of earth and the erection of 10 1/3 perches of stone mortar masonry wall. The tinsmit

3/1. Serial No. 537, Document No.1, p. 348/.
4. 3rd Series, F. 9307, V. 77, to carpenter William Rowe, July 9.1849,$ 24.00.
5. 3 S., F. 9895, V. 23, to brick mason William Collins, Aug.31,1849, $ 4.50.
6. 3rd S., F. 10276, V.46, To carpenter Patrick H. Kelly, Dec.27,1849, $ 18.00.
7. 3rd S.,F. 12680, F. 69, July 3,1851, for $ 25 50/
8.3rd S., F. 12680, V. 33, for $ 16.93. The wall cost $ 15.50 and excavtion,$ 1.43.

Dennis Snook was paid $ 23.38 on May 19, 1851 for putting on 531 square feet of tin roof on "new file room:" and for making 50 feet tin gutter and 12 feet of tin spouting.[9]

The latter work was apparently described in Major Symington's report for the year ending June 30,1851, as follows:

"A new store-room for files, 11 by 30 feet, of brick on stone foundation, has been built in connexion with suitable compartments for the different varieties of files. The building is covered with sheet tin."[10]

The location of the file room is unknown; it may have been attached to a workshop, or perhaps to the central office building.

9. 3rd S., F. 12680, V. 5, for $ 23.38- Tin roof cost $ 15.93, 50 feet of tin gutters, $ 6.25, and 12 feet of flown spouting, $ 1.20.

10. Serial No. 611, Document No.1, p.459.

6. Engine and Guard House(Park Bldg. No. 63), 1847-48:

This is building No. 19 on Map No. 3 (1848) and Bldg. No. 1 on the 1859 historical base map. In his estimates submitted on November 30,1844 Major John Symington had requested $ 720.00 to construct a brick engine house to house the fire engine at the musket factory . His "Estimate in detail for engine house-(See plan No.3)" was based on the following calculations:

147	yards of excavation, at 18 cents	$ 26.46
67	perches masonry laid with cement, at $ 2	134.00
26,000	hard bricks laid, at $ 10 per M	260.00
160	feet of cut-stone water-table and cornice, at 60¢	96.00
2,000	feet of lumber, at 1½ cents	30.00
100	lbs.iron for hanging doors, at 12½ cents	12.50
600	feet of slating at 10 cents	60.00
36	day carpenter's work, at $ 1.50	54.00
8	days painting, at $ 1.45	11.60
50	lbs. nails, at 4½ cents	2.12
480	feet of paving, at 6 cents	28.80
	Oil and paint	4.52
		$ 720.00 (1)

In his estimates for the 1847-48 fiscal year, however, Symington requested an appropriation of $ 1,540.00"for constructing a house for the fire-engine, and the accommodation of the night watch." The structure was needed, he explained, because "The fire- engine and appartatus are now badly sheltered in a wooden shed, out of position. This item is for the erection of a neat brick building for the engine and apparatus, to be used also as a watch house."[2] The requested amount was appropriated by Congress on March 2,1847.[3]

It seems possible that in preparing his second estimate, Symington may have simply doubled his 1844 estimate, which was for a smaller brick structure without the guard room included.

The work of constructing the engine and guard house got underway during the 3rd or 4th quarter of 1847 and was completed by June 1848. In his

1. Serial No. 464, Document No. 43, p. 14.
2. Serial No. 497, Document No. 3, p. 142, item No.6.
3. U.S. Statues at Large, IX, p. 151.

annual report for the year ending June 30,1848, Superintendent Symington wrote: "A engine and guard house, 35½ by 24 feet, one-story brick, covered with slate, and having copper gutters and down spouts, has been constructed, and is now occupied."[4] Because the paymaster's vouchers are missing from the National Archives records for the 3rd and 4th quarters of 1847 and all four quarters of 1848, it is not possible to provide specific data on the costs of construction and amount of material used in erecting the engine and guard house. Total cost was probably about $ 1,540.00. The following workmen also probably built the structure: excavation for and construction of stone foundation: the mason Peter Litle; brick work by the mason William Collins; slating by William Bayley, and copper guuters and downspouts by Dennis Snook.

The building was designed to house two fire engines and one-third of the structure served as a room for the night watchmen. The architecture of the engine and guard house matched that of the other new building being erected by Symington. The structure fronted three bays wide on the musket factory yard and was two bays deep. .... Each bay was comprised of a recessed panel that was set within a relieving round arch that was supported by capped pilasters. Bays on the south (left) gable end and also on the west(rear) elevation had solid brick walls set within each arch to the height of the capped pilaster, the space above this, to the top of the round arch, was enclosed by large semi-circular windows. Parapted brick walls with turrets at the corners rose at either end above the gable roof. Each end wall contained a small centered chimney for the service of a iron stove. In the center of the roof was a square wooden cupola which contained a bell that served as a fire alarm.

4. Serial No. 537, Document No.1, p. 348. Item 3 at the Musket Factory.

The center and left bays on the front(east or north) elevation each contained wide double wooden doors above which were semicircular windows. These were the entrances for the two fire engines. The third, or right bay on the front elevation lead into the guard room section. This entrance was comprised ofa single centered door that was flanked on either side by side lights, each containing 10 lights of 8 by 10 inch glass . The door and sidelights were topped by a wide semicircular window with fixed sash .

The engine room was separated from the guard room by means of an interior solid brick wall. The north(right or west) outer gable end wall had two casement double windows, one set in each bay, which opened inwards into the guard room. Eact window contained 12 panes of glass. The round arch area above each casement window was enclosed by a solid brick wall.[5]

On February 21, 1849, the mason William Collins was paid $ 8.46 for "setting 70½ feet brick cornice at new engine and guard house."[6]

The extant paymaster's vouchers for the period 1849 to 1851 indicate that no further work was done on the structure during this period. The destruction of the Paymaster's vouchers for the years 1852 to 1861 by the National Archives staff in the 1940's makes it impossible to determine what work might have done to the structure during this period. However, the failure to mention the engine and guard house in the annual reports of the superintendents for the years 1849 to 1861 undoubtedly indicates that no major repairs or alterations were made to the structure prior to the Civil War.

5. W. Lewis Barlow,IV, "Historic Structure Report: John Brown's Fort, Architectural Data, Harpers Ferry National Historical Park, Maryland-W. Va." Denver Service Center, Historic Preservation Division, National Park Service, Denver, Colorado, May 1976), for modern plans and details
6. 3rd Series, File 9093, V. 23, for $ 8.46.

7. Stocking and Machine Shop,1847-1850:

The Stocking Shop (South wing) is Bldg. No. 4 on the Map. No. 5(1848) and was built on the site of the Old Storehouse, Bldg. No. 4 on Map No. 1(1844). The Stocking Shop is Bldg. No. 6A on the 1859 Historical Base Map. The Machine Shop or North wing, was built on the site of the old stocking shop, Bldg. No. 5 on Map No. 2(1844) and Bldg. No. 5 on Map No. 3 (1848). The Machine Shop is Bldg. No. 6B on the 1859 Historical Base Map.

In his estimates for the 1846-47 fiscal year, Major John Symington requested the sum of $ 15,200.00 for " rebuilding stocking and machine shop at the musket factory." This replacement was necessary, the superintendent explained, because: "The buildings now used for stocking and machine shops (Bldgs. No. 5 and No. 8 on Map No 3(1848)) were built upwards of thirty years ago,(when machinery was not used), slightly, like common dwelling houses, and of bad materials. They are now in a ruinous state, and require to be propped and stayed to prevent their falling. Besides, they are so low on the ground that the driving machinery and lower floors, in high freshets, are several feet under water, interrupting the operations and ruining the machinery." In addition, Symington also requested that $ 3,700.00 be provided to manufacture the "line of working shafts,&c, in this shop at the musket factory."[1] Congress appropriated the requested $ 18,900.00 on August 8,1846.[2]

The new building,designed by Major Symington in the same architectural style as the other new workshops then under construction, was to consist of a center building with north and south wings.

During the period September 8,1846 to December 31,1846, there was spent a total of $ 5,051.04. Of this sum $ 4,602.06 was expended to purchase 3,586 feet of cut stone and 252,016 bricks, and $ 448.98 for constructing a wheel pit.

1. Serial No. 481, Document No.9, p.111, items 3 and 4. In addition,another $ 1,450.00 was provided to acquire "Governors to the water wheels",ITem No.14 .It was explained"The means for regulating the water upon the wheels according to the work in hand, is essential to the proper working of the machinery."
2. U.S. Statues at Large, IX, p.69.

The bricks and stone were not only intended for use on the proposed stocking and machine shop, but were also used on the new stock house and new forging or smiths shop that were being erected in 1846-47.

The materials were acquired as follows:

From Redmond Burke on September 8,1846, 3,586 feet 10 inches of cut stone for $ 2,217.60 consisting of:

1,519 4/12 superfical feet cut stone water table, for	$ 759.00
720 lin. feet cut stone cornice, for----------	482.40
798 10/12 lin. feet cut stone window sills----------	535.21
250 lin feet, cut stone coping----------	295.00
290 8/12 sup. feet, cut stone door steps----------	145.33
3,586 10/12 feet	$ 2,217.60 (3)

The bricks were purchased from the following people.

11,870 bricks from Richard John, Sept. 14,1846 for.....	$ 83.09 (4)
35,142 hard red bricks from Ellen Lynch, Sept. 21,1846.....	281.13 (5)
4,536 brick(3,600 good red bricks for $ 30.60, and 936 good arch and salmon bricks for $ 45.08) from John F. Wall, Sept. 25,1846 for.....	75.68 (6)
200,468 hard red bricks from William Collins on Sept.22 and November 4,1846 for.....	1,944.56 (7)
252,016 bricks	$ 2,384.46

The $ 448.98 for construction went to the stone mason Peter Litle on December 16,1846, or building what is believed to be the wheel pit and its foundation wall for the water wheel that was to turn the machinery in the new stocking house. If this theory is correct, then this construction was done at Bldg. 6B on the 1859 historical base map. Litle performed the following work on this project in 1846:

For excavation and removal of 209 cubic yards.....	$ 12.70
For building 139 18/25 perches mortar masonry.....	244.51
For 340 8/12 sup. feet rock facing wall.....	173.37
For 114 sup. feet dressed stone.....	18.40
	$ 448.98 (8)

(3) 3rd S. F. 4403, V. 27, Sept. 8,1846, for $ 2,217.60, to Burke.
4. 3rd S.F.4403, V. 36, to Richard John.
5. 3rd S., .F. 4403, V. 38, to Ellen Lynch.

6. 3rd S. V. 4403, V.46, to John F. Wall.
7. 3rd S., F. 4403, V. 39, to William Collins, Sept. 22,1846, $ 784.31 for 81,468 bricks; and F. 4837, V. 8, To W. Collins, Nov.11,846, $ 1,160.25 for 119,000 bricks.
(8) 3rd S.,F.4837, V.40, to Peter Litle, Dec. 16,1846, for $ 448.98.

Construction of the South Wing(Bldg. 6A)-The Stocking House and Wheel House(Bldg.6B), 1847-48:

Construction on the large south(or east) wing, which was to be the Stocking Shop, got underway in June 1847. On July 2, 1847 Peter Litle was paid $ 80.00 for taking off the slate roof, pulling down the two-story brick walls of Bldg. No. 4 on Map No. 2 (1844)- the Old Storehouse and Master Armorer's Office, and removing the material to clear the site for the construction of the south wing.[9]

The demolished building,a two-story brick building measuring 80 by 30 feet, had been erected by Paymaster John Mackey in 1799 for the first "Factory" or "Armory" for the musket factory.

Because the paymaster's vouchers for the period July 1,1847 to December 31, 1848, are missing from the National Archives Records, it is impossible to trace the costs of construction and amounts of material utilized in detail during this 18 month period. The records for 1849, however, indicate that the same men who built the new stockhouse and forging shop, namely masons Peter Litle and William Collins, etc., also erected the south wing or stocking shop.

In his annual report for the fiscal year ending June 30,1848, Major Symington reported on the progress of construction as follows:

"The south wing of new stocking and machine shop (Bldg. 6A on 1859 map) , 89 by 35½ feet, has been erected, (the foundation is of stone, cut-stone water table,) two stories, of brick, cast iron door and window frames, and sheet iron roof, with copper gutters. This shop is near its completion, and will be finished in a few weeks. Connected with this shop is the wheel house(Bldg. 6B on 1859 Map), covering the water-wheel and main driving gear, This is completed; it is of brick,

9.3rd S. F. 5623, V.48, Peter Litle, July 7,1847,$ 80.00.

" 18 by 26 feet, one story, on stone foundations, with cast iron frames, and covered with slate." [10]

Under the heading of machinery made, the superintendent further reported,

" 72 10/12 feet heavy main driving gearing, with heavy spur and bevel wheels, and 28½ feet of main line working shafts, seats and main driving drums; also (have been) put up in the new stocking shop." (11)

In the estimates for the 1848-49 fiscal year, Symington had requested the sum of $ 950.00 "for building a brick wheel house over the (water) wheel driving the machinery of the new stocking and machine shop at the musket factory." "The present shelter over this wheel and penstock," he continued," is a temporary rough-board shed." [12] Congress provided the requested amount on August 14,1848. [13] The cost of building the wheel house thus appears to have been approximately $ 950.00, and with this appropriation, a total of $ 19,850 had been provided for construction.

The paymaster's vouchers indicate that $ 843.76 spent putting the final touches to the stocking (south wing) shop in the spring of 1849.

This total included the following items:

To William Collins, February 21,1849, $ 25.30, for setting 175 feet of brick cornice for $ 21.00 and $ 4.30 for hauling and setting 500 brick. (14)

To Edward Tearney (partner of Peter Litle), May 19,1849, $ 9.75 for 4 days work of mason, $ 8.00,and 2 days work of tender, $ 1.75, for altering head blocks. (15)

The painter G. W. R. Seale received a total of $ 143.47 for painting some 1,224 square yards as follows:

181 square yards painted one coat.....	$ 18.10
988 8/9 square yards painted 2 coats.....	116.11
54½ square yards painted 3 coats.....	9.26
	$ 143.47

(16)

10. Serial No. 537, Document No. 1, p. 348. Item 4, musket factory.
11. Serial N o.537, Doc.1, p.346.
12. Serial No. 514, Document No.2, p.110-111,item No. 2.
13. U.S. Statues at Large, IX, p. 306.
14. 3rd S., F.9093, V. 23, to William Collins.
15. 3rd S.,F.9307, V.23, to Edward Tearney.
16. 3rd S., F.9093,V. 22, to G.W.R. Seale.

The carpenter Jesse Schofield received a total of $ 665.24 for executing the following carpenter work on the newly finished south(or east wing):

" For carpenter work of roof, including girders, ceiling joist & jack rafters: 3,500 feet @ 6¢ (87½ x 40 feet) = $ 227.50.
For 2nd floor, including girders, joist and flooring @ $ 5 3/4, (86 x 32 2/12 feet) = $ 159.04.
For 1st floor, including joist & floor, 2,698 feet, @ $ 4½ (85 8/12 by 31 6/12 feet)= $ 121.41.
For carpenter work of putting on ceiling, 5,243 fet @ $ 3 (86 by 32 2/12 feet and 78 by 31 6/12 feet) = $ 157.29.
Total of bill: $ 665.24. (17)

In his annual report for the year ending June 30, 1849, Superintendent Symington reported:" The south wing of new stocking and machine shop, at the musket factory, is completed, and the whole of the machinery (stocking) transferred to it (from Bldg. 5, the old stocking shop on Map No 3 ,1848), and in operation." [18]

With regards to machinery, he informed the Chief of Ordnance that "83 feet main line, and 253 8/12 feet counter driving machinery and fixtures, (have been) put up and (were) in operation in new stocking shop." [19]

Construction of the North wing or Machine Shop(Bldg. 6D), and Center Building (Bldg. 6C), 1849 - 50:

Construction on the north wing and center of this great building got underway in March 1849 . Edward Tearney took down the old stocking house(Bldg. No. 5 on Map No.2(1844) and Map No. 3(1848), removing the slate from the roof, timbers, and bricks, thus clearing the ground for the north wing. The old Stocking House, a two-story brick workshop, 111 by 30 feet feet, had been erected by Superintendent James Stubblefield and Paymaster Samuel Annin in 1808-09, as a tilt-hammer shop. About 1820 it had been converted into a stocking shop. By April 19, 1849, Tearney had completed the construction of the stone foundations for the wing and center and received a total of $ 1,024.65 for his services. [20]

17. 3rd S. F. 9093, V. 28, April 5,1849, for $ 665.24.
18. Serial No. 549, Document No.1, p.366. item 1.
19. Serial No. 549, Document No.1, p. 365.
20. 3rd S., F. 9307, V. 23, April 19,1849, for $ 1,024.65.

Tearney performed the following work for this money:

For taking down and removing materials of old stocking shop-----	$ 70.00
For excavating and removing 263 16/27 cubic yards of earth.....	79.08
For excavating and removing 8 10/27 cubic yards of hard rock....	7.32
For building 410 16/25 perches stone masonry wall.....	821.28
for hammered face wall, 426 sup. feet.....	42.60
For setting 221 3/12 feet cut stone water table.....	22.12
	$ 1,042.40
Minus $17.75 deducted for 71 perches of old stone wall used in the new foundation.....	-17.75
	$ 1,024.65 (21)

On January 1,1849 William Collins was paid $ 1,437.62 for making and delivering 172,532 bricks.(21A)

The carpenter William J. Rowe received $ 12.00 for putting up temprary stairs in the new building on July 7,1849.[22] The brick mason William Collins was paid $ 546.69 for performing the following work in June: "For laying 105,074 brick in the north wing and centre building of new stocking and machine shop from their basement to the bottom of the 2nd tier of joists..... $ 525.31
For setting 164½ lin.feet of cut stone sills..... 21.38
$ 546.69. (23)

About $ 3,021.96 had been spent on the construction of the north wing and centre building from January 1849 to June 30, 1849.

In his annual report for the fiscal year ending June 30,1849, Major John Symington described the progress of this construction as follows:

"The centre building for offices and north wing for machine shop (at the musket factory) is built up to the second floor. The dimensions of this building are: centre, 35½ by 48 feet,(enclosing water wheel;) wings, each 35½ by 89 feet, two stories, built of brick, on stone foundations. Iron door and window frame, with sheet-iron roof."[24] Under the heading of machinery, the superintendent stated that" 8 7/12 feet (of) counter machinery, driving, &c, (have) been put up in the machine shop."[25]

(21.A) 3rd S., F. 9093, V. 5, to William Collins, Jan.26,1849-$ 1,371.7 for 167,216 building brick and $ 66.45 for 5,316 long cornice brick, total: $ 1,437.62.

21. 3rd S., F. 9307, V. 23, April 19,1849, to Tearney.
22. 3rd S., F 9307, V. 77, to W.J. Rowe.
23. 3rd S. F. 9307, V. 80, To William Collins, July 10,1849, for $ 546.69.
24. Serial No. 549, Document No.1, p. 366, item 1.
25. Serial No. 549, Doc. No.1, p. 365.

The brick mason William Collins continued erecting the brick walls during the summer of 1849 and received a total of $ 592.36 for performing the following work on the north wing and center:

August 25,1849, for laying 100,530 bricks in the walls of the 2nd story of centre and west (or north) wing.....	$ 502.65
for setting 334 4/12 lin feet of cut stone coping and sills.....	43.40
For putting on 201 feet of brick cornice.....	25.12
	$ 571.23 (26)
August 31,1849- For Scaffolding, cutting out window in gables and setting. Mason, 3 days= $ 6.00; tender 3/4 day =$ 0.75.....	6.75 (27)
October 10,1849- For altering walls.....	14.38 (28)
	$ 592.36

In addition, Collins was paid $ 537.60 on August 31,1849 for making and delivering 64,000 brick to the building site.[29]

From the vouchers, it is apparent that William Collins laid a total of 205,604 in the two- story high walls of the center and north wing, set 498 10/12 lin. feet of cut stone coping and sills, and laid 201 feet of brick cornice.

The stone cutter Redmond Burke provided 105 lin. feet of additional cut stone coping for this building for $ 123.90.[30] Approximately $ 4,459.58 was expended on the construction of the north wing and center in 1849 and $ 1,684.26 to June 30,1850, so that the cost of the wing and center appear to have been more than $ 6,384.63.

The carpenter Jesse Schofield was paid a total of $ 1,408.34 for performing the following carpenter work on the north wing and center:

February 20,1850 for putting 6,110 feet of roof on.....	$ 397.15
for putting 5,849 feet on lower floor.....	134.75
for " 4,215 7/12 ft, on upper floor...	242.39
8,097 ft. ceiling	242.91
for 37 steps finished.....	41.25

26. 3rd S., F. 9895, V. 20, August 25,1849, for $ 571.23.
27. 3rd S., F. 9895. V. 23, August 31,1849, for $ 6.75-part of a bill for $ 543.75.
28. 3rd S., F. 10276, V. 8, October 10,1849.
29. 3rd S., F. 9895, V. 23, Aug.31, 1849. The 64,000 brick cost $ 512.00 and the cost of transportation, $ 25.60.
30. 3rd S. f. 10276, Dec.11,1849, to Burke.

for 41½ feet skirting	$ 6.22	
for making 46 window sills	23.00	
2,397 feet rough garrett floors	29.96	
for making 444 lights of square sash	33.30	
for 78 lights of circular sash	6.63	
for 2 inside doors, circular head, fitted with sash, frames, &c	70.00	
For 2 inside doors, square heads, complete	50.00	
for one window, circular head, complete	25.00	
for one window, square, complete	15.00	
for 3 small door frames and triming	6.00	
for 1 double front door, &c faced with sheet iron(?)	12.00	
for 4 clothes presses and one partition, down stairs	32.00	
For one partition up stairs		17.50
February 20,1850		$ 1,390.06 (31)

April 26,1850 For making 144 square lights of sash.. $ 10.80
For making 88 circular lights of sash 7.48
$ 18.28 (32)

Total: $ 1,408.34

The iron worker, William Volkmar, prepared and installed the sheet iron roof, 6,180 feet on the wing and center in September 1849, receiving $ 247.20 for this work.[33] The exterior brick walls of the Stocking and Machine shop were colored with a cement wash in October 1849 at a cost of $ 21.47.[34] In November 1849, $ 10.90 was spent for "plastering with cement" 121 7/9 square yards the wheel house(Bldg. 6B) for the shop.[35]

The painter G. W. R. Seale received a total of $ 387.30 for his work on the north wing and center. This included:

November 11-23,1849: For priming and glazing 2,910 lights of sash @ 5¢...$145.50(36

January 13,1850 For painting centre and north wing:

95 5/9 square yards 3 coats	$ 15.90	
118 sq. yards 1 coat	5.90---	241.80(37
1,760 sq. yards 2 coats	220.00	
	241.80	$ 387.30

On March 1,1850, the tinsmith Henry W. Edwards was paid $ 29.47 for putting up 393 feet of copper spouting on the new building.[38]

31. 3rd S. V. 10673, V.15, February 20,1850, to Jesse Schofield, $ 1,390.06.
32. 3rd S., F. 11000, V. 10, April 26,1850, for $ 18.28.
33. 3rd S. F. 10276, V.1, To Wm. Volkmar, October 10,1849, for $ 247.20.
34. 3rd S., F. 10276, V. 16, to Francis Trimous, November 3,1849, for $ 21.47.
35. 3rd S. F. 10276, V. 45, to Robert F. Dowling, Dec. 24,1849, for $ 10.90.
36. 3rd S., F. 10276, V.29, Nov.23,1849, for $ 145.50.

(37) 3rd S. F.10276, V. 86, Jan.13,1850, for $ 241.80.
38. 3rd S., F. 10673, V. 18, March 1,1850, for $ 29.47.

On March 2, 1850 Mrs. Margaret Krepps was paid $ 3.90 "for making 39 cotton window curtains for the stocking and machine shop."[39] Finally, William Collins received $ 0.75 on June 26,1850, for sending a mason and tender part of a day to make minor repairs on the new wing.[40] In the annual report for the fiscal year ending June 30,1850, Major Symington wrote: "The centre building and north wing of the new stocking and machine shop, described in the last annual report, when partially completed, has been finished."[41] Under the heading of machinery, the superintendent also reported that " 126 feet main line of driving machinery, 133½ feet counter line of driving machinery, fabricated, and in operation in the new machine shop, Musket Factory."[42]

The cost of constructing the new stocking and machine shop must have exceeded the $ 19,850 that had been appropriated, for in his estimate for the 1850-51 fiscal year, Major Symington an additional $ 6,300 be provided, explaining that about $ 4,300 was needed to complete the structure and $ 2,000 to put up"the necessary driving machinery.[43] The requested sum was appropriated on September 28,1850.[44]

Probable costs of construction, 1846 to 1850 thus totaled about $ 26,150: This figure included $ 20,450.00 for the structure and $ 5,700.00 for the machinery.

From June 30 to December 31,1850, the sum of $ 117.55 was spent on the new shop. $ 109.50 was paid to color the exterior brick walls, 1,564 yards, with three coats of wash.[45] On November 30,1850, the mason William Collins received $ 8.00 for sending a mason and tender to work 2½ days making minor repairs.[46]

39. 3rd S., F. 10673, V.20, March 2,1850, for $ 3.40.
40. 3rd S., F. 11000, V. 52, June 26, 1850, for 75 cents.
41. Serial No. 587, Document No.1, p. 476, item 1.
42. Serial No. 587, Doc. 1, p. 475.
43. Serial No. 568, Document No. 4, pp. 156-157,item 1.
44. U.S. Statues at Large, IX, ,p.507.
45. 3rd S. F. 11542, V.12, to Francis Sinnon, September 27,1850, for $ 109.55.
46. 3rd S., F. 12169, V. 20, Nov.30,1850, for $ 8.00.

Finally, the sum of $ 66.00 was spent on the new stocking and machine shop during 1851. Lightning rods- three points and three leads to the ground, were installed on the new workshop.[47]

47.3rd S., F. 12680, V.69, to Decker and Robinson, July 3,1851, for $ 66.00.

Construction of the Stocking and Machine Shop, Musket Factory

(Stocking shop, 1846, center and Machine shop, 1849
(Bldg. 6A, 6B, Center, Bldg. 6C, Machine Shop, 6C on 1859 map).

Project	Cost	Description
For cut stone	$ 2,217.60 123.90 $ 2,341.50	1846- 3,586 feet for water table, coping, sills. 1849 105 feet for coping 3,691 feet.
For bricks	$ 2,384.46 $ 1,975.22 $ 4,359.68	1846 for 252,016 bricks 1849 for 236,532 bricks 4,88,548 bricks
Stone foundations, Stone mason:	488.98 80.00 ? 70.00 972.20 9.75 $ 1,563.38	1846 construction of wheel pit and foundations, Bldg. 6- , excavation 209 cubic yards; 139 18/25 mortar masonry erected; 340 8/12 sup.feet rock facing wall' 114 feet ,sup. dressed stone. demolishing old store house and Master Armorer's offic cost of excavation and construction of stone foundatic of south wing(Stocking Shop in 1847. cost of demolishing old stocking shop. cost of excavation and construction of stone foundatic of center and north wing(machine shop),1849. excavating of 263 16/27 cubic yards of earth, excavtion of 8 10/27 cubic yards of hard rock. Building 410 16/ perches of stone masonry foundation walls; 426 sup. feet of hammered face wall; 221 3/12 feet of cut stone water table laid. Other, work in 1849. To Peter Litle and Edward Tearney.
Laying Bricks:	? 25.30 1,027.96 64.78 25.12 .75 $ 1,164.35	1847-brick walls of south wing -1848 1849-setting 175 feet brick cornice, south wing. 1849 for laying 205,604 brick in north wing and cente 1849 for laying 498 10/12 feet cut stone. 1849 for putting up 201 feet of brick cornice, north wi 1850-other repairs. for work as brick mason to William Collins.
Carpenter work joists, floors, roof, ceiling.	$ 665.24 $1,408.34 12.00 $ 2,085.58	1849 for carpenter work on south wing. Jesse Schofield 1849-50 carpenter work in north wing and center, to Jeese Schofield. Other, to Wm. Rowe, 1849. North wing.
Iron roof:	? $ 247.20	1847-sheet iron roof on south wing 1849, for 6,180 ft sheet iron roof for north wing, center
Painting	$ 143.47 387.30 $ 530.77	1849 for painting about 1,224 square yards, south wing. 1849-50 for painting about 1,973 5/9 square yards and priming and glazing 2,910 sash, north wing & center.
Copper gutters and douwn spouts	? 29,47	1847-for south wing 1850-,393 feet for north wing and center.
Cement wash	32.37	1849 walls of wheel house and new shop.
Total:	$ 12,354.30	Cost of structure: $20,450.00

8. Lumber House and Coal Bin, Musket Factory, 1848-49

The lumber house and coal bin is Bldg. No. 10 on Map No. 3(1848) and Bldg. No. 10 on the 1859 historical base map.

Major John Symington's estimate for the 1846-47 fiscal year requested the sum of $ 5,200.00 for the "erection of brick lumber house", explaining that "There is no building for this purpose at the armory, and one is wanted."[1] The requested money was appropriated on August 8,1846.[2] Because the paymaster's vouchers for the 3rd and 4th quarters of 1847 and all four quarters of 1848 are missing from the National Archives Records, it is impossible to trace the construction of this edifice in detail during this period.

Due to the heavy construction program on larger and more important buildings, it is probable that construction on the lumber house and coal bin did not get underway until the spring of 1848, and at the earliest, after July 1,1847. As we shall see, the stone foundations and stone-first story were constructed by Peter Litle and his partner Edward Tearney, and the brick second story by the mason William Collins. Superintendent Symington described the progress of construction of this storehouse in his annual report for the year ending June 30,1848, writing: "The new lumber house has been commenced, and the foundation and first story, which is of masonry, is now nearly up. The lower story of this building will be reserved as a place of deposite for bituminous coal; the dimensions are 77 4/12 by 53 8/12 feet."[3]

The brick second story was erected by William Collins in May 1849 and on June 9, he was paid $ 277.39 for laying 47,642 brick for $ 238.21 and $ 39.08 for setting 156 lin. feet of cut stone water table and 156 feet of cut stone coping.[4] On June 11,1849, Edward Tearney, acting as the administrator of

1. Serial No. 481, Document No. 9,pp. 111.112,Item 8.
2. U.S. Statues at Large, IX, p.69.
3. Serial No., 537,Document No.1, p. 348, Item 5, Musket Factory.
4. 3rd Series, F.9307, V. 35, To Collins, June 9,1849, for $ 272.71,and F. 9307, V. 80, to Collins, July 10, 1849, for $ 4.68- for charges omitted from V. 35.

his deceased partner's estate, Peter Litle, was paid $ 157.76 for the following work in the new lumber house:

filling in and paving, 53 ½ square yards.....	$ 33.43
paving with flag stones, 207 2/9 square yards.....	124.33
	$ 157.76 (5)

In his annual report for the fiscal year ending June 30,1849, Major Symington wrote: "Lumber house, musket factory, is completed except the slating of the roof, which is half done. Dimensions, 53 8/12 by 78 feet. The lower story is of stone, which includes and covers the bituminous coal bins; the upper story of brick, the openings having wooden frames fitted with blinds."[6] Shortly after writing this, in July 1849, a hurricane struck the musket factory yard and the incomplete roof was torn off the lumber house and its brick gable end walls in part demolished.

William Collins was paid $ 7.11 for laying 1,422 brick in rebuilding the gable ends.[7] Redmond Burke also provided 32 feet of cut stone coping to be used in the rebuilding for $ 37.36.[8] The original carpenter work and also the rebuilding of the lumber house was done by Patrick H. Kelly, who received a total of $ 390.00 for performing the following work:

For putting in girders and joists, laying one floor rough, framing and putting up roof, fitting and hanging blinds, doors, &c, for the sum previously agreed on----------	$ 380.00
Broken timbers, occasioned by the falling of gable end walls, removed and replaced by others, for.....	10.00
	$ 390.00 (9)

Finally, on August 9,1849, the slater George W. Tacey was paid a total of $ 109.41 for performing the following services:

5. 3rd S., F. 9307, V.36, June 11,1849, for $ 157.76.

6. Serial No. 549, Document No. 1, p.366. Item 2.

7. 3rd S., F.11000, V. 24, June 26,1850, for $ 7.11-He was not paid to this date, but must have done this work in July 1849.

8. 3rd S.F. 9895. July 24,1849, for $ 37.36.

9. 3rd S., F. 9307, V.79, July 9,1849, for $ 390.00.

For labor of taken off slate roof, 2,622 square feet, of the old stock house(Bldg. No. 12 on Map No.5, 1848, which was being demolished).....$ 13.11

For putting on the slate roof of new lumber house, 4,815 sq.ft.... 96.30

$ 109.41 (10)

In the estimate for the 1850-51 fiscal year Symington requested the sum of $ 495 " for repairing damage to the lumber house at the musket factory," explaining:" The end walls of this building were thrown down by a violent hurricane just as the roof framing was ready to be put on, and many of the timber were broken..."[11] The money for this purpose was appropriated on September 28, 1850.[12] Prior to this, however, in his annual report for the year ending June 30,1850, Superintendent Symington reported:" The new lumber house,... described in the last report, has been completed."[13]

The total cost of constructing the lumber house and coal bin, 1848-1849, including the rebuilding, was approximately $ 5,695.00.

During the summer of 1850 $ 45.69 was paid to Francis Simnons for "coloring exterior(brick) walls of new lumber house with 3 coats of cement wash, 509 sq. yards.[14] During the summer of 1851, lightning rods- 2 points and 2 leads to the ground- were installed on the new lumber house at a cost of 15 cents per foot, total cost was $ 33.60.[15] Finally, on December 24,1851, the stone mason Edward Tearney received $ 6.75 for the services of a mason for three days, building steps at the coal house.[16]

The destruction by the National Archives staff during the 1940s of the Armory paymaster's vouchers for the years 1852 to 1861 makes it impossible to trace in detail any alterations or repairs that may have been made to the lumber house during this period. Judging from the superintendents' annual

10. 3rd Series, F. 9895, V. 17, August 9,1849, for $ 109.41.
11. Serial No. 568, Document No. 4, pp. 156,157, item 3.
12. U.S. Statues at Large, IX, p.507.
13. Serial No. 587, Document No.1, p.476, item 2.
14. . 3rd S., F. 11542, V. 12, Sept.27,1850, for $ 35.69.
15. 3rd S., F. 12680, July 3,1851 to Decker and Robinson, for $ 33.60.
16 3rd S. F, 13107, V.4, Dec. 24,1851, for $ 6.75.

reports, 1852 to 1860, however, it would appear that no major alterations or repairs were made during these years.

CONSTRUCTION OF LUMBER HOUSE AND COAL BINS, MUSKET FACTORY, 1848-49

Project	Cost	Description of work
Excavation	?	Excavation for foundations, 1848- Peter Litle.
Foundation walls	?	erection of ? perches stone mortar wall for foundations.
Masonry walls of 1st story	?	construction ? perches of stone mortar walls of 1st story, Peter Litle.
Paving 1st story Floor	$ 157.76	Filling in and paving, 53½ square yards; paving 207 2/9 sq. yards with flag stones, to Peter Litle, deceased.
For brick	?	
For cut stone	37.36	32 feet of coping, replacement.
Brick mason	238.21	laying 47,642 brick, 2nd story.
	7.11	laying 1,422 replacement bricks
	245.32	49,064 brick
	39.08	for setting 312 lin. feet of cut stone (156 feet of water table and 156 feet of coping).
	285.40	Total to brick mason, William Collins.
Carpenter work	380.00	Contract for girders, joists, one rough floor, framing roof, fitting and hanging blinds, doors.etc.
	10.00	replacing damaged girders, etc.
	390.00	To carpenter Jesse Schofield.
Slating:	13.11	labor for taking 2,622 feet slate off old stock house.
	96.30	for putting 4,815 square feet slate on lumber house roof.
	109.41	To slater George W. Tacey (or Tracey).
Gutters & spouts	?	for ? feet of copper gutters and ? feet of copper downspouts.
Total:	$ 979.03	(Probably total cost: $ 5,695.00, including $ 495 for repair

9. Tilt Hammer Shop for Barrel Welding, 1849 - 1851:

(Bldg. No. 9 on the 1859 Historical Base Map.)

In the annual estimate for the 1849-50 fiscal year, prepared by Major John Symington on February 4,1848, he requested the sum of $ 17,900.00" for constructing "a barrel welding, tilt hammer, and swedging shop, 200 by 50 feet", built of brick on stone foundations and covered with sheet iron. Explaining the need for this new structure, he wrote:

> To replace the present barrel welding and tilt hammer shop(Bldg. No. Bldg. No. 11 on Map No. 3,1848), which has all the defects, but in a greater degree, of the other old shops,which have had to be reconstructed; being dark and badly ventilated, with its floor so low that every freshet covers it, some times to the depth of eight feet. There is also now a separate wheel and gearing for each hammer, eight in all, six of which are tub wheels, utterly useless when submerged, having thus lost 28 working days last year, and 52 the year before, besides considerable damage to the perishable parts of the machinery by the frequent floodings. The present forebays and penstocks supplying the wheels are of wood carried through the ground, and require frequent repairs, and entire renewal every few years. Whilst these repairs are in hand, a suspension of the manufacture of arms are necessary, causing embarrasment to the operations of the armory and much loss. This is a measure of pressing importance." 1

Symington also requested $ 27,370 to provide the necessary new machinry for this proposed barrel welding and tilt hammer shop, and also for a proposed new grinding mill, saw and planing mill. The machinery for the tilt hammer shop would require eight tilt hammers for welding barrels, rods, &c, including water power and gearing(estimated at $ 12,928.00); two double tilt hammers for drawing barrel plates and tilt iron and steel, with driving power and gearing(estimated at $ 5,372.00);large shears, with gearing($ 385.00); driving machinery for four sets of drop hammers for swedging components ($ 3,785.00); blow machine, includin water wheel and air pipes($ 2,550.00), and fitting up large grindstone and gearing($ 450.00), Total, $ 25,470, leaving only $ 1,900 for machinery in the grinding mill.[2]

The total estimated cost of constructing the tilt shop and equipping it with new machinery was thus $ 43,370.00. Congress appropriated this sum on March 3,1849. (3)

1. Serial No.538, Document No. 2, pp. 117,118, Item No. 2.
2. Serial No. 538, Document No. 2, pp. 117,118, Item No. 3. Symington more detailed estimate for machinery, dated Feb, 4,1858, is in the Park Files.
3. U.S. Statues at Large, IX,p. 376.

Work on the large new shop's foundations began in the spring of 1849, but because of some unknown cause, some of paymaster's voucher paying Edward Tearney were not paid until 1850 and 1851! Thus on December 20, 1850, Tearney was paid $ 1,338,02 for performing the following work "on new tilt Hammer shop, Musket Factory", probably in 1849, as follows:

$ 648.71	For excavating and removing 2,162 10/27 cubic yards of earth for foundation.
264.64	For constructing 132 8/25 perches stone masonry.
105.97	for 1,059 9/12 feet, superfical , face hammered wall.
51.95	for setting 519 6/12 lineal feet cut stone water table and step.
260.00	for 1,040 cubic yards filling in with earth for floor.
6.75	for 3 days work of stone cutter cutting corners of sills.
$ 1,338.02.	(4)

On June 30,1849, Major Symington, in his annual report for the fiscal year noted: "Tilt Hammer Shop, at musket factory has been commenced, about half of the excavation and stone foundation being done. The dimensions of this shop," he continued" will be 53½ feet by 188 feet, one story brick, on stone foundations. Iron door and window frames, with sheet iron roof."[5]

During 1849, however, only $ 506.08 was spent on the tilt hammer project. William Collins received $45.04 for hauling 112,639 bricks from the rifle factory to the musket factory for the new tilt hammer shop.[6]

The balance of $ 461.04 went to stone cutter Redmond Burke for providing 668 5/12 feet of the following cut stone:

$ 134.83	for	269 8/12 feet of water table.
137.27	for	116 9/12 feet of coping.
188.94	for	282 feet of window sills.
$ 461.04		668 5/12 feet (7)

4. 3rd S., F.12169, V. 43, dated Dec.20,1850, for $ 1,338.02.
5. Serial No.549, Document No. 1, p. 366, item No. 3.
6. 3rd S., F. 9895, V.23, August 31,1849, for $ 4.26,for hauling 10,666 brick; F. 10276, November 29, 1849, for $ 40.78 for hauling 101,973 bricks.

(7) 3rd S., F. 9895, V. 8, July 24, 1849, for $ 461.04.

Major construction probably resumed in April or May 1850.

On May 23,1850,Edward Tearney was paid $ 3,000.00 for constructing 1,500 perches of mortar stone masonry,"foundation walls in part of new tilt hammer shop."[8] The stone foundations were completed by May, for on June 26,1850, the mason William Collins erected the brick walls and received $ 1,224.81 for performing the following work:

$ 1,125.88, for labor, scaffolding, mortar, laying 225,166 brick @ $ 5 per M.
51.43 for setting 396 lin. ft.cut stone window sills and coping at 13¢ per foot.
47.50 for setting 380 feet of brick cornice @ 12½ ¢.
$ 1,224.81 (9)

In his annual report for the fiscal year ending June 30, 1850, Superintendent Symington reported of this construction:

"The excavation,,stone foundation, and brick walls, with cut-stone coping, water-table, window and door sills of new tilt-hammer, and barrel-welding shop have been completed, and the roof is now being put on. This shop is 190 feet long by 53½ feet wide, of one story- floor to be laid with stone flagging, and roof (having a continuous ventilator along the ridge) to be covered with slate. The door and window frames are of cast iron."[10]

During the fall of 1850 the carpenter Jesse Schofield was paid $ 1,017.47 for performing the following carpenter work on the new tilt shop:

$ 724.03 for framing, putting on roof, 11,139 square feet.
79.86 for sheathing, 10,649 sq. ft. for slate roof.
$ 803.89- October 31,1850 (11)
129.60 for making 1,726 square light sash.
83.98 for making 988 circular light sash.
$ 213.58 July 10.1850 (12)
$ 1,017.47

8. 3rd Series, F. 11000,V. 31, May 23,1850, for $ 3,000.00.
9.3rd S. F.11000, V. 52, June 26,1850, for $ 1,224.81.
10. Serial No. 587, Document No. 1, p. 476, Item 3.
11. 3rd S.,F. 12169, Oct. 31,1850, for $ 803.89. Voucher No. 9.
12. 3rd S., F. 12169, V. 16, July 10,1850, for $ 213.58.

Under machinery, the sum of $ 6,137.24 was expended on September 9, 1850, pay for three -turbine water wheels, cast-iron ,complete with flumes, implements,i main up right shafts and bevel gearing. These were made by the Ames Manufacturing Company of Boston,Mass., cost $ 2,000.00 each, and the cost of freight from Boston to Harper's Ferry was $ 137.24(13).

On August 10,1850, William Collins was paid $ 386.85 for making and delivering 47,178 bricks to the armory yard for use in the new buildings.[14] He was also paid $ 1.00 in November 1850 for sending a mason to do one half-days work in the new shop.[15] Redmond Burke was also paid $ 88.77 for providing 132½ additional feet of cut stone, as follows:

$ 45.89 for 68½ lin.ft of water table.
42.88 for 64 lin.ft of window sills.
$ 88.77 16.

The slater George W. Tacey received $ 319.14 in November 1850 for performing the following services:

Labor taking off slate roof of old shop(B)ldgs. 7,8, and 9,Old Carpenter Shop, Old Machine Shop,and Old Carpenters Shop on Map No. 3 (1848), 10,328 square feet..... $ 51.64
Labor slating 13,375 square feet roof of new tilt hammer shop: 267.50
$ 319.14 (17)

$ 53.15 was paid to the tinsmith Henry W. Edwards for making putting gutters and down spouts on the new shop as follows:

To the estate of Henry W. Edwards,deceased, for making 380 feet of copper gutters.....$ 15.20
For making 114 feet of copper spouting..... 11.40
For making 6 copper spout heads..... 3.75
$ 30.35(18)

13. 3rd S. F. 11542. V.10, Sept.9,1850, for $ 6137.24.
14. 3rd S., F 11542, V. 4, Aug.10,1850, for $ 386.85.
15. 3rd. Series, F. 12169, V. 20, November 30,1850, for $ 1.00
16. 3rd S., F.12169, V. 27, Dec. 2,1850, for $ 88.77.
17. 3rd S., F. 12169, V. 24, November 27,1850, for $ 319.14.
18. 3rd S., F. 12169. V.14, Feb.13.1851, for $ 30.35.

To Alexander S. Vernon, December 3,1850, for putting up 380 feet of copper gutter,etc at new tilt shop.....$ 22.80 (19)

This evidence indicates that the new tilt hammer shop was up and roofed by December 1850. Much work remained to be down by the stome mason Edward Tearney, however, before the shop could function: two wheel pits for two water wheels and the stone forebay remained to be built and the stone flag floors were yet to be installed.

On April 21,1851, Tearney received a total of $ 3,209.38 for constructing the stone forebays, which involved the following construction:

For 205 9/25 perches mortar masonry.....	$ 359.38
For 561 superfical feet rock faced wall.....	280.50
for 259 22/27 cubic yards earth excavation.....	77.94
for 27 6/27 cubic yards earth puddling.....	8.16
For 229 20/25 perches cement masonry for wheel pit, tail race	459.60
For 186½ superfical feet circular cut stone,wheel pit.....	186.50
for 552 19/25 perches dry masonry wall.....	829.14
for 76 22/27 cubic yards of rock excavation.....	172.83
for 2,784 12/27 cubic yards of earth excavation.....	835.33
	$ 3,209.38 (20)

On June 24, Edward Tearney was paid $ 1,218.71 for building the foundation beds for the tilt hammer blocks. This involved the following construction:

For 472 24/27 cubic yards of earth excavation.....	$ 141.86
For erecting 478 15/25 perches mortar masonry of very heavy stone:	1,076.85
	$ 1,218.71 (21)

In June, lightning rods- four points and 3 leads to the ground-were installed on the new tilt hammer shop at a cost of $ 59.70.[22]

19. 3rd S., F. 12169,V. 28,Dec. 3,1850, for $ 22.50.
20. 3rd S., F. 12680, V. 5, April 21,1851, for $ 3,209.38.
21. 3rd S., F. 12680, V. 33, June 24,1851, for $ 1,218.71.
22. 3rd S. F., 12680, V. 69, To Decker and Robinson, July 3,1851, for $ 59.70.

On September 30,1851, Edward Tearney received $ 570.96 for putting the stone floor in the tilt hammer shop; this involved the following construction:

For 793 square yards of heavy stone flagging, floor.....	$ 396.50
For 59 19/25 perches mortar masonry.....	119.52
For 78 8/27 cubic yards excavation of earth.....	19.57
For 32 days of laborer drilling holes in walls	32.00
For 1½ days service of stone cutter drilling holes in walls..	3.37
	$ 570.96 (23)

Finally, the master carpenter Jeremiah Fuss was paid $ 24.00 for making two large doors: "made,fitted & hung at new tilt hammer shop, Musket Factory."[24]

Total recorded cost of construction (exclusive of water wheels and machinery) was approximately $ 12,958.34.

In his annual report for the fiscal year ending June 30,1851, Major John Symington reported: "New tilt-hammer and barrel-welding shop described in last report has been completed, and a portion of the machinery placed in position, including two iron turbine wheels, the whole of the main line of shafting, four trip hammers(belt) and one fan blast and pipe; the remaining machinery, &c., for this building, in in hand."[25]

Under the heading of machinery, the superintendent further remarked: "...two (turbine) water-wheels have been placed in position at the new tilt hammer shop; and substantial wheel-pits of masonry sunk, together with cast-iron head-gates, set in solid walls of grouted masonry; also (two) water-wheel regulators, placed in position, complete...

"The machinery for tilting and barrel-welding has undergone considerable repairs, as has also the pit-gears attached to replace those worn out. One fan blast has been placed in position in new tilt-hammer shop, together with fifty feet of pipe for carrying blast to forges..."[26]

23. 3rd S., F. 12680, V.54, Sept.30,1851, for $ 570.96
24. 3rd S. F. 13107, V. 42, Dec. 24,1851, for $ 24.00.
25. Serial No. 611, Document No.1, p.458, Item 1.
26. Serial No. 611, Document No. 1, p. 457.

Under machinery purchased, Symington listed:

3 turbine water-wheels, cast-iron, with cast-iron flumes, wrought-iron forebay and fixtures complete. (Purchased from the Ames Manufacturing Company, Boston, for $ 6,137.24].

2 fan-blasts, with 162 feet of 9-inch copper pipe.

3 regulators for water wheels.

1 large factory force-pump,(five plungers) with fixtures complete.[27]

Machine in progress of being fabricated included:

2 trip hammers for forging bayonet sockets, about two-thirds finished.

4 trip-hammers(belt) for forging musket barrels, about one-half finished.[28]

27. Serial No. 611, Doc. No.1, p.457.
28. Serial No. 611, Document No. 1, p.456.

Project	Cost	Description of Construction
Foundations	$ 648.71	For excavation of 2,162 10/27 cubic yards.
	3,264.64	For 1,632 8/25 perches stone mortar masonry walls.
	105.59	for 1,059 9/12 sup. feet face hammered wall.
	51.95	for setting 519 6/12 feet,lin.cut stone water table.
	260.00	for 1,040 cubic years of earth fill.
	6.75	for other costs.
	$ 4,338.02	cost of stone foundation
Forebay and wheel pits	$ 77.94	for 259 22/27 cubic yards of excavation.
	359.38	for 205 9/25 perches of mortar masonry wall.
	280.50	for 561 sup. feet rock faced wall.
	8.16	for 27 6/27 cubic yards earth puddling.
	459.60	for 229 20/25 perchs cement masonry,wheel pit,tail race.
	186.50	for 186½ sup.feet circular cut stone, wheel pit.
	172.83	for 76 22/27 cubic feet excavation of rock.
	835.33	for 2,784 12/27 cubic yards of earth excavation.
	829.14	for 552 19/25 perches of dry masonry wall.
	$ 3,209.38	for Forebay, wheel pits, and tail race.
Foundation tilt hammer blocks	$ 141.86	for 472 24/27 cubic yards of earth excavation.
	1,076.85	for 478 15/25 perches sup.ft mortar masonry wall. of very heavy stone.
	$ 1218.71.	
Flagging Floors	$ 19.57	for 78 8.27 cubic yards of earth excavation.
	396.50	for 793 square yards of heavy stone flagging of floor.
	119.52	for 59 19/25 perches of mortar masonry.
	35.37	for 33½ days of labor drilling holes in walls.
	$ 570.96	
Subtotal:	$ 9,337.07	paid to stone mason Edward Tearney for above work.
Purchase of Cut Stone	$ 180.72	for 338 2/12 feet cut stone water table.
	$ 231.82	for 346 feet of cut stone will sills.
	$ 137.27	for 116 9/12 feet of cut stone coping.
	$ 549.81	for 800 11/12 feet:To Redmond Burke.
Making & Delivering brick	45.04	for transporting 112,639 bricks.
	386.85	for making & delivering 47,178 bricks.
	$ 431.89	for 159,817 brick, paid to William Collins.
Laying brick walls:	$ 1,125.88	for laying 225,166 bricks in walls.
	51.48	for setting 396 lin.ft. cut stone window sills,coping.
	47.50	for setting 380 feet of brick cornice.
	1.00	for other work.
	$ 1,225.81	paid to brick mason William Collins.
Carpenter work:	1,017.47	for framing roof, 11,139 square feet; sheathing roof for slating, 10,649 feet; making 1,726 square sash and 988 circular sash of light: To Jesse Schofield.
	24.00	for making two large doors, to Jeremiah Fuss.
	$ 1,041.47	
Slating Roof:	$ 51.64	taking 10,328 ft slate off roofs of old shops.
	267.50	for slating 13,375 feet roof of tilt shop.
	$ 319.14	paid to slater George W. Tracey.
Cooper Gutters and spouts:	$ 30.35	for making 380 ft copper gutters, 114 feet of copper spouting and 6 spout heads.To Henry W. Edwards.
	32.80	for putting up gutters,etc., to A.S. Vernon.
	$ 63.15	
Total:	$ 12,958.34	Probable total cost: $ 17,900.00

Construction of Tilt Hammer Shop for Barrel Welding, Musket Factory

Project	Cost	Description of work
Excavation	$ 172.83	For 76 22/27 cubic yards excavation of rock.
	1,780.96	for 5,757 22/27 cubic yards excavation of earth.
	$ 1,896.24	for excavation, paid to Edward Tearney
Stone Masonry	$ 5,279.99	for 2,605 21/25 perches of stone mortar masonry.
Hammered Wall:	386.09	for 1,620 9/12 sup.ft of hammered rock wall.
Cut stone	238,45	for 706 lin.feet of cut stone laid.
Fill	260.00	for 1,040 cubic yards of earth fill.
	8.16	for 27 6/27 cubic yards of earth puddling.
Dry wall	829.14	for 552 19/25 perches of dry wall built.
Flag stone	396.50	for 793 square yards heavy flag stone paving.
Other Labor	42.12	for labor, drilling holes in walls, etc.
Total	$ 9,337.07	paid to stone mason Edward Tearney, 1849-51.

10. Polishing Shop, Musket Factory, 1849-50:

The Polishing Shop is Bldg. 4, located between Bldgs. No. 3-the Old Bell Shop and Bldg. No. 5, the new Boring Mill, on the 1859 historical base map.

In the estimates for the 1848-49 fiscal year Major John Symington requested the sum of $ 1,700.00" for building a polishing shop at the Musket factory", explaining that"The present shop is too small and dark for the necessary work, and some of the wheels have consequently been set up in the finishing (or Bell) Shop, (Bldg. No. 2 on Map No. 3 (1848)]; this is destructive to the machinery, from the dust made. The workmen also suffer much from the want of proper ventilation to carry off the dust."[1] The requested amount was appropriated on August 14, 1848.[2]

The Polishing shop was built so as to connect Bldg. No.3, the Old Bell Shop and the new Boring Mill, Bldg. No. 5.

Construction on the new polishing shop got underway, probably in September or October, of 1849. The mason William Collins received a total of $ 737.51 for executing the following construction:

$ $ 7.80	for excavating and removing 26 cubic yards of earth.
24.00	for making 16 perches of stone masonry.
238.58	for laying 47,716 brick in front and rear walls.
5.62	for laying 45 lin. feet of brick cornice.
12.54	for laying laying 96½ ft. of cut stone coping and cornice.
18.95	for hauling 47,395 bricks from rifle factory to the building site.
15.00	for 7½ days mason, for cutting out stone and brick walls, building abutments, & preparing for building arches & walls of wheel house.
6.25	for 6½ days service of tender.
0.75	for hauling 3 cart loads of sand.
0.50	for hauling 2 cart loads of stone.
391.27	for making 47,395 brick.
4.00	for taking down gable of old wheel, taking down,& replacing cornice, removing and resetting lintels, & rebuilding a portion of gable at wheel house, 2 days of mason
1.25	for 1½ day of tender.
0.75	for mortar for this work.
$727.76	for building new Polishing shop, including cost of brick.(3)

1. Serial No. 514, Document No. 2, pp. 110-111, item 1. The Old Polishing Shop had been erected ca. 1834-36 along the north bank of the Armory Canal. Its exact location is unknown, but it may have been adjacent to the Old Bell Shop.
2. U.S. Statues at Large, Vol. IX, p. 306.
3. 3rd Series, File 10276, V. 8, October 29, 1849, for $ 727.76.

$ 9.75 for 3½ days work of mason, 1 3/4 days work ,of labor, and 1 load of mortar. (4)

$ 737.51

The stone cutter Redmond Burke received $ 77.88 for providing 66 feet of cut stone coping for the new Polishing shop.[5]

Patrick H. Kelly, working under a contract for the specified sum of $ 160.00, did the "carpenter and joiners work constructing a polishing shop and wash house over the wheel house between the bell shop and boring mill, according to the specifications and for this sum previously agreed on."[6] On March 8,1850, George W. Tacey was paid $ 40.84 for slating the roof of the new polishing shop with slate, 2,042 square feet.[7] Also in March 1850, the tinsmith Henry W. Edwards received $ 2.80 for making 28 feet of copper spouting for the new shop.[8] Finally, in June 1850, Robert Simms received $ 20.00 for plastering 80 square feet inside the new Polishing shop.[9] Total recorded cost of construction was approximately $ 1,039.03. Total cost was proably about $ 1700.00.

In the annual report for the fiscal year ending June 30,1850, Superintendent John Symington described the Polishing shop as follows:

"A new polishing-shop has been erected, 40 by 22 feet, two stories high, of brick, on stone foundation, and covered with slate. This shop is built in connexion with the bell-shop and boring mill, and covers the large iron overshot wheel that drives in part the machinery in those two shops."[10] The polishing shop was apparently 22 feet wide and 40 feet long.

Destruction of the paymaster's vouchers for the period 1852 to 1861 in the National Archives records during the 1940's make it impossible to trace repairs or alterations in detail. The absence of any further mention in the superintendent's

4. 3rd S.,F.10276, V.33, November 29,1949, for $ 9.75,To William Collins.
5.3rd. S., F. 10276, V.39, Dec. 11,1849, for $ 77.88.
6.3rd S., F. 10276, V.37, December 10,1849, for $ 160.00.
7. 3rd S. F. 10673, March 8,1850, for $ 40.84.

8. 3rd S., F.10673, V. 18, March 1,1850, for $ 2.80.
9. 3rd S., F. 11000, V. 46, June 21, 1850, for $ 20.00.
10. Serial No. 587, Document No. 1, p. 476.

annual reports for the years 1852 to 1860, however, suggests that no major repairs or alterations were made to the polishing shop during those years.

CONSTRUCTION OF THE POLISHING SHOP ,1849-50,Musket Factory
Bldg. No. 4 on 1859 Historical Base Map.

Projects	Costs	Description of Work
Foundations	$ 7.80	for excavating 26 cubic yards of earth.
	24.00	for 16 perches of stone masonry, foundation.
	31. 80	Paid to William Collins.
Bricks , making and laying of.	391. 27	for making 47,395 bricks.
	18,95	for delivering 47,395 bricks.
	238.58	for laying 47,716 bricks.
	5.62	for laying 45 lin. feet of brick cornice.
	12.54	for laying 96½ feet of cut stone coping and cornice.
	28.59	for services of mason, tender, mortar in making alterations.
	9.75	for service of same as above.
	705.71	Paid to William Collins.
Carpenter work	160.00	Paid to Patrick H. Kelly.
Cut stone	77.88	for 66 feet of cut stone coping.
Slating Roof	40.84	for slating 2,042 square feet of roof.
Copper gutters	2.80	for 28 feet of copper spouting.
Plastering	20.00	For plastering 80 square yards inside.
TOTAL	$ 1,039.03	Probably total cost: $ 1,700.00.

Of the record total of $ 1,039.03; $ 975.39 was spent in 1849 and $ 63.64 in 1850.

11. New Grinding Mill, Sawmill, and Planing Mill, 1850 - 51:

This is Bldg. No. 8 on the 1859 historical base map, with 8A being the new Grinding Mill, 8B, the center building which contained the saw mill, and 8C, serving as the new carpenter shop.

In his annual report for the year ending June 30,1849, Major Symington reported that at the musket factory the old buildings were being torn down to clear the site for the construction of new ones, as the functions of the the old structures could be transferred to the new shops.[1] Old workshops demolished at this time apparently included the Old Carpenters Shop. Bldg. 7, erected in 1834(See Map 3 ,1848); Bldg. 8, the Old Machine Shop(1834), and the Old Grinding Mill,Bldg. No. 9, erected in 1831, (See Map 3 (1848)).

In the estimates for the 1849-50 fiscal year Superintendent John Symington requested the sum of $ 9,730 for"constructing a grinding mill, saw and planing mill." Explaining the need, he wrote: "This building, to accommodate the machinery and fixtures for the grinding, sawing, and planing, is necessary to replace the present make-shift structures, used for these purposes with great inconvenience and loss. The present grinding mill(Bldg. No. 9 on 1848 map) has its floor below the surface of the ground, and is covered during the freshets to a depth of sometimes five feet. The saws and turning laths are at present in the machine shop(Bldg. No. 8 on 1848 map), among filers and iron workers, for want of power and a better locality elsewhere; whilst the planing machinery is equally out of position in a shed put up on the side of one of the shops, and not well secured from the weather. The present structures are also much decayed, and are only kept in use by frequent repairs, to the delay of the operations of the armory.:"[2] In this sameestimate, Symington requested the additional appropriation of $ 27,370 for machinery for the new grinding mill, saw and planing mill

1. Serial No. 549, Document No. 1, p. 365.
2. Serial No.538, Document No., 2, pp. 117-118, Item No. 1.

and also for the new barrel welding and tilt hammer shop he was hoping to build. Symington's original submission, dated February 4,1848, as has been mentioned itemized the cost of machinery of the tilt shop as totalling $ 25,470, leaving only $ 1,900.00 for the machinery to equip the grinding, saw, and planing mills. In the estimate presented to Congress, the machinery required for the grinding,saw and planing mill was described as follows:

"two turbine wheels. with iron feeding troughs and penstock, shafts, and bevel gearing; a main line of driving shafts, with pullies, hangers, belting,&c., for the grinding mill, and machinery with pullies &c, complete, for driving upright and circular saws, turning lathes, planing machine, and tenoning, grooving,and boring machines...." 3

The money requested for these projects was appropriated on March 3,1849.[4] Building materials such as cut stone and brick were purchased in 1849 and 1850 but actual construction on the grinding, saw, and planing mills did not actually get underway until the fall of 1850. Purchases of cut stone, all provided by Redmond Burke, were as follows:

July 24,1849	$ 39.00	-for 78 feet cut stone steps (5).
December 11,1849	189.90	for 316½ feet cut stone water table (6)
Decmber 2, 1850	391.31	for 33 ft.lin. stone water table got $ 22.11. (7)
		for 216 lin.ft. window sills, for $ 144.72.
		for154 4/12 lin. ft. coping, for $ 182.11
		for 84 9/12 ft sup. door sills and steps, for $ 42.37.
	$ 620.21	for 882 7/12 feet of cut stone.

On October 24,1850, the administrator of the estate of William Collins was paid a total of $ 542.24 for making and transporting the following brick:

$ 499.72	for making 55,750 bricks.
42.57	for hauling 106,444 brick for new grinding mill. (8)
$ 542.24	(8)

The stone mason apparently began construction on the foundations in September or October 1850, and the brick mason William Collins put up the

3. Serial No. 538, Document No.2, p.117,118, item No.3.
4. U.S. Statues at Large, Vol. IX, p.376.
5. 3rd Series F., 9895, V.8, July 24,1848, for $ 39.00.
6. 3rd S., F. 10276, Dec.11,1849, for $; 189.90. Voucher 39.
7. 3rd S., F. 12169, V. 4, October 10,1850.,for $ 542.24.

in October and November 1850.

Edward Tearney was paid $ 1,322.25 on December 20,1850 for his construction of the stone foundations. This included the following work:

$ 132.55 for excavating and removing 441 23/27 cubic yards of of earth for the foundation.
1.096.16 for constructing 548 2/25 perches of stone mortar masonry.
45.37 for 453 9/12 sup/ft. face hammered wall.
37.05 for setting 370 6/12 lin.ft water table and steps,cut stone.
10.12 for 4½ days work of stone cutter(corners of sills,&c).
$ 1,322.25 (8)

The brick mason William Collins received $ 877.00 for erecting the brick walls and the following work in November 1850:

$ 782.02 for furnishing labor, mortar, scaffolding, and attendents and for laying 156,405 bricks.
5.60 for hauling 14,000 brick from rifle factory to armory yard.
25.49 for setting 207 lin. ft, of brick cornice.
27.49 for setting 211½ lin. ft.of cut stone window sills.
20.02 for setting 154 lin.ft.of cut stone coping.
8.00 for four days work of brick mason
8.00 for 7 days work of laborer and 1 cart load of mortar.
$ 877.00 (9)

The carpenter Jesse Schofield was paid a total of $ 752.43 for executing the following work on the new shop:

$ 97.20 for making 1,296 square lights of sash and fitted up.
53.04 for making 624 circular lights of sash
$ 150.24 1,920 lights of sash. (10)
for carpenter work, fitting,working,and laying floor with griders, joists, two inch plank complete.
$ 112.07, 1st floor, 2,637 sq. feet. 2 inch plank.
63.53 2nd floor, 1,105 sq ft of 1½ inch plank.
65.79 ceiling, 2,193 square feet.
324.80 for framing and sheathing roof, 4,480 square feet.
36.00 for making,fitting,and hanging three outside doors.
$ 602.19 (11)
$ 752.43 Total.

8.3rd S., F.12169, V. 43, Dec.20,1850, for $ 1,322.25.
9.3rd S., F. 12169, V. 20, Nov.30,1850, for $ 877.00.
10.3rd S. F. 12169,V. 16, Jan.10,1851, for $ 150.24.
11. 3rd S., F. 12169, V. 26, April 14,1851, for $ 602.19.

George W. Tacey slated the roof of the new grinding, saw, and planing in December 1850 or early January 1851, receiving $ 97.93 for performing the following work:

$ 96.62 for putting 4,806 square feet of slate on roof.
1.31 for 3/4 days work putting snow board on the roof.
$ 97.93 (12)

Dennis Snook was paid $ 44.00 on January 20,1851 for putting the copper gutters and down spouts on the new shop at the following rates:

$ 27.00 for making 216 feet of copper gutter.
12.00 for making 120 feet of copper spouting.
5.00 for making 8 copper spout heads.
$ 44.00 (13)

Final touches were made to the shop in June 1851:

Meen and Brewing were paid $ 31.23 for carpenter work and plastering, 1,041 feet of the ceiling in the center building.[14]

In May and June the stone mason Edward Tearney swung back into action to construct the two wheel pits for the new shop, receiving a total of $ 1,486.15 for the following construction:

$ 209.94 for building 139 24/25 perches of dry stone masonry for culvert at wheel pit.
31.50 for 63 sq.yards of stone flagging at bottom of wheel pit.
196.00 for 98 perches mortar stone masonry for wheel pit.
151.20 for 60 12/25 perches circular masonry for wheel pit.
114.75 for 114 3/4 ft,sup., circular cut stone, wheel pit.
246.66 for 109 17/27 cubic yards rock excavation for wheel pit.
99.33 for 331 3/27 cubic yards earth excavation for culvert walls & pit.
237.54 for 135 20/25 perches mortar stone masonry, for forebay and culvert walls.
137.50 for 275 ft. sup., hammered stone in forebay.
61.62 for 205 11/27 cubic yards excavation and puddling in forebay.
$ 1,486.15 (15)

12. 3rd S., F. 12169,V. 6, January 28,1851, for $ 97.93.
13. 3rd S., F. 12169, V. 77, January 20,1851, for $ 44.00.
14. 3rd S., F. 12680, V.52. June 30,1851, for $ 31.23
15. 3rd S., F. 12680, V. 33, June 24,1851, for $ 1,486.15.

Finally, Lightning rods- four points and 3 leads to the ground, were installed on the new shop in June 1851 at a cost of $ 48.60.[16]

In his annual report for the fiscal year ending June 30,1851, Major John Symington described the new musket factory shop as follows:

New grinding and saw-mill and carpenter's shop has been erected, and is now occupied. This building 110 by 36 feet, is similar in style to the other new shops; it is of brick, on stone foundations, with cut-stone water table, coping, door and window sills, &c., cast-iron door and window frames, roof covered with slate, and gutters and spouts of copper. The centre building (one-third of the whole length) is of two stories; the wings of one story, One of the wings is the grinding-mill (the south or east wing,B.dg.8A), now in full operation; the other wing, with the centre building, will accommodate the saws, planing machine, wood-turning lathes, and other machinery necessary for making arms chests,&c. The turbine wheel now in operation (in the grinding mill) will suffice for the whole of the machinery of this shop."[17]

The turbine water wheel, complete with flumes, implements, main upright shaft and bevel gearing had been purchased from the Ames Manufacturing Company of Boston, Mass. on September 20,1850, at a cost of $ 2,000 plus about $ 45.74 for railroad freight.[18]

Of the water wheel, Symington wrote in his annual report : One new turbine wheel had been placed in position at the new grinding mill " and substantial wheel pits of masonry sunk, together with cast-iron head gates,set in solid walls of grouted masonry." One water-wheel regulator had also been placed in position complete. "Heavy foundation walls of masonry have been erected in the new grinding mill,to support the cast iron frames for the (grind) stones which have been transferred from the old to the new shop, and placed in position. New housing for the (grind)

16. 3rd S., F. 12680, V. 69, to Decker and Robinson, July 3,1851, for $ 48.60.
17. Serial No. 611, Document No.1, pp.458-459.
18. 3rd Series, F. 11542, V.10, September 20,1850, part of an order for 3 cast-iron water wheels, for $ 6,000.00 plus $ 137.24 for freight. The other two turbines were put in the tilt hammer shop for barrel welding.

"stones have been made and attached, and extensive repairs done to the fixtures generally of the mill, which is now in complete running order."[19]

Total recorded cost of constructing the new shop, excusive of machinery, to December 31,1851, was $ 5,822.04. Total cost of construction was probably about $ 9,730.00.

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19. Serial No. 611, Document No. 1, p. 457.

CONSTRUCTION OF THE GRINDING MILL(8A,) Sawmill(Center-Bldg.8B), and Carpenters Shop(North Wing-Bldg. 8C), Musket Factory, 1850-51.

Project	Cost	Description of Work
For Foundation, Forebay, wheel Pit: To stone mason Edward Tearney	$ 2,808.40	For 109 17.27 cubic yards of rock excavation for 978 10.27 cubic yard of earth excavation for 842 9/25 perches stone mortar masonry. for 139 24/25 perches of dry wall masonry. for 728 9/12 sup. feet face hammered stone wall. for 485 3/12 lin. feet of cut stone, water table, steps, set.
To Brick mason William Collins	877.00	For laying 156,405 bricks in walls for laying 207 feet of brick cornice for setting 365½ lin.feet cut stone window sills and coping.
Stone Cutter Redmond Burke	$ 620.21	For providing $ 882 7/12 lin. feet of cut stone.
To brick maker William Collins	242.24	for making and delivering 55,750 bricks for transporting 106,444 additional bricks.
Carpenter Work Jesse Schofield, Meen & Brewing.	$ 783.66	For making total of 1,920 square and circular lights of sash;putting in 1st and 2nd floor flooring; 3,842 sq.feet of flooring, ceiling 3,234 square feet; framing and sheathing roof, 4,480 sq. feet, making 3 outside doors.
Slating: George W. Tacey	97.93	slating 4,806 sq.feet of roof.
Copper Gutters & Spouts, Dennis Snook	44.00	for 216 feet gutters, 120 feet spouts, and 8 heads for spouts.
Lightning rods	48.60	for 4 points and 3 leads, at 15 c per foot.
Total:	$ 5,822.04	Probable total cost: $ 9,730.00

Construction expenditures:

1849: $ 178.90

1850: 3,132.85

1851: 2,460.34

Total of cut stone used in construction of shop= 850 9/12 lin. feet.

12. The new Annealing Shop and Brass Foundry, Musket Factory, 1851-52

The Annealing House and Brass Foundry is Bldg. No. 14 on the 1859 Historical Base Map.

By 1850, the Annealing Shop and Proof House, built of stone in 1834 at a cost of approximately $ 1,872.36 (See Bldg. No. 15 on Map No. 3 (1848)), was in such ruinious condition as to be no longer safe to use. Accordingly Major John Symington paid the brick mason William Collins $ 129.77 in June 1850 for constructing a temproary annealing furnace and also a charring furnace in the old smiths shop, Bldg. No. 16 on Map 3 (1848).[1] The superintendent described this construction in his annual report for the year ending June 30,1850 as follows: A double-annealing furnace and stack of brick-work, with cast-iron front, has been erected in one of the old smiths shops; also, in the same shop, a new charring-furnace (for leather), with cast-iron cylinder."[2]

In his estimates for the 1851-52 fiscal year, Major John Symington requested the appropriation of $ 9,550.00 "for erecting a new annealing furnace and brass foundry at the musket factory", explaining the need as follows: "The old annealing shop has,from necessity, been abandoned, the walls threatening to tumble down, and the floor flooded more or less, at every freshet in the river. Temporary structures for this work have had to be resorted to till suitable permanent ones, which are much wanted, can be constructed."[3] The requested money was appropriated on March 3,1851.[4]

1. 3rd S. V. 24, to William Collins, June 26,1850 for 6½ days service of mason, tender, mortar; F. 11000. V.52 to Collins, June 26,1850, for $ 110.52. 20,249 brick apparently went into the new annealing furnace and 2,320 brick into the charring furnace. F. 11000 for $ 19.25,
2. Serial No. 587, Document No. 1, p.476, Item No. 6.
3. Harpers Ferry NHP Microfilm Reel No. 20, Vol. 7,p.694, Item No. 1.
4. U.S. Statues at Large, Vol. IX, p. 620.

This was the last structure at the musket factory to be designed and erected by Major John Symington.

Construction on the annealing house and brass foundry got underway during the summer of 1851. The stone cutter Redmond Burke was paid $ 412.89 for providing 453 3/12 lin.ft of cut stone and also steps for use as follows:

$ 191.16	for 162 feet of coping.	
172.86	for 258 feet of window sills,	
22.27	for 33 3/12 feet of water table.	
24.00	for 24 cut stone steps.	
2.00	for 1 day checking on steps.	
$ 412.89	453 3/12 ft of cut stone.	(5)

The stone mason Edward Tearney received $ 2,695.77 for executing the following construction on the foundations of the building:

$ 341.40	for 1,138 cubic yards of earth excavated.	
101.40	for 507 cubic yards of earth excavated for foundations.	
2,158.00	for building 1,079 perches of heavy mortar masonry, foundations.	
57,40	for 574 sup. ft. hammered face wall.	
34.20	for 342 ft of cut stone water table and sills set.	
3.37	for 1½ days service of stone cutter dressing water table.	
$ 2,695.77		(6)

Major Symington described this work in his report for the year ending June 30,1851, writing. "The excavation and stone masonry for foundation of annealing shop and brass foundry, is nearly complete and ready for the brick masonry. This building will be 109½ by 36 feet, divided by partition walls into three compartments, and of the same style of finish as the other new shops."[7]

The one-story brick walls were erected by N.P. Haller(who had replaced the deceased mason, William Collins) in the fall of 1851 for the sum of $ 1,057.10. This work included the following items:

$ 995.10	for laying 165,850 bricks.	
19.75	for laying 158 feet of cornice.(brick?).	
20.41	for setting 157 feet of cut stone coping.	
21.84	for setting 168 ft of cut stone window sills.	
$ 1,057,10		(8)

(5).3rd Series, F. 12680 V. 23, September 1,1851, for $ 412.89.
(6) 3rd S.. F. 12680, V. 54, September 8,1951, for $ 2,695.77.
(7). Serial No. 611, Document No. 1, p. 459,item No. 4.
8. 3rd S., F. 13107, V.17, November 5,1851, for $ 1,057.10.

The master carpenter Jeremiah Fuss was paid a total of $ 695.28 for performing the following carpenter work on the annealing shop and brass foundry:

October 31,1851 -	$ 377.54	for framing, constructing and sheathing 5,207½ feet for roof. (9)
December 12,1851	41.25	for making 15 large window and door frames, set, with the center.
	13.50	for 9 small window and door frames, ditto.
	36.30	for three large doors & frames, fitted & hung.
	7.75	for 1 small door and frame ditto.
	62.40	for making 624 circular light sash.
	51.84	for making 527 square light sash.
	105.00	for three ventilators on the roof complete.
	$ 317.74	Dec.12,1851 (10)
	$ 695.28	

Total of recorded expenditures on the construction of this building in 1851 was approximately $ 4,861.04.

Destruction of the Armory paymaster's vouchers for the years 1852 to 1861 by the National Archives staff during the 1940's makes it impossible to trace in detail both the final completion of the Annealing Shop and Brass foundry in 1852 and any repairs or alterations made from 1853 to 1861.

In his annual report for the fiscal year ending June 30,1852, Brevert Colonel Benjamin Huger, the new superintendent, reported: "The new annealing and brass foundry, described in the last report as ready for the brick masonry, has been completed."[11]

The Annealing House and Brass Foundry had cut stone water table, coping, window sills; apparently wooden door and window frames; copper gutters and down spouts. Its gable roof, probably covered with slate, was crowned on the ridge with three ventilators, one for each of the three compartments below.

9. 3rd S.,F. 13017, V. 11, October 31,1851, for $ 377.54.
10. 3rd S., F. 13107, V. 42, December 24,1851, for $ 317.74.
11. Serial No. 659, Document No. 1, p. 253, item 1.

Construction of the Annealing House and Brass Foundry, Musket Factory, 1851-52. Bldg. No. 14 on 1859 historical base map).

Project	Cost	Description of Work
Foundations: Edward Tearney	$ 2,695.77	for 1,645 cubic yards of excavation of earth. for 1,079 perches of heavy stone mortar masonry. for 574 sup.ft. hammered face wall. for laying 342 lin.ft. of cut stone water table, sills.
For cut stone Redmond Burke	412.89	for 453 3/12 lin. feet of cut stone water table , sills, coping, and stone steps.
For brick walls N.P. Haller	1,057.10	for laying 165.850 bricks. for laying 158 feet of brick cornice. for setting 157 feet of cut stone coping. for setting 168 ft. of cut stone window sills.
For carpenter work Jeremiah Fuss	695.28	framing and sheathing, 5,207½ feet for roof. for making 15 large window and door frames for making 9 small window and door frames. for making and hanging 3 large and 1 small doors and frames. for making 624 circular and 527 square light sash. for making three roof ventilators.
For making Brick	?	?
For slating roof	?	? 1852
For gutters and down spouts:	?	? copper gutters and spouts ,1852
Building 2 brick annealing furnaces	?	? brick, 1852-53
Total:	$ 4,861.04	Probable total cost= $ 9,550.00

13. Alterations to the Finishing or Old Bell Shop, 1845-51:

The Old Bell Shop, or Finishing Shop, is Bldg. No. 2 on Map No. 2 (1844), Bldg. No. 2 on Map No. 3 (1848), and Bldg. No. 3 on the 1859 historical base map.

The finishing shop, or Old Bell Shop, as it was usually called had been designed and erected by Superintendent James Stubblefield and Paymaster Samuel Annin in 1809-10. This workshop, the largest at the Harper's Ferry Armory prior to 1845, was two-story, built of brick, with a wood-shingle gable roof, and its dimensions were 131 by 45 feet. Its water wheels and forebay were constructed of wood. In 1824 a fire apparently swept through this building, leaving the brick wall standing, but destroying the floors, roof, and machinery. The structure was rebuilt in 1824 at a cost of $ 5,000; the new roof was slated and a lath and plaster ceiling was installed. In March 1825, a cupola with a bell was constructed on the center of the Old Finishing or Turning Shop's roof and the structure was henceforth generally known as the "Old Bell Shop."

At some unknown date after 1825, but prior to 1839 a large stone chimney stack was added to roof in order to accommodate a forge fire on each floor. Cost of this alteration was perhaps $ 5,000. Between 1833 and 1839 an approximate total $ 11,446 was spent to modernize the shop. The raceway and flume, including the forebay were rebuilt of stone and also enlarged and deepened, so that a new, larger, and more efficient wheel could be installed to drive the rebuilt machinery in the Bell Shop.

Probably because of its great width, 45 feet, in constrast to only 30 feet for the other old musket factory workshops, and its extensive rebuilding in the late 1820's and 30's, Major John Symington decided to preserve this old structure by altering it for modern use and replacing its machinery with newer items

The remodelled Bell Shop and the remodelled Armory Office building were

1. See Volume I for a detailed history of this building, 1809 to 1841, with summary pp. 255-256,

thus to be the only two surviving examples of the early(pre-1810) structures still to be standing at the Musket Factory in 1861.

The estimate for the 1844-45 fiscal year contained a request for $ 500.00 for the purchase of a large clock. It was explained" Much incovenience is experienced from the want of means for regulating properly the hours of labor. It is thought that the cost of a good clock would soon be reimbursed by the precision given to the signals for labor."[2] The money for this fiscal year was appropriated on June 14,1844,[3] so it is possible that this clock, if actually acquired, was added to the cupola of the Bell Shop in 1844 or 1845.

In his annual report for the year ending June 30,1845, under the heading of machinery made, Superintendent Symington reported that"26 feet of main working shaft, 19 counter shafts, with the requisite pulleys and appendages, (had been) put in operation in finishing shop(at the musket factory)."[4]

In June 1847, $ 23.42 was spent to repair the plaster in the Bell Shop.[5] In his annual report for the year ending June 30,1847, Major Symington reported: " 21 60/100ths square of new joist and flooring, and 11 66/100ths squares of new partition, have been put up in the finishing shop, the old floor having fallen in from decay."[6] The Paymaster's vouchers for the 3rd and 4th quarters of 1847 and all four quarters of 1848 are missing from their places in the National Archives Records, hence it is impossible to determine both the cost of alterations and who performed the work on the Bell Shop during this period. In the annual report for fiscal year ending June 30,1848, however, Symington described these changes as follows: "A large chimney stack of masonry in the bell shop, to accommodate a forge fire on each floor, has been taken down, and two portable forges, opening into sheet iron flues, substituted." He further reported that "The driving machinery

2. Serial No. 439, Document No. 6, p. 94, Item No.3.
3. U.S. Statues at Large, V, p.698. The original estimate of $17,000 was reduced to an appropriation of only $ 12,000. It is not clear if the money was provided topurchase the clock.
4. Serial No. 470, Document No.1, p.420.
5. 3rd S., F. 5623, V. 38, to R.J. and W. Brenn,June 10,1847,for $ 23.42.
6. Serial No.503, Document No.1, p 692, Item 3.

"in the bell or finishing shop has been improved by substituting pullies and cones of pullies for the continuous line of ___ drums on the main driving shaft; and removing as unnecessary, one line of counter machinery. By this arrangement the consumption of oil will be greatly diminished, and fewer bands required."[7]

In the estimates for the 1849-50 fiscal year, Major John Symington asked for $ 2,675.00 "for repairs to finishing shop, fitting up shelves and racks for patterns, and coloring the exterior of buildings." He explained the need, writing" The finishing shop requires gutters and down spouts, and a ceiling of boards for the upper story, the old lath and plaster ceiling being broken by the driving machinery, The patterns (for musket parts), which are very numerous and valuable, have now no special place of deposite, and suffer for the want of order and management. Some of the buildings only being colored, it is proposed, or uniformity and preservation, to color them all with a uniform fast wash."[8] The requested sum was appropriated on March 3,1849.[9]

The tinsmith Henry W. Edwards was paid $ 41.81 on May 18,1849 for repairing or making the copper spouting and gutters on the Bell Shop and one dwelling house.[10]

In March 1850 the carpenter Patrick H. Kelly received $ 100.00"for carpenter and labor ceiling the second story of the Bell Shop and casing pillars & girders,for the same."[11] In his annual report for the fiscal year ending June 30,1850, Symington also noted: Extensive repairs have been made on the large iron-overshot-wheel at the Bell Shop.[12]

7. Serial No. 537, Document No. 1, p. 347, Items 1 and 2.
8. Serial No. 538, Document No. 2, p. 118,119, item No. 4.
9. U.S. Statues at Large, Vo.IX, p. 376.
10. 3rd S., F. 9307. V. 22, May 18,1849, for $ 41.81.
11. 3rd S.,F,10673. V. 23,, March 8,1850, for $ 100.00.
12. Serial No. 587, Doc.1, p.475,

In October 1850 $ 5.18 was spent to plaster 51 8/9 square feet of ceiling of the wash house at the Bell Shop.[13] In May 1851 the carpenters Meen and Brewing received $ 70.00 for "making alterations to wash house at Bell Shop and Boring Mill, to fit it for holding the grinder (?)."[14] In June 1851, lightning rods- 2 points and 2 leads to the ground, were installed on the roof of the Old Bell Shop at a cost of $ 50.40.[15]

13. 3rd S. F. 12169, V. 1, to Reuben & Dowling, October 18,1850, for $ 5.18.
14. 3rd S., F. 12680, May 21,1851, for $ 70.00.
15. 3rd S. F. 12680, V.69, to Decker and Robinson, July 3,1851, for $ 50.40.

14. A Coal Scale and Shed, Musket Factory, 1849.

A minor structure erected for Major John Symington in the musket factory yard in 1849 at a cost of $ 85.02 was a coal scale and shed.

The stone mason Peter Litle received $ 45.52 for the following work:

$ # 4.31 for excavating 14 10/27 cubic yards of earth.
39.42 for erecting 26 7/25 perches of stone masonry.
1.79 for paving 14 3/9 sq.yards with brick.
$ 45.52 (1)

The carpenters Landerkin and Rowe were paid $ 39.50 "for making a wooden shed over the coal scale".[2]

The location of this scale in the musket factory yard is unknown. As the coal was delivered from barges that entered the armory canal, the scale was probably located near the armory canal and perhaps adjacent to the Lumber House and Bituminous coal bins, Bldg. No. 10 on the 1859 base map(Bldg. No. 10 on 1848 Map No. 3).

1.3rd Series, F. 9307, V. 36- June 11,1849,,for $ 45.52-money was paid to Edward Tearny as executor of Peter Litle,deceased.
2. 3rd., F. 9093, V.27, March 3,1849, for $ 39.50.
3.3rd S. F. 10276, V. 16, Nov.3,1849, for $ 160.83.

15. Repairs and Alterations to the Boring Mill, 1846-1851:

From 1846 to December 31,1851, a total of approximately $ 115.72 was spent making repairs or alterations to the Boring Mill. In 1846 6½ feet of copper spouting was added at a cost of $ .65.[26] In 1850 the brickwork was repaired for $ 3.50.[27] Also in 1850, the exterior brick walls, 644 square yards, were colored with one coat of cement wash.[28] In July 1851 lightning rods, consisting of three points with three leads to the ground were installed at a cost of $ 41.55.[29] Finally, in August 1851, the carpenter Jeremiah Fuss was paid $ 55.00 under a contract for making window frames, door frames, sash, door, and putting up a board partition wall in the Boring Mill.[30]

The Boring Mill is Bldg. No. 3 on Map No. 3 (1848).

26, 3rd S., F.4403, V. 22- To Denis Snook, Sept. 8,1846.
27. 3rd S., F.12168-V. 20, to William Collins, Nov.30,1850,for $ 3.50.
28. 3rd S., F. 11542, V. 12, To Francis Simmons, Sept.27,1850.
29. 3rd S., F. 12680,V.69-Decker and Robinson, July 3,1851.
30. 3rd Series, F, 12680, F. 10, to J.Fuss, Aug.8,1851.

16. Horse and Carriage Shed, Musket Factory, 1851:

In December 1851 Superintendent Brevet Colonel Benjamin Huger expended $ 104.72 to erect "horse and carriage shed" at some unknown location. It could have been located at the Armory stable, Block F, Lot 2, Shenandoah Street, or perhaps more likely, near the Armory Office Building(No. 2 on 1859 base map) and gates to the Musket Factory, for parking visitors" horses and carriages. The foundations of the building were constructed by Edward Tearney for $ 27.72, who performed the following work:

$ 1.80 for excavating 6 cubic yards of earth
25.92 for erecting 17 7/25 perches of stone wall, foundation.
$ 27.72 (1)

The master carpenter Jeremiah Fuss received $ 77.00 for doing the carpenter work for constructing the new shed. (2)

In his annual report for the fiscal year ending June 30,1856, Superintendent Henry W. Clowe reported: "The horse shed, occupying a position in the Armory yard, near the entrance gate, has been removed to a more suitable site,, on North Cliff Street...." (3) This probably refers to the shed that was constructed in 1851.

1.3rd S., F. 13107, V. 41, December 24,1851, for $ 27.72.
2. 3rd S, F.13107, V. 42, December 24,1851, for $ 77.00.
3. Serial No. 876, p.389.

17. Repairs and Alterations to the Proof House, 1845 - 1851:

In March 1850 the carpenter Patrick H. Kelly was paid $ 38.00 for making 10 large blinds and taking down roof and repairing the sheathing at the musket factory proof house.[8] In 1849 the exterior brick walls of the building were colored by Francis Trinmous with cement wash at a cost of $ 31.29.[9]

The Proof House is Bldg. No. 14 on Map No. 3 (1848).

8. 3rd Series, F. 10673, Voucher 23, To Patrick H. Kelly, March 8, 1850, for $ 38.00. $ 30.00 for making blinds and $ 8 for repairing Sheathing. Patrick H. Kelly, incidently had help build and was owner of one-half of Bldg. No. 38(Park Building) on Shenandoah Street.

9. 3rd S., F. 10276, V. 16, dated November 3, 1849, for $ 31.29.

18. Repairs and Alterations to the Warehouse, 1845 - 1851:

The warehouse is Bldg. No. 18 on Map No. 3 (1848).

In 1849 approximately $ 341.95 was spent making repairs to the warehouse.[21] This included $ 1.31 for repairing gutters; $ 12.00 for putting up handrail and banister stairs of storehouse;[22] 50 cents for one-fourth day work of brick mason;[23] $ 47.32 "for coloring [exterior] walls of storehouse with cement wash;[24] and finally, $ 281.32 for "filling in the "cellar of warehouse" with 398 3/4 cubic yards for $ 119.62 and paving ground floor, 269½ square yards" for $ 161.00.[25] In his annual report for the year ending June 30,1849, Major Symington described the work on the cellar of the warehouse as follows : "The wooden floor of [the] new storehouse, at the musket factory, being decayed, fell in; the damage has been repaired by filling in the space an average depth of five feet with quarry spalls, and covering with large stone flagging."[26] To recover the money that had been expended in repairing the wooden first story floor, the annual estimates for July 1,1850-June 30,1851 requested the sum of $ 505.00 to cover the cost of this construction.[27] Congress appropriated the requested amount on September 28,1850.[28]

Final changes to the building that can be documented from existing Armory Paymaster records occurred in June 1851, when $ 31.35 was spent to have lightning rods installed on the warehouse. Two points with two leads to the ground, 209 feet, were placed on the storehouse.[29]

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21. R.G. 217-3rd S., 9093-V.7-Jan.27,1849-to Tinsmith Henry W. Edwards.
22. R.G. 217-3rd S., 9307-V. 77-July 9,1849-William J. Rose, Carpenter.
24. R.G. 217-3rd S.-10276-V.16-Nov. 3,1849-Fancis Trinmous.
23. R.G. 217-4rd S, 10276-V. 8-Oct.10,1849-William Collins,brick mason.

25. R.G.217-3rd S., F. 9307-V. 36- June 11,1849=To Edward Tearney, as executor of the estate of Peter Litle, decased stone mason.
26. Serial No. 549-Document No. 1, p. 366.
27. Serial No. 568, Document 4,p.156-157.For repairing the storehouse at Musket Factory -$ 505.00. The wooden floor of this building having fallen in from the decay of the timber, it becomes necessary to provide a new flooring,which is to be made permanent by filling in with quarry spalls to the level of the floor, and paving with rough flagging."
28. U.S. Statues at Large, IX, p. 507.
29. R.G. 217-3rd S., 12680-V. 69- July 3.1851 to Decker and Robinson, They charged 15 cents a foot, Total of bill $ 31.35.

19. Repair of the Old Workshops at the Musket Factory, 1845-51:

From 1845 to 1851 a recorded total of approximately $ 4,430.72 was spent to make repairs to the old shops, as follows:

1845:	$ 508.91	includes $ 368.91 for new heating system for Boring Mill.)
1846.	3,081.46	(includes $ 3,009.88 for cast iron forebay)
1847:	records for one-half year missing	
1848	records missing	
1849	433.39	
1850	278.96	
1851:	127.90.	

20. Repair of Old Grinding Mill and Old Tilt Hammer Shop, 1845 - 51:

The major repair work done during the period 1845-51 was performed on the Old(1831) Grinding Mill,Bldg. No. 9 on Map. No. 3 (1848), and the Old(1834-37) Tilt Hammer Shop for Barrel Welding, Bldg. No. 11 on Map No. 3 (1848).

In his estimates for the 1846-47 fiscal year, Major Symington requested a total of $ 12,900.00 to rebuild the wooden water wheels and forebays of these two structures. Of the total, $ 10,400 was earmarked for the tilt shop and $ 2,500 for the grinding mill.

At the grinding mill, Symington hoped to replace the decaying wooden forebay with a new one of stone and the old wooden wheels with new ones.[15]

At the tilt hammer shop, the sum of $ 2,600 was to be used to replace its rotting wooden forebay with a new one of cast iron, and to also replace old wooden wheels with new ones.[16]

The sum of $ 7,800 was to be used to reconstruct the wooden hammer frames of six tilt hammers for barrel welding with stone frames. Six wooden wheels should be renewed and their shattered flues rebuilt.[17]

The requested amount of $ 12,900 was appropriated on August 8,1846.[18] On October 10,1846 a cast-iron forebay and penstock for the tilt hammer shop was purchased from Ross Winans for $ 3,009.88.[19]

In his estimates for the 1847-1848, Symington requested an additional appropriation of $ 2,700 "for raising the floor of the barrel-welding shop, and for replacing the tub-wheels now used for barrel-welding,by turbine wheels." He explained that the floor"is now, in ordinary freshets" under water", thus stopping all work. Also that turbine wheels, unlike tub wheels were"not materially affected by back water ." [20] This money was appropriated on

15. Serial No.481, Document No. 9, p.111,112, item 11.
16. Srial No.481, Doc. No. 9, p. 111,112, Item 10.
17. Serial No. 481, Doc. No. 9, pp. 111,112, item 9.
18. U.S. Statues at Large, IX, p.69.
19. 3rd S., F. 4837, V. 2, October 10,1846, for $ 3,009.88.
20. Serial No. 497, Document No. 3, p. 142, item 7.

March 2,1847,[21] thus bringing the total available for work on the tilt hammer shop to $ 13,100, and the grand total for this and the grinding mill, to $ 15,600.

Finally, in his estimate for the 1848-49 year, Symington requested and received on August 14,1848, the sum of $ 850.00"for building a room for inspecting forged barrels at the musket factory,"explaining:"There is neither room nor light for inspecting barrels in the welding shop, consequently these barrels have to be carted down to the lower shops to be inspected, and sent back to have the cone seat welded on. This great inconvenience and expense will be avoided by having an inspecting room adjoining the barrel forging shop."[22] Total of $ 13,950 thus appears to have been expended on the tilt hammer shop for barrel welding and $ 2,500.00 on the old grinding mill,making a grand total of $ 16,450 spent for repairs on the two structures.

In his annual report for the fiscal year ending June 30,1848, Major John Symington described this repair work as follows:

"Extensive repairs have been made to the barrel-welding shop, and to the wheel and forebay of the grinding mill.

The forebays and penstocks of these shops have been repaired- almost renewed, and the wheels repaired. The hammer frames for welding barrels have very generally required repeated repairs. An entirely new frame for the hammer, for drawing iron and steel, has been made. The heavy repairs,so frequently recurring to this old and worn out machinery will add considerably to the cost of producing the musket.:"[23]

The old grinding mill, as has been noted, was pulled down in 1850,

21. U.S. Statues at Large, IX, p151.
22. Estimate in Serial No. 514, Document 2, pp.110,111, item 3.; appropriation in U.S. Statues at Large, IX, p.306.
23. Serial No. 537, Document No.1, p.347, item 3.

and the old tilt Hammer shop for barrel welding, Bldg. No. 18 on Map No. 3(1848), was to be demolished during the fiscal year ending June 30, 1853.[24]

24. Serial No. 692, Document No. 1, p.277.

21. Musket Factory Yard Privies, 1849-51:

From 1849 to 1851 a total of approximately $ 111.17 was expended on the construction of privies in the musket factory yard.

On December 27, 1849, the carpenter Patrick H. Kelley received $ 18.00 for making doors, floors, and ceiling for the (probably brick) privy of the Public Offices (Bldg. No. 2 on the 1859 historical base map.)[1]

On September 30, 1850, the carpenter Jesse Schofield was paid $ 51.67 for "carpenter work building of one new privy for armory 18 by 7 feet with 7 stalls, including the removal of the old privy and constructing a new one in its stead, the same dimensions.:"[2]

In 1851 $ 42.50 was spent to erect a new privy. Of this total, $ 4.50 went to the stone mason Edward Tearney for providing the services of a stone cutter, who spent 2 days "cutting out wall under (B.&.O) railroad for new privy."[3] The balance, $ 37.00, was paid to the carpenter Jeremiah Fuss for "Construction of one new privy for shops, for $ 35.00; and $ 2.00 for repairing old privy for the shops."[4]

1. 3rd S., F. 10276, V.46, Dec. 27, 1849, for $ 18.00.
2. 3rd S., F. 11542, V.14, September 30, 1850, for % $ 51.67.
3. 3rd S., F. 13107, December 24, 1851, for $ 4.50.
4. 3rd Series, F. 13107, December 24, 1851, for $ 37.00.

22. Coloring Extrior Brick Shop Walls with Cement Wash, 1849-50:

The details of applying cement wash to the exterior brick walls of each musket factory building has been mentioned in the discussion of that edifice. Here is is noted that a total of $ 321.03 was expended on this project in in 1849 and 1850. Of this sum, $ 160.83 was paid to Francis Trinmous on November 3, 1849[3] for coloring a total of 3,480 square yards of brick wall. The balance, $ 160.20, went to Francis Sinnons on September 27, 1850 for applying three coats of cement wash to 2,718 square yards of brick wall.[1]

In his annual report for the fiscal year ending June 30,1851, Major John Symington reported : "Two coats of patent paint, in oil, have been applied to the exterior walls of all the shops(except three not yet completed) and storehouses(at both the musket and rifle factories); also, to the commanding officer's, paymaster's, and master-armorer's quarters."[2]

1. 3rd S., F. 11542, V. 12, September 27,1850, for $ 160.20.

2. Serial No. 611, Doc.1, p. 459.

23. Improved Heating Facilities for the Workshops, 1850-51:

In his annual report for the year ending June 30,1851, Superintendent Symington reported "The facilities for warming shops have been very much improved at the musket and rifle factories, by 644 feet of sheet iron stove pipe, 11 inches in diameter."[1] Cast iron stoves were being made by Hugh Gilleece at his foundry on Virginius Island. On April 8, 1846, the Armory purchased three cast iron stoves from Gilleece for $ 55.16 "for heating armory shops."[2] On September 25,1850, the armory also purchased 775 feet of stove pipe from the tinsmith Alexander S. Vernon, for $ 50.37 :"for heating workshops."[3].

1. Serial No. 611, Document No.1,p. 457.
2. 3rd S., F. 3502, V.54, April 8,1846, for $ 55.16.
3. 3rd S. F. 11542,V.11, September 9,1850, for $ 50.37.

24. Lightning Rods on Musket and Rifle Factory Buildings, and on the Quarters of the Commanding Officer and the Paymaster, 1851:

The details and cost of placing lightning rods on each public building are discussed in each section dealing with structures at the Musket and Rifle Factories and also for the sections relating to the construction of the new dwelling houses for the Commanding Officer and the Paymaster. Here it is noted that this work was performed by Decker and Robinson, who were paided a total of $ 597.75 for this service on July 3,1851. For this sum they furnished the materials and placed in position on the public buildingsa grand total of 3,955 lineal feet of lightning rods and points at a charge of 15 cents per feet.[1] In his annual report for the fiscal year ending June 30, 1851, Superintendent John Symington noted that lightning rods had been attached to all of these public buildings.[2]

1. 3rd S., F. 12680, V. 69, for $ 597.75, part of payment totalling $ 677.75.
2. Serial No. 611, Document No. 1, p. 459.

25. Purchase of Land to Protect the Musket Factory from Fire, 1847 - 49:

In Volume One of this study, pp. 196-200, it was narrated how Superintendent James Studdblefield, in April 1828, first suggested the desirablity of purchasing about one acre of the Wager Family land that was located in the Six Acre Reservation, immediately to the west or south of the Musket Factory tract and running parallel with the Musket Factory canal for about 140 yards. Only a 15 foot wide alley separated the numerous wooden structures on this private land from the musket factory workshop. Stubblefield pointed out that the acquisition of this land and buildings, would permit the demolition of the edifices, many of which were" miserable tippling shops" that were contrary to good morals and industrious habits of Armory workmen , and also fire hazards. The narrow alley could also be widened into a broad street, thus creating an effective fire lane to protect the musket factory shops. It would also make it possible to widened and more readily maintain the armory canal. On July 2, 1836, after several unsuccessful requests, Congress finally appropriated the sum of $ 5,000.00 to purchased the proposed one acre of Wager land. By this date, however, the Wager heirs were involved in financial and legal difficulties and were no longer able to sell the one acre of land they had been ready to deliver for this price as late as 1834. The whole project in 1836 thus became abortive.

Major John Symington, as a young lieutenant, had served as acting superintendent of the Harper's Ferry Armory in August 1829 and thus may have learned of this plan to purchase the Wager land. It is certain, however, that shortly after

assuming his duties as superintendent of the Harper's Ferry Armory, in November 1844, Symington revised the 1828-36 project and expanded it. In a letter to the Chief of Ordnance, Lt. Col. George Talcott, dated December 12,1844, Major Symington, wrote:

> I have the honor to enclose, herewith, schedules A and B, with a plat (see Map No. 2) of a part of the public property at this place, with the adjacent lots belonging to private individuals (in the Wager Six Acre Reservation).
>
> These schedules and plat exhibit the relative locality of some of the public buildings, and of such lots and parts of lots adjoining, belonging to private individuals, with a description of the improvements thereon, and the price for which the whole can be purchased for the United States from the respective owners. (Schedules A and B are in Appendix No. I).
>
> These papers have been prepared with a full belief that when the danger and inconvenience of having private property, over which the United States has no control, so immediately contiguous to public buildings pf great value, are made known and understood, speedy arrangements will be made to purchase out such private property, and thus secure the control of it to the United States.
>
> The considerations to offer for the purchase of this property are. to secure the public buildings bordering the armory canal from danger of fire occurring along the alley; to which casualty there is great liability, from the many stables and small shanties situate thereon.
>
> The public buildings adjoining are generally filled with machinery, and immensely valuable; the loss of any one of which would be threefold the value of the whole of those private lots with their improvements- not to consider the loss to be sustained by a general interruption to the operations of the armory.
>
> But even should fire originate in the rear of one of the public buildings, the confined situation of the narrow alley would be a serious (perhaps insurmountable bar) to its being checked, as was the case May ,1824, when a valuable building (The Old Bell or Finishing Shop, Bldg. No. 3 on 1859 map) was totally con. ned (except for its brick walls) from fire occurring in a shed in the rear, co ring one of the water wheels. Could access have been had readily, and room to play the engines in this alley, the fire would have been promptly put out before it communicated to the main building.
>
> Another great inconvenience is, that this alley is, for the most part, occupied by stables, and used by the tenants of the lots, whose residences are generally on High Street, as an approach to their premises; here is received their wood and other supplies, and it is made a place of deposite for all the filth and offal made in the vicinity - its only place of removal, whenever it is remcved, being into the armory canal; thus occasioning labor and expense in cleaning out from time to time.

This too has been a fruitful cause, and perhaps the chief one, of the sickness that at times prevails.....

The schedule A includes the whole of such lots, and the improvements thereon, between High street and the alley (in the Wager Six Acre Reservation), that can be purchased. Also the two lots and buildings, Nos. 11 and 12 (in the Wager Ferry Lot Reservation), at the entrance of the armory enclosure, about which I shall say more hereafter; and considering all things, I would certainly recommend that this entire purchase be made, rather than a part, as shown in Schedule B/ (Schedule A asked for $ 50,261 and Schedule B for only $ 31,648). The purchase would secure some good comfortable dwellings on High street, suitable for inspectors and other officers whose quarters are furnished to them. And thus quartered, the stables, shanties, &c. being removed, and the alley permanently widened to a broad avenue of (say) 40 feet, they could have the armory buildings always under view, and the declivity between these dwellings and the avenue neatly cultivated. There is a want of good buildings for dwellings for the armorers. The greater part of those built many years since, of wood, and in low damp situations, are in wretched bad condition, continually requiring repairs, so as to consume in a great degree the amount received from rents. The purchase of those in schedule A would secure several good residences, so much needed to be occupied in place of so many of the old structures now tottering in decay, and consuming by continual expenses for repairs, the rent fund.

The Lots Nos 11 and 12 (in the Wager Ferry Lot Reservation) are covered entirely with buildings occupied as stores. They are situated, as you will perceive on the plat (Map No 2), in front of the armory enclosure, and allowing only a narrow entrance to the armory. This approach is most generally filled with horses, wagons, &c., and the empty packages turned out from the stores, and is the usual mart where the country people exhibit their products for sale, rendering the place filthy, and frequently interrupting the entrance into the armory.

This nuisance can only be corrected by purchasing out the property... "

After discussing the merits and demerits of the alternative plan Schedule B, Symington also requested $ 2,000.00 to purchase Dr. Nicholas Marmion's leasehold of U.S. land, which will be given further consideration in the section on Armory Dwellings, and $ 1,500.00 to purchase a large portion of an island that was located in the Potomac immediately to the east or north of the musket factory. With regards to the island, Symington commented:

I submit also a proposition from Mr. Byrnes, the owner of a part of what is called Byrnes's island, the reat of the island being already in the possession and occupancy of the United States.

As the price asked appears to be reasonable, ($1,500), I would recommend the purchase of it, as the only means of keeping off bad neighbors and of affording excellent gardening ground for armorers, who will be allowed to cultivate it on sufferance." 1

1. Serial No.464, Document No. 43, pp.6-8.

Under Schedule A, Symington hoped to buy 22 Wager Lots containing 40 buildings for $ 47,761 (plus $ 3,500 to acquire the Marmion Lease and Byrnes Island), making a total of $ 51,261.00 Under Schedule B, only 18 Wager lots with 35 buildings would be acquired for $ 29,648 (plus $ 2,000 for the Marmion lease, bringing the total to $ 31,648).[2]

Impressed with Symington's plans, Chief of Ordnance George Talcott, transmitted Symington's long memo, Schedules A and B, and the plat, to the Secretary of War _____ on January 6 1845, as a part of his annual report, strongily endorsing proposal in the following words:

> Some years ago(,(viz: in 1830), it was deemed proper to purchase one acre of land at the lower end of the armory canal, on the Potomac, to give more room for its extension, and quiet all claims to the land on its margin. The price then asked was $ 5,000. The appropriation for this purpose was ultimately made in 1836; but, in the mean time, some of the land had changed owners; buildings had been erected on it; the price then demanded was for beyond the amount appropriated; it could not be purchased, and the money reverted to the surplus fund in the treasury. The reasons which formerly required this purchase have existed and gathered new force in consequence of the manner in which the ground is now occupied, but the cost at this time will be far beyond anything heretofore demanded. The officer in charge of the armory has presented a sketch of the ground, showing the position of all the buildings upon it, and estimate of the amount necessary to purchase the whole. I respectfully urge the importance of his views, as set forth in the papers herewith, Every year will add to the value of the land, and the necessity for the purchase will become stronger, as the hazard to the valuable machinery and workshops becomes greater. Although the cost will now be great, the position of things will not be improved by delaying the measure; and I therefore recommend the purchase at this time... (3)

The Ordnance's Department's estimates for the 1846-47 fiscal year contained a request for $ 50,261.00 to purchase land for the musket factory in accordance with Schedule A.[4] Congress appropriated the requested $ 50,261 on August 8, 1846.[5]

A. Acquisition of the Wager Lots for Fire Protection, 1847 -49:

The purchase of the Wager land got underway in 1847 and was completed as far as it was possible to go, some owners still refusing to sell, in 1848.

2. Serial No. 464, Document 43, pp.9 to 12 contains Schedules A and B, but did not publish the 1844 map or plat, Map No. 4.
3. Serial No. 464, Document No.43, 2-3.
4. Serial No. 481, Document No.9, pp. 111,112, item No. 19.
5. U.S. Statues at Large, IX, p. 69.

Although funds were appropriated on August 8,1846, the Armory was unable to begin purchasing any of the desired property until June 1847 for the following reasons:(1) Some owners were unwilling to sell at the established prices. (2) Since the Schedule A of estimated prices for lots and buildings had been submitted on December 12,1844, additional improvements had been made on three lots, thereby increasing their value. Their owners refused to sell unless they received an increased compensation of these improvements.[5A] Finally, under the terms of the 1846 appropriations act, the entire area had to be acquired for the specific amount of $ 50,261, or not could be purchased at all. In this situation Superintendent Symington informed Chief of Ordnance Talcott on December 4,1846,[5B] the Armory could not legally purchase any portion of the desired land.

These obstacles were surmounted: first, by having Congress pass a special act on March 3,1847,[5C] which authorized the purchases of parts of the desired land. Second, by deciding to relinquish the plan to purchase Lots No. 30, 31, and 32, and a part of Lot 29. The money saved by not acquiring these lots could be used to meet the increased prices demanded on the other lots. It was believed that the deleted property was located so far from the Musket Factory workshops, that any structures built on those lots would not endanger the public buildings in case of fire. Secretary of War Wilkins approved the changes in plans for eliminating certain lots on April 29,1847.[5D]

After the Hon. James M. Mason examined the titles and the Attorney General approved his report, the money to purchase the property was sent to Armory on June 6,1847.[5E]

5A. Symington to Lt.Col. George Talcott,Chief of Ordnance, August 18,1846, Harpers Ferry NHP Microfilm Reel 23, V.7, p.679.
5B. HFNHP, Reel 23, V.9, p.736,
5C. Reel 20, Vol. 7, p.657. U.S Statues at Large, IX,p.151.
5.D. Reel 20,V.1, p.15.
5.E. Reel 23, V.9, p.826. Also see Sullivan, Arthur L.,"Historic Building Site Survey Report: Wager Lots No. 17 - 34, 1782-1869,Harpers Ferry National Monument, W.Va.(N.P.S. typescript, Harpers Ferry NM, W.Va., May 15,1859),.13-15.

On March 3,1849, Congress made the further appropriation of $ 200.00 to purchase a small Wager lot, part of No.15, subdivision 4 , that had not been included in the Schedule A listing.[6] This addition increased the total money made avaliable to buy land to $ 51,461, of which $ 47,961 was earmarked to acquire Wager lots.

The annual rate of expenditure for acquiring land was as follows:

Year	Land and Bldgs. adjacent Musket Factory	Dr. Nicholas Marmions lease	for Byrnes Island	Total
1847	$ 35,088.33	$ 2,000.00	0	$ 37,088.33
1848	3,640.00	0	1,500.00	5,140.00
1849	209.00	0	0	209.00
Total:	$ 38.937.33	$ 2,000.00	$ 1,500.00	$ 42,437.33

A balance of $ 9,829.67 was left in the account on December 31,1851 because the owners refused to sell.[7]

The chart on the following page presents a comparsion of the estimated prices as given in the 1844 Schedule A and the actual prices paid in 1847-49. Of the 25 items included in the plan, 21 were acquired, but three of the latter were for only a small portion of a lot, and not the entire property as originally intended.

B. The Byrnes Island Purchase, 1848:

On July 28,1763, the royal governor of Maryland, Horatio Sharp. had granted Robert Harper a patent to an island in the Potomac River containing about 10 acres of land. This island, which was located opposite to the future site of the musket factory, passed through Harper's heirs to the United States

6. U.S. Statues at Large,IX,p.372.
7. A fully documented account of the purchases1847-49, will be found in Charles W. Snell,"The Acquisition and Disposal of Public Lands at the U.S. Armory at Harper's Ferry,Virginia, 1796-1885," (Typescript, Denver Service Center, National Capital Team, December 1979), Vol. I,pp.15-20.

On November 14,1853 and January 13,1854, $ 7,000.00 of the balance of $ 9,829.67 was to be utilitized to purchase Wager Lot No. 11 and the building standing on it.

CHART- LAND ACQUISITION, 1844- 1849

Wager Lot No.	Schedule A Estimate for Land	For Bldgs.	Total	Prices Paid For Land	For Bldgs.	Total	Date of Purchase	
11	$ 2,286	$ 4,000	$ 6,286	-	-	-	Not brought	
12 NE	1,600	1,600	3,200	1,833.35	3,166.00	4,999.35	9/15/47 7/29/48	1
12 SW	2,500	2,500	5,000	2,500.00	2,500.00	5,000.00	7/1/47	2
16	182	218	400	237.00	0	237.00	6/6/48	3
17	182	18	200	237.00	0	237.00	6/6/48	4
18	725	1,700	2,425	1,806.00	800.00	2,606.00	7/1/47 7/2/47	5
19	725	1,700	2,425	750.00	1,845.00	2,595.00	6/30/47 7/9/47	6
20	725	2,500	3,225	833.33	3,500.00	4,333.33	6/847 9/4/47	7
21	750	2,050	2,800	1,000.00	2,000.00	3,000.00	7/1/47	8
22	750	2,200	2,950	1,000.00	2,500.00	3,500.00	7/1/47 6/6/48	9
23	800	100	900	900.00	0	900.00	3/7/48	10
24	750	850	1,600	200.00	222.66	422.66 *	6/7/47 6/8/47	11
25	600	50	650	224.66	0	224.66 *	6/7/47	12
26	800	1,800	2,600	833.33	2,250.00	3,083.33	6/8/47 9/14/47	13
27	800	1,200	2,000	1,000.00	1,000.00	2,000.00	6/9/47	14
28	800	1,200	2,000	400.00	0	400.00 *	6/8/47	15
29	800	700	1,500	1,000.00	750.00	1,750.00	10/2/47	16
30	800	900	1,700	0	0	0	not bought	
31	350	60	410	0	0	0	not bought	
32	1,000	100	1,100	0	0	0	not bought	
33	350	40	390	400.00	40.00	440.00	10/2/47 6/8/47	17
34	800	2,200	3,000	1,000.00	2,000.00	3,000.00	10/2/47	18
15-4	200	0	200	209.00	0	209.00	5/28/49	19
Subtotal 23 lots	19,275	28,686	47,961	$ 15,357.69	23,579.66	38,937.35	19 lots purchased	

*. Only a small portion of the lot purchased.

by will and a deed to the Government, the later dated June 15,1796, which gave the United States" an island in the River Potomack opposite to Harper's Ferry containing about Twenty Acres."

In 1815 or 1816, Patrick Byrnes had obtained a patent from the State of Maryland claiming the entire large island, including the 20 acre U.S. section. In an suit held in a Washington County, Maryland, court, Byrnes succeeded in establishing his title to about 30 of the 40 acres the island was then believed to contain. Title to the remaining 10 acres was held by the Harpers Ferry Armory.

In 1841 Byrnes sold a very small portion of the island to the Baltimore and Ohio Railroad company, who purchased the lot as a footing for a possible railroad bridge that the company might wish to build over the Potomac. On February 7, 1848, Patrick Byrnes sold all his remaining portion of the island, about 72 3/4 acres,to the United States for $ 1,500.00, thus eliminating the possible development of that island. This addition increased the total land holdings of the armory to about 1,949 acres.[8]

C. Creation of North Cliff (later Potomac) Street, 1848-51:

Buildings located on the former Wager Six Acre land and fronting on the 15 foot wide alley that ran along the armory canal were demolished or removed after their acquisition by the U.S. Armory, 1847-49, thus eliminating both a fire hazard and a source of filth. Twenty-feet in depth of lower(or alley) end of each acquired lot was made into a forty-foot wide fire lane that was known first as North Cliff Street and later as Potomac Street. The new avenue, however, extended only from just south(or east) of lot 16 north (or west) across Wager Lot 34. The alley from Lot 15 south to Shenandoah Street was still only 15 feet wide;(See Map 2 1844) Map. 3 ,(1848). Major Symington

8. Snell, C.W., "The Acquisition and Disposal of Public Lands at the U.S. Armory at Harper's Ferry,Virginia, 1796-1885",pp.19-20.

described this work in his annual report for the fiscal year ending June 30,1851 as follows: "The grading of the street along the (armory) canal, and the building of the stone wall on one side of said street, at the foot of the precipitous slope, to prevent the wash being deposited in the canal, is nearly completed. The grading of the road extends about 1,100 feet along the canal on a width of about 40 feet, requiring an average depth of excavation and filling of 1 4/12 feet; the wall is 667 feet in length, and 2½ feet thick."[9]

9. Serial No. 611, Document No. 1, p. 459., item 5.

26. Armory Entrance Gate and Fence: 1846, 1849:

Major John Symington planned to construct a formal entrance and fence to to musket factory yard. ON November 22,1845, the stone cutter Redmond Burke was paid $ 31.00 for providing four cut-stone posts to be used at the armory gates.[10] In the estimates for the 1846-47 fiscal year, the superintendent also requested $ 350.00 for building a "Fence and gate at the upper end of the armory yard."[11] This entrance would be located at the northern or western end. Congress appropriated the desired amount on August 8, 1846.[12]

In his report for the year ending June 30,1846, that there had been built "Wrought-iron gates, for the main entrance into the armory grounds: a large double and two large single gates."[13] In the estimates for 1847-48, Symington asked for $ 1,100.00 "For enclosing wall and iron railing at the entrance of the armory yard," explaining that "The removal of buildings mentioned in Schedule A., attached to last year's estimate (building located on Lot No. 12) will leave this end of the yard open to the main street and without enclosure. It is proposed to enclose it with a low brick wall and cast-iron palings."[14]

The requested sum was appropriated on March 2, 1847.[14A]

The acquisition of complete title to Wager 12 on July 29, 1849 at a

10. 3rd S., F. 3122, V. 27, November 22,1845, for $ 31.00.
11. Serial No. 481, Document No. 9, p.111, item No. 12.
12. U.S. Statues at Large, IX, p.69.
13. Serial No. 493, Document No.1, p. 165, Item No. 12.
14. Serial No. 497, Document No. 3, p. 142, item No. 8.
14.A. U.S. Statues at Large, IX, p. 151.

total cost of $ 9,999.35 for the buildings and land enabled construction to get underway in 1849. The large brick stores on Lot 12 had to be demolished. Redmond Burke provided the cut stone for the entrance; Peter Litle constructed the stone foundations and the brick mason William Collins erected the brick walls.

Redmond Burke was paid $ 411.50 on July 24,1849 for providing the following "cut stone for entrance":

$ 96.00	for 64 feet cut stone coping,wide.
206.50	for 175 feet of cut stone coping, wide.
40.00	for 8 ft cut stone caps for piers.
60.00	for 15 ft cut stone caps for piers.
6.00	for 1 ft. cut stone cap for pier.
3.00	for cutting piers by the day, 1½ days.
$ 411.50 (15)	

In early June 1849, the stone mason Peter Litle received $ 84.40 for his services "on the enclosing walls of the armory yard:"

$ 27.25	for filling in with 136 8/27 cubic yards of earth.
6.11	for excavation of 20 10/27 cubic yards of earth.
44,04	for erecting 29 9/25 perches of stone mortar masonry.
7.00	for 70 feet of hammered face stone wall.
$ 84.40 (16)	

The brick mason William Collins, also in early June 1849, was paid $ 51.40 for building"the enclosing walls of the armory," as follows:

$ 30.20	for laying 7,550 bricks
20.95	for setting 159 10/12 feet of coping and water table.
.25	for hauling 2 loads of brick.
$ 51.40 (17)	

In his annual report for the fiscal year ending June 30, 1849, Symington reported: "The front enclosing wall of armory yard has been commenced, and 130 feet linear completed, round the site of one of the buildings recently purchased on lot No. 12."[18]

15. 3rd S., F. 9895, V.8, July 24,1849, for $ 411.50.
16. 3rd S., F. 9307, V. 36, June 11,1849, for $ 84.40-the money was paid to Edward Tearney as executor of the late Peter Litle estate.
17. 3rd S., F.9307, V.35, June 9, 1849 for $ 46.43, and F.9307,V. 80, July 10,1849, for $ 4.97.
18. Serial No. 549, Document No. 549, Document No.1, p.366, Item 6.

The demolished building on Lot No. 12 was large 2½ story brick structure with a wood-shingle covered gable roof and a full cellar. Erected by Joseph L. Russell and John A. Fitzsimmons in 1830-31, this was the first brick structure to be erected on privately owned land in Harper's Ferry. The double house, 60 feet wide and 30 feet deep, had contained two stores on the first floor and two dwellings on the upper floors.[19] The 136 8/27 cubic yards of earth fill provided by Peter Litle probably went to fill in the basement or cellar of the demolished stores.

The brick mason continued his work on the armory fence during the the summer of 1849 and on August 31,1849 was paid $ 429.07 for performing the following construction on the entrance:

$ 5.60	for excavating 28 cubic yards of earth.
44.04	for building 29 9/25 perches of stone masonry, foundation.
11.20	for hauling 28,000 bricks to site.
111.79	for laying 27,949 bricks in fence.
229.60	for making the 28,000 bricks.
26.84	for laying 206½ lin. feet of cut stone coping.
$ 429.07	(20)

A total of approximately $ 976.37 was expended to construct the front enclosing wall of the armory on lot No. 12 in 1849.

19. for detailed history of construction and use of Lot 12 building,1830-1848 see Snell, Charles W.,"An Historical Study of Wager Lot No. 12, 1830-1848, Ferry Lot Studies,"(NPS typescript, Harper Ferry National Monument, W.Va., September 24, 1958) 26 pages.

20. 3rd S., F. 9895, V.23, August 31,1849, for $ 429.07-

In his annual report for the fiscal year ending June 30,1850, Major John Symington described the new entrance as follows: "The front enclosing wall of armory yard has been finished; its extent, about 340 linear feet. The gate front is built with piers and low panels, the upper part of the panels fitted with iron railing to the height of the piers.

"The remaining portion of the wall is of brick, solid, on stone foundation; the height of the enclosure 9 feet; and walls coped with cut stone."[21] Harpers Ferry NHP Negative HF 90, a photograph taken in October 1859, provides an close and excellent detailed view of the entrance gate, iron fence, and solid brick enclosing wall that was built on Lot No. 12 in 1849.

The Armory was unable to purchase Wager Lot No. 11 and hence Symington's plan to construct a matching fence and wall across that property had to be deferred until 1855.

On September 1,1851 the stone cutter Redmond Burke was paid $ 6.00 for three days work repairing the cut stone of the enclosing walls of the armory yard.[22] On December 24,1851, the stone mason Edward Tearney received $ 14.06 for 6½ days labor of a stone cutter cutting stone for the support of a pillar.[23] This may relate to repair of one of the armory gate posts.

21. Serial No. 587, Document No.1, p.476, item No.4.
22. 3rd S.F. 12680, V.23, September 1,1851, for $ 6.00.
23 3rd S.,F. 13102, V.41, December 24,1851, for $ 14.06.

27. Brick Pavement in Front of Workshops, Potomac Street:

In the estimates for the 1846-47 fiscal year Symington requested $ 450.00 for placing " brick pavement in front of shops,".[24] This money was appropriated by Congress on August 8, 1846.[25] This work ,however, may not have been done until 1849. On October 26,1849 the brick mason William Collins was paid $ 326.85 for the following work which may relate to the 1846 appropriation for paving:

$ 297.31	for making 36,271 bricks.
14.50	for hauling 36,271 bricks from the rifle factory to the entrance of the Armory yard.
10.54	for paving 84 1/3 square yards with brick.
3.00	for 1½ days services of a mason.
1.50	for 1½ days services of a tender.
$ 326.85	[26]

24. Serial No. 481, Document No.9, p.111, item No. 13.
25. U.S. Statues at Large, IX, p. 69.
26. 3rd S.,F 10276, V.8, October 26,1849, for $ 326.85.

28; Grading the Grounds at the Musket Factory: ,1850-51:

In the estimates for the 1848-49 fiscal year Superintendent Symington requested $ 500.00 "for filling up low grounds and grading the musket factory," explaining that "Much of the ground about the shops is under water at moderately high freshets, thus interrupting operations."[30] The desired sum was appropriated on August 14,1848.[31] This money was apparently held in reserve and not used until 1850. On December 20 of that year the stone mason Edward Tearney was paid $ 498.95 for "filling in and grading the armory yard"with 2,935 cubic yards of earth and spalls."[32] In his annual report for the year ending June 30,1851, Symington reported:" There has been much filling and grading of grounds, both at the musket factory and rifle factory, to an extent of 3,000 cubic yards.."[33]

In his annual estimate for the fiscal year 1851-52, Symington asked for $ 1,200.00 "for filling up low grounds in the Armory yard, and filling up and grading grounds within the enclosure at the Rifle factory," explaining it was necessary" To complete the grading of the Armory yard and the leveling of the grounds about the new buildings at the Rifle factory,and to afford convenient places of deposite for Coal and other heavy articles."[34] The requested amount was appropriated by Congress on March 3,1851.[35]

30. Serial No. 514, Document No. 2, pp. 110, 111, Item No. 4.
31. U.S. Statues at Large,IX,p.306.
32. 3rd S., F. 12169, V. 43, Decemebr 20,1850, for $ 498.95. Tearney charged 17 cents per cubic yard delivered.
33. Serial No. 611, Document No.1, p. 459.
34. Harpers Ferry Mircofilm Reel 20,V. 7,p.694, Item 3.
35. U.S. Statues at Large, IX, p. 620.

An additional $ 431.50, was thus spent for the following grading during the period July 1-December 31,1851:

To William T. Daugherty, October 31,1851, $ 171.50- "for hauling and delivering into the armory yard 70 cart loads of river sands.. for grading the public ground at the musket factory".[36]

To Edward Tearney, December 24,1851, $ 260.00,"for filling up the Armory yard from the end of the Boring Mill (Bldg. No. 5 on 1859 map) to the upper end of new machine shop (Bldg. No. 6D on 1859 map), grading the roadway to the proper height, covering the culverts & drains and walling the same, for this sum previously agree on."[37]

The grading and landscaping of the armory yard was not to be completed until 1853.

36. 3rd S., F. 13017, V.12, October 31,1851, for $ 171.50, Daughtery charged 25 cents per wagon load.
37. 3rd S., F. 13107, V. 41, December 24,1851, for $ 260.00.

29. Wells, Springs, Pumps, and Pipes"

In 1845 William Darke,Jr. was paid $ 75.00 for excavating 183 3/4 perches of rock and digging a well.[38] The location of the well is not known. In 1849 Peter Litle received $ 9.18 for building 6 3/25 perches of stone masonry wall "around spring in Armory."[39]

In 1846 Ross Winas received $ 140.02 "for making pattern for water pipes", probably for cast iron pipes.[40] Log pipes were still in use: In 1849 William B. Brown & Son was paid $ 6.00 for three white oak pump logs 20 feet long "for repair of pumps."[41]

In the estimates for the fiscal year 1851-52, Major Symington asked for $ 3,220.00 for the"purchase of factory pumps and fixtures for the musket and rifle factories," explaining "This purchase is much required as the only reliable safeguard against fire occuring among the shops."[42] Congress appropriated the money for this project on March 3,1851.[43]

On January 27,1852, J. T. Ames Manufacturing Company of Boston, Mass., was paid $ 2,448.78 for making and delivering 62,188 lbs of cast iron pipe and one force pump for the rifle factory.[44]

The installation of this fire-fighting equipment was to be completed in 1853.

38. 3rd S., F. 3122, V. 8, October 28,1845, for $ 75.00.
39. 3rd S., F. 9307, V.36, June 1,1849, for $ 9.18.The money was paid to Edward Tearney as the executor of the late Peter Litle.
40. 3rd S.,F.4837, V.2, October 10,1846, for $ 140.02.
41. 3rd S. F. 9307, V.46, June 28, 1849, for $ 6.00.
42. Harpers Ferry NHP Microfilm Reel 20, V.7, p. 694, Item 2.
43. U.S. Statues at Large, IX, p. 620.
44. 3rd S., F.13017, V. 76, January 27,1852, for $ 2,448.78. The cost of the pump was $ 1,865.64 and the pipe $ 583.14.

30. Potomac River Wall, 1847- 48:

In 1846 the mason Peter Litle was paid $ 87.37 for repairing the river wall.[27]

The estimate for the 1847-48 fiscal year contained an item requesting $ 640.00 "for raising the river wall, grading grounds, gutters to shops, and stone steps to such of the armory buildings as require them." Symington explained the purpose was "To raise the area about the shops above the ordinary freshets, the river wall must be made about 2½ feet higher."[28] The money for this purpose was appropriated on March 2,1847.[29] The Paymaster's vouchers for the period July 1,1847 to December 31,1848 are missing from the National Archives files so that there is no record of details of this construction, its cost, or who did it.

27.-3rd S., F.3858, V. 19, May 2,1846, $ 87.37 for building 58½ perches dry wall of heavy stone, repair of river or guard wall.

28. Serial No. 497, Document No. 3, p. 141, 142, item No. 4.

29. U.S.Statues at Large, IX,p.151.

CONSTRUCTION AT THE MUSKET FACTORY, HARPER'S FERRY ARMORY, 1845 - 1851

	1	2	3	4	5	6	7	8
Year :	Charcoal House	Stock House	Forging or Smiths Shop	Coal Bins	Office Remodelled	Engine and Guard House	Stocking & Machine Shop	Lumber House
1845	(1,029.08	424,62	6,768.37	yes	-	-	-	-
1846	170.92	3,516.55	3,763.22	223.64	-	-	5,051,04	-
1847			1,504.82+	167.72+			80.00	-
1848					(850.00)	(1,540.00)		?
1849	7.62	1.31	328.48	272.29	46.50	8.46	5543.05	971.92
1850		1.75	124.28	401.87	0	0	1,801.51	42.80
1851		34.50	327.39	245.20	65.81	0	66.00	40.35
TOTAL	$ 1,207.62	3,978.73	12,036.41	1,311.72	112.31	8.46	12,541,60	1,054.87
Approp. For	1,200.00	6,438.00	18,000.00	2,680.00	850.00	1,540.00	20,450.00	5,694.00
For Machinery							5,700.00	

Records for the 3rd quarter of 1845, 3rd and 4th quarters of 1847, and all 4 quarters of 1848 are missing.

CONSTRUCTION AT THE MUSKET FACTORY, HARPER'S FERRY ARMORY, 1845-1851

	9	10	11	12	13			
Year:	Tilt Hanner Shop	Polishing Shop	Grinding, Saw and Planing Mill	Annealing Shop &Brass Foundry	Altering Bell Shop	Total Bldgs.	Land Purchases	Wells, Pipes
1845	-	-	-	-	0	8,222.07	0	75.00
1846	-	-	-	-	0	12,725.37	0	140.02
1847	-	-	-	-	23.42	1,775.96	35,088.33	
1848		-		-	(2,675.00)	(5,065.00)	5,140.00	
1849	506.08	975.39	178.90	-	41.81	8,881.81	209.00	15.18
1850	7,398.86	63.64	3,132.85	-	105.18	13,072.74	0	0
1851	5,113.10	0	2,460.34	4,861.04	120.40	13,334.13	0	2,448.78
TOTAL	13,018.04	1,039.03	5,7772.09	4,861.04	290.81	58,012.08	40,437.33	2,678.98
Approp For	17,900.00	1,700.00	9,730.00	9,550.00	2,675.00	98,407.00	51,461.00	3,220.00
For Machiner	25,470.00		1,900.00			33,070.00		

Records for 3rd quarter of 1845, 3rd and 4th quarters of 1847, and all 4 quarters of 1848 are missing.

CONSTRUCTION AT THE MUSKET FACTORY, HARPER'S FERRY ARMORY, 1845-1851

Year:	Gates and Fences	Coal Scales	Privies	Total New Construction	For Repairs	Grading	Brick Pavement	River Wall	TOTAL
1845	31.00	-		$ 8,328.07	508.91			87.37	8,924.35
1846		-		12,527.76	3081.46				15,609.22
1847		-		36,864.29	yes				36,864.29
1848		-		5,140.00	yes				5,140.00
1849	976.37	85.02	18.00	10,185.38	433.49		326.85		10,945.72
1850	0	-	51.67	13,124.41	278.96	498.95			13,902.32
1851	20.06	-	41.50	15,844.47	127.90	431.50			16,403.87
TOTAL	$ 1,027.43	85.02	111.17	102,014.38	4,430.72	930.45	326.85	87.37	107,789.77
Approp. For Machinery	1,450.00	0	0	154,538.00	16,440.00*	1,700.00	450.00	640.00	170,978.00

*provided for renewing water wheels and forebays.

Record for the 3rd quarter of 1845, the 3rd and 4th quarters of 1847, and all 4 quarters of 1848 are missing.

(For Location of Buildings, see Map No. 3 (1848):

EXPENDITURES FOR REPAIRS AT THE U.S. MUSKET FACTORY, HARPER"S FERRY ARMORY, 1845 - 1851

Year:	Bldg.18 New Warehouse	Bldg.14 New Proof House	Bldg.3 New Boring Mill	Bldg.15 Old Annealing Shop	Bldg.11 Old Tilt Hammer Shop	Bldg. 9 Old Grinding Mill	Old Polishing Shop	Total-Repairs
1845			368.91[1]		yes		140.00	$ 508.91
1846			.65	70.93	3,009.88[2]			3,081.46
1847								
1848					yes	yes		
1849	342.64	31.29	41.81	17.75	10,930.12	2,500.00		13,863.61
1850		38.00	18.52	abandoned	4.50			278.96
1851	31.35		96.55					127.90
TOTAL	373.99	69.29	526.44	88.68	13,944.50	2,500.00	140.00	21,681.05
Approp.					13,940.00 +	2,500.00		16,440.00

+ $ 7,800.00 for 6 new tilt hammers; 2,600.00 for water wheels; $ 2,700.00 for raising floors, $ 850.00 for adding new room to tilt hammer shop.

1. For new heating system. For new cast iron forebay.

31. The U.S. Musket Factory Canal on the Potomac, 1845 - 1851:

In his estimate for the 1845-46 fiscal year Major John Symington requested that $ 5,000.00 be appropriated in order to accomplish the following objectives:

1." $ 3,500.00 for building a culvert across the Armory Canal". The superintendent explained that this was "To conduct the water and Debris from a deep ravine under the canal of the musket factory. The rush of the water which is thrown into this ravine, in times of heavy rains, is so great that large quantities of earth and stones are carried down and deposited in the canal, across the entire width of which it has formed a bank."[1]

2 . $ 1,500.00"for cleaning out Armory Canal.","for the purpose of increasing the capacity of the canal at the musket factory, by freeing it from earth and stone that now obstruct the free passage of water."[2]

Congress appropriated the requested $ 5,000.00 for these two projects on March 3, 1845.[3] In 1845 and to June 30,1846, Symington spent a total of $ 1,029.58 for the following work on the canal.

To George W. Lynch, February 4,1846 $ 443.96"for excavating, clearing, and removing 1,343 cubic yards and 25 feet of earth, stone, &c.from the middle ground of the Armory canal at 33 cents per yard."[4]

$ 586.09 was spent for "work done with a view of more securely protecting the Amory Canal at the cross wall, by forming a basin, for the receipt of the deposit of stone and rubbish from the hill margin of the river, and in lieu of a culvert under the canal:"[5] Of this sum $ 423.65 was paid to S. McMurphy on November 29, 1845 for performing the following work:

1. Harpers Ferry Microfilm Reel 20, Vol. 7, p.652, ... Item 1.
2. Ibid, Item No. 4.
3. U.S. Statues at Large, V, p.747.
4. 3rd S., F. 3502, V. 13, February 4,1846, for $ 443.49.
5. from the voucher to S.D. McMuprhy, 3rd S., F. 3122, V. 35, November 29,1845.

$ 97.03 for 277½ cubic yards of excavation in clay and depositing the earth on the canal embankment.
326.62 for erecting 201 perches of stone wall for the basin.

$ 423.65. (6)

On December 8,1845 George N. Lynch was paid $ 90.62 for 362½ cubic yards of embankment "on the Armory Canal, put up with a view of preventing the wash of stones and gravel therein, in the time of freshets, in lieu of culvert beneath the canal." [7] In 1846 Lynch also received $ 71.82 for:

$ 12.43 for 24 21/25 perches of Rip Rap Wall.
59.40 for 297 cubic yards of excavation, for cleaning out and to prevent the wash from the hillside into the armory canal.
$ 71.82 [8]

In his annual report for the fiscal year ending June 30, 1846,Major Symington described this construction as follows:

"9. A reservoir on upper (inland) side of armory canal, to receive the wash of stones and earth from a ravine, and prevent the filling up of the canal; excavation of 277 cubic yards of earth; stone wall on sides and end, 201 perches. (by McMurphy for $ 423.65),

10.Two rip-rap dams of loose rubble stone, 362½ perches, on the side of armory canal, opposite the mouth of ravines, to receive stone and earth pushed down in heavy rains. These are in lieu of culverts under the canal, for which the appropriation was made. (by George N. Lynch, for $ 162.44).

11. 1.343 cubic yards of earth excavated to the depth of four feet in the armory canal and removed. This was the remains of the old canal embankment before its enlargement, and interrupted the full supply of water to the wheels."

Although he was not paid for this work until September 8, 1846. the mason Peter Litle must have actually constructed $ 1,093.21 woth of work that is described below prior to June 30, 1846:

6.3rd S., F. 3122, V.35, November 29,1845, for $ 423.65.
7.3rd S., F. 3122, V. 37, December 8, 1845, for $ 90.62.
8.3rd S., F. 4403, V.16, August 31,1846, for $ 71.82.
9.Serial No. 493, Document No.1, pp. 164-165.

$ 85.29, for excavating & removing 473 22/77 cubic yards of eatth for "revetment wall in rear of shops.
955.99 for erecting 546 7/25 perches of stone revetment wall.
51.93 for puddling before the revetment wall.
$ 1,093.21 [10]

In his report for the year ending June 30, 1846, Superintendent Symington appears to have described Litle's construction in the following terms:

"5 Canal embankment of stone, laid in mortar and cement, 780 feet long, 11½ feet, and 2½ feet thick (made); about 600 cubic yards of earth excavated and 275 yards of puddling (done)." [11]

With this project included, Symington spent a total of about $ 2,122.79 of the $ 5,000.00 appropriation on the musket factory canal in 1845-46.

In the estimates for the 1847-48 fiscal year, Symington requested that a total of $ 2,740 be provided for the following two canal projects:

1. $ 1,580.00 "for completing the canal embankment wall in rear of shops, widening the canal, and sloping the bank.," explaining, "The old wall was built dry, and too weak to sustain the pressure on it. A part of it has been substantially rebuilt. This item is to complete it as far as the line of shops, which will also allow of widening the canal, and obtaining a better supply of water." [12]

2. $ 1,160.00 " for a fence along the armory canal, and a paved gutter to receive and carry off the wash from the hill side." This was needed, he explained "To prevent the breaking down of the canal banks by cattle, and its being used, as it now is, as place for depositing all manner of offal." [13]

Congress appropriated the $ 2,740 covering these two projects on March 2,1847. [14]

10. 3rd S., F. 4403, V. 28, to Peter Litle, September 8,1846 for $ 1,093.21.
11. Serial No. 493, Document No. 1, p. 164.
12. Serial No. 497, Document No. 3, p. 142, item 2.
13. Ibid., Item No. 3.
14. U.S. Statues at Large. IX,p. 151.

George N. Lynch continued his work on the canal prior to June 30, 1847 and received $ 266.74 for the following construction:

$ 134.75	for excavating and removing 336 22/27 cubic yards of earth for canal embankments and river wall.
65.00	for ___ sodding slope of embankment, 325 square yards.
20.00	for taking out old coffen dam.
32.80	for labor of 3 hands, 41 days, digging, boating clay, and puddling bank.
17.31	for use of 3 horses.
14.20	other.
$ 266.74	15

In his annual report for the fiscal year ending June 30,1847, Symington recorded that "The embankment of the armory (Musket Factory) canal, next to the shops and along their whole extent, has been cut down to a regular width, and slope sodded. This now affords a full supply of water to the various wheels. 16 "A neat bridge has also been constructed across this canal," he noted.

The Armory Paymaster's vouchers for the period July 1,1847 to December 31,1848 are missing from the National Archives Record Group 217 files, thus making it impossib to trace the work done on the canal in detail during this 18 month period. Symington, however, did not request additional funds for work on the canal in the 1848-49 fiscal estimates. 17 In his annual report covering the work done during the period July 1,1847 to June 30,1848, Symington reported that: "The (Musket Factory) canal, at the guard gates, has been improved by having about 67 perches 18 of dry wall built to prevent the wash of rubbish from the hill side."

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15. 3rd Series, F. 5623, V.74, paid July 20,1847, for $ 266.74/
16. Serial No. 503, Document No. 1, p. 692, item 4, Musket Factory.
17. Serial No. 514, Document No. 2, p.110-111.
18. Serial No. 537, Document No.1, p. 347, item 4.

During 1849 $ 459.54 was spent for work on the Musket Factory Canal that Superintendent Symington did not mention in his annual report for the fiscal year ending June 30,1849. On January 1,1849, George N. Lynnch was paid $ 36.54 for"constructing 121 4/4 perches of Rip rap walling around the basin at the head of the armory raceway to arrest the wash from the hillside."[19] On June 11, 1849, Edward Tearney, acting as executor for the estate of the late Peter Litle, received for the following"work on canal embankments and revetment walls:

$ 55.69	for excavating 309 11/27 cubic yard of earth.
65.44	for constructing 65 11.25 perches of dry wall.
59.77	for excavating 199 7/27 cubic yards of earth.
242.10	for erect 161 10/25 perches of stone masonry.
$ 423.00	(20)

19.3rd S., F. 9093, V. 4, January 23,1849, $ 36.54.
20.3rd S., F. 9307,V. 36, June 11,1849, for $ 423.00.

The battle of stopping the wash from the hill side had not been won, for in his estimate for the 1850-51 fiscal year, Symington asked for $ 725.00 "for building a guard wall, to prevent the wash of dirt into the canal," The superintendent explained that it was planed;

To construct a rough stone wall at the foot of the hill, about 40 feet from the canal bank, to prevent the wash of earth and rubbish into the canal, which has hitherto caused inconvenience by filling up, and expense in cleaning it out. The road is to be graded so as to allow the water from the hill to be conducted by a drain to the tail race. [21]

The money for this project was appropriated on September 28,1850. [22]

Total of $ 2,166.19 was expended on the Musket Factory Canal during 1851 and of this sum, $ 2,113.34 went to the mason Edward Tearney for the following construction:

For guard wall along Armory Canal:	$ 436.30	for 1,744 cubic yards of earth filled in and graded at $ 25 c per yard.
	500.62	for 400½ perches of dry masonry wall with coping @ $ 1.25 per perch.
	$ 936.00	
For Cleaning out Canal"	$ 5.00	for 10 laborers ½ day each=5 days @ $ 1.00 cleaning out sand bars from canal.
	.75	for 2 carts and driver ½ = ½ day @ $ 1.50= 75 cents.
	$ 5.75	
For constructing revetment wall	269.27	for excavating 897 16/27 cubic yards of earth at 30¢ per yard.
	589.80	for constructing 471 21/25 perches of dry masonry wall at $ 1.75 per perch.
	$ 859.07	
For culvert to guard wall of armory canal	19.44	for 64 22/27 cubic yards earth excavated.
	149.20	for 119 9/25 perch of dry wall masonry @ $ 1.25.
	$ 168.64	
	$ 1,969.46, subtotal, September 30,1851	(23)

21 Serial No. 568, Document No.4, p.156,157, Item 5.

22. U.S. Statues at Large, IX, p.507.

23. 3rd S., F. 12680, V. 54, September 30,1851,for $ 1,969.46.

To prevent wash from hillside from falling into canal	$ 125.76	for 125 19/25 perches of dry wall at $ 1.00 per perch.
Culvert walling to carry off surface wall from canal	18.12	for 14½ perches of dry masonry wall at $ 1.75 per perch.
	$ 143.88	(24)
	$ 2,166.19	paid to Edward Tearney in 1851.

Armistead Fites was paid $ 52.85 for fencing the armory canal as follows:

$ 31.85,	for putting up 49 panels of fence on the side of the Armory raceway @ 65¢ each.
19.00	for sloping the canal bank from the water surface to the fence wall for the sum previously agreed upon.
2.00	for providing and preparing locust pins for the fence, 2 days @ $ 1.00 per day.
$ 52.85	(25)

In his annual report for the fiscal year ending June 30, 1852, Col. Benjamin Huger described Tearney's construction in 1851 as follows: "Two drains, about 300 feet long, and a stone wall, built on the hillside, about 217 feet long, seven feet high, and 2½ feet thick, have been finished along the south side of the armory canal, to prevent the wash of earth from the hill and road into it." 26

North Cliff Street, which ran parallel and adjacent to the south bank of the Musket Factory canal, had been improved as follows:

"The granding of the street along the canal, and the building of the stone wall on one side of said street, at the foot of the precipitious slope, to prevent the wash being deposited in the canal, is nearly completed. The grading of the road extends about 1,100 feet along the canal on the width of about 40 feet, requiring an average depth of excavation and filling 1 4/12 feet; the wall is 667 feet in length, and 2½ feet thick. (27)

By June 30,1852, the wall along the hillside on the south side of the armory canal appears to reached a length of 884 feet.

24.3rd S. F. 12680, V. 54, September 30,1851, for $ 143.88.
25. 3rd S., F. 13017, V. 18, November 5,1851, for $ v 52.85.
26. Serial No. 659, Document No.1, p.253.
27.Serial No. 611, Document No.1, p.459, item 5.

U.S. Musket Factory Canal on Potomac

Calender Year	Recorded Expenditure	Appropriated for canal
1845	$ 514.27	$ 5,000.00
1846	1,608.52	0
1847	266.74 (1)	2,740.00
1848	missing	0
1849	459.54	0
1850	0	725.00
1851	2,166.19	0
Total	$ 5,015.26	$ 8,465.00

(1) The Paymaster's vouchers for the 3rd and 4th quarters of 1847 and all four quarters of 1848 are missing from the National Archives Record Group 217 files.

32. U.S. Musket Factory Dam on the Potomac: 1845 - 1851:

On October 18,1845, S. D. McMurphey was paid $ 1,060.37 for making the following repairs to the U.S. Dam on the Potomac:

$ 501.75 for 223 square yards of heavy stone laid edgewise securing Potomac Dam on Potomac River.
194.62 for 64.718 square yards of heavy flagging stone drilled and bolted to solid rock.
364.00 for 112 perches of heavy stone drilled and bolted to solid rock.
$ 1,060.37. (1)

In his annual report for the fiscal year ending June 30,1846, Superintendent John Symington described this construction as follows: "Dam across the Potomac repaired by laying 223 square yards of large flat stones on edge. 65 yards of large flagging stones, drilled and bolted to the solid rock, and 112 perches of stone breast walls built." [2]

In his annual estimate for the 1850-51 fiscal year,Major John Symington asked for $ 1,500.00 "for repairing the dam across the Potomac, the guard wall at canal gate, the lock and sluice gates, and abutment wall, and for cleaning out the canal." He explained "The sluice gates are entirely decayed, and require renewing. The repairs to the dam and wall are necessary, and the sooner they are done the less expensive they will be." [3] The money for this project was appropriated by Congress on September 28, 1850. [4]

The mason Edward Tearney made repairs in June 1851 and received $ 202.50 for erecting 135 perches of dry stone masonry on the Potomac Dam. [5] In his annual report for the year ending June 30,1851, Symington reported that "Heavy repairs have been made upon the dam across the Potomac River." [6]

1.3rd Series,F. 3122, V. 5, October 18,1845, for $ 1,060.37.
2. Serial No. 493, Document No. 1, p. 164. Item No. 7.
3.Serial No. 569. Document No. 4, P. 156,157, item No. 6.
4.U.S. Statues at Large, IX, p. 507.
5. 3rd S., F. 12680, V. 33, June 24,1851, for $ 202.50. He charged $ 1.35 per perch.
6.Serial No. 611, Document No.1, p. 457.

Expenditures on the U.S. Potomac Dam, 1845-51

Calendar Year	Recorded Expenditure	Appropriated for dam.
1845	$ 1,060.37	0
1846	0	0
1847	0	0
1848	0	0
1849	0	0
1850	0	1,500.00
1851	202.50	0
Total	$ 1,262.87	$ 1,500.00

For map showing plan and location of the U.S. Musket Factory Dam on the Potomac during the years 1842 to 1861 see Map No. (1869), p.

SUMMARY SHEET OF APPROPRIATIONS FOR REPAIRS, IMPROVEMENTS, AND MACHINERY, 1845-1851

Calender Year	Musket Factory	Potomac Canal & Dam	Grand Total
1845	$ 8,000.00	5,000	$ 13,000.00
1846	86,911	0	86,911.00
1847	13,030	2,740	15,770.00
1848	4,000	0	4,000.00
1849	57,875	0	57,875
1850	7,675	2,225	9,900
1851	12,360	0	12,360
TOTAL	$ 189,851	9,965	199,816

CHAPTER III - Col. Huger and Major Bell, 1852- 1854:

General:

Brevet Colonel Benjamin Huger, appointed on July 9,1851 to replace Major John Symington as the superintendent of the U.S. Armory at Harper's Ferry, reported for duty at the Armory in September 1851,[1] and served as the commanding officer of the Armory until March 1854.[2] He was replaced in March 1854 by Major William H. Bell, the last of the line of military superintendent, who served until December 1854,[3] when civilians were once again made superintendents of the National Armories.[4]

During the period January 1,1852 to June 30,1854, Col. Huger and Major Bell were largely engaged in carrying to completion the plans that had been conceived and proposed by Major John Symington. This included the completion of the Annealing Shop and Brass Foundry.Bldg. 14 at the Musket Factory; the construction of the Machine Shop,Bldg. No.6,1852-53; at the Rifle Factory; the construction of the Rolling Mill, Bldg. No. 18, at the Musket Factory in 1852-55; and the public sale of U.S. lots and Dwelling Houses in September 1852. Superintendents Huger and Bell spent a total of $ 134,360.29 on repairs and improvements during the period January 1,1852 to June 30,1854(see Chart on following page).

Because of the destruction by the National Archives staff during the 1940's of all vouchers issued by the Armory Paymasters during the years January 1, 1852 to April 18,1861, it is no longer possible to trace in detail the costs of construction and repairs, amounts of materials used, and who did the construction of armory buildings during the years 1852 to 1861.

1. General Order No. 9 of Adjutant Generalm July 9,1851, Reel 24, V.6,p.517. Huger to Craig, Chief of Ordnance, October 1,1851, Reel 24, V. 3, p.278.
2. Huger to Craig, March 11,1854, Reel 25, V.3, p.254.
3. Craig to Bell, January 27,1854, Reel,19, V. 6, p. 604; Craig to Bell, September 24,1854, Reel 19, V. 7,-p.673.
4. Secretary of War Jefferson Davis to Henry W. Clowe, January 9,1855, Reel 25,

Chart No. -

Expenditures for Repairs and Improvements at the U.S. Armory at Harper's Ferry, Virginia, during the administrations of Col. Benjamin Huger and Major William H. Bell, January 1,1852 to June 30,1854:

Fiscal Year	Expenditures	Appropriations	Date
Jan.1,1852 to June 30,1852	$ 26,358.06 (1)	0	-
July 1,1852 - June 30,1853	47,979.19 (2)	$ 28,950.00	8/31/52
July 1, 1853- June 30,1854	60,023.04 (3)	$ 63,500.00	3/3/53
Total:	$ 134,360.29	$ 92,450.00	-

See Chart No. on page ; for a breakdown of the appropriations among the projects that Huger and Bell intended to use the money voted for repair and improvements at the Armory.

1.3rd Series, Files 12680 and 13017, National Archives Record Group 217, 2nd Auditor's Accounts. The sum of $ 34,621.19 that was spent during the 3rd and 4th quarters of 1851 have been subtracted from the total of $ 60,979.25 that was reported as expended for repairs and improvements during the fiscal year July 1,1851 to June 30,1852, as published in Serial No. 677, Document No.26.

2. Serial No. 717, Document No.19.

3. Serial No. 783, Document No.33. On August 5,1854,after Bell had left Harpers Ferry, Congress appropriated $ 35,100.00 for repairs and improvements at the Armory. U.S. Statues at Large, Vol. 10,p. 578. This increased the amount asked for and receiv by Huger and Bell from 1852 to 1854 to $ 127,550.00.

CHART NO. Expenditures for Repairs and Improvements, Harper's Ferry Armory:

YEARS	For Land, including Mill sites and the Houses on the land when purchased.	Buildings, milldams, canal or races, and other permanent improvements, including machinery.	Repairs of Buildings, dams, canals, &c.	Total for lands, buildings, improvements & repairs
1796 to June 30, 1851	$ 87,914.63*	$ 1,175,219.06	$ 105,067.23	$ 1,368,200.92
June 30 1852		60,979.25		$ 60,979.25
June 30 1853		47,979.19		47,979.19
June 30 1854	$ 7,000.00	60,023.04		60,023.04
Subtotal	$ 94,914.63	$ 1,337,200.54	$ 105,067.23	$ 1,537,182.40
June 30 1855		37,292.67		37,292.67
June 30 1856	8,700.00	31,158.00		39.858.00
June 30 1857	1,465.66	43,616.25		45,081.91
June 30 1858		25,044.68		25,044.68
June 30 1859		32,663.07		32,663.07
June 30 1860		71,079.03		71,079.03
April 18 1861	0	?		?
GRAND TOTAL	$ 105,180.29*	$ 1,576,643.49	$ 105,067.23	$ 1,786,891.01

* Total included $ 2,000.00 spent to purchase buildings of Dr. Nicholas Marmion that were located on Armory land.

Chart No.

Summary Sheet-Appropriations for Repairs and Improvements at the Harper's Ferry Armory, 1852- 1854:

Year	Musket Factory	Rifle Factory	New Arsenal	Canals & Dams	Magazine & Lumber Shed	Repairs & Preservation General	New Machinery-General	Grand Total
8/31 1852	$ 3,100	450	16,450	1,650	-	2,300	5,000	$ 28,950
3/3/ 1853	10,500	2,600	13,700	9,000	-	20,000 (1)	7,700	63,500
8/5/ 1854	23.400	-	-	0	7,000	1,700	3,000	35,100
Total	$ 37,000	$ 3,050	$ 30,150	10,650	$ 7,000	$ 24,000	$ 15,700	$ 127,550

(1) Includes $ 20,000 provided to clean up and repair damage caused by April 1852 flood.

A. **Effects of the April 19-20,1852 flood on Armory Operations:**

In his inspection report of Harper's Ferry Armory, dated July 20,1852, Lieutenant Colonel R. L. Baker, Inspector for Ordnance Department, reported to Col. Henry K. Craig, Chief of Ordance:

A reduction in the number of muskets manufactured monthly, which prior to the great flood, was about 1,667, is a consequence of that disaster, by which more than 20,000 arms were injuried. Labor has been diverted from the manufacturing to the repair; and the work of reparation is proceeding at the rate of about 250 per day. This change in employment has enabled the commanding officer to add to the number of workmen on rifles, so as to increase the manufacture of that arm to about 250 per month.....

There are at the present time 354 men employed at this armory as follows:

1 master- armorer	9 borers	103 laborers.
4 clerks	34 turners and drillers.	
1 assistant clerk	3 grinders	
16 foremen	12 lock-filers	
32 machinists	29 mounting-filers	
5 barrel-forgers	7 polishers	
5 lock-forgers	19 stockers	
3 bayonet-forgers	23 barrel finishers	
8 mounting forgers	1 arm assember	
4 trip=hammer men	7 blacksmiths, for jobbing.	
12 assistant forgers	1 job filer	
4 annealers	9 carpenters	

"many of the laborers are temporarily employed in cleaning the wet arms, &c., and will be discharged when that work shall be finished. The amount of the pay-roll for May is as follows, viz:

Manufacture of Arms	$ 5,810.23	Muskets.
.....	2,301.36	Rifles
Manufacture of Rifles		
Special Work		
Repairing damage by flood....	1,957.56	
Fabricating cones and polishing	298.72	
Buildings and improvements	538.58	
New machinery..	720.28	
	$ 11,626.73.	(1)

1. Serial No.,639, Document No.1, p.248-249.

B. Musket Factory, 1852 - 1854:

1. The Flood of April 20, 1852:

Of the great flood that struck Harper's Ferry in April 1852, Superintendent Huger report in regards to the Musket Factory on the Potomac:

"The Armory yard and shops were overflowed by the flood of April 20. The water was about 10 feet deep over the yard and six feet over the shop floors, leaving a large deposite of mud. All cleaned off, and the walks and roads laid off and remade; near 400 feet of stone flagging, 5 9/12 feet wide, laid in front of the workshops."[1]

As a result of the great flood of April 19 and 20,1852, the Ordnance department asked for and Congress appropriated, on March 3,1853, the sum of $ 20,000 to pay for repairing and cleaning up the damage caused by the flood.[2]

During the years 1852-1854, repairs, additions, and alterations were made to six of the following large musket factory workshops:

Old Bell Shop, Bldg. No.3; Boring Mill, Bldg. No. 5; Machine and Stocking Shops, Bldg. No. 6; Tilt Hammer Shop for Barrel Welding, Bldg. No. 9; the Smiths or Forging Shop, Bldg. No. 13; and the Annealing Shop and Brass Foundry, Bldg. No. 14.

Four new buildings, two major- the Stock and Store House(New Arsenal), Bldg. No. 11; and the Rolling Mill, Bldg. No. 18; and two minor- the Lime House, Bldg. No. 19, and the Ice House, Bldg. No. 20, were constructed by Colonel Benjamin Huger.

1. Annual report for the year ending June 30,1852, Serial No. 659, Document No.1, p. 254.

2. U.S. Statues at Large, X, p.217.

APPROPRIATIONS FOR REPAIRS AND IMPROVEMENTS AT THE MUSKET FACTORY, 1852 - 54:

(Bldg. Nos. refer to numbers used on 1859 Historical Base Map.)

Year	Bldgs. 3 and 5 Bell Shop & Boring Mill	Bldg. 7 Stock House	Bldg. 11 New stock House -grounds	Bldg. 13 Smiths Shop	Bldg. 18 Rolling Mill (1)	Entrance Gate & wall	cistern	Paved walks
8/31/1852				$ 3,100				
3/3/1853		$ 1,000		2,500	7,000			
3/5/1854	$ 1,800		8,800		4,100	1,000	1,000	700
Total	$ 1,800	$ 1,000	$ 8,800	$ 5,600	$ 11,100	$ 1,000	$ 1,000	$ 700

(1) An additional $ 16,500 had been appropriated to erect a rolling mill on August 14,1848. This money had apparently been expended to purchase building materials for the structure and to make necessary machinery for the mill. In 1855 an additional $ 1,432 was provided in order to complete the structure.

Appropriations for Repairs and Improvements at the Musket Factory, 1852-54

Year	Purchase of Land for gate & wal (1)	Grand Total For Bldgs.	For Potomac Canal	For Potomac Dam	Enclosing South Wall &WestWall	Grand Total, Bldgs., Dams & Canals
8/31 / 1852		$ 3,100	1,650	0		$ 4,759
3/3 / 1853	(2,500)	$ 10,500	4,000	0		14,500
8/5/ 1854	(4,500)	$ 23,400	0,	0	6,000	23,400
Total	($ 7,000	$ 37,000	5,650	o	6,000	$ 42,650

(1) This is the sum actually spent to purchase Lot No. 11 in order to complete the formal entrance wall at the Musket Factory. In was paid from the balance of $ 9,829.67 that had been left from the original appropriation of $ 50,261.00, voted by Congress on August 8, 1846.

2. Repair and Improvement of Six Shops:

a. Repairs to the Old Bell Shop, Bldg. No. 3, and the Boring Mill, Bldg. No. 5, 1852 - 1854:

The destruction of the Armory paymaster's vouchers for the years 1852 to 1861 by the National Archives staff during the 1940's makes it impossible to trace in detail repairs and improvements made to the shops during this period.

The superintendent's annual reports reveal that the following work was done to these buildings and their machinery from 1852 to 1854.

In the annual report for the year ending June 30,1852. Brevet Col. Benjamin Huger reported: "A new brick wash house between the BellShop(Bldg. No.3) and Boring Mi (Bldg. No. 5 on 1859 base map), has been erected, with a tin roof."[16]

The great flood of April 20,1852 apparently damaged the Bell Shop and Boring Mill. In his annual report for the fiscal year ending June 30,1853, Col. Huger wrote: "New floors have been laid in the boring mill and in the bell shop; the excavation under the floors deepened some three feet, and the bottom graded and arranged to carry off the water washing from machines,&c, into the race-way."[17]

The estimates for the 1854-55 fiscal year contained a request for $ 1,800.00 "for repairs to the bell shop and boring mill". It wasexplained that "the lower storie of these buildings require re-flooring", thus suggesting that this money was to be used to pay for work that had already been done in 1853.[18]

Returning to June 30,1853, Superintendent Huger further reported: "Stone forebay at bell shop repaired, 1,134 cubic feet of earth excavated,and paved, and grouted with cement. Culvert under bell-shop flagged over with 56 square yards of flagging, and cross walls under floors to support joists,&c."[19]

In the report for the year ending June 30,1854, the new superintendent, Major William H. Bell, noted: "Extensive improvements have been made to the main and counter lines of driving machinery in the first and second floors of the Bell Shop and Boring Mill."[20]

16. Serial No. 659, Document No.1, p. 253, item 2.
17. Serial No. 692, Document No.1, p. 277.
18. Serial No. 714, Document No 2, p. 188,189, item 10. The money appropriated on August 5,1854.
19. Serial No. 692, Document No. p. 277.
20. Serial No. 747, Document o.1, p.361.

b. Repairs and Alterations to the Machine and Stocking Shops, Bldg. No. 6), 1852 - 1854:

The destruction of the Paymaster's vouchers for the years 1852 to 1861, done by the National Archives staff in the 1940's, makes it impossible to trace in detail the repairs and alterations that were made to the stocking and machine shop after 1852. The superintendents's annual reports; however, reveal that the following work was done:

June 30,1852, the new superintendent Brevet Col. Benjamin Huger reported: "A new brick building on stone foundations, adjoining the new machine shop.(Bldg. No. 6D), and of the same style of architecture, has been erected as an office for the foreman of that shop."[48]

June 30,1854, Major W. H . Bell reported: "...some new and additional main and counter line put up in the new machine shop and stocking shop. Many machines transferred and put in position in stocking shop, to facilitate the operations."[49]

48. Serial No.659,Document No.1, p.253, item.3.
49. Serial No. 747, Document No., p. 361.

c. Alterations to Stock-House, Bldg. No. 7, Musket Factory, 1852-54:

In his inspection report of the Harper's Ferry, dated July 20, 1852, Inspector of Arsenals and Armories, Lieutenant Colonel R.L. Baker, reported:

"The present stock house in the armory yard (Bldg. No. 7) was overflowed, and that building convenient and required for a work-shop, another stock-store should be put up on the ground above all floods (This was to be Bldg. No. 11)." 49A

The estimates for the 1853-54 fiscal year thus included a request for $ 1,000 "for converting the present stock-house into a work-shop." It was explained that "The cellar and first floor of the present stock-house were completely overflowed in April (1852). The removal of old dwellings will afford a good site for building a safe storehouse for gunstocks (Bldg. No. 11), while the old one can be usefully converted into a work-shop." 49 B.

The requested money was appropriated by Congress on March 3, 1853, 49C but was apparently not spent prior to 1855.

49.A., Serial No. 659, Document No. 1, p. 250.
49B. Serial No. 675, Document No. 2, p. 257, 258, Item No. 3.
49C. U.S. Statues at Large, X, p. 217.

e. Repairs to the Tilt Hammer Shop for Barrel Welding, Bldg. No. 9, 1852 - 1854:

Due to the destruction of the armory paymaster's vouchers for the years 1852 to 1861 by the staff of the National Archives in the 1940's, it is no longer possible to trace in detail the repairs and alterations that may have been made to the tilt hammer shop during this final period.

The superintendent's annual reports, however, do reveal that the following repairs and alterations were made during the years 1852 to 1861:

In the report for the year ending June 30,1852, Brevet Colonel Benjamin Huger noted: "The wood frames for belt tilt hammers have been found to stand much better than iron ones. They answer perfectly well. Solid platforms of stone masonry have been placed under these hammer frames and the two punching presses."[29]

In the annual report for the year ending June 30,1853, Superintendent, Huger reported: "In tilt-hammer shop, for foundations and fixtures for tilt hammers, there has been laid 29 perches of stone masonry, 245 by 2 feet, facing "stone dressed, and 167 yards of flagging."[30] Some of this work may have been done to repair damage caused by the great flood of April 1852.

In the estimates for the 1854-55 fiscal year the sum of $ 700.00 was requested to construct a pavement of stone flagging " in front of the boring mill(Bldg. No. 5 on 1859 map) and tilt shop." It was explained that 'this pavement is required for dry communication with these shops in wet weather.:"[31] Money for this estimate was appropriated on August 5,1854.[32]

29. Serial No. 659, Document No.1, p. 253
30. Serial No. 692, Doc. 1,p.277.
31. Serial No. 714, Document No. 2, p.188,189, item No.12.
32. U.S. Statues at Large, X, p. 578.

e. Repairs to the Smiths or Forging Shop, Bldg. No. 13, 1852 - 1860:

In the estimates for the 1852-53 fiscal year, the sum of $ 3,100 was requested and received "for cast-iron forges for new smiths shop, and for filling in and flagging the floor"..."for the proper and permanent completion of the shop for smiths' work."[43] The estimate for the 1853-54 fiscal year also requested the sum of $ 2,500 "for paving smith's shop; sheet-iron stacks for 18 forges; repairing roof, and new ventilator". It was explained that "To make the smiths' shop complete, requires this additional work."[44]

In his annual report for the fiscal year ending June 30,1853, Armory superintendent Brevet Colonel Benjamin Huger reported of this work:

> New smith's shop and forging shop has been extensively repaired(The building was partly submerged in the great flood of April 20,1852). The floor has been removed, and the interior filled up with earth, and paved with brick and flagging; new cast-iron forges, with sheet iron stacks, put in; wind and water pipes laid complete, and new anvil blocks, placed on cast-iron chairs, set in stone foundations. A ventilator has been put on the whole length of the building, 216 feet; the roof altered and repaired; the foreman's office removed from centre of building, and a new one made in the end. 45.

Total cost of this work was probably about $ 5,600.00.

The destruction by the National Archives in the 1940's of the Armory Paymaster's vouchers for the years January 1,1852 to 1861 make it impossible to provide any additional details as to workmen, costs, and what minor repairs were made to smiths shop during the years 1852 to 1861. No major repairs or alterations, however, appear to have been made to the forging shop after June 30,1853.

43. Serial No. 633, Document No. 1, p. 212. Appropriation made August 31, 1852, see U.S. Statues at Large, X, p. 107.
44. Serial No. 675, Document No. 2, pp. 257-258; Money appropriated on March 3, 1853, U.S. Statues at Large, X, 217.
45. Serial No. 692, Document No. 1, p.276. The armory also made " 30 cast-iron forges, complete."

f. Improvements to the Annealing Shop and Brass Foundry, Bldg. No. 14, Musket Factory, 1852- 1860:

In his annual report for the year ending June 30,1853, Superintendent Huger wrote: "Two furnaces built, and six cast-iron forges and stacks put up in the tempering shop, with wind and water pipes laid complete. Floor paved with brick, and 20 square yards of flagging covering the wind and water-pipes between this building (Bldg. No. 14) and the forging shop. (Bldg. No. 13 on the 1859 map)."[12]

The superintendents' annual reports for the period 1854 to 1860 indicate that no further major alterations or repairs were made to the Annealing house and Brass Foundry during those years.

12. Serial No.692, Document No.1, p. 277.

3. Construction of Four New Buildings, Musket Factory, 1852-55

Brevet Colonel Benjamin Huger designed and erected the two following minor structures at the Musket Factory in 1852-53:

a. Lime House, Bldg. No. 19, 1852:

In his annual report for the fiscal year ending June 30,1852, Huger announced that"a new lime house,of wood" , probably one-story, had been erected at the musket factory.[1] This storehouse probably replaced the frame lime house that Major Henry K. Craig had built in 1844. The appearance and location of the lime house in the musket factory yard are not known.

b. Ice House, Bldg. No. 20, 1853:

In his annual report for the fiscal year ending June 30,1853, Col. Huger noted, "An ice house has been built, 20 feet square by 13 feet high" at the Musket Factory.[2] The appearance and location of the ice house in the musket factory yard is also unknown.

1. Serial No. 659, Document No.1, p.253.
2. Serial No. 692, Document No.1, p. 277.

c., More Coal Bins under the B.&. O. Railroad Tracks, 1852-1854:

Huger continued the practice begun by Major John Symington of constructing coal bins in the space between the Musket Factory and Baltimore and Ohio Railroad Company river walls, and under the railroad trestle that stood astride the two walls. In his annual report for the fiscal year ending June 30,1853, Col. Huger reported: "To fill up the open spaces under the Baltimore and Ohio railroad, 51 feet of dry stone wall built - 19 feet high and 4 feet thick - 6,500 cubic yards of filling, making coal bins and spaces under the trestle-work of the road."[3]

In the report for the year ending June 30,1854, Major William H. Bell wrote: "Thirty coal-bins, each about 15 by 17 by 29 feet deep,under trestle work of Baltimore and Ohio railroad, have been filled in with earth and made suitable for the reception of coal and other stores."[4] These 30 bins formed a line 510 feet long.

3. Serial No. 692, Document No.1, p. 277.
4. Serial No. 747, Document No.1 p. 361-362.

d. The New Rolling Mill, Bldg. No. 18, 1853-54:

The vouchers of the Armory Paymaster relating to the construction of the rolling mill and for the period 1852 to 1861 were destroyed by a committee of the National Archives during the 1940's. This makes it impossible to trace the details of the cost of construction, amounts of materials used, as well as to identify the workmen who constructed in this large shop.

Major John Symington's estimates for for the 1848-49 had contained a request for $ 16,500 "for erecting a rolling mill at the musket factory." This building was needed, it was explained "To work up scrap iron into bars of suitable sizes for use in the shops., For want of a rolling mill the large amount of scrap iron annually made at the armory has to be sold for whatever it will bring. This iron is of the best quality, and the working of it into bars, fit for use, would make an annual saving of $ 1,500 or more. The estimate includes the necessary furnaces and stack, with water-wheel and stone forebay and machinery, to drive two pairs of rolls."[1] Congress appropriated the requested $ 16,500 on August 14, 1848,[2] but for reasons that that are not known, the rolling mill structure was not constructed during the 1848-52 period. The money, however, may be used to purchase or make machinery for the mill.

Col. Huger's estimates for the 1853-54 fiscal year included a request for $ 7,000: "For building a roll mill". He explained: this was needed "To work up scrap iron suitable for manufacturing. All the machinery and part of the material for this this object have been procured, and this amount is required for its completion."[3] The desired sum was appropriated by Congress on March 3,1853.[4]

The estimates for the 1854-55 fiscal year included a request for an additional $ 4,100 to purchase the following machinery for the rolling mill:

" $ 1,300 "for one heavy tilt-hammer". "This...is to be placed in the rolling mill, and will be required for drawing barrel plates and other heavy work."[5]

1. Serial No. 514, Document No. 2, pp. 110-111, Item No. 6.
2. U.S. Statues at Large, IX, p. 306.
3. Serial No. 675, Document No. 2, p.257,258, Item No. 2.
4. U.S. Statues at Large, X, p.217.
5. Serial No. 714, Document No. 2, pp.188-189, Item No. 1.

"$ 2,800" for a driving-wheel and a small wheel for blast," which were "Required for the rolling mill."[6]

The requested $ 4,100 was appropriated on August 5,1854.[7] Finally, in the estimates for 1855-56 fiscal year, it was necessary to ask for $ 1,432 "for completing the exterior of the rolling mill." This money was needed "For completing walls for supporting embankment, filling in the same, and otherwise completing the exteriorof the rolling mill."[8] This sum was voted by Congress on March 3,1855.[9] The cost of constructing the rolling mill, 1853-1855 was thus approximately $ 12,532, but if the money from the 1848 appropriation is included, as it probably should be, the final total cost of the new rolling milling, including the machinery and structure, was probably about $ 29,032.

Preparation, which included clearing the site, for the new rolling mill was under way in the spring of 1853. In his annual report for the fiscal year ending June 30, 1853, Superintendent Benjamin Huger reported:

"The old tilt-hammer shop (at the Musket Factory, Bldg. No. 11 on the 1848 map, built in 1834-39 at a cost of $ 21,776) has been pulled down, and the (water) wheels, &c., removed; the wheel-pits penstocks, and forebays filled up; and all made ready for building the new rolling-mill on its foundations."[10]

The following year, Major William B. Bell announced the completion of and described the new workshop was follows:

"New Rolling Mill; 146 feet by 45 feet, one story of 16½ feet, built of brick, on stone foundation, covered with slate; paved with stone, and having two reverberatory furnaces, with stacks 45 and 40 feet high; two tilt-hammers, one forge, one large lathe for rollers, two trains of rollers, 13 and 8 inches; large shears, fan-blower, water-wheel, 15 feet cube. master wheel and gearing, pullies and other

6. Serial No. 714, Document No. 2, p. 188,189, Item No. 13.
7. U.S. Statues at Large, X, p. 578.
8. Serial No. 781, Document No. 3, p. 238, Item No. 1.
9. U.S. Statues at Large, X, p. 637.
10. Serial No.692.Document No. 1, p. 277.

"machinery, one large cast-iron flume from canal to forebay, is now completed, except the two tilt-hammers, part of the pavement, lathe and shears, forebay , part of machinery for driving fan-blower, which is not in position. It is expected that this mill will be ready for operations on or before the first of October next(1854)."[11]

Like the other new buildings at the Musket Factory, the rolling mill had cut stone water table, sills, and copings and the gutters and down spouts were of copper. Either Major John Symington or Brevet Colonel Benjamin Huger could have prepared the plan used in constructing the rolling mill, but photographs Harpers Ferry NHP Negative HF- 9 and 10, taken during the Civil War, reveal that new mill was designed in the same architectural style that Symington had been applying to the new shops going up at both the musket and rifle factories since 1846.

11. Serial No. 747, Document No. 1, p. 361.

e. New Stock and Store House, Bldg. No. 11, (New Arsenal Site), 1854 - 55:

The New Stock and Store House, Bldg. No. 11 on the 1859 historical base map is considered a part of the Musket Factory establishment even though the structure was not located in the factory yard, but on the south side of the armory canal, on the side of the hill between the canal and High or Washington Street.

In 1849, Col. Henry K. Craig had recommended that a new arsenal building to store muskets and rifles should be erected to replace the two original arsenals structure which dated from 1799 and 1806.[1]

As a result of the great and destructive flood of April 1852, it was decided to erect the new arsenal well above flood level, on the side of the hill overlooking the Musket Factory. The estimate for the 1852-53 fiscal year contained a request for $ 16,450 " for the erection of an arsenal, or storehouse for small arms." It was explain that the new building was needed because:

> The old arsenal is in a dilapidated condition, and is insufficient and unfit for the storge of small arms; the lower floor being subject to be flooded at high water. Its location is also bad; being in the business part of town (on Block A, Shenandoah Street), with private buildings in its immediate vicinity, and the Winchester railroad passing within 30 feet of its walls. The proposed building is to store finished arms, and will conveniently hold 80,000 stand. The proposed location for it is convenient to the other armory buildings, and remote from private property." [2]

Congress appropriated the money for this project on August 31,1852.[3]

In the estimates for the 1853-54 fiscal year, Col, Benjamin Huger asked for an additional appropriated of $ 13,700" for completion of new arsenal and enclosing wall," explaining: "The old arsenal is dilapiated, and so low as always to be liable to inundation. It is on one of the lots (Block A,Shenandoah) not required for armory purposes, and will be sold. The plan of the arsenal building heretofore proposed will have to be enlarged to receive the property it was intended to s store

1. Captain William Maynadier of Ordnance Office to Supt. John Symington, May 8, 1849, Harpers Ferry NHP Microfilm reel No. 19, Vol. 4, p.383.
2. Serial No. 633, Document No. 2, p. 212, Item No. 1.
3. U.S.Statues at Large, X, p. 107.

"in the old arsenal, and also muskets in the upper part, out of the reach of floods."[4] Congress also voted this money, on March 3,1853,[5] thus making a grand total of $ 31,150 available for this project.

Work on the site was underway in the spring of 1853 and on June 30,1853, Brevet Colonel Benjamin Huger described the progress in his annual report as follows: "To carry off water from foundations of new arsenal, the road above (High or Washington Street) has been graded and drains constructed; 419 feet of stone wall built, averaging 7 feet high by 4 thick."[6]

The new superintendent, Major William H. Bell, in his annual report of the year ending June 30, 1854, reported:

" New Arsenal: Foundation for this building nearly excavated. The lumber,cast-iron pillars, window and door frames, and roof irons purchased and delivered."[7]

In July 1854, however, Major Bell decided that the hillside would not be a suitable place to erect the new arsenal and recommended that it should be constructed on Old Arsenal Square, Block A, Shenandoah. In his inspection report, dated July 19,1854, Lieutenant Colonel R. S. Baker, Inspector for the Ordnance Department, concurred in and supported both of Huger's proposals regarding the proper site for the new arsenal.[8] Chief of Ordnance Col. Henry K.Craig approved the change in plans.

The estimate for the 1854-55 fiscal year thus contained a request for $ 8,000 "for building a new stock-house," explaining that "The cellar and first floor of the present stock-house (Bldg. No. 7) was covered with water during the last flood, in 1852. A large number of stocks have been collected

4. Serial No. 675, Document No. pp. 257-258, item No. 1.
5. U.S. Statues at Large, X, p.217.
6. Serial No. 692, Document No.1, p.277.
7. Serial No. 747, p. 361.
8. Inspection Report of Lt.Col. Baker, July 19,1854, Harpers Ferry NHP Photostaic Collection, Vol. 3, pp. 54-55.

"for seasoning, and a suitable building is required to keep them secure. The plan of the building will be furnished before the meeting of Congress."[9]

Also requested in this same estimate was $ 400 " for a post-and-rail fence to enclose arsenal grounds." "This was necessary." it was explained," to preseve the drains and slopes, which are liable to be injured by cattle."[10]

An additional $ 400 was desired "for drains and culverts", "To conduct water from the slopes and hill-sides, above the (Musket Factory) canal, to prevent wash, and to pass the water from the foundations of the arsenal and proposed stock-house."[11]

Congress appropriated the rquested total of $ 8,800 for these three related projects on August 5, 1854.[12]

Thus in August,1854, the plans to erect the proposed new arsenal on the hillside south of the new Tilt Hammer and barrel welding shop, Bldg. No. 9, were abandoned and Major William H. Bell prepared the plan for the actual structure, Bldg. No. 11, the Stock and Store House, which was to be constructed on the proposed arsenal site, in 1854-55.[13]

Master Armorer Samuel Byington, serving as acting superintendent, supervised the construction of the new stock house. On December 30,1854, Byington reported that the foundations walls and brick walls of the first story had been completed.[14]

He also informed Col. Craig that: "instead of putting a wooden fence on the government line on Washington Street, I have constructed a permanent Stone- wall, ... from stone saved from the foundations of the buildings torn down by the U.S. on that line. This wall is a most useful improvement,as it widens the street about double its original width and secures the face of the hill below from the work of the hill."[14a]

9. Serial No. 714, Document No. 2, pp.188-189, item No. 2.
10. Ibid., item No. 7.
11. Ibid., Item No. 9.
12. U.S. Statues at Large, X, p.578.
13. Also see Smith, Philip R , Jr."Research Report- History of the Large and Small Arsenals, 1796-1869, Block A., Lots 2, 3,4, 5, 6, and 7, Shenandoah Street, Harpers Ferry National Monument, West Virginia,"(NPS typescript, Harpers Ferry NM, W.Va., April 29, 1959),pp.21-25.
14. Col. H.K. Craig to Master Armorer in Charge Samuel Byington, August 24,1854, Reel 19, V. 7, p.655; Byington to Craig, December 30,1854, Reel 25, Vol. 11, p.4, 7.
14a. Ibid.

In his first annual report, for the fiscal year ending June 30, 1855, the new superintendent, Henry W. Clowe wrote:

" New stock house. Commenced and nearly completed; of brick, 100 by 35 feet, two stories, covered with slate, on stone foundations, cut-stone water-table; the doors and window frames are of cast iron. This building only needs the painting "of the (brick) walls outside to complete it. The foundation is that which was reported last year as nearly excavated for the new arsenal."[15]

In his report for the year ending June 30,1856, Clowe recorded: "The new stock-house, reported as nearly completed last year, has been finished, and is now occupied."[16]

The cost of the new stock and store house was probably about $ 8,800.00. The gutters and downspouts were probably of copper.

15. Serial No.841, p.556.
16. Serial No. 876, p. 389

4. Street Lights and Grading the Musket Factory Yard, 1852 -54:

Following the April 1852 flood, the musket factory yard was cleaned up and many improvements were made. In his annual report for the fiscal year ending June 30,1853, Superintendent Benjamin Huger reported of this work: "The roads in armory yard graded and macadamized; grass plats filled up, graded, and sown with grass-seed; six cast-iron lamp-posts put up and furnished with lamps complete."[1]

1. Serial No. 692, Document No. 1, p. 277-278.

5. Force Pumps for Fire-Fighting, Hydrants, 1852-54:

On June 30,1853, in his annual report, Brevet Col. Huger noted that "About 1,300 feet of 8-inch cast-iron pipe, with 9 hydrants attached, have been laid between the shops for conducting water(to extinguish fires) from the large force-pump to be attached to one of the water- wheels. This improvement will be completed the present summer."[2]

In the annual report for the fiscal year ending June 30,1854, Superintendent William H. Bell wrote: "One large force pump for throwing water in case of fire, completed with all its machinery, connected with the water wheel, with cast iron gearing."[3]

2. Serial No. 692, Document No.1, p. 277.
3. Serial No. 747, p.361.

6. Cistern for Drinking Water, 1853:

In the annual report dated June 30,1853, Col. Huger wrote: "A cistern has been built at the musket factory, capable of containing 25,000 gallons of water, for use of the shops, &c."[4]

This perhaps cost $ 1,000 to build, for in the estimates for the 1854-55 fiscal year, $1.000 was requested "for building a cistern." The justification stated: "To supply the workshops with drinking water, which now has to be brought from a distance." (5) The Congress appropriated this sum on August 5,1854 and the money may have been used to pay for the cistern already built.[6]

4. Serial No. 692, Document No.1, p. 277.
5. Serial No. 714, Document No. 2, pp. 188,189, item No. 8.
6. U.S. Statues at Large, X,p.578.

7. Painting the Work Shops, 1853:

In the report for the yearing ending June 30,1853, Superintendent Huger mentioned that "Many of the buildings, machines,&C.," at the musket factory had been painted.[7]

7. Serial No. 692, Document No. 1, p. 277.

8. Progress on the Formal Entrance Gate Project, 1852 -54:

Major John Symington's plan of constructing a formal entrance to the musket factory yard from the Wager Ferry Lot had been half executed in 1846-1849 at a cost of approximately $ 11,100. Wager Lot No. 12 had been purchased at a cost of $ 9,999.35, the large brick stores on the property demolished, and an architecturally impressive gate erected and an entrance wall built on Lot 12. Symington was unable to complete the balancing entrance wall because he could not presuaded the owners of Wager Lot No. 11 to sell. The following military superintendents did not forget Symington's plan. Brevet Col. Benjamin Huger was able to induce the owners of the property to sell it to the United States. On November 14,1853, Noah H. Swayne, the owner of the land, sold the lot, subject to the unexpired term of a 99 year lease held by the merchant Richard D. Doran, to the United States, for $ 2,500.00.[8]

On January 13,1854, the executor of the late Richard D. Doran's estate, Dr. Nicholas Marmion, sold Doran's 99 year leasehold and the title to the large brick building on Lot No.11 to the U.S. for $ 4,500.[9]

The large 2½ story brick building on Lot 11 had been erected by George Rust, Jr. and Robert Keyes in 1831-32. The edifice had two store rooms on the 1st floor and duplex dwellings or quarters on the upper floors.[10]

8. Deed of Bargin and Sale, November 14,1853, Deed Book 33,p389, Jefferson County Courthouse, Charles Town, W.Va.

9. Assignment of Lease, January 13,1854, Deed Book 34, p.1, Jefferson County Court House.

10. Snell, Charles W.; "An Historical Study of Wager Lot No. 11, 1831-1854, Ferry Lot Studies, Harpers Ferry National Monument, West Virginia,"(NPS typescript, Harpers Ferry NM,W.Va., September 23,1958)pp.5-6.

Major John Symington, on December 12,1844, had described the Lot 11 building as follows: "Double Brick building, 40 by 40 feet, 2 stories high, with finishe garrett and shingled roof; cellar underneath; and open gallery in front; back buildings of brick, 2 stories; lower story occupied as store, upper story and garret as dwelling." He had estimated that the land could be purchased for $2,286 and the building $ 4,000, making the total estimated price $ 6,286.[11]

The total final price paid in 1853-54 was,as has been noted, $ 7,000.00.[12]

The demolition of the Lot 11 building and construction of the remaining portion of the entranc wall took place in 1855-56 and will be considered in the following chapter.

11. Serial No. 464, Document No. 43, p. 9, Schedule A, item No.1.

12. This $ 7,000.00 came from the balance of $ 9,829.67 out of the August 8,1846 appropriation of $ 51,261 that had been provided to purchase land in the Wager Six Acre Reservation and Ferry Lot Reservation, Byrnes Island, and Dr. Nicholas Marmion's claim to houses located on Armory land.

9. The U.S. Musket Factory Canal on the Potomac River, 1852- 1854:

The estimates for the 1852-53 fiscal year requested $ 1,650 for" rebuilding a part of the armory canal wall and interior revetement, and removing obstructions." This work was necessary it was explained because:"This wall has been thrown down in consequence of the narrowness of the old road along the canal, which was only 15 feet wide, and afforded but a single tract(sic-track?). The road widened so as to prevent a recurrence of the damage, and it is necessary to rebuild the wall that has fallen, and to remove obstruction caused thereby to a full supply of water for the wheels."[1] Congress appropriated the desired amount on August 31,1852.[2]

In his annual report of operations for the fiscal year ending June 30, 1853, Brevet Col. Benjamin Huger reported of construction on the musket factory canal:

"A grouted stone wall built on the northeast side of canal, near new rolling-mill(Bldg. No. 18), 248 feet long, 6 feet high by 4 feet thick; and on the opposite side of the canal a dry wall 255 feet long, 6 feet high, and 2½ feet thick, to sustain that bank of the canal. These walls are complete, except the coping.

"The sluice-way of the canal(near old tilt shop)(Bldg. No.No.18)has been repaired. 48 perches grouted stone-masonry, 50 perches dry wall, and 68 square yards of paving, 2 feet deep in this repair, together with a new sluice- gate, with cast-iron gearing, complete, made and put in place. Extensive repairs and improvements have been made to the canal by cleaning out sand-bars and obstructions which have heretofore impeded the passage of water at low stages."[3]

1. Serial No. 633, Document No. 2, p.212, item No. 2.
2. U.S. Statues at Large, X, p. 107.
3. Serial No. 692, Document No.1, p. 277.

The estimates for the 1853-54 fiscal year contained a request for $ 4,000 "for repair of buildings, drains, and culverts, making roads and walks, and grading grounds." This was needed it was explained "From the very rough nature of the ground around the works, and the abrupt declivities, the rains do continued injury. It will be cheaper to grade these declivities, and to conduct the waters off, by a proper system of drainage, than to make continued repairs, with a constant recurrence of the injury will render necessary."[4] As this appears to be a program to keep the earth and rocks from being carried into the canal, the request is considered under this heading. The desired amount was voted by Congress on March 3,1853.[5] The money may have been used to grade the hillside on the south side of the armory canal, where the proposed new arsenal and the new stock house(Bldg. No.11) were scheduled to be erected.

In his report for the year ending June 30,1854, Major William H. Bell reported the the"Armory canal at the head,repaired; a wall of 200 feet, 4½ feet high, 3 feet thick, built to prevent wash, and large sand bars removed from the head of the canal. Lock gates and head gates at the stone forebay improved."[6]

Many of the improvements made to the Musket Factory canal and the grading of the hillside can be seen in the 1857 lithograph, Harpers FERRY NHP Negative No. HF -51 or HF-256 . Photo No. 2, p. 68.

4. Serial No. 675, Document No.2,,p.257,258,item No. 5.
5. U.S. Statues at Large, X, p.217.
6. Serial No. 747, p.361

Appropriations for the U.S. Musket Factory Canal 1852 - 1854

Year:	Musket Factory Canal
8/31 1852	$ 1,650
3/3/ 1853	4,000
8/5/ 1854	0
Total	$ 5,650

Destruction of the Armory Paymaster's Vouchers for the years 1852 to 1861 in the 1940s makes it impossible to determine the actual amounts expended, the amounts of material used, and who did the construction.

10. The U.S. Musket Factory Dam on the Potomac, 1852-1854:

In the annual report for the year ending June 30,1853, Brevet Colonel Benjamin Huger reprted that "The dam over the Potomac, which was much injured by the flood of [April] 1852, has been repaired, 1,083 perches of stone wall laid, and 916 cubic yards of filling."[1] No further work was mentioned in the annual report for the year ending June 30,1854.[2]

Appropriations of repairs and Improvements to U.S. Musket Factory Dam, 1852 to 1861:

Years	Musket Factory Dam
8/31 1852	0
3/3/ 1853	0
8/5/ 1854	0
Total	0

The destruction of the Armory Paymasters' vouchers from the years 1852 to 1861 during the 1940s makes it impossible to determine how much money was spent on the repair and improvement of the dam, for the purchase of materials, and who did the work on the dam during this period.

1. Serial No. 692. Document No. 1, p.277.
2. Serial No. 747, pp.361-362.

PART II- THE CIVILIAN SUPERINTENDENTS, 1855-61

CHAPTER IV - HENRY W. CLOWE AND ALFRED M. BARBOUR

A. General

For political reasons, President Franklin Pierce signed into law on August 5,1854 a measure that restored civilian superintendents to command of the National Armories at Harper's Ferry and Springfield, Mass., as had been the case from 1794 to 1841.[1] The last military superintendent, Major William H. Bell, departed from Harpers Ferry, apparently in August 1854, and Major Armorer Samuel Byington served as the acting superintendent from August to December 31,1854, when the new civilian superintendent, Henry W. Clowe, was appointed to the office. Clowe had been employed at the Harper's Ferry Armory since at least 1841. During the years 1841 to 1849 he resided in Armory Dwelling House No. 105, a one-story stone house, valued at $ 600 and located on Camp Hill. His rent was $ 9.25 a quarter. By December 31, 1850, he was an master machinist and was living rent free in Armory Dwelling House No. 103, a two-story brick house valued at $ 900, which was located on Block F, Lot No. 1, Camp Hill. He was still living in House 103 in 1852. His earlier home, House 105, was situated on Lot No. 4, Block F, Camp Hill.[2]

In December 1858, Secretary of War John B. Floyd was forced to removed Clowe as superintendent of the Armory because of Clowe's general mis-management of the Armory,[3] even through both Floyd and Clowe were fellow Democrats.. Clowe then returned to his former position as master machinist.

On December 24, 1858, Secretary of War Floyd announced the appointment of Alfred M. Barbour as the new civilian superintendent of the Harper's Ferry Armory.[3] A political choice, Barbour was a lawyer from nearby Charles Town, Va. Barbour was to be the last superintendent of the Harper's Ferry Armory, serving

1. U.S. Statues at Large, Vol. X, p.578. See Smith, Merritt Roe, Harpers Ferry Armory and the New Technology, p.301-304 for more detailed discussion.
2. Data from rent rolls, Records of 2nd Auditor, Treasury Department, National Archives Record Group 217, 2nd and 3rd series.
3. Smith, Harpers Ferry Armory, p. 302.
3. Ibid., p. 303.

in that office from December 24,1858 to April 19,1861, when Confederate troops seized the Armory by force of arms. On March 22,1861 he submitted a letter of resignation which not accepted until April 1861. During this latter period he was actively engaged at Richmond, Virginia, in preparing and facilitating Confederate plans to c[illegible]ture the Harper's Ferry Armory.[4]

The census of 1860 provides the following data on the two civilian Armory superintendents of the 1855-1861 period:

Henry W. Clowe, born in Virginia, was 48 years old in 1860. His real estate was valued at $ 2,000 and his personal estate at $ 500. His wife Sarah, 38 years old, and Clowe had two daughters **and three sons living with them, ranging in age from 8 to 18. Clowe's occupation in 1860 was listed as "armorer."** A.

Alfred M. Barbour, "Superinteddant of U.S. Armory," in 1860 was 28 years old and had been born in Virginia. The value of his real estate was estimated to be $ 5,000 and the value of his personal estate, $ 10,000. He was married **to Kate D. Barbour, aged 20, and the couple had no children.** B

During the period July 1,1854 to June 30,1860, a total of $ 251,019.36 was spent for repairs and improvements and the purchase of land at the Harper's Ferry Armory.

4.Smith, [illegible] Merritt Roe, Harpers Ferry Armory, p.315.

A. National Archives Record Group No. 29, Reel No. 1355.
B. Ibid.

B. Expenditures for Repairs and Improvements, Harpers Ferry Armory, 1854-1860

Fiscal Year :	Appropriated	Spent during year	Balance carried over June 30 Treasury	From Sale of land in 1852	Date Appropriated
1854-1855	0 (5)	$ 37,292.67	0		8/5/54
1855-1856	52,673.00	39,858.00	$ 37,850.00		3/3/55
1856-1857	38,892.00	45,081.91	53,625.03	36,606.70	4/23/56 8/30/56
1857-1858	34,970.00	25,044.68	18,000.00		3/3/57
1858-1859	101,907.00	32,66[illegible]7	38,900.00		6/12/58
1859--1860	55,000.00	71,07[illegible].03	88,608.40		3/3/59
1860 1861	65.500.00	?	?	-	6/12/60
Sub-TOTAL	348,942.00 + 36,606.70	$ 251.019.36 -	-	36,606.70	4/19/61 Armory captured.
1861-1862	64,500.00	(6) 0			3/2/61
Total	413,442.00 36,606.70				
Total	$ 450,048.70				

(5). $ 35,100 appropriated has been included in the totals of the preceeding chapter as money requested by the military superintendents.

(6) Money never spent.

C. Final Disposition of the Proceeds of the 1852 Sale of Lots:

The chart on the preceeding page reveals that from March 3,1855 to June 12, 1860 the U.S. Congress appropriated a grand total of $ 348,942.00 in projects designated as repair and improvement at the Harper's Ferry. In addition, on April 23, 1856, they also voted that $ 36,606.70 that had been collected from the 1852 sale of lots and houses and deposited in an special account in the U.S. Treasury, could be used to make repairs and improvements on the Armory land at Harper's Ferry. The total amount of money available for repair and improvement projects at the Armory from March 3,1855 to June 12,1860 was thus was thus $ 385,548.70.

Under the joint resolution of Congress, passed April 23,1856, it was resolved. "That the Secretary of War and he is hereby authorized to apply so much of the proceeds of the recent sale of land and lots at Harper's Ferry, as he may deem advisable, to the purchase of such other lots at that place, as he may deem necessary to the safety and convenience of the public buildings belonging to the United States, and that he may apply the residue of the proceeds of said sale to the improvement of the property retained by the United States."[6]

In the last chapter, it was noted that Col. Benjamin Huger,October 15,1852, had suggested to the Chief of Ordnance that the proceeds of the 1852 be used to make improvements at the Armory, but had been turned down by the Secretary of War. Huger, following the guide lines laid down by the Board of Officers in their report of September 24, 1851, which had been approved by the Secretary of War on June 10, 1852, had worked out detailed estimates of the work that should be done to the Armory grounds and streets, if the proceeds of the 1852 sale were made available. On March 18,1854, in reponse to the request of Representative Charles F. Faulkner of Virginia , Major William H. Bell,

6.U.S. Statues at Large, XI, p. 143.

Superintendent of the Harper's Ferry Armory, provided both the Congressman and the Ordnance department with copies of Huger's 1852 estimate and other documents relating to the 1852 sale.[7] He also advised Faulkner that To March 31,1854, a total of $ 27,692.31 collected from the sale had been deposited in the special account in the U.S., Treasury, that the Armory Paymaster had on hand $ 2,100.00 that had not yet been deposited,making a total of $ 29,792.31 collected and the unpaid balance outstanding was $ 28,854.52.[8]

This information served as the basis for Congressman Faulkner's actions which led to the passage of the joint resolution of Congress on April 23,1856. By this date the total amount collected had risen to $ 33,725.27 and by June 1856 the total stood at $ 36,606.70. Huger's and Baker's September 1852 estimates thus appears to have served as the chief basis of the improvement program totalling $ 36,606.70 that Secretary of War Jefferson Davis approved, acting under the joint resolution of Congress, on June 28, 1856.[9]

This $ 36,606. 70, added to the $ 38,892.00 appropriated in repair and improvement appropriation, made a grand total of $71,576.70 available for construction during the 1856-1857 fiscal year.

The records of the Treasury Department of disbursals of funds to the Harper's Ferry Armory Paymaster indicates that an additional $ 6,218.74 from the proceeds of the 1852 sale, money paid in during the period 1856-60, was made available by the Secretary of War for making improvements at Harpers Ferry. The grand total expended from this fund from 1856 to 1861 was thus $ 42,825.44.

The improvement program approved by Secretary of War Jefferson Davis on June 28, **1856 was comprised of the following 10 projects:**

7. Bell to Faulkner, March 18,1854, Reel 25, Vol. 1,pp.80-88.
8. Ibid., p.80.
9. Chief of Ordnance Henry K. Craig to Superintendent Henry W. Clowe, Reel 19,Vol.9, p.871. Also Secretary of War to Secretary of Treasury, Mar 7,1856, Reel 26,V.5,p.466. Sec.of Treasury to Sec. of War, May 10,1856,Reel 26, V.5, p.464; Craig to Sec.of War, May 3,1856, Reel 20, V. 3, p.231-232; Craig to Clowe, May 10,1856, Reel 19, V. 9,pp.862-863. Receipts,Expenditure, and Deposits for 1852 lots at Harpers Ferry, are on Reel 18, V. 12, pp.1205-1207.

Proceeds of 1852 Sale of Public Lots and Houses, made available June 28, 1852, for making the following improvements at the U.S. Armory at Harper's Ferry during the 1856-57 fiscal year:

1. Purchase of Wager Lot 17 to be made into a street.....	$ 1,466.00
2. Erection of three quarters (Master Armorer's new house, Park Bldg. No. 36; Paymaster's Clerk's Quarters, Park Bldg. No. 58; Superintendent's Clerks's Quarters, Park Bldg. No. 57.....	18,000.00
3. Grading and Opening Street.....	5,613.20
4. Repairs of Finishing Shop (Bldg. No.3) Rifle Factory.....	2,860.00
5. Enclosing grounds of new magazine and new stock house (Bldg. No. 11 of Musket Factory.....	1,000.00
6. Cleaning well on Fillmore Street (Camp [illegible]) and Pump.....	200.00
7. Completing protection and improvement Rifle Factory	3,993.00
8. Filling, grading, and paving East end at North Cliff (making Wager Lot 13 into a street.....	357.50
9. Extending Arsenal Square (Blocks A and B, Shenandoah Street)..	2,917.00
10. Removing building from (Wager) Lot 17.....	200.00
	$ 36,606.70 (10)

The additional $ 6,218.74 spent from the proceeds of the 1852 sale were apparently expended to meet the cost overruns in the construction of three new quarters for the Master Armorer, the Superintendent's Clerk, and the Paymaster's Clerk, and the addition of a second story to the Paymaster's Quarters. The final total cost of this work was thus $ 24, 218.74 and not $ 18,000 as had been estimated.

The money approrpiated by Congress for repair and improvement, plus the $ 42,825.44 made available from the proceeds of the 1852 sale of public houses and lots, was to be used as follows during the period 1855 to 1861:

10. Col. Craig to Supt. Henry W. Clowe, June 28,1856, Reel 19, V.9, p.871.

D. U.S. Musket Factory, 1855 - 1861:

During the period 1855 to 1861 a total of $ 50,056 was appropriated and probably spent making repairs and improvements to the buildings and grounds of the U.S. Musket Factory: Major improvements included the following:

1. Conversion of the 1846-47 Storehouse for Stocks to a Millwright Workshop in 1859-60. Cost, $ 11,103.00. Musket Factory Bldg. No. 7.

2. Construction of Connecting Workshop, Bldg. No. 21, linking Musket Factory Buildings No. 7 and 8, 1860-61. Cost about $ 5,951. Large two-story brick shop.

3. Addition of 2nd brick story to Bldg. 8A, Grinding Mill, east wing of Bldg. 8, in 1860-61. Cost about $ 800.00.

4. Construction of Bell Tower Workshop, Bldg. No. [illegible], connecting Bldgs. No. 6 and 7, in 1860-61. Cost about $ 8,073.50.

5. Construction of the formal entrance wall on Wager Lot No. 11 in 1854-55. Cost, about $ 1,000.00.

6. Additional coal bins were constructed under the trestle of the B. &. O. Railroad tracks.

7. The 1851 frame horse and carriage shed, located near the main gate, was removed from the Musket Factory yard in 1856.

8. A smaller frame horse shed was built under the B.&.O. treatle in 1856.

9. 1855-57 about $ 10,723 was expended constructing a stone wall that was topped by an iron paling fence along the south bank of the Armory canal, between the canal and North Cliff(or Potomac) Street. This wall was about 1,365 feet long.

10. 1854-55, about $ 1,000 spent constructing a brick pier and iron paling fence enclosing the western or upper end of the Musket Factory yard.

Details of this construction follow:

APPROPRIATIONS FOR REPAIRS AND IMPROVEMENTS AT THE U.S. MUSKET FACTORY, 1855-1861

Year:	Bldg.2 Offices	Bldg. 3 Bell Shop	Bldg. 6 Machine Shop	Bldg.7 (Old Stock) Millwright Shop	Bldg.8 Grinding Mill	Bldg. 11 New Stock House & Grounds	Bldg. 21 Connecting Shop	Bldg. 18 Rolling Mill
3/3/ 1855				363				1,432
8/30/ 1856		1,000				3,183		
3/7/ 1857	766					1,000		
6/12/ 1858				11,103				
3/3/ 1859					800	800		
6/21/ 1860			600				7,025	15,000
3/2/ 1861								
TOTAL	$ 766	$ 1,000	$ 600	$ 11,466	$ 800	$ 4,983	$ 7,025	$ 16,432

APPROPRIATIONS FOR REPAIRS AND IMPROVEMENT AT THE U.S. MUSKET FACTORY, 1855-1861

Year	Coal Bins	Paving Walks	Bell Tower & Shop	Enclosing SouthhWall	Total Bldgs.Groun	U.S. Canal	U.S.Potomac Dam	Total Bldg.Dams, Canals
			Bldg. 22					
3/3/ 1855	176				$ 1,971	2,334	0	4,305
8/30/ 1856	223	560		5,723	10,689	2,670	7,000	20,659
3/7/ 1857					1,766	0	0	1,766
6/121/ 1858					11,103	6,479	40,000	57,582
3/3/ 1859					1,600	10,730	26,000	38,330
6/21/ 1860			6,025		28,650	0	0	28,650
3/2/ 1861					0	11,693*	0	11,693
TOTAL	$ 399	$ 560	$ 6,025	5,723	$ 55,779	34,476	$ 73,000	$ 163,255
TOTAL SPENT	$ 399	$ 560			55,779	$28,236	$ 73,000	$ 151,292

* Money never spent.

SUMARY SHEET:

APPROPRIATIONS FOR REPAIRS AND IMPROVEMENTS AT THE HARPER'S FERRY ARMORY
1855 - 1861

Year	Musket Factory	Rifle Factory	Arsenal Square	Canals	Dams	Officers' Quarters	Wells	Streets	Machinery	Total
3/3/ 1855	$ 1,971	8,180		5,839				9,650	7,033	$ 32,673.00
8/30/ 1856	10,689	2,050	5,761	2,670	7,000			422	10,000	38,892.00
3/7/ 1857	1,766	6,853	2,917			18,000	200	7,636.70	34,204	71,576.70
6/12/ 1858	11,103	0	27,325	8,479	40,000				15,000	101,907.00
3/3/ 1859	1,600	15,820		10,730	26,000				850	55,000.00
6/21/ 1860	28,650								36,850	65,500.00
3/27/ 1861		12,128 *		23,092 *		2,000 *			27,280 *	* 64,500.00
TOTAL	$ 55,779	$ 45,031	$ 36,003	34,476	$ 73,000	$ 20,000	$ 200	$ 17,708.70	$ 131,217	$430,048.70
TOTAL SPENT	$ 55,779	$ 32,903	$ 36,003	$ 33,741	$ 73,000	$ 18,000	$ 200	$ 17,708.70	$ 103,937	$ 365,548.70

* Money never spent.

CHART

CASH FLOW FROM US. TREASURY DEPARTMENT TO THE PAYMASTER AT HARPER"S FERRY ARMORY, VA., FROM FUNDS COLLECTED FROM THE SALE OF PUBLIC LOTS AT HARPER"S FERRY IN 1852,TO BE USED TO MAKE PERMANENT IMPROVEMENTS, 1855 - 1859.

Year	Repayments during fiscal Year	Total Available	Amount withdrawn by requisition of Paymaster during year.	Balance in Treasury at end fiscal year	
1855-56	$ 33,725.27	$ 33,725.27	$ 0	$ 33,725.27	(1)
1856-57	904.31	34,629.58	14,000.00	20,629.58	(2)
1857-58	0	20,629.58	16,000.00	4,629.58	(3)
1858-59	8,195.86	12,825.44	12,825.44	0	(4)
1859-60	0	0	0	0	(5)
Total	$ 42,825.44	-	$ 42,825.44	0	-

Sources:

1. Serial No. 878, Document No. 17, p. 5.
2. Serial No. 924, Document No. 29, p. 5.
3. Serial No. 1006, Document No. 64,p.4.
4. Serial No. 1047, Document No.21, p.4.
5. Serial No. 1097, Document No.34, p. 3.

Use of Funds from the Sale of Lots in 1852, as approved by the Secretary of War :
For making Improvemnns at:

Rifle Factory: $ 6,853.00

Grading Streets: 5,970.50

Purchase of Lot No. 17 for street 1,660.00

Arsenal Square 2,917.00

Magazine 1,000.00

Three Quarters for Master Armorer & clerks" $ 18,200

Total: $ 36,600.50

1. Improvements for Armory Office ,Building No. 2,Musket Factory, 1857-1860

The paymaster's vouchers for the period 1852 to 1861 were destroyed by the National Archives in order to save space during the 1940's, hence it is impossible to trace any minor alterations or repairs that may have been made during the years 1852-61.

The estimates for the year 1857-58, however, requested the sum of $ 766.00 to erect an "iron fence and gates in front of armory offices". It was explained that "the building in the armory yard devoted to offices, and in which all the offices of the armory with their clerks, including the vault of the military storekeeper and paymaster, is without any enclosure. It is proposed to construct a iron fence in front, so as in a great degree to separate it from the business of the yard,and as a better and further protection to the records and papers of the establishment."[11] The requested amount was appropriated on March 7,1857.[12]

In his annual report for the year ending June 30, 1858, Superintendent Henry W. Clowe reported: " 35 cut stone bases, for fence in front of armory offices, have been purchased ready for doing the work."[13] The completion of this iron fence, however, is not mentioned in the superintendent's annual reports for June 30, 1859 and June 30,1860,[14] so that iron fence with piers of brick and cut stone was probably not erected prior to the Civil War(1861). HFNHP Negative HF-27B, an excellent photograph showing the front of the Armory Office building in 1865, apparently confirms this, as no fence is visible in front of the Office.

11. Serial No. 909, Document 192, p. 162.
12. U.S. Statues at Large, XI, p. 203.
13. Serial No. 976, Document No.1, p. 1319.
14. Serial No. 1025, Document No.1, p.1114 for 1859; Serial No. 1079, Document No.1, p.973-974.

In his annual report for the fiscal year ending June 30, 1860, Superintendent Alfred M. Barbour reported that the "new privy at offices" had been completed.[15] **What is probably this brick structure can be seen in Harpers Ferry Negative No. 539, a photo taken in 1886.**

15. Serial No. 1079, p. 973,

2. Repairs to the Old Bell Shop, Bldg. No. 3, 1855 - 60:

In his first annual report, for the year ending June 30,1855, the new superintendent, Henry W. Clowe reported, regarding the Bell Shop:

" Machines fabricated:

47 feet,lineal, main line shafting put up and in operation on first floor of bell shop.

32 10/12 feet,lineal, counter-line shafting, put up and in operation on first floor of bell shop.

This shafting is of the latest and most approved style, finished bright, with cast-iron pulleys, gearing, and metallic journals....

Various and extensive improvements have been made to the main and counter-line of driving machinery on the second floor of the bell shop...;to the water-wheel at bell shop, improving the head-gates of the same..." 21.

The estimates for the 1856-57 fiscal year contained a request for $ 1,000.00 "for forebay for cast-iron water-wheel at bell shop;" it was explained: "The present forebay for this wheel is of wood, having been constructed about 18 years ago. and is in a very dilapiated and decaying condition, The timbers are constantly giving way, causing not only a great waste of water, but requiring constant renewing. This estimate proposes that the entire frame-work of the forebay be of iron; the planking to be of yellow pine two inches thick, secured with iron bolts and straps." 22

The requested money was appropriated on August 30,1856. 23

Finally, under the heading of machinery made, Superintendent Clowe noted in his annual report for the year ending June 30, 1856:

"31 feet of main line, and 38 of counter shafting, with pulleys of cast-iron, finished bright, of uniform size, of good quality, and the most approved construction, have been fabricated and put in operation on the first floor of the bell shop; and 38 feet of old counter shafting removed, as unfit for service.

65 feet of main line and 69 9/12 feet counter shafting, with cast-iron pulleys, hangers, and white metal journal seats, with pans for catching the oil from the journals, oil cups, cone pulleys, belt shifters, &c., all complete as above; and 98 feet of old main line, and 125 feet 4inches of the old counter shafting, removed as worn-out and unservicable from the second floor of the bell shop. 24

21. Serial No. 841, Document No.1, p. 556.
22. Serial No. 865m o, 245, 247, item No. 11.
23. U.S. Statues at Large,XI, p.150.
24. Serial No. 876, Document No.1, p. 388.

In the report for the year ending June 30,1857, Clowe reported:

Fifty feet main line shafting, and 210 feet of counter shafting, of superior quality, finished bright, with cast iron pulleys, hangers, and Babbitt metal journal bearings or seats, have been completed and in operation on the first and second floors of the bell shop and boring mills, in the stocking shop, and on the first and second floors of the machine shop."[25]

In the report for the fiscal year ending June 30,1858, Clowe noted that " 1 cast iron forebay for water wheel at bell shop,(had been) fabricated." and that "I set of gearing, shafting,&c. for head of forebay(had also been) fabricated."[26] **The cast-iron forebay was apparently installed at the Bell Shop in 1858-59.**

25.Serial No.920,p.550.
26, Serial No. 976, p. 1318.

3. Repairs to the Boring Mill, Bldg. No. 5, 1855 - 1860:

In the annual report for the fiscal year ending June 30,1856, Superintendent Henry W. Clowe noted that "94 feet counter shafting and machinery on second floor of boring mill so improved as to allow the removal of 115 7/12 feet of shafting, with pulleys, fixtures,&c, and simplify the machinery, econonmize oil and belting, and reducing the friction equal to the amount removed."[1]

In the report for the year ending June 30,1857, Clowe reported:

Fifty feet main line shafting, and 210 feet of counter shafting, of superior quality, finished bright, with cast iron pulleys, hangers, and Babbitt metal journal bearings or seats, have been completed and in operation on the first and second floors of the bell shop and boring mills, in the stocking shop, and on the first and second floors of the machine shop."[2]

1. Serial No.876, pp. 388-389.
2. Serial No. 920, p.550.

4. Repairs to the Machine and Stocking Shops, Bldg. No. 6, 1855 - 60:

In his annual report for the fiscal year ending June 30,1855, Superintendent Henry W. Clowe reported that " 10 feet, lineal, counter-line shafting"had been made ,"put up and in operations on the first floor of the machine shop. This shafting is of the latest and most approved style, finished bright, with cast-iron pulleys,gearing,and metallic journals."[1]

In the report for the year ending June 30,1856, Clowe noted: "11 feet counter shafting, fabricated, and put in operation, first floor of machine shop."[2] He also noted that "Machinery and fixtures ... for drawing head gates at ... the grinding mill (had been installed). These are of cast iron, and of the most permanent and durable construction."[3]

He further recorded that"Very considerable improvements have been made on the stocking-table, and machinery attached to it, and the main line of shafting thereof, in the stocking shop."

In the report for the year ending June 30,1857, Clowe reported: Fifty feet main line shafting, and 210 feet of counter shafting, of superior quality, finished bright, with cast iron pulleys, hangers, and Babbitt metal journal bearings or seats, have been completed and in operation on the first and second floors of the bell shop and boring mills, in the stocking shop, and on the first and second floors of the machine shop."[4]

In the estimates for the 1860-1861 fiscal year Superintendent Alfred H.Barbour asked for $ 600 "for removing partitions on first and second floors of machine shop"; It was explained;"These partitions are found, from experience to be in the way."[5] Congress appropriated the desired sum on June 21,1860.[6]

1.Serial No.841,p. 556.
2. Serial No. 876,p. 388.
3.Serial No. 876,p. 389.
4.Serial No. 920,p.550.
5. Serial No.1043, p. 229, Item No. 5.
6.U.S. Statues at Large, XII, p. 66.

5. Construction of Two New Workshops and an Addition of a Second Story to the Grinding Mill, Bldg. 8A, 1860-61:

In 1860 $ 13,050 was provided to make the following improvements at the musket factory:

1. To raise the one-story east wing of Bldg. 8A, the grinding mill, to two-stories in height .

2. To construct a two-story brick building, Bldg. No. 21, that would connect the Grinding Mill, Bldg. 8A, with the recently converted Millwright Shop, Bldg. No. 7.

3. To construct a workshop with a tall bell tower, Bldg. No. 22, between the Millwright Shop, Bldg. No. 7, and the Machine Shop, Bldg. 6D - the two-story west wing of Bldg. No. 6.

This construction would thus unite Bldgs. No. 8, 21 , 7, 22, and 6 into single gigantic shop about 519 feet long by 36 feet wide. The purpose was to form a single building within which the production and assembling line would pass along muskets and the steps of manufacturing would progressivly follow, with the finished weapon emerging at the lower end of the line.[1]

The destruction of the Armory Paymaster's vouchers for the years 1852- to 1861 by the staff of the National Archives during the 1940's makes it impossible to trace in detail the costs of constructions, amounts of building material actually used, or the names of the men who constructed Bldgs. No. 21 and 22, and added the second story to Bldg. 8A.

1. Inspection Report,July 20,1859, Photostats, Vol. 4,p.7; George Mauzy to J.H. Burton, August 18,1859,; Photograph HF-30; Superintendent A.M. Barbour to Chief of Ordnance, Col. Henry H. Craig, July 31,1860, Reel 27, V.8,p.801; Craig to Barbour, August 3,1860,Reel 19,V.12, p.1139; Barbour to Craig, August 6,1860, Reel 27, Vol. 8, p.807; Craig to Secretary of War Floyd, August 7,1860, Reel 20,V. 4, P.325; Craig to Barbour, August 26,1860, Reel 19,V.12,p. 1148; Craig to Barbour, September 7,1860, Reel 20, V. 4, p.351; Craig to Barbour, February 14,1861, Reel 20, V.4, p.388. Also estimates of work, August 30, 1860, Reel 27, V.9, p.822-823 .

6. The New Bell Tower Workshop, 1860 - 61: Bldg. No. 22- (Located Between Bldgs. 6 and 7).

The estimates for the 1860-61 fiscal year contained a request for $ 6,025 for making an "Addition to the machine and stocking shop (Bldg. No. 6)," it was explained that "If this addition is authorized, the building (no. 6) will be connected with the barrel finishing (or Millwright Shop, Bldg. No. 7), and under the same roof, whereby a large amount of external transportation of components and materials will be avoided."[1] Congress appropriated the desired amount on June 21, 1860.[2]

The plans and itemized cost of materials and laborer need in the construction the Bell Tower, Bldg. No. 22, were prepared by Master Armorer Armistead M. Ball, at Superintendent Alfred M. Barbour's request, on August 30, 1860, as follows:

215,000	Brick laid @ 16 per M	$ 3,440.00
412 26/27	yds Earth Excavation @ 30 ¢ per yd	123.75
412 26/27	yds Earth removed @ 25¢ pr yd	103.75
352 10/25	perches Cement (foundation) walling at $ 4.50 pr perch	1,585.75
94	ft. (cut stone) water table @ 1.00 per lineal ft.	94.00
130	ft ft (cut stone) Window Sills @ 75¢ " " "	97.50
110	ft (cut stone) coping @ $ 1.00 per ft	110.00
13,000	lbs Iron Castings (door & window frames) @ 4¢ pr lbs	520.00
700	ft Glass (double) @ 15 ¢ pr ft	105.00
1,800	ft Slating @ 9 ¢ pr ft	162.00
150	ft Copper Guttering @ 87½ ¢ pr lineal ft	131.25
14,000	ft Sawed Timber @ $ 16 pr ft	244.00
4,000	ft 1 inch plank @ $ 2 pr ft	80.00
3,000	ft. 1 inch plank @ $ 1.50 pr ft	45.00
3,500	ft 2 inch plank, @ $ 2.00 " "	70.00
3,000	ft 1½ inch plank @ $ 2.00 " "	60.00
	Painting, Glazing & Materials	230.00
	Irons for Roof (Lightning rods?)	45.00
	Fitting up Castings (iron), Windows & Door frames	60.00
	Hardware & Nails	50.00
	Carpenter Work	650.00
	Transportation of Lumber	66.50
	Appropriated (June 21, 1860) $ 6,025	$ 8,073.50 [3]

1. Serial No. 1043, p.229, Item No. 3.
2. U.S. Statues at Large, XII, p.66.
3. Ball to Supt. Barbour, Aug. 30, 1860, Reel 27, V.9, p. 823.

Barbour and Ball apparently planned to pay for the cost overrun on Bldg. No 22, the Bell Tower by transferring surplus funds from the Connecting Shop, Bldg. No.21, project as follows:

For Bldg. No.	Appropriated	Estimated Cost
21	$ 7,825.00	$ 5,950.67½
Bldg. 22	$ 6,025.00	8,073.50
Total	$ 13,850.00	$ 14,024.17½

Col. Henry K. Craig, Chief of Ordnance, approved the plan for Bldg. No. 22 on September 7, 1860,[4] and construction apparently got underway at once.

Because of the outbreak of the Civil War in April 1861, Superintendent Alfred M. Barbour never wrote his report of operations for the fiscal year ending June 30,1861. Due to this, and also to the destruction of the Armory Paymaster's vouchers for the period 1852-1861, there is no long any data extant on the progress of construction of Bldg. No. 22. Visual evidence, taken 1861-1865, however, reveals that Bldg. No. 22, the tall bell tower was erected in the period September 1860- April 1861. Historical prints and photographs made 1861 to 1865 showing the Bell Tower are as follows: HF- 223- a drawing published in Harpers Weekly in 1861 entilted: "Harpers Feery Armory as It now Appears, July 20,1861"; HF-240 and HF -492, both photographs taken in October 1862; HF- 30, also a photo made in 1862; HF-11, photo of October 1862; HF-10, 1862 photo. HF- 38, a photo taken in 1865 or 1866 reveals that Bldg. No. 7, 22, and 6 had all be demolished by that date.

4.Craig to Barbour, Sept. 7,1860, Reel 20, V. 4, p.351.

The photographs reveal that the Bell Tower, Bldg. 22 ,was three bays wide, three stories high, with a gable roof. The center bay of the north or front elevation was occupied by a slightly projecting square shaped bell tower that rose three full stories from the ground. The tower was then set or stepped back slightly, and the structure then rose another two stories. The top of the tower was adorned by a small turret at each of the four corners. Each elevation of the square belfry contained a tall round arched open window above which, in the fifth story, was set a small round open window,

7. Remodelling of the Store House for Stocks into the Millwrights Shop, Bldg. No. 7, 1855 - 1860:

On March 3,1855,Congress appropriated $ 363.00 to install a plaster ceiling and repair the floor of the store house for stocks.[1] The estimate requesting this sum explained the need as follows: "The present stock-house is found to be injurious in some degree(to the stock stored there) from dampness, owing to the condensation of vapor from a sheet-iron roof without ceilings, and from defective drainage and decayed floor. By the addition of the ceiling, and removing the floor and renewing, and the drainage, the dampness may be easily remedied."[2]

In the estimates for the 1858-59 fiscal year, the sum of $ 11,103.00 was requested "For converting old stock house(Bldg. No. 7) into a work-shop." This was needed because""There is a necessity for more shop room for the manufacture of arms; and a new stock house(Bldg. No. 11) having been erected outside of the armory yard affords an opportunity of converting the building in the yard heretofore used as a stock house into a very suitable workshop. It is designed for files and putting in position the cutting and milling machines nexessary for the work of machines."[3] The converted stock house was henceforth to be known as "the millwrights shop." Congress appropriated the desired amount for this project on June 12, 1858.[4]

1. U.S. Statues at Large, X,p.637.
2. Serial No. 781,Document No.3, p.238.Estimates for 1855-56 Bldg. No. 11, the new Stock House, under construction in 1854-55, had a slate roof.
3. Serial No. 941, p.193.
4. U.S.Statues at Large Vol. 11, p.335.

Because of the destruction of the Armory Paymaster's vouchers for the years 1852 to 1861 by the staff of the National Archives during the 1940's, it is no longer possible to trace in detail the costs of construction, amounts of material and machinery purchased and used in the conversion, and the names of the men who did the work.

Under the heading of machinery "in progress of fabrication" in the annual report for the fiscal year ending June 30,1859, Superintendent Alfred M. Barbour noted that "1 water-wheel, flume, shafting(main and counter,) with pits, head gates, fixtures, walling, &c. for converting the old stock-house (Bldg. No. 7) into a workshop" had been made.[5] The wheel and flume were apparently constructed of cast- iron.

In his report for the year ending June 30,1860, Barbour wrote: "The old stock-house(Bldg.No. 7) at the musket factory, has been converted into a workshop, but the necessary work has not yet been completed, to enable it to be employed as such."[6]

Plans for the conversion of the stock house to a millwrights shop were prepared by Superintendent Henry W. Clowe, but the execution of the work was done by Superintendent Alfred M. Barbour in 1859-60.

5. Serial No. 1025,p.1113.
6. Serial No. 1079, p. 974.

8. The New Connecting Workshop, Bldg. No. 21, 1860-61: (Located between Bldgs. No. 7 and 8):

The estimates for the 1860-61 fiscal year contained an item asking for $ 7,025 for making an addition to barrel-finishing shop (Bldg. No. 7); it was explained "This addition will connect this building (No. 7) with the grinding mill (Bldg. 8A)," and "under the same roof whereby a large amount of external transportation of components and materials will be avoided."[1] Congress appropriated the requested amount on June 21, 1860.[2]

The plan and itemized cost of materials needed in the construction of Bldg. No. 21 were worked out by Master Armorer Armistead M. Ball for Superintendent Alfred M. Barbour, at Barbour's request, on August 30, 1860, as follows:

"Estimate of Cost of Additional Building, connecting Grinding Mill (Bldg. 8A) and Barrel Finishing Shop (Bldg. No. 7), Musket Factory

90,000	bricks, layed @ $ 16 per M	$ 1,440.00
110	ft cut stone Water table @ $1 pr lineal ft	110.00
156	" " " Window sills @ $ 0.75 " "	117.00
258	yrds Earth Excavation @ 30¢ per yd	77.55
260	perches Cement walling @ $ 4.50 pr prch	1,1170.00
12,000	lbs. Iron castings (window and door frames) @ 4¢ per lbs	480.00
258	yds Earth removed @ 25¢ per yd	64.62½
2,900	Ft Slate roofing, @ 9¢ per ft	261.00
18,000	ft sawed Timber at $ 16 ft	278.00
5,000	Ft 1½ inch plank, at $ 2 ft C	100.00
4,000	Ft 2 inch plank. @ $ 2 ft C	80.00
9,000	Ft 1 " " $ 2 " "	180.00
2,000	Ft 2 " " $ 3.50 "	70.00
600	Ft window glass @ 15¢ pr ft	90.00
230	ft. copper guttering @ 87½ ¢ per Lineal ft	192.50
	Hareware and Nails	80.00
	Painting, Glazing & Material	230.00
	Fitting up (iron) castings Window & Door Frames	120.00
	Irons for Roof. (A)	90.00
	Transportation of Lumber	100.00
	Labor of Out hands	20.00
	Carpenter Work	600.00
	Appropriated (June 21, 1860): $ 7,025.00	$ 5,950.67½

1. Serial No. 1043, p. 229. Item No. 4.
2. U.S. Statues at Large, XII, p. 66.
A. Perhaps for lightning rods.

In addition, Master Armorer Ball noted that there was also available an appropriation of $ 800.00,made March 3,1859, for making an addition to the grinding Mill,Bldg. 8A, that had not yet be used.[3] Thus a total of $ 7,825 was apparently available for construction that was estimated to cost only $ 5,951. The surplus from Bldg. No. 21 was apparently utilized to help construct Bldg. No. 22, as the estimated cost of Bldg. No. 22 exceeded the amount of money voted for that purpose.

The Chief of Ordnance, Col. Henry K. Craig, approved the plan and estimate for constructing Connecting Building No. 21 on September 7,1860.[4]

Because of the destruction of the Paymaster's vouchers and due also the the coming of the Civil War War in April 1861, causing Barbour to never write his annual report of operations for the fiscal year ending June 30,1861, there is now no information available on the progress of construction of Bldg. No. 21. The following Harpers Ferry NHP Negatives, however, reveal that a second brick story was added to the grinding mill, Bldg. 8A and that a two-story brick shop was erected that connected Bldgs. No. 8 and 7: HF- 223 a drawing published in Harpers Weekly entitled: "Harpers Ferry Armory as It Now Appears, July 20,1861", shows the Bldg. Tower, Bldg. No. 22, the Connecting Shop.Bldg. No. 21, and part of the new second story on Bldg. 8, the Grinding Mill. The new buildings were designed in the same style that Major John Symington had begun applying to the new Armory Buildings in 1846. HF- 30, a photo taken in October 1862, reveals that the details shown in HF- 223 are correct and also shows Bldgs. No. 8, 21, 7, 22, and 6 in detail. HF- 38, a photo taken in 1865 or 1866, reveals that Bldgs. No. 8,

3. Ball to Barbour, August 30,1860,Reel 27, V.9, p.822.823.
4.Craig to Barbour, Sept.7,1860, Reel 20, V. 4,p.351.

and 21 were still standing in ruined state, but that buildings No. 7, 22, and 6 had been demolished.

Judging by the visual visual evidence, the Connecting Shop was approximately eight bays long on its front (north) and rear (south) elevations.

9. Repairs and Additions to the Grinding, Saw, and Planing Mills, Bldg. No. 8, 1855 - 1860:

The destruction of the Armory paymaster's vouchers for the years 1852 to 1861 by the staff of the National Archives during the 1940's make it impossible to trace in detail the completion of the saw and planing mills in 1852 or of repairs or alterations made to the structure during this period.

The annual reports of the superintendents, however, do reveal that the following work was done to the work shop during the period 1852-1861.

In his annual report for the fiscal year ending June 30,1856, Superintendent Henry W. Clowe reported that"A portion of the floor in the carpenter's shop (north wing,Bldg. 8C),which was discovered to be very much decayed, has been removed, and new joists and floor put in."[20]

The annual estimates for the 1859-60 fiscal year contained a request for $ 800.00 "for adding to the length of the grinding mill (south wing, Bldg. No.8A) at the musket factory," explaining: "The building in which all this work for both factories is now done is entirely too small for the business, and is so constructed as to cause the machine grindstones to be dangerously crowded. The addition proposed will obviate these defects."[21] The appropriations for this fiscal year were approved on March 3,1859.[22] In the fall of 1860, a brick second story,matching in design the second story of the center, was added to the east wing, Bldg.8A, the Grinding Mill.

In a letter to Superintendent Alfred M. Barbour, dated August 30,1860, Master Armorer A.M. Ball informed Barbour that appropriation of $ 800.00 for lengthening the grinding mill had not been spent.[23]

20. Serial No. 876. Document No.1. p.389.
21 Serial No. 996, p.181, Item No. 3.
22. U.S. Statues at Large, Vol. XI, p.433.
23, Cited in Snell, Charles W., "Research Report: The Musket Factory Buildings and Grounds, Harpers Ferry Armory,1858-60," p. 78.

10. Repairs to the Tilt Hammer Shop For Barrel Welding, Bldg. No. 9, 1855 - 1861:

In the annual report for the year ending June 30,1856, Superintendent Henry W. Clowe reported that"5 and 5/12 feet of counter shafting, for driving heavy drop-hammers in the tilt-hammer shop, fabricated and put in operation, and the hammers set up and put in operation."[1]

He further noted that machinery and fixtures for drawing the head gates at the tilt hammer shop had been completed."These are of cast iron, and of the most permanent and durable construction."[2]

1.Serial No. 876, p.388.

2.Serial No. 876,p. 389.

11. The New Stock House, Bldg. No. 11, Grounds, Grading and Fencing, 1855 - 1860:

On April 23, 1856, a joint resolution was passed by Congress that authorized the Secretary of War to apply the proceeds, amounting to $ 33,725.27, that had been collected from the 1852 sale of U.S. lots and Armory dwelling houses to making improvements on the Armory land at Harpers Ferry.[17] On June 28, 1856, the Chief of Ordnance, Col. Henry K. Craig notified Superintendent Henry W. Clowe that the Secretary of War had approved the expenditures of the 1852 sale proceeds on 10 improvement projects, among which was Item No. 5, $ 1,000 "for enclosing grounds of new magazine (which was located on Camp Hill) and stock house. (Bldg. No. 11)."[18]

In the estimates for the 1856-57 fiscal year Superintendent Clowe also requested an appropriation of $ 3,183.00 for the following two projects on the new Stock House yard:

1. $ 1,324 "for enclosing new-stock-house," explaining: "This building is outside of the armory enclosure, on the south side of North Cliff street, and to protect it will require a fence on the north side next the street, and the adjoining grounds. It is proposed to construct it of a foundation of stone, with brick piers, coped with cut stone,

17. U.S. Statues at Large, Vol. 11, p.143.
18. Craig to Clowe, June 28, 1856, Reel 19, V.9, p.871.

"similar to the style of the opposite fence or railing, on the south side of the [musket factory] canal; wood railing and paling in the spaces between the their piers. The length will be about 675 feet."[19]

2. $ 1,859.00" for further grading and terracing the hill-side." Clowe explained:

> The appropriation heretofore made for this purpose will be all exhausted in the current fiscal year, and this sum will be further required to continue the grading on the plan proposed for this hill and the grounds adjoining the new stock house and new magazine. The heavy rains of the present summer have seriously broken up the irregular surface of these grounds, and will every year increase the gullies and deep washes, unless timely care is had in grading and terracing the portion liable to these damages; that portion of the hill-side on which the expenditure of the appropriation for the current year has been devoted has withstood the unusual rains remarkably well. "[20]

Congress appropriated the requested total of $ 3,183.00 on August 30, 1856.[21] With the money from the 1852 sale included, there was a total of $ 4,183 available for work on the new Stock House yard: $ 2,324 for erecting fences and $ 1,859 for grading.

Prior to the receipt of this money, Superintendent Clowe, in his June 30,1856 report, described the progress that had been made on the new Stock House area as follows:

"The hill side of the reserved [U.S. owned] ground, lying immediately on and south of [North] Cliff street, overlooking the armory between Washington and Cliff street, has been graded and terraced as far as the ravine dividing this from magazine hill. The terraces have been planted with forest trees. This work embaces about 7,000 cubic yards of excavation and filling, 30 perches of stone masonry, and 430 lineal feet of walled culverts and drains."[22]

"Harper's Ferry Armory from Magazine Hill," a lithograph by Ed. Beyer and published in his Album of Virginia, Dresden, 1857 , deplicits accurately and in detail the hill side grading, planting, and also Bldg. No. 11, the Stock House.[23]

19. Serial No. 865, p. 244, 245, item No. 3.
20. Ibid., item No. 4.
21. U.S. Statues at Large, XI, p.150.
22. Serial No.876, p.391.
23. Harpers Ferry NHP Negative No. 51 or 256.

In his report for the fiscal year ending June 30,1857, Superintendent Henry W. Clowe reported: "A portion of the hill-side of the magazine grounds, has been terraced, graded, and drained, requiring 260 perches of masonry, 440 yards sodding with grass, and 3,342 yards of excavation and filling, with 60 panels post and board fence."[24]

In what proved to be his final annual report, dated June 30 1858, Clowe noted that " All the reserved grounds, including the area within the armory enclosure, the terraces below the new magazine, and in rear of the new stock house, have been carefully improved at considerable cost, and many of the streets graded and rendered easy of access and ordinary travel."[25]

In the estimates for the 1859-60 fiscal year the sum of $ 800 was requested "For new fence along Washington street and on the hill side at right angles therewith to North Cliff street." It was explained that "This fence is essential for the preservation of the grounds around the new magazine and new stock-house."[26] Congress voted the money for this project on March 3,1859.[27]

In his first annual report, dated June 30,1859, Superintendent Alfred M. Barbour noted that "The new stock-house has been fitted up for stocks."[28] No further work on the Stock House or its grounds were reported in the annual report for the fiscal year ending June 30,1860.

From August 5,1854 to 1860 the Armory spent some $ 15,833 on Bldg. 11 and its hillside site. This included $ 8,000 for building the new Stock House, $ 3,524 on fences and walls, and $ 4,359 on grading, planting, and drains.

24. Serial No.920, p.551.
25. Serial No. 976,p. 1319.
26. Serial No. 996, p. 181, 182, item No. 7.
27. U.S. Statues at Large, XI, p. 433.
28. Serial No. 1025, p.1114.

12. Repairs to the Proof House, Bldg. No. 15. 1855-60:

In the annual report for the year ending June 30,1857 , Armory Superintendent Henry W. Clowe reported" "the lower floor in the proof house, which was found to be very much decayed, was renewed,and new joists and floor put in."[10]

10.Serial No. 920, Doc. 1, p.551.

13. Repairs to the Rolling Mill, Bldg. No. 18, 1855 - 1860:

In his first annual report, dated June 30, 1855, Superintendent Henry W. Clowe reported that" A new office has been built in the rolling mill for the foremen." He also noted that:

"All the exterior grounds about the rolling mill have been graded, walled, and filled up with stone and earth. The house for the protection of the rolling-mill water-wheel has been built, with slate roof and brick walls. The embankment all around the mill on the canal side has been supported with a good dry wall, consisting of some 300 perch, and, where it was necessary, mortar or grouted masonry has been used. This dry walling is extended from the east end of the mill on the south side and gable end, where it terminates in the Potomac River, by a tail race for the outlet of the water from the wheel-pit. These exterior grounds are now fully completed."[12]

Under the heading of "Machinery fabricated and in progress," Clowe wrote:

"1 set of tools and fixtures for rolling and scraping iron, fabricated.
1 cast-iron forge for rolling mill, fabricated.
1 cast-iron furnace for rolling mill, fabricated.
1 water-wheel for rolling mill, finished and in operation.
1 forebay for rolling mill, cast-iron frame, columns, gates, gearing and planking, secured by iron bolts and screws.

Machinery for rolling mill, including the water-wheel and forebay, partially reported last year, has been completed and put into operation, and about ten tons of iron fabricated and rolled into suitable bars and shapes. Extensive improvements

11. Serial No.747, p.361.
12. Serial No. 841, p.557.

made on the shingling and drawing hammers, furnaces and fixtures. Fixtures and machinery for drawing head-gates at the rolling mill nearly completed."(13)

In the report for the fiscal year ending June 30,1856, Superintendent Henry W. Clowe reported that the last part of the work on the rolling mill had been completed, writing:

"Machinery and fixtures for drawing head gate at rolling mill, have been completed, and also, for drawing head gates at the tilt-hammer shop(Bldg. No. 9) and grinding mill(Bldg. No. 8A). These are of cast iron, and of the most permanent and durable construction."[14].

In his annual report for the fiscal year ending June 30, 1858, Superintendent Clowe noted that 64 perches of dry wall had been erected and 84 cubic yards of excavation had been done "for a cesspool, at the rolling mill."[15]

The estimates for the 1860-61 fiscal year requested $ 15,000 " To defray the expense of purchase and erection of barrel-rolling machinery;" It was explained, "This sum to be applied to objects of repairs and improvements heretofore authorized, but which are now delayed in consequence of the expenditure for the purchase and erection of new barrel-rolling machinery, deemed essential to the best interests of the armory,and not to be postponed."[16] The desired sum was voted by Congress on June 21,1860.[17]

In his annual report for the fiscal year ending June 30,1860, Superintendent Alfred M. Barbour reported: "Exentive repairs and improvements ,,,,,.for furnace for barrel rolling, housings for barrel machines, main and counter line of machinery for barrel rolling and finishing shop.... and complete fixtures and machinery for rolling barrels, at a cost of over fifteen thousand dollars."[18]

13. Serial No. 841, pp.555-556.
14. Serial No. 876, p.389.
15. Serial No. 976, p. 1319.
16. Serial No. 1043, p.229, Item No.1,
17. U.S. Statues at Large, XII, p. 66.
18. Serial No. 1079, p.973.

14. Relocation of the Old(1822) Pay Office from Arsenal Square to the Musket Factory Yard, Bldg. No. 17, 1858:

In April 1858, the Old Pay Office, dating from 1822, was removed from its original location on Lot 2, Block B, Shenandoah Street, at the northwest corner of Old Arsenal Square, in order to clear that site for the construction of new quarters for the Master Armorer(Park Bldg. No. 36- then known as Armory Dwelling House No. 1).[1] In his annual report for the fiscal year ending June 30, 1858, Superintendent Henry W. Clowe wrote: "The old 'paymaster's office' has been taken down, to make room for the master armorer's quarters...."[2]

The Pay Office, a one-story brick building, 24 by 18 feet in size, had been erected in 1822 at a cost of $ 500.00. Its roof had been slated in 1833 and in 1840 a one-story brick vault, five by seven feet, with walls 2½ feet thick, had been added to the rear or south side of the old Pay Office.[3]

In April 1858 the Old Pay Office was apparently carried over to the Musket Factory yard and re-erected at a unknown location, but perhaps adjacent to the west end of the Armory Office, Bldg. No. 2. In September 1863, either the 1822 Pay Office or the 1848 remodelled Pay Office was being used as the "Guard House" by the Union Army. The guard house was described as having three rooms in the main building" a front room 18 by 18 feet, and two back rooms, one 18 by 14 feet, and the other 14 by 10 feet, The Paymaster's Old Vault, 10 by 7 feet, served as the "dungron.". In July 1865, the Old Pay Office was still standing in good condition in the Musket Factory yard and was being used by the Ordnance Department as a repair shop.

The relocated Old Pay Office is Bldg. No. 17 on the 1859 Historical Base Map.

1. Superintendent Henry W. Clowe to Col. Henry K. Craig, Chief of Ordnance, April 22, 1858, Microfilm Reel 27, Vol. 1, p. 48.

2. Serial No. 976, p. 1319.

3. Snell, Charles W.. "Historic Structures and Grounds Report for U.S. Arsenal Square(Map 1981) ,pp.74- 88.

15. Completion of the Formal Entrance Project, 1855 -60:

In 1853-54, as has been noted, the Armory had purchased Wager Lot 11 and the large brick building on it for $ 7,000. In the estimates for the 1854-55 fiscal year Major William H. Bell now requested $ 1,000 for "a wall and railing on north side of main gate, on the lot purchased of Noah H. Swayne [Lot 11]." He explain that this new wall and fence was "To correspond with the present wall and railing on the south side of the entrance [on Wager Lot 12]."[1] Congress appropriated the requested amount on August 5,1854.[2]

In his annual report for the fiscal year ending June 30,1855, Superintendent Henry W. Clowe reported: "The enclosing wall and fence on the north side of the main entrance gate to the armory yard, consisting of stone foundation, brick piers and panels, coped with cut-stone, and wrought-iron fence, resting upon the coping, is completed. This is similarly finished to that on the south side of gateway, completed some years ago."[3]

The total cost of erecting this formal entrance, which had been designed by Major John Symington in 1846, was approximately $ 21,577.36. This sum included $ 16,999.35 for purchasing Wager Lots 11 and 12 and the two large brick structures standing on those lots, and $ 4,578.01 for demolishing the two stores and constructing the formal gate and flanking walls.

In his report for the year ending June 30,1857, Clowe wrote: "The portion of armory yard lying northeast of entrance gate has been graded and laid off into a pasture, the borders sodded, and trees planted therein."[4]

1. Serial No. 714, Document No.2, p.188,189, item No. 5.
2. U.S. Statues at Large, X, p.578.
3. Serial No. 841, p. 556.
4. Serial No. 920, p. 552.

Historical prints and photographs showing the main entrance to the Musket Factory yard in detail include the following Harpers Ferry NHP Negative Nos. HF- 66- A photo taken in 1859 and showing a portion of the fence and wall on Wager Lot No. 11; HF- 99, photo taken in October 1859, closeup of main entrance, wrought iron fence and gates, and wall on Lot No. 12. HF-27B, closeup of Lot 12 and main entrance, taken in 1865. HF-379, HF-539, and HF-59, taken 1870-1889, all show the entrance, together with the John Brown Fort or old Armory fire and guard house, with the fence, by 1889(HF-59) gradually being demolished.

16. More New Coal Bins, Musket Factory, 1855-1861:

During the period 1845 to 1851, Major John Symington had built more than 24 coal bins in the open space between the two parallel stone river walls that had been erected by the U.S. Armory and the Baltimore and Ohio Riailroad company in 1837-42 and top of which, mounted on trestles, stood the main line west of the railroad. Built at a cost of approximately $ 1,312, these bins were about 15 feet wide, 17 feet long, and about 13 feet deep.

Brevert Colonel Benjamin Huger continued this program in 1852-54 and added at least 30 more of these bins.

The estimates for the 1855-56 fiscal year asked for $ 176.00 "for fitting up three bins for scrap-iron under railroad near the new rolling mill (31dg. No.18)"; it was explained that "There is no covered place for scrap-iron at the present time, and in consequence the borings and turnings suffer great deterioration from the actions of the atmosphere; it is necessary to have them covered, and in a position convenient to be worked up in the rolling-mill, for which the above expenditure is required."[1] Congress provided the desired money on March 3,1855.[2]

In the annual report for the fiscal year ending June 30,1855, Superintendent Henry W. Clowe wrote: "A very considerable amount of filling in with stone and earth has been done in the armory yard to complete coal bins under the railroad."[3]

In the estimates for the 1856-57 fiscal year, Clowe requested $ 223 "For filling ditch and completing six-coal bins, under Baltimore and Ohio railroad;" This was needed he explained because: The open spaces under the trestle-work of the Baltimore and Ohio Railroad are fruitful sources of disease, being subject

1. Serial No. 781, Document No.3, p.238, Item No. 4.
2. U.S. Statues at Large, X,p.637.
3. Serial No. 841, p.557.

"to the inundations of the river Potomac; great quantities of vegetable and other alluvia are deposited there at every rise in the river; and slowly decompose, tainting the atmosphere with the offensive effuvia. This condition of things can be remedied by filling up these spaces with earth and rock at the same time that ample receptacles of suitable dimensions and convenience can be afforded for coal and other heavy articles out of the way, and under partial protection from the weather, by the flooring of the trestle-work."[4]

Congress appropriated the requested amount on August 30,1856.[5]

In his annual report for the fiscal year ending June 30,1856, Superintendent Clowe noted that "some of the coal bins, under the railroad, have been raised, and stone walls built to support the embankments."[6]

There is no further mention of the building of an additional coal bins in the annual reports written after June 30,1856. It thus appears that approximately nine coal bins were built at a cost of $ 399 during the period 1855 -61.

From 1845 to 1861 a total of at least 60 of these storage bins were built under the B.&.O. railroad tracks at an approximate cost of more than $ 1,701.

4. Serial No. 865, p.245, 246, item No. 7.
5. U.S. Statues at Large, XI, p.150.
6. Serial No. 876, p.389.

17. Painting and Slating Roofs, Musket Factory, 1855-61:

In his annual report for the fiscal year ending June 30,1856, Superintendent Henry W. Clowe noted "The iron roofs on the shops [at the musket factory] have all been painted, and the slate roofs, [copper] guttering and spouting thoroughly repaired."[1]

In the report for the year ending June 30, 1858, Clowe reported that at the musket factory "All the workshops have been slightly repaired and the exterior [brick] walls painted."[2]

Finally, in the report for the fiscal year ending June 30,1859, Superintendent Alfred M. Barbour wrote: "All the shops at the musket factory have been more or less improved, including the painting of all [the cast-iron and wooden] window frames and sash."[3]

1. Serial No. 876, p. 389.
2. Serial No. 976, p.1319.
3. Serial No. 1025, p. 1114.

18. Grading the Musket Factory Yard, 1855-61:

In the annual report for the fiscal year ending June 30,1855, Superintendent Henry W. Clowe reported: "the grounds in front of the shops have to some extent been filled up and graded, to bring them to a uniform level with the portions heretofore completed."[4] In his report for the year ending June 30,1856, Clowe again noted" The armory yard has been filled and graded in some places..."[5]

In the report dated June 30, 1858, Clowe wrote: "All the reserved [U.S. owned] grounds, including the area within the armory enclosure, ... have been carefully improved, at considerable cost,..."[6]

Finally, in his annual report for the fiscal year ending June 30,1860, Superintendent Barbour wrote: "The grounds,generally, of the armory, comprising a considerable area, have all been kept in order and where improvements were necessary to preserve or add to their sightly condition,they were made."[7]

4. Serial No. 841, p.557.
5. Serial No. 876, p.389.
6. Serial No. 976, 1319.
7. Serial No. 1079, p. 974.

19. Pavement and Sidewalks, Musket Factory, 1855-1861:

In the estimates for the 1854-55 fiscal year Brevet Colonel Benjamin Huger asked for $ 700 "for pavement(stone-flag) in front of tilt shop[Bldg. No. 9] and boring-mill[Bldg. No.5]," he explained"This pavement is required for dry communication with these works in wet weather."[1] Congress appropriated the desired amount[2] on August 5,1854.

In the estimates for the 1856-57 fiscal year, Superintendent Henry W. Clowe requested an additional $ 560 "for continuing the flag pavement in front of workshops," he explained:"Besides improving the appearance of the armory yard, this work seems to be necessary to afford comfortable passage from shop to shop of the workmen and other employed at the armory, and to finish the same in the style in which it has been commenced."[3] Congress voted the additional money on August 30,1856.[4]

Clowe described the results of this construction in his annual report for the fiscal year ending June 30,1857, writing: "About 196 square yards of heavy cut stone flag pavement, and 139 lineal feet of dressed curbing have been laid and set in front of and between several of the workshops in the armory yard."[5] In the report for the year ending June 30,1858, Superintendent Clowe reported: " 125½ square yards of paving, with large flagstones have been laid in front of the carpenters' shop[Bldg. No. 8C] and stock house [bldg. No. 7Y]."[6]

Total cost of this flag stone sidewalk, which ran from the tilt -hammer shop [Bldg. No. 9] east to the main entrance gates, was approximately $ 1,260. Portions of the walk and crubing can be seem in Harpers Ferry NHP Negative HF-90, taken in October 1859; HF-89 - a drawing by A.R.Ward, published March 11,1865; HF- 27B, a photo taken in 1859.

1. Serial No. 714, Document No. 2, p. 188,189, Item No. 12.
2. U.S. Statues at Large, X, p. 578.
3. Serial No. 865, p.245, 246, item No. 8.
4. U.S. Statues at Large, XI, p.150.
5. Serial No. 920,p. 551.
6. Serial No. 976, p. 1319.

20. Old Horse Shed Removed from Musket Factory Yard, 1856 :

In his annual report for the fiscal year ending June 30,1856, Superintendent Henry W. Clowe reported that"The horse shed, occupying a position in the armory yard, near the entrance gate, has been removed to a more suitable site, on a lot outside the yard,on North Cliff street [now called Potomac street], and disconnected with the armory."[1]

This is probably the frame horse and carriage shed that Superintendent Benjamin Huger had built in December 1851 at a cost of $ 104.72.

21. New Horse Shed Built in New Location, Musket Factory Yard,1856.

In the annual report of operations for the yearing ending June 30, 1856, Clowe also noted that a new horse shed "of smaller dimensions, inside the [armory] yard, under the Baltimore and Ohio railroad [trestle], has been put up."[2]

1. Serial No. 876, p. 389.
2. Ibid.,

22. Lease of Lot for a B & O. R.R. Water Tower, Musket Factory Yard, 1855-1862:

Acting under the authority and instructions of Secretary of War Jefferson Davis, Armory Superintendent Henry H. Clowe and the President of the Baltimore and Ohio Railroad Company, V. Brooks, entered into a formal agreement on November 16, 1855 . The United States granted the company permission to erect a brick water tower about 17 feet square and about 36 feet high in the musket factory yard, with the understanding that the building would be removed if requested.[1] The tower was located adjacent to the main line on the Potomac River wall and stood at the east or lower end of the Musket Factory yard, just inside the main entrance. Built in 1856, the tower was destroyed on Union troops on February 7,1862, during the Civil War.[2]

1. Agreement, November 16,1855, Reel No. 25, Vol. 9, pp.936-937.
2. See Snell, Charles W.,"Historic Building Site Survey Report for Wager Lot No. 1 & the Bridge Lot- The Baltimore & Ohio Railroad Company's Bridge and Buildings at Harpers Ferry, 1835- 1862, Harpers Ferry National Monument, West Virginia,"(NPS typescript, Harpers Ferry NM, W.Va., September 22,1958),pp.35- 37.

23. Enclosing Wall, South Side Musket Factory Yard, 1855 - 60:

The estimates for the 1854-55 fiscal year requested a total of $ 6,000 to wall and fence the armory canal. The money was to be used as follows:

1. "$ 5,000 " for a stone wall and iron railing along the south side of armory canal;" this was needed, it was explained "To secure the canal bank it is necessary to build a permanent wall, which, with an iron railing, would enclose the work on that (the street) side."[1]

2. $ 1,000 "For iron railing between railroad bridge and armory canal"; this was need "To enclose the west (or upper) end of the Armory yard."[2]

The desired $ 6,000 was appropriated by Congress for these projects on August 5, 1854.[3]

In his first annual report, for the fiscal year ending June 30, 1855, Superintendent Henry W. Clowe reported: "Enclosing wall and fence has been put up at the west (upper) end of the armory yard, near the rolling mill (Bldg. No. 18) on the west side, consisting of stone foundation, cut-stone coping, brick piers and panels, with wrought-iron fence, filling the space between the piers, and extending from the Baltimore and railroad track to the basin, leaving the waste-weir and gates within, and thus cutting off all communication with the armory yard from that side."[4]

Continuing, he also wrote: "The wall along the south side of the armory canal has been excavated for, and the foundation of stone completed about 1,365 feet in length. A portion of this wall is sixteen feet high, while the residue is from six to nine feet in height, with and average thickness of three feet. 1,365 feet of cut-stone caps for piers have been made ready to place upon the wall when the brick

1. Serial No. 714, Document No. 2, p.188,189, item No.3.
2. Ibid., item No.4.
3. U.S. Statues at Large, X, p.578.
4. Serial No.841, p.556.

"piers are built."[5]

In his estimates for the 1856-57 fiscal year, Clowe asked for $ 5,723.00 "for completing stone wall and iron railing on south side of armory canal;" he Explained "This sum is needed to purchase and set bricks for the piers, and base wall for the cut-stone coping. The foundation wall, with the needful cut-stone coping, is already prepared and paid for from the previous appropriation. The superstructure of panel brick-work has yet to be laid, which, together with the wrought-iron railing, now being made at the rolling-mill of the armory, from scrap of inferior quality, will require the above sum."[6] Congress voted this money on August 30,1856.[7]

The fence along the south of the armory canal, for which a total of $ 10,723 had been provided, was completed by June 30,1857; in the annual report of that date Clowe wrote:

"The enclosure on the south side of the armory, consisting of stone foundation, brick piers, cut stone caps and coping, wrought-iron railing between the piers and pickets, has been completed, except painting. The wall is now about 1,309 feet long.

"The stone masonry was done previous to the close of the fiscal year ending 30th June 1855; ... The brick and iron work was done in the last fiscal year."[8] In this same report, Clowe also noted that " 50,966 pounds of iron (had been) made and rolled from blooms for (the) fence."[9]

In his annual report for the fiscal year ending June 30, 1858, Clowe wrote: "The enclosing wall and iron picket fence, on the south side of the armory canal, has been painted its entire length."[10]

5. Serial No. 841, p. 557.
6. Serial No. 865, P.244,245, item No. 2
7. U.S. Statues at Large, XI,p.150.

8. Serial No. 920, p. 551.
9. Serial No. 920, p.549.
10. Serial No. 976, p. 1319.

24. Completion of the Fire Lane Project for the Musket Factory, 1855 - 1861:

On March 3, 1855 and August 30, 1856, Congress appropriated, and on June 28, 1856, the Secretary of War made available from the proceeds of the 1852 slae of U.S. lots, a grand total of $ 16,908.70 to make improvements to the streets of Harpers Ferry. Of the total, $ 10,166.00 was used to purchase three private lots and their buildings so that the project of widening North Cliff Street into an effective fire lane for the Musket Factory, started in 1847, and also to create a new street for the same purpose could be completed. The balance of the total, $ 6,742.70, was utilized to remove the buildings situated on the acquired lots and to grade and pave the streets.

Major William H. Bell, in estimates dated May 18,1854, submitted the data and prosposals that served as the basis for much of this work and he, in turn, had drawn on the Report of the Board of Officers dated September 28,1851, for most of these proposals.[1]

The improvements made will be studied under the heading of the various projects that were approved and funded in 1855 and 1856.

a. The North Cliff(Potomac Street) Improvement Project: 1855-56:

The estimates for the 1855-56 requested $ 8,850.00 "for removing obstructions in North Cliff street, on musket factory canal viz:

(1) purchase of leasehold building on (Wager Lot No.13] which obstructs North Cliff Street at its junction with Shenandoah Street.....	$ 5,000.	
(2) and of the reversion in fee of the lot [No.13] on which this building stands.....	2,000.	
(3) purchase of twenty-five feet in depth of Lot No. 15(subdivisions 2 and 4,on which Park Bldg. No. 7 stood], adjoining the foregoing,which obstructs North Cliff Street to that extant.....	1,700	
For land and buildings:	$ 8,700	
(4) pulling down and removing these buildings, and for sewers and grading North Cliff street.....	150	
	$ 8,850	(2)

1. Major William H. Bell to Congress Charles Faulkner, March 18,1854, together with Bell's estimates dated May 18,1854, Reel 25, Vol. 1, pp. 80, 83,84.
2. Serial No.781, Document No. 3, p. 238-, item 10.

It was explained to Congress that "These buildings so obstruct this street on the south side of the musket factory, that their removal is indispensable to the proper grading and cleaning of that street, which under the present circumstances, in summer, is very injurious to health, as well as inconvenient to the public works."[3] This project was thus an extension eastward to Shenandoah Street of Major John Symington's plan of widening the 15 foot alley to a 40 foot wide street. This goal had been accomplished from the western corner of the Six Reservation(Wager Lot 34) eastward to Wager Lot 15 in 1847-48, but from this point eastward to the Shenandoah Street junction, the alley still retained its orginal width of 15 feet.

Congress appropriated the requested $ 8,850.00 on March 3,1855.[4] Acting under the authority granted him by the Joint Resolution of Congress of April 23,1856, Secretary of War Jefferson Davis, on June 28,1856, further funded this project by making available $ 357.50 from the proceeds of the 1852 sale of U.S. Lots "for Filling, grading & Paving East end at N. Cliff Street."[5] See Map No. 4 (1852) for width of street.

The total amount of money provided for the North Cliff Street improvement project was thus $ 9,207.50.

On December 26,1855, the United States purchased Wager Lot No. 13 from its owner, Noah H. Swayne, for $ 2,000,"Subject to the unexpired term of a lease for ten years" held by John G. Wilson.[6] On January 31,1856, the Government was next able to acquire for $ 5,000.00 from John G. Wilson his lease to Lot 13 "having on it a three storey brick dwelling and store."[7]

3. Serial No. 781, Document No. 3,p.239, Item No. 10.
4. U.S. Statues at Large, X,p.637.
5. Col. Henry K. Craig, Chief of Ordnance to Supt. Henry W. Clowe, June 28,1856, Reel 19, V. 9, p.871.
6. Deed of B.&. S., December 26,1855, Deed Book 35, pp.296-297, Jefferson County Court House, Charles Town, W. Va.
7. Assignment of Lease, January 31, 1856, Deed Book 35, p.295. Jefferson County Courthouse, Charles Town, W. Va.

The building on Lot 13 had been erected by Wilson in 1837-38 for use as a hotel. It was a three, and probably 3½ story brick structure, with 17 rooms plus a finished cellar. The edifice fronted 27½ feet on Shenandoah Street and was about 40 feet deep. By 1841 Wilson had added a two-story brick annex to the rear of the main house. The building then had four rooms in the basement and 20 rooms in the upper structure.[8]

The brick structure was demolished by April 1856 and on the 28th of that month, Chief of Ordnance, Col. Henry K. Craig, informed Superintendent Henry W. Clowe that Secretary of War Davis had granted authority to sell the materials from house, such as doors and windows, and door and window frames, at public auction.[9]

On February 13,1856, the U.S. Government purchased a portion of Wager Lot 15, subdivisions No. 2 and 4, fronting 24 feet on North Cliff street by 25 feet deep, together with that portion of the two-story stone warehouse that occupied that ground, from its owner, Federick A. Roeder, for $ 1,700.00.[10] The stone warehouse, 24 by 40 feet, had been constructed by William Anderson in 1838-39 as a one-story structure with cellar and slate roof. Roeder had added the second stone story in 1848-49.[11]

The front half of Roeder's building, which had been purchased by the United States, was demolished by April 1856, and the land made a part of widened North Cliff Street.

8. Snell, Charles W." Historical Study of Wager Lot No.13, 1837-1856, Harpers Ferry National Monument, West Virginia,"(N.P.S. typescript, Harpers Ferry NM, W.Va., September 25,1958), 20-22.
9. Craig to Clowe, April 28,1856, Reel 20, Vol. 9, p. 858.
10. Deed of B.&. S.,February 13,1856, Deed Book 35, pp.299-300.
11. Snell, Charles W.,"Historic Structure Report, White Hall Tavern, Bldg. No. 7 on Subdivisions No. 2 and 4 of Wager Lot No. 15, Historical Data, Harpers Ferry National Historical Park, West Virginia,'(NPS typescript, National Capital Team, Denver Service Center, April 1980),pp.8-11.

In the annual report for the fiscal year ending June 30,1856, Superintendent Henry W. Clowe reported of this project:

"...the buildings and the fee-simple estate in the land occupied by them, which obstructed the widening of North Cliff street, have been purchased, and the buildings removed, and the street opened to the full width to its intersection with Shenandoah Street."[12]

The Common Council of the Town of Harper's Ferry also made its contribution to this project on July 18, 1856, when it purchased from Philip Coons for $ 227.08 1/3 a vacant portion of Subdivision No. 1 of Lot No. 15 which fronted on the narrow alley. The section which the town acquired, nine feet one inch wide, 25 feet deep, and containing 229 1/12 square feet, was also made a part of widened North Cliff Street in 1856.[13]

Total cost of this improvement of North Cliff Street in 1855-56, including the town money, thus appears to have been approximately $ 9,434.58.

b. Creation of a New Street - Wager Alley, 1856-57:

Acting under the authority granted to him by the Joint Resolution of Congress dated April 23,1856 , Secretary of War Jefferson Davis, on June 28,1856, made available $ 1,666 from the proceeds of the 1852 sale of U.S. Lots for the following project:

1."Purchase of [Wager] Lot No. 17.....$ 1,466.00.
2."Removing building from Lot No.17..... 200.00 "

Total: $ 1,666.00 [14]

The purchase of this land was planned to make possible the creation of a new street that would run up the hill from North Cliff to High or Washington Street.

12. Serial No. 876, P.391.
13. Deed of B.&.S., July 18, 1856, Deed Book 35, p.311-312, Jefferson County Courthouse.
14. Chief of Ordnance, Col. Henry K. Craig, to Supt. Henry W. Clowe, June 28,1856, Reel 19, V. 9, p.871.

On February 26,1856, Superintendent Henry W. Clowe had recommended the purchase of Wager Lot No. 17 because the large stable which occupied most of that land was "filled with Hay & Straw, under careless attendance day and night, " hence was "a mine of danger" to the safety of the musket factory workshops.[15] On August 26,1856, the United States was able to purchase the land and the stable for a total of $ 1,465.66. Of this sum $ 1,165.66 went to Frederick A. Roeder, who owned the land,[16] and $ 300.00 to John G. Wilson who held a leasehold on the lot and held title to the stable.[17] Wilson had constructed a large stone and frame stable, about 40 by 100 feet on Lot No.17 in 1837-38. The fire hazard was demolished by the Armory in 1856.[18]

In his annual report of operations for the fiscal year ending June 30, 1857, Superintendent Clowe reported:

"The stable and fixtures occupying lot 17 of Wager's reserve,of six acres, purchased of F.A. Roeder and John G. Wilson, have been removed, a wall built on each side of the lot, in the aggregate about 150 feet long, averaging five fee in height and two feet thick, covered with dressed stone coping. The walling wa necessary to support the filling required to make a street of easy grade upon this lot, running from Washington to North Cliff Street."[19]

In 1857, then, the Musket fire lane project, first proposed in 1828, instituted in 1847, was finally completed.

15. Clowe to Col. H.K.Craig, February 27,1856, Reel 25, V.8, p.803.
16. Roeder to U.S., B.&.S., August 26,1856, Deed Book 36, p.135-136.
17, Wilson to U.S., Assignment of Lease, August 26,1856m Deed Book 36m pp.133-134.
18.Sullivanm Arthur L., "Historic Buildings Site Survey Report for Wager Lots No. 17 to 34, 1782-1869, Harpers Ferry National Monument, West Virginia,"(N.P.S. typescript, Harpers Ferry NM, May 15,1959),pp.72-74.
19.Serial No. 920, p. 551-552.

APPROPRIATIONS FOR THE MUSKET FACTORY FIRE LANE PROJECT, 1855 -1861

(North Cliff Street and Wager Alley)

North Cliff Street Project

Calender Year:	Lot 13	Lot 15	Grading Paving &c.	Subtotal N.Cliff St.	Lot 17 Street	Grand Total
1855	$ 7,150	$ 1,700	0	8,850.00	0	$ 8,850.00
1856	0	0 (1)	357.50	357.50	1,666.00	2,023.50
1857						
1858						
1859						
1860						
1861						
TOTAL	$ 7,150.00	$ 1,700.00	$ 357.50	$ 9,207.50	$ 1,666.00	$ 10,873.50

(1). In addition, on July 18,1856, the town of Harper Ferry purchased the vacant section of Wager Lot No. 15, subdivision No. 1, for $ 227.08 1/3 . This land was made a part of North Cliff Street in 1856.

Total Expedditures for Land for Streets for Musket Factory Improvements, 1842 - 1861

Years	North Cliff Street Fire Hazard Project	Lot 17 Wager Alley Project	Lots 11 & 12 Entrance Gate	Total
1847-49:	$ 28,938.00	0	9,999.35	$ 38,937.35
1853-54:	0	0	7,000.00	7,000.00
1855-56:	8,700.00	1,465.66	0	10,165.66
Total:	$ 37,638.00	$ 1,465.66	$ 16,999.35	$ 56,103.01
Byrnes Island Purchase, 1847				$ 1,500.00
Total				$ 57,603.01.

25. U.S. Musket Factory Canal, 1855- 1861:

In the estimates for the 1855-56 fiscal year, Superintendent Clowe requested $ 2,334 for two canal projects, namely:

1. $ 234 for "repairs and filling in of sluice-ways at musket and rifle factory;" it was explained that "The bottom and sides of sluice-ways at the musket factory need filling in with sand and cementing, to prevent the water from undermining and ruining the foundations below the sluice-ways and the walls on each side."[10]

2. $ 2,100 for "Improvement of north side of hill at the musket factory". "The torrent in rainy weather down the sides of this hill are exceedingly injurious to the canal at the present time, filling it in with dirt and sediment continally, rendering it necessary too often to stop the works to clean the race-way."[11]

Congress appropriated the money for these two canal projects on March 3, 1855.[12]

The 1856-57 estimates, asked for $ 2,970 for two more projects:

1. $ 441.00 "for new bridge and sluice over armory canal at musket factory." Clowe noted that "Nearly opposite the east-end of the rolling mill (Bldg. No. 18), on the south side of the canal, there has been dug out a deep pit to receive the debris of the ravine at this point, which formerly emptied itself into the canal, always injurious to its capacity, and often endangering the safety of the canal embankment. This pit has now served its purpose; but the constantly increased expense, which become more repeated as the reservoir inclines entirely to fill up, giving warning of the necessity of providing a better, and more durable, and

8. ; Serial No. 920, p. 549.
9. Serial No. 920, p. 551.
10. Serial No. 781, Document No. 3, p. 238, 239, item No. 6.
11. Ibid., Item No. 9.
12. U.S. Statues at Large, X, p. 637.

" less costly vent to this drainage. It is therefore proposed to construct at this point a bridge over the canal, the chords of which will serve as the sides of a trunk underneath the platform of the bridge to carry off the surplus water and drainage into the tail-race of the water-wheel of the rolling-mill [Bldg. No.18], which is sufficiently low to effect the purpose with great facility, and ,as compared with the expense of frequent removal of the gravel and dirt from the pit before spoken of, at little cost. "[13]

Congres voted this money on August 30,1856.[14]

This bridge was constructed in 1856-57 and in his annual report for the year ending June 30,1857, Superintendent Clowe described this improvement as follows: "A bridge and sluice, or trunk, has been built over the armory canal. This structure consists of a wooden bridge, thirty-six feet long and ten feet wide, to admit of the free passage of wagons and carts. Suspended to the bridge is a trunk of sufficient capacity to conduct the water from the hill across the canal during heavy rains; and thus prevent the deposit of mud and stones in the canal. Connected with this is a walled drain, leading from the bridge to the tail-race, at the rolling mill [Bldg. No.18], paved at the bottom, walled on both side, and covered with heavy flag stones.

"The foot bridge across the canal has been removed about sixty feet east from its old position, with the stone masonry on which it rested."[15]

What is probably the old foot bridge, perhaps in its original position, can be seen in the lithograph,Harpers Ferry NHP Negative HF-256, which was published in 1857. See Photo No. 2, p. 68.

13. Serial No.865, pp. 244,245, Item No. 6.
14. U.S. Statues at Large XI,p. 150.
15. Serial No. 920, p. 551.

The 2nd request in the 1856-57 estimates with regards to the Potomac Canal was for $ 2,529 "For breakwater wall to protect lock-gates at head of the armory canal, and stone wall on the southwest and north side, above and below the railroad bridge, where it crosses the canal." It was explained that:

"The construction of the inlet at the head of the canal is such that every freshet causes more or less injury to the lock gates. These gates are very valuable; and by the erection of this wall the current will be broken, and drift acompanying i will be carried away over the dam instead of lodging against the gate, and thumping against the planking, with the action of the water. The stone wall above and below the bridge over the canal, on the roadside [south side], is very much needed, as the water here is very nearly even with the surface of the road for the distance of about 895 feet, and consequently liable to filling up by the wash of the road and the accumulation of stones from the common use of the road, and other causes."[16]

Congress voted the requested sum on August 30,1856.[17]

The construction was completed in 1856-57 and in his annual report for the fiscal year [ ] ending June 30,1857, Clowe remarked:

"Four thousand one hundred and ninety-two perches of heavy dry walling, in eight sections, and 589 cubic yards of earth filling, have been constructed for the breakwater, at the dam on the Potomac River, and in repairing the same. The walling is of very heavy stone, secured by heavy iron bolts in the most permanent manner to resist the ice and drift during the freshets which frequently occur in the river."[18]

During the 1857-58 fiscal year

"1,179 yards of the inner face of the canal wall [were] .. pointed with mortar.", and

16. Serial No. 865, pp. 243,246, Item No. 9.
17. U.S. Statues at Large, XI,p.150.
18. Serial No. 920, p. 551.

" A new set of beams for the lock gate, at the head of the armory canal, were put in position, and a platform across the locks constructed, for the convenience of opening and closing the same."[19]

In his estimates for the 1858-59 fiscal year, Superintendent Henry W. Clowe asked for $ 6,479 "for construction of a stone wall from the lock gates at the head of canal, along the south bank of the same, east, to unite with the new iron fence opposite the rolling mill (Bldg. No. 18)," he explain the need as follows: "The canal, or race-way, which furnishes all the power to the armory, requires protection from the washing of the hill-side, (which is steep and bluffy throughouts its entire length,) more particularly now, as a county road, very much used, lies along its bank the whole distance from the armory buildings to the lock gates or head. The efforts heretofore made to secure the object of this estimate have been partial and temporary; and although they have materially aided in preventing the evil complained of, complete protection in this respect cannot be obtained except by the construction of a revetment wall like that above estimated for."[20]

Congress appropriated the desire money on June 12,1858.[21]

In his first first annual report, dated June 30,1859, the newly appointed superintendent, Alfred M. Barbour, wrote: " Two thousand five hundred and ninety-three perches of heavy stone masonry have been built on the south bank of the armory canal; 4,447 cubic yards excavation and filling earth, and 209 yards rock excavation done on the same."[22]

The estimate for the 1859-60 contained a request for a total of $ 10,730 to accomplish the three following projects on the musket factory canal:

19. Serial No. 976, p. 1319.
20. Serial No. 941, p.193, item No. 3.
21. U.S. Statues at Large, XI, p. 335.
22. Serial No. 1025, p. 1114.

1. $ 2,230 "for removing old canal embankment from present armory canal," because "The embankment to be removed obstructs very injuriously the volume of water in the armory canal and should be removed."[23]

2. $ 6,500 "for face and range stone wall on canal bank in rear of workshops", needed because "By construction of this wall a much greater volume of water can be obtained , and the damage done by the burrowing of muskrats in the embankment of the armory canal will cease."[24]

3. $ 2,000 "for cleaning out armory canal "; it was explained "This work of cleaning out the canal has become necessary from a great accumulation of débris."[25]

Congress provided the desired $ 10,730 on March 3,1859.[26]

In his annual report for the fiscal year ending June 30,1860, Barbour noted of these projects: "The banks of the canal at the musket factory next, to the shops, have been repaired by a grouted cement wall, all along its length from the barrel shop (Bldg. No. 9) to the bell shop (Bldg. No. 3), and this improvement insures the entire efficiency of the canal in rear of the range of shops. The canal having been cleared from all obstructions from its bed, the flow of water is now ample to meet any possible contingency of power."[27]

Superintendent Alfred M. Barbour, joining the Confederacy in April 1861, never submitted his annual report of operations for the fiscal year ending June 30,1861, hence the repairs and improvements that may have been made to the musket factory canal during that period are unknown.

Barbour, in his estimates for the 1861-62 fiscal year, was thinking of rebuilding much of the armory canal and requested an appropriation of $ 11,963 "for enlargement and protection of musket factory canal." He explained

23, Serial No. 966, p.181, Item No. 4.
24. Ibid., Item No. 5.
25. Ibid., Item No.6.
26. U.S. Statues at Large, XI, 433.

This item... is in continuance of the plans heretofore proposed, to make the canal sufficient as a water power for government use. By the expenditure of the sum estimated, it will, in connection with the new dam over the Potomac river, so prove; and its future usefulness and secured permanent adaption to the wants of the armory will be beyond question. It also refers to a very valuable improvement, looking to facilities in the working operations of the armory. The workshops next the canal are now so close to the bank of the canal as to preclude the use of the shop range of shops [???].

The bank of the canal is wide enough to allow the removal of a portion of it, so that the space thus reclaimed may be conveniently used by carts passing in rear [south] of this range of shops, whereby great inconvenience in the constant transportation of materials and work may be avoided. (27)

Congress, on March 2,1861, appropriated the requested $ 11,963 to implement this plan,[28] but before any construction could be undertaken, Confederate troops seized the armory on April 19, thus ending U.S. Ordnance Department operations for the production of arms at the U.S. Musket Factory, as it turned out, forever.

Of the total of $ 34,176 appropriated for canal projects from 1855 to 1861, approximately $ 22,213 was actually spent on repairs and improvements.

The U.S. Musket Factory Canal can be seen in the following drawings and photographs. : Harpers Ferry Negative No. 51 or 256, a lithograph published in 1857; HF- 30, a photo taken in October 1862; HF- 10,photo Taken October 1862, excellent view of the brick pier and iron fence erected along the south side of the armory canal, showing section from rolling mill east to Shenandoah Street; HF-9,taken October 1862,showing area of canal west of rolling mill,Bldg.No.18. HF- 38,photo taken 1865or 1866;HF 28, taken 1865- or 1865; HF- 355, excellent photo taken about 1886; HF-492- taken from Loudoun Heights about 1880; HF-539, excellent photo taken in 1886, looking west over Bldgs. 1 and 2, showing condition of wall along south side of armory canal and of the canal.

27. Serial No. 1092, p.322,323, item No. 3.
28. U.S. Statues at Large, XII,p. 202.

APPROPRIATIONS FOR THE U.S. MUSKET FACTORY CANAL, 1855 - 1861

Year	U.S. Potomac Canal
3/3/ 1855	2,334
8/30/ 1856	2,670
3/7/ 1857	0
6/12/ 1858	6,479
3/3/ 1859	10,730
6/21/ 1860	0
3/2/ 1861	11,963 *
TOTAL	$ 34,176
TOTAL SPENT	$ 22,213 (1)

* Money never spent.

Because of the destruction of the Armory Paymaster's vouchers for the years 1852 to 1861 during the 1940s it is no longer possible to determine that actual amounts expended, the amounts of materials utilized, and who did the construction.

(1) Estimated total spent.

REPAIR AND IMPROVEMENT OF ARMORY CANAL WALLS AND EMBANKMENTS, ALSO LOCK GATES, 1842-1861:

Years	Canal Mortar Wall Perches	Canal Dry Walls Perches	Canal Cubic Yards Embankment	Puddling yds.	Cost of Work	Canal Lock Mortar Masonry perches	Canal Locks Cut Stone feet	Canal Wall Excavation cubic yds.
1844	—	105 1/5	80 15/27		$ 147.61			
1844	—				1,759.42	363 3/5	597' 2"	
1846	546 7/25	Stone, mortar & cement wall, 2½ ft thick, 780 ft long, 11½ ft high		275yds.	1,093.21			600
1847			336 22/27		266.74			
1849	161 10/25	65/25			423.00			508 18/27
1851		471 21/25			859.07			897 16/27
1853	Northern wall of canal new rolling mill, 248 wall 255 feet long, 6	grouted stone wall, near feet long, 6 feet high by 4 feet high, and 2½ feet thick			1,650.00 built.	feet thick built and on opposite (south) side of canal, a dry		
1853	Sluice way of canal near Bldg. 18 repaired, 48 perches grouted wall, 50 perches dry wall, 68 square yards of paving 2 feet deep.							
1854						Lock gates and head gates improved. 1854		
1857	4,192 perches of heavy dam, hevy stone wall to	dry walling, in 8 sections, protect lock gates at head			and 589 cubic yards $2,529.00 of	filling, constructed for the armory canal inlet.		breakwater, at
1858	New set of beams for lock gates put in position and platform built over locks.							
1859	2,593 the canal. along the south bank of the canal, east, to unite with the new iron fence opposite the rolling mill. Bldg. No. 18		4656 for construction of heavy masonry wall from the lock gates at the head of		6,479.00			
1860	North bank of canal, constructed grouted cement wall along entire length from Bldg. (9) east to Bldg. 3, the old Bell Shop				$ 6,500.00			
1855	$ 234 provided for repairs and filling of sluiceways at musket and rifle factories.							

Canal about one and one-quarter miles long.

THE BATTLE AGAINST EROSION FROM CAMP HILL INTO THE U.S. ARMORY CANAL ON THE POTOMAC, 1842 - 1861:

	Cost of Work	Cleaning Canal ~~Cubic Yds.~~	Culverts-Basins excavation Cubic yards	Culverts-Stone walls	Culvert - embankments	Rip Rap Wall or dams	Culvert Dry Walls Perches	
1844	—							
1844	—							
1845	586.09	1,343-25'						
1845	513.27		277	201	362½			
1846	71.82		297			362½ perch		
1848	?						67	
1849	36.54					121 4/4		
1851	5.75	½ day						
1851	312.52		66 22/27				263 16/25	
1851-52	Two drains, about 300 feet long, and a stone wall, built on hillside, about 217 feet long, 7 feet high and 2½ feet thick, finished along south side of Armory canal.							
1854	4,000.00	A wall of 200 feet, 4½ feet high, 3 feet thick, built to prevent wash,				1854 work done	at head of canal. and large sand bars removed,	
1856-7	441.00	wooden foot bridge 10 feet wide, 36 feet long, built 60 feet east of old bridge, had trunk under to carry off rain water from hill.						
1860	for removing old canal embankment from present canal to increase flow of water.						$ 2,230.00	
1860	$ 2,000	for cleaning out armory canal to increase flow of water						
1855	2,100 for improvement of north side of hill at musket factory to prevent erosion into canal.							

The canal was about one and one-quarter miles long.

26. U.S. Musket Factory Dam on the Potomac: 1855 - 1861:

In the estimates for the 1856-57 fiscal year Superintendent Henry W. Clowe asked for $ 7,000 "for repairs to the Potomac Dam." He explained:

" Upon the safety and permanency of this dam the whole utility of the establishment depends; and in the event of a very serious breach being made in it, the entire working machinery of the musket factory would be compelled to stop. The superintendent of the armory reports that he has caused, and has himself made, careful surveys of the condition of the dam at present. The great flood of April 1852 did it very serious damage; and the repairs which have been made to it since have not be as permanent as they might have been, and the heavy rains and freshets of the late summber have continued to make gradual inroads upon it, carrying away many of its supports. It requires now heavy coping, and much filling in, to resist the powerful pressure against it through its entire length. The expenditure now of this sum may and probably will save to the government other and large sums for the same purpose at no distant day."[1]

The Congress appropriated the desired money on August 30,1856.[2]

In his annual report for the fiscal year ending June 30,1858, Clowe reported that" 1,456 perches of heavy stone masonry have been constructed as a breastwork for the repair of the dam over the Potomac."[3]

A New Potomac Dam Proposed,1858- 1861;

In the estimates for the 1858-59 fiscal year., Superintendent Clowe requested $ 40,000 "For a new dam across the Potomac;" It was explained: "The old dam on the Potomac river, by which the entire effective value of the armory, as such, is controlled, has been in use over thirty years (since 1828-29), and as constructed at that early day is deficient, and always has been so, in all the points which render it secure and reliable. Year after year it has been necessary to repair it, and remedy the

1. Serial No. 865, p. 246,247, item No. 10.
2. U.S. Statues at Large,XI,p.150.
3. Serial No. 976,p.1319.

APPROPRIATIONS FOR THE REPAIR AND IMPROVEMENT OF THE U. S. MUSKET FACTORY DAM, 1855 -1861

Year	For Dam
3/3/55	0
8/30/56	7,000
3/7/57	0
6/17/58	40,000
3/3/59	26,000
6/21/60	0
3/2/61	0
Total	$ 73,000
Spent	$ 73,000

The destruction of the Armory Paymasters' vouchers for the years 1852 to 1861 during the 1940's makes it impossible to determine in detail the actual expenditure of money and the amounts of material purchased for use on the dams during this period.

"defects which every freshet in the river, or the breaking up of the ice in the spring, makes apparent. The cost of the repairs which have been made to this dam since its construction would be more than sufficient to reconstruct it upon the most approved plan, which is now proposed as a measure of necessity and economy."[4]

Congress voted the $ 40,000 on June 12,1858.[5]

On February 18,1859, the United States entered into a contract with Snovell & Company to built the new dam.[6] The engineer in charge of the project was Thomas Leiper Patterson.[7] The specifications and plans for the new dam will be found in Snell, Charles W.,"Research Report-The Musket Factory Buildings and Grounds, Harpers Ferry Armory, 1859-1860, Harpers Ferry National Monument, West Virginia,"(N.P.S. Typescript, Harpers Ferry NM, W.Va., April 27, 1959), Appendix No.IV, pp.80-83. The foundation and abutments were to be comprised of heavy stone rock ashlar masonry bound with mortar. These were to be 10 feet thick. The upper part of the dam was also to be composed of heavy stone masonry, laid in two walls which formed the upper and lower faces of the dam. Each mortar wall was to be eight feet(four courses) high two feet thick. This was also to be 10 feet thick and the core was apparently to be filled with heavy stone. The stone portion of the dam was to have a timber superstructure that was to be five feet 10 inches high and 10 inches thick. This was to consist of seven courses of white oak timbers each 10 inches thick, which were to be secured to the masonry section by one and one-eighth inch iron bolts.

The contractor began laying masonry for the dam on the Maryland side of the Potomac about the first of June 1859.[8]

4.Serial No. 941, p.193,194, item No. 4.

5.U.S. Statues at Large,XI,p.335.

6.Col. Henry K. Craig, Chief of Ordnance, to Secretary of War Floyd,February 21, 1859, Reel 20, V.3, p.289; Contract dated February 18,1859, in Harpers FERRY NHP Photostats V. 4, pp. 10-17.

7. Col. Craig to Secretary of War Floyd, Nov.22,1858, Ree; 27,Vol. 1,p.91.

8.Engineer T.L. Patterson to Col. Craig, June 22,1859,Reel 27,Vol.6,p.528.

In his annual report for the fiscal year ending June 30,1859, Superintendent Alfred M. Barbour described the progress of construction as follows:

"Up to the close of the fiscal year, but little comparative progress has been made in the construction of the new dam over the Potomac river to supply the place of the old one, for feeding of the armory canal.

"The contractor for this work, which is controlled chiefly by a civil engineer in charge, has performed preparatory labor and procured materials, amounting in the whole to about $ 2,827.20, for which he had been paid. A large number of heavy iron bolts and nuts for securing the coping and timber of the work have been prepared at the armory from scrap-iron, made and forges in the rolling mill and workshops of the armory."[9]

The contractors made such slow progress that the United States cancelled the contract in October, 1859.[10] Of the total 1,470 feet length of the new dam, Snovell & Company had only constructed 335 feet, extending out from the Maryland shore, at a cost of $ 9,130.75.[11]

A new contract for completing the dam was awarded to Hugh L. Gallaher in March 1860.[12]

9. Serial No. 1025, p. 1114.
10. Col. Craig to Supt. Barbour, October 27,1859, Reel 19, V.11, p.1069.
11. Report on Armory Dam by Civil Engineer C. Crozet, to Col. H.K. Craig, May 21, 1860. Reel 26,Vol. 10, p.962-968; Final estimate of Work done by Snovell & Co. Upon the new dam for the U.S. Armory at Harper's Ferry, November 26,1859, Reel 26, V.11, pp.1027-1028.
12. Col. Craig, to Supt. Barbour, Mar h 2,1860, Reel 19, V.11,p.1095.Contract with H.L. Gallaher, for Completion of the Dam at Harpers Ferry, dated March 1, 1859, Harpers FERRY NHP Photostats, Vol. 4, pp.34-41.

In the annual estimates for the 1859-1860 fiscal year the Ordnance Department asked for an additional $ 26,000 " for continuing the new dam across the Potomic." They explained to Congress "The appropriation made at the last session of Congress embraced 40,000 dollars for this dam as estimated by the Superintendent of the armory. But the construction of the work having been confided to a professional engineer, and his estimate being that the work, to be permanently and properly done, will cost $ 66,000, this additional sum is now asked."[13] Congress voted the additional $ 26,000 on March 3,1859.[14]

Of the total of $ 66,000 provided, $ 56,869.25 was available on March 1,1860 to pay Hugh L. Gallaher for completing the dam.

In his annual report for the fiscal year ending June 30,1859, Superintendent Barbour reported: "The contract for the new dam over the Potomac River, to supply the armory canal, has progressed with very variable prospects, to its completion; but it is now hoped that the present season, if favorable, will terminate the work. This,however, will very much depend on the weather and the unabated energy of the contractor."[15]

-Progress was slow and on September 6,1860, Engineer Patterson reported that the work had been much delayed by frequent freshets in 1860. He described the state of the new dam as follows:

> The masonry of the Dam is complete for about 420 feet from the Maryland abutment which is raised to the level of the C. & O J Canal embankment and within four and a half feet of its full height. More than 300 feet of the dam is timbered and sheeted.
>
> The Coffer dam extends out to about 600 feet from the Maryland abutment and will be continued so as, by the last of next week to enclose one-half of the length of the Dam (735 feet)....

13. Serial No. 996, p.181,182, item no.8.
14. U.S. Statues at Large, XI, p.433.
15. Serial No. 1079, p.974.

Engineer Thomas L. Patterson listed the costs of construction, 1858 to date as follows:

Amount of work done by first contractor, Snovell & Co.....	$ 9,130.73
" " " " " second " , Hugh L. Gallher	9,702.59
Cost of timber and plank.....	8,797.89
Iron bolts & spikes manufactured in Armory.....	3,230.60
Engineering expenses.....	9,174.96
Advertising & printing of bids.....	66.67
	$ 40,103.44 [16]

Thus by September 6,1860, only $ 25,896,56 remained of the original appropriation [17] of $ 66,000, and the dam was still less than one-third complete!

On October 12,1860, Engineer Patterson suggested that the line of the dam be changed [18] on the Virginia or armory side of the river.

Henry W. Clowe, Master Machinist and former superintendent of the armory, explained the reasons for these proposed changes to the Ordnance department as follows: By the alterations, the line of the Dam next the Virginia side will be nearly perpendicular to the course of the current of the river, & have a tendency to direct the driftwood away from the head or lock gates towards the center of the stream -- more than would be the case by the former line -- and this with the peculiar & favourable construction of the proposed abutment with the flume wall, must it seems effectually prevent the drift wood knocking against the head gates, & also from the accumulation of it at this point, a result that the construction of the Old Dam & lock gates never successfully accomplished..." [19]

The Secretary of War approved this proposed change [20] in the line of the dam on December 22,1860. Secretary of War Floyd was also informed during December 1860 that an additional appropriation of $ 50,000, thus increasing the total cost to $ 121,000, would be required [21] to complete the new Potomac dam.

The construction season ended in November,1860, on the dam and in order to reduce expenses to an absolute minium, Engineer Thomas L. Patterson and his assistants were dismissed in January,1861 and further construction of the dam was to be supervised [22] by Superintendent Alfred M. Barbour.

16. Patterson to Col. Craig, September 6,1860, Reel 26, V.8, pp.750-751.
17. Col. Craig, Chief of Ordnance, to Secretary of War Floyd, Sept. 18,1860, Reel 20, V. 4, p.329.
18. Patterson to Superintendent Barbour, October 12,1860, Reel 27, V.8., p.854-856.
19. Clowe to Master Armorer A. M. Ball, October 23, 1860, Reel 27, V.8, pp.858-859.
20. Capt. Mayandier, Ordnance Dept., to Superintendent Barbour, December 22,1860, Reel 20, V. 4, p. 376.
21. Capt. Mayandier, Ord. Office, to Secretary of War Floyd, December 12,1860, Reel 20, V.4, p.343.
22. Col. Craig, Chief of Ord., to Barbour, January 21,1861, Reel 20, V. 4, p.384

No further work was done an the new Potomac dam during the winter of 1860-61 and Confederate soldiers seized the Armory on April 19, 1861, before construction was resumed.

The unfinished dam, about one-third complete and erected at an approximately cost of $ 42,000 or $ 43,000, was apparently well-built, for the masonry portion of the structure has stood from 1861 to date with no further maintenance or repairs being made to the dam.

This new dam was described as "half completed" in 1880, when the U.S. Government offered the musket factory, the Potomac Canal, and dams for sale.[22] As no work had been done on the dam from 1861 to 1880, a more exact description would have read "one-third complete."

There are no known historical drawings or photographs that show either the old or new armory dams.

From 1855 to 1861 a total of $ 73,000 was appropriated to make repairs and improvements to the dams on the Potomac. Of this sum about $ 50,000 was actually spent: $ 7,000 to make repairs to the old dam 1857-58 and $ 43,000 to construct about one third (about 420 feet) of the new dam in 1859-60.

22. Catalog of Property of the United States at Harper's Ferry, W. Va., to be Sold By the Solicitor of the Treasury on the 25th day of May, A.D. 1880, at Harper's Ferry, p.1, National Archives Record Group 121, Public Buildings Serice, Harpers Ferry, W.Va.

WORK ON THE OLD AND NEW U.S. MUSKET FACTORY DAMS ON THE POTOMAC, 1842 - 1861:

Year	Expenditure	Pier head canal	Pier head rubble fill	Main Dam heavy stone	heavy stone Flagging -Dam	Dam Heavy Stone drilled & bol	Dam Dry Masonry wall	Dam Filling
1842	$ 1,747.43	perches wall 418 35/100	perches. 51 25/100					
1845	1,060.37	-	-	223 sq. yds.	64,718 sq.yds	112 perches		
1851	202.50	-	-				135 perches	
1853	?			1,083 perches				916 cubic yd
1858	?			1,456 perches				
NEW DAM	Contractpr	Engineering expenses	Timber & Plank	----------	----------	----------	----------	Iron Bolts
1859	$ 9,130.75			335 feet of	1,470 foot length	built.		
1860	$ 9,702.59	9,174.96	$ 8,797.89	420 feet completed to within 4½ feet of fu		ll height		$ 3,230.60
1860				300 feet of	the completed length timbered		and sheeted.	Other costs 66.67
1860				Coffer dam extends out 600 feet		from Maryland	shore.	
Total	$ 40,103.44	New Dam,	859- 1860.					

APPROPRIATIONS FOR U.S. CANALS AND DAMS, 1855 - 1861

Year	U.S Potomac Canal	Rifle Factory Canal	Total Canals	U.S. Potomac Dam	U.S Shenandoah Dam	Total Dams.		Total-Canals & Dams
3/3/1855	2,334	3,505	$ 5,839	0	0	0		$ 5,839
8/30/1856	2,970	0	2,970	7,000	0	7,000		9,970
3/7/1857	0	0	0	0	0	0		0
6/12/1858	6,479	2,000	8,479	40,000	0	40,000		48,479
3/3/1859	10,730	0	10,730	26,000	0	26,000		36,730
6/21/1860	0	0	0	0	0	0		0
3/2/1861	11,963 *	11,129 *	23,092 *	0	0	0		23,092 *
TOTAL	$ 34,473	$ 16,634	$ 51,110	$ 73,000	0	$ 73,000.		$ 124,110
TOTAL SPENT	$ 22,513	$ 5,505	$ 33,741	$ 73,000	0	$ 73,000		$ 106,741

* Money never spent.

CHART NO .

ARMS PRODUCED, 1842- June 30,1860
U.S. ARMORY AT HARPER"S FERRY, VIRGINIA

YEARS:	Flintlock Muskets	Hall Percussion Rifles	Hall Perc. Carbines	Total:
Jan. 1,1842 Sept.30,1842:	6,575	0	0	6,575
Oct. 1,1842 to June 30,1843:	3,105	300	1,001	4,406
1843-44:	608	2,700	-	3,308
Total :	10,288	3,000	1,001	14,289

Years:	1842 percussion musket	1842 percussion rifle	1855 rifled musket	1855 model rifles
1844-45	2,225	0	-	-
1845-46	12,203	700	-	-
1846-47	12,000	3,054	-	-
1847-48	11.000	2,802	-	-
1848-49	8,300	1,925	-	-
1849-50	9,600	2,676	-	-
1850-51	11,100	3,050	-	-
1851-52	13,400	3,227	-	-
1852-53	10,001	2,762	-	-
1853-54	9,000	2,761	-	-
1854-55	7,700	2,339	0	0
1855-56:	0	0	0	0
1856-57	-	-	1	11
1857-58	-	-	8,581	1,719
1858-59	-	-	6,489	2,450
1859-60	-	-	5,049	2,701
TOTALS, 1844-60:	106,529	25,269	20,120	6,881

	Muskets	Rifles	To
1842-1860:	136,937	36,151	173,088

Source: Annual Reports of the Ordnance Department to Congress on Operations at the Harper's Ferry Armory

CHAPTER V

DESTRUCTION OF THE HARPER"S FERRY ARMORY, 1861

Lieutenant Roger Jones, commanding the company of 44 soldiers guarding the U.S. Armory at Harper's Ferry, was warned of the approach of Confederate forces on April 18,1861. He removed a large quantity of powder from the armory magazine located on Magazine Hill and laid powder trains through the two brick arsenal buildings on Old Arsenal Square on Shenandoah Street and also in the two rows of some 20 brick Musket Factory shops lying between North Cliff(or Potomac] Street and the Potomac River.

At nine o'clock on the night of April 18, Jones wired the Assistant Adjutant-General in Washington,D.C., of the impending crisis and the actions he had taken to meet it. He telegraphed" ...The steps I have taken to destroy the arsenal, which contains nearly 15,000 stand of arms, are so complete that I can conceive of nothing that will prevent their entire destruction...'[1]

Jones was assisted in this task by Captain Kingsbury, who had arrived to take charge as superintendent of the Armory on April 18, following Alfred M. Barbour's resignation. George Mauzy, an eyewitness of these events, a civil engineer, and resident of the island of Virginius, described what followed, writing on April 9: "At about ten at night they (Capt. Kingsbury and Lt. Jones] set fire to the carpenter shop(Bldg. 8C] and grinding mill(Bldg.8A], stocking shop(Bldg. 6A-all at the Musket Factory],and the 2 arsenals, which were both burned down together with some 15,000 guns of various kinds...

1. Lieutenant Roger Joines to Assistant Adjacent-General,Washington, D.C. April 18, 1861- 9 p.m., CR,S.I., Vol. II,pp.3-4.

"The first named shops are also a perfect heap of ruins, fortunately the stock shop was saved with but little damage. Well after these buildings were set on fire Lieut Jones and his men walked across the Potomac bridge and it is said went up to the Canal, in the direction of Hagerstown, it is presumed they are making their way across to Penn."[2]

As the arsenal buildings and musket factory shops burned on the night of April 18, however, the lower town section of Harpers Ferry was alive with men, women, and children, hurrying to an fro, loaded with plunder from the workshops and soldiers' barricks. Evently some of the Armory workmen dragged the fire engines out of Musket Factory Bldg. No. 1, the Engine and Guard House, and succeeded in extinguishing the flames at the Musket Factory. Citizens of Harpers Ferry who had helped Jones in his work of destruction now fled northward for their lives, as Confederate troops entered the about 1 a.m. on April 19, 1861.[3]

Harpers Ferry NHP Negatives HF- 349, HF- 533, and HF-334 are fairly accurate drawings made and published in 1861, showing the destruction of the Armory Bldgs. on April 18,1861.

Lt. Jones and his 44 men made a forced march of 30 miles to Hagerstown, Md., where they boarded ominibuses for Chambersburg, Pa.. There they were fed by the people of the town. They arrived at Carlisle ,Pa. and safety about 2:30 p.m. on April 19. Secretary of War Cameron promoted Jones to captain for his fine work on April 22,1861.[4]

On April 25,1861, Lt. Col. James W. Ripley, of the Ordnance Office, informed Harpers Ferry , Armory Paymaster Dennis Muprhy:

> The armory at Harpers Ferry having been foreably taken possesion of on the night of 18th April, by the Militia of Virginia, the United States will not be responsible for the services of the operatives after that date." [5]

Thus the production of arms that began in 1803, ceased on April 18,1861 at Harpers Ferry,

2. George Mauzy to James H. Burton, former Master Armorer at Harper's Ferry , April 19,1861.
3. Sullivan, Arthur L.,"Harpers Ferry, April 18-December 31,1861- A Casualty of War, Harpers Ferry National Historical Monument,West Virginia,"(NPS typescript, Harpers Ferry NM, W.Va., Fenruary 17, 1960) Chapter I.
4. Sullivan,Ibid.,p. 28.
5. Ripley to Murphry,April 25,1861, Reel 20, V.4, p.405

Confederate troops held Harpers Ferry from 1 a.m. April 19th to June 15, 1861. During this period all U.S. Armory property at Harpers Ferry, including 78 U.S. workshops and storehouses and the arms manufacturing machinery therein, was seized by the Confederate Government. Armory employees were forced to vacate their government quarters so that they could be used as barracks. Harpers Ferry churches were also occupied and utilized as barracks. Townspeople who were suspected of being Union sympathizers were thrown into jail without hearings or trial, their property stolen and their houses occupied as barracks. Between April 19 and June 14 more than 432 valuable machines for manufacturing arms, 57,000 assorted tools, and thousands of feet of belting and shafting for the machinery were stripped from the Musket and Rifle Factory workshops, loaded on wagons, and transported south to be used in the armories established at Richmond,Virginia, and Fayetteville, North Carolina. to manufacture arms for the Confederacy.[6]

On June 14,1861, the Confederate army, under the command of Brigadier General Joseph E. Johnston, began evacuating Harpers Ferry. About 6;30 a.m. on June 14, the army burned the Baltimore and Ohio Railroad Company's wooden bridge across the Potomac and the iron bridge span next to the Wager House Hotal, which was located on Wager Lots No. 6,7 and 8, was blown up. (Harpers Ferry NHP Negative No. HF-102, a drawing published July 1,1861,shows the destruction of the bridge). Also about 6:30 a.m. on June 14, the Confederate troops also set fire to the 22 workshops, storehouses, and offices located in the Musket Factory yard. The wooden interiors, floors, and roofs of all these structure were destroyed, with the exception of the large, incombustable

6. Sullivan, A.L,"Haprper's Ferry...",p. 53-55.

Smiths or Forging Shop, Bldg. No. 13, and a smaller store house, a warehouse, Bldg. No. 12. The solid brick walls of most of the other buildings, however, remained standing. The iron railroad trestle, with its wooden platorms, along the top of the great Potomac River wall, in the Musket Factory yard, from the lower or eastern end of the yard west to the railroad road bridge over the U.S. Armory canal, was also burnt.

On the morning of June 15, Johnston's army of more than 10,000 men began their march south towards Winchester.

The Armory Superintendent's House, Armory Dwelling No. 25(Park Bldg. No.59), which had been occupied as General Johnston's Headquarters, had been heavily damaged and stood open, with locks broken, furniture removed and the floors and grounds covered with papers, topograpgical plans, letters, paymaster's rolls, etc."[7]

On June 20th, or 28th, a Confederate regiment returned to Harpers Ferry during the early morning hours, and set fire to and destroyed the 10 U.S. workshops and storehouses at the Rifle Factory on the Shenandoah, which Johnston had forgot to burn on the 14th; they also burned the wooden toll bridge across the Shenandoah river, and ran Baltimore and Ohio Railroad Locotmotive No.165 and some cars into the Potomac River.[8]

Union troops occupied Harpers Ferry on July 18 and held the town until August 17, 1861.[9] (See Harpers Ferry Negatives HF- 223, and 229, for drawings showing the Musket Factory, published in July 1861). From August 18,1861 to February 25,1862, the town was a no-man's land.[10]

7.Sullivan, Op. cit.,pp.48-49, p.51. The description of the state of Armory Dwelling is from the diary of David Hunter Strother, p.25, who was present in Harpers Ferry during this period.

8.Sullivan,Ibid., p.58. Some accounts state the raid took place on June 20th,others on June 28,1861.

9.Ibid, p. 69. Captain Newton of the Engineers and a Massachusetts regiment apparently occupied Harpers Ferry on July 18,1861 Ibid.,,p. 78.

10.Sullivan, Chapter IV,p. 79-100.

On November 16, 1861, Lt. Col. William Maynadier, of the Ordnance Department, submitted a report to Secretary of War Simon Cameron listing the losses incurred at the U.S. Armory at Harper's Ferry on April 18-19,1861. With regards to the value of the armory plant, he reported:

HARPERS FERRY PROPERTY, NOVEMBER 16, 1861

The amount expended on the same for land purchases at different times.....		$ 45,477.
(Note: This total is correct as of January 1,1847, but an additional $ 57,598.88 had been spent for land from 1847 to 1856, so that the true total for land was $ 103,076 in 1861).		
For improvements thereon, for water power, canals, embankments, walls, water privileges and for hydraulic machinery and buildings of all kinds.....	1,797,430	
Total(1796-1861), exclusive of the amount expended in the manufacture and repair of arms.....	1,832,907	
The last annual inventory of the property belonging to the United States at that Armory is dated June 30, 1860, in which the value of all the property on hand at that date is appraised as follows:		
1,669½ acres of land(of total of 1,963 acres once owned: about 216½ acres sold in 1852, 4 acres in Harpers cemetery).....		37,457.00
Mill dams, canals, water power, and hydraulic machinery.....		233,279.00
Forges, rolling mills, machine shops, dwellings and other buildings.....		341,221,00
Amount of Real Estate.....		$ 611,957.00
Machinery used in workshops.....		270,235.00
Tools used in workshops.....		109,560.00
Subtotal, Machinery and Tools:		$ 379,795.00
Value of unwrought materials on hand, $ 100,043.00--------		193,616.00
Value of parts of arms in progress, 93,573.00		
Value of 20,507 arms of different models in storage (in Arsenals at Harpers Ferr).....		285,145.00
TOTAL APPRAISED VALUE, JUNE 30, 1860.....		$ 1,407,513.00 (11)

11. A Collection of Annual Reports and Other Important Papers Relating to the Ordnance Department Taken from the Records of the Office of the Chief of Ordnance, from Public Documents, and from other Sources Prepared under the direction of Brig. General Stephen V. Benet (4 vols., Washington, D.C., 1880), Vol.IV,p. 1043-1044.

Of the 20,507 arms reported as in storage on une 30,1860, Lt. Col. Maynadier informed the Secretary of War on November 16,1861, that this number by April 18,1861, when the Armory was destroyed, had been reduced to 4,287, the value of which he placed at approximately $ 64,000. Maynadier thus estimated the value of the Harper's Ferry Armory to be $ 1,470,513 on June 30,1860 and only $ 1,207,660 on April 18,1861.[12]

Harper Ferry, however, was too important strategically to be left unoccupied. The Baltimore and Ohio Railroad, the Chesapeake and Ohio Canal, and the road between Frederick, Md., and the Shenandoah Valley in Virginia all funneled through Harpers Ferry and its river gaps. Who ever controlled Harpers Ferry had command of the important coummincation lines from Washington, D.C. to the West. For this reason, the Union Army reoccupied Harpers Ferry on February 25, 1862, By the night of the 26thm 8,500 infantry, 18 cannon, and 2 squadrons of cavalry held the town and also Loudoun and Bolivar Heights.[13] Union forces held Harpers Ferry From February 1862 to September 1862.

During the first year of the war, the Commanding Officer's or Superintendent's Quarters, Armory Dwelling House No. 25(Park Bldg No. 59) was used as follows: Headquarters of Col. Thomas J. Jackson, CAS, about May 8 to May 23,1861; Headquarters of Brigadier General Joseph E. Johnston,C.S.A, May 23-June 15,1861; Headquarters of Major General Robert Patterson, U.S.A, July 21-25,1861. Headquarters of Major General Nathaniel P. Banks,U.SA., July 25 to ca.July 31,1861.

Escaping destruction by Confederate and Union Forces in 1861-62 were Musket Factory Buildings No. 1-Engine and Guard House(Park Bldg. No. 63) Bldg.No. 2- the Armory Office Building; No.12-the Warehouse, and No. 13 -

12. Ibid., IV, pp. 1043-1044.
13. Sullivan, Arthur L.,"Harpers Ferry in the Civil War-1862,Harpers Ferry National Monument, West Virginia," (NPS typescript, Harpers Ferry NM, W.Va., June 26, 1961),pp.18- 22.

the Smiths or Forging Shop.

During the Federal occupation of Harper's Ferry, February-September 1862, many of the burned out brick Musket Factory buildings and the first floor of the Large Arsenal, the latter located on Old Arsenal Square, were re-roofed and utilized as Quartermaster and Commissary depots for both the troops stationed at Harpers Ferry and the large Federal forces in the Shenandoah Valley. By March 24,1862, the Winchester and Potomac Railroad had been repaired for its entire length from Harpers Ferry to Winchester, for the purpose of forwarding supplies to the Union troops in the Shenandoah Valley. The arsenal operated by the Ordnance Department at Harpers Ferry during this period was located at the U.S. Rifle Factory on the Lower Hall Island.

Colonel Dixon S. Miles, who commanded Federal forces at Harpers Ferry from March 29 to September 15,1862, had his headquarters in a house located on Shenandoah Street, probably the Master Armorer's new Quarters, Armory Dwelling House No. 1(Park Bldg. No. 36). Brigadier General Rufus Saxton, U.S.A., also had his headquarters in the same building during the period, May 25-29,1862.[14]

Siege of Harpers Ferry, September 1862

September 1862 brought the first Confederate invasion of the North following victory in the battle of Second Manassas. Reaching Frederick on his way through Maryland toward Pennsylvania, General Lee decided to remove the threat to his rear and line of communications represented by the strong Union garrison at Harpers Ferry. In order to do this he decided to divide his army, sending part of it against Harpers Ferry while the main body pressed on toward Hagerstown. It was a daring plan, its success depending upon the Confederates ability to capture Harpers Ferry and quickly reunite in time to face Major General George B. McClellan's Union army which was following them.

14. Snell, Charles W., "The Forifications at Harpers Ferry, Va., in 1861, and Jackson's Attack, May, 1862,Harpers Ferry National Monument, West Virginia," (NPS typescript, Harpers Ferry NM, W.Va., February 9, 1960,p.96-97.

Lee sent three columns with a total of some 32,000 men against Harpers Ferry: Major General Thomas J. Jackson approached from the south; Major General Lafayette McLaws invested Maryland Heights from the north; and Brigadier General John G. Walker approached from the east. Jackson reached the vicinity of Harpers Ferry on the south on September 12; on the 14th McLaws seized possession of Maryland Heights and emplaced his cannon there; Walker arrived at Loudoun Heights a day later. Thus, on September 14, Colonel Dixon S. Miles, in command of the Harpers Ferry garrison of 14,238 officers and men, largely new recruits, found himself surrounded with Confederates on the heights overlooking his positions at Camp Hill and Bolivar Heights.

Miles and his men withstood the Confederate artillery fire from across the Potomac and Shenandoah Rivers on Maryland and Loudoun Heights for two days, almost but not quite upsetting Lee's schedule for re-concentrating his army. Although the Union casualties were not heavy, his artillery ran out of ammunition and Miles surrendered his garrison on the 15th, not knowing that if he held out a little longer a rescue force would arrive. A cannon shot from the Loudoun Heights batteries mortally wounded Miles at the very end of the action. 12,693 officers and men of the Harpers Ferry garrison were taken prisoners and paroled; 44 were killed and 173 wounded. Colonel B. F. Davis led his Union cavalry command, 1,510 men, over a pontoon bridge across the Potomac and escaped. Except for prisoners, Confederate casualties in the action were greater than the Union losses, incomplete returns indicating that there were about 283 killed and wounded. Also taken were 47 pieces of artillery and some 13,000 small arms.

Immediately after the capitulation of the Union garrison, Jackson hurried off toward Sharpsburg to reinforce Lee in the battle of Antietam, leaving Major General A. P. Hill to arrange the parole of the Union prisoners. Having hurriedly done that, Hill, in turn rushed off to Sharpsburg with his men and reached there at a critical moment in time to save Lee's army from threatened disaster in the battle of Antietam.

During the siege of Harper's Ferry, September 12-15,1862, Colonel Dixon S. Miles' Headquarters continued to he located in a house on "main street" in the lower town and near the Potomac River pontoon bridge and the B.& O. Railroad bridge. This house was probably Armory Dwelling No. 1,(Park Bldg.No.36), the Master Armorer's new Quarters. After Miles's surrender, Major General A. P. Hill, C.S.A. used Miles's office as his own headquarters. Federal ammunition was also stored in"the arsenal" in the lower town, either in a re-roofed structure in the Musket Factory yard, or on the re-roofed floor of the Large Arsenal on Arsenal Square.[15]

15.Snell, Charles W., "A Report on the Federal Fortifications at Harpers Ferry, Va., and of the Conferate and Union Troop Movements during the Siege of Harpers Ferry, September 12-15,1862,Harpers Ferry National Monument, West Virginia,"(NPS typescript, Harpers Ferry NM, W. Va., December 1,1959),p.6.

Harpers Ferry, 1862-63::

On September 20, 1862, the Union Army re-occupied Maryland Heights and on the 22nd also took position on Camp Hill and Bolivar Heights. During October 1862 three army corps with more than 60,000 men present and fit for duty camped at Harpers Ferry and its surrounding heights. During that month and November the soldiers constructed three large stone redoubts on the summit of Loudoun Heights and cleared the crest of timber. A series of strong fortified works, including the "Stone Fort" and Fort Duncan, batteries and rifle pits, were erected on Maryland Heights. Much of this mountain was also cleared of heavy forest.

When Lee invaded the north a second time—in the 1863 campaign that led to Gettysburg—a Union garrison evacuated Harpers Ferry on June 29. On July 1, they also abandoned the strong fortifications on Maryland Heights. On July 7 the Union Army reoccupied Maryland Heights and on the 14th they again moved into Harpers Ferry and Bolivar Heights.

During the period 1863-64, the headquarters of the Union generals commanding at Harpers Ferry were located in the lower town and probably in Armory Dwelling House No. 1 (Park Bldg. No. 36), the Master Armorer's New Quarters. These generals included: Brigadier General Benjamin F. Kelley; Brigadier General John R. Kenly, Brigadier General Henry H. Lockwood(July 19 to October 12,1863),and Brigadier General James C. Sullivan(October 13 to December 31,1863).

The Guard House, in September 1863, was located in the Musket Factory yard, probably in the relocated Paymaster's Old(1822) Office, Bldg. No. 17, which was described as having a front room 18 by 18 feet, and two back rooms, one 18 by 14 feet and the other 14 by 10 feet. The"dungeon," 10 by 7 feet, was the Paymaster's old vault, which was " burglar, air, and light proof."

"A Government Bakery" to bake bread for the troops and also a "slaughter house," to butcher cattle for the soldiers, were located in re-roofed Armory structures that were situated either in the Musket Factory yard or on Old Arsenal Square.[16]

16.Snell, Charles W., "Harpers Ferry Becomes a Fortress, September 21,1862 - October 6,1863, Harpers Ferry National Monument, West Virginia,"(NPS typescript, Harpers Ferry NM, W.Va., December 16,1959,p. 59-60.

Harpers Ferry, 1864-65:

The last year of the Civil War saw three related developments take place at Harpers Ferry: First, the completion of all fortifications; second, the successful defense of the position at Maryland Heights against a major attack, July 4-8., 1864; and third, the conversion of Harpers Ferry into a major base of operations for Sheridan's army, August 1864 to February 1865, which led directly to the destruction of Confederate power in the Shenandoah Valley.

The Confederates held Harpers Ferry briefly for the last time in the course of Lt. General Jubal A. Early's raid against Washington in the summer of 1864. On July 3 Early approached Harpers Ferry with approximately 20,000 men. The Union soldiers evacuated the town of Harpers Ferry on the night of July 4 and the commander, Brigadier General Max Weber, concentrated his troops on Maryland Heights. There he was joined by soldiers under the command of Major General Franz Siegel bringing the total number of Union troops to 6,500. Early arrived in Harpers Ferry on July 5, but found it impossible to cross the Potomac there as the Union army had burned the railroad and pontoon bridges and also still stood guard on Maryland Heights. On July 6 2,800 men and three batteries, re-enforcements from Washington also reached Maryland Heights. Meanwhile, Early was forced to detour his army around Harpers Ferry, crossing the Potomace near Sharpsburg. His men put Harpers Ferry to the torch as they left it on the night of the 6th. On the night of the 7th the last Confederate brigade also left Bolivar Heights. On July 6 and 7th there was heavy skirminishing on Maryland Heights along the Barnard Lines and there was also heavy cannonading from the Federal guns. Meeting with determined resistance, Early pulled back his soldiers and continued his march on Washington on the 8th. On July 8 the Union troops crossed the Potomac and re-occupied Harpers Ferry for the last time. Early devoted and lost four days in his unsuccessful attempt to cross at Harpers Fery and take Maryland Heights. As a result of this delay, Early did not reach Washington until July 10, 1864. From August 1864 to February 1865 Harpers Ferry served as the main base of operations and supplies for Major General Philip S. Sheridan's army, which successfully destroyed Early's army as a fighting force and conquered the Shenandoah Valley in Virginia.

During this period the brick and stone walls of the burned out Musket Factory, arsenal, and Rifle Factory buildings were reroofed to serve as giant warehouses for the storage of the munitions and supplies that were necessary to support Sheridan's advance. His great wagon trains numbering up to 1,000 wagons per train were parked for safety within the defensive lines on Bolivar Heights in August 1864, before they began their march south. In November 1864 the U.S. Military Railroad Corps also rebuilt the destroyed Winchester and Potomac Railroad from Harpers Ferry south 28 miles to Stephenson's Depot, a point about five miles west of Winchester, Virginia. Six hundred soldiers were employed to operate the 13 locomotives and 75 cars on this line. During the period December 1864 to June 1865 this railroad dispatched 2,236 trains that carried nearly 200,000 persons and thousands of tons of supplies to support Sheridan and also to transfer forces to Grant.

Four Extant Musket Factory Buildings in 1865:

Harpers Ferry NHP Negative Nos. HF-89; HF-27B; HF-28. and HF -38, photographs or drawings made in 1864 -66, reveal that the following four Musket Factory buildings had survived the war and were being used as

1. Bldg. No.1- Engine and Guard House(Park Bldg. No.63):

In his July 27, 1865 inspection report, Brigadier General Edward D. Ramsay described this structure as: "Engine House, brick, 1 story, 25 x 35 feet, No.2-Bldg.Located in Armory enclosure-In good condition- used for storing Ammunition."[1] He further remarked."The small engine house, celebrated as the citadel of John Brown, is used as magazine. I consider this very dangerous, and the ammunition should be removed to a place of greater security."[2] The structure was serving as Ordnance Department Warehouse No. 2 in 1865.

2. Pay Office. Described by General Ramsay as, "Brick, 1 story, 18 by 28 feet, Ordnance Bldg. No. 3, located in Armory enclosure, in good condition, used as Repair Shop."[3] This is apparently the Old Pay Office, erected in 1822 on Block B, Lot 2, Arsenal Square, on Shenandoah Street, and supposedly "demolished " in April 1858 to clear the site for the construction of the Master Armorer's new Quarters, Armory Dwelling No.1(Park Bldg.No.36). The Old Pay Office, Bldg. No. 17, was simply removed (not demolished) to the site in the Musket Factory Yard in 1858, where it was still standing in 1865.

3. Armory Office Building. Bldg. No. 2. Photographs show this structure standing in good condition and in use by the Union Army in 1864-65.

General Ramsay reported:"The Q(uarter)M(aster) and Commissary have been and are occupying some of the (Armory) buildings, but have put upon them very inferior repairs,"[4] which apparently consisted of new roofs and floors.

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1. Brig.Gen. E.D. Ramsay to Brigadier General A.B. Dyer, Chief of Ordnance,July 27, 1865, Harpers Ferry NHP Photostats, Vol.4, p.50-56; Photostat Collection,Map Case, Drawer No.10-for list of buildings.
2. Ibid.,
3. Ibid.
4. Ramsay to Dyer, July 29,1865.

4. Stock House, Blding No. 11: Also still standing on the south side of Potomac Street, just across from the Musket Factory yard, was the "brick Old Stock House," Musket Factory Bldg. No. 11, which General Ransay listed as being in fair condition and as being Ordnance Department Ware House No. 1.[5]

Other items that Brigadier General Edward Ramsay found laying about in the Musket Factory yard in 1865 included the following items:

8 Anvil Blocks(cast iron) in good condition
1 large turning lathe. in Machine shop, damaged.
8 grind stone frames, in good condition.
34 cast iron columns, new.
1 iron forbay or flume, new.
1 Rolling Mill with machinery, furnace and Forge, in Armory Bldg., damaged.
Arch window frames, new.
Square window frames, new.
Tons cast iron, scrap.
Tons wrought iron, scrap.
1 lot dressed stone, good.
Water wheels, in Armory Bldgs., damaged.
1 lot iron fence around armory buildings, good condition.[6]

Photographs HF -27A and HF-38, taken in 1864-65, reveal that Q.M. and Commissary Departments were utilizing the following Musket Factory structures in 1865:

5. Bldg. No. 3 -Old Bell, Finishing, or Turning Shop.

6. Bldg. No. 5, the Boring Mill.

7. Bldg. No. 12, the Warehouse.

8. Bldg. No. 13, the giant Smiths or Forging Shop.

9. Bldg. No. 14, the Annealing Shop and Brass Foundry.

Still standing with ruined walls but no roofs in 1865, were:

10. Bldg. No. 8, Carpenter(Planing) Shop, Saw Mill, and Grinding Mill.

11. Bldg. No. 21, the Connecting Building(1860-61).

12. Bldg. No. 9, Tilt Hammer Shop for Barrel Welding.

13. Bldg. No. 18, the Rolling Mill (see HF- 83).

The ruined brick walls of the following nine Musket Factory buildings had apparently been levelled by 1865: Bldg. No. 4, 6, Bldg. 22- the Bell Tower, Bldg. No.7, Bldg. No. 10, Bldg. 15, Bldg. 16, Bldg. 19, and Bldg. 20.

5. Ramsay to Dyer, July 27, 1865 list. 6. Ibid.

"Harpers Ferry Property (1) Ca.1865-69)

I On Potomac side. (U.S. Musket Factory) (Bldg. No. 1)

Fire Engine House, about 30 ft. by 25 ft. one story brick slate roof, two iron doors, Cupola. (1)

Long Building, about 100 ft. by 25 feet, one story brick, one half demolished, but boarded up; with board roof. The brick half has slate roof. Wooden part has brick gable. Foundation, with dressed stone coping 100 feet by 25 ft. 2 feet above ground. (Office Bldg.) Bldg. No. 2

Foundation & Stone Coping, 2 feet above ground 100 feet by 25 feet. (Bldg. 3 ?)

Blacksmith Shop & Blast Furnace, about 250 feet by 30 feet Chimney stack about 115 feet high & 10 feet at base all of brick. Partly under rough roof, one story high, 21 iron window frames remaining, 2 iron door frames. Granite foundadion dressed coping, about 2 feet above ground. (Bldg. 13)

Front Wall of Government Yard, 12 panels of iron railing on granite base & brick with brick piers brown stone coping on piers. Double iron gates two in number. Heavy dressed gate posts of granite five in number.

West Enclosure Wall and part of South Enclosure 46 pannels [sic,] --iron pickets between brick piers

[2]

stone coping base of masonry about six feet high.

South Enclosure in part, about 500 feet in length rock base and solid brick above about eight feet high.

Cast Iron Overshot Wheel about 15 feet in diameter set in pit of masonry faced and coped with heavy dressed granite. Forebay of iron frame and wood over the wheel about 15 feet square. 4 cog wheels 5 ft. diam. each on heavy shaft of iron. 2 small cog wheels 3 ft. Two lines of wrought iron shafting about 10 feet long each by 8 inches.

1. National Archives Record Group 121, Washington ,D.C., Public Buildings Service, Harpers Ferry File No. 154, n.p., n.d., prepared ca.18865-1869. Cited from James P. Noffsinger,"Harpers Ferry,West Virginia...".pp.124-127. Building numbers added by C.W.Snell. Dimensions of the buildings as given in report are not very accurate. Nearly all structures listed were at least 35 feet wide and not 25 feet as is generally stated.

Line of blast pipe 150 feet long by 10 inches underground to blacksmith shop. Drum wheel in ground about 4 ft. diameter & part of shaft about 3 ft. long. Wooden buckets all destroyed.

(Bldg. No. 21- Connecting Shop? 1860-61)

Foundation of Machine Shop built in 1857. Laid about 4 feet deep. Coping of dressed granite—length about 100 ft. width about 25 feet. 2 iron cogs about 4 ft. in diameter & shaft about 12 ft. by 8 in.

Two Granite-faced Waste-ways. Walls about 12 feet high.

Overshot Wheel. Iron shaft wooden frame braced &

[3]

bolted with iron, journals broken & metal carried off. 6 large cogs 4 ft. diameter, 2 small do. 3 ft. Bed of masonry about 40 feet by 15 ft. 1 large cog about 6 feet, 2 small do. about 3 ft. Drum wheel 4 feet wrought shafts 12 feet by 8 in.

Foundation of Carpenter Shop 100 feet long about 30 feet wide. Part of dressed granite coping. (Bldg.No. 8)

Foundation of Proof Shop 100 feet by 30. Granite-dressed coping above ground about 10 inches. (Bldg.No.15)

Undershot Wheel. Iron shaft wooden frame wood nearly destroyed. 4 large cogs 6 ft. diam. 4 small cogs 3 ft. 2 drum wheels 5 ft. Shafts 2 10 ft. by 8 in. All set in bed of dressed granite blocks. 2 lateral shafts 8 ft. by 8 in. 2 Drum wheels & shafts 10 ft. by 8 in.

Foundation of Millwright Shop. 100 ft. by 25 ft. Masonry with dressed stone coping. (Bldg. No. 7)

Turbine Wheel in bed under ground & perpendicular shaft, 1 cog 3 ft. 1 cog 2 ft. Cast iron frame & fly wheel heavy 4 ft. drain 8 in. wide, and operating shaft. Masonry bed about 10 ft. square.

Long line of Masonry wall enclosure South

[4]

Foundation of building about 25 ft. square. No coping. (Bldg. 16? Charcoal House ?)

Foundation of Grinding Mill, 80 ft. by 25 ft. Heavy & long dressed stone coping, 14 in. above ground. (Bldg.6A- Stocking Shop ?)

Iron Flume 4 ft. diameter well bolted about 35 feet long with perpendicular shaft of Turbine Wheel. Turbine Wheel probably burried /sic./ under ground.

Old Machine Shop Foundation 80 ft. by 25. Masonry. (Bldg. No. 6D?)

Two Cisterns

Flag Stone Walk along fronts of buildings about 1/4 mile in length.

Rolling Mill and Till Hammer Shop. Brick one story, on dressed stone coping to foundation. 17 iron window frames. Length of building 200 feet by 40 ft. 2 door frames iron. Large quantity dressed stone inside over surface of shop. No roof. (Bldg.No.18 (Rolling Mill)

Turbine Wheel & Flume. The latter about 30 feet length & 4 in. diameter. Iron frames & supports. Wheel & machinery burried /sic./ in ground similar to the one before described.

Walls of Arched Warehouse. All of masonry 1 story 70 ft. by 50 ft. (Bldg. 10) (Lumber House and Coal Bins)

[5]

Old Rolling Mill Shop Foundation. Stone coping dressed 200 ft. by 30 ft. Flag flooring many iron bolts. (Bldg.No. 9 Tilt Hammer and Barrel Welding Shop)

Overshot Wheel Wood frame. 15 ft. diameter. Large revolving shafts. Forebay 15 ft. square. Large masonry waste-way about 60 ft. by 15 ft. 20 ft. deep. Dressed stone facing and coping. Boiler iron supply pipe 25 ft. by 4 ft. Iron water gate.

Iron Flume about 4 ft. diameter 20 ft. long. Iron water gate.

Coping of Canal Wall blocks of dressed stones about 6, 8, 10 ft. long 8 in. thick. Stones well squared about 500 feet in length.

Locks of Canal at Dam on Potomac & headway one open gate. One lifting gate & chains.

CHAPTER VI

DISPOSAL OF THE U.S. MUSKET FACTORY, 1866 - 1885

The land making up the U.S. Musket Factory at Harper's Ferry was owned by the United States Government from 1796 to 1869. In 1865 the Armory still about 1,669½ acres of land. but the workshops and storehouses at the U.S. Musket and Rifle Factories and also at the U.S. Arsenal had been destroyed.

On May 14, 1866, Brevet Major General A. B. Dyer, the Chief of Ordnance informed Secretary of War E. M. Stanton, that "Harper's Ferry can not, in my opinion, be ever again used to advantage for the manufacture of arms, the retention of the property of the United States at that place is not necessary or advantageous to the public interest... and I recommend that.... all the public land, buildings, and other property there be sold and the proceeds of the sale be applied to the construction of the armory in the west...."[1] On December 15, 1868, the U.S. Congress passed an act that authorized and directed the Secretary of War to sell at public auction the U.S. lands, buildings, machinery, and water power privileges at Harpers Ferry.[2]

In accordance with instructions from the Secretary of War, the surveyor S. Howell Brown subdivided the U.S. Armory property at Harpers Ferry into house lots completing his map, entitled "Map of Harper's Ferry -Plat of Harper's

1. A Collection of Annual Reports and Other Important Papers Relating to the Ordnance Department Taken from the Records of the Office of the Chief of Ordnance, from Public Documents, and from other Sources, prepared under the direction of Brig. General Stephen V. Benet(4 vols. Washington, D.C., 1878-1890), Vol. IV, pp. 1049-1050.
2. U.S. Statues at Large, Vol. XV, pp.265-266.

" Ferry Armory Property laid off into lots for Sale in Pursant to the Act of December 15, 1868, scale 165 feet to the inch," on November 1, 1869. (See Map 2 for Brown's 1869 map). Secretary of War William W. Belknap approved Brown's map on November 16, 1869 and the Ordnance Departmnet held a public sale of this property at Harpers Ferry on November 30 and December 1 and 2, 1869. The total property, comprised of 248 items, was apparently sold for a total of $ 297,793 50.[3]

At the public auction held in December 1869, the United States sold the U.S. Musket Factory grounds, consisting of 72 acres of land, the U.S. Musket Factory Canal, the U.S. Musket Factory Dam across the Potomac, including the old and new dams, together with the ruins of the Musket Factory workshops and storehouses, the remains of machinery, and the water power rights on the Potomac River, to group of Washington, D.C. speculators, who were headed by Captain Francis C. Adams, for $ 176,000. Under the easy credit terms of the 1868 act, this band of men, posing as "industrialists", obtained complete control of the industrial and water power resources of Harpers Ferry by simply signing bonds promising to pay; they were not required to put up a single dollar. They had neither the money nor the desire to erect new factories at Harpers Ferry. Their true intent was to highjack the Baltimore and Ohio Railroad Company, whose main line west ran along the north or river front of the Musket Factory Yard under a right of way that had been granted to the company by the Secretary of War in 1838. Captain Adams and his partners now alledged that they owned this right of way and demanded that the railroad company pay a high price for that grant, or relocate its main line somewhere else. Because of the topography of Harpers Ferry, there was no other place where the tracks could be relocated.

3. Benet, A Collection of Annual Reports... , IV, p.1053. Report of Major S. V. Benet to the Secretary of Warm December 24,1872.

On July 20,1872, Secretary of War Belknap requested the U.S. Attorney General to institute a suit against Francis C. Adams for the sum of $ 209,705 that the speculators owed on three bonds that they had signed.[4] Suits in equity were filed against Adams by Nathan Goff, Jr., the U.S. District Attorney for West Virginia in the U.S. District Court of that State in July 1873. The court handed down a decree in favor of the United States in September or October 1873, and directed that the property be sold . In September, 1876, acting as trustee for the U.S. District Court of West Virginia, Goff sold off at public auction the land and water rights that had been held by Adams and partners. The United States repurchased its title to the water power rights of the Potomac and Shenenandoah Rivers and to the sites of the U.S. Musket and Rifle Factories for $ 70,000.[5] The Government received its deeds for these items on April 17,1877.

On June 14, 1878, the President of the United States approved an act of Congress which authorized the Solicitor of the Treasury, by and with the consent of the Secretary of War, to offer for sale all Armory land, lots, buildings, and water rights that had had their titles properly cleared from the 1869 "sale."[6] After about one and a half years of effort Solicitor of the Treasury Kenneth Rayner was able to clear the title to a total of 155 lots and items that had apparently been "sold" in December 1869. On May 25,1880, at 1 p.m., he offered 126 of these items at public sale at Harpers Ferry. He was able to sell 75 items to 27 purchasers for a total of $ 4,538.00.[7]

4. One bond for $ 176,000 for Musket Factory and Potomac Water right; 2nd Bond for $ 30,000 for U.S. Rifle Factory and water rights on Shenandoah River, and third bond for two lots of land in Block A, Shenandoah Street, for $ 3,705.
5. Serial No. 2179, Report No. 770, p.1.
6. U.S. Statues at Large, Vol. XX,pp.130-131.
7. National Archives Record Group 121, Public Buildings Servicem Entry 58, Vol. III, pp. 559-590, Washington, D.C.

Solicitor Kenneth Rayner had also offered the water power rights to the Potomac and Shenandoah River for sale in 1880, but withdrew them when he received only a bid of $ 10,000 for the rights on the Potomac and zero for the Shenandoah rights. In a letter to the Secretary of the Treasury dated January 23,1882, Solicitor Rayner wrote of the water power rights at Harper's Ferry:

> The water-power of the Shenandoah, as constructed and used in early times, is now of little value, because of the changes in the river-bed, made from time to time by devasting floods (in 1870 and 1877), so memorable in the region, and of the almost certain prospect of frequent overflow...

Continuing, Rayner remarked:

> For two decades (since 1861) this whole (Armory) property, on both rivers, has been going to destruction by the filling up of the canals or race-ways, through floods in the river principally; but by the continuous disintegration of the dams; by the loss of material through the depredation of trespassers; and by the rust and decay consequent upon the exposure to the weather. There would accordingly seem to be no reason on the part of the government to hold the property for better prices, but every reason to part with for any reasonable sum that may be offered....(8)

Convinced that because of the vast changes that had occurred in the development of industrial techonology since 1861 and also due to the 20 years of neglect that had occurred, the Secretary of the Treasury, the Secretary of War, and the Solicitor of the Treasury concurred in the opinion that water power rights at Harpers Ferry could no longer be sold at high prices. They recommended that Congress should pass a law which would authorize the sale of these water power rights at lower but more realistic prices.[9]

8. Rayner to Charles J. Folger, Secretary of the Treasury, January 23,1882, in Serial No. 2027, Document No.66,pp.3-5.

9. Ibid., pp.1-5.

The Sale of October 22,1884:

After studying the matter since 1882, Congress took action and passed a law that was approved on July 4,1884, that "authorized and directed"the Solicitor of the Treasury" to make sale of all the real estate and riparian rights now owned by the Government of the United States at Harper's Ferry,... such sale to be at public auction, without reservation,... to the highest bidder....Provided, that the property shall not be sold for less sum then twenty thousand dollars. The act also directed that at least one-third of the purchase made had to be paid in cash, and that the credit portion was to bear interest at the rate of six percent per annum. Purchases under one hundred dollars had to be made in cash, over that sum, one third in cash, one third in one year, and the balance in two years.[10]

Accordingly, on October 22,1884, at 1 p.m., what proved to be the last large sale of U.S. land was held at Harper's Ferry. Seventy six items, including the water power rights on the Potomac and Shenandoah Rivers, and 74 house lots, with two armory dwellings, were offered at public auction. Seventy-five items, including the water-power of the two rivers and 73 house lots with the two dwellings,were sold for a grand total of $ 32,325.76 to 28 purchasers. From this total, $ 25,910.00 was for water power rights and $ 6,415.00 for 73 lots amd 2 houses.[11] All purchasers paid in accordance with the terms of the law and the United States issued the 75 deeds between 1884 and 1887, with the last deed[12] that for the water power on the Potomac, being dated April 12, 1887:

10. U.S. Statues at Large, Vol. 23,p. 69.

11. National Archives Record Group No.121,Public Building Service, Entry No. 79, "Records of Federal Land sold at auction on October 22,1884-Sales of Harper's Ferry Lots," one volume.

12. National Archives Record Group 121, Entry 58, Vol.III,p. 624.

At the October 22,1884 sale, Thomas H. Savery was the high bidder and purchaser for $ 25,100, of the U.S. water Power rights on the Potomac, the Musket Factory Canal, and old and new Musket Factory dams, the 72 acres of the Musket Factory yard, the ruins of the old workshops and stores, machinery and extant Musket Factory Bldgs. No. 1, Engine and Guard House(the John Brown Fort), and Bldg. No. 2, the Armory Office Building. The United States issued the deed for this property to Thomas H. Savery on April 12, 1887, after Savery had completed his final payment for this item.[13]

13. National Archives Record Group No. 121, Public Buildings Service, Entry 58, Warrenty Deeds, Vol. III, p.624, Washington, D.C.
Savery also purchased the water power rights to the Shenandoah and the 13 acre U.S. Rifle Factory tract for $ 810.00. He received his deed from the United States to the Rifle Factory on March 2,1885.

Record of Disposal of Key Armory Buildings and Lots, 1869-1884 :

U.S. Musket Factory yard, Buildings No.1, Engine and Guard House; Bldg. No. 2, Armory Offices, 72 acres of land, ruins of old workshops, U.S. Armory canal and dam on the Potomac. Sold October 22, 1884 to Thomas H. Savery, for $ 25,100; U.S. deed to property issued to Savery on April 12, 1887.
Water rights on the Potomac River.

On July 28, 1891, Thomas H. Savery sold Bldg. No. 1, the Engine and Guard House, then known as "the John Brown Fort," to Augustine J. Smith and others for $ 5,000.00.[2]

Bldg. No. 2, Armory Offices, had been demolished by Savery by 1889.

1. National Archives Record Group 121, Entry 58, Warrenty Deeds, Vol.III, p.624. Also deed in Book Q, page 317, Jefferson County Courthouse, Charles Town, W. Va.
2. Deed Book Y, page 191, Jefferson County Courthouse, Charles Town, W. Va.

CHAPTER VII

Summary: Repair and Improvements at the U.S. Musket Factory, 1842 to June 30, 1860:

From 1842 to June 30, 1860, Congress authorized the expenditure of a grand total of $ 939,300.70 for repairs and improvements at the U.S. Armory at Harper's Ferry, Virginia. Ordnance Dpartment records indicate that $ 911,020.42 was actually spent for these purposes in that period. Of the total spent, about $ 468,697.75 went for repair, improvement, purchase of land, and for new machinery at the U.S. Musket Factory. (See chart on following page). About $ 146,759.26 went for the construction of 24 structures, large and small; $ 14,628.00 for remodelling three older buildings, $ 46,073.14 to make repairs to some 23 workshops and storehouses . Approximately $ 28,724.56 was spent on the Musket Factory grounds, to bring the total for buildings and grounds to $ 236,184.96. New machinery cost $ 64,570.00; land purchased to protect the Musket Factory came to $ 47,437.33. Work on the U.S. Potomac Canal amounted to about $ 44,258.03 and repair of the old U.S. dam and the construction of a new dam on the Potomac was about $ 76,247.43.

The new buildings and structures erected 1842 - 1860 were as follows:

1. Warehouse for Iron, Steel, Bldg. No. 12, 1841-44
2. Boring Mill, Bldg. No. 5, 1843-44.
3. Proof House, Bldg. No. 15, 1843-44.
4. Engine House, 1843- frame, minor structure.
5. Lime House, 1843, frame, minor structure.
6. Charcoal House, Bldg. No. 16, 1845-46.
7. Store House for Stocks, Bldg. No. 7, 1846-47.
8. Smiths or Forging Shop, Bldg. No. 13, 1845-48.
9. Engine and Guard House, Bldg. No. 1, 1847-48.

APPROXIMATE TOTAL OF EXPENDITURES FOR REPAIRS AND IMPROVEMENTS AT THE U.S. MUSKET FACTORY, 1842 - 1860

PROJECTS	1842 - 44	1845 - 51	1852 - 54	1855 - 60	TOTAL
New Buildings	$ 21,600.00	92,209.26	19,900.00	13,050.00	$ 146,759.26
Remodelled Buildings	0	3,525.00	0	11,103.00	14,628.00
Coal Bins	0	2,680.00	0	399.00	3,079.00
Coal Scales	0	85.02	0	0	85.02
Privies	0	111.17	0	0	111.17
Subtotal	21,600.00	98,610.45	19,900.00	24,552.00	164,662.45
Repair Bldgs	6,048.09	21,681.05	8,400.00	9,944.00	46,073.14
River Wall	120.00	640.00	0	0	760.00
Gates & Enclosing walls	2,581.58	1,450.00	7,000.00	5,723.00	16,754.58
Grading	0	1,700.00	0	0	1,700.00
Paving	0	450.00	700.00	560.00	1,710.00
Wells,pipes	304.79	3,220.00	1,000.00	0	4,524.79
Subtotal MF	30,654.46	127,751.50	37,000.00	40,779.00	236,184.96
For land	0	40,437.33	7,000.00	0	47,437.33
Machinery	0	49,570.00	0	15,000.00	64,570.00
Canal	1,907.03	8,465.00	5,650.00	28,236.00	44,258.03
Dam	1,747.43	1,500.00	0	73,000.00	76,247.43
TOTAL:	$ 34,308.92	227,723.83	49,650.00	157,015.00	$ 468,697.75
No. of new Bldgs.erected	5	11	5	3	24
No. of remodelled bldgs.	0	2	0	1	3
No. of repaired Bldgs.	5	7	4	7	23
No.of relocated Buildings	0	0	0	1	1
Total Bldgs	10	20	9	12	51

Construction and Repair at the U.S. Armory at Harper's Ferry, Va., 1842 to June 30,1860 , work accomplished under the various Superintendents .

Years	Superintendents	Amount expended	Amount Appropriated for C &R	No. of bldgs built
1842 to 6/30/1845	Major Henry C. Craig:	$ 141,487.53	$ 90,500(1)	6
July 1,1845 to June 30, 1852	Major John Symington	384,153.24	335,702.00	20
July 1,1852 to June 30, 1854	Col. Benjmain Huger & Major William Bell	134,360.29	92,450.00	8
Subtotal 1842-54	Military Superintendents	$ 660,001.06	$ 536,652.00	34
July 1,1854 to July 1,1858	Henry W. Clowe	147,277.26	263,542.00(2)	3
July 1, 1858 to 6/30/1860	Alfred M. Barbour	103,742.10	185,000.00	3
Subtotal, 1854-60:	Civilian Supts.	$ 251,019.36	$ 448,542.00	6
Grand Total 1842-60		$ 911,020.42	$ 985,194.00	(2) 40
Proceeds of 1852 land sale for use in 1856:		-	36,606.70	
1842-60,June 30. GRAND TOTAL		$ 911.020.42	$ 1,021,800.70	40

(1). Total includes $ 18,000 in funds carried over into 1842 from the 1841 appropriations of $ 38,000.00.

(2). Total does not include $ 36,606.70 obtained from the sale of U.S. Houses and lots in 1852 and authorized by Congress in 1856 for use to make repairs and improvements at the armory.

List of New Buildings, 1842-60, Continued:

(Bldg. No. refer to 1859 Historical Base Map.)

10. Stocking House and Machine Shop, Bldg. No. 6, 1847-50.

11. Lumber House and Coal Bins, Bldg. No. 10, 1848-49.

12. Tilt Hammer Shop for Barrel Welding, Bldg. No. 9, 1849-51.

13. Polishing Shop, Bldg. No. 4, 1849-50.

14. Grinding, Saw and Planing(Carpenter) Mill, Bldg. 8, 1850-51.

15. Annealing Shop and Brass Foundry, Bldg. No. 14, 1851-52.

16. New Coal Shed and Scale,1849,minor structure.

17. Horse and Carriage Shed, 1851, minor structure.

18. Lime House, Bldg. No. 19, 1852. minor structure.

19. Ice House, Bldg. No. 20, 1853, minor structure.

20. Rolling Mill, Bldg. No. 18,1853-54.

21. New Stock and Store House, Bldg. No. 11, 1854-55.

22. Connecting Shop, Bldg. No. 21, 1860-61.

23. Bell Tower Shop, Bldg. No. 22, 1860-61.

24 New Horse Shed, 1856, minor structure.

Remodelled Structures:

1. Residence into Armory Central Offices, Bldg. No. 2, 1847-48.

2. Finishing, Turning or Bell Shop, modernized in 1845-51.

3.Store House for Stocks,Bldg. 7,(1846-47) remodelled 1859-60 for use as millwrights shop.

Relocated Building:

1. Old(1822) Pay Office and Vault removed from Arsenal Square in April 1858 to the Musket Factory yard.

Expenditures on Physical Plant of Harper's Ferry Armory 1796 - June 30, 1860

Period	For Land	For Construction and Repair	TOTAL	No. of Bldgs.built
1796-1841:	$ 45,477.28	$ 830,383.31	$ 875,870.59	266
1842-1860:	59,603.35	851,417.07	911,020.42	48
TOTAL:	$ 105,080.63	1,681,800.38	$ 1,786,891.01	314

Appraised Value of Armory Plant

Year:	1821	1831	1860
No. of Buildings	113	180	73
Value of buildings	150,650.00	217,920.74	341,221.00
Value of Canals, dams	105,000.00	145,117.66	233,279.00
Value of Machinery,Tools	72,247.44	77,554.43	379,795.00
Value of Land *	42,877.28	42,877.28	37,457.00
TOTAL:	$ 370,774.72	405,915.70	$ 991,752.00

*1,890 acres of land in 1821 and 1831; 1,669½ acres of land in 1860.

Value of Musket Factory Plant in 1821

Value of 19 buildings:	$ 74,410
Value of canal and dam:	105,000
Total , 1821	$ 179,410

SUMMARY CHART: APPROXIMATE TOTAL EXPENDITURES AT THE U.S. FACTORY FOR REPAIRS AND IMPROVEMENTS, 1822 - 1860

Period	New Bldgs.	Repair of Bldgs.	River Wall	Enclosing Walls	Grounds	Land	New Machinery	Canal	Dam	Total
1822-42	58,401.17	56,613.14	40,772.30	0		0	53,671.00	55,867.96	22,305.40	287,630.97
1842-60	164,662.45	46,073.14	760.00	16,754.58	7,934.79	47,437	64,570.00	44,258.03	76,247.43	468,697.75
TOTAL:	223,063.62	102,686.28	41,532.30	16,754.58	7,934.79	47,437	118,241.00	100,125.99	98,552.83	756,328.72

26 buildings constructed 1822-41

24 buildings constructed 1842-61

50 buildings erected 1822- 61.

Approximate total of 77 buildings located in the U.S. Musket Factory grounds from 1796 to 1861.

CHAPTER VIII

DESCRIPTIVE CATALOG OF 24 MUSKET FACTORY BUILDINGS ERECTED 1842 - 1861

During the period 1842 to 1861 the Musket Factory shops were arranged in two long parallel rows, the north line standing on the bank of the Potomac River(or within 50 feet of it) and the southern line was situated on the north bank of the U.S. Musket Factory Canal. The building numbers mentioned in this chapter are the numbers that are used on the 1859 historical base map.

1. Warehouse for Iron and Steel, Bldg. No. 12, 1841- 44:

Location: At the lower or eastern head of the northern line of workshops.

Map References: Bldg. No. 10 on Map. No. 2(18440; Bldg. No. 18 on Map No. 3 (1848).

Visual Evidence:

The description of the 1841-44 warehouse that follows is based on the documentary evidence presented above and on photographic evidence. The structure can be seen in the following historical photographs: HF- 64(1859) east and north elevations); HF-66 (1859) south slope of roof only; HF-492 (1861) east and north elevations; HF-49(1861),east and north elevations; HF- 30 (1862),west and south elevations; HF-27B (1864-65) closeup east and south elevations; HF-38 (1865-66); part of west and south elevations. HF- 355(ca.1880-86) showing warehouse had been demolished by this date.

History and Description:

The new warehouse was designed and erected by Major Henry K. Craig, 1844, at an approximate cost of $ 7,200.00. The structure measured approximately 93 feet 6 inches by 30 feet 10 inches, had stone foundations, and was two stories, brick, in height. Its gable roof was covered with slate and provided with copper gutters and downspouts. The water table, cornice, window and door lintels and sills were of cut

stone. A series of stone columns in the original full basement supported the wooden floor of the first floor. When this floor decayed and fell in 1849, the cellar was filled in to about first floor level with quarry spall and then paved with large flag stones. The photographs reveal that the warehouse, at the second floor level, was three bays wide and seven bays long, thus apparently having a total of 20 windows topped by flat arches at the second story. Photographs prior to 1864-65(see HF-27B) do not provide very good views of the 1st story fenestrations, however, from what can be seen and the Voucher 8011-2nd series-V.89 to Redmond Burke, November 3, 1842, for 40 cut stone window sills and 4 door lintels, it would appear that that there were probably also 20 flat-topped openings on the first story. These were probably comprised of 16 windows and possibly four doors, with the entrances being located in the center bay of each elevation.

The east gable end had a small brick chimney and the third story levels of both gable ends were occupied three windows: one square centered window flanked by two "quadrant" or semi-elliptical windows.

The interior brick walls of the warehouse were plastered. The exterior brick walls were colored with "cement wash" after 1849 and the structure had two lightning rods after 1851.

2. Boring Mill, Bldg. No. 5, 1843-44 :

Location: Fifth building from eastern or lower head of southern line of workshops.

Map References: Bldg. No. 3 on Map No. 2 (1844); Bldg. No. 3 on Map No. 3 (1848).

Visual Evidence:

Visual evidence in the form of drawings or photographs showing the Boring Mill is extremely limited. Best evidence or view is probably the lithograph by Ed Beyer. Ray & Son, Dresden, 1857- Harper's Ferry Armory from Magazine Hill" and published in Beyer's Album of Virginia, 1857, in which the Boring Mill can be seen in the distance (Harpers Ferry NHP Negative No. 256). Photographic views that show distant views of the ruined walls of the burnt out Boring Mill during the Civil War include Harpers Ferry NHP Negative No. HF- 30 ,made in 1862, and perhaps No. HF-38, taken about 1865 or 1866.

History and Description:

The new Boring Mill was designed and erected by Major Henry K. Craig in 1843-44 at an approximate cost of $ 10,500. The diminesions of the workshop are given as 123 by 42 feet or 122 by 42½ feet, the latter figures probably being the most accurate ones. The factory had stone foundations and brick walls that were two stories in height. Its gable roof was covered with slate and was provided with lead(or copper) gutters and copper down-spouts. The water table, cornice, window and door lintels and sills, and exterior steps were all of cut stone. Lithograph HF-256 indicates that the Boring Mill has flat arched windows and probably resembled the newly built warehouse(of which there are many photographic views) in its exterior appearance, except that the Mill did not have quadrant windows in the third story windows at the gable ends. HF- 256 suggests that the Boring Mill was at least 10 bays long by 3 bays wide.

The ceilings of the mill and perhaps the interior brick walls were plastered. The floors were wooden. There was a large end chimney centered at the east end and perhaps two smaller one at the west gable end. The heating system was comprised of 10 cylinder stoves with 820 feet of stove pipe.

A cast-iron water wheel, 15 feet in diameter and 10 feet wide, drove all the machinery in the Boring Mill.

3. Proof House, Bldg. No. 15, 1843-44:

Locations Fourth from the eastern or lower head of the northern line of workshops.

Map References: Bldg. No. 14 on Map No. 3 (1848).

Visual Evidence:

Photographs that provide distant views of the Proof House are as follows: Harpers Ferry NHP Negative Nos. HF-51 or 256(1857 lithograph), HF- 49(1861), HF 30(1862), HF-11(1862), and HF- 38(taken ca 1865) The most important view, that which gives the most architectural information about the original appearance of the proof house is HF- 49, made in 1861 after Musket Factory buildings had been burned by the Confederates. Photograph HF-11, taken in 1862, suggests that either the ruined walls had been reroofed, or that a new structure, used as a warehouse had been erected on the proof house site by the Union Army in 1862. Re-roofing the brick walls would seem to be the most likely probability. HF-38, taken in 1865 or 1866, reveals that the ruined brick walls of the Proof House had been demolished by the date this picture was taken.

The new Proof House was designed and erected by Major Henry K. Craig in 1843-44 at an approximate cost of $ 2,500.00. The Proof House was 70 feet long by 30 feet wide, with a stone foundation, two-story high brick walls, and a gable roof that was covered with sheet iron. The structure had cut stone water table, cornice, window and door lintels and sills. Photograph HF- 11 indicates the Proof House was three bays wide and five bays long and that except for its iron roof, its exterior probably architecturally matched the new warehouse and new boring mill, which Craig also designed and erected 1843-44.

The windows of the Proof House like the other two new buildings, had flat arches and the floors were of wood. The ceilings, and perhaps also the interior brick walls, of the structure were plastered.

In 1850 10 large wooden blinds were made and added to the windows of the Proof House.

4. Engine House, 1843-48 :

Location: Unknown.

Map Reference: None.

Visual Evidence: None.

History and Description:

Built in 1843 by Major Henry K. Craig, this frame Engine House for an Armory Fire engine is believed to have been situated in the U.S. Musket Factory yard, but its exact location and size are unknown. If located in the yard, the wooden engine house was undoubtedly demolished or removed when the brick Engine and Guard House was constructed at the Musket Factory in 1847-48.

5.Lime House, 1843- 1852:

Location: Unknown.

Map References: None.

Visual Evidence: None.

History and Description:

This one-story frame storehouse for lime, size unknown, was constructed by Major Henry K. Craig in the Musket Factory Yard in 1843. Its exact location and appearance are unknown. This was apparently the first storehouse for lime to be erected at Harper's Ferry Armory. The wooden lime house was demolished and replaced by a new storehouse for lime in 1852.

6.Charcoal House, Bldg. No. 16, 1845-46:

Location: Fifth from the eastern or lower head of the northern line of workshops.

Map Reference: Bldg. No. 13 on Map No. 3 (1848).

Visual Evidence:

The Charcoal House, Bldg. No. 16 on the 1859 map, can been seen in the following historical prints and photographs: HFNHP Negative HF-51 or 256, 1857 lithograph, showing western end and south slope of roof; HF-49, photograph taken in 1861, shows distant view of east gable end; this is the best picture of the structure. HF- 38, photo taken in 1864 or 1865, view of what is probably the roof of the Charcoal House, reroofed and apparently still standing at the end of the Civil War.

History and Description:

The Charcoal House was designed and erected by Major John Symington in 1845-46 at an estimated cost of approximately $ 1,200.00. The one-story brick storehouse stood on stone foundations and was adorned with cut-stone water table, sills, cornice, and coping; the building measured 35½ by 35½ feet in size; the door and window frames were of cast iron and the gable roof was covered with sheet iron.

Its interior was divided into four storage compartments by means of two two-inch thick wooden partition walls. Photograph HF -49, taken during the summer of 1861, after the Confederates had burned the Armory structures, reveals that the Charcoal House was probably three bays wide on its gable end and that each bay was comprised of a recessed panel set within a relieving round arch that rested on capped pilasters. The gable end were further adorned by brick parapet end walls that were turreted at the corners, topped with cut stone coping, and that rose above the ridge of the sheet iron gable roof. Symington's use of this style was to be applied to all the brick shops and storehouses that were to be erected at the Harper's Ferry Armory from 1845 to 1861.

7. Store House for Stocks, Bldg. No. 7, 1846-47:

Location: 8th from the eastern or lower head of the southern line of workshops in 1860.

Map References: Bldg. No. 6 on Map No. 3 (1848).

Visual Evidence: The Store House for Stocks, in its original form, can be seen in detail in HF NHP Negative HF-51 or 256 (1857 lithograph); and in slightly altered form, including extensions at either end to connect with adjacent buildingsm in Photographs HF- 223, made in 1861; HF-30, made in 1862; and HF -38, taken in 1865 or 1866. The last item reveals that the ruined walls of this shop had been demolished by that date.

History and Description:

The Store House for Stocks was designed and erected by Major John Symington in 1846-47 at an approximate cost of $ 6,438.00. The two-story brick building stood on a one-story basement of stone, had cut stone water table, sills, cornice, and coping. Measuring 100 by 35½ feet in size, the stock house had cast iron door and window frames and its gable roof was covered with sheet iron. A plaster ceiling was installed under the iron roof on the second floor in 1855. The visual evidence indicates that in 1857 the storehouse was three bays wide and eight bays long.

The stock house had brick parapet end walls, with turrets at the corners; these were topped with cut-stone coping. The end walls rose above the ridge of the gable roof. The brick first story of the stock house was composed of a series of bays, each made up of a recessed panel set within a relieving round arch that rested on capped pilasters. Windows set within these arches were topped by round arches. Bay on the second story were comprised of a rectangular recessed panel and each panel contained a window with a flat arch.

The store house for stocks was remodelled into a work shop with water wheels in 1859-60 and renamed the Millwrights Shop. The cost of the alteration was about $ 11,103.00.

8. Smiths or Forging Shop, Bldg. No. 13, 1845-48:

Location: Second from the eastern or lower head of the northern line of workshops.

Map References: Bldg. No. 17 on Map No. 3 (1848).

Visual Evidence: The large Smiths or Forging Shop can be seen in the following HFNHP lithgraphs, drawings and photographs: HF- 51 or 256, 1857 lithgraph; HF-240(and blowup from, HF-492) made in June 1861; HF-49, photo taken June 1861; HF-30, taken in 1862; HF- 11,taken in October 1862; HF- 89- detailed sketch published March 11,1865; HF- 27B, photo taken in 1865; HF- 38, photo taken in 1865 or 1866; HF- 28, taken in 1865 or 1866; HF-355, taken about 1886; HF- 539, taken about 1886; HF-492,taken about 1880; and HF- 59, taken in 1889, reveals that all but the chimney stack had been demolished by 1889. **Also HF- 45(ca.1886): and HF-113(ca. 1884-89).**

History and Description:

The Forging or Smiths shop was designed and erected by Major John Symington in the period 1845 to 1848 at an approximate cost of $ 18,000. Additional alterations and repairs made in 1852-53 of about $ 5,600 increased the total cost of this workshop to $ 23,600. The forging shop was comprised of three sections: the west(or north) wing was of brick, on stone foundation, one story, 122 by 35½ feet; a center building, for inspectors' offices and model and pattern rooms, was of brick, on stone foundation, two stories, and 46 by 37 feet . In the middle of the back(east or north) wall of the center office building was the main brick chimney stack, 90 feet high, 10 feet square at the base and 6 feet square at the top. The great chimney was built upon a massive stone arch thrown across a tail race leading from one of the water wheels and waste dam of the armory canal. The third section, the east(or south) wing was of brick , on stone foundation , one story, 121 by 35½ feet. Through the center of the north and south wings there was a line of double forges for burning anthracite coal, under which there were two horizontial flues leading to the main chimney stack in the center building.

The two wings and center section had cut stone water table, sills, cornice, and coping; the gable roofs were covered with sheet iron; the door and window frames were of cast iron. The gutters and downspouts were of copper.

Ths shop apparently had one turbine reaction water wheel, with penstock and cast iron gates, shafting and bevel gearing for driving the fan blast that serviced the smiths forges. The ceilings were plastered and sheet iron was apparently used for flooring under the forges in 1847-48.

In the 1852-53 alterations, the sheet iron floor was removed, the cellar filled in with earth , and then paved with brick and stone flagging . 18 new cast iron forges, with sheet iron stacks, were put in, as were new anvil blocks that had been placed on cast iron chairs that were set in stone

foundations, Finally, a ventilator, probably 243 feet long, ran the full length of the ridges of gable roofs on the east and west wings,

Photographs reveal that the north and south wings were each three bay wide and 11 bays long . The facade of the centre building,37 feet wide, was divided into three bays and the length, 47 feet, projected a total of 11 feet 6 inches beyond the wings: probably about 2 feet in front and 9½ feet in the rear. The style of architecture matched that of the other factory structures that Symington had built or was then constructing. Each first-story bay of the wings and center consisted of a recessed panel that was set within a relieving round arch that was supported by a capped pilaster. This device, repeated 25 times on the 280 foot long front elevation of the forging shop, rendered the structure impressive in appearance. The three-bay wide second story front and rear elevations of the center structure were each comprised of a recessed panel that was set within a relieving flat arch that was supported on capped pilasters, 1st story windows had round arches and second story windows flat arches. Parapet end walls, adorned with rectangular panels, topped with cut stone coping, and turreted at the corners, rose above the gable roofs of the ends of the two wings and also of the center building.

9. Engine and Guard House,Bldg. No. 1(Park Bldg. No. 63), 1847-48:

Location: First structure at the eastern or lower head of the southern line of workshops.

Map References: Bldg. No. 19 on Map No. 3 (1848).

Visual Evidence: The Engine and Guard House can be seen in the following Historical photographs and drawings: HFNHP Negative Numbers:HF -64(taken in 1861); HF-90(taken in 1859- Southeast corner only); HF- 223(drawing made 1861); HF-27B, 1865; HF-355, 1886); HF- 539-1886; HF-379,1882; HF- 55(1873-75): HF-100 taken during the 1889 flood; HF-190, ca.1890-92. These views all show the structure on its original(1848) site. In 1892, the Engine and Guard House, then known as the John Brown Fort, was dismantled and shipped to Chicago for the World's Fair. Also see HF-18(1864-65); HF-55; HF-495(1889); HF 113; and HF 58.

History and Description:

The Engine and Guard House was a one-story brick building, 35½ by 24 feet with cut-stone water table and coping. The slate-covered gable roof was crowned with a square wooden cupola that held a fire bell. The gutters and downspouts were of copper. The structure was designed and erected by Major John Symington in 1847-48 at a cost of approximately $ 1,540. Inside, one-third of the structure was partitioned off by the means of a solid brick wall to form a guard room for the use of the night watchmen. The remaining two-thirds served as the engine house and housed two fire engines.

The building fronted three bays wide on the musket factory yard and was two-bay deep. Each bay was comprised of a recessed panel that was set within a relieving round arch that was supported by capped pilasters. Round arch windows and doors were set within recessed panels. The gable end walls were adorned with brick parapet walls that were crenelated, topped with cut-stone coping and rose above the ridge of the roof.

10. Stocking House and Machine Shop, Bldg. No. 6, 1847-50:

Location: Sixth building from the eastern or lower head of the southern row of workshops.

Map References: Bldg. No. 4 on Map No. 3 (1848).

Visual Evidence: On the 1859 historical base map:

the Stocking Shop(south or east wing) is Bldg. 6A; the wheel house attached to the south or east end of 6A, is Bldg. 6B; the center building, attached to the north or west end of 6A, is Bldg. 6C, the office building; Bldg. 6D, the machine shop(north or west wing) is attached to the north or west side of Bldg. 6C, the office. Bldg. No. 6 can be seen is the following HFNHP Negatives: HF- 51 or 256(1857 lithgraph); HF-223, 1861 drawing; HF-30, 1862 photo. Photos HF-38 and HF 26, both taken in 1864 or 1865 reveal that Bldg. No. 6 had been demolished by that date.

History and Description:

The Stocking and Machine Shop was designed and erected by Major John Symington in the period 1847 to 1850 at an approximate cost of $ 20,450.00, with an additional $ 5,700.00 being spent for the machinery in the two shops; Total costs thus amounted to about $ 26,150.00 for the entire project. The building was comprised of three sections: the stocking shop in the south or east wing, an office building in the center, and the machine shop in the north or west wing. The entire structure stood on stone foundation, with cut-stone water table; the walls, two stories high, were of brick, with cut-stone sills and coping. The door and window frames were of cast-iron and gable roofs were covered with sheet iron. The gutters and down-spouts were of copper. Each wing measure 89 by 35½ feet and the center building, which covered a water wheel and contained offices, was 35½ feet wide and 48 feet deep, so that the center projected about six feet 3 inches beyond the both the front and rear elevations of the two wings. The over all length was thus about 213½ feet. In addition, a wheel house for the water wheel driving machinery(Bldg 6B) in the stocking shop(south or east) adjoined the south wing at its south end. The wheel house was one-story brick on stone foundations, with cast iron door and window frames, measuring 18 by 26 feet, and its gable roof was covered with slate. HF-51 indicates that the wings were each seven bay long by three bays wide. The front and rear elevations of the center office building had three bays each. Like other Symington-designed shop, the first story openings were set in recessed round arch openings and the flat arched windows of the second story were located in recessed rectangular panels. Crenelated parapet brick end walls, topped with cut stone coping also adorned the four gable end walls of the two wings and center building.

11. Lumber House and Coal Bins, Bldg. No. 10, 1848-49:

Location: Seventh building from the eastern or lower end of the northern line of workshops.

Map Reference: Bldg. No. 10 on Map No. 3 (1848).

Visual Evidence: There are no known views or photgraphs of this structure. Located at the extreme western or northern end of the line of workshops bordering the Potomac River, the lumber house stood in an area that was not photographed or drawn. HFNHP Photographs which do show or come close to its site(without the structure being visible) include the following: HF=10, taken in 1862, what may possibly be one ruined wall can be seen); HF-9, taken in 1862; HF 83,taken about 1875; HF -492, taken about 1880.

History and Description:

The Lumber House and Coal Bins were designed and erected by Major John Symington in 1848-49 at a cost of approximately $ 5,695.00. The two-story structure stood on stone foundations, the first story, which contained bins for bituminous coal, had stone walls and a flagstone floor; the second story, which contained the lumber room, was of brick and its windows were adorned with blinds. The water table and coping were of cut-stone. The gable roof was covered with slate and the gutters and douwnspouts were probably of copper. If designed in the same style as the other new buildings then being erected, the stone first story contained round arches with recessed stone panels and the bays on the second brick story had windows with flat arches.

The lumber houses was 58 feet 8 inches wide and 77 feet 4 inches to 78 feet long.

12. Coal Scales Shed, 1849:

Location: Unknown, but perhaps adjacent to Bldg. No. 10, the Lumber House and Coal Bins, at the western or upper end of the Musket Factory yard.

Map References: None.

Visual Evidence: None.

History and Description: This wooden shed on stone foundations was erected by Major John Symington in 1849 in the Musket Factory yard to shelter the coal scales. Cost of construction was about $ 85.00. Size of the building is not known.

13. Tilt Hammer Shop for Barrel Welding, Bldg. No. 9, 1849-51:

Location: Eleventh building from the eastern or lower head of the southern line of workshops.

Map References: None.

Visual Evidence: The Tilt Hammer Shop can be seen in the following HFNHP Negatives: HF-51 or 256(1857 lithograph); HF-30, photo taken in 1862; HF-10, taken in October 1862; HF-355, taken about 1886; HF-539, taken in 1886; HF-492, taken from Loudoun Heights about 1880;

History and Description:

The Tilt Hammer Shop for Barrel Welding was designed and erected by Major John Symington in 1849-51 at an approximate cost of $ 17,900.00; in addition, about $ 25,470.00 was also spent to purchase and manufacture the machinery for this shop. The Tilt-Hammer Shop for Barrel Welding was a one-story brick structure on stone foundations, 53½ feet wide and from 188 to 190 feet long. The water table, sills, and coping were of cut stone; the door and window frames were of cast iron. The gable roof, covered with slate, was crowned by a ventilator that ran the full length of its ridge. The gutters and downspouts were of copper. Like the other Symington-designed shops, the brick walls of the Tilt Hammer Shop for Barrel Welding were divided into round arch bays and the gable end walls had brick crenelated parapet walls,

topped with cut-stone coping, that rose about the gable roof. The gable ends were apparently three bays wide and the side walls were divided into ten bays .

The machinery in the structure was powered by two cast-iron turbine water wheels that had been manufactured by the Ames Manufacturing Company of Massachusetts. There were eight tilt hammers for welding barrels and ram rods; two double tilt hammers for drawing barrel plates and tilting iron and steel; four sets of drop hammers; a large shears; a blow machine; and a large grindstone.

14. Polishing Shop, Bldg. No. 4, 1849-50:

Location: Fourth building from the eastern or lower head of the southern line of workshops:

Map References: None.

Visual Evidence:

The structure can be seen on the following HFNHP Negatives: HF- 51 or HF-256, a lithograph made in 1857;Hf-30, photo taken in 1862. HF-355,taken about 1886, reveals that the Polishing Shop had been demolished by that date.

On the 1859 historical base map prepared in 1959, it was assumed that the polishing shop used the gable end walls of the Old Bell Shop and new Boring Mill as side walls. Under this plan the front and rear elevations of the Polishing shop would each be 22 feet wide and the shop,40 deep, would project slightly forward and backward from the 35½ feet wide gable end walls of the two larger shops. An examination of HF-51 and HF-30, however, in 1981, has suggested another possible arrangement; namely, that the polishing shop was built entirely on the south(or west) sides of the Old Bell Shop and Boring mill, partially overlapping perhaps the rear corner of each structure. Under this scheme , the polishing shop would be 22 feet wide, between the side walls of the two shops and run 40 feet along the north or east bank of the Armory canal. Based on the 1857 lithograph (HF-51), the north and south 22 feet end walls may have been only one-story in height, while the roof

rose at such a pitch as to form a second story in the center of the 40 feet long elevations. The south or west gable end elevation, in the 1857 lithograph, at the 2nd story levels, appears to be adorned with the typical "Symington" brick parapet end wall that crenelated and topped with cut stone coping.

History and Description:

The Polishing shop was designed and erected by Major John Symington in 1849-50 at an approximate cost of $ 1,700.00. The structure, two stories high, had brick walls and stood on a stone foundation. Forty by 22 feet in size, the shop covered a large iron overshoot water wheel that drove a portion of the machinery in the adjoining Bell or Finsishing shop and the Boring Shop. The gable roof was covered with slate and the gutters and downspouts were of copper. The polishing shop was probably located on the second floor of the structure.

15. Grinding, Saw and Planing Mill, Bldg. No. 8, 1850-51, 1860:

Location: Tenth building from the eastern or lower head of the southern line of workshops.

Map References: None:

Visual Evidence: The Grinding Mill, Bldg. 8A, was the east or south wing; the Saw Mill, Bldg. 8B, was the center section; the Planing Mill or Carpenter Shop, Bldg. 8C, was the west or north wing.

This workshop can be seen in the following

Harpers Ferry NHP Negatives: HF- 51 or 256, a 1857 lithograph which shows the structure in its original form; HF- 223, a 1861 print showing a corner of the revised(two story) south wing; HF-30 a photo taken in 1862 that clearly shows the changes made in 1860; HF- 38, taken in 1864 or 1865, and HF- 355, photo taken about 1886, showing that the structure had been demolished by that date.

History and Description:

The Grinding Mill, Saw and Planing Mill was designed and erected by Major John Symington in 1850-51 at an approximately cost of $ 9,730.00, exclusive of $ 1,900 for machinery. Its style of architecture was the same as that of the other workshops then being erected by Superintendent Symington.

The shop was 110 feet long and 36 feet deep. Its length was divided into three equal sections: the center was of two stories and the north and south wings of one story. The building was of brick, on stone foundations, with cut-stone water table, coping, door and window sills. The door and window frames were of cast iron; the gable roofs were covered with slate and the gutters and spouts were of copper. The structure was equipped with lightning rods.

There were apparently two cast-iron turbine water wheels, one located in the south wing, the grinding mill, and the other in the north wing, the planing mill or carpenter's shop. The gable ends of the north and south wings, one-story in 1851, were each divided into three bays and brick parapet crenelated end walls, topped with cut-stone coping, rose above the ridges of the gable roofs. The gable ends of the two-story center building were treated in like manner. The 110 foot east and west elevations were each divided into nine bays. All first-story bays contained round arch that was supported by a capped pilaster. Round arch windows were located within the recessed panel that was set within each arch. Windows on the second story of the center building were topped with flat arches and set in reccessed rectangular panels.

In the 1860 remodelling, a similar three-bay second story was constructed over the original one-story south wing, the grinding mill, at a cost of approximately $ 800. A new two-story shop, Bldg. No. 21, designed in the same style as the 1851 construction, was also erected in 1860 to connect the Grinding Mill, Bldg. 8A, to Bldg. No. 7, the Millwrights Shop.

16. Annealing Shop and Brass Foundry, Bldg. No. 14, 1851 -52:

Location: Third structure from the eastern or lower end of the northern line of workshops.

Map References: None.

Visual Evidence: The Annealing Shop and Brass Foundry can be seen in the following Harpers Ferry NHP Negatives, Nos.: HF-51, or 256, a lithograph made in 1856; HF-492, a photo taken in June 1861; HF-49, a photo taken in June 1861; HF-30, a photo taken in 1862; HF- 11, taken in October 1862; HF-27B, a photo taken in 1864 or 1865; HF- 38, A photo taken in 1864 or 1865; HF-28, a photo taken in 1865 or 1866; and Photo HF-355, taken in 1886, reveals that the structure had been demolished by that date.

History and Description:

The Annealing Shop and Brass Foundry were designed and erected by Major John Symington in 1851-52 at a cost of approximately $ 9,550.00. The one-story structure had brick walls, stone foundations, cut-stone water table, window and door sills, and coping. The door and window frames were apparently of wood (otherwise of cast iron);the gable roof, covered with slate, had three wooden ventilators mounted on its ridge, one each for the compartments below. The gutters and downspouts of the roof were copper. Inside, two brick walls divided the building into three large rooms or compartments and the floors were paved with brick. Photographic evidence reveals that the 36 feet wide by 109½ feet long edifice was divided into three equal parts and that gable roof of the center ran at right angles to the two gable roofs covering the north and south compartments. The gable ends of the north and south compartments, and also the east and west gable ends of the center section,were all adorned with brick parapet walls that were crenelated, topped with cut-stone coping, and rose above their gable roof. This created the architectural impression of a center building 1½ stories high flanked on either side by a one-story wing. Two square chimneys, each perhaps 10 feet high, rose above the ridge line of the roof, each stack

being located over one of the brick interior partition walls. Each chimney apparently served one of the two annealing furnaces that were located in the building . The structure also held six cast-iron forges and their stacks. The north and south gable ends were were each divided into three bays and the 109½ foot length of the east and west elevations each had nine bays, with three bays each in the center and north and south wing sections. Each bay contained the usual Symington round arch that rested on capped **pilasters.** Recessed within this arch was a panel that contained a tall round arch window, a device that was used in all 11 of the large new brick structures that were erected by Major John Symington between 1845 and 1851.

17. Horse and Carriage Shed, 1851:

Location: Unknown, but probably somewhere near the entrance to the Musket Factory yard and the Armory Office building.

Map References: None.

Visual Evidence: None.

History and Description: A frame horse and carriage shed, size unknown, was erected by Superintendent Benjamin Huger in December 1851 at a cost of $ 105. The one-story building probably stood somewhere near the Armory Office Building, Bldg. No. 2. In 1856 the horse and carriage shed was removed from the armory yard and erected on a site located on the south side of North Cliff Street.

18. Lime House, Bldg. No. 19, 1852:

Location: Unknown.

Map References: None.

Visual Evidence: None.

History and Description: The Lime House was constructed by Superintendent Benjamin Huger in the Musket Factory yard in 1852. This frame, probably one story, building replaced the earlier Lime House that had been erected in 1843.

19. Ice House, Bldg. No. 20, 1853:

Location: Unknown.

Map References: None.

Visual Evidence: None.

History and Description: The Ice House, a one-story brick structure, 20 feet square and 13 feet high, was erected by Superintendent Benjamin Huger in the Musket Factory yard in 1853.

20. Rolling Mill, Bldg. No. 18,1853-54:

Location: At the extreme western or upper end of the northern line of workshops.

Map References: Built on the same site formerly occupied by the Tilt Hammer Shop for Barrel Welding of 1834-38, Bldg. No. 11 on Map No. 3 (1848).

Visual Evidence:

The Rolling Mill can be seen in the following Harpers Ferry NHP Negatives: HF- 11, distant view taken in October 1862; HF- 10, closeup, taken in October 1862; HF- 9, taken in October 1862.; HF- 83, taken about 1875; HF- 492, taken about 1880; and HF- 99, taken about 1892, showing the rolling mill rebuilt as a pulp mill.

History and Description: The Rolling Mill was probably designed by Brevet Colonel Benjamin Huger, but in the same architectural style that former Superintendent John Symington had been applying to all the new workshops that had been erected since 1846. The new Rolling Mill was constructed by Superintendent Huger in 1853-54.

The Rolling Mill was a one-story, 16½ feet high, brick shop on stone foundations. The building was 146 feet long and 45 feet wide and its gable roof was covered with slate. The water table, sills, and coping were of cut stone and the gutters and downspouts were of copper. The gable ends were comprised of four bays and the long sides were each divided into 14 bays. Centered on the south (canal) side was a low one-story brick wheel house with a slate covered gable roof. This structure covered the cast iron water wheel that drove the machinery in the shop. Each bay was comprised of a round arch that was supported by capped brick pilasters. A recessed panel within each arch contained a round arch window or door. Brick parapet end walls, topped with cut-stone coping and crenelated, rose above the roof ridge at both gable ends of the main structure and also at the south gable end of the wheel house.

Inside, the floor was paved with stone. There were two reverberatory furnaces that were served by two brick chimney stacks that were 45 and 40 feet high; also one cast-iron forge, two tilt hammers, one large lathe for rollers, two trains of rollers, 13 and 8 inches in size, large shears, and a fan blower. A large cast-iron flume conducted the water from the armory canal to the forebay and the cast-iron water wheel was described as being '15 feet cube".

21. New Stock and Store House, Bldg. No. 11, 1854-55:

Location: On the south side of North Cliff(later Potomac) Street, directly south of Bldg. No. 9, the Tilt Hammer Shop for Barrel Welding.

Map References: None.

Visual Evidence: The new Stock House can be seen in Harpers Ferry NHP Negatives No. HF-51 or 256, a lithograph that was published in 1857, and in HF-10, a photograph that was taken in October 1862.

History and Description:

The Stock House was designed by Major William H. Bell in the same architectural style that Major John Symington had applied to all the major workshops and storehouses that had been erected at the musket and rifle factories during the period 1846 to 1851. Construction of the Stock and Store House was supervised by Master Armorer Samuel Bymington and Superintendent Henry W. Clowe, August 1854 to July 1855. The cost of construction was approximately $ 8,000; another $ 4,359 was spent on grading, planting, and draining the hill side site, and about $ 3,524 was expended on fencing and enclosing the Stock House and new Powder Magazine yards. Total cost of building on the hillside thus probably exceeded $ 15,833.00.

The Stock House was a two-story brick structure with a slate covered gable roof that was 100 feet long and 35 feet wide. Built on stone foundations, the edifice had cut-stone water table, sills, and coping. The door and window frames were of cast iron and the downspouts and gutters were of copper. The exterior brick walls were painted with " patent paint in oil."

The gable ends were divided into three bays and the long sides each had nine bays. These followed the typical Symington plan: Each first-story bay was comprised of a recessed panel that was sent within a relieving round arch that was supported by capped brick pilasters. Round arched windows or doors were set in each panel. On the second story, the recessed panels were set within flat arches and the windows were also topped by flat arches. Brick parapet end walls, adorned with recessed rectanuglar panels, crenelated, and

topped with cut-stone coping, rose above the ridge of the gable roof at each end of the Stock House.

Inside, cast-iron pillars were used to help support the load of the second floor. It is not known if the Stock House had a basement, if so, then cast iron pillars would also have located in the cellar to help support the load of the first floor.

22. New Horse Shed, 1856:

Location: Under Baltimore and Ohio trestle, which stood on top of the Potomac River walls, near the main (eastern or lower) entrance to the Musket Factory yard. The exact location of the horse shed in the yard is unknown.

Map References: None:

Visual Evidence : None.

History and Description: A new frame one-story horse shed, size unknown, was erected in the Musket Factory under the Baltimore and Ohio trestle by Superintendent Henry W. Clowe in 1856. The structure probably stood near the Armory Office Building, Bldg. No. 2. The 1856 structure replaced a horse and carriage shed that dated from 1851 (See Item 17, p. 327).

23. Connecting Shop, Bldg. No. 21, 1860-61:

Location: Ninth building from the eastern or lower head of the southern row of workshops. The structure connected Bldg. No. 7, the remodelled Millwright Shop with Bldg 8A, the Grinding Mill.

Map References: None.

Visual Evidence:

Bldg. No. 21 can be seen in the following Harpers Ferry NHP Negatives: HF-223, a drawing made in July 1861; photos taken in October 1862 include HF- 10, HF-11, HF-30, HF-240, and HF-492; the structure was still standing in 1865-or 1866,see HF- 38; and HF-355, a photo taken about 1886, reveals that Bldg.No.21 had been demolished by that date.

History and Description:

The Connecting Shop was designed by Master Armorer Armistead M. Ball and constructed under the supervision of Superintendent Alfred M. Barbour in the period September 1860 to April 1861 at an approximate cost of $ 5,951. The edifice was probably not completely finished when the Civil War commenced.

The Connecting Shop was a two-story brick workshop 36 feet wide and apparently eight bays, or perhaps 88 feet long, that adjoined Bldg. No. 7 on the east gable end and Bldg. No. 8 on the west gable end. The Connecting Shop was designed in the same architectural style that Major John Symington had first introduced at the Harpers Ferry Armory in 1846 and had also been used when he designed and constructed Bldgs. No. 7 and 8.

The Connecting Shop, Bldg. No. 21, had stone masonry foundations, brick walls, cut-stone water table and window sills; and the door and window frames were of cast-iron. The gable roof, covered with slate, had copper gutters and downspouts, and also probably had lightning rods attached.

Gable ends walls of Bldgs. No. 7 and 8 also served as the gable end walls of Bldg. No. 21. The north(front) and south(rear) elevations of the Connecting Shop were each apparently divided into eight bays. The first story openings, which had round arches, were set in recessed round archs that were supported by brick capped pilasters. The second story windows, topped with flat arches, were located in recessed rectangular recessed panels, in the identical style that Symington had applied to adjoining Bldgs. No. 7 and 8. As a part of the 1860-61 construction, a second story of brick was also added to the Grinding mill, Bldg. 8A, the east wing of Bldg. No. 8.

In the normal practice of that time, the exterior brick walls of the Connecting Shop would also have reached several coats of oil paint.

24. The Bell Tower Shop, Bldg. No. 22, 1860-61:

Location: Seventh building in the southern line of workshops from the eastern or lower head of that row.

Map References: None.

Visual Evidence:

The Bell Tower Shop can be seen in the following Harpers Ferry NHP Negatives: HF-240, drawing made in July 1861; photos made in October 1862 include HF- 240,492, HF -10, HF- 11, and HF -30;; and HF-38, taken in 1865 or 1866, reveals that Bldg. No. 22, the Armory Bell Tower, had been demolished by that date.

History and Description:

The Bell Tower Shop was a three story brick building that was adorned by a square and crenelated tower that rose to a height of five stories. The main shop was 36 feet deep and three bays, or about 33 feet wide, and was built so that it connected Bldgs. No. 6 and 7, using their gable end walls as the Bell Tower shop's side walls. It was designed in the same architectural style that Major John Symington had first introduced at the Harpers Ferry Armory in 1846. Like the other shops erected by Symington, the Bell Tower Shop had stone masonry foundations, brick walls, and cut-stone water table, window sills, and coping. The door and window frames were of cast-iron . The gable roof was covered with slate; it probably had lightning rods, and the gutters and downspouts were of copper.

The gable roof of Bldg. 22 ran at right angles to Bldgs. 6 and 7, and the gable ends of the Bell Tower, which formed the front(north) and rear (south) elevations of the new shop, were treated in the usual Symington manner, that is, with brick parapet end walls, topped with cut-stone coping and crenelated, that rose above the ridge of the roof at either end.

The center bay of the three-bay wide north or front facade was comprised of a square bell tower that rose to a height of five stories. The first story of the tower building contained a center door that was flanked on either side by the usual Symington, round arch window that was set within a recessed panel beneath a round arch that was supported by capped brick pilasters. Second and third story windows had flat arches that were set in recessed panels which also had flat arches. The front and rear elevations of Bldg. No. 22 thus blended perfectly with the facades of the adjoining Bldgs. No. 6 and 7 , which had both been designed and erected by Superintendent Symington.

At the fourth story level the square belfry was slightly set back. Each elevation contained one tall and open round arch window above which, at the fifth story level, was set a small and open round window. The top of the tower was adorned with four small turrets, one each set at a corner.

Under the normal practice of that time, the exterior brick walls of the Bell Tower, Bldg. No.22, should also have received two coats of oil paint. The roof also probably had lightning rods.

Relocated Building:

25. Old(1822) Pay Office, Bldg. No. 17, 1858:

Location: Exact location in Musket Factory yard after 1858 is uncertain. However, the building may have been located at the west end of the Armory Central Office Building, Bldg. No. 2.

Map References: None.

Visual Evidence: No definite sketch or photograph of structure known. However, Harpers Ferry NHP Negative No. 355, a photograph taken about 1886, show a brick structure located at the west end of Armory Offices, Bldg. No. 2, which may be the Old(1822) Pay Office, Musket Factory Bldg. No. 17.

History and Description: The Old Pay Office, Bldg. No. 17, was erected by Superintendent James Stubblefield at a cost of $ 500 in 1822 to serve as the office of the Armory Paymaster. The edifice was located at the northwest corner of Arsenal Square on Lot No. 2, Block B, Shenandoah Street, where the office was to stand until April 1858.

The Pay Office was a one-story brick building with a wood shingle roof and measured 24 by 18 feet in size. The roof was slated in 1833 and in 1840 a one-story brick "fireproof" vault, five by seven feet, with walls 2½ feet thick and a slate covered-gable roof, was added to rear(south) elevation of the Pay Office. The cost of this addition was about $ 234. Armory Paymasters who used this structure are their office included the following men: John McGuire, 1822-23; William P. Craighill, 1823-24; William Broadus, 1824-30; Daniel Bedinger, 1830-38; Richard Parker, 1838-47; and perhaps Edward Lucas, Jr,, briefly in 1848.

By June 30,1848, Paymaster Lucas had relocated his office to the remodelled Armory Central Office Building, Bldg. No. 2 in the Musket Factory Yard.

From 1848 to 1851 the Armory rented the Old(1822) Office on Arsenal Square to private individuals. In 1848-49, T. J. W. Sullivan

leased it as a ready-made clothing and tailor shop. In 1850 it served as the law office of Isaac Fouke. From 1851 to April 1858, it was next leased to the town government of Harper's Ferry. During this period the Old Pay Office served as the town hall, office of the mayor, and vault was utilized as the town jail.

In April 1858, the Old Pay Office was taken down and apparently re-erected in the Musket Factory yard. The structure was removed from Arsenal Square in order to clear its original site for the construction of a new house for the Master Armory (Armory Dwelling House No. 1- present Park Bldg. No. 36).

During September 1863, as has been mentioned, the U.S. troops holding Harpers Ferry used either the Old Musket Factory Bldg. No. 2- the central Armory Office Building, or Musket Factory Bldg. No. 17- the Old (1822) Pay Office as a guard house and the Paymaster's old vault served as the "dungeon."

Brigadier General Edward D. Ramsay's Report of July 27,1865, describing the "Pay Office.. located in Armory enclosure", as "Repair Shop" and "in good condition", indicates that from 1864 to 1865, while Harpers Ferry served as the main base of operations and supplies for General Sheridan's army, the Old (1822) Pay Office in the Musket Factory yard was used as a repair shop to recondition arms. Brevet Major General A. B. Dyer, Chief of Ordnance, issued orders for the Harper's Ferry Repair shop in the old Pay Office to close on March 9, 1866.

The Old Pay Office, Bldg. No. 17, was apparently demolished in the period 1886-89.

Old Buildings Remodelled for Use, 1842-61:

26. Armory Central Offices, Bldg. No. 2, 1847-48:

Location: Second building from the eastern or lower head of the Southern line of workshops.

Map References: Bldg. No. 1 on Map No. 1 (1837-38); Bldg. No. 1 on Map No. 2(1844); and Bldg. No. 1 on Map No. 3(1848).

Visual Evidence:

The Armory Office building can be seen in the following HFNHP Photographs, Negative Nos. HF-51 or 256(1857 lithograph); HF -64 (Photo taken in 1859, showing roof); HF-27B, Photo taken in 1865; HF-355, taken about 1886; HF-492- taken from Loudoun Heights, about 1880; HF- 379, taken in 1882; HF- 539, taken in 1886. HF- 100(1889 Flood) and HF 190(1890-92) both show that the Armory Office had been demolished by 1889.

History and Description:

The Armory Office building was designed and erected by Superintendent James Stubblefield in 1808-09 as a two-story brick residence, about 36 by 30 feet, with a cellar kitchen and a wood shingle covered gable roof. The structure served as the residence of the superintendents from 1808 to 1844 and then of Armory Paymaster Richard Parker, 1844-47. In 1828-29 a large brick addition, which included a kitchen, was added to the original dwelling and the roofs were slated. In 1847-48 Major John Symington remodelled the old residence into the Armory Office building at a cost of approximately $ 850.00. The offices of the superintendent, paymaster, with the paymaster's vault, and of the master armorer were all located in this structure from June 30,1848 to April 18,1861. The dimensions of the Armory Office were approximately 100 by 30 feet. In the 1847-48 alterations, the 1828 kitchen was converted into a money vault with walls of heavy masonry from three to 3½ feet in thickness and its gable roof was also covered with large, heavy flag stones. Photographic evidence suggests that the original 36 by

30 foot portion of the house had large brick chimneys built within the walls at either gable end.(There was definitely such an end chimney at the south or east end and probably a matching chimney at the north or west end). The front elevation faced north (or east), opening out on the musket factory yard. A brick privy, with three stalls) was located up against the Musket Factory brick wall to the rear of the office, near the northwest corner(See HF- 539). The brick wing, added in 1829, was a long one-story wing, perhaps 64 feet long and 20 feet wide. A broad chimney pierced the center of its slate covered gable roof at middle of its length, thus probably dividing the long wing into two sections each about 32 feet long.(See 539). The wing was built on the same axis as the main house and constructed so that its north (or east) facade was flush with the front elevation of the two-story building and its depth, about 20 feet, left one bay in the east(or south) gable end wall of the main house exposed. This bay contained a window that was topped by a flat arch. Photo HF-355 suggests that the Old Pay Office erected in 1822 may have been added to the west(or north) end of the main house in 1858. A slightly lower two-bay wide structure appears to ajoin the west gable wall of the main building.(1) Photograph HF-379,taken in 1882, reveals that the east half of the long 1829 wing was two bays wide on the front(north)elevation and also two bays wide on the east (or south) gable end. The four windows visible are topped by flat arches. By 1882 all four of these openings appear to have been bricked up.

1. see discussion, page 335, for more details on Old Pay Office, Bldg. No. 17.

27. Old Bell, Finishing, or Turning Shop, Bldg. No. 3, 1847-48:

Location: In the southern line of workshops, third structure from the lower or eastern end of that row.

Map References: Bldg. No. 2 on Map No. 1(1838); Bldg. No. 2 on Map 2(1844); Bldg. No. 2 on Map No. 3 (1848).

Visual Evidence: The Old Bell Shop can be seen in the following HF NHP Negs.: HF-11 or HF-256, 1857 lithograph; HF- 66, Photo taken in 1859; HF-64,photo taken in October 1859; HF-30,photo taken in 1862; HF- 27B, photo taken in 1865; and HF- 355, taken in 1886, reveals that the structure had been demolished by that date. HF- 492, taken about 1880, also shows that the shop is gone. HF-45, perhaps taken about 1870, indicates that the Old Bell Shop was gone by that date.

History and Description: This two-story brick workshop was designed by Superintendent James Stubblefield and erected by Paymaster Samuel Annin in 1809-10. Measuring 131 by 45 feet and covered with a wood-shingle gable roof, the Finishing Shop was the largest workshop to be constructed at the Harper's Ferry Armory until the mid-1840's. Its forebay and water wheel was constructed of wood. The workshop was valued at $ 15,000 in 1821.

On May 8, 1824, a serious fire apparently swept through this shop; this destroyed the roof, interior woodwork, water -wheel, machinery and tools, but left the brick walls standing. The shop was reconstructed in 1824-25 at a cost of $ 10,000, with $ 5,000 of the total going for structural work and the balance for rebuilding the machinery and water wheel. During the rebuilding, the new roof was slated and a lath and plaster ceiling was installed. In March 1825, a cupola or belfrey was constructed on the center of the roof of the Finishing Shop and the building was henceforth often called "the Bell Shop." The bell was used to call the men to their work and signal lunch hours and the end of the day.

In 1831 a small building was erected and attached to the Bell Shop at a cost of $ 152.00. This addition held grindstones and their machinery.

In 1833 and 1834 Congress appropriated a grand total of $ 34,440 to make repairs to three old Musket Factory Shops, including the Bell Shop. It is estimated

that about one-third of the total- $ 11,446, was used to rebuild the wooden water wheel, the wooden forebay, to construct new machinery, and sink a deeper flume at the Bell Shop during the period 1833-39. In 1839 the forebay of the workshop was rebuilt of stone at a cost of $ 514. In 1836 Congress provided $ 5,000 to erect a forge and fixtures for working up scrap iron into bars. This money may have been used in 1839 to erect a large chimney stack on the Old Bell Shop. (Compare HF NHP Negatives No. HF-628, a painting done about 1826, with HF-23, a lithograph drawn about 1837-39).

Because of its great length and breadth, the Old Bell Shop apparently proved adaptable to the changes and improvements that were to be made at the Musket Factory during the years 1842 to 1860. The Old Bell, Finishing, or Turning Shop was thus the only pre-1841 workshop at the Musket Factory to escape demolition and hence was still standing in 1861.

In 1848 Major John Symington had the "large chimney of masonry in the bell shop," which accommdated a forge fire on each floor, taken down and replaced by two portable forges that opened into sheet iron flues.
In 1849-50 about $ 2,675 was spent overhauling the Old Bell Shop. Copper gutters and downspouts were installed, the old lath and plaster ceiling was replaced by a new ceiling of wood, and shelving and racks for storing patterns for arms were made. The exterior brick walls were also painted. In 1851 lightning rods were installed on the shop at a cost of $ 50.50.

The great flood of April 1852 damaged the Bell Shop and about $ 900 was spent replacing the flooring. New floors were laid and the excavation under the floor deepened about three feet, and the bottom graded and arranged to carry off water washing from the machines into the ra e way. The machinery of the shop was also updated and improved in 1854. In 1855 and again in 1856 the driving lines for the machinery were improved. In 1858-59 a cast iron forebay was made at the Musket Factory and installed at the Bell Shop at a cost of about $ 1,000.

The doors and window frames of the Bell Shop were of wood and the windows and doors were topped by flat arches, The floors and ceilings were also of wood. A octagonal wooden cuploa or belfry crowned the slate covered roof. The Old Bell Shop was destroyed by fire by the Confederate Army on June 14, 1861. Its brick walls, covered by a temporary roof, however, were being used by the Union Army as a supply depot in 1864-65. The old shop was apparently demolished in the period 1866- 1870.

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The Confederate Army on April 19, 1861 captured the U.S. Armory at Harper's Ferry and held the place until June 15,1861. On their withdrawal on the latter date, they set fire to the U.S. Musket Factory buildings and thereby destroyed all of the original records at the Armory, which were on file in Musket Factory Bldg. No. 2, the Armory Offices. For this reason there is no collection of Harper's Ferry Armory records as such on file in the National Archives at Washington, D.C.

The originals of letters written by Harpers Ferry Armory Officers from 1798 to 1861 to the Secretary of War and Chief of Ordnance are still largely intact in the National Archives, but they are filed as they were received, when written, in the general filing systems of the Washington offical.

In 1957, Park Historians Herbert L. Kissling and Charles W. Snell, during a six week period, searched most of the central files in the National Archives for material relating to the history of the Harper's Ferry Armory from 1794 to 1869. Collected were 14,504 pages of documents on 14 reels of microfilm and 225 pages of photostated documents. Map, plans, prints and photographs in the National Archives collections relating to Harpers Ferry were also copied. Historians Kissling and Snell, in effect, thus recreated much the central Armory files that were destroyed in 1861.

The microfilm material was reproduced in the form of ex rox pages and these were placed in loose leaf notebooks. These volumes and their pages were numbered and completely cataloged and indexed according to subject and these notes placed in a master card index system.

All persons interested in performing research on the Harpers Ferry Armory history from 1794 to 1869 would therefore do well to first examine this extensive centralized collection in Harpers Ferry National Park library to collect their data, and only then, if there are still some missing links, to attempt to located these items in the general files of the National Archives, Washington, D.C.

The following National Archives Record Groups were searched and data relating to Harpers Ferry collected in 1957:

1.Records of the Bureau of the Census: Population Schedules of the Census of the United States for the Years 1810 to 1870, for the towns of Harper's Ferry, Bolivar, and Virginius Island. National Archives Record Group 29 (274 pp. on one reel of microfilm in Park Library).

2. Records of the Office of the Chief of Engineers, National Archives Record Group No. 77 (Maps and reports relating to right of way for the Winchester and Potomac Railroad, 1834).

3. Records of the National Park Service, National Archives Record Group No. 79(Maps and reports of C. &. O. and Shenandoah Canal Companies for constructing canal and locks on Shenandoah in 1803-1807.)

4. Records of the Office of the Quartermaster General, National Archives Record Group No. 92 (Civil War activities, 1861-66).

5. Records of the Adjutant General's Office, National Archives Record Group No. 94. (Civil War).

6. Records of the Office of the Secretary of War, National Archives No.107 (1794-1869).

7. Records of the Public Buildings Service, National Archives Record Group No. 121(1796-1887 records of the purchase of land for U.S. Armory use, and also of the sale of U.S. lots and houses, 1852, and 1869-1887.).

8, Records of the Office of the Judge Advocate General, National Archives Record Group No. 153.(Records and copies of deeds for the purchase of Armory lands and the sale of the same, 1796 - 1887).

9. Records of the Chief of Ordnance, National Archives Record Group No. 156. This Office or Department was responsible, under the supervision of the Secretary of War, for the operations of the Harper's Ferry Armory,1815 to 1887).

10. Records of the Office of the Inspector General, National Archives Record Group No.159. Has many inspection reports written after inspections had been made of the Harper's Ferry Armory.

Records of the U.S. Treasury Department and the U.S, General Accounting Office, The records of the Second Auditor of the Treasury, National Archives Record Group No. 217, Series Two and Three, 1817 to 1851:

This data ia comprised of thousand of pages of documents that were prepared and submitted by the Harpers Ferry Paymasters for paying wages, for purchase of materials for manufacturing arms and for construction of buildings, dams, and canals. It includes armory pay rolls and rent rolls.

This vast collection was searched by Historian Charles W. Snell for data relating to the repair and improvements of the Harper's Ferry Armory from 1817 to 1851. Records for the years 1852 to 1861 were destroyed by the National Archives staff during the 1940's in order to save space.

Historian Snell's long hand notes, taken during June 1980, have been typed up and are available for study in the Harpers Ferry National Historical Park Library in the following typescript reports:

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Snell, Charles W.,"Extracts from National Archives Record Group 217, Records of the Second Auditor, Second and Third Series, U.S. Treasury Department, relating to Expenditures for Repairs and Improvements at the U.S. Armory at Harper's Ferry, Virginia, during the Years 1842 to 1842."(Typescript, October, 1980), Volume III, 259 pp.

Published U.S. Documents:

1. American State Papers- Class V, Military Affairs(7 volumes, Washington, D.C., 1832-1850) Includes some correspondence of the Secretary of War, Ordnance Office, and Armory Superintendents. Many estimates and reports, for period 1793 to 1837.

All data relating to the U.S. Armories at Harper's Ferry, Virginia, and Springfield, Massachusetts, in these seven volumes was xeroxed by Historian Charles W. Snell in January 1980 and copies of the following report provided to the libraries of both parks:

Snell, Charles W., Compiler, "Data for Operations Histories of the United States Armories at Harper's Ferry, Virginia, and Springfield, Massachusetts, 1793 to September 30,1837, complied from American State Papers(7 volumes)," (National Capital Team, Denver Service Center, January 1980), 298 pp. in two Volumes. Vol.I(1793- 1828); Volume II, 1829-1837.)

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Sullivan, Arthur L., "Harpers Ferry in the Civil War-1862," (Harpers Ferry NM, June 26, 1961), 57 pages, 23 photos. HF-94B.

APPENDIX I

Schedules A and B, prepared by Major John Symington, Superintendent, U.S. Armory at Harper's Ferry, Virginia, December 12, 1844

From Congressional Serial No. 464, Document No. 43, pp. 9 - 12

Schedule of lot, and improvements thereon, owned by private individuals, adjoining the public buildings at the Harper's Ferry armory, with description of the improvements on each lot, and the price for which the whole can be purchased - these lot and parts of lots being included within the blue lines marked on the accompany plat(See Map No.4).

"Map of the Relative Position of the Reserved Land & Public Work at Harpers Ferry, Va. - 1844."

For projects to develop a formal entrance to the Musket Factory yard by acquiring Wager Lots No. 11 and 12 and to create a wide(40 foot) fire lane by purchasing portions of Wager Lots No. 16 to 34 and increasing the width of the 15-foot alley to 40 feet in order to protect the Musket Factory workshops.

SCHEDULE A

A schedule of lots and improvements thereon, in use by private individuals, adjoining the public buildings at the Harper's Ferry armory, with description of the improvements on each lot, and the price for which the whole can be purchased—these lots being included within the yellow lines marked on the accompanying plat.

Number of lot.	Owner of ground.	Owner of buildings.	Description of the buildings, &c.	Price of ground.	Price of buildings.	Total.
11	Mrs. Swayne	Richard D. Doran	Double brick building, 40 by 40 feet, 2 stories high, with finished garret and shingled roof; cellar underneath; an open gallery in front; back buildings of brick, 2 stories; lower story occupied as stores, upper story and garret as dwellings	$2,256	$4,000	$6,256
Part of 12	G. B. Wager	Richard D. Doran	Two-story brick building, with finished garret and cellar, 35 by 30 feet, covered with shingles; lower story occupied part as a drug and general variety store, and part as a shoemaker's shop; the upper story, including garret, as dwellings	1,600	1,600	3,200
Part of 12	Henry Yost	Henry Yost	Two-story brick building, continuation of the building above-described, and under same roof, 25 by 30 feet; lower story occupied as a general variety store, upper story as a dwelling	–	–	5,000
16	Mrs. Swayne	–	A large wooden stable, 60 by 30 feet, and loft above	182	218	400
17	Mrs. Swayne	J. G. Wilson	A small wooden house, 16 by 14 feet, 1 story	182	18	200
18	G. B. Wager	Samuel Lover	On High street a 2-story brick house, 30 by 22 feet, covered with shingles, and cellar underneath; on the alley a stable for wood, with loft for hay	725	1,700	2,425
19	G. B. Wager	Charles Button	On High street a 2-story brick house, 30 by 22 feet, covered with shingles, and cellar underneath; a porch in front and rear; on the alley a wooden stable, with hay loft 20 by 18 feet	725	1,700	2,425
20	G. B. Wager	Philip Coons	On High street a 2-story brick house, with basement, and cellar under basement, 34 by 23½ feet, covered with slate, well finished; on the alley a 2-story stone house, 26 by 22 feet, covered with shingles	725	2,200	2,925
21	G. B. Wager	G. B. Wager	On High street a 2-story stone house, with basement, 30 by 26 feet, covered with slate, with back buildings, all well finished; on the alley a wooden stable 26 by 20 feet, with hay loft; also, a stone smoke-house 16 by 9 feet	750	2,050	2,800
22	G. B. Wager	William Megraw	On High street a 2-story stone house, with basement, 30 by 26 feet, covered with slate, well finished, and a stone corn-house 14 by 9 feet; on the alley a wooden stable 27 by 20 feet, with hay loft	750	2,200	2,950

Schedule of lots and parts of lots, &c.—Continued.

Number of lot.	Owner of ground.	Owner of buildings.	Description of the buildings, &c.	Price of ground.	Price of buildings.	Total.
23	Mary Thompson	Mary Thompson	A small wooden building of little value on the alley	–	–	$900
24	Mrs. Swayne	A. Reiley	On High street a 2-story frame house, with basement, 21 by 20 feet, covered with shingles; in the middle of the lot a 1-story frame house 21 by 16: on the alley a wood blacksmith's shop 20 by 18 feet	$750	$850	1,600
25	A. & R. Cross	A. & R. Cross	On High street a wooden shanty of little value, 25 by 25 feet	600	50	650
26	Mrs. Swayne	P. Hagan	On High street a 2-story stone house, with basement, 24 by 20 feet, covered with shingles; on the alley a 2-story stone house, 30 by 26 feet, covered with slate, and a 1-story stone kitchen, 14 by 12 feet	800	1,800	2,600
27	M. Foley	M. Foley	Vacant on High street, on the alley, a 2-story stone house, 30 by 20 feet, covered with slate, and a 2-story stone kitchen, 28 by 16 feet, shingle roof	–	–	2,000
28	Mrs. Swayne	P. Hagan	On High street a stone foundation, and a wooden building partly erected, 30 by 25 feet; on the alley a 2-story stone house, 26 by 20 feet, slated roof	800	1,200	2,000
29	Martin Grace	M. Grace	Vacant on High street, on the alley, a 2-story stone house, 28 by 20 feet, with a 1-story stone kitchen, 18 by 15 feet, both covered with slate	–	–	1,500
30	M. Breitenbaugh	M. Breitenbaugh	A 2-story brick house, with basement, 26 by 22 feet, well finished	–	–	1,700
31	Mrs. Swayne	M. Grace	Some waiting and an old wood building	350	60	410
32	M. Grace	M. Grace	A 1-story wooden building of little value: good stone foundation	–	–	1,100
33	Mrs. Swayne	Mrs. Swayne	A 1-story wooden building of little value	350	40	390
34	M. Grace	M. Grace	On the alley a 2-story stone house, 30 by 18 feet; another stone house 2 stories, 20 by 18 feet; a 1-story wooden house, 25 by 20 feet, and another 1-story building, 20 by 12; the stone houses are partially new; the wood house of little value	–	–	3,000
H	United States	Dr. N. Marmion	A stone house 2-stories, with basement and gallery, 35 by 22 feet; also, a wooden 1-story house, 16 by 14 feet	–	–	2,000
			For payment for part of "Byrnes's island"	–	–	1,500
						50,261

HARPER'S FERRY ARMORY, *December 12, 1844.*

JOHN SYMINGTON, *Master of Ordnance.*

SCHEDULE B:

B.

Schedule of lots and parts of lots, and improvements thereon, owned by private individuals, adjoining the public buildings at the Harper's Ferry armory, with description of the improvements on each lot, and the price for which the whole can be purchased—these lots and parts of lots being included within the blue lines marked on the accompanying plat.

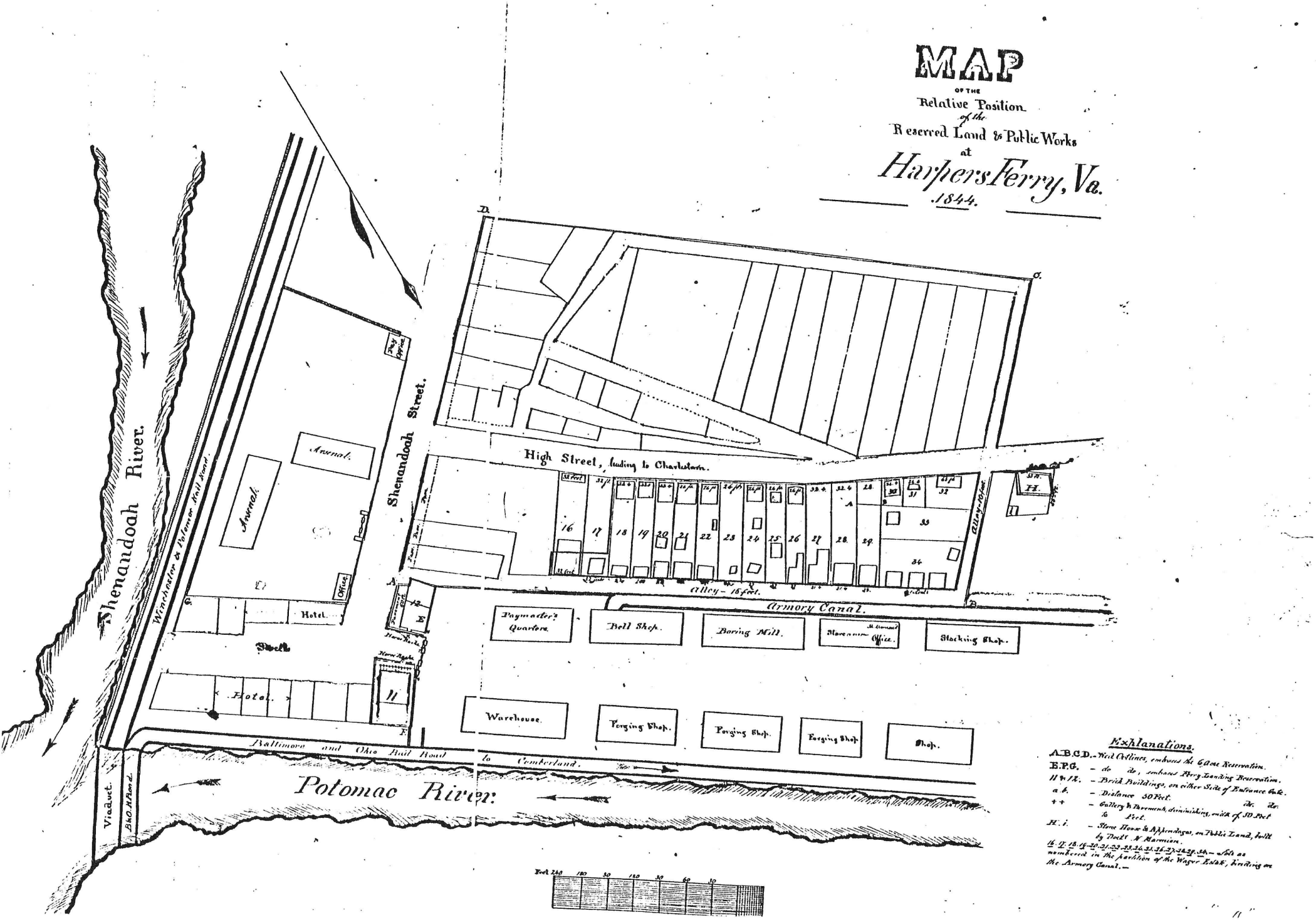
Number of lot.	Owner of ground.	Owner of buildings.	Description of the buildings.	Price of ground.	Price of buildings.	Total.
11	Mrs. Swayne	Richard D. Doran	A double 2-story brick building, with gallery, finished garret and cellar; 40 by 40 feet, covered with shingles: back building of brick, 2 stories; lower story stores, upper story dwellings			
Part of 12	G. B. Wager	Richard D. Doran	A 2-story brick building, and finished garret and cellar, 35 by 30 feet, shingle roof; lower story drug store and shoemaker's shop, upper story dwellings	$2,286	$4,000	$6,286
Part of 12	Henry Yost	Henry Yost	A 2-story brick building, continuation of the foregoing described building, 25 by 30 feet, same finish; lower story country store, upper story dwellings	1,600	1,600	3,200
16	Mrs. Swayne		A large wooden stable, with hay loft, 60 by 30 feet			5,000
17	Mrs. Swayne	J. G. Wilson	A small wooden house, 16 by 14 feet, 1 story	182	218	400
18	G. B. Wager	S. Lover	A wood stable, with hay loft, of little value	182	18	200
19	G. B. Wager	Charles Button	A small wood stable, with hay loft, 20 by 18 feet	182	28	210
20	G. B. Wager	Philip Coons	A 2-story stone house, 26 by 22 feet, covered with slate	182	1,000	1,182
21	G. B. Wager	G. B. Wager	A 2-story stone house on High street, with basement, 30 by 26 feet, covered with slate, with back buildings all well finished; on the alley a stone stable 26 by 20 feet, with hay loft; also, a stone smoke-house 10 by 9 feet	750	2,050	2,800
22	G. B. Wager	William Megraw	A wooden stable, with hay loft, 27 by 20 feet	182	48	230
23	M. Thompson	M. Thompson	A small wooden building	200	20	220
24	Mrs. Swayne	A. Kelley	A wood black smith's shop, 20 by 18 feet	182	218	400
25	A. & R. Cross	A. & R. Cross	A small wooden shanty	600	50	650
26	Mrs. Swayne	P. Hagan	A 2-story stone house, 30 by 26 feet, slated roof, and a 1-story stone kitchen, 14 by 12 feet	190	900	1,090
27	M. Foley	M. Foley	A 2-story stone house, 30 by 20 feet, slated roof, and 2-story stone kitchen, 28 by 16 feet; shingle roof			2,000
28	Mrs. Swayne	P. Hagan	A 2-story stone house, 26 by 20 feet, slated roof	189	900	1,089

Schedule of lots and parts of lots, &c.—Continued.

Number of lot	Owner of ground.	Owner of buildings.	Description of the buildings	Price of ground.	Price of buildings.	Total.
29	M. Grace	M. Grace	A 2-story stone house, 28 by 20 feet, with a 1-story stone kitchen, 16 by 15 feet, both slated			
31	M. Grace	M. Grace	A 2-story stone house, 30 by 18 feet; another stone house, 2-story, 20 by 18 feet—these partially new; and a 1-story wooden house 25 by 20 feet, and one other 1-story wooden house 20 by 12 feet—the wooden buildings of little value			$1,500
11	United States	Dr. N. Marmion	A 2-story stone house, with basement and gallery, 35 by 22 feet, and a wooden 1-story back building			3,000
						2,000
						31,648

HARPER'S FERRY ARMORY, *December* 12, 1844.

JOHN SYMINGTON,
Major of Ordnance.


MAP
OF THE
Relative Position
of the
Reserved Land & Public Works
at
Harpers Ferry, Va.
1844.
Shenandoah River.
Winchester & Potomac Rail Road.
Shenandoah Street.
Arsenal.
Arsenal.
Office.
Hotel.
Hotel.
High Street, leading to Charlestown.
Alley - 16 feet.
Armory Canal.
Paymaster's Quarters.
Bell Shop.
Boring Mill.
Storeman's Office.
Stocking Shop.
Warehouse.
Forging Shop.
Forging Shop.
Forging Shop.
Shop.
Baltimore and Ohio Rail Road to Cumberland.
Potomac River.
Viaduct.
B&O. R.Road.
Explanations.
A.B.C.D. - Red Outlines, embraces the 6 Acre Reservation.
E.P.G. - do do, embraces Ferry Landing Reservation.
11 & 12. - Brick Buildings, on either Side of Entrance Gate.
a.b. - Distance 50 Feet.
++ - Gallery & Pavement, diminishing, width of 50 Feet to Feet.
H. i. - Stone House & Appendages, on Public Land, built by Doct. N. Marmion.
16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. - Lots as numbered in the partition of the Wager Estate, binding on the Armory Canal.

APPENDIX II

Extracts from a report prepared by Col. George Talcott, Chief of Ordnance, Ordnance Department, Washington, D.C. June 10,1848 To accompany the Report of the Secretary of War of June 10, 1848; in answer to a resolution of the Senate of April 28, 1848.

Extracts for period 1794 to 1841

From Congressional Serial Number 509, Document No. 54, pages, 10, 12, 14, and 16.

"Statement of expenditures at the U.S. armory at Harper's Ferry, Virginia, and of the arms and appendages made therein," from its establishment to 30th of September, 1841.

B.

Statement of expenditures at the United States armory at Harper's Ferry, Virginia, and of the arms and appendages made therein, from its establishment to the 31st of March, 1818.

[To accompany report to the Secretary of War of June 10, 1848, in answer to a resolution of the Senate of April 28, 1848.]

YEARS.	For land, including mill sites and the houses on the land when purchased.	Buildings, milldams, canals or races, and other permanent improvements, including machinery.	Repairs of buildings, dams, &c.	Total for lands, buildings, and improvements.
From its establishment in 1796 to the 31st of December, 1821*	$12,877 28	$256,509 41	$66,793 32	$366,180 01
December 31, 1822		5,134 75	350 00	5,484 75
Do 1823		11,037 80		11,037 80
Do 1824		16,271 96		16,271 96
Do 1825		4,101 50	2,171 50	6,273 00
Do 1826		9,847 66	431 97	10,279 63
Do 1827		7,550 87	(3)	7,550 87
Do 1828		6,533 00	5,500 00	12,033 00
Do 1829		(1) 1,461 82	157 33	(2) 1,619 15
Do 1830		14,431 93		14,431 93
Do 1831		18,237 33		18,237 33
Do 1832		18,408 68		18,408 68
Do 1833	2,600 00	33,422 91		36,022 91
Do 1834		45,038 16		45,038 16
Do 1835		23,432 47		23,432 47
Do 1836		28,678 42		28,678 42
Do 1837		81,579 27		81,579 27
Do 1838		55,541 11		55,541 11
September 30, 1839		26,782 49		26,782 49
Do 1840		18,315 53		18,315 53
Do 1841		57,578 88	16,423 99	74,002 87
Do 1842		37,598 60	7,661 71	45,260 31
June 30, 1843		29,527 37	2,952 69	32,480 06
Do 1844		32,736 40	2,309 66	35,046 06
Do 1845		28,386 04	315 06	28,701 10
Do 1846		62,468 77		62,468 77
Do 1847		55,346 27		55,346 27
Total to end of fiscal year 1847	45,477 28	985,939 40	105,067 23	1,136,483 91
Add to include March 31, 1848	30,632 66	36,613 30		67,245 96
Total	76,109 94	1,022,552 70	105,067 23	1,203,729 87

(1) 1829 should read $ 14,631.82.

(2) 1829 should read $ 14,789.15.

(3) 1827 $ 1,519.87 in repairs ommitted.

ORDNANCE OFFICE, *Washington, June* 10, 1848.

G. TALCOTT, *Colonel Ordnance.*

* This line gives the totals of the report in detail made 30th November, 1822. [See State Papers, vol. 2—military affairs, page 481.]

B—Continued.

YEARS.	For the manufacture and repair of arms, including materials, wages, salaries, stationery, postage, forage, horses, &c.	Miscellaneous expenses, not included in the foregoing.	Total, exclusive of lands and improvements.	ARTICLES MANUFACTURED.	
				Flint lock muskets.	Percussion muskets.
From its establishment in 1796 to the 31st of December, 1821*	$2,171,490 85	$63,438 49	$2,234,929 34	119,911	.....
December 31, 1822	148,615 84	1,086 00	149,701 84	10,000	.....
Do 1823	173,021 14	492 00	173,513 14	12,200	.....
Do 1824	179,325 98	592 00	179,917 98	10,559	.....
Do 1825	181,856 91	2,660 13	184,517 04	14,000	.....
Do 1926	155,358 92	1,675 81	157,034 73	8,720	.....
Do 1827	191,370 82	2,099 00	196,469 82	12,020	.....
Do 1828	184,114 80	1,457 82	185,572 62	10,000	.....
Do 1829	170,444 96	3,612 37	174,057 33	8,895	.....
Do 1830	149,790 80	1,344 69	151,135 49	10,130	.....
Do 1831	168,664 95	609 85	169,273 80	11,160	.....
Do 1832	204,211 05	674 26	204,885 31	12,000	.....
Do 1833	171,785 40	1,192 08	172,977 48	12,000	.....
Do 1834	173,822 04	1,550 28	175,372 32	12,000	.....
Do 1834	138,560 34	7,696 83	146,257 17	10,000	.....
Do 1835	149,487 27	2,292 88	151,780 15	9,150	.....
Do 1836	149,544 33	2,839 42	152,383 75	8,200	.....
Do 1837	178,231 70	6,711 18	184,942 88	12,000	.....
Do 1838	150,677 01	4,958 01	155,635 02	5,850	.....
September 30, 1839	150,381 80	5,956 23	156,338 03	8,304	.....
Do 1840	180,318 66	814 50	181,133 16	8,650	.....
Do 1841	110,387 95	4,176 89	114,564 84	6,575	.....
Do 1842	85,389 24	825 40	86,214 64	3,105	.....
June 30, 1843	[illegible]	[illegible]	[illegible]	[illegible]	.....
Do 1844	90,698 56	3,348 67	94,047 23	605	2,225
Do 1845	139,292 76	457 68	139,750 44	.....	12,203
Do 1846	168,000 74	5,144 10	173,144 84	.....	12,000
Do 1847	200,236 28	7,242 06	207,478 34	.....	.....
Total to end of fiscal year 1847	6,318,081 10	134,947 63	6,453,028 73	336,037	26,428
Add to include March 31, 1848	137,774 09	4,556 14	142,330 23	.....	8,200
Total	6,455,855 19	139,503 77	6,595,358 96	336,037	34,628

* This line gives the totals of the report in detail made 30th November, 1822. [See State Papers, vol. 2—military affairs, page 481.]

APPENDIX III

APPROPRIATIONS FOR WORKSHOPS AND STOREHOUSES AT THE MUSKET FACTORY, 1842 - 1861

APPROPRIATIONS FOR BUILDINGS AT U.S. MUSKET FACTORY, 1842-1861

Fiscal Year	Annealing Furnace-Brass Foundry	Tilt Hammer Shop for Barrel Welding	Boring Mill	Charcoal House	Coal Bins	Engine and Guard House	Grinding, Saw & Planing Mill	Lumber House and coal bin	Office Building	Polishing Shop	Proof House
1842											
1842-43											
1843-44			6,500								built
1844-45			4,000	(730.00)	(1,300.00)						
1845-46				built							
1846-47								5,200	850		
1847-48					1,800	1,540					
1848-49										1,700	
1849-50		17,900 build. 27,370 machinery	(for tilt				9,730				
1850-51	9,550	shop & new	grinding mill)		880			495 repairs			
1851-52											
1852-53											
1853-54											
1854-55			900 repairs								
1855-56					176						
1856-57					223						
1857-58											
1858-59											
1859-60							800 Addition				
1860-61							7,025 Connecting building				
1861-62											
TOTAL	9,550	$ 45,270	11,400		3,079	1,540	17,555	5,695	850	1,700	

APPENDIX III

APPROPRIATIONS FOR BUILDINGS AT U.S. MUSKET FACTORY, 1842-1861

Fiscal Year	Rolling Mill	Smiths or Forging Shop	Stock House (Millwright Shop)	New Stock & store house (arsenal)	For new stock house	Stocking & Machine shop	Warehouse	Lime Houses wooden	Ice House	Old Finishing (Bell)Shop	TOTAL
1842											
1842-43											
1843-44							built	built (1)			6,500
1844-45											4,000
1845-46		(13,500)									0
1846-47			5,200			3,700 machinery 15,200 building					30,150
1847-48		4,500	750.00								8,590
1848-49	16,500					950-addition					19,150
1849-50										2,675 repairs	57,675
1850-51						4,300 building 2,000 machinery	505-repair floors				17,730
1851-52				new 16,450 -arsenal				built (2)			16,450
1852-53		3,100 forges		13,700 completion new arsenal					built		16,800
1853-54	7,000	2,500.00	1,000	400 for fence							10,900
1854-55	4,100 machinery				8,000					900 repairs	13,900
1855-56	1,432		363-new floor	1,324 brick fence							3,295
1856-57				(1,000-fence-1852 sale)							223
1857-58											0
1858-59			11,103 made over to millwright shop.								11,103
1859-60				800 fence							1,600
1860-61						6,025 adding building 600 alter bldg.					13,650
1861-62											
TOTAL	29,032	10,100	18,416	32,674	8,000	32,775	505			3,575	231,716

Buildings+= $ 191,446 Machinery= $ 40,270

APPENDIX III

APPROPRIATIONS FOR BUILDINGS AT U.S. MUSKET FACTORY, 1842-1861

Fiscal Year	REPAIRS OLD BUILINGS Barrel Welding & Old Tilt Hammer shop			Old grinding Mill			
1842							
1842-43							
1843-44							
1844-45							
1845-46	2,600	iron water wheels, forebays					
1846-47	7,800	rebuild tilt hammers		2,500	iron water wheel and stone forebay	=	12,900
1847-48	2,700	raising floor, and replacing tub wheels					2,700
1848-49	850	adding a room					850
1849-50							
1850-51							
1851-52							
1852-53							
1853-54							
1854-55							
1855-56							
1856-57							
1857-58							
1858-59							
1859-60							
1860-61							
1861-62							
TOTAL	13,950			2,500			248,166

APPENDIX IV

APPROPRIATIONS, 1842-1861, FOR REPAIRS AND IMPROVEMENTS, HARPER'S FERRY ARMORY.

Objects of Appropriations	U.S. STATUES AT LARGE	DATES OF APPROP.	AMOUNT
26. Repairs, improvements, and new machinery at Harper's Ferry Armory	5 Stat. 509	8/23/42	$ 30,000.00
27 Repairs, improvements and new machinery at Harper's Ferry armory.....	5 Stat.605	3/1/43	30,500.00
For fiscal year ending June 30, 1845:			
28. Repairs, improvements, and new machinery at Harper's Ferry Armory.....	5 Stat.698	6/17/44	12,000.00
FOR FISCAL YEAR, June 30,1846:			
29.Repairs and improvements and new machinery at Harper's Ferry Armory.....	5 Stat. 747	3/3/45	18,000.00
For 1847 fiscal year:			
30. Repairs, Improvements, and new machinery at Harper's Ferry Armory.....	9 Stat. 69	8/8/46	128,361.00
For 1848 fiscal year:			
31. Repair, improvement, and new machinery	9 Stat. 151	3/2/47	17,770.00
For 1849 fiscal year:			
32. Repairs, improvements, and new machinery	9 Stat. 306	8/14/48	53,091.00
For 1850 fiscal year:			
33. Repairs, improvements and new machinery	9 Stat. 372	3/3/49	62,680.00
34. Purchase of a lot of ground at Harper's Ferry contiguous to the public buildings	9 Stat. 372	3/3/49	200.00
For 1851 fiscal year:			
35. Repairs, improvements, and new machinery	9 Stat., 507	9/28/50	50,560.00
For 1852 fiscal year:			
36. Repairs, inprovements, and new machinery	9 Stat., 620	3/3/51	23,100.00
For 1853 fiscal year:			
37. Repairs, improvements, new machinery	10 Stat. 107	8/31/52	28,950.00
38. Damages at Harper's Ferry caused by flood of April 19 and 20,1852	10 Stat., 217	3/3/53	20,000.00
For 1854 fiscal year:			
39. Repairs, improvements, new machinery.	10 Stat.,217	3/3/53	43,500.00
			63,500.00
		Subtotal:	$ 518,652

APPROPRIATIONS FOR REPAIRS AND IMPROVEMENTS, 1842 to 1861, Harper's Ferry Armory:

Purpose of Appropriations	U.S. STATUES AT LARGE	Date of Approp	AMOUNT
For 1855 fiscal year: 40: Repairs, Improvements, new Machinery at Harper's Ferry Armory.....	10 Stat.578	8/5/54	$ 35,100.00
For 1856 fiscal year: 41: Repair, Improvements, new machinery	10 Stat 637	3/3/55	32,673.00
42. New Machinery	10 Stat 637	3/3/55	20,000.00
			$ 52,673.00
43. Purchase of lots and Improvements at Harper's Ferry Armory *(1) **For 1857 fiscal year: From proceeds of 1852 sale.**	11 Stat. 143	4/23/56	33,725.27*
44. Repairs, improvements, new machinery **For 1857 fiscal year.**	11 Stat.149	8/30/56	38,892.00
For 1858 fiscal year: 45. Repair, improvements, new machinery	11 Stat. 203	3/3/57	34,970.00
For 1859 fiscal year: 46. Repair.improvements, new machinery	11 Stat. 335	6/12/58	101,907.00
For 1860 fiscal year: 47. Repairs, improvments, new machinery	11 Stat. 433	3/3/59	55,000.00
For 1861 fiscal year: 48.Repairs and improvements	12 Stat 66	6/12/60	65,500.00
For 1862 fiscal year: ** 49. Repairs, improvments, new machinery at Harper's Ferry Armory	12 Stat. 202	3/2/61	$ 64,500.00

** Confederate troops seized the Harpers Ferry Armory on April 19, 1861.

(1)* Item 43 was not an appropriation, but authorized the Armory to use $ 33,725.27 collected from the 1852 sale of public lots and houses at Harper's Ferry to make programed repairs and improvements in the town.

Total Appropriated, 1842-61:	$ 967,194.00
Moneys from land sales, 1856	33,725.27
Total available:	$ 1,000,919.27

Actual amount of money from the proceeds of the 1852 sale made available for improvements by the Secretary of War on June 28, 1856, was $ 36,606.70, so the total amount of money available for Repairs and Improvements, 1842-1861 was $ 1,003,800.70 .

APPENDIX NO. V.

Number of Arms and Arms Accessories Manufactured and Stored at the U.S. Armory and Arsenal at Harper's Ferry, Virginia, from 1801 to June 30,1860.

From

Snell, Charles W., "The Expenditures at and Production of Arms and their Accessories at the U.S. Armories at Harper's Ferry, Virginia, and Springfield, Massachusetts, January 1, 1795 to June 30,1860, Compiled from the Office Reports of the Ordnance Department to the Congress of the United States."(NPS typescript, National Capital Team, Denver Service Center, January 1980, Harpers Ferry Section revised in October 1980), 23 pp.

APPENDIX V

PRODUCTION OF ARMS AT THE U.S. ARSENAL AT HARPER'S FERRY, VIRGINIA (1) Revised

Year	Flintlock Muskets	Flintlock Rifles 1803/1814 mo	Pistols, 1807 model	Pattern weapons made	Muskets repaired	Rifles repaired	pistols repaired	NO. of workmen			Source: (1) Serial No. 287, Doc. 44.
1795	-	-	-	-	-	-	-	(1) -			
1796	-	-	-	-	-	-	-	-			
1797	-	-	-	-	-	-	-	-			
1798	-	-	-	-	-	-	-	-			
1799									-		
1800									-		
1801	293								-		
1802	1,472							28	-		
1803	1,048							20			
1804	156	772		8				37			
1805	0	1,716						51			
1806	136	1,381		8				67			
1807	50	146	2,880		5,500			71			
1808	3,051		1,208					87	-		
1809	7,348				590			153			
1810	9,400				691			197			
1811	10,000				1,392			209	-		
1812	10,200			4	2,113	531	581.	210	-		
1813	9,000			9	612	231		208	-		
1814	10,400	1,600			548	16		210	-		
1815	5,340	1,508		5	23	2		202	-		
1816	6,416	2,052		6				222	-		

APPENDIX V

PRODUCTION OF ARMS ACCESSORIES AT THE U.S. ARMORY AT HARPER'S FERRY, VIRGINIA (1) Revised 17

Year	Ball screws	Wipers	Screw Drivers	Bullet Moulds	Spring Vices	Flint Caps	Rifle Flasks	Arms Chests			
1795											
1796											
1797											
1798											
1799											
1800											
1801											
1802											
1803											
1804	772	772		772			772				
1805	1,716	1,718		1,716			1,718	These items all produced for use with rifles.			
1806	1,381	1,381		1,381			1,381				
1807	146	146		146			146				
1808											
1809											
1810											
1811											
1812											
1813											
1814	1,600	1,600		1,600			1,600				
1815	1,508	1,508		1,508			1,508				
1816	2,052	2,052		2,052			2,052				

APPENDIX V

ARMS PRODUCTION AT The U.S. ARMORY AT HARPER'S FERRY, VIRGINIA (?)

Revised 10

Year	Flintlock Muskets	Flintlock Rifles	Pistols, model 1807	Pattern weapons made	Muskets Repaired	rifles Repaired	Pistols Repaired	Hall Flint-lock rifles	Bayonets, Extra	Workmen Armory	Workmen-Hall Factory Factory
1817	8,513	2,726	0	17	0	0	0	0		231	
1818	9,892	2,700		10						237	
1819	7,020	3,324								242	5
1820	9,856	1,793								253	18
1821	10,320	0								234	17
TOTAL	119,911	19,718	4,088	67	11,469	780	581	0	—	-	-
1822	10,000			32						237	16
1823	12,200								—	253	24
1824	10,559							1,000	3,050	280	35
1825	14,000									242	40
1826	8,720								2,200	221	30
1827	12,020							1,000	4,050	239	57
1828	10,000									217	67
1829	8,895 (or 8,915)-Serial No. 287, Doc. 44, p. 349)								—	205	61
1830	10,130									196	52
1831	11,160									242	66
1832	12,000							4,360	—	272	75
1833	12,000							3,670		249	78
1834	12,000							970	—	255	55
TOTAL	263,595	19,718	4,088	99	11,469	780	581	11,000	7,100	-	-
1835	10,000							1,714	3,489 rifles	229	
1836	9,150							1,809	1,518-rifles	243	

APPENDIX V

PRODUCTION OF ARMS ASSESSORIES AT THE US.ARMORY AT HARPER'S FERRY,VIRGINA (2) Revised 13

Year	Ball screws	Wipers	Screw drivers	bullet moulds	Spring vices	flint caps	rifle flasks	Arms chests		extra ramrods	Expenditures for Construction & Repair at Hall's Rifle Factory- these sums in addition to
1817	2,726	2,726		2,726			2,726				
1818	2,700	2,700	6,750	2,700			2700				
1819	3,324	3,324	12,500	3,324		*For use with rifles.	3,324				$ 3,748.40
1820	1,793	1,793	10,000	1,793	3,768		1,793				121.04
1821	0	0	8,500	0	2.266		0				0
TOTAL	19,718*	19,718*	37,750	19,718*	6,034		19,718*				
1822			5,594					500			42.18
1823			10,343					921			37.44
1824		8,173	6,922	1,000			1,000	212		6,879	1,518.66
1825	5,000	11,000	26,926					848			1,035.81
1826	5,327	31,827	53,112					888		2,200	222.39
1827		25,998	8,475		10,100			772			5,751.00
1828		25,000	35,679	1,000			1,000	1,164			3,665.93
1829			3,653					837			3,425.96
1830						51,575		564			11,558.31
1831						7,454		274			11,947.15
1832		4,360	4,360	436	436	6,632	20	137			15,938.16
1833		19,100	368	367	367	17.084	3,670	102	Bolts for rifles		2,952.00
1834	6,896	22,360	25,941	47	47	6,000	4.734	74	1,040		
TOTAL:	36,941	167,536	219,123	22,568	16,984	88,745	30,112	7,293			
1835		1,714	1,714	171	171	2,000		(226)			5,768.03
1836		1,770	1,770	177	1777	10,000	3,000	(447)			854.03.

APPENDIX V

THE PRODUCTION OF ARMS AT THE U.S ARMORY AT HARPER'S FERRY, VIRGINIA(3) — Revised — 11

Year	Flintlock muskets	Percussion muskets, model 1842	Percussion Rifles, model 1842	Hall Flintlock Rifles	Hall Flintlock Carbines	Bayonets, for rifles	Flintlocks altered to percussion	Model arms made	No. Workmen Armory	Model 1855 rifled muskets	Model 1855 Rifles
1837	8,200			1,200	1,027				262		
1838	12,000			2,934		1,973			294		
1839	5,850 (9 months)					842			272		
1840	8,304			1,023	1,003			3	241		
1841	8,650			190					267		
1842	6,575			Percussion hall rifles	Percussion hall Carbines			10	246		
1843	3,105			300	1,001				180		
1844	608			2,700				2	199		
1845	-	2,225		-	-				267		
1846		12,203	700					2	296		
1847		12,000	3,054						301		
1848		11,000	2,802								
Total	336,037	37,428	6,556	22,870	3,021	14,922	0	116	-		
1849		8,300	1,925				278		260		
1850		9,600	2,676				10,838		264		
1851		11,100	3,050				0		279		
1852		13,400	3,227						245		
1853		10,001	2,762						240		
1854		9,000	2,761	Proceeding steel barrel for long-range sights		Sword bayonets	model 1842 percussion muskets rifled & sights	6	221		
1855		7,700	2,339			3,325			142		
1856		0	0	1,050			2,082		225		
1857		0	0	945		13	9,126		309	1	11

APPENDIX V

PRODUCTION OF ARM ASSESSORIES AT THE U.S. ARMORY AT HARPER'S FERRY, VIRGINIA (3) 19 19 Revised

Year	Ball screws	Wipers	screw drivers	bullet moulds	spring vises	flint caps	rifle flasks	arms chests	Hooks, bolts &Nuts		Data on arms chest marked
1837	614	17,435	2,809	301	200	70,000	1,881	(626)	1,017		( ) from Serial No.509, Doc.54.
1838	1,136	41,039	25,424	395	1,334	3,000		(1,563)			
1839		22,914	29,027	-	4,941	-	-	(609)			
1840		10,940	5,202	55	3,418	10,080	-	2			
1841	1,663	4,428	4,199	25	40	14,817		(132)			
1842		14,867	10,685		567	3,234		(298)	-		
1843		1,999	1,950	131	501			(112)			
1844	73	15,315	3,123	3,191	304			(307)	-		
1845	524	7,472						(311)	Extra Cones	Cone Picks	
1846	478	6,547	8,631	2	1,241			(1,084)	7,702	2,080	
1847	2,247	3,749	19,562	435	3,100			(606)	13,206	8,818	
1848	1,810	12,664	13,296	913	1,321			624	18,882	483 cone wrenches	screw drivers for altering flintlocks to percussion
Total	45,488	330,389	346,515	28,164	34.299'	201,878	35,023'	14,240	39,890	-	
1849	836	14,537	11,887	285	1,415	HAMMERS 10,838	COCKS for altering flint lock toPercussion. 19,826		16,120		1,741
1850	902	7,466	5,592	485	1,056	31,806	34,502		9,789		41,580
1851	1,176	13,568	6,411	195	2,095	34,508	44,839		9,242		46,832
1852	2,501	26,963	35,642	235	1,873	6,754	35,415		13,020		4,313
1853	1,911	26,374	30,478	134	935	8,785	15,535		25,781		15,470
1854	550	5,864	3,105	1,092	1,750	6,556	150,107 Total	arms chests	13,774		7,897
1855	1,364	14,968	8,926	305	3,250	99,247, Total	Long Range back sights/4,861	108	4,412		10,322
1856	1,610	5,260	6,801	36	0	TOMPIONS	8,909	195	16,273		
1857	571	1,643	19,255	99	256	9	22,148	106	-		128,155 Total

APPENDIX V

ARMS PRODUCTION AT THE U.S. ARMORY AT HARPER'S FERRY, VIRGINIA. (1)

Revised

Year	Rifled muskets Model 1855	Rifles, Model 1855	Percussion Muksets, Model 1842	Percussion Rifles, Model 1841	Percussion Model 1842, rifled&sighted	Rifles, long range sights added	Sword Bayonets	Pattern Arms Made	No. of Armory workmen		
1858	8,581	1,719	0	0	1,434	1,663	2,250		400		
1859	6,489	2,450			1,000	1,904	4,242	18	254		
1860	5,049	2,701				1,936	3,176		265		
1861											
TOTAL	20,120	6,881	106,629	25,296	13,642	7,498	27,928	144	-		

NEW ARMS MANUFACTURED AT THE HARPER'S FERRY ARMORY:		
Years Produced	Type	TOTAL
1801-44	Flintlock Muskets	336,037
1803 &1814	Flintlock Rifles	19,718
1807	Flintlock Pistols	4,088
Model 1842	Percussion Muskets	106,629
Model 1841	Percussion Rifles	25,296
1824-1841	Hall rifles	22,870
	Hall Carbines	3,021
Model 1855	Rifled Muskets	20,120
Model 1855	Rifles	6,881
Total Firearms	Produced	544,660 (1)
Extra Bayonets	made	27,928

OLD ARMS REPAIRED	
Flintlock muskets-	11,469
Flintlock rifles	780
Flintlock pistols	581
Model 1842 percussion muskets altered.....	13,642
Rifle altered	7,498
flintlock muskets altered to percussion..	11,116
TOTAL Repaired:	45,086
Fire Arms Manufactured	544,660
Fire Arms Repaired	45,086
TOTAL	589,746

Other Items made		
Pattern muskets	62	1802-33
Patern Rifles	19	1802-21
Pattern Pistols	18	1807-21
Wall Pieces	7	1807-08
Harpoon Guns	4	1811
Torpedo Locks	40	1813
Torpedo Lock Box	25	1813
Cannon Locks	6	1817
Verifying Instruments	32	1822.

(1) 4,287 of thesearms were stored in the small arsenal building at Harperis Ferry on April 15,1861 and destroyed by U.S troops to prvent them from fallen into the hands of approaching Confederate troops.

APPENDIX V

PRODUCTION OF ARMY ASSESSORIES AT THE U.S. ARMORY AT HARPER'S FERRY, VIRGINIA (4)

Revised

20

Year	Ball Screws	Wipers	Screw Drivers	Bullet Moulds & Swages	Spring Vises	Tompions	Long Range Sights	Arms Chests	Tumber & Hand Spring Punches	Extra Cones	
1858	1,865	9,765	8,000	156	1,450	6,625	5,102	50	1,364	0	
1859	692	8,283	8,794	480	1,042	6,335	1,581	188	1,765	9,489	
1860	601	4,421	6,802	449	690	12,929	135	382	707	6,927	
1861											
TOTAL	60,665	469,501	498,210	32,115	50,111	25,898	42,736	15,329	3,836	164,717	

BALL SCREWS 60,665 1804-60

WIPERS 469,501 1804-60

SCREW DRIVERS: 498,210 @ "

BULLET MOULDS 32,115

SPRING VICES 50,111

FLINT CAPS 201,878 1830-42.

Rifle flasks 35,023 1804-37

Arms Chests 15,329

extra Cones 164,717 1846-60

extra picks 10,898 1846-47

Cone Wrenches 483 1848

Tompkins 25,898 1857-60

Long range sights: 42,736 1855-60

Extra Ramrods 9,079 1824, 1826

Hooks, bolts & nuts 1,017 1837

Tumbers & band springs 3,836 1858-60
Punches

ITEMS FOR ALTERING FLINTLOCK MUSKETS TO PERCUSSION:

Hammerers 99,247 1849-54

Cones 150,107 1849-54

screw drivers 128,155 1849-57.

APPENDIX VI

Photostats, Volume 4, Pages 18-24
Harpers Ferry National Historical Park Collections.
(See Text pp. 106 -112.)

FEBRUARY 18, 1859

SPECIFICATION

FOR A MASONRY DAM, FOR THE U. S. ARMORY, AT HARPERS FERRY

Foundation

1. The foundation of the Dam and abutments shall be of solid rock, so levelled off as to present an even surface on which to bed the stone, and made perfectly clean.
2. No foundation shall be built upon, until after it shall have been inspected and approved by the Engineer in charge, or by an officer selected by him for the purpose.

Masonry

1. The Masonry for the Dam shall be of Rock Ashlar, composed of heavy stone and well bound together. The face stone shall have horizontal beds, and vertical joints; they may be left rough on the face, except a draught cut around each stone. The top beds and joints of stretchers must run back into the wall, full to the square, a distance of at least one foot. The bottom beds must be not less than sixteen inches, nor less than the height of the course. The proportion of headers to stretchers will depend upon the character of the stone, and shall be such as the Engineer may direct during the prosecution of the work.- The first course must be laid in a full bed of mortar, and must have the face stone as broad as practicable. Each course must be grouted full before another is commenced, and must have the mortar-bars as such distances apart, as the Engineer may, from time to time, direct. Each course must, as far as practicable, be kept of the same thickness, but changes may occasionally be made, by checking. No mortar shall be spread on a dry or dusty stone, but the wall must be kept clean and wet at the time of laying, so as to favor the adhesion of the cement. The masonry of the rear or upstream face of the Dam will be similar to that of the front, but the face stone need not be draughted.
2. The upper part of the Masonry of the Dam will be composed of heavy stone, laid on the front and rear of the wall, scabbled in the form shown on the plan, and enclosing four courses of stone, two feet in depth, laid on edge, and presenting an even surface for the timbers of the superstructure to rest upon; the whole to be laid by means of Lewises.
3. The dam will have a thickness of ten feet, and will be plumb front and rear. The top of the masonry will be level for one foot back from the front and will then pitch up stream, with an inclination of three feet in ten.

4. The North or Maryland abutment and wing will be twelve feet and a half above the comb of the Dam. The wing will be fifty feet in length, measured from the face of the abutment, and will be four feet thick at top with a batter of one inch to the foot on the face and two inches to the foot on the rear of the wall. The abutment will be five feet thick and twenty feet in length at top, with a wing or return twelve feet long at its upper end; it will be plumb in front and have a batter of three inches to the foot in the rear.
5. The section of the South abutment and wing is similar to that of the above, but the arrangement of the walls will be best understood by a reference to the plans. The character of the masonry of the abutments will be the same as that of the Dam, except that the quoins and recesses of the flume connected with the Virginia abutment, and so much of the face thereof as will be under the water level of the Armory Canal, shall be scabbled so as to present a perfectly true and even surface. Both abutments and wings will be coped with stone one foot thick and three feet wide; the upper surface, face and beds scabbled, and the joints cut truly for the full width, and dowelled.

The stone used in the construction of the Dam and abutments must be of the best quality, and of good shape.
6. If, in the opinion of the Engineer, it shall be necessary to dowell or cramp any of the stone used in the work, (except the one-foot coping), the Contractor shall be paid therefore such a price, as in the judgement of the Engineer may seem just.

DRY WALL

There will be a dry wall on the Maryland side, to connect the abutments with the stone protection of the Canal towpath. This wall will be built of large stone, well bound together, and of such form and dimensions as the Engineer may direct.

CEMENT AND SAND

1. The cement will be furnished by the Contractor, and must be of the best quality; subject at all times to the inspection of the Engineer in charge, or of some person selected by him for the purpose; and no cement shall be used without having had such inspection and approval. It must be kept in a tight weather-proof house, constructed for the purpose, and approved by the Engineer.
2. The sand must be clean and sharp; if necessary, it must be washed and screened, for which purpose a screen of which the wires are not more than three-eighths of an inch apart must be used.
3. The mortar, grout and concrete shall be composed of such proportions of cement and sand as shall be directed to be used from time to time by the Engineer in charge. The length of time between the wetting of the cement and its being placed in the wall shall not exceed half an hour.

SUPERSTRUCTURE

1. The top surface of the masonry will be covered with seven courses of white oak timber, ten inches thick, as shown upon the plan, running

longitudinally of the Dam, and secured to the masonry by screw-bolts of one and an eighth inch round iron, the heads swelled, let into holes drilled in the stone for the purpose, and made fast with sulphur and sand. The spaces between the timbers, will be filled with concrete prepared as the Engineer may direct.

2. The timbers will be covered with a course of three-inch plank, laid transversely, and spiked to the timbers with seven inch wrought spikes.

3. On this course of plank there will be a course of ice-guards of white oak, seven and a half feet long, six inches thick at one end, and two inches at the other, secured by spikes of sufficient length to pass through the sheeting into the timbers below. The top angle of these ice-guards will be dubbed off, as as to form a flat surface of nine inches width, made accurately level along the whole course of the Dam. This surface will be about five feet above the mitee-sill of the guard-lock of the Armory Canal. There will also be a timber, six inches by thirteen, bolted to the front timber to support the end of the sheeting and ice-guards, and to form a drip. A reference to the plan will make the manner of constructing this part of the Dam more clear.

4. The timber and iron will be contracted for separately; the prices bid upon these items in the Proposal, being for the value of the labor and workmanship necessary to take the timber, plank and ice-guards from the pool of the Dam, or the Armory Canal, and to fit and secure them to their places according to the plan. The timber, plank and ice-guards will be delivered, already sawed to the proper dimensions. The prices for workmanship will include the boring for and driving of the spikes, sawing off the ends, and dubbing off the top angle, as described above.

5. The bid for iron is for the work necessary to be done in taking the iron bolts from the point of delivery, fitting them in the holes drilled for their reception, and securing them with sulphur and sand.

ROCK EXCAVATION

This will be necessary for procuring a good foundation for the Dam and abutments and the price will cover both the cost of blasting and removing the rock, and of reducing the surface to a form suitable for receiving the masonry; also, of taking down so much of the old masonry, as in the opinion of the Engineer it may be necessary to remove.

EMBANKMENT

This item is for filling in around the abutments, and shall be formed with such slopes, and of such material (to be furnished by the Contractor) as the Engineer may direct.

GRAVELLING

The Contractor may be required to place a bank of gravel in the rear of the Dam, in which case it shall have a slope of from four to five base to one perpendicular, as the Engineer may direct, and commence this slope midway of the top surface of the Dam.

APPENDIX VI

GENERAL REMARKS AND CONDITIONS

1. The quantities, disposition and character of any portion of the work may be changed at any time during its progress, at the pleasure of the Engineer, by alterations in the plans; it being understood, however, that if, by such changes, the work is made more or less expensive to the Contractor than the plans and statements exhibited to him by the Engineer, and on which he made his proposal, would have required, he shall have such allowance or deduction made therefor as the Engineer, in his own judgement, may consider just.
2. The quality of the stone and other material used, and the manner of preparing and putting them together in the work must, in all cases, be subject to the inspection and meet with the approval of the Engineer in charge. All masonry will be estimated and paid for by the perch of twenty-five cubic feet. The cramps and dowels shall be fastened with sulphur and sand. The price bid per perch will include the cost of all materials, workmanship, tools, cofferdams, and pumping and bailing, both while preparing the foundation, and building the masonry, and all other expenses necessary to the construction and completion of the work to the satisfaction of the Engineer.
3. The Contractor, being so directed by the Engineer, shall remove and rebuild, or make good, without charge, any work which the latter may consider to be defectively executed, and in the Contractor shall neglect or refuse to do so, the Engineer shall have it done at the Contractor's cost.
4. The Contractor, shall commence, prosecute and complete the work, in all its parts, under the direction of the Engineer, who shall have power to direct the application of the force to any portion or portions thereof he may indicate, and to order the increase or diminish the amount of said force at his pleasure.
5. It is understood that the Contractor shall give his personal attention to the work, and that he shall not let or transfer his contract, or any portion thereof, without the consent of the Colonel of U.S. Ordnance Dept., Washington, entered upon the instrument of transfer.
6. Strict discipline and order among the workmen, both while on and off the work, must be enforced by the Contractor, who shall discharge from the work any person in his employ upon the requisition of the Engineer.

For map showing the new dam, see Map No. 6, page 382.

APPENDIX VII

SEE MAP NO. 6 for 1885 Survey Map.
page 382.

National Archives Record
Group No. 121-Public
Buildings Service- Entry
75, Tray No. 2.
Washington, D.C.

The United States of America to Thomas H. Savery: 72 acres.

Survey of "Potomac Property" [U.S. Musket Factory Grounds] at Harpers Ferry, W. Va., by S. Howell Brown, S., J.C., March 28,1885.

Beginning at a point on the bank of the Potomac River at the corner of one of the Wager Lot Reservations in line with the stone wall at the lower end of the Armory Yard (see Fig. 1 in the plat hereto annexed) running thence with the stone wall, S 43° W 4.8 poles to an angle in said wall(fig.2) thence continuing with the wall in part, following along the north line of Shenandoah Street S 51° 45" W 9.8 poles to the corner of the Armory Yard wall at Potomac Street, being at the line of the Wager Six Acre Reservation (fig. 3) thence along the southwest side of wall, with said Potomac Street, N 49° 15 ' W 33.9 poles to an angle in the same (fig. 4) thence N 45° 15' W 32.3 poles to another angle (fig. 5) thence N 43° W 41.6 poles to the west side of the upper column on the said wall (fig. 6) thence crossing Potomac Street and running with the line of a lot [the Bluff Lot] sold by the United States to Alexander Murphy S 45° W 16.7 poles to a stone in the north line of Ridge Street (fig. 7) thence with said line N 76° 30' W 17 poles to a stone at the intersection of the same with the east line of Lancaster Street(fig. 8) thence with it, N 13° 30' E 8 poles to a stone at the, terminons of said street (fig 9) thence with the back line of the Seminary[school] Lot and of Blocks U,T, and S N 76° 30' W 66.5 poles to a stone (fig.10) thence again with the rear line of Blocks S and R N 74° 30' W 42.9 poles to a stone at the east line of Taylor Street (fig. 11) thence extending said line N 15° 30' E 2 poles to a s tone (Fig. 12) thence following the street lines N 26° W 3.5 poles to a stone (Fig. 13) thence N 16° 30' W 3.8 poles to a stone in a ravine at the east line of Putnam Street (Fig. 14) thence with said line N 30° 30' E 16 poles to the Baltimore and Ohio Railroad at the east end of the culvert wall (Fig. 15) thence along the railroad N 60° W 3 poles to a stone above the west side of the culvert wall, at the north line of Van Wert Street (Fig 16) thence with the said street lines S 70° W 5.3 poles to a pine tree (Fig. 17) thence N 80° W 8 poles to a stone (Fig) 18) thence N 70° W 13 poles to a stone (Fig. 19) thence

APPENDIX VII

N 64° 30' W 9.5 poles to a stone (Fig. 20) thence N 57° 30' W 19.95 poles to a stone (Fig. 21) thence N 65° W 10.9 poles to a stone (Fig. 22) thence N 72° W 14.1 poles to a stone (Fig. 23) thence N 74° 30' W 26.1 pole to a stone at the east line of Cambridge Street (Fig. 24) thence extending said street line N 15° 30' E 6.5 poles to a stone at the termination of said street and the beginning of North Cliff Street (Fig. 25) thence following the north side of the last named street N 55° 30' E 11.3 poles to an iron bolt in a rock (Fig. 26) thence N 29° W 15 poles to a stone (Fig. 27) thence N 34° W 9 poles to a high rock (Fig. 28) thence N 51° 30' W 10 poles crossing a small stream of water in a deep ravine to a iron bolt in a rock just north of said stream, it being 5.7 poles above the face of the culvert, through which the streams passes under the Baltimore and Ohio Railroad (Fig. 29) thence N 38° 30' W 13 poles to a pine tree (fig. 30) thence N 65° 30' W 11 poles to a stone (Fig. 31), thence N 85° W 23.75 poles to a stone (Fig. 32) thence N. 77° 30' W 10.9 poles to a stone (Fig. 33) thence S 73° 15' W 11.8 poles to a stake (Fig. 34) thence S 60° 15' W 15.1 poles to a stone (Fig. 35) thence S 68° W 10.34 poles to a stone in the original Patent line, now the line of Samuel W. Strider (Fig. 36), thence with said line N 7° E 42 poles to a stone on the bank of the Potomac River (Fig. 37) thence down the river with the meanders thereof, following the color line on the Plat, embracing the Canal, wagon road, and Baltimore and Ohio Railroad, to the place of Beginning, containing 71 acres.*

Given under my hand the 28th day of March 1885.

S. Howell Brown S[urveyor] J[efferson] C[ounty].

* in a revised map prepared Dec. 10, 1885- Brown estimated the acreage at slightly more than 72 acres.

MAP NO 1

"MAP Shewing the Routes surveyed for the BALT. & OHIO RAIL ROAD along the public grounds on the Potomac, at & above Harper's Ferry upon which the Company have applied to Government for permission to locate and construct their road. Scale: 400 feet = 1 inch. Signed Benj. H. Labrobe, Engineer of Location and Construction, Balt. & Ohio R.Rd.." No date, but prepared in 1837 and used to accompany an agreement between the U.S. and Railroad dated November 3,1838.

National Archives Record Group No. 121, Public Buildings Service, Harpers Ferry Laminated Material, Map No. 3. Drawer 5, Portifolia No. 6. Washington, D.C.

Section of map showing buildings of the U.S. Musket Factory on the Potomac:

Numbers added by author.

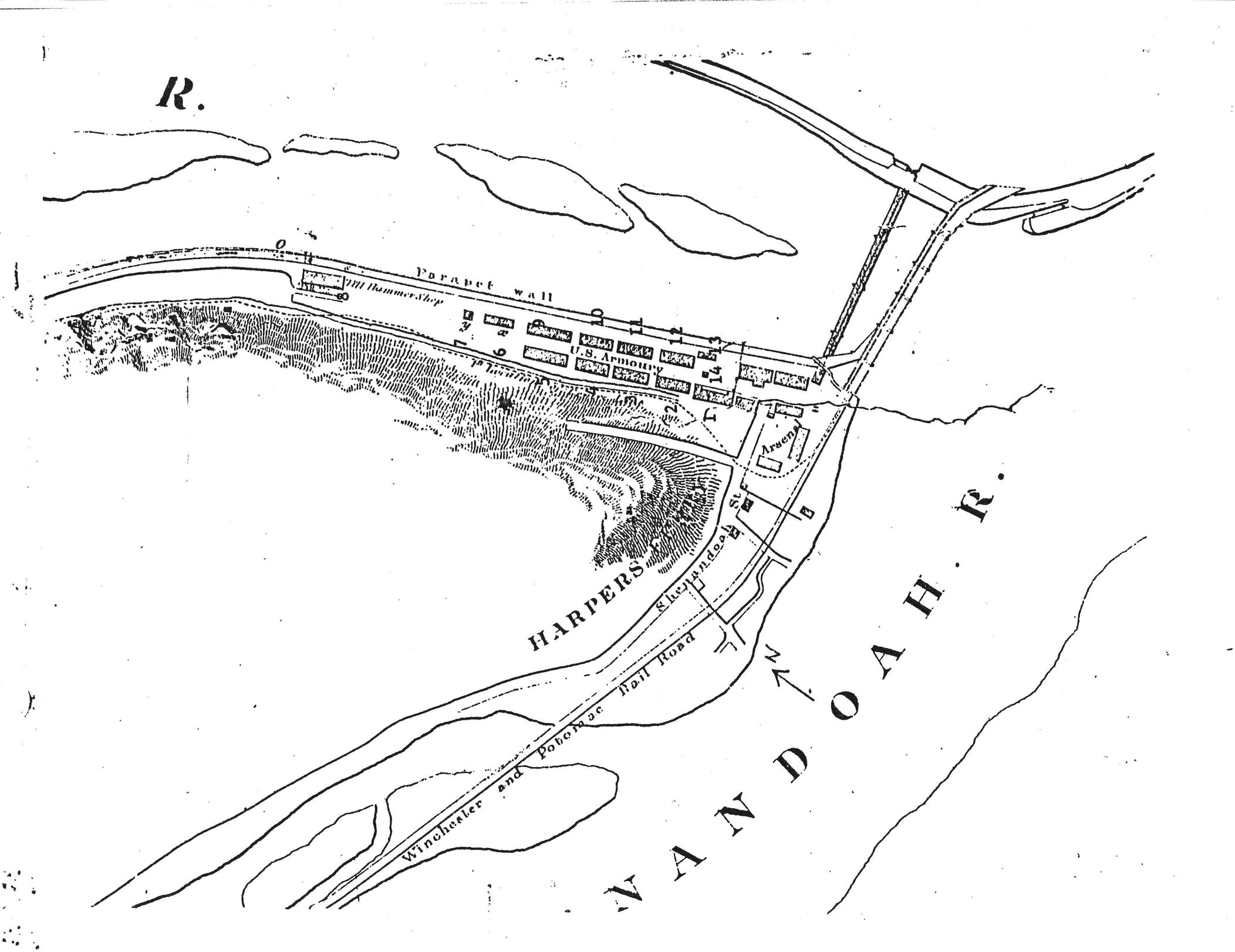
Musket Factory Bldgs.

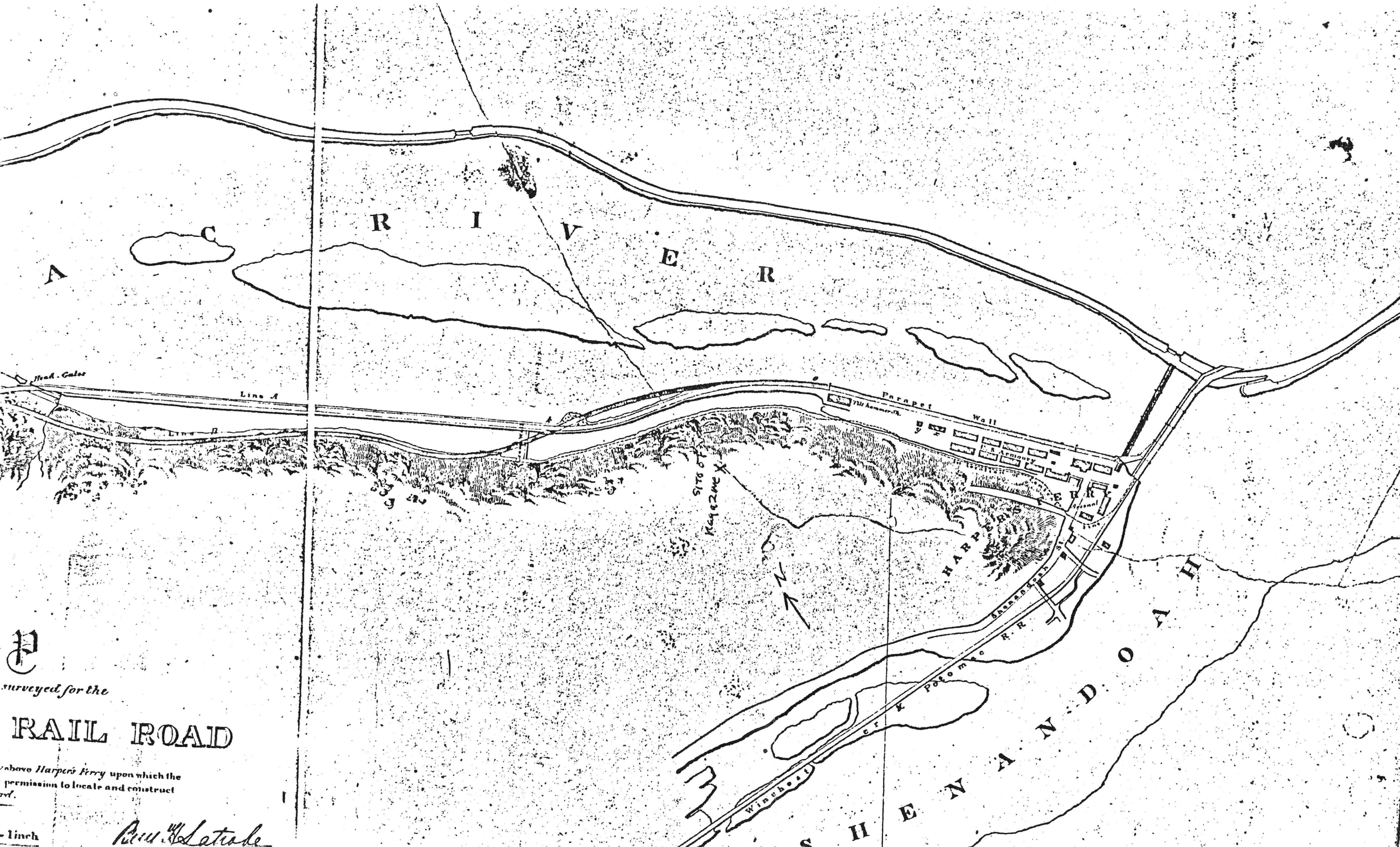
No. 1 Superintendent Rust's Residence. 1808-09.
No. 2 The Bell Shop , 1809-10. Water wheels & machinery
No. 3. Boring Mill,1799-1800,water wheels & machinery.
No. 4. Storehouse, 1799-1800. No water wheels or machinery.
No. 5, Stocking Shop,1808-09, water wheels and machinery.

No. 6. Store House for Stocks. 1832.
No. 7. Perhaps Store House for Charcoal,1828.
No. 8. Tilt Hammer and Forging Shop, erected 1834-38.
No. 9. Annealing Furnace and Proof House, 1834.
No. 10. Smith's Shop, 10 forges, erected 1808-09.
No. 11. Smiths's Shop, 16 forges, erected 1808-09.
No. 12. Smiths's Shop, 16 forges, erected 1808-09.
No. 13 Store House for Condemned Parts,1837 ? or Store House for Iron,1834?
No. 14. Capt. John H. Hall's Browning Shop.

Musket Factory Shops under Construction in 1837 included:

1. Store House for Condemned Parts, stone, 2 stories, 80 by 30 feet, with slate roof. Cost, $ 3,400.00
2. Forge for Scrap Iron, cost $ 5,000.00
3. Coal House at the Tilt Hammer Shop, 30 by 20 feet, 10 feet high, cost $ 650.00. Stone.
4. Polishing Shop
5. Tempering Shop
6-7. 2 Houses for Fire Engines.


R.
Parapet wall
Armorers Shop
U.S. Armoury
Arsenal
Sluice
Shenandoah
HARPERS
Winchester and Potomac Rail Road
SHENANDOAH R.



P

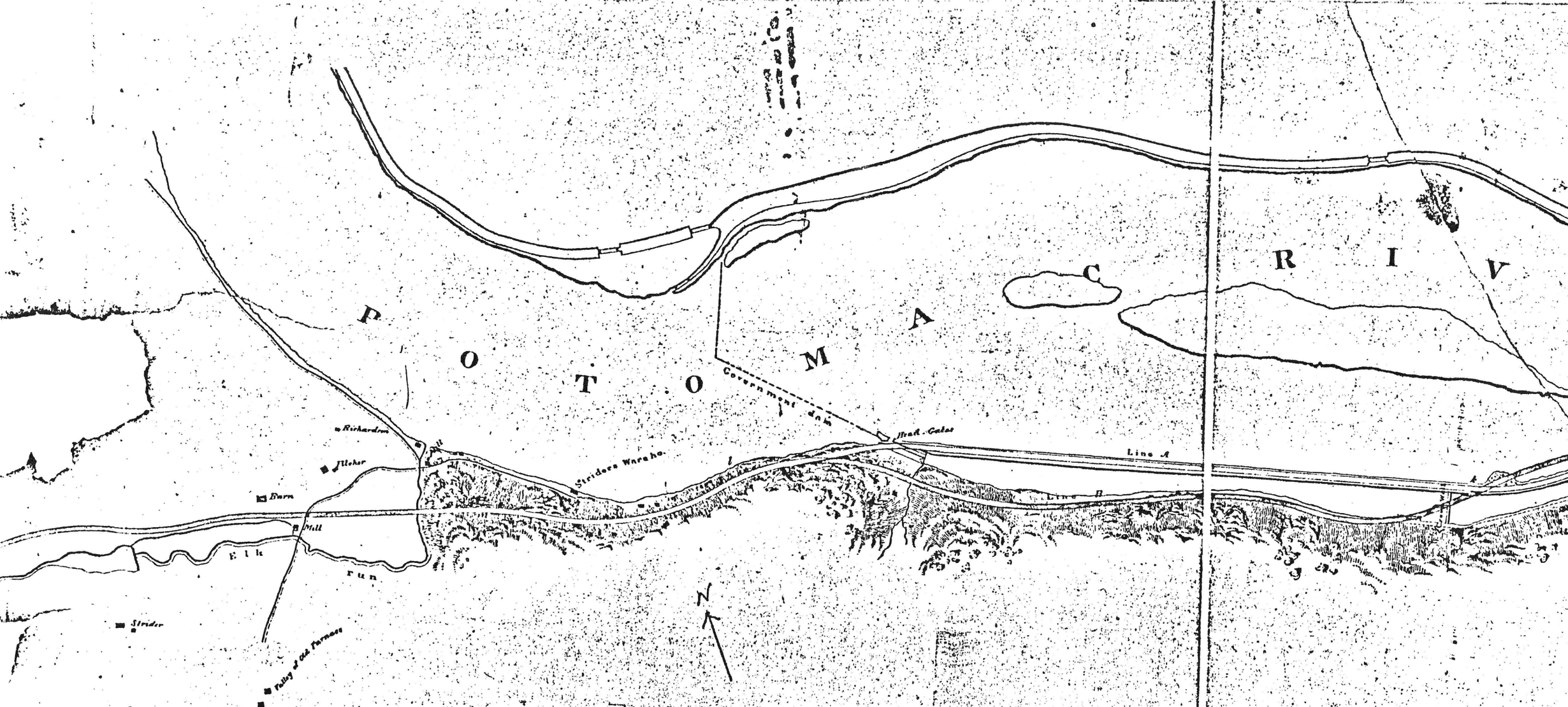
surveyed for the

RAIL ROAD

above Harpers Ferry upon which the
permission to locate and construct
ed.

1 inch

Wm. H. Latrobe



MAP

shewing the routes surveyed for the

BALT. & OHIO RAIL ROAD

along the public grounds on the Potomac, at & above *Harpers Ferry* upon which the Company have applied to Government, for permission to locate and construct *their road.*

MAP NO 2

"MAP of the Relative Position of the Reserved (Wager-owned Six Acre Reservation) Land & Public Works at HARPERS FERRY, VA., 1844." (Copy prepared by Major John Symington, Superintendent of the Harper's Ferry Armory, March 22,1847).

National Archives Record Group 121, Public Buildings Service, Harpers Ferry Laminated Material(Drawer No. 5, Portfolio No. 1).

Section of Major Symington's detailed map.

Bldgs. in the U.S. Musket Factory, 1844

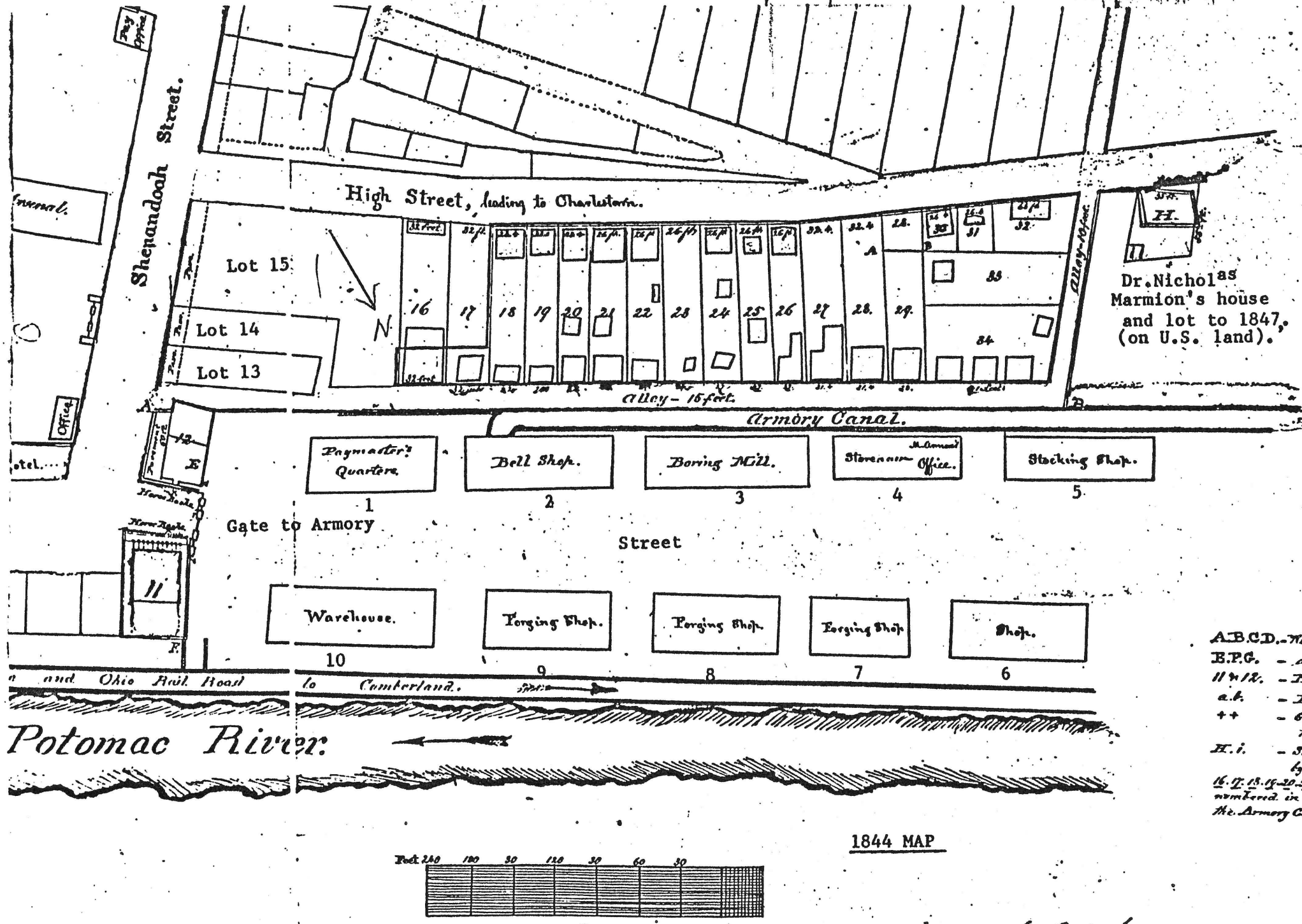
1. Paymaster's Quarters (Residence of the Superintendent 1808-09 to 1November 1844).

2. Bell Shop, erected 1809-10, water wheels and machinery. 131 by 45 feet, 2 story. brick.
3. Boring Mill, a new workshop erected in 1843-44 on the site of the 1799-1800 armory. Had water wheels and machinery. 122 by 42½ feet, 2 story brick.
4. Store House, also Master Armorer's Office. Old Smiths' shop erected in 1799-1800 but converted to use as a storehouse by 1821. No water wheels or machinery. 80 by 30 feet, 2 story brick.
5. Stocking House, erected in 1808-09, water wheels and machinery. 111 by 30 feet, 2 story, brick.
6. "Shop", Annealing Shop and Proof Shop, 1834. 125 by 45 feet, 1834.
7. Forging Shop., erected 1808-1809, 10 forges, 80 by 30 feet, 2 story brick.

8. Forging Shop, erected 1808-09, 16 forges, 120 by 30 feet, 2 story, brick.

9. Forging Shop, erected 1808-09, 16 forges, 130 by 30 feet, 2 story brick.

10. Warehouse, new, 1843-44, 93½ feet by 30 10/12 feet, 2 story, brick,for storing iron and steel,.



1844 MAP

(Copy)

H. Ferry

MAP NO. 3

MAP OF HARPER"S FERRY, VA.,prepared in Compliance with Letter to Major(John) Symington, April 22,1848," Drawn by S. Howell Brown, Surveyor, in 1848. Scale 165 feet to the inch. Original linen map, only existing copy.

Harpers Ferry National Historical Park Map Collection, Map No. 77.

On this map of great historical value, Brown shows and names the U.S. Armory buildings in the Musket Factory, the U.S. Rifle Factory, and the U.S. Arsenal. Location of springs, pumps, stables, woodyards, firehouses, schools, and churches are also indicated. In 1851 Major John Symington revised and updated the section of the 1848 map relating to the Island of Virginius. These revisions were made in red ink on the linen map in 1851.

The dates of construction given after the names of buildings have been added by the writer. The number and name of each structure, however, was placed on the map by Brown in 1848.

SECTION OF THE MAP SHOWING THE U.S. MUSKET FACTORY BUILDINGS:

Structures marked "old" by Brown appear on Maps No 4 (1834), No. 5 and 6 (1837), and No. 7 (1844), and thus help to determine of the use of the unmarked buildings on the earlier maps.

In 1837-1839, the original width of the Musket Factory yard was increased by approximately 70 feet by building two great stone river walls north into the Potomac and then filling in behind them with earth and stone .

The line of old(1799-1810) of workshops situated along the north bank of the Armory canal and also the general level of the Musket Factory yard was very low and the grounds and floors frequently overflowed during river freshets. In the general rebuilding of the Factory that got underway in 1845, the new workshops had high stone foundations and the ground level was considerably elevated by much filling and grading.

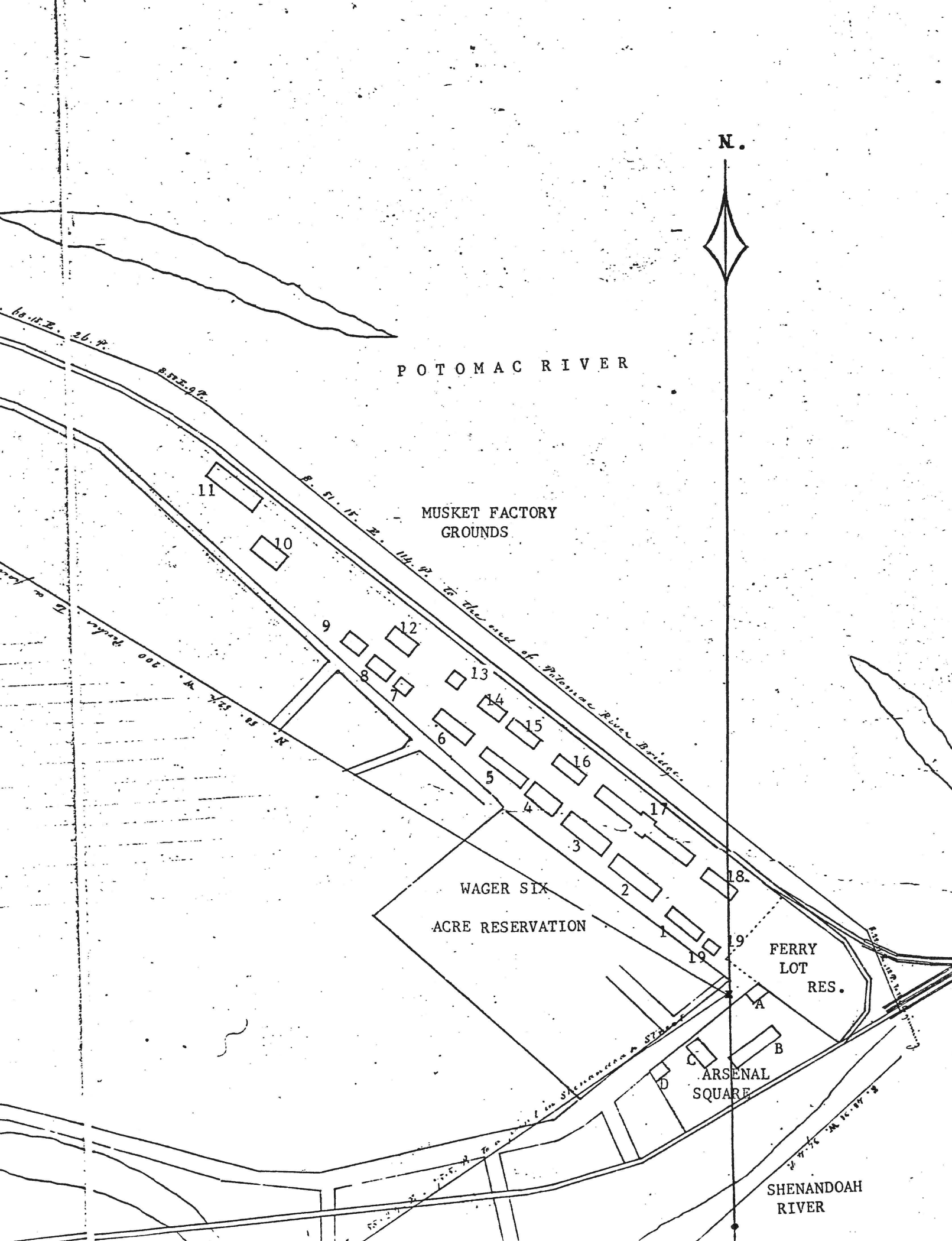
MAP NO. 3

LEGEND FOR S. HOWELL BROWN"S

MAP OF HARPER"S FERRY, 1848

U.S. MUSKET FACTORY BUILDINGS-1848:

1. Offices (1808-09,remodelled in 1847-48).
2. Bell or Finishing Shop (1809-10).
3. Boring Mill (1843-44).
4. Stocking Shop - New (1846-47).
5. Stocking Shop - Old (1808-09).
6. Stock Store House- New (1846-47).
7. Carpenters Shop - Old (1834).
8. Machine Shop - Old (1834).
9. Grinding Mill - Old (1831).
10. Coal Bin and Lumber House (1848-49).
11. Barrel Welding and Tilt Hammer Shop (1834-38).
12. Stock Store House-Old (1832).
13. Charcoal House - New (1845-46).
14. Proof House - New (1843-44).
15. Annealing Furnace - Old (1834).
16. Smiths Shop - Old (1808-09).
17. Smiths Shop - New (1845-48).
18. Warehouse -New (for iron and steel,1843-44).
19. Engine and Guard House- New (1847-48).


N.
POTOMAC RIVER
MUSKET FACTORY GROUNDS
WAGER SIX ACRE RESERVATION
FERRY LOT RES.
ARSENAL SQUARE
SHENANDOAH RIVER
11
10
9
12
8
13
14
15
6
16
5
17
4
3
18
2
1
19
19
A
B
C
D

MAP NO. 4

MAP OF HARPERS FERRY , 1852

Prepared by S. Howell Brown,

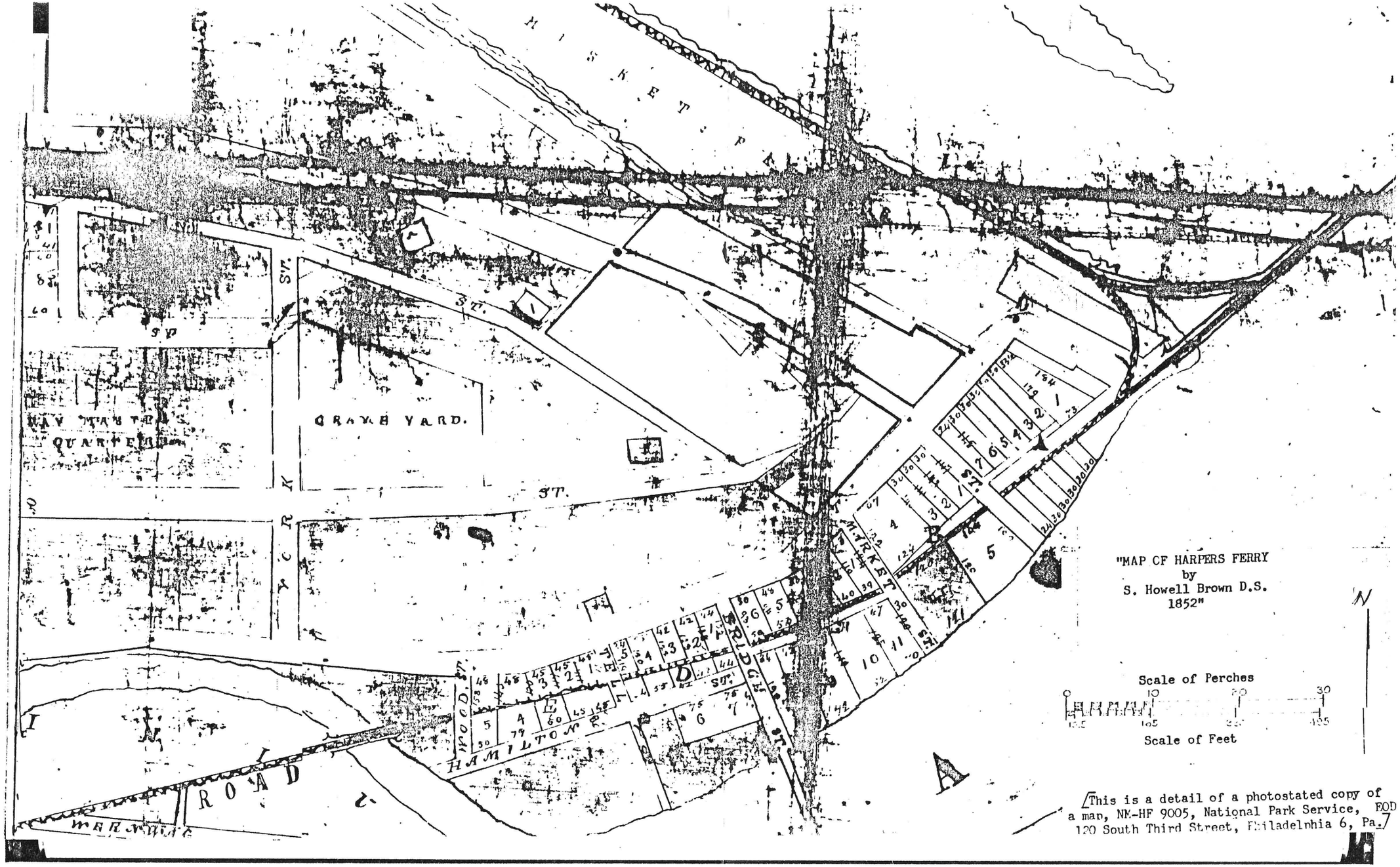
Dated April ,1852 and approved by Secretary of War Conrad on June 10,1852.

Brown prepared this plat, subdividing the U.S. land at Harper's Ferry, Virginia, into house lots for the public sale of U.S. land that was held August 31 and September 1 and 2, 1852. Brown was paid $ 340.00 on July 1,1852 "for 42½ days surveying and Dividing the U.S. land at Harper's Ferry into Lots & constructing 3 maps of the same, including the services of chain carriers, Paper for Maps, and stakes for corner of lots @ $ 8.00 per day."

This map illustrates the relationship of the Musket Factory's main entrance to the Wager Ferry Lot Reservation and Six Acre reservation in 1852.

Wager Lot 12 had been purchased by the Armory and included in the entrance to the Musket Factory. Wager Lot 11 (on bank of Potomac, on the other hand is still in private ownership and projects to help block the main entrance.

Note also how North Cliff Street(now called Potomac Street) has been widened through the Six Acre Reservation land to create a fire lane to a point near the junction of the street with Shenandoah Street. Here Wager Lot No. 13 is still in private ownership and projects to leave the 15-foot wide old alley at this original(1796) size.



This is a detail of a photostated copy of a map, NM-HF 9005, National Park Service, FOD 120 South Third Street, Philadelphia 6, Pa.

MAP NO. 5

MAP OF HARPER'S FERRY - Plate of Harper's Ferry

Armory Property laid off into Lots for Sale in Pursant to the Act of December 15, 1868," Scale: 165 feet to inch.

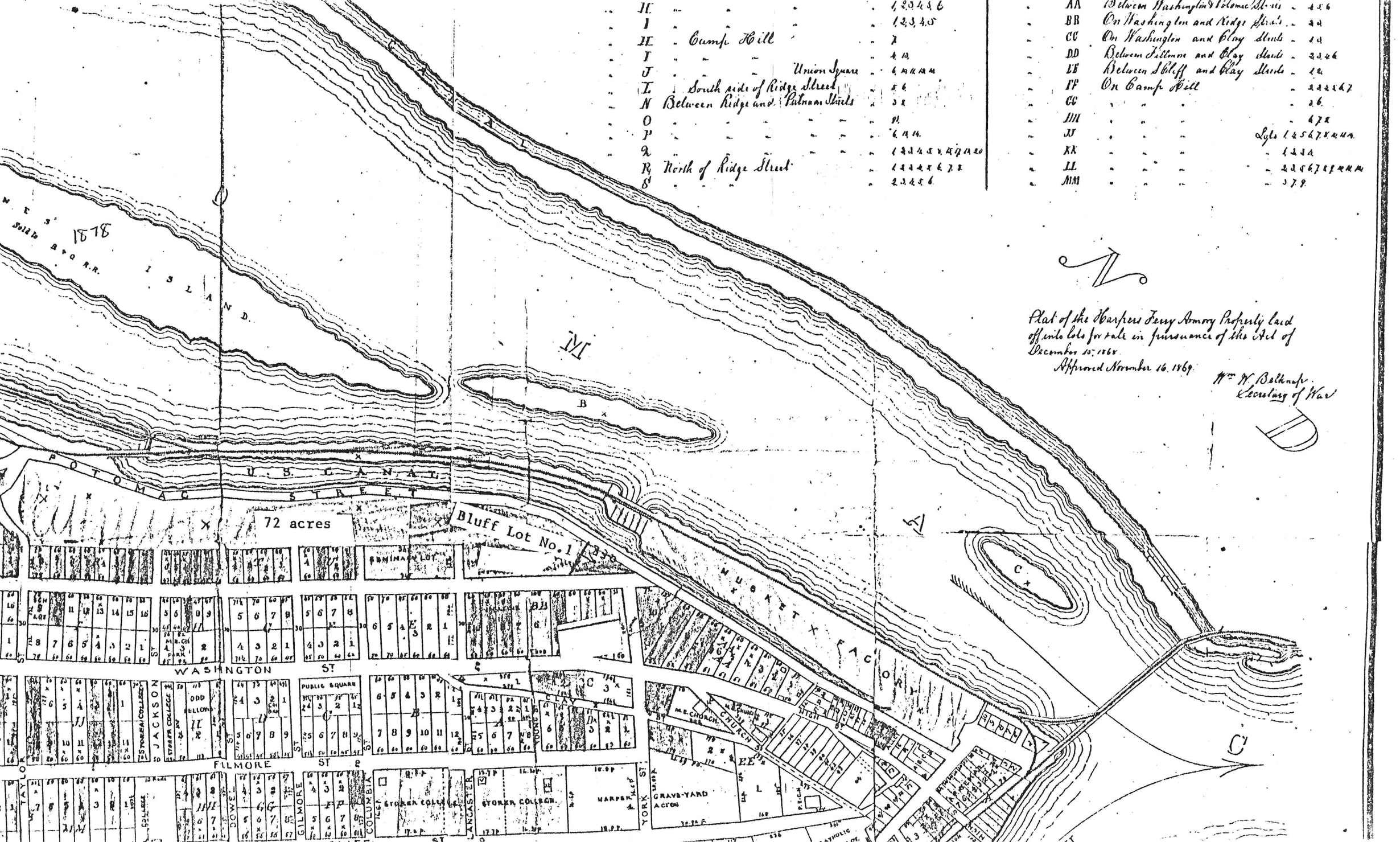
by

S. Howell Brown, November 1, 1869.

Approved by Secretary of War William W. Belknap, November 16, 1869

National Archives Record Group No. 121, Public Buildings Service, Entry 76, Deeds from the United States Ordnance Department, 2 vols., Washington, D.C.

This map shows the old U.S. Musket Factory dam across the the Potomac River but fails to include the partially completed new dam of 1859-60.



H 1,2,3,4,5,6
I 1,2,3,4,5
H Camp Hill 7
I 4,13
J Union Square 6,10,11,12,14
L South side of Ridge Street 5,6
N Between Ridge and Putnam Streets 3,8
O 91
P 6,13,14
Q 1,2,3,4,5,8,15,17,18,20
R North of Ridge Street 1,2,3,4,5,6,7,8
S 2,3,4,5,6
AA Between Washington & Potomac Streets 4,5,6
BB On Washington and Ridge Streets 2,3
CC On Washington and Clay Streets 1,3
DD Between Fillmore and Clay Streets 2,3,4,6
EE Between S Cliff and Clay Streets 1,2
FF On Camp Hill 2,3,4,5,6,7
GG 3,6
HH 6,7,8
JJ Lots 1,4,5,6,7,8,10,11,14
KK 1,2,3,4
LL 2,3,5,6,7,8,9,10,11,14
MM 3,7,9
Plat of the Harpers Ferry Armory Property laid off into lots for sale in pursuance of the Act of December 15, 1868.
Approved November 16, 1869.
Wm W. Belknap
Secretary of War
1878
ISLAND
POTOMAC STREET
U.S. CANAL
72 acres
Bluff Lot No. 1
MUSKET FACTORY
WASHINGTON ST
FILMORE ST
JACKSON
TAYLOR
DOWEL
GILMORE
COLUMBIA
LANCASTER
YORK ST
CHURCH
STORER COLLEGE
HARPER
GRAVE-YARD
PUBLIC SQUARE
ODD FELLOWS
SEMINARY LOT


July 1. 1880.
Lots subject to lease only, in blue
Lots subject to sale in red
Lots in white have been sold.
P
O
T
1878
1878
U.S. CANAL
BALTIMORE AND OHIO RAIL-ROAD
N. CLIFF ST
VAN WERT ST
PINE-GROVE CEMETERY
PUTNAM ST
RIDGE ST
POTOMAC STREET
U.S. CANAL
72 acres
Bluff

MAP NO. 6

Survey of the "Potomac Property", U.S. Musket Factory at Harper's Ferry, W. Va., 71 Acres.

Prepared by S. Howell Brown, March 28, 1885.

Also shows old and new U.S. Armory Potomac Dams.

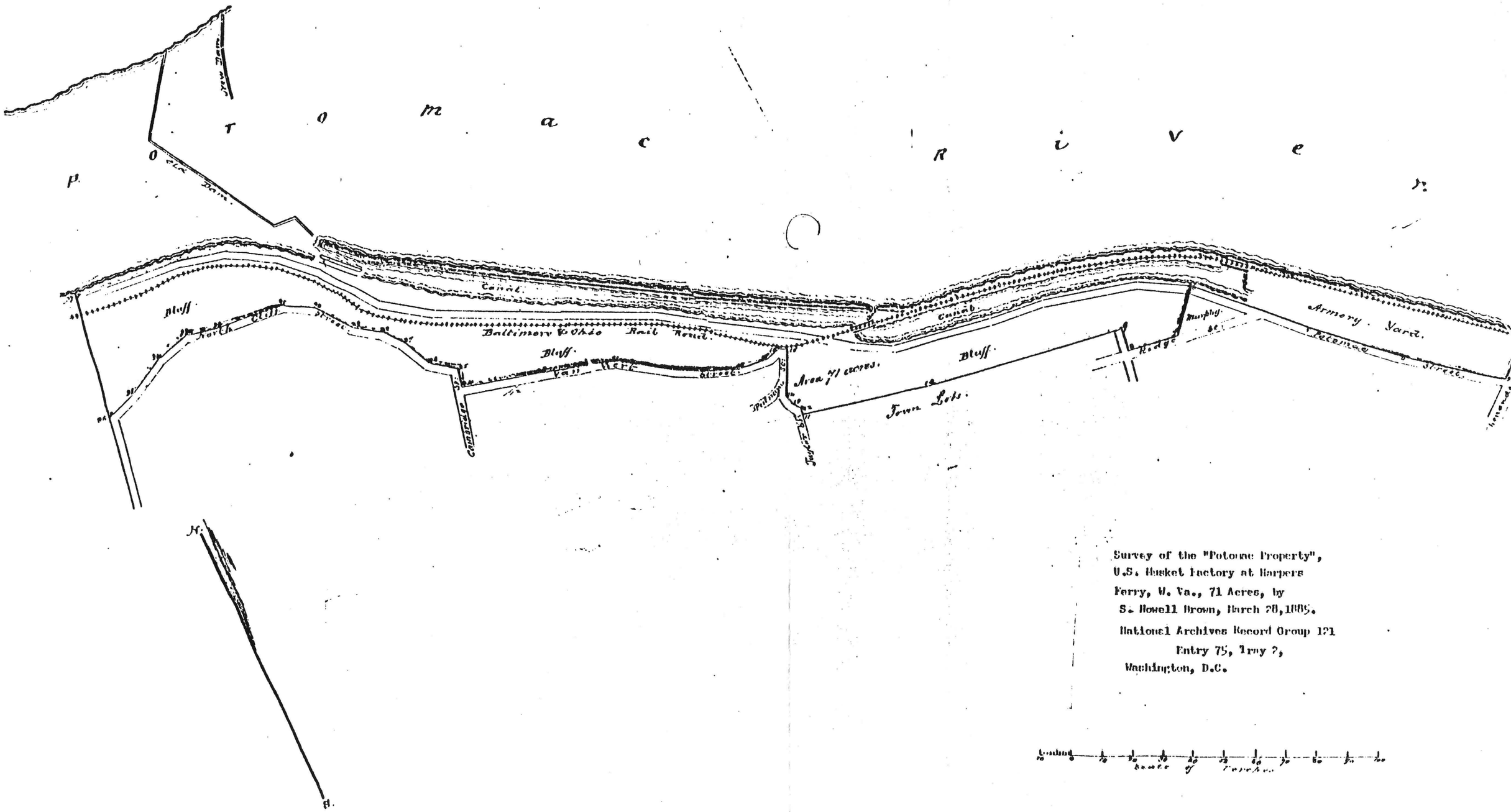
Show bounds of the property purchased by Thomas H. Savery from the U.S. on October 22,1884, for $ 25,100.

Brown recalculated the acreage as containing 72, not 71 acres, as written on the map.

The United States issued the deed to Savery for this property on April 12,1887.

National Archives Record Group 121, Public Buildings Service, Entry 75, Warrenty Deeds and Correspondence, 1796-1884, for for Public Lands of the U.S. Armory at Harpers Ferry,Va., Tray No. 2, of two trays. Washington, D.C.

For the written description of the boundaries of the Musket Factory property see Appendix VII, page 374.



Survey of the "Potomac Property",
U.S. Musket Factory at Harpers
Ferry, W. Va., 71 Acres, by
S. Howell Brown, March 20, 1865.

National Archives Record Group 121
Entry 75, Tray ?,
Washington, D.C.

MAP NO. 7

Map No. 2- Sketch showing two practicable locations for the Balto. & Ohio R. Road through the village of Harper's Ferry, 1838

Scale 100 feet to inch. Ordnance Office, Drawer 5, Portfolio 1 No. 5, no date, but drawn in 1837-38.

Photostatic copy of this map received from Vicksburg NHP in 1958. Lo ation of the original map is unknown.

Harpers Ferry National Historic Park Map No. 35, in Map Case Drawer No. 12.

Legend for Map No. 2 -1837-38 Sketch showing two practicable routes through the village of Harpers Ferry. (Legend prepared by Historican Charles W. Snell, 1981).

Numbered buildings owned by the U.S. Armory; lettered building owned by private individuals.

MUSKET FACTORY BUILDINGS, 1837-38

1. Superintendent's House, 1808-09. 2-story, brick.

2. Old Bell(Finishing or Turning) Shop, 1809-10, 2-story, brick, 131 by 45 feet. Projecting wing to south may be the Polishing Shop (24),erected 1837.

3, Old Boring Mill, 1799. 2-story, brick, 120 by 30 feet.

4. Store House and Master Armorer's Office, 1799, 2-story, brick, 80 by 30 feet.

5. Old Stocking Shop, 1808-09, 2-story, brick, 111 by 30 feet.

6. Additions to Old Stock Shop probably include: Shop for Half-Stocking Machinery, 1827-28, 2-story brick, 20 by 30 feet, plus 1837 addition?

7. Perhaps Fire Engine House, frame, 1837, or Tempering Shop, 1837.

8. Perhaps Fire Engine House, frame, 1837

9. Carpenters Shop, 1834, 1-story, stone.

10. Machine Shop, 1834, 1-story, stone.

11. Grinding Mill, 1831 , 1 -story, stone.

12. Coal House, 1837. One story (10 feet high, stone, 30 by 20 feet.

13. Tilt Hammer Shop for Barrel Welding, 1834-37. One-story, stone.

14. Waste Weir for U.S. Musket Factory Canal.

15. Probably Store House for Stocks, 1832. Stone, 65 by 30 feet. 1-story.

16. Perhaps Store House for Charcoal, 1829, frame, one-story.

17. Annealing Shop and Proof House, 1834, one-story, stone.

18. Smiths or Forging Shop, 1810-12, 2-story, brick, 80 by 30 feet. 10 forges.

19. Smiths or Forging Shop, 1808-09, 2-story brick, 120 by 30 feet. 16 forges.

20. Smiths or Forging Shop, 1808-09, 2-story, brick, 130 by 30 feet. 16 forges.

21. Perhaps Store House for Iron and Bin for Coal, 1834, brick, 1-story.

22. Perhaps Store House for Condemned Component Parts of Arms, Scraps, 1837-38, 2-story, stone, 80 by 30 feet.

23. Captain John H. Hall's Browning Shop,, 2-story, wood, 18 by 18.Office of Armory Superintendent, ca. 1817 to 1832.

Buildings on U.S. Arsenal Square

24. Large Arsenal, 1799-1800. 2-story, brick, 125 by 32 feet.

25. Ice House, probably frame, about 24 feet by 24 feet.

26. Small Arsenal, 1806-07, 2-story, brick, 68 by 36 feet.

Privately Owned Buildings on Wager Ferry Lot Reservation:

A. Lot No. 12 Occupied by two two-story brick stores, with dwellings on the upper floors . Northern structure 35 by 30 feet, building owned by Richard B. Doran and ground by Gerard B. Wager; Southern building, 25 by 30 feet. Building erected in 1831.

B. Lot No. 11. Two-story duplex building 40 by 40 feet, with two stores on first story and residences on the upper floors, built 1831-32.

C . Lot No. 10: Two-story stone house about 40 by 29 feet, built 1837-38, containing a story and dwelling, and, or a small frame building with two small shops dating from 1830. In 1843 Benjamin M. Snook's tinsmith shop was located in the wooden shop on Lot 10.

D. Lot No. 9. 2½ story stone house, 40 by 24 feet. Store and dwelling.

E. Lot No. 8. Vacant in 1837-38.

G. Lot No. 7. Three-story brick hotel, 14 rooms, built by James Foley, master carpenter, 1837-38 45 by 29 feet.

H. Lot No. 6: Three-story brick hotel , 14 rooms, built by James Foley, carpenter for Gerard B. Wager in 1837-38 , 45 by 29.

Buildings on G and H known as the U.S. Hotel in 1839, operated by James Foley.

I. Wager Lot No. 2, owned by Gerard B. Wager. Probably a small frame shop.

J. Wager Lots 4 and 5: Tavern - western half on Lot No. 5, a three-story brick Hotel, the National Hotel, erected by Samuel Gibson in 1834, also containing a store; eastern half on Lot No. 4, a two-story stone house built by the Wager family ca. 1825-30, owned by Gerard B. Wager.

K. Wager Lot No. 15. Old frame Harper's Ferry Hotel. Subdivision 1,2 3 of Lot 15.

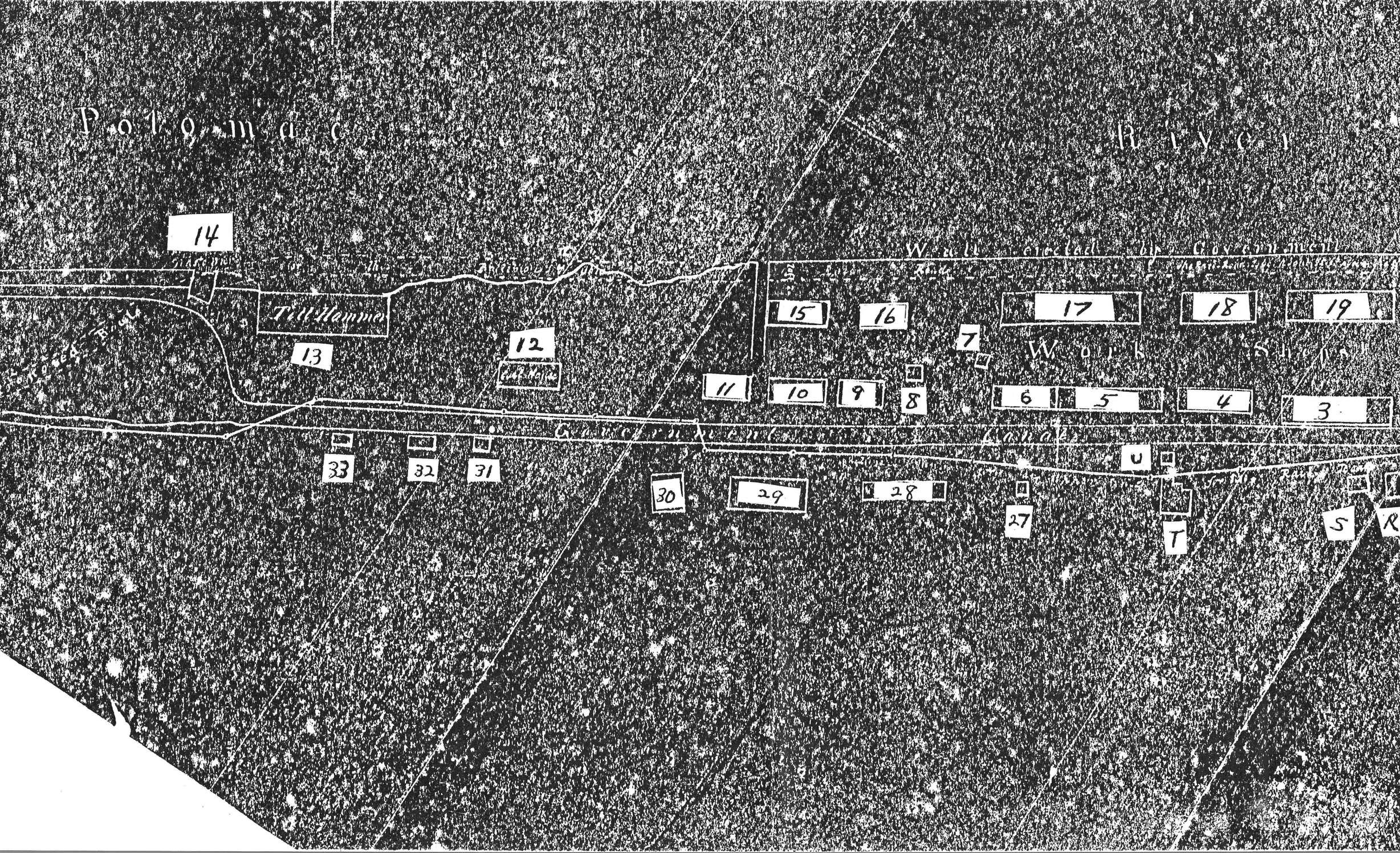
L. Wager Lot No. 14, in part, service building for hotel?

M. Wager Lot 15 ,service building for hotel? Subdivision 2 or 3 of Lot 15.

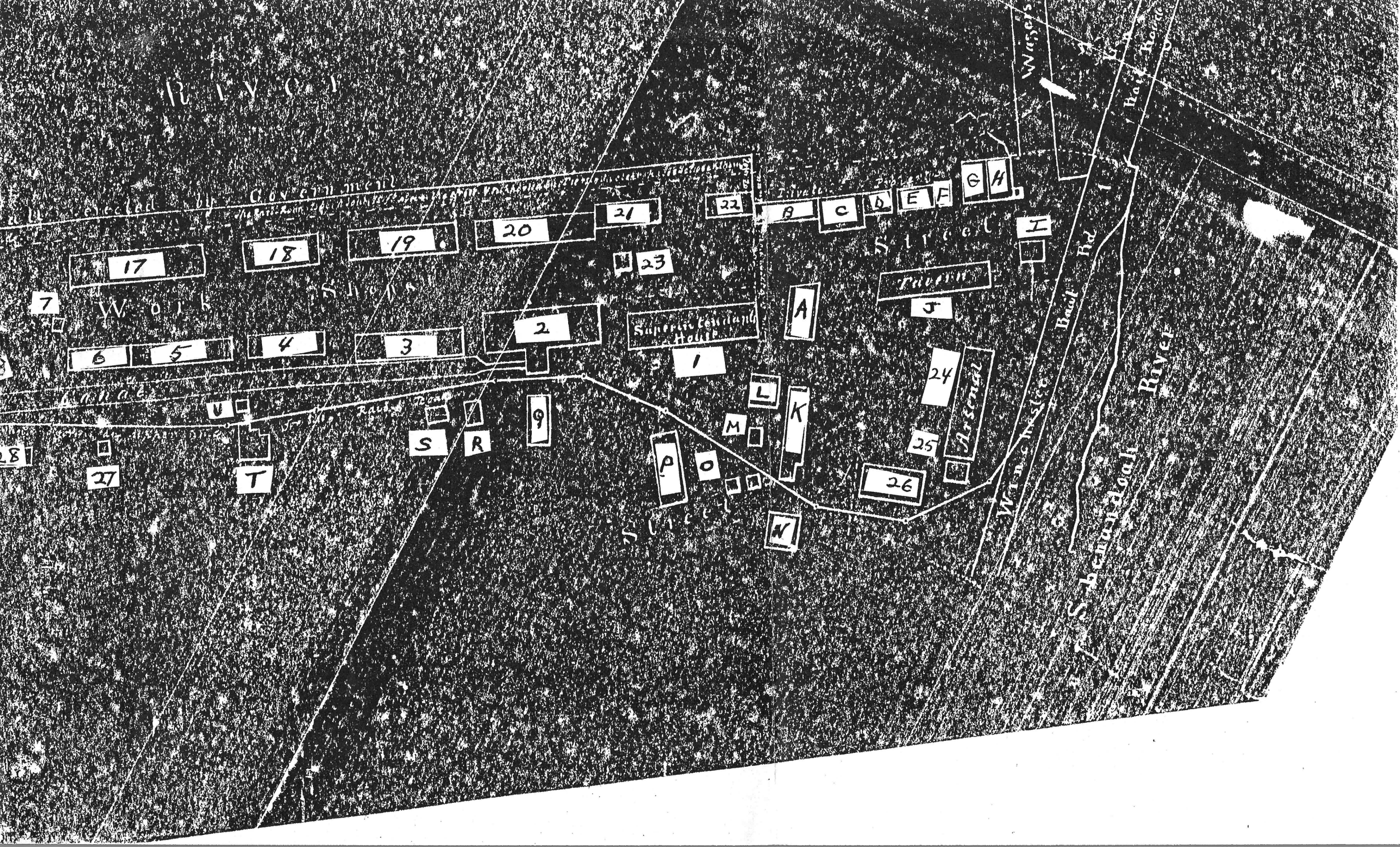
N. Wager Lot 51, 2½ story brick building, shop and dwelling, 1832.

O. Wager Lot 15, two small frame shops, probably. Subdivision 1 of Lot 15.

P. Wager Lot 15, subdivision 4, Stable, possibly located on Wager Lot No. 16.



Potomac River
14
Till Hammer
13
12
15
16
17
18
19
7
Work Shops
11
10
9
8
6
5
4
3
Government Canal
33
32
31
30
29
28
27
U
T
S
R


River
Government
Work
Shops
Street
Tavern
Superintendent House
Arsenal
Winchester
Boat Rd
Wagers
Shenandoah River
17
18
19
20
21
22
23
7
6
5
4
3
2
1
A
B
C
D
E
F
G
H
I
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P
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24
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28

PHOTOGRAPH NO. 1

HARPER'S FERRY ARMORY FROM MAGAZINE HILL, 1856

Lithograph by Ed Beyer, Ray & Son, Lith, Dresdin, 1857
From Beyer's Album of Virginia, published in 1857.

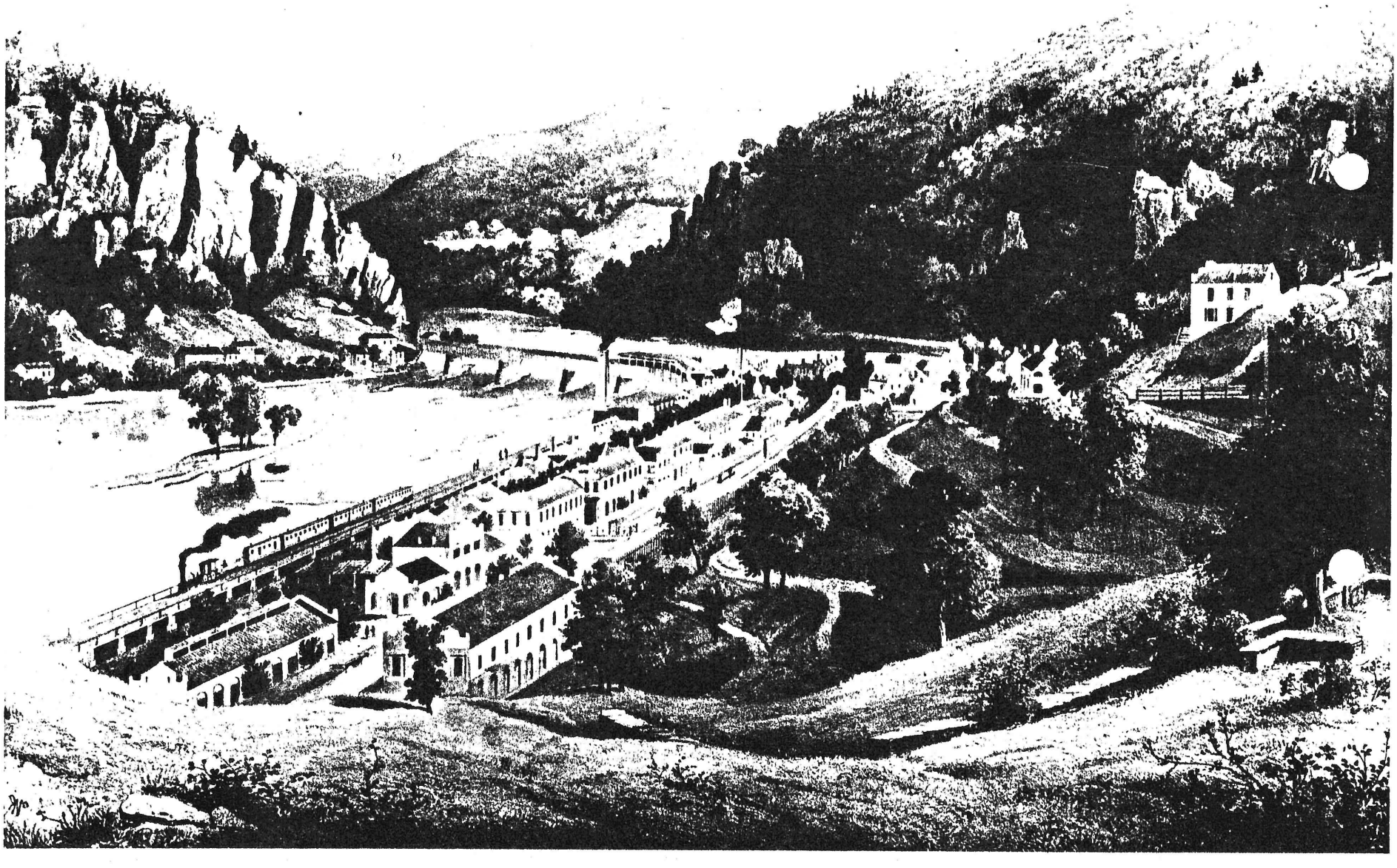
Harpers Ferry National Historical Park Negative No. HF - 51.

At the foot of the terraced hill is North Cliff Street(later known at Potomac Street), running east and west. On the north(far) side of North Cliff Street can be seen the U.S. Musket Factory Canal, also running east and west. Note the bridge over the canal, also two people in a boat on the canal, and to their right, a wall on the dividing line between the south bank of the canal and North Cliff Street. The bridge may be the structure that was replaced in 1856-57.

The Musket Factory Buildings are as follows: At the foot of the hill and on the south side of north Cliff Street, Bldg. No. 11, the Stock and Store House erected in 1854-55.

In the Musket Factory Yard, on the north side of the canal and to the left of Bldg. 11, is Bldg. No. 9, one-story, the Tilt Hammer Shop for Barrel Welding, built in 1849-51. Moving to the right along the north side of the canal, Bldg. No. 8, the Carpenter Shop, Saw Mill, and Grinding Mill, constructed in 1850-51; next Bldg. No. 7, the two-story Store House for Stocks, erected in 1846-47; Bldg. No. 6, the Machine Shop, Office and Stocking Shop, a two-story, three part shop erected in 1847-50; Bldg. No.5, the Boring Mill, a two-story edifice constructed in 1843-44; Bldg. No. 4, the Polishing Shop,built in 1849-50; Bldg. No. 4, Old Bell or Finishing shop, two-story, with cupola on its roof, erected in 1809-10 and remodelled in 1825 and 1848. At the far end of this southern line of shops can be seen the Armory Office Building, Bldg. No. 2, constructed as the Superintendent's Residence in 1808-09 and remodelled in 1847-48 as an Office.

The northern line of shops, fronting on the Potomac River and the B. &. O. R.R. trestles, reading from left(west) to right(east) include the following buildings: Bldg. 16, Charcoal House, one story, erected in 1845-46; Bldg. No. 15, Proof House, two stories, constructed in 1845; Bldg. No. 14, the Annealing Shop and Brass Foundry, a one story structure divided into three parts, with two chimneys, built in 1851-52; Bldg. 13, the giant three-part Smiths or Forging shop with a 90 foot tall chimney, erected in 1845-48. Finally, at the eastern head of the line is the Warehouse, Bldg. No. 12, two-stories, constructed in 1841-44.

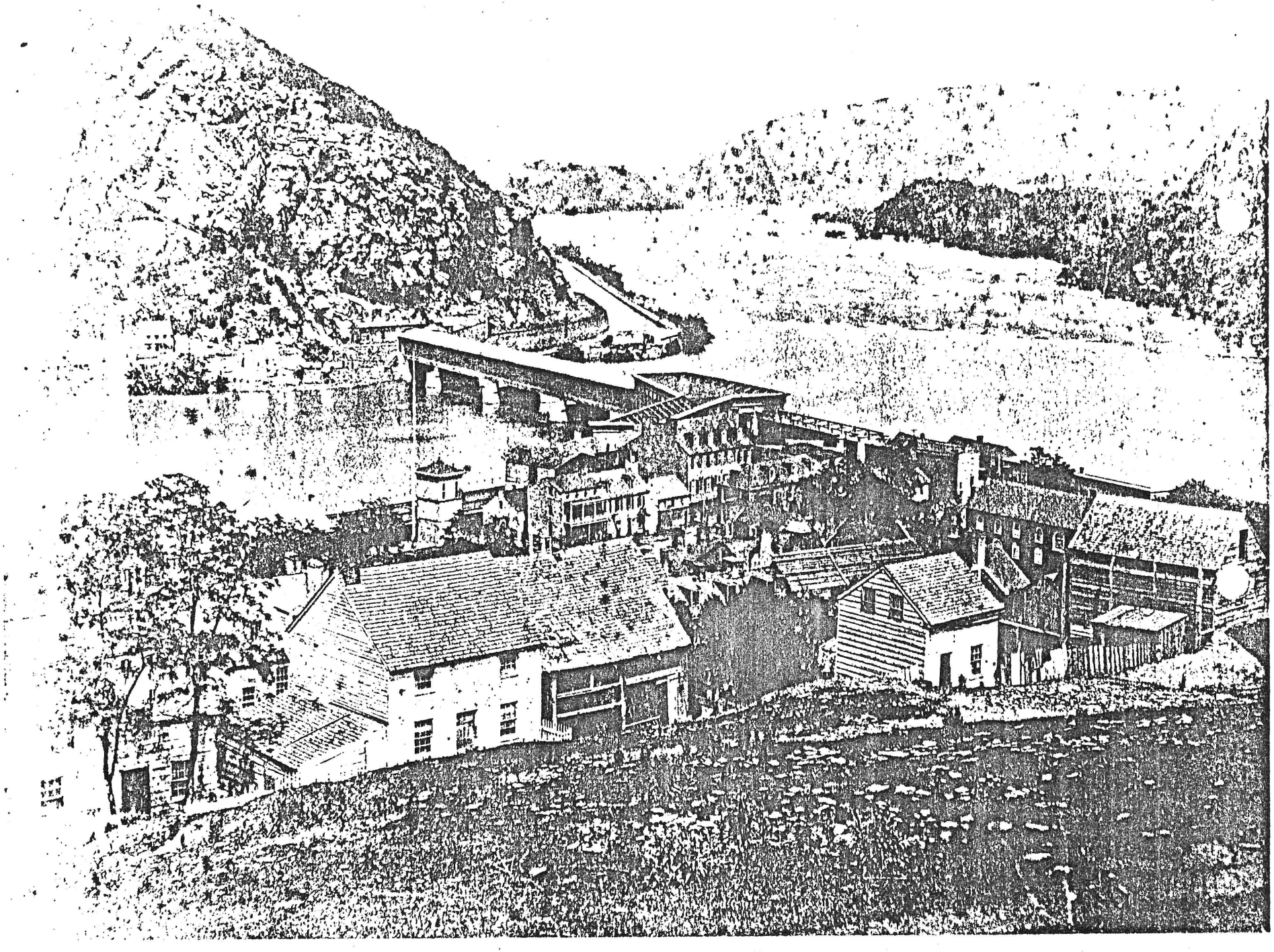


No. 2

HARPERS FERRY FROM CAMP HILL, 1859

Harpers Ferry Negative No. HF-56.

At the left of the photograph and at the foot of the hill may be seen the roof of Bldg. No. 3, the Bell or Finishing Shop which has a cupola on its roof. Moving to the right and crossing the musket factory street, is visible the roof of Bldg. No. 12, the Armory Warehouse. Moving to the right, is to be seen the iron trestle of the B&O Railroad, then the tall Armory Flag Pole, and finally, the B&O brick water tower which was located just inside the limits of the Armory yard. A portion of the Armory entrance fence and gate, as well as trees, are visible by the water tower. The large two story brick building with arched windows to the right of the photograph, is the large Arsenal which was situated in the old Arsenal Square.

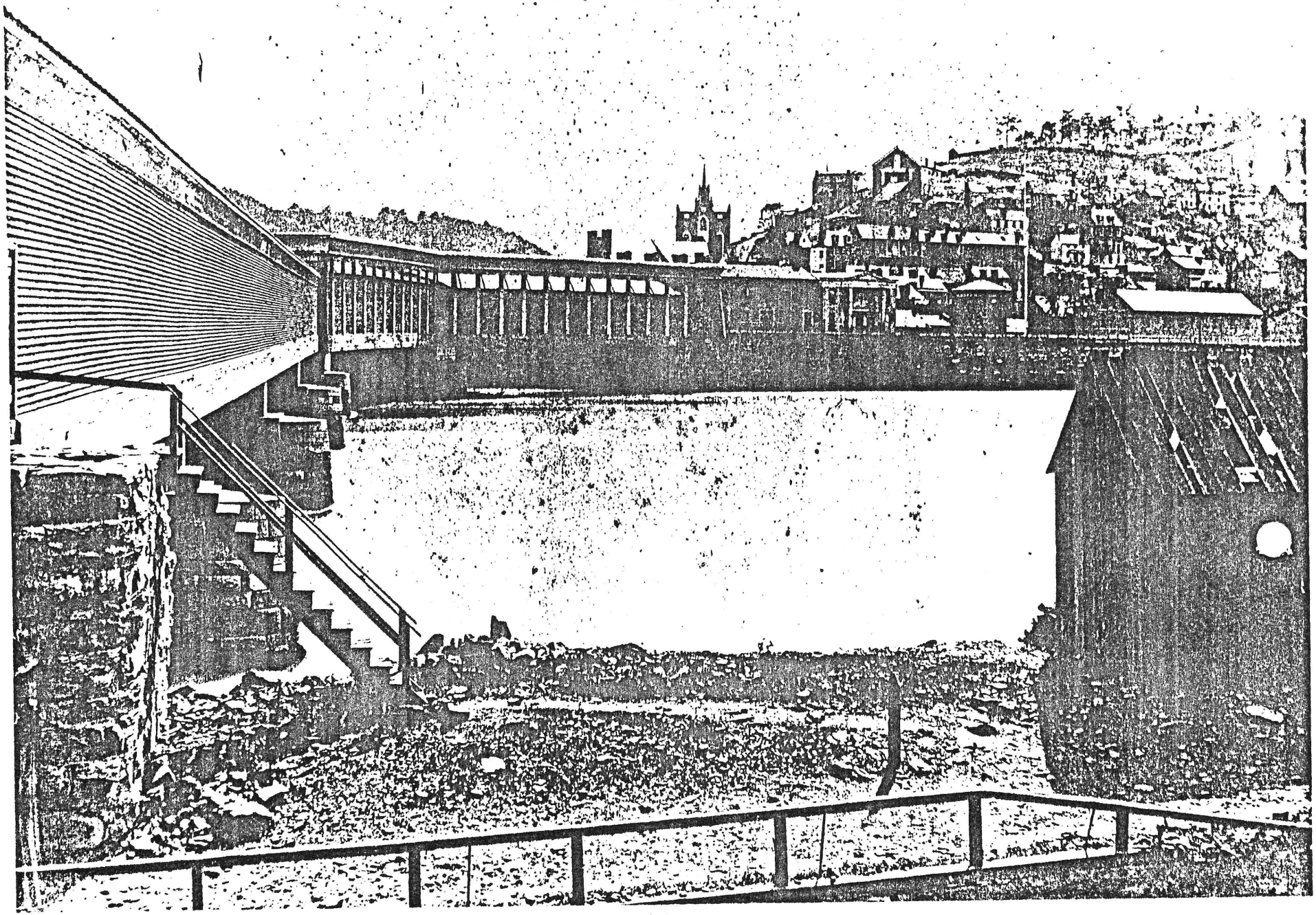


No. 3

HARPERS FERRY FROM THE MARYLAND SHORE, 1859

Harpers Ferry Negative No. HF-64.

To the left is the wooden B&O RR across the Potomac; to the right of the bridge is to be seen a portion of the Wager House Hotel; next the Potomac Restaurant (with pillars); then the roof of a stone house located on Wager Lot No. 10; the roof of Armory Bldg. No. 1, the Engine and Guard House; then the B&O brick water tower, and Armory flag pole. To the left of the flag pole and in the distance, is to be seen the roof of Armory Bldg. No. 2, the Offices. To the right of that structure stands Bldg. No. 3, the Bell or Finishing Shop. To the right of this, near the River Wall, stands large Bldg. No. 12, the Armory Ware House; and to the right of this is visible a small portion of Bldg. No. 13, the Smith Shop. Note the trees growing in the Armory yard by Bldg. No. 12.



FORMAL ENTRANCE TO MUSKET FACTORY YARD, 1859

Harpers Ferry Negative No. HF-90.

In the left foreground is the formal entrance to the Armory yard, including iron gates, piers, brick walls and iron panels. Note grass and trees planted in yard, also the flag stone side walk, McAdamized street, and iron street light. The large brick building across the street to the right, is Monument Bldg. No. 8. To the left, and across Shenandoah Street, stands the small Arsenal, located in the old Arsenal Square. Note the brick and iron fence surrounding the arsenal yard.

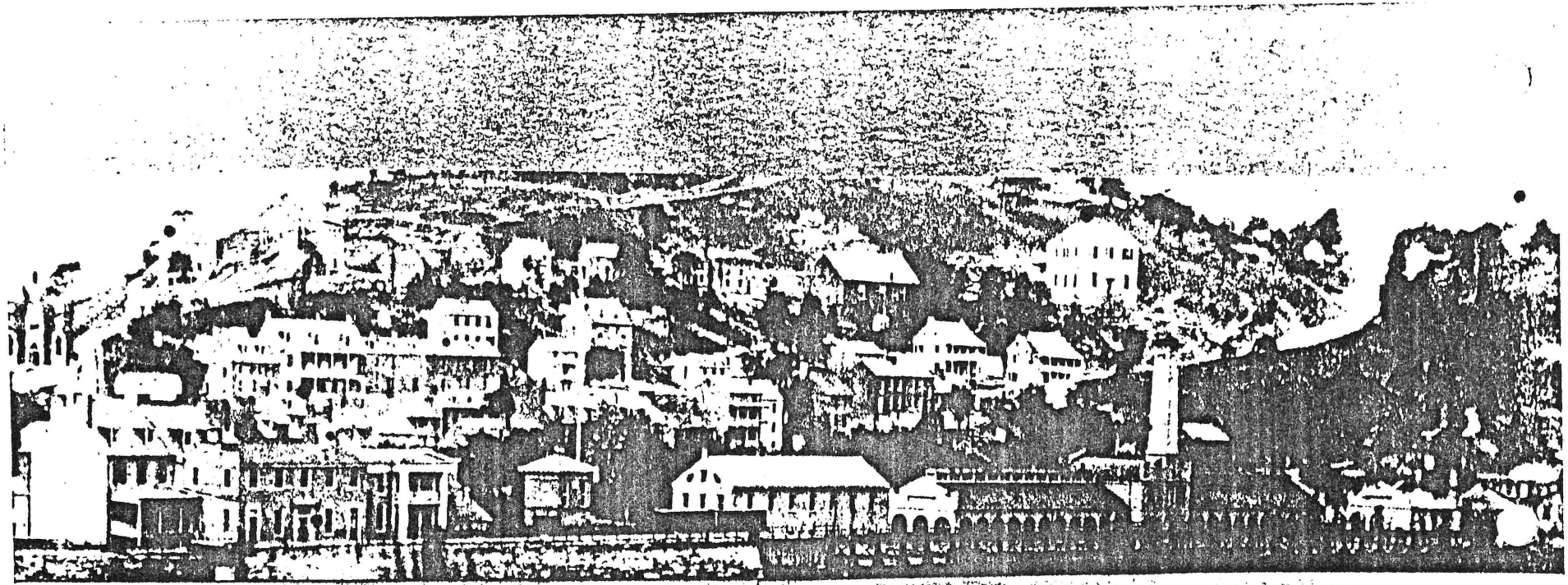
The head of a boy has been inked out at the bottom of the photo, just the left of the street light. For an uncensored version of this same photograph, see Negative HF- 625, which was added to the Park Collections in 1961.



HARPERS FERRY IN JUNE, 1861, FROM THE MARYLAND SHORE

Harpers Ferry Negative No. HF-492.

This photograph is a blow-up made from Negative HF-240. Left to right on river wall: Wager House Hotel; Potomac Restaurant B&O Water Tower; Bldg. 12-Armory Warehouse; Bldg. 13-Smith Shop; Ruins of Bldg. 14-Annealing Shop and Brass Foundry. In rear of 14 may be seen great bell tower erected between Bldgs. No. 6 and 7 in 1859-60. Note iron trestle of B&O situated on top of river wall.

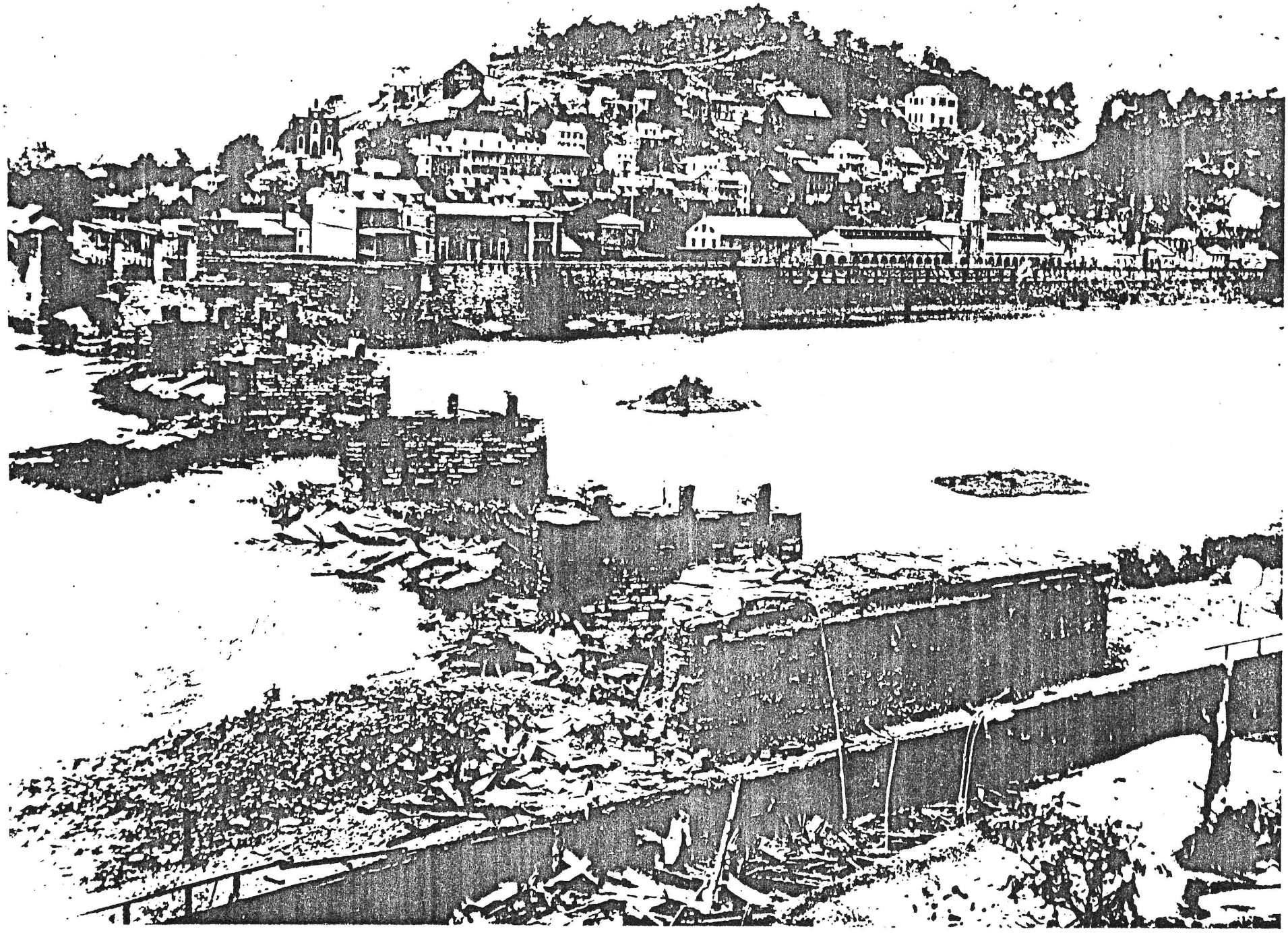


No. 6

HARPERS FERRY IN JUNE, 1861, FROM THE MARYLAND SHORE

Harpers Ferry Negative No. HF-49.

Reading from left to right along Potomac River wall: 1st, Iron Winchester Span of B&O Bridge, next B&O RR Depot, then Wager House Hotel, B&O Potomac Restaurant; then B&O Water Tower, Armory Flagpole, iron trestle of B&O; Old Boat Landing (below two railroad cars). Note also culverts in the River Wall for the tail races from the Armory shops; just to right of box cars are Bldg. 12, the Warehouse; then Bldg. 13-the great Smith Shop; next Bldg. 14-the Annealing Shop and Brass foundry. In the rear of 14 and towering over it, may be seen the tall bell tower erected in 1859-60, which was situated between Bldgs. 6D and 7; to the right of the tower is also the upper story of Bldg. 8. Returning to Bldg. 14 on the river edge, next in line is Bldg. No. 15-the Proof House, and then Bldg. No. 16, the Charcoal House. The Confederate forces have just evacuated Harpers Ferry and have burned Musket Factory Shops No. 6, 7, , 9, 11, 14, 15, 16, 17 and 18.



No. 7

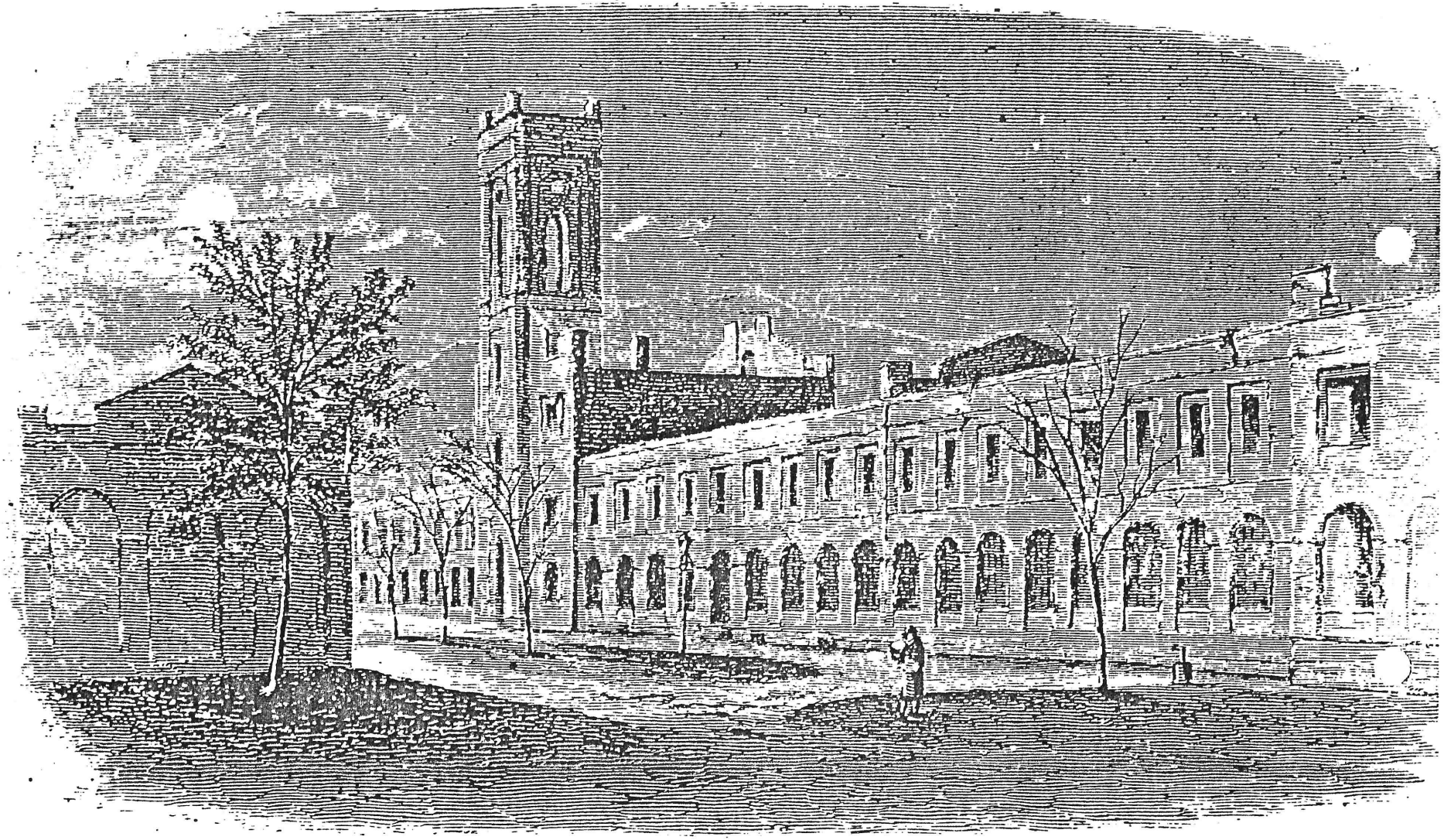
HARPERS FERRY ARMORY AS IT NOW APPEARS, JULY 20, 1861

From Harpers Weekly, Vol. 5, 1861, page 455.

Sketch shows Musket Factory Bell tower erected in 1859-60., Bldg.

No.22. To the left of the tower and connected with it, is Bldg. No. 6D, the Machine Shop. To the right of the tower is Bldg. No. 7, the Millwright Shop; then a two story section that was erected in 1859-60 to connect -The Connecting Shop, Bldg. No. 21.
Bldgs. No. 7 and 8. At the right edge of the sketch may be seen a small portion of Bldg. No. 8, the Grinding Mill. A second story was added to the grinding mill in 1859-60. Note the flag stone walk, the iron street light, and trees planted along the street. To the left of the photograph is to be seen the end wall of what is probably Bldg. No. 16, the Charcoal House.

HF - 223.



HARPER'S FERRY ARMORY AS IT NOW APPEARS.

No. 8

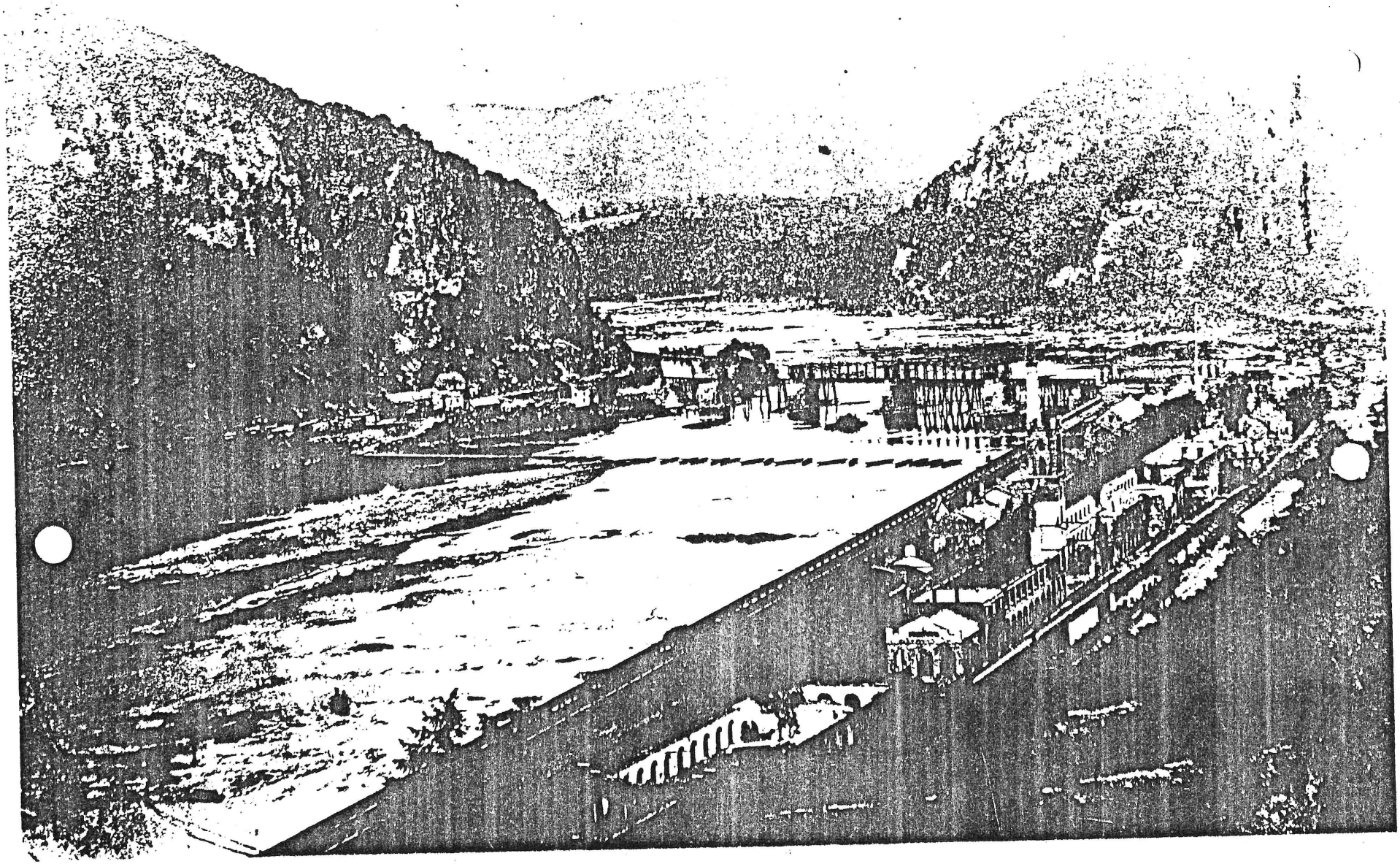
HARPERS FERRY ARMORY IN 1862, FROM MAGAZINE HILL

Harpers Ferry Negative No. HF-30.

Beginning at the bottom left center of photograph; ruined wall of Bldg. No. 10, Armory Lumber House and Coal Bin; next Bldg. No. 9, Tilt Hammer and Barrel Welding Shop. Note Armory Canal, brick wall and iron fence along Potomac Street, also note trees growing in Musket Factory yard. Next to 9, is Bldg. No. 8C-one story Carpenter shop; then 8B, two story Saw Mill; then Bldg. 8A, the Grinding Mill, with the second story that was added in 1859-60; then two story section added in 1859-60 connecting 8 to Bldg. No. 7, the Millwright Shop; then two story section, with bell tower, added in 1859-60, connecting Bldgs. No. 7 and 6D, the Machine Shop; then 6C, the Office, projecting towards the Canal; next 6A, the Stocking Shop; the projection at end of this is the one story wheel house, 6B; then Bldg. No. 5, the Boring Mill; Bldg.4, the Polishing Shop; and Bldg. No. 3, the Bell Shop; all two story structures.

Crossing the street, and moving from right to left: Armory Flag Pole-moved to new location; then B&O Water Tower near Potomac; Bldg. No. 12, Armory Warehouse; Bldg. No. 13, Smith Shop; Bldg. No. 14, Annealing Shop and Brass Foundry, one story with two chimneys, then Bldg. 15, the Proof House; and ruined walls of Bldg. No. 16, the Charcoal House.

Note two tracks of B&O on iron trestle. Pontoon bridge, on Harpers Ferry side, lands at the Old Boat Landing in Musket Factory wall.

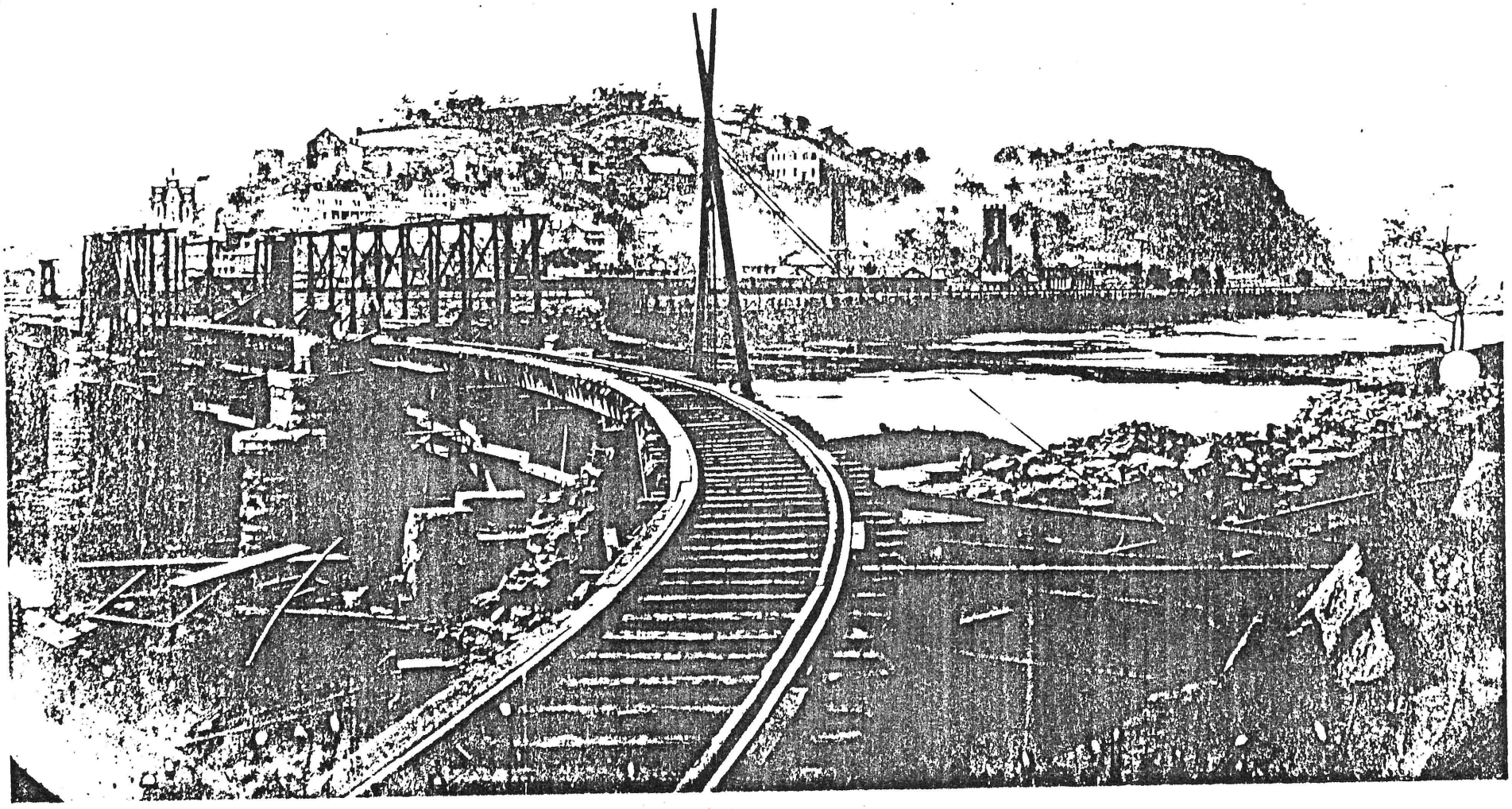


No. 9

HARPERS FERRY, OCTOBER, 1862, FROM MARYLAND SHORE

Harpers Ferry Negative No. HF-11.

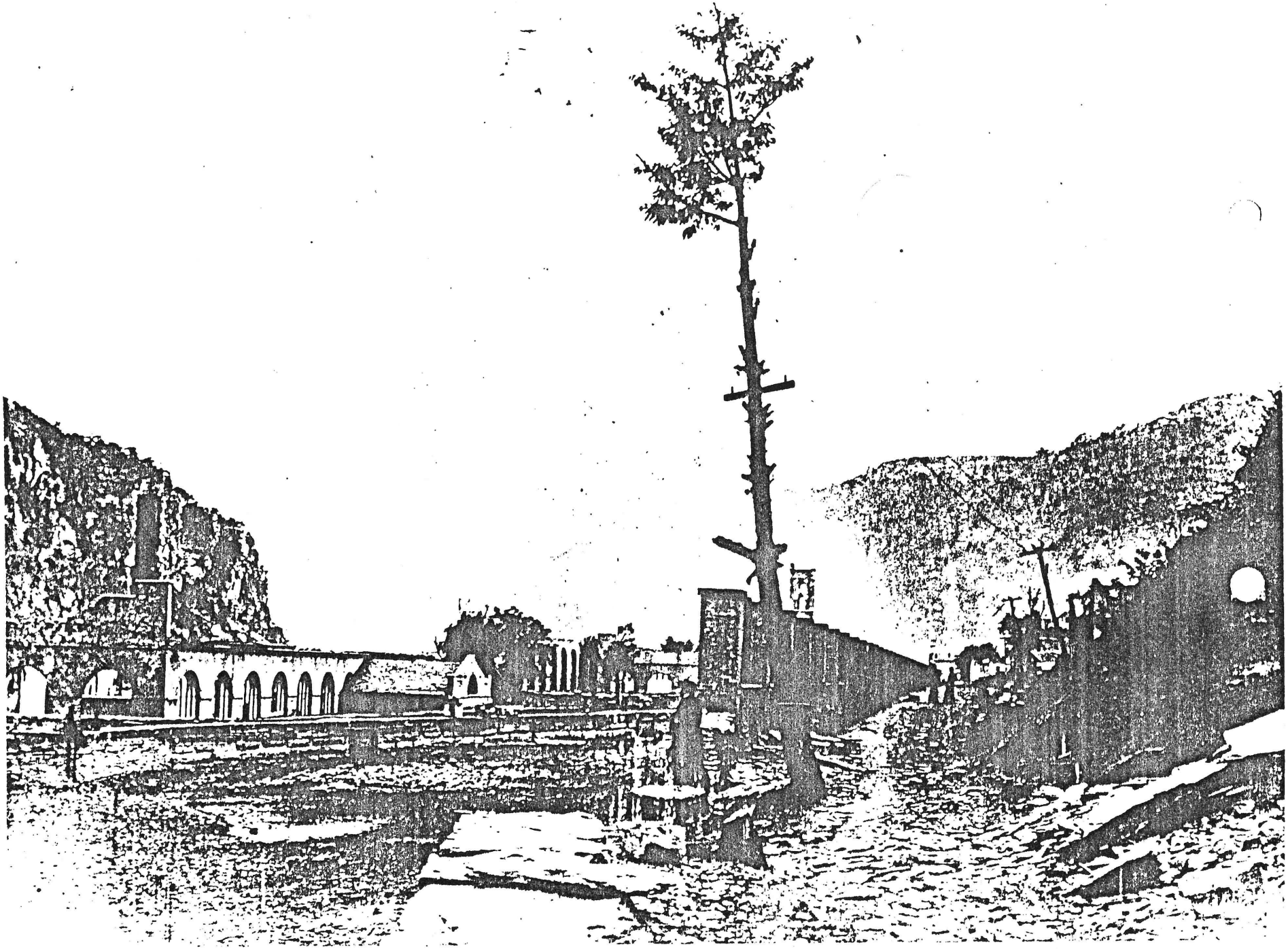
Bldg. 1, the wooden cupola of the Engine and Guard House, may be seen through the bridge; by river wall, roof of Bldg. No. 12, the Armory Warehouse, has been burned off; next Bldg. 13, Smith Shop, roofs on the one story wings of this structure have also been burned. Then Bldg. No. 14, Annealing Shop and Brass Foundry; Bldg. No. 15, Proof House; Bldg. No. 16, Charcoal House; moving to right of trees, ruins of Bldg. No. 18, Lumber House and Coal Bin; then to far right of photograph, ruins and 45 foot stack of Bldg. No. 18, the Rolling Mill.



Harpers Ferry Armory, October 1862

Harpers Ferry NHP Negative No. HF - 10.

To the left of the Photograph are the stone retaining walls of the Armory Canal, and beyond these are the ruins of the one-story brick wall of Bldg. No. 18 (with chimney stack), the Rolling Mill. To the right of this are the story-story high ruined wall of the Lumber House and Coal Bin, Bldg. No. 10; to the right of this can be seen the one-story brick gable end wall of Bldg. No. 9, the Tilt Hammer Shop and Barrel Welding Shop. Above the fence rises the tall tower of the Bell Tower Shop, Bldg. No. 22, erected in 1860-61. The tall brick wall with panels of iron paling fence was erected along the south side of the Armory Canal(or along the north side of North Cliff Street) at a cost of $ 10,723 in 1855-57. At the far end of North Cliff Street can be seen the rear elevation of Park Bldgs. No. 8 and 9. To the right of the right and just beyond the telegraph pole, can be seen the ruins of Bldg. No. 11, the new Stock and Store House, built in 1854-55.

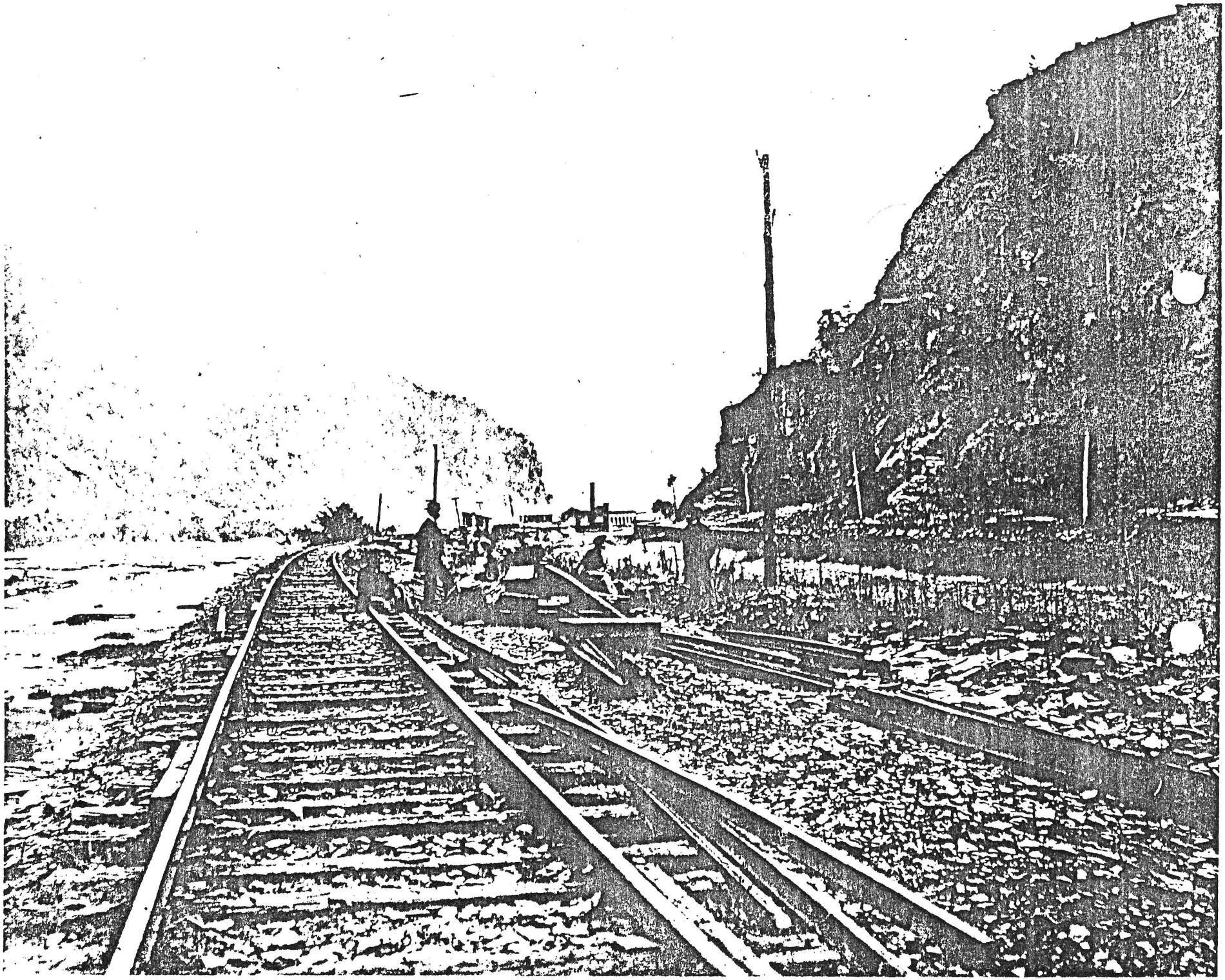


No. 11

HARPERS FERRY ARMORY, OCTOBER, 1862

Harpers Ferry Negative No. HF-9.

To the left of the railroad track is the Potomac River. In the center, at a distance, are the ruins and one stack of Bldg. No. 18, the Rolling Mill. To the right is the Armory Potomac Canal. A county road also runs along the base of the high cliffs at the right.

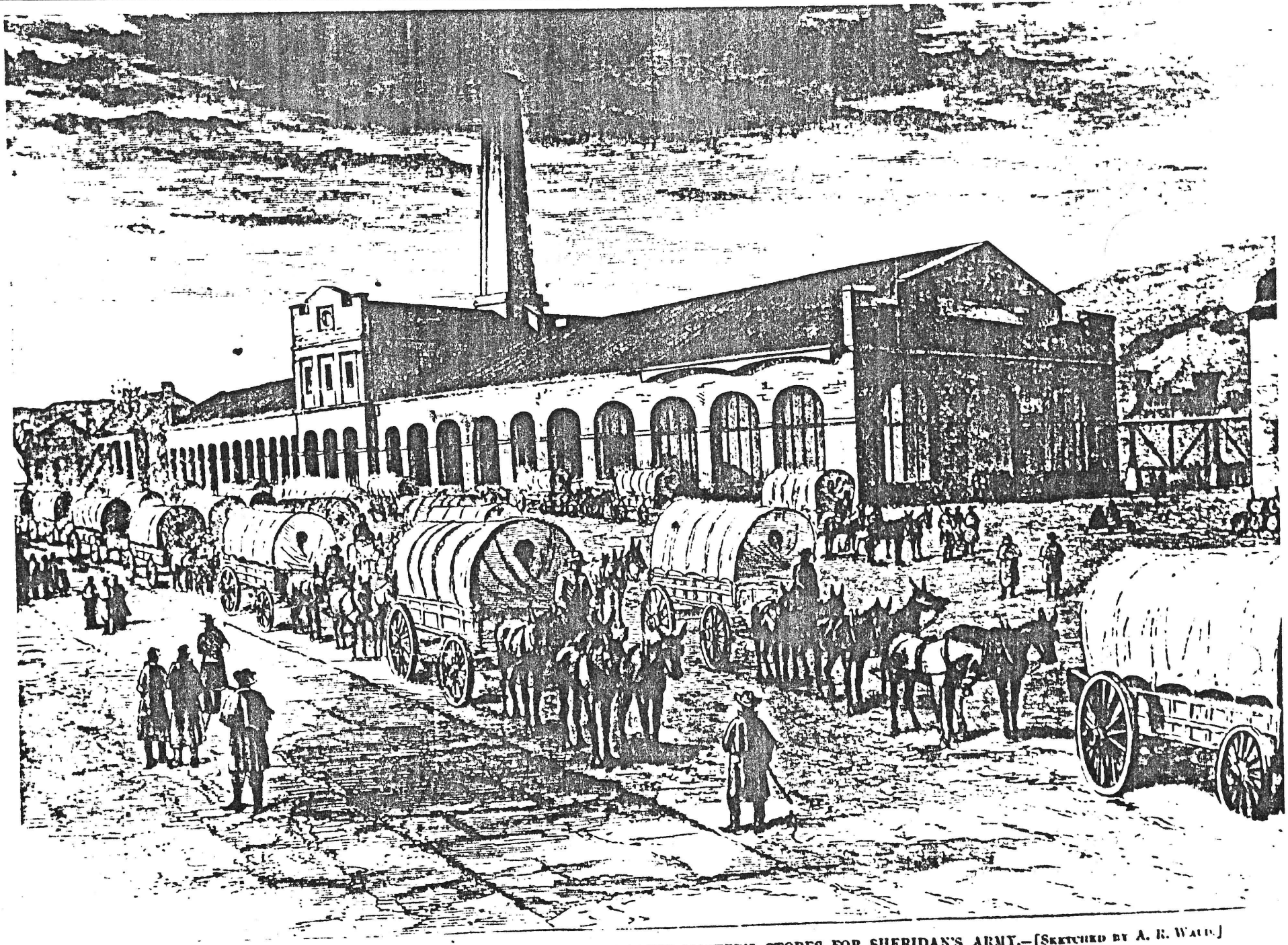


No. 12

UNITED STATES ARSENAL (ARMORY) AT HARPERS FERRY, NOW USED FOR QUARTER MASTER'S STORES FOR SHERIDAN'S ARMY. Sketch by A. R. Waud. Published March 11, 1865.

From Harpers Weekly, March 11, 1865, page 152.
Harpers Ferry Negative No. 88.

The great building in the center, with a temporary roof, is Bldg. No. 13, the Smith Shop. To the left of 13, stands Bldg. No. 14, the Annealing Shop and Brass Foundry, also re-roofed. To the right of 13 may be seen a corner of Bldg. No. 12, the Warehouse. Note the flagstone walk in the left foreground of the sketch.



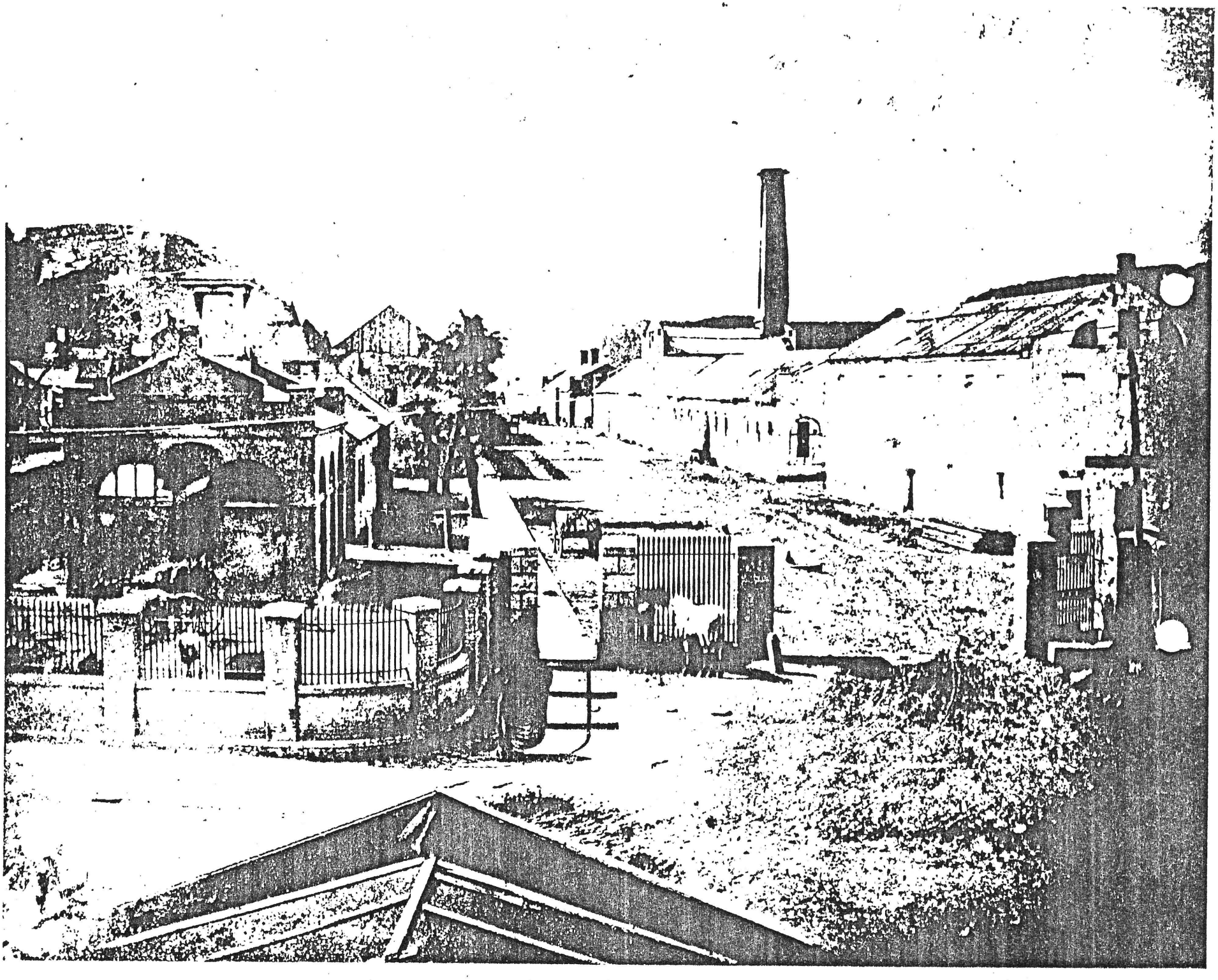
UNITED STATES ARSENAL AT HARPERS FERRY, NOW USED FOR QUARTER-MASTER'S STORES FOR SHERIDAN'S ARMY.—[SKETCHED BY A. R. WAUD.]

No. 13

HARPERS FERRY ARMORY, 1865

Harpers Ferry Negative No. HF-27B.

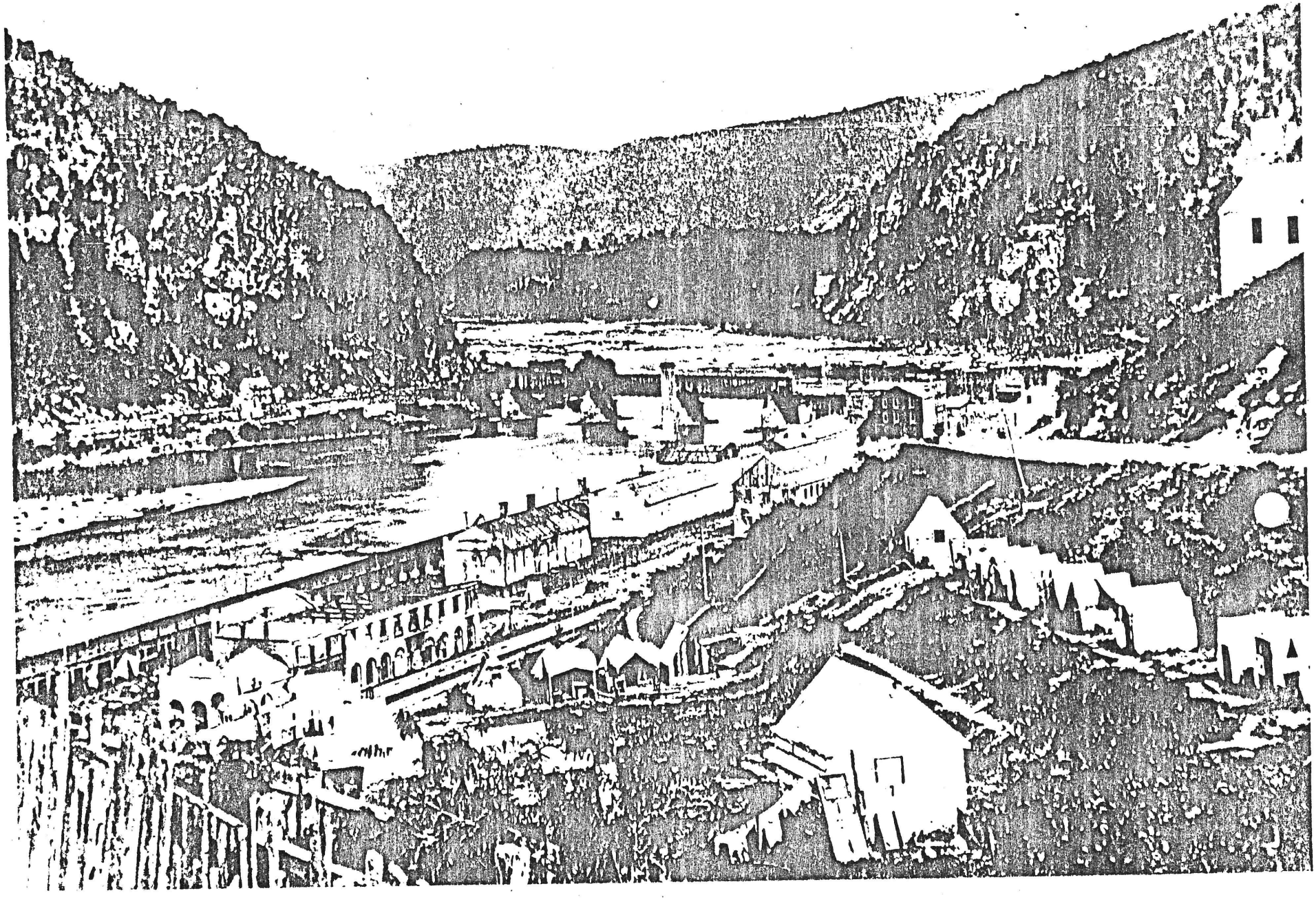
In the foreground is the main entrance to the Musket Factory, with iron gates, brick walls and iron fences. To the left of the photograph is: first, Bldg. No. 1, Engine and Guard House; next the one story brick Bldg. No. 2, Armory Office; beyond this is the two story Bldg. No. 3, the Bell or Finishing Shop. Note the flagstone sidewalk and the trees growing by Bldg. No. 2. Crossing the Musket Factory street, to the right of the photograph: first in line is Bldg. No. 12, the Armory Warehouse; next Bldg. No. 13, the Smith Shop; then in the distance, with two small chimnies, Bldg. No. 14, the Annealing Shop and Brass Foundry. In far distance, Bldg. No. 15, Proof House. The shops have had temporary roofs placed on them to serve as a Quarter Masters Depot.



HARPERS FERRY ARMORY FROM MAGAZINE HILL, 1865 OR 1866

Harpers Ferry Negative No. HF- 38.

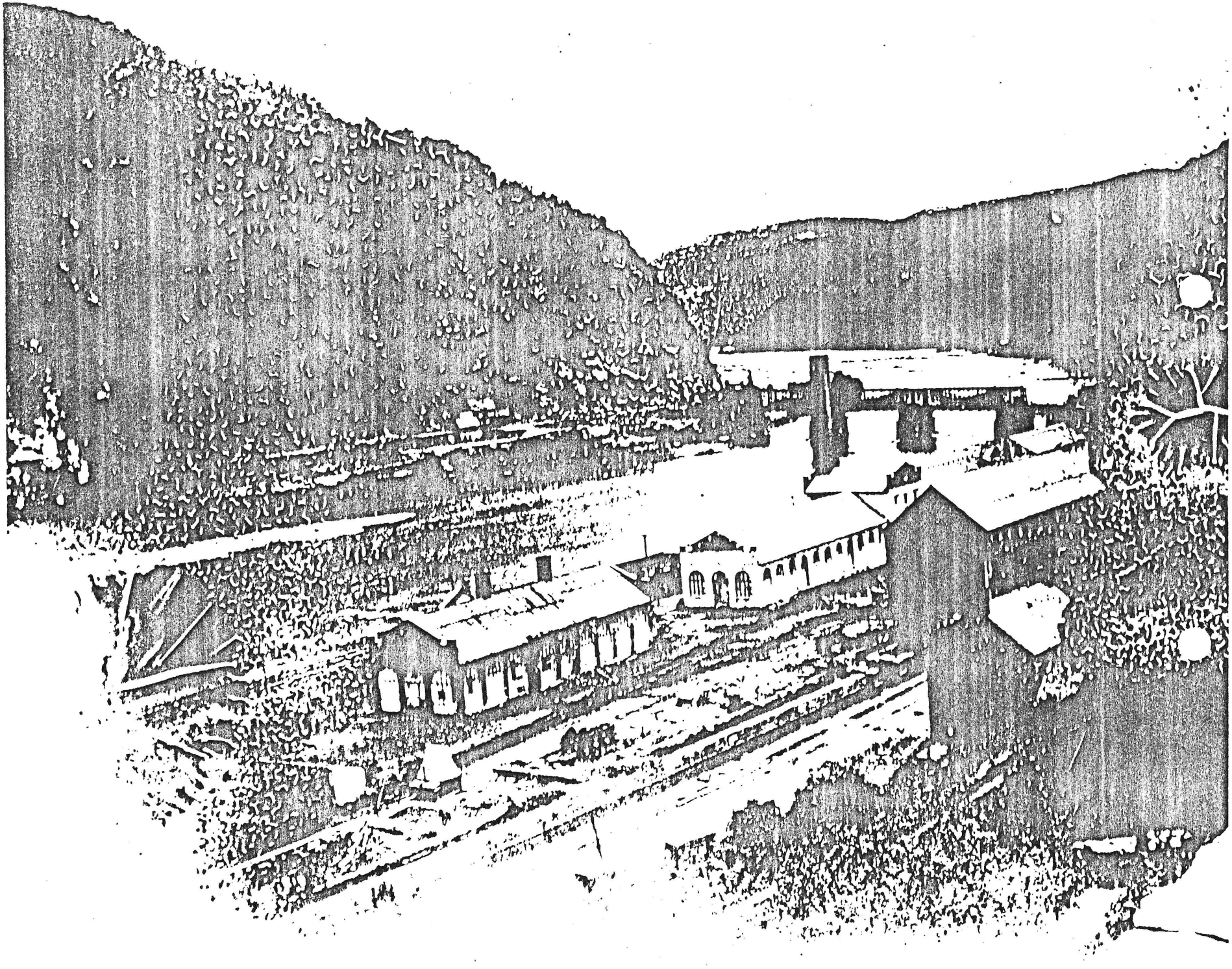
Along Potomac River wall, from left to right; first Bldg. No. 14, Annealing Shop and Brass Foundry; then Bldg. No. 13, the Smith Shop; and Bldg. No. 12, the Warehouse. The large two story building across the Musket Factory street and to the right, is probably Bldg. No. 5. the Bell or Finishing Shop. Armory Canal is to be seen in the foreground. In the lower left-hand corner, on the north side of the Armory Canal is Bldg. 8C, one-story west wing of Bldg. 8, the Carpenter Shop wing, the projecting two-story center, is Bldg. No. 8B, the Saw Mill, the next three bays to the right of the center is Bldg. 8A, the grinding mill. The Grinding Mill was erected as the one-story east wing and its second story was added in 1860-61. The remaining six bays of the two-story shop to the right of the Grinding Mill is a portion of the Connecting Shop, Bldg. No. 21, erected in 1860 to united Bldgs. No. 8 and 7. Bldg. No. 7, the Millwright Shop(converted from a stock house), the Bldg. No. 22, the Bell Tower Shop, constructed in 1860, and Bldg. No. 6, the Stocking and Machine Shop, have been demolished by this date.



HARPERS FERRY FROM MAGAZINE HILL, ABOUT 1865 or 1866

Harpers Ferry NHP Negative No. HF- 28.

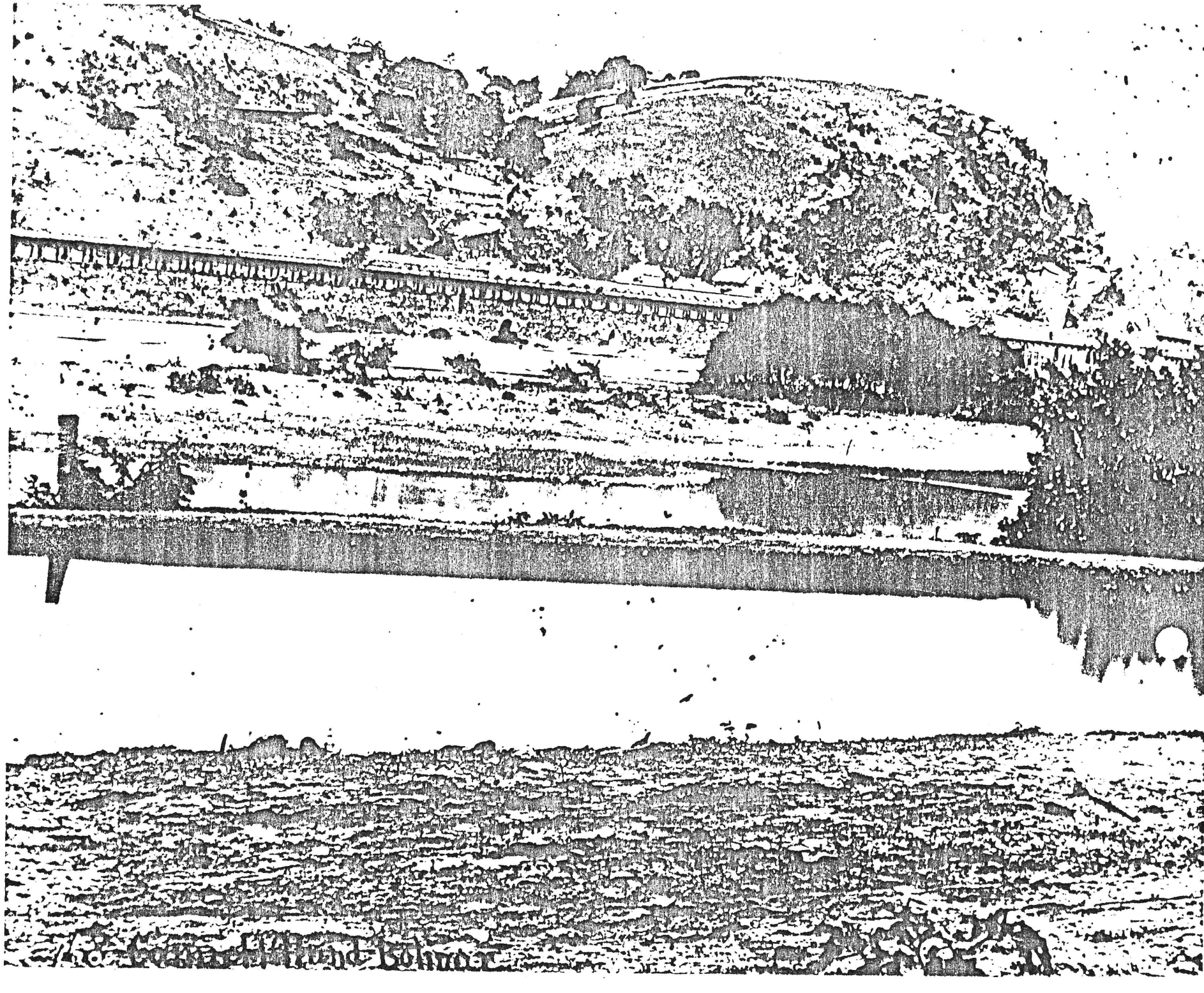
Along the Potomac River Wall in center distance, reading from left to right: first Bldg. No. 14, Annealing Shop and Brass Foundry(with two chimney stacks); then Bldg. No. 13, the Smiths or Forging Shop; and the roof and gable end of Bldg. No. 12, the Warehouse. The large two-story shop across the street from Bldg. No. 13 is probably Bldg. No. 5, the Boring Shop. Bldgs. No. 6, the Machine and Stocking Shops, the Bell Tower Shop, Bldg. No. 22, and Bldg. No. 7, the Millwright Shop, which once stood along the north bank of the Armory Canal, to the left of the Boring Shop, have all been demolished. The two-story building on the south side of North Cliff or Potomac Street, near Bldg. 5, the Boring Mill, is probably Armory Dwelling House No. 20, Located on Wager Lot No. 27.



CAMP HILL AND MAGAZINE HILL ABOUT 1875
FROM THE MARYLAND SHORE

Harpers Ferry Negative No. HF-83.

To the left of the photograph is Camp Hill, with Washington Street or High Street climbing the heights. Note the terracing and walling on the hillside below Washington Street. The hill to the right of the photograph is Magazine Hill. Note the Potomac River wall, with a culvert for tail race of an Armory shop in foreground. Behind the culvert and to the right of it, stands the ruins of the Bldg. No. 18, Armory Rolling Mill; to the right of this may be seen some wooden trestling of the B&O Railroad along the Armory Canal.



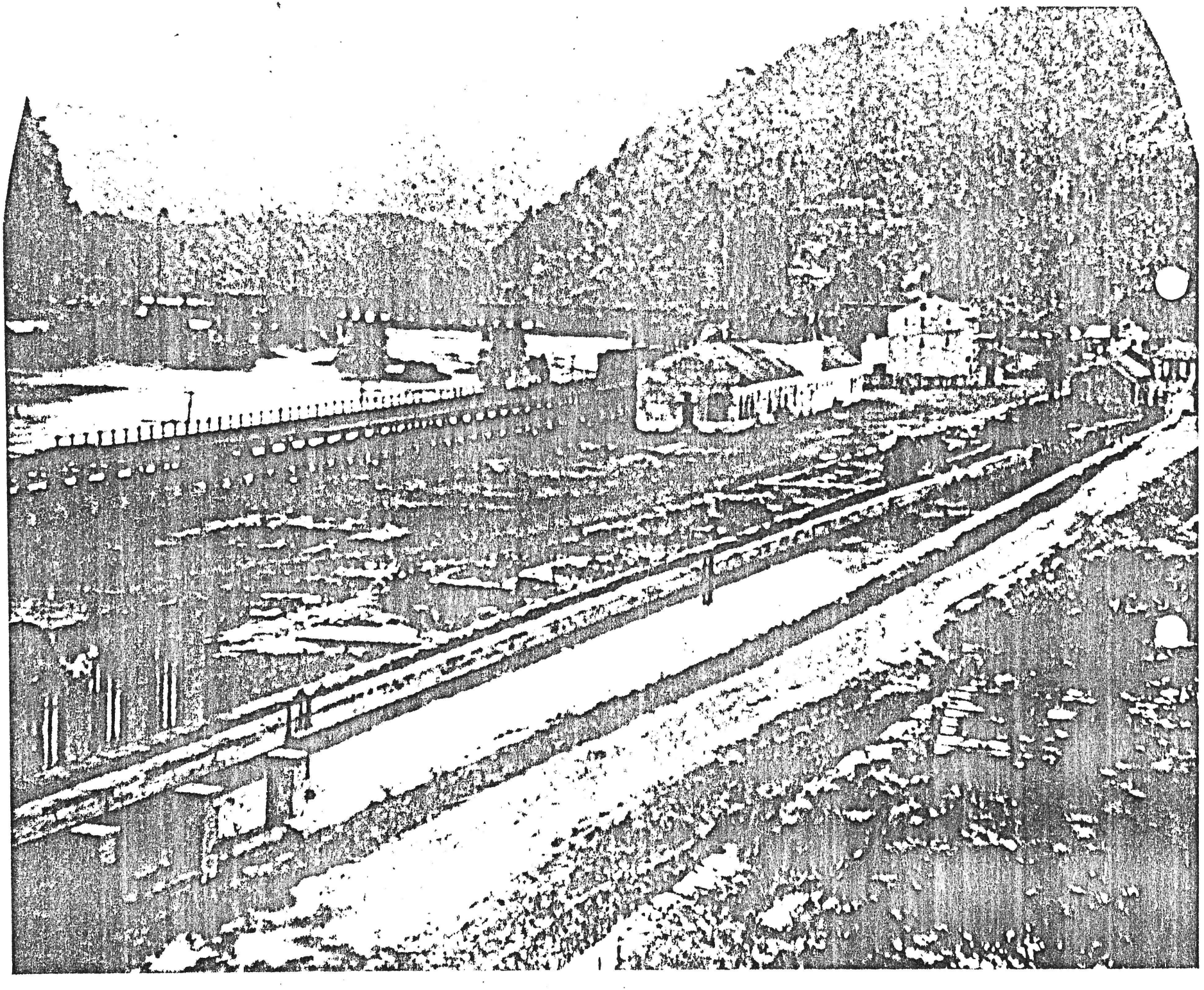
No. 17

HARPERS FERRY MUSKET FACTORY YARD ABOUT 1886

Harpers Ferry NHP Negative No. HF- 355.

In the foreground is North Cliff or Potomac Street, with the Armory canal running along its north side. The one-story brick shop in the lower left-hand corner is Musket Factory Bldg. No. 9, the Tilt Hammer and Barrel Welding Shop. Note that except for three brick piers on North Cliff Street side of the canal, the fine brick pier and iron paling fence that once guarded the south bank of the canal, has been demolished. Note the iron trestle and track of the B. & O. Railroad standing on top of the Potomac River Wall in the distance. In the right center is the great Smiths or Forging Shop, Bldg. No. 13, with its 90 foot tall chimney stack. Note that Bldg. No. 12, the Armory Warehouse, which once stood to the right of Bldg. No. 13, has been demolished. Also Bldg. No. 14, the Annealing Shop and Brass Foundry, which once stood just to the left of Bldg. No. 13, has also been torn down.

Along the north bank of the Armory Canal, Musket Factory Bldgs. No. 8, the Carpenter Shop, the Sawmill, and Grinding Mill; Bldg. No. 21, the Connecting Shop; Bldg. No. 7, the Millwright Shop, Bldg. No. 22, the Bell Tower Shop; Bldg. No. 6, the Machine and Stocking Shops; Bldg. No. 5, the Boring Mill; Bldg. No. 4, the Polishing Shop, and Bldg. No. 3, the Old Bell Shop, have all had their ruined walls levelled. At the far right, on the north bank of the Canal, can be seen what may be Bldg. No.17, the Old Pay Office, relocated from Arsenal Square in 1858, then Bldg. No. 2, the Armory Office Bldg., and finally the Engine and Guard House, with the wooden cupola on its roof, Bldg. No. 1.



The MUSKET FACTORY YARD FROM LOUDOUN HEIGHTS ABOUT 1886

Harpers Ferry NHP Negative No. HF- 492.

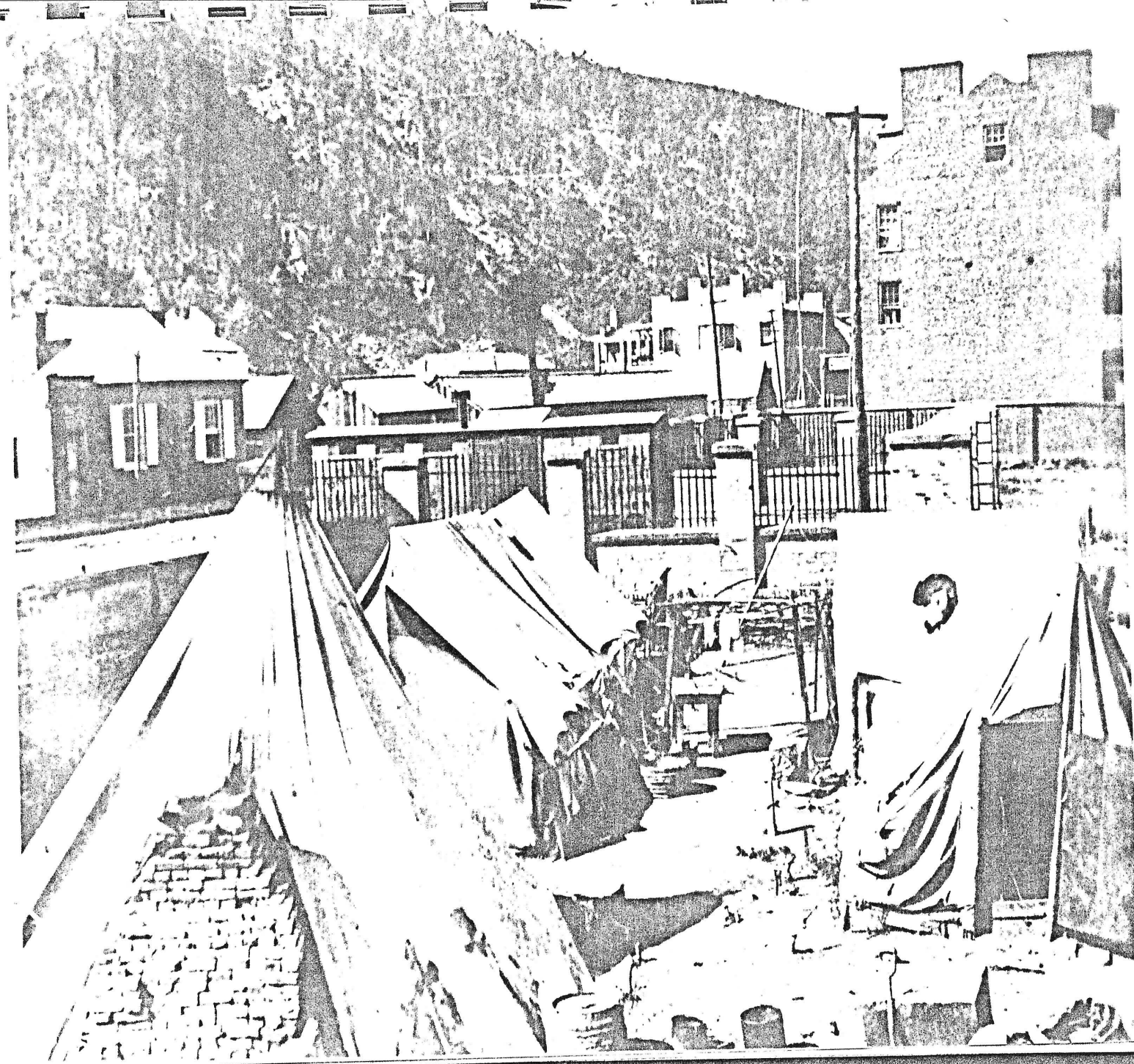
The Musket Factory yard stretches along the south bank of the Potomac River to the right of the photograph. All of the Musket Factory Shops and Storehouses have been demolished except the following structures: Bldg. No. 9, the Tilt Hammer and Barrel Welding Shop, standing on the north bank of the Armory Canal in the distance. In the far distance, on the south bank of the river, perhaps the ruined walls of Bldg. No. 18, the Rolling Mill; 3. The large Smiths Shop, Bldg. No. 13, with its 90 foot chimney stack. 4. Armory Office Bldg. No. 2, and 5. the John Brown Fort-Bldg. No. 1, the Engine and Guard House, with a wooden cupola on its roof. A few of the stone piers of the armory entrance gate are also still in place. The hipped roof one story house on the northeast corner of Old Arsenal Square, Lot 1, Block A, Shenandoah Street, is probably the Armory Superintendent's Old Office .

"CONTRABAND CAMP -HARPER'S FERRY, VIRGINIA

Harpers Ferry NHP Negative No. HF - 18
(U.S. Signal Corps Collection, National Archives
Still Picture Section- from estate of Captain
James Bown Johnston, 8th Michigan Cavalry.)

Photo probably taken in 1864 or 1865.

The tent camp of the escaped slaves is located on Wager Lot No. 11 just inside the main gate and entrance wall of the Musket Factory Yard. The hipped roof one-story brick building across Shenandoah Street to the left, is the Superintendent's Old Office, located on Lot 1, Block A., Shenandoah Street; the four or five one-story frame buildings located to the right of the Old Office, on Lots 2 to 7, Block A, are temporary structures erected by the Union Army, perhaps by the Military Railroad Corps. To the right of these, the two-story brick house is Armory Dwelling No. 1(Park Bldg. No. 36), the Master Armorer's new Quarters, which was built in 1858-59. The large three and one-half story brick building at the right, at the junction of Shenandoah and North Cliff(or Potomac) Streets, is Park Bldg. No. 9.

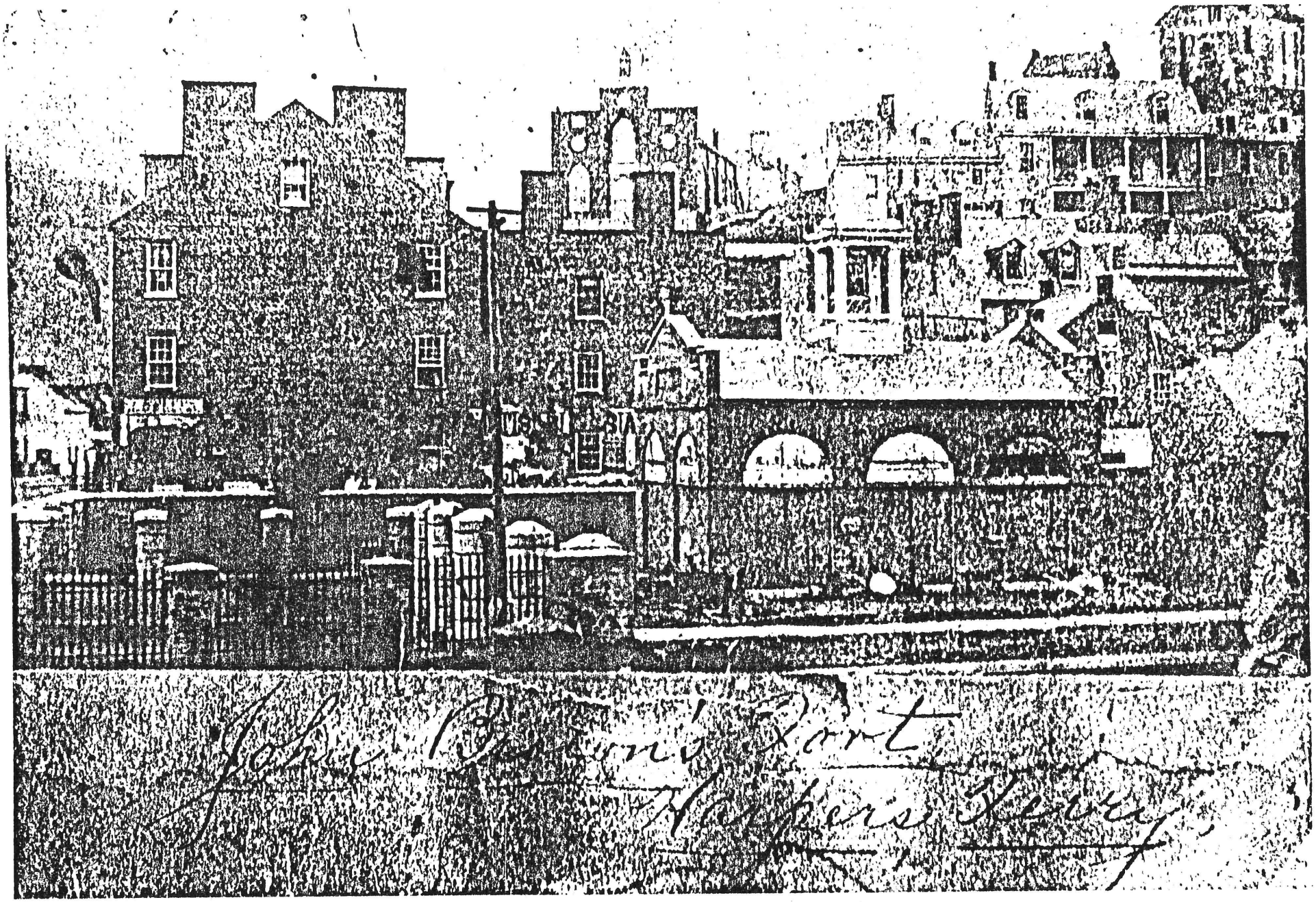


JOHN BROWN'S FORT, 1873-75.
HARPER'S FERRY, W. VA.

Harpers Ferry NHP Negative No. HF - 55

This photograph was probably taken in 1873-75. Musket Factory Bldg. No. 1, the Engine and Guard House, known as the "John Brown Fort," after the October 1859 raid, is the one-story brick building in the right center, with the wooden cupola on its roof. To the right of the "Fort" stands a part of the former kitchen wing of the Superintendent's Old Quarters, which was remodelled into an Armory Office Bldg., Bldg. No. 2, in 1847-48. Between Musket Factory Bldg.s No. 1(Park Bldg. No. 63) and No. 2, can be seen Park Bldg. No. 7, Frederick A. Roeder's White Hall Tavern. The large three and one-half story brick building to the left of the "Fort" is Park Bldg. No. 9 and the three-story rear brick service wing is Park Bldg. No. 8. Gilbert Brothers Drug Store is located in 9.

In the foreground, to the left, can be seen the main gate and entrance walls to the Musket Factory Yard, which were located on Wager Lots No. 11 and 12.

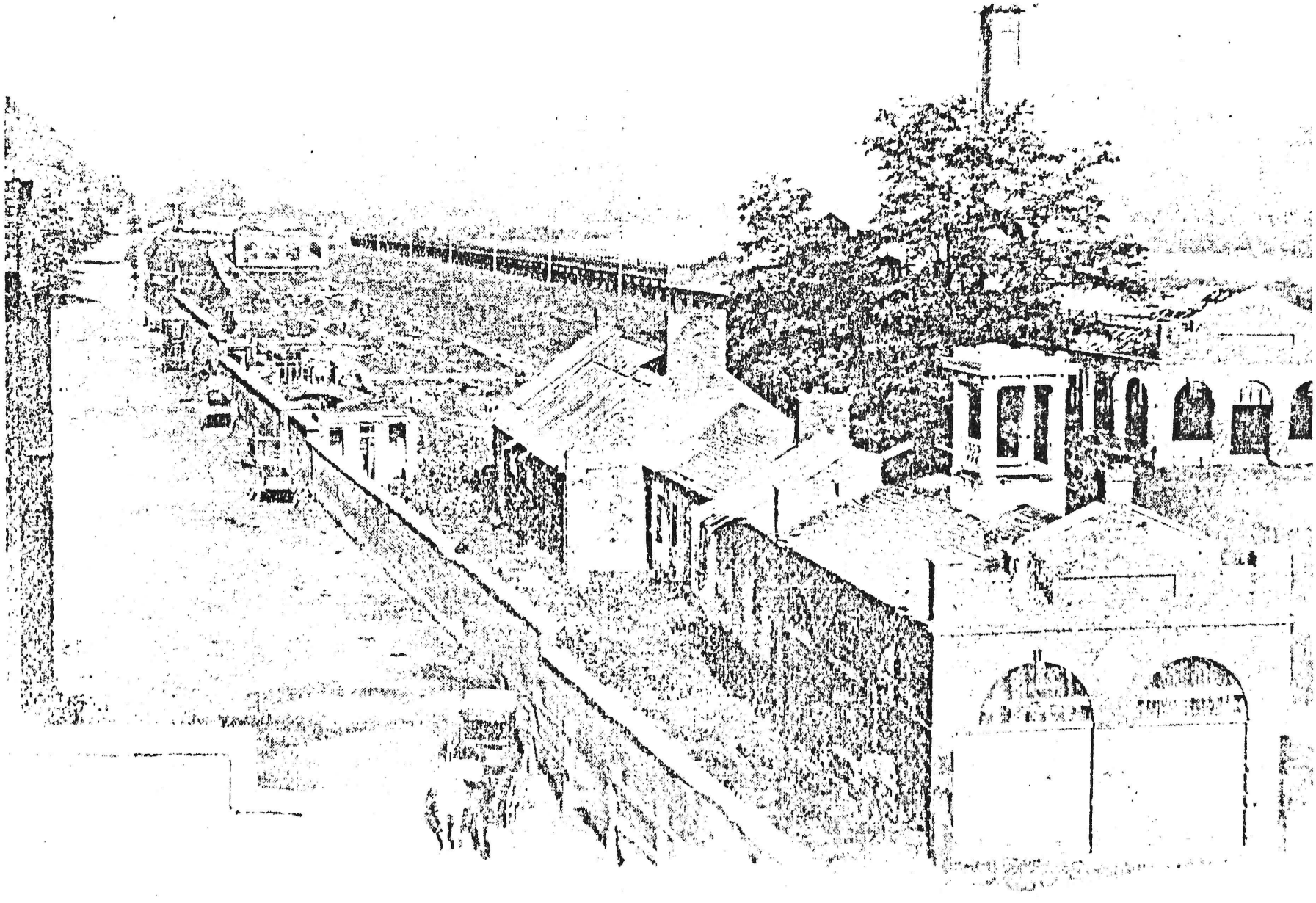


JOHN BROWN"S FORT AND THE OLD ARSENAL BEFORE THEY WERE REMOVED. Photo taken in 1886.

Harpers Ferry NHP Negative No. 539.

To the left is North Cliff or Potomac Street; to the right are the remains of the brick enclosing wall along the south side of the Musket Factory yard and Armory Canal. In the center distance are the one-story ruined brick walls of the Tilt Hammer and Barrel Welding Shop, Musket Factory Bldg. No.9. To the right of this is to be seen the iron trestle and main line west of the B. &. O. R.R., standing on top of the stone Potomac River wall. Behind the tree to the right, can be seen one ruined wing and the 90 foot tall chimney stack of Bldg. No. 13, the Smiths or Forging Shop.

In the right corner foreground is the east and south(rear) elevations of the John Brown Fort, Musket Factory Bldg. No. 1, the Engine and Guard House(Park Bldg. No. 63), with the wooden cuplola mounted on its roof. To the left of the "Fort" is Bldg. No. 2, the Armory Office Building, the former Superintendent's 1809 residence, which was remodelled for use as a office in 1847-48. The long one-story service wing to the main dwelling was added in 1828-29. The one-story ruined brick building, with three doors, located to the left of the main Office Building and abutting on the brick enclosing wall, is probably the "new priv y at offices " that Superintendent Alfred M. Barbour reported as being completed in his annual report for the fiscal year ending June 30, 1860.



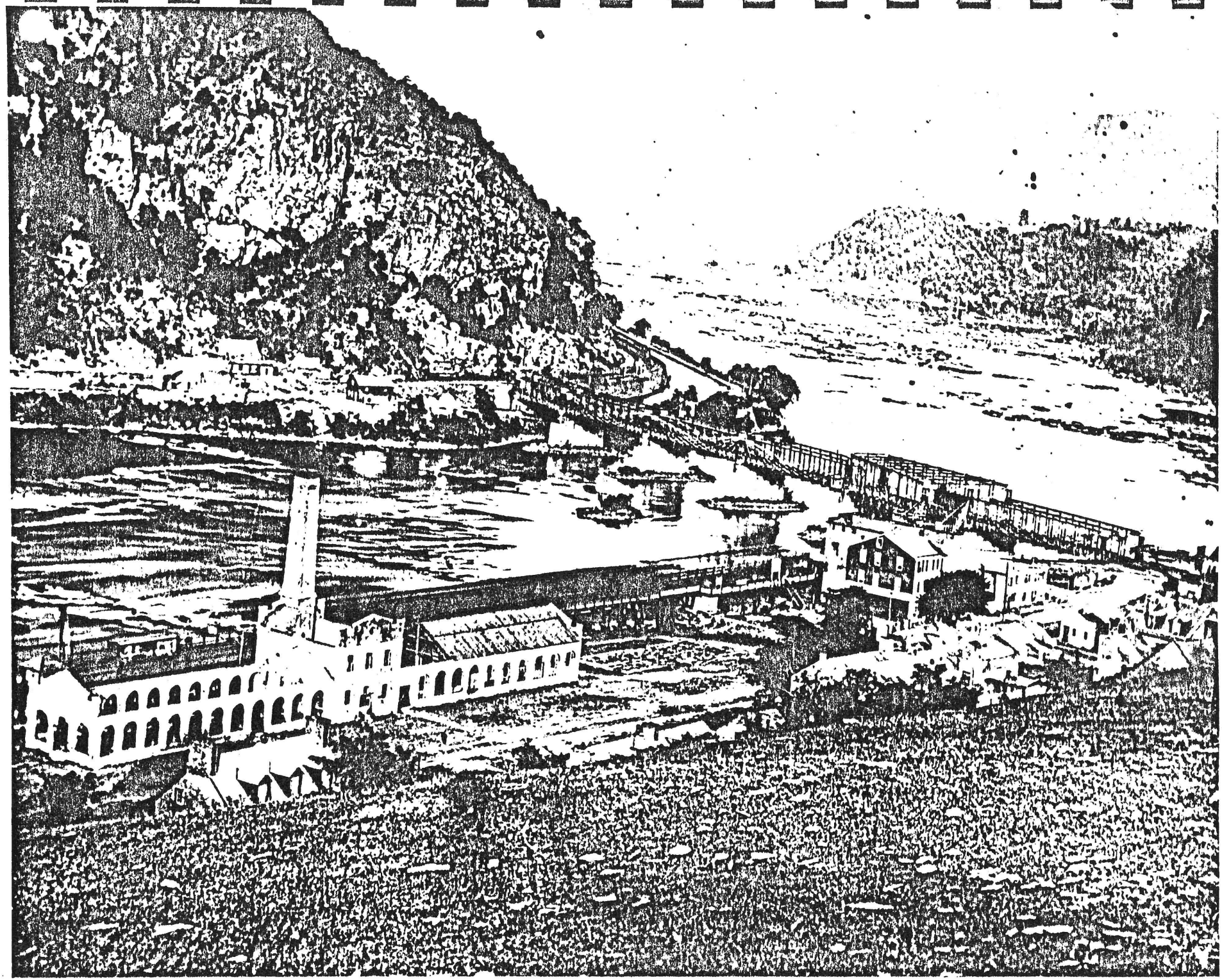
JOHN BROWN'S FORT AND THE OLD ARSENAL BEFORE THEY WERE REMOVED.

MUSKET FACTORY YARD, 1884 -1889

Harpers Ferry NHP Negative No. HF -45

At the left, an excellent view of the huge Smiths or Forging Shop, Musket Factory Bldg. No. 13. At the foot of the hill to the right can be seen the John Brown "Fort" (Park Bldg. No. 63), with a wooden cuploa on its roof, still standing on its original site. This is Musket Factory Bldg. No. 1, the Engine and Guard House. To the left of Bldg. No. 1 can be seen the roof of the Armory Office Bldg., Bldg. No. 2. The one-story house to the right of the "Fort", on the opposite side of Shenandoah Street, is probably the Superintendent's Old Office, which was located on Lot 1, Block A, of Old Arsenal Square. Just to the right of the "Fort" on the opposite side of North Cliff or Potomac Street can be seen dormer windows that were located in the roofs of Park Bldg. No. 8 and 9.

To the right of the Smiths Shop, Bldg. 13, can be clearly seen the stone foundations of Musket Factory Bldg. No. 12, the Warehouse. (See HF- 113, following page) for a continuation of this view to the right).



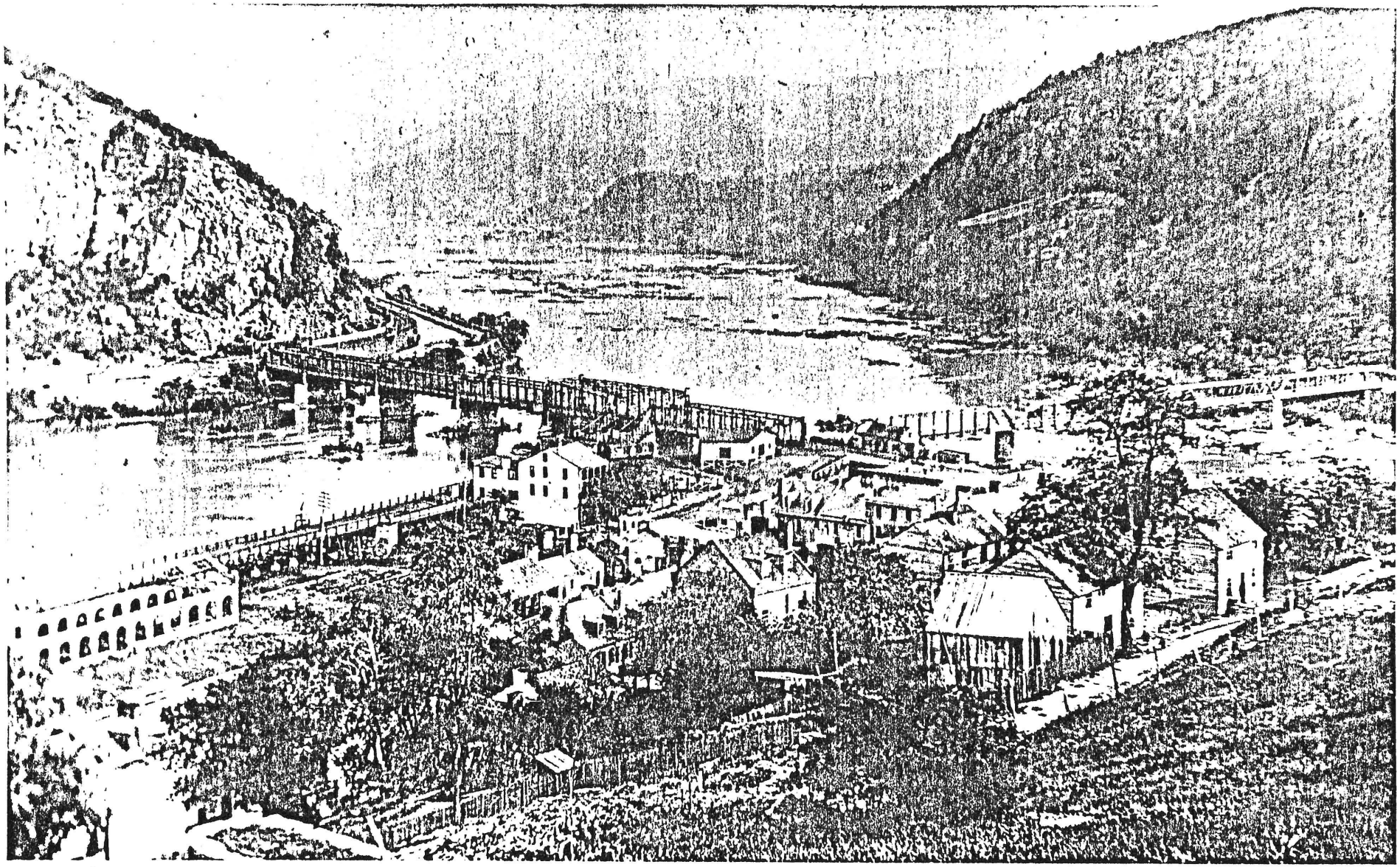
No. 23

MUSKET FACTORY YARD, 1884 - 1889

HF- 113, Harpers Ferry NHP Negative.

This photograph was probably taken on the same day as the preceeding photo, HF- 45.

At the left can be seen the east wing of the large Smiths or Forging Shop, Musket Factory Bldg. No. 13, to its right are the the stone foundations of Musket Factory Bldg. No. 12, the Warehouse. On the opposite side of the Musket Factory Street is the "John Brown Fort,"(Park Bldg. No. 63), with the wooden cupola on its roof. This is Musket Factory Bldg. No. 1, the Engine and Guard House. To the left of Bldg. 1 is the Armory Office, Musket Factory Bldg. No. 2.

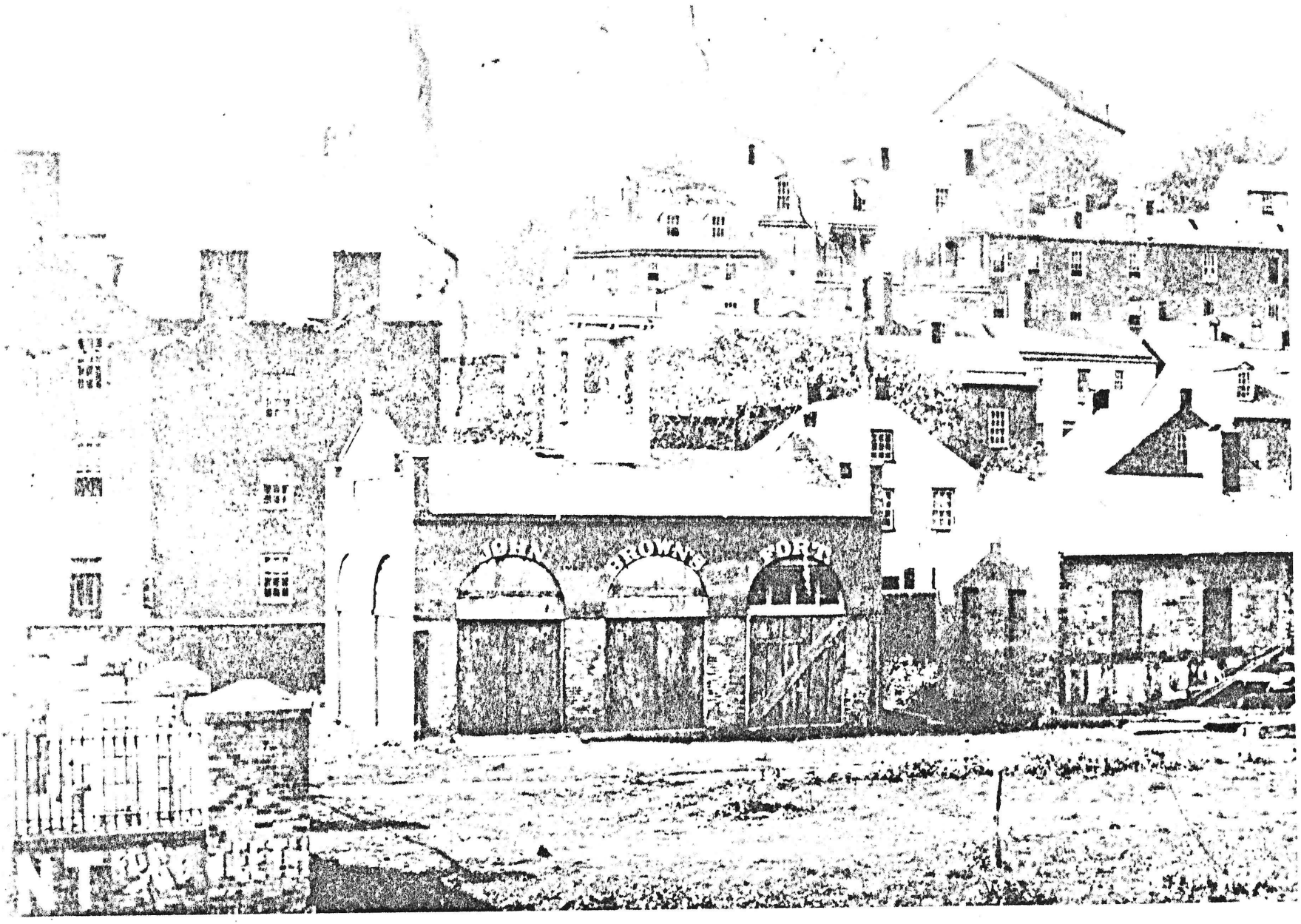


No. 24

JOHN BROWN'S FORT, HARPERS FERRY, 1882

Harpers Ferry NHP Negative No. HF - 379.

In center, the south(side) and north(front) elevations of Musket Factory Bldg. No. 1, the Engine and Guard House, also known as the "John Brown Fort," (Park Bldg. No. 63). To its right is the one-story rear wing of Armory Offices, Musket Factory Bldg. No. 2. Note that the Armory Gates and entrance walls, brick, with iron paling fence, at the left, is intact. This indicates that the property was still owned by the U.S. Government and this photo was taken before the U.S. sold the Musket Factory yards and its buildings on October 22, 1884.


JOHN BROWN'S FORT

The John Brown Fort in the 1889 Flood

Harpers Ferry Negative No. HF - 100.

The "John Brown Fort (Park Bldg. No. 63 and Old Musket Factory Bldg. No. 1, the Engine and Guard House), stands in the center half- submerged by waters of the 1889 flood. Note that to the right of the "Fort", the Armory Office Building. Bldg. No. 2, has been demolished, thus opening up the view to Park Bldg. No. 5, which is located on the south side of Potomac Street. Note to the left, the stone piers of the main entrance gate and the brick enclosing walls, with iron paling fence, appear to be largely intact.

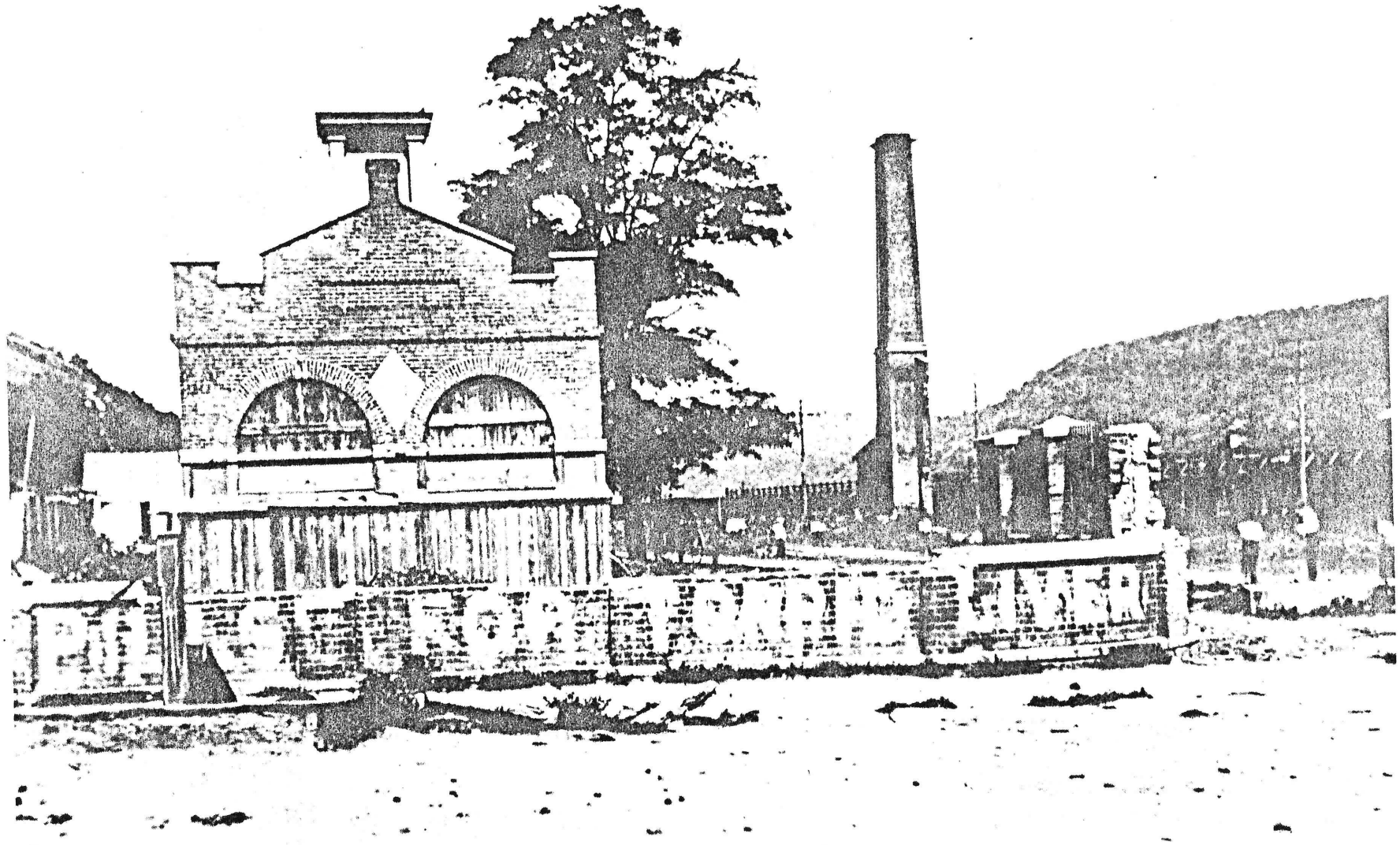


JOHN BROWN FORT, Ca. 1890-91.

Harpers Ferry NHP Negative No. 59

At the left is the east(side) elevation of the "John Brown Fort" (Park Bldg. No. 63), old Musket Factory Bldg. No. 1, the Engine and Guard House, still standing on its original site. To the right can be seen the 90 foot tall chimney stack of Bldg. No. 13, the Smiths Shop. The two wings and center buildings of this Forging Shop have been demolished.

Note that the iron paling fence and the iron gates of the Musket Factory Main gate and entrance walls are missing. These were purchased by Alexander Murphy of Harpers Ferry to protect his coal yard. The original iron fence and stone gates still stand on the Murphy heirs' Buena Vista farm near Harpers Ferry in 1981.

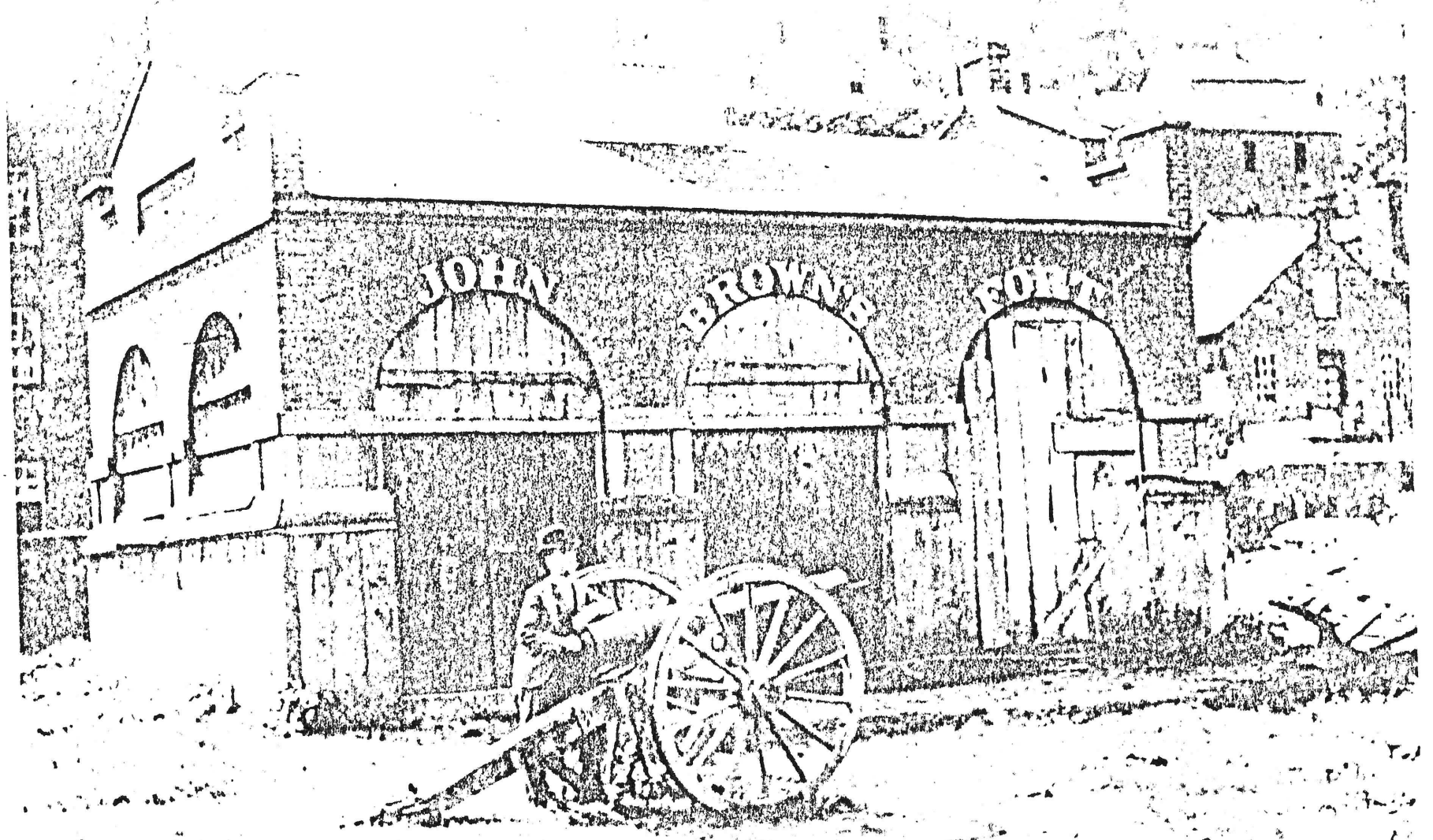


No. 27

The JOHN BROWN FORT, 1890-92

Harpers Ferry Negative NO. HF- 190.

East(side) and north(front) elevation of Park Bldg. No.63, the old Musket Factory Bldg. No. 1, the Engine and Guard House, better known as the "John Brown Fort". Note to the right that Armory Office Bldg., old Musket Factory Bldg. No. 2, has been demolished. The removal of the Offices opened up the excellent view of Park Bldg. No. 5. which stands to the right of the "fort" and on the south side of Potomac Street.


JOHN
BROWN
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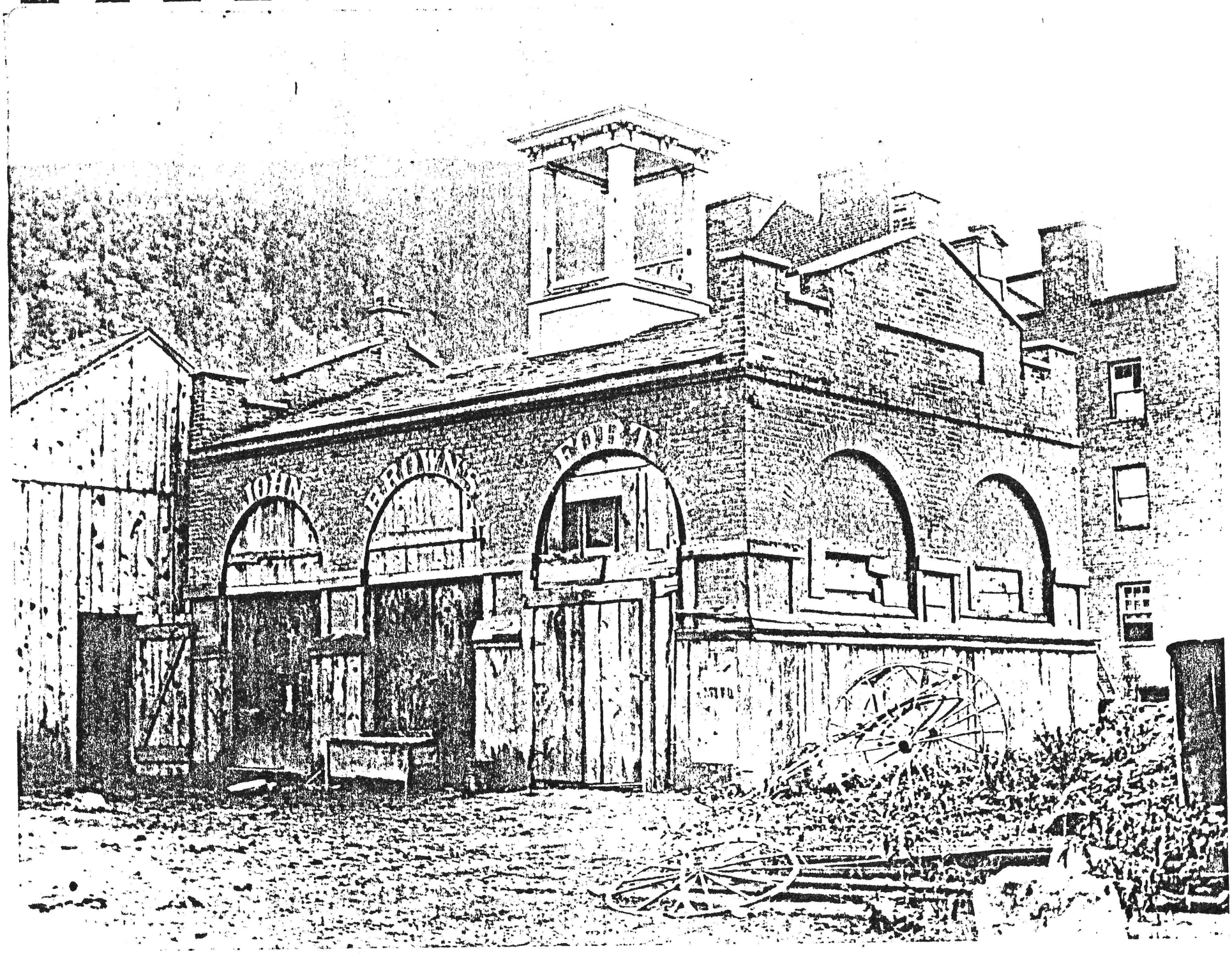
No. 28

JOHN BROWN" FORT, 1890-1892

Harpers Ferry NHP Negative No. HF- 495.

A view of the north(front) and west(side) elevations of the John Brown Fort(Park Bldg. No. 63), the old Musket Factory Bldg. No. 1, the Engine and Guard House, which had been built in 1847-48. To the right of the "Fort" can be seen Park Bldg. No. 8, the rear 3-story brick service wing to Park Bldg. No. 9.


JOHN BROWN'S FORT

No. 29

MUSKET FACTORY YARD FROM LOUDOUN HEIGHTS, 1892 - 1896

Harpers Ferry NHP Negative No. HF - 99.

This photograph was taken after 1892 because the B. & O. R.R. has started to relocate its main line (see upper right) from its iron trestle on top of the Potomac River Wall, to a new location on top of the Armory Canal, which had been filled in and covered with an embankment. The photo was also taken prior to 1896, because St. Peter's Roman Catholic Church stands in the center of the picture in its original format. The remodelling of the church to its present form began in 1896.

Thomas H. Savery's pulp and paper mill, erected after 1887, can be seen in the upper right hand corner of the photo, adjacent to the iron railroad trestle. It stands on the approximate site of the Rolling Mill, Bldg. No. 18.

High Street comes down the hill at the right, the second house from that street, standing on the south side of Shenandoah Street, is Armory Dwelling House No. 1(Park Bldg. No. 36), the Master Armorer's new Quarters, built in 1858-59. To its left stands Armory Dwelling House No. 2, the Master Armorer's Old Quarters(Park Bldg. No. 34-35), built 1812. House No. 2, a two- and -one-half brick house in 1859, was greatly remodelled into a three and one-half story structure in 1870-72. Id Indemiately

Directly south(below) Armory Dwellings No. 1 and 2, on the south side of the Winchester and Potomac Railroad tracks, stands the large town Market House, designed by Major John Symington and erected in 1846 - 1847 . This is the large two-story brick building with an arched first story.



No. 30

MUSKET FACTORY YARD FROM LOUDOUN HEIGHTS,
1896 - 1901

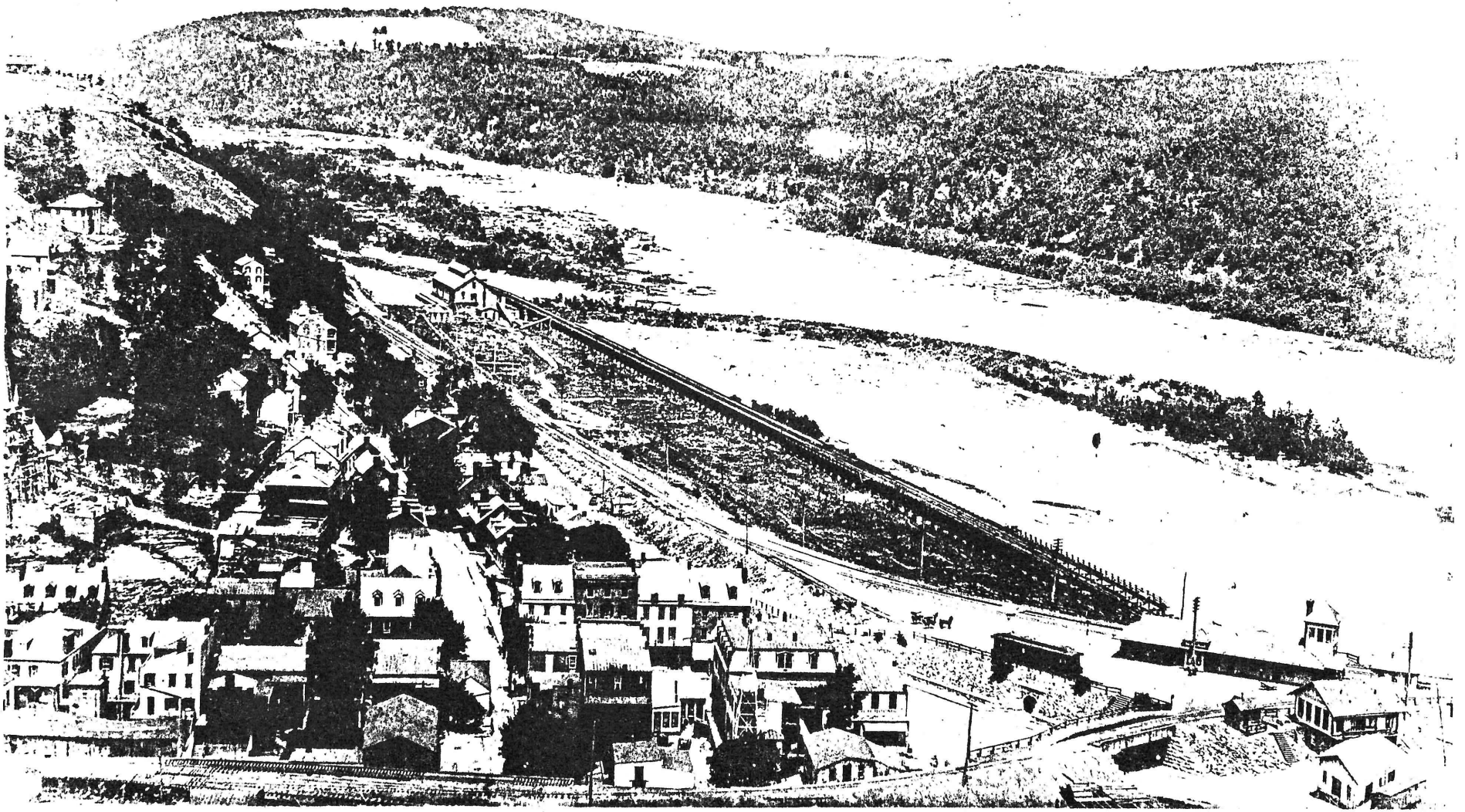
Harpers Ferry NHP Negative No. HF- 92

This photograph was taken after 1896, because the remodelling work is in progress on St. Peter's Roman Catholic Church at the right side of the photograph. The picture was taken prior to 1901, because Park Bldg. No. 3, fronting on High Street in the center of the photo has not yet been rebuilt into its present format.

The Baltimore and Ohio Railroad main tracks west have been shifted from their 1838 position on the iron trestles atop the stone Potomac River wall to a new location on top of the old Armory Canal along the south side of the Musket Factory Yard. The canal has been filled in and an embankment rises over it on which the tracks stand. The small white stone monument near the approach to the new railroad station(with several horses and carriages adjacent) marks the original site of the "John Brown Fort'(Park Bldg. No. 63- the Old Musket Factory Bldg. No. 1- Engine and Guard House).

At the far or upper end of the Musket Factory yard, adjacent to the iron trestles, can be seen Thomas H. Savery' pulp and paper mill, which is built on the approximate site of Muskat Factory Bldg. No. 18, the Rolling Mill.

High Street comes down the hill in the center. All the structures situated to the right of that street and on the south(lower) side of Shenandoah Street are located on Old Arsenal Square, Lots No. 1 to 7, and were constructed after 1870. All of these commerical structures were demolished by the National Park Service in 1958 in order to restore Old Arsenal Square.



No. 31

MUSKET FACTORY YARD FROM MARYLAND HEIGHTS,
1896 - 1901

Harpers Ferry National HP Negative No. HF- 96.

This photograph was taken after 1896, because remodelling work which started on St. Peter's Roman Catholic Church that year, is in progress. The picture was also taken before 1901, because Park Bldg. No. 3, fronting on High Street, has not yet been rebuilt in its present format. This work took place in 1901-02. In the left foreground can be seen the lower end of the Musket Factory yard, the stone river wall erected 1837-40, and the iron trestles of the B. & O. Railroad. In the center is the new railroad station and the new railroad bridge across the Potomac. The older Potomac bridge is in the lower left hand corner, as is the Shenandoah Toll bridge.

The small white stone marker near the approach to the station(between Park Bldgs. 9-8 and No.7) marks the original site of the "John Brown Fort" (Park Bldg. No. 63- the Musket Factory Bldg. No. 1- Engine and Guard House), from its construction in 1847-48 to its removal in 1892.

The mass of commerical structures on the south(left)side of Shenandoah Street and above(or west) of the Winchester and Potomac Railroad line, are located on Old Arsenal Square, Lots No. 1 to 7, Shenandoah Street. All of these buildings were constructed between 1870 and 1880.

On the shore off the Shenandoah River can be seen old Armory Dwelling House No. 43, the greatly remodelled First(1803) quarters of the Paymaster, and just above and to the right of it, the large two-story brick Market House, which was built by Major John Symington in 1846-47 for the use of the town.

Returning to the Musket Factory Yard, the stone foundations of Bldg. No. 12, the Warehouse, and of Bldg. No. 13, the large Smiths Shop, can be seen running parallel with the river wall.

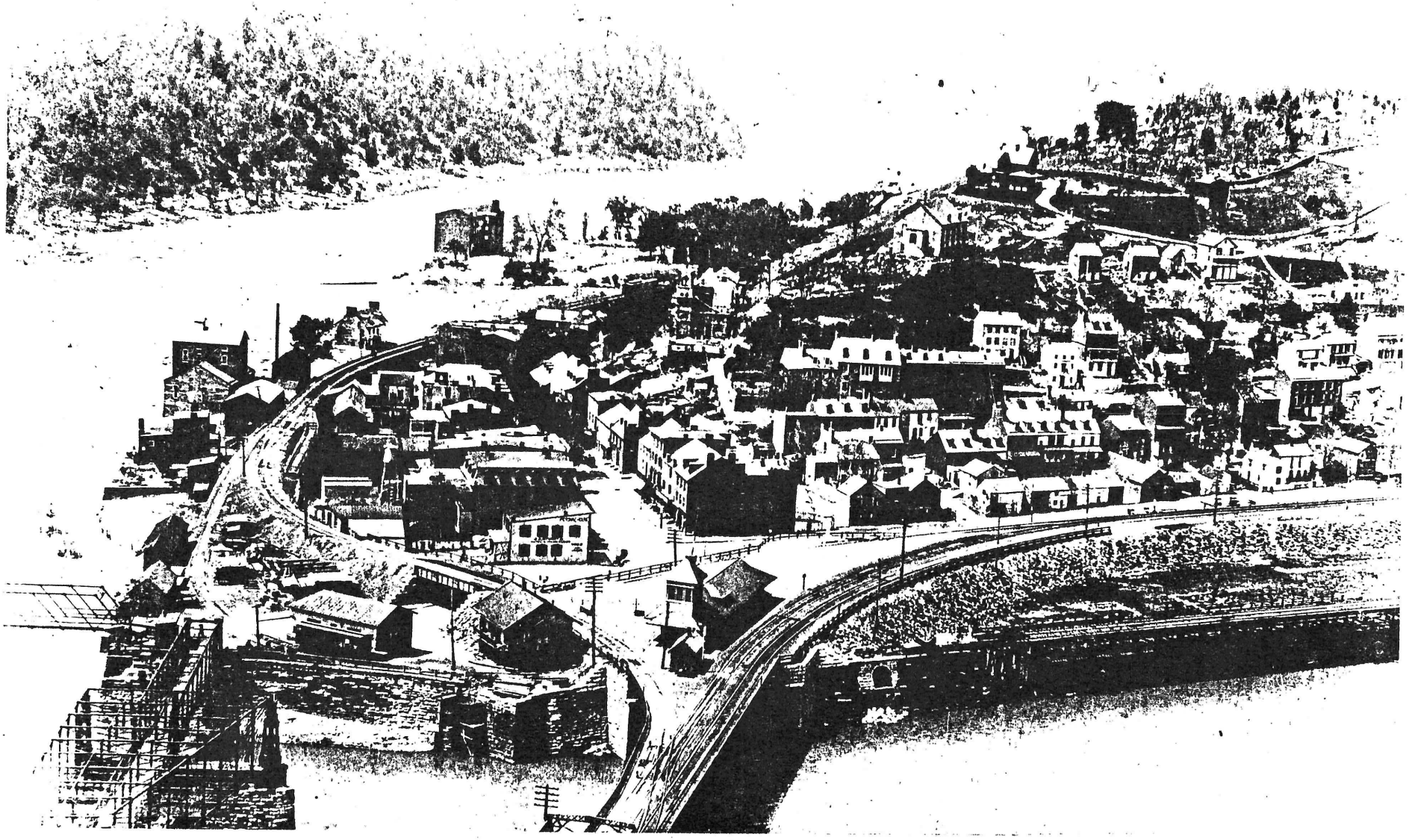


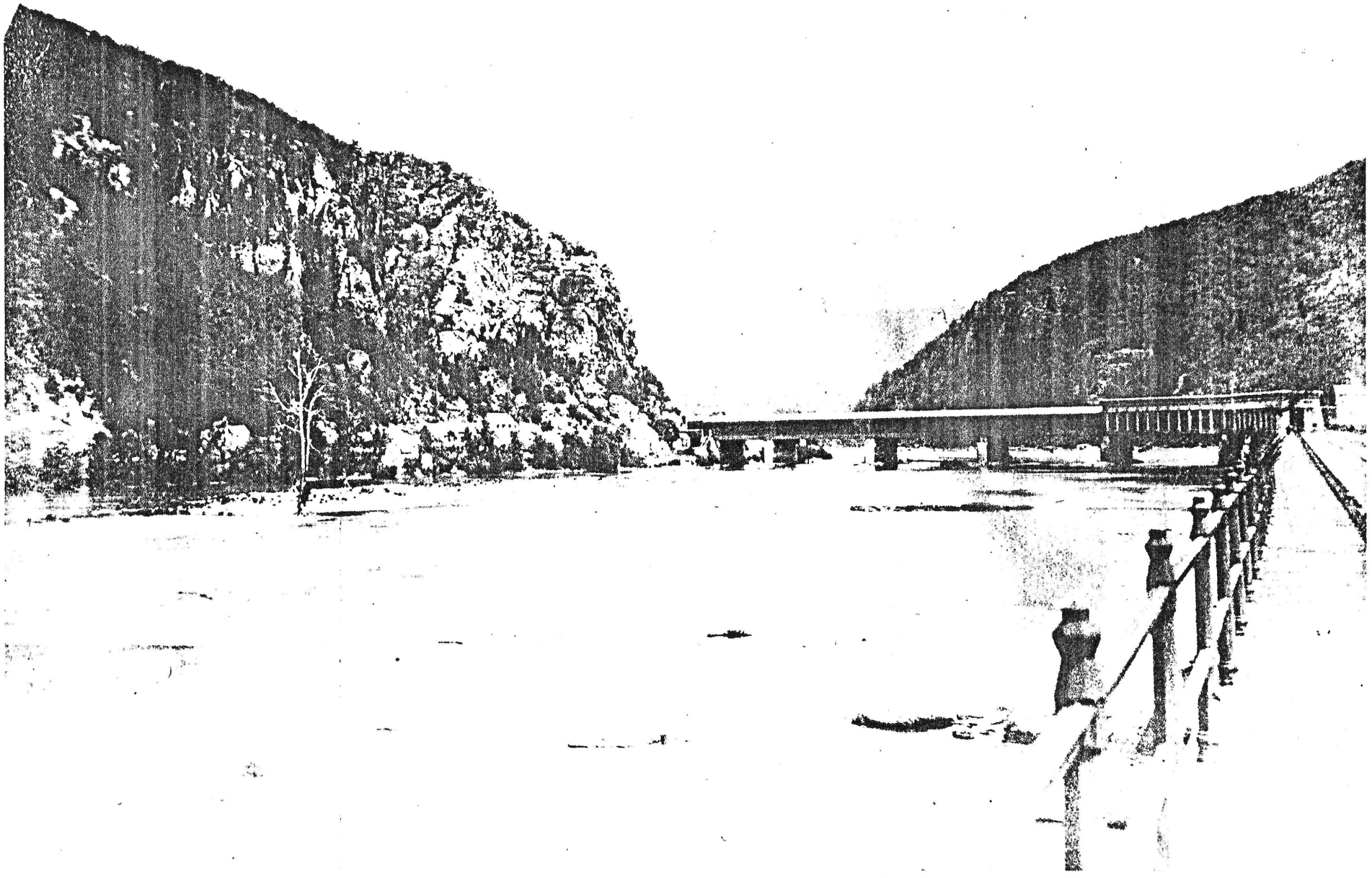
Photo No. 32

Harper's Ferry Potomac Bridge, 1859

Harpers Ferry National Historical Park Neg. HF -65

This view, probably taken in October 1859, was made from the wooden platform on top of the Baltimore and Ohio Railroad iron trestle that stood astride the B.&O and U.S. Armory river walls. The view looks east along the river front to the B.&. O. wooden railroad and toll bridge.

Buildings of the C. &. O. Canal are visible on the far(Maryland) side of the river.



National Archives

HF-65

This photograph taken about 1860 was most likely used by the artist as the basis for the print on the opposite page.

Photo No.33

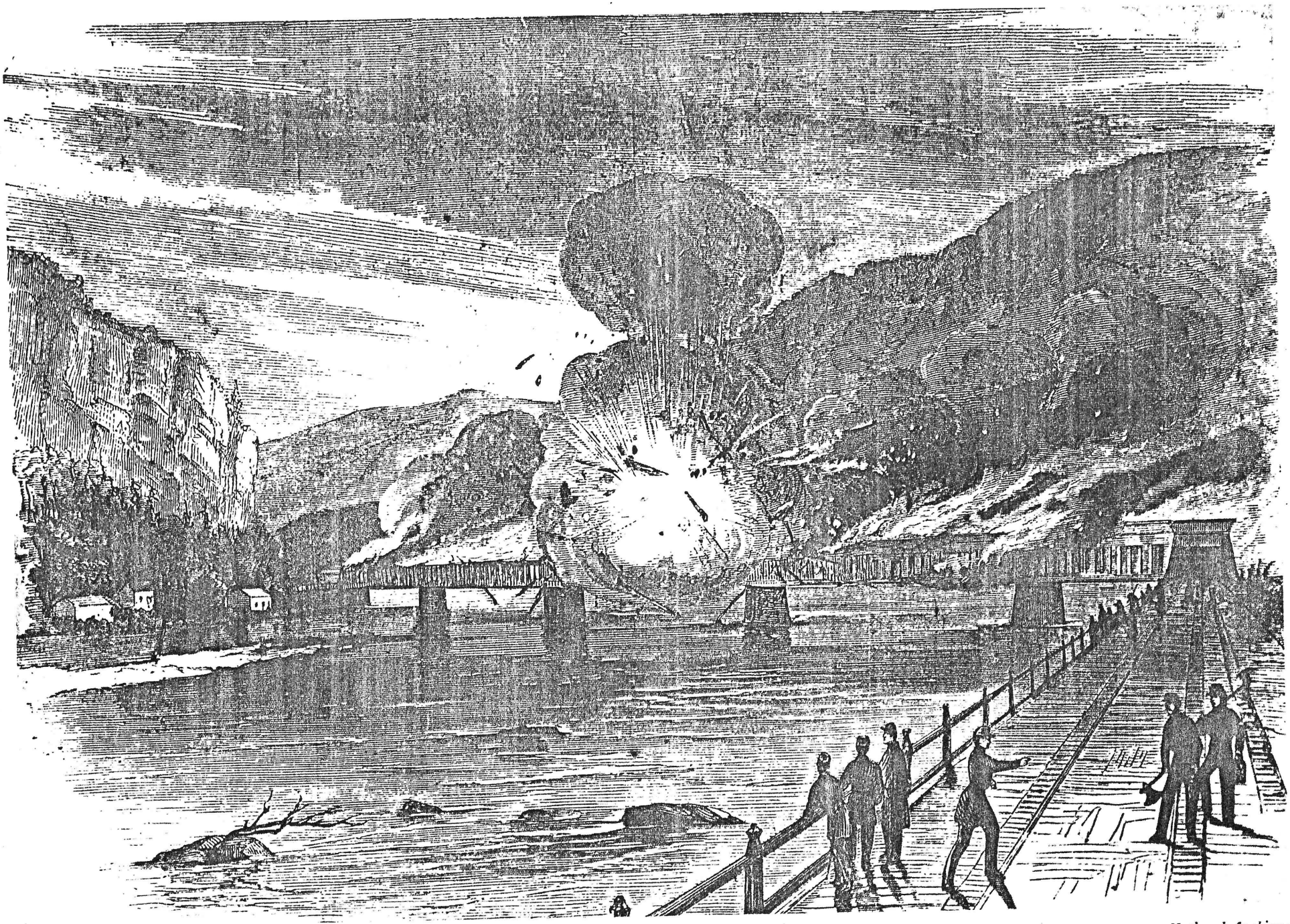
"Destruction of the Railroad Bridge over the Potomac River, at Harper's Ferry, by the Rebels, June 15, 1861"

From Harper's Weekly, June 6, 1861, page 429.

Harpers Ferry National Historical Park Neg. HF -102

The destruction actually took place on June 14, 1861.

View made from top of B.&. O. trestle looking east towards the wooden bridge.



National Archives

Destruction of the '-oad bridge by the Rebels (June 14, 1

HF-102

From *Harper's Weekly*, July 6, 1861

MAP NO. 8

1844

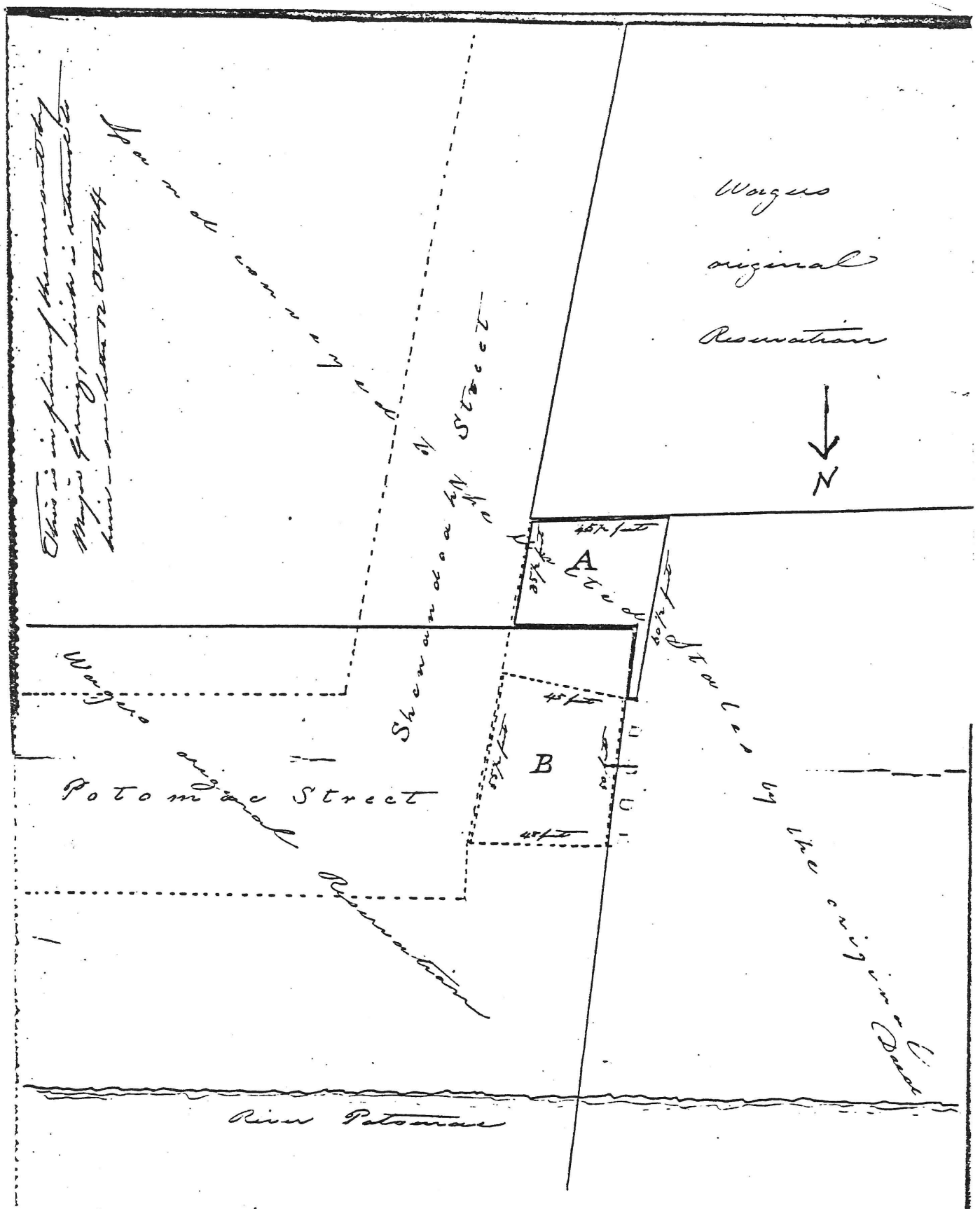
"Plat of Land to be Exchanged by the United States and the Wager Family at the Junction of Potomac and Shenandoah Streets, Harpers Ferry, Va.," September 9, 1844. Plan prepared by Major Henry K. Craig, Superintendent of the Harper's Ferry Armory

From National Archives, Washington, D.C.. Record Group 156, Ordnance Department, Letter Received, C-139, September 9, 1844. Harpers Ferry National Historic Park Map No. 68, Park Map Case, Drawer No. 4.

This plat illustrates an unexecuted plan developed by Major Henry K. Craig to improve the main (lower or east) entrance to the U.S. Musket Factory by giving Lot A (Part of Wager Lot 12 and the 15 foot wide alley between Lots 12 and 13) to the Wager family in exchange for Lot B, which included the northern part of Lot No. 12 and the extant street leading into the Musket Factory Yard.

This plan, if carried out, would have have widened the exisiting narrow street leading to the Musket Factory. This idea was changed by Major John Symington in his letter to the Chief of Ordnance dated December 12,1844 (See Map No.2, page 377) to an outright purchase by the United States of Wager Lots 12 (A) and 11, which [hemed] in the street leading to the Musket Factory(See text page 37).

On Map No.11, five of the six cut stone gate posts that formed the entrance to the yard, erected by Major Craig in 1843, are shown on the west(right)side of Plot B.



A. The part included in full red lines is to be conveyed to Wagus. It is the part described in the Deed as marked A. B. C. D.

B. The part included in dotted red lines is the part to be conveyed by Wagus, in exchange, for the Avenue as above

MAP NO. 9

"Plat of Wager Lots No. 12 to 17 inclusive", dated September 1, 1848, Harpers Ferry Armory. Map submitted by Armory Superintendent John Symington to Chief of Ordnance on February 16, 1849.

From National Archives Record Group No. 156, War Department, 1849, Ordnance 69 (See Harpers FERRY NHP Microfilm Reel No. 23, Vol. 12 , p. 1109). Harpers Ferry NHP Map No. 74, Map Case, Drawer No. 4.

This map shows the portions of Wager Lot No. 15, subdivision No. 4, and also of Wager Lots No. 16 and 17 that were being purchased in 1847-49 in order to widen the 15 foot wide alley into a 40 foot wide firelane and street.

On March 3, 1849, Congress made a special appropriation of $ 200.00, on the basis of this plat, to purchase the marked portion of Wager Lot 15, subdivision 4. On May 28, 1849, the owner of the lot, Mrs. Susuan Downey, sold that section to the United States. The lot was 18 feet wide and 25 feet deep.

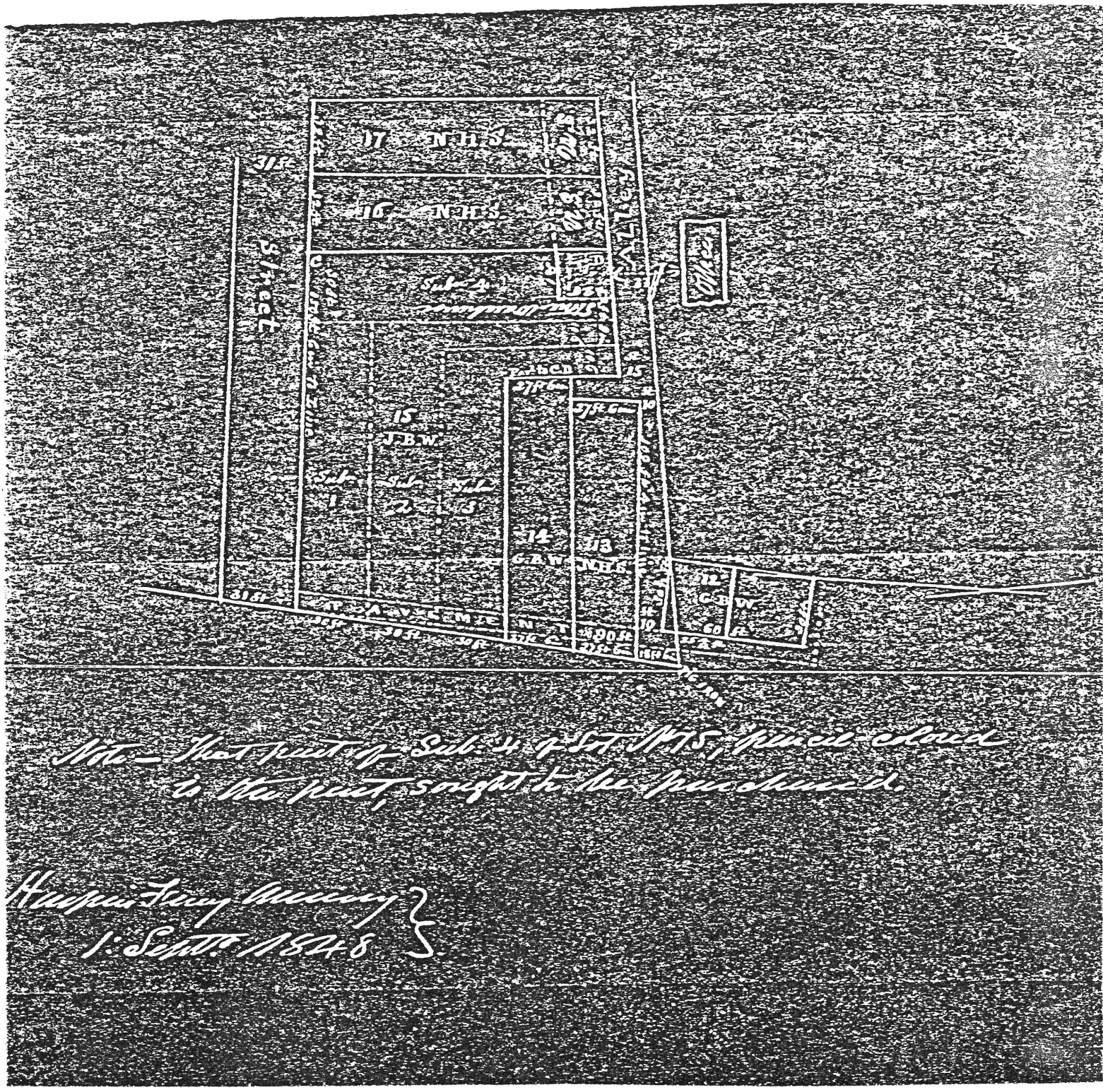
Present Park Bldg. No. 7 stood in 1847-48 astride Wager Lot No. 15, subdivisions 2 and 4, adjacent to the section of 4 that Downey sold to the United States, as a two-story stone warehouse 24 by 40 feet size. The building had been erected in 1838-39. The owner of Bldg. No. 7, Frederick A. Roeder, sold a section of Bldg. 7 and the land it stood on, 24 feet wide and 25 feet deep, to the United States On February 13, 1856 for $ 1,700.00. The U.S. then demolished its section of Bldg. 7 in order to widen North Cliff or Potomac Street into a 45 foot wide street.

Note that Musket Factory Bldg. No. 2, the Central Office Bldg., was located 33 feet directly north of the original(1835) northern boundary of Wager Lot 15, subdivision No. 4.

See text, pp. 147-52 for 1847-51 purchase of land and the construction of North Cliff Street. See text, 255-258, for 1855-56 purchase and completion of North Cliff Street.

Wager Lot No. 12 on Map No. 9 was purchased by the United States in 1847-48 at a cost of $ 9,999.35 in order to improve the formal main(east) entrance to the Musket Factory.See text, pp. 152-156.

On June 8, 1848, the United States purchased the small marked northern ends of Wager Lots 16 and 17 from the owner, Frederick A. Roeder,paying $ 237.00 for each vacant lot. On August 26,1856, the U.S. purchased the balance of Wager Lot 17, paying Frederick A. Roeder, the owner of the land, $ 1,165.66, and John G. Wilson, the owner of the stable on the property, $ 300.00. The large stone and frame stable was then demolished on Lot No. 17 was made into Wager Alley or street in 1856-57.



Note — Short Street off Sub. 4 of Lot 14 N.T.S., Plan cited and is the first sought to be amended.

Hudson Tract Survey
1: Sept. 1854

MAP NO. 10

"Plat of Wager Lots 13, 14, 15, and 16 in Wager Six Acre Reservation, Harpers Ferry, Virginia, 1855.

Plat submitted by Armory Superintendent Henry W. Clowe to Col. Henry K. Craig, Chief of Ordnance, on July 24, 1855.

Map from National Archives Record Group 156. War Department, Ordnance, Letter Received, 216-C -1855 (Harpers Ferry NHP Micro film Reel 25, Volume 8, page 748) Harpers Ferry NHP Map No. 67, in Map Case, Drawer No. 3.

Superintendent Clowe submitted this plat to illustrate his plan to complete the widening of North Cliff street to its junction with Shenandoah Street into a 40 foot wide street and firelane. (Text,pp.255-258).

1. Wager Lot No. 16(Marked "Roeder - 15). Frederick A. Roeder, the owner of Lot 16, had sold the north end (marked 15, 32 feet wide and 25 feet deep, to the United States on June 6,1848 for $ 237.00 to be made into a 40 foot wide street.

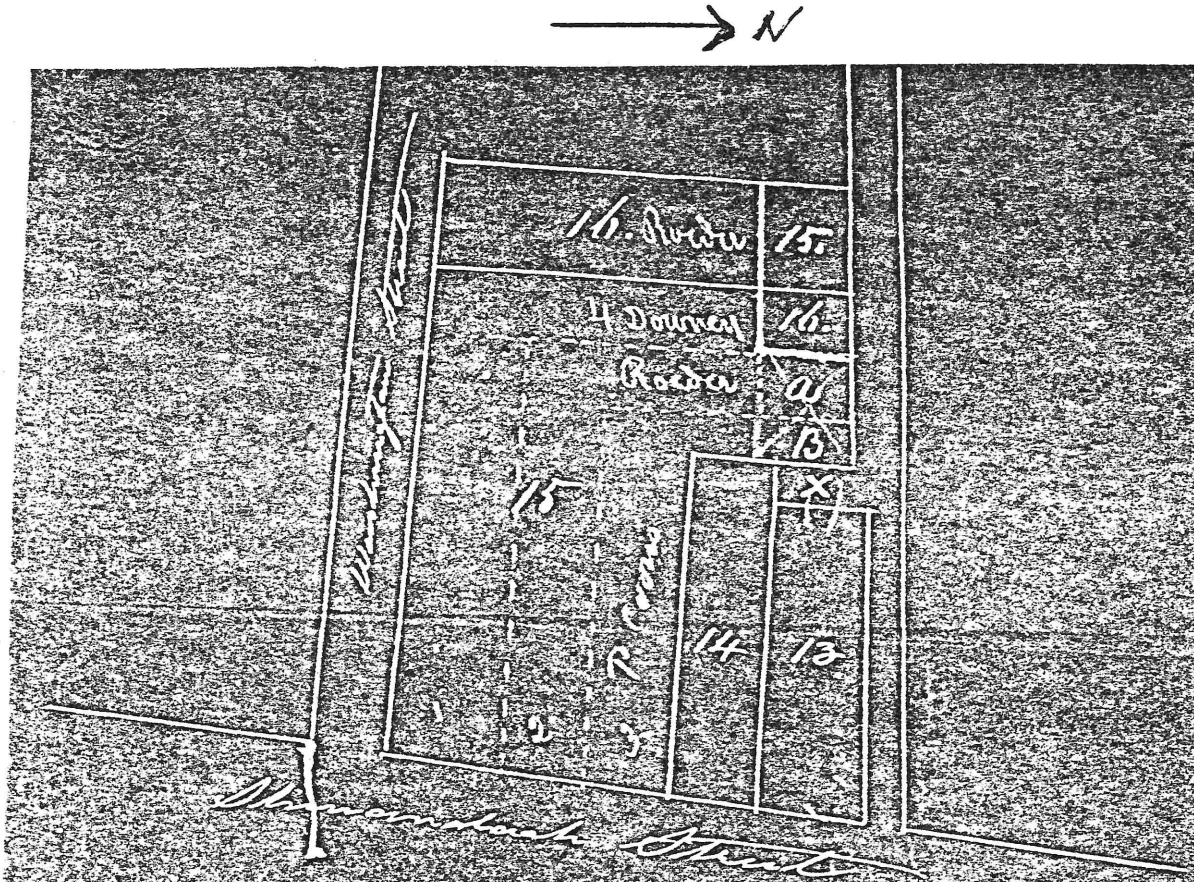
2. Wager Lot 15-subdivision 4 (marked "Downey -16"). Mrs. Susan A. Downey, the owner of this property, had sold the northern end, marked 16- 18 feet wide by 25 feet deep, to the United States for $ 200.00 in May 28, 1849 to be made into a 40 foot wide street.

3. Wager Lot 15, subdivisions 2 and 4, marked "Roeder - 16", in 1855 was the site of a two-story stone warehouse, 24 feet wide and 40 feet deep, that was owned by Frederick A. Roeder . This structure included part of present Park Bldg. No. 7. On February 13, 1856, Roeder sold the northern portion of his building, a section 24 feet wide and 25 feet deep, to the United States for $ 1,700.00. The U.S. then demolished is portion of Bldg. No. 7 in order to widen the 15-foot alley into a 40 foot wide street and fire lane.

4. Wager Lot No. 15, subdivision No. 3, marked "P. Coons and northern end fronting on 15-foot wide alley is marked "B". The town government of Harpers Ferry purchased this portion of the lot, marked "B", a vacant lot, for $ 227.08 1/3 on July 18,1856 to be made a part of the street. Lot 9 by 25 ft.

5. Wager Lot No. 13. On December 26, 1855 and Januarv 31,1856, the United States purchased Wager Lot 13 for a total of $ 7,000.00. Noah H. Swyane, the owner of the land received $ 2,000.00 and John G. Wilson, the owner of the 3½ story brick store and dwelling on the lot was paid $ 5,000.00. The United States demolished this house, which was 27½ feet wide and 40 feet deep in April 1856 in order to widen North Cliff street to a standard 40 feet width for its entire length to its junction with Shenandoah Street.

6. Wager Lot No. 14, the present site of Park Bldgs. No. 9 and 8 (also standing in 1855) became a corner lot in April 1856.



1 2 3 4 are subdivisions of the Lot 15, as per order of Court of 1835

a — The Building & part of Subdivision 2 of Lot 15 now owned by Roeder and provided for in the Appropriation 1834-5.

B — The integral portion of Subdivision 3 of Lot 15, now owned by Philip Coons, and unprovided for by the said Appropriation, for which he asks compensation.

Red X — A public alley for the convenience originally of Nos 13 & 14 — and no dispute about it, but goes with purchase of 13

In other respects the sketch is correct —

MAP NO 11

HARPERS FERRY ARMORY (VIRGINIA)

"That part of Wagers Six Acre Reserve, bounding on the Musket Factory Grounds". Scale of 60 feet to one inch 1854-57

From National Archives Record Group No. 156, War Department, Ordnance, "Arsenals of the United States," pp.34-35. Harpers Ferry National Historical Park Map No. 81, in Park Map Case, Drawer No. 3.

This map was established by the Ordnance Department in order to record the progress in acquiring and expending the total of $ 64,869.70 provided from Congress from 1846 to 1856 to improve the Musket Factory grounds by purchasing Wager Lots.

Congress voted $ 47,961.00 in 1846-49 and $ 16,908.70 in 1855-56 in order to carry out the following three projects:

1. Acquiring Wager Lots 11 and 12, together with the buildings standing on these properties, in order to improve the main (lower or east) entrance to the Musket Factory grounds.

2. The acquisition of entire Wager lots, or sections thereof, together with the buildings standing on these properties, that bounded on the south side of the 15-foot wide alley that ran from east to west between the north side of the Wager Six Acre Reseravtion and the south side of the U.S. Musket Factory canal or Mill Race and grounds.

The Armory demolished structures fronting on the alley and widened the alley into a 40 foot wide street which served as a fire lane to protect Musket Factory workshops and storehouses. The street was known as North Cliff Street and later as Potomac Street.

3. In 1856, for the acquisition of the main portion of Wager Lot 17 and the stable standing thereon so that this property could be made into a street

The demolition of the large stable on Lot 17 also reduced the danger of fire to Musket Factory buildings. The street, built in 1856-57, was then known as "Wager Alley."

See text, pp. 144 - 156, 244-245, and 255-261 for narrative histories of these three projects.

Legend for Map No. 10 (1854-57)

From Whom Purchased and When:				Recorded in	Voucher	Date	Total Amount
1. N.H. Swayne (1)	Lot	33	8 June 1847	Vol. 2,p.217	113	4/2/47	$ 440.00
2. Martin Grace	"	34	2 Oct. 1847	2,p.215	113	4/2/47	3,000.00
					106	4/"/48	30.00
3. Martin Grace	"	29	2 Oct. 1847	2,p.213	113	4/2/47	1,750.00
4. N.H. Swayne	"	28	8 June 1847	2,p.229	113	4/2/47	1,400.00 (sic)
5. Michael Foley	"	27	9 June 1847	2,p.207	113	" "	2,000.00
6. N. H. Swayne	"	26	8 June 1847	2.p.203.	113	"	3,083.33
7. N. H. Swayne	"	24	8 June 1847	2.p.223	113	"	450.00
8. A. Kennedy (2)	"	23	7 March 1848	2.p.253	106	4"48	900.00
9. G. B. Wager	"	22	1 July 1847	2.p.246	106	4"48	3,500.00
10. G. B. Wager	:	21	1 July 1847	2.p.189	113	4"47	3,000.00
11. N. H. Swayne	"	20	8 June 1847	2. p.193	113	"	3,333.36 (sic)
12. G. B. Wager	"	19	30 June 1847	2.p.181	113	"	2,570.00 (sic)
13. G. B. Wager	:	18	1 July 1847	2.p.178	113	"	2,606.00
14. F. A. Roeder	"	17	6 June 1848	2,p.244	106	4"48	237.00
15. F. A. Roeder	"	16	6 June 1848	2.p.239	106	"	455.00 (sic)
16. Susan Downey	"	15	28 May 1849	2.p.278	7	3"49	200.00
17. Henry Yost	"	12	1 July 1847	2.p.186	113	3"47	5,000.00
18. G. B. Wager	"	12	9 Sept.1847	2.p.237	106	4"48	4,999.33
Executor of Wager		12	25 Aug. 1848	2,p.235	-	-	------
19. N. H. Swayne	"	11	14 Nov. 1853	2.p.321	55	4"53	2,500.00
Assignee of Doran's heirs		11	13 Jan. 1854	2.p.325	55	" "	4,500.00
						$	45,953.99
Amount for a building on Govt.Land (Dr, Marmion)			(30 Nov.1847)	----------	113	4/2/47	2,000.00
Byrnes for Island in Potomac			(2 Feb. 1848)	2,p.256	106	4 " 48	1,500.00

(1) N. H. Swayne was the husband of Sally Ann Wager.
(2) A. Kennedy was a trustee for the Jefferson County Court, representing the estate of James B. Wager.

Legend to Map 10(Contined)(1854-57)

From Whom Purchased and When:

			Recorded in	Voucher		Amount
20.N. H. Swayne	Lot 13	26 Dec. 1855	Vol. 2,p.333	4	1/56	$ 2,000.00
J. G. Wilson	" 13	31 Jan. 1856	" 2,p.337	5	1/56	5,000.00
21. F. A. Roeder	Lot 15(north part of Lot 15,subdivisions 2 and 4, item 21 on map.]	13 Feb. 1856	Vol. 2,p.338	6	1/56	1,700.00
22.F.A. Roeder	Lot 17(portion marked 14½]	26 Aug. 1856	Vol.2, p.357	11	3/56	1,177.66
J.W. Wilson (for bldg.)	Lot 17 (on portion marked 14½]	26 Aug. 1856	Vol.2,p. 351	10	3/56	300.00

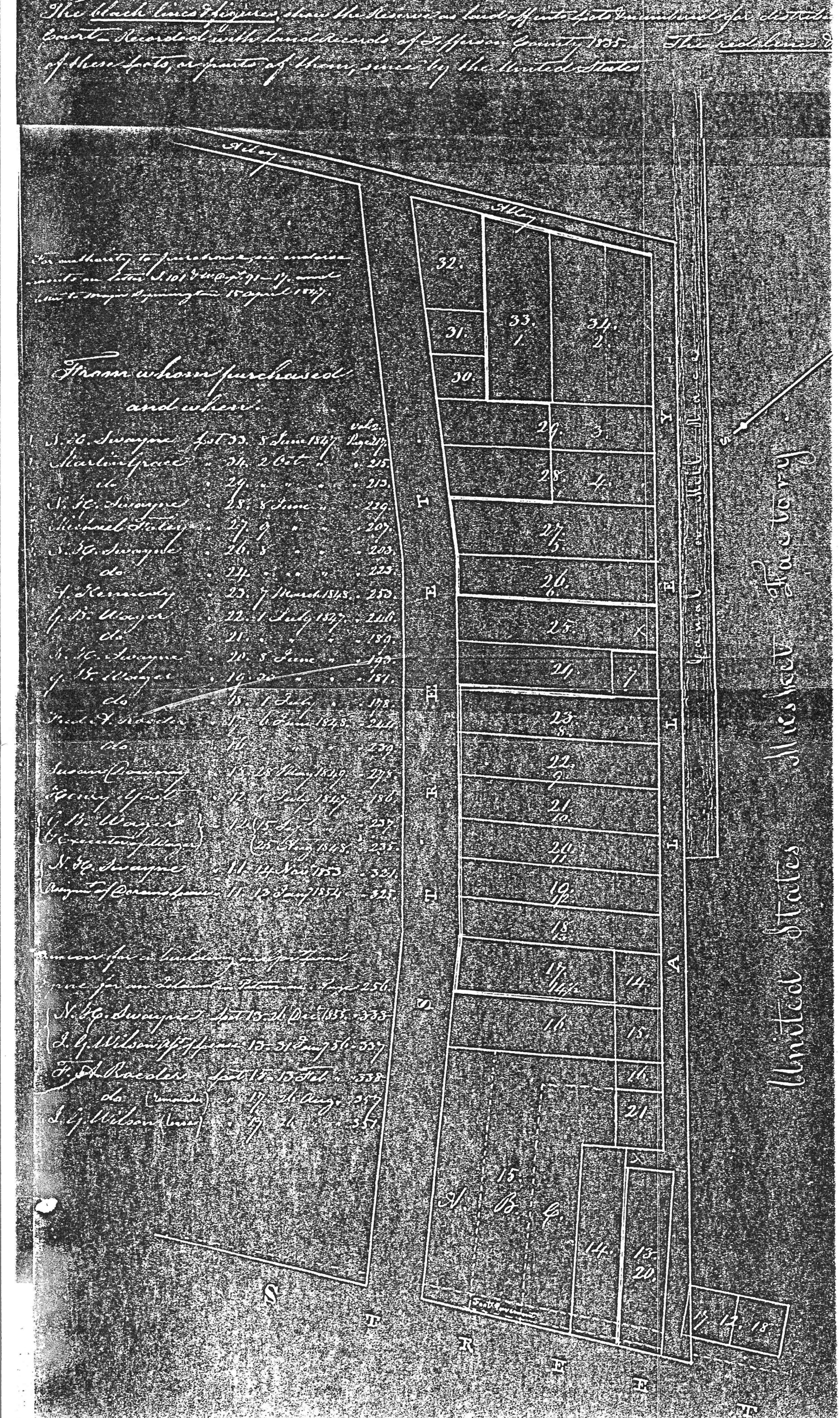
(Grand Total - $ 59,620.65]

" For Lot 25, see letters to (Master Armorer]Byington, 15 Sept. & 15 March, 1854)."

(The U.S. Armory had been unable to purchase any portion of Lot No. 25 in 1847-49, because the owner Alexander Kelly refuse to sell. Kelly did, however, grant the United States the right to use up to 25 feet in depth of the vacant northern end of Lot 25 in order to widen North Cliff Street, subject to his right to revoke this use of that portion of his land at his pleasure.

In 1854 Kelly proposed selling the 25 feet in depth street part of Lot No. 25 to the U.S. and to purchase adjacent vacant Lot No. 23 for $ 900.00, which was the same amount that the Armory had paid for it in 1848, including the 25 foot deep northern part of Lot 23 that had already been made into a street. Secretary of War Jefferson Davis approved this plan on September 15,1854 (Harpers Ferry Reel 19, Vol. 7, p. 668.). The 25 foot deep northern end of Lot 25 was valued at $ 224.66 and credited to Kelly's account towards the purchase of Lot No. 23. The vacant northern end of Lot 23 which had been made into a street, 25 feet in depth, was valued at $ 219.66 and deducted from the $ 900.00 price of Lot 23 by the Government. As a result of this deal, Alexander Kelly owed the United States $ 450.68 in cash in September 1854. Kelly took possesion of the balance of Lot 23, used it until after the Civil War, paying taxes on the land, but failed to complete payment of the sum ofv $ 450.68 due to the U.S.]

The black lines & figures show the Reserve as laid off into Lots & numbered for distribution
Court Records & with Land Records of Jefferson County 1855. The red lines &
of these Lots, & parts of Town sites by the United States.



For authority to purchase see entries on Letter S 101 & 102 & pp 91–97 and Letter Inquiry Springfield 15 April 1857.

From whom purchased & and where.

				value by Sec.
1	J. C. Swayne	Lot 33.	8 June 1847	
1	Marlin Grace	34.	2 Oct "	. 215
	do	29.	" "	. 213.
	N. C. Swayne	28.	8 June "	. 229.
	Michael Staley	27.	9 " "	. 207.
	N. C. Swayne	26.	8 " "	. 203.
	do	24.	" "	. 223.
	F. Kennedy	23.	7 March 1848	. 253.
	G. D. Wagner	22.	1 July 1847	. 246.
	do	21.	" "	. 184.
	N. C. Swayne	20.	8 June "	. 199.
	G. D. Wagner	19.	2 " "	. 181.
	do	15.	1 July "	. 178.
	Fred. F. Raeder	17.	6 June 1848	. 244.
	do	16.	" "	. 239.
	Susan Lewis	14.	28 May 1849	. 275.
	Henry Yost	12.	1 July 1847	. 180.
	G. D. Wagner (Executor of Wagner)	11.	15 Dec " 23 Dec 1848	. 235.
	N. C. Swayne	11.	12 Nov 1853	. 301.
	Assignee of Swayne	11.	12 Dec 1854	. 325.

Town lot in Lindsay subject to
one farm Lot Reserve. Page 256.

	N. C. Swayne	Lot 13.	21 Dec 1853	. 333.
	L. G. Wilson Assignee	13.	31 Aug 1856	. 337
	F. F. Raeder	Lot 15.	15 Feb	. 338.
	do (unsold)	17.	1 Aug.	. 357
	L. G. Wilson (unsold)	19.	21 "	. 357