United States Department of the Interior National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, How to Complete the National Register of Historic Places Registration Form. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

	The same
1. Name of Property	FEB - N
Historic name: Federal Square Historic District	t FEB R
Other names/site number:	
Name of related multiple property listing:	MAT. REALSTER OF THE
(Enter "N/A" if property is not part of a multiple	property listing
2. Location	
Street & number: 1 Federal Street	
	achusetts County: Hampden
Not For Publication: Vicinity:	
3. State/Federal Agency Certification	
As the designated authority under the National H	listoric Preservation Act, as amended,
I hereby certify that this nomination rec the documentation standards for registering prop Places and meets the procedural and professiona	perties in the National Register of Historic
evel(s) of significance:	local
Brona Simon	January 31, 201
Signature of certifying official/Title:	SHPO Date
State or Federal agency/bureau or Tribal	Government
In my opinion, the property meets d	oes not meet the National Register criteria.
Signature of commenting official:	Date
Title:	

Federal Square Historic District Name of Property

4. National Park Service Certification	
I hereby certify that this property is:	
ventered in the National Register	
determined eligible for the National Register	
determined not eligible for the National Register	
removed from the National Register	
other (explain:)	
Lon Deline	3/15/19
Signature of the Keeper	Date of Action
5. Classification	
Ownership of Property	
(Check as many boxes as apply.) Private:	
Public – Local	
Public – State	
Public – Federal	
Category of Property	
(Check only one box.)	
Building(s)	
District	
Site	
Structure	
Object	

Hampden, Massachusetts County and State

> EDUCATION/college/university LANDSCAPE/plaza/green

ne of Property		Hampden, Massachu County and State
Number of Resources within Pr		
(Do not include previously listed		
Contributing 9	Noncontributing 2	buildings
1	0	sites
0	3	structures
	3	objects
12	7	Total
Number of contributing resource	s previously listed in the Natio	onal Register 0
6. Function or Use	s previously listed in the Natio	onal Register 0
6. Function or Use Historic Functions	***************************************	onal Register 0
6. Function or Use Historic Functions (Enter categories from instruction	***************************************	onal Register 0
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Federal Square Historic District	Hampden, Massachusetts	
Name of Property	County and State	
7. Description	-	
Architectural Classification		
(Enter categories from instructions.)		
LATE19TH&EARLY 20 TH C. REVIVALS/Classical Revival		
MODERN MOVEMENT/Art Deco		
Materials: (enter categories from instructions.)		
Principal exterior materials of the property:		
Brick, concrete		
Brick/brownstone/concrete/wood		
Slate, rolled tar, metal		

Narrative Description

(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with a summary paragraph that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

Summary Paragraph

The Federal Square Historic District occupies an entire city block that is slightly larger than 15 acres in size (Figures 1 and 17). The block of Federal Square is bordered by Lincoln Street on the north, State Street on the south, Federal Street on the west, and Magazine Street on the east. St. James Avenue cuts across the southeast corner of the block for a few yards. Wrought-iron fencing defines the perimeter of the lot (Photos 1 and 2). The district's contributing buildings (numbered 101–105, 111, and 112) are former industrial buildings used for the manufacture of firearms. Those buildings with specific styles—as opposed to the two utilitarian buildings (105 and 112)—reflect the period in which they were built: Classical Revival for the industrial buildings constructed in the 1880s and 1890s, and Art Deco for those constructed in the 1940s. Significant features of the late 19th-century buildings include materials, which are brick walls with brownstone trim and slate roofs; and design features such as stepped parapet walls and end-wall chimneys, and entrance porticos resting on Doric columns. Significant features of the buildings from the 1940s include materials, which are brick with brownstone and concrete trim; and design features that include rusticated brickwork between window openings. The three principal buildings—101, 102, and 103— are laid out on three sides of a square encompassing a center green-Federal Square Green—and a parking lot. There is a security office at the opening of the perimeter fencing on Federal Street leading into Federal Square (Photo 3). Buildings 104 South and 104 North

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(sections remaining after the 2014 removal of the building's central portion), 105, and 112 are on the eastern one-third of the Federal Square block. Building 111 is south of Building 102 and is oriented toward State Street on the south rather than to Federal Street as are the three principal buildings. The historic district setting is park-like due to the presence of the Federal Square Green, and the feeling conveyed by the buildings and landscape is that of an institution rather than an industrial complex.

The Federal Square Historic District is part of the Springfield Armory complex, but outside the official boundaries of the Springfield Armory National Historic Site, which consists only of Armory Square. The entire Armory complex, on a hilltop (Springfield Hill) in the city of Springfield, is bisected by Federal Street. The National Historic Site buildings are on the west side of the street and the buildings in the Federal Square Historic District, the subject of the present nomination, are directly opposite, on the east side of the street (Photo 1, Figure 6). The buildings of the Federal Square Historic District retain a high level of historic integrity, an integrity that is carried principally by Buildings 101, 102, 103,105, 111, and 112.

Narrative Description

The Federal Square Historic District is comprised of eleven buildings, one site, three structures, and four objects (see district data sheet). The following narrative describes those nineteen resources in chronological order, based on their date of construction.

Fence Post

There is one brownstone fence post (SPR.981, Sketch Map #1) at the northeast corner of Federal Street and State Street marking the Federal Square side of the Springfield Armory (Photo 1). This post likely dates to the Armory's construction in 1851. It is a brownstone post about 3 ½ feet by 3 ½ feet and 8 feet in height. The stone blocks are cut in a rusticated manner with beveled edges and rough-cut faces. A 1980s perimeter fence (SPR.985), described below, is attached to this entrance post.

The original post is complemented at the northwest corner of Federal Street and State Street by a second, modern post designed to match the original. This modern post marks the Armory Square side of the campus and is outside the Federal Square Historic District.

Building 101

Building 101, constructed in 1888 (SPR.4411, Sketch Map #101), is a 2 ½-story, south-facing, brick building on a high basement (Photo 4 and Figure 1). The building has a cross plan. It is composed of a front-gabled, projecting main block of 2½ stories, five-bay width and four-bay depth. Centered at each side of the main block are long, side-gabled wings of sixteen bays on the west and seventeen bays on the east. The main block projects five bays beyond the plane of the wings on the north (Photo 5) and on the south, creating the cross plan. The last bay of the south façade of the west wing is occupied by a three-story stairtower that is one bay wide and four bays deep. There is no corresponding stairtower on the east wing (Photo 4). The wings are four bays deep.

In elevation, the building is Classical Revival in style, repeating stylistic details from its Federal- and Greek Revival-era predecessors at the Armory, but repeating them in late 19th-century proportions and decorative details. Stylistic and functional details at Building 101 adopted from the Federal style include stepped parapet walls in the gable ends of its main block and wings. The brick parapet walls are supported at the eaves by brownstone consoles. The steps of the parapet walls rise to a center wall segment that is

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framed by tall chimneys at either side. The parapet walls with chimneys duplicate the Armory's Federal-style parapet walls with end-wall chimneys. They are further ornamented with two rows of decorative angled brickwork. The main block's south parapet wall is more ornate than any of the other three parapet walls with a pair of 6/6 windows separating shallow recessed panels in the lower steps. Above, in the upper section of the parapet wall, the pair of chimneys frame two rows of ornamental angled bricks. The west wing's stairtower has full eaves returns creating a Greek Revival-style pediment on its front-gabled south façade.

The principal entry to Building 101 is in the main block at raised, first-floor level; and it is reached by double-ramp stairs with iron railings (Photo 4). A flat-roofed Greek Revival portico on Doric columns and pilasters shelters a double-leafed entry below an eight-light transom. Secondary entries are located in the west stairtower, and at first-floor level at the top of a single flight of stairs on the east elevation of the east wing.

Windows in the building are replacement 6/6 metal sash on upper stories and 3/3 metal sash at basement level with brownstone sills and lintels. On the south façade toward the end of the east wing at second-floor level is a double-bay opening for loading materials. It has a pair of wooden doors. Typical of late 19th-century architecture, stippled brownstone is used as contrasting trim in the building with sills, lintels, and a watertable. Beneath the eaves of the building on all elevations is a cornice made up of two rows of dentil-patterned brickwork—a decorative feature typically found on late 19th-century industrial and commercial blocks. Two metal ventilation stacks are located on the roof ridges of the wings, and at basement level on the east wing is a copper-covered shed roof that extends for eight bays above a long window well in front of eight basement windows.

Federal Square Green

The Federal Square Green (SPR.980, Sketch Map #2), ca. 1888, is a grassy area in front of Buildings 103 South and 102 (Photos 10, 11, 32). About one-half acre in size, it is bounded by a low granite curb. A concrete sidewalk that runs from a parking lot on the west to the roadway in front of Building 103 South bisects the green. Nine relatively mature oak trees are irregularly spaced on the green.

Building 102

Building 102 (SPR.4412, Sketch Map #102), constructed in 1890, was intended as a nearly identical building to 101. It is a 2½-story, north-facing brick building on a high basement (Photo 6). It repeats the cross plan with main block and attached wings. Building 102 has pedimented, three-story stairtowers at the ends of its wings, rather than at just one end as at Building 101. The main block of the building is five by two bays. Its entrance, above a double-ramp stair, is sheltered by a flat-roofed portico on Doric columns and pilasters. The entry is a storefront replacement door of glass and metal, and windows in the building are also replacements of 1/1 metal sash. The east wing of Building 102 is seventeen bays long—fifteen window bays followed by the stairtower that is the equivalent of two bays in width. At second-floor level on the east wing is a loading bay composed of double-leaf wooden doors that are likely original. A four-bay infill connector attaches the east wing of Building 102 to Building 103. It is also in brick, 2½ stories in height with brownstone watertable, consoles at the eaves, sills, and lintels. The west wing of Building 102 is seventeen bays long with fifteen window bays and a two-bay stairtower at its west end. There is a shed roof sheltering a long window well in front of the first eight bays of the basement west of the main block. The copper-covered shed roof rests on squat Doric columns. There are three metal ventilators evenly spaced on the slate roof of Building 102.

Parapet walls play the same role and are similar in Building 102 to those in 101. The north façade of the main block repeats the stepped parapet wall with tall end-wall chimneys, shallow recessed panels, and

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angled rows of bricks. The west-wing parapet is stepped, has end-wall chimneys and rows of angled brickwork, but omits the panels. A ventilation grille has been inserted at attic level on both the west and south parapet walls (Photo 7). The parapet wall at the end of the east wing is visible above the roof level where the wing and connector meet. At the cornice level of the main block, wings, and connector, rows of dentil-patterned bricks provide decorative detail. On the south elevation of the building, HVAC equipment occupies ground level at the west wing and is fenced off (Photo 8). At the end of the east wing the three-story, flat-roofed connector extends south to join Building 102 to Building 111 at its southeast corner (Photo 9). The south extension of the connector is three bays long, is metal sided, and has a one-story brick addition on its west façade that rises to a four-story brick tower at its southwest corner. Picture windows fenestrate the connector.

Building 103 North and South

Building 103, constructed in 1892, is the third of the cross-plan industrial buildings and makes up the east-facing, closed side of the square's three-building layout (Photo 10). Intended as the largest and principal building of the three, it has been the most altered. Removal of four bays of the north wing to create a roadway to the eastern side of the Federal Square lot, ca. 2014, has divided Building 103 into two parts, North (SPR.4413, Sketch Map #103N) (Photo 11) and South (SPR.4414, Sketch Map #103S) (Photo 12). Following the pattern of Buildings 101 and 102, Building 103 in both sections is 2½ stories in height above a high basement, is brick with brownstone trim, and has a slate roof. Now vacant, the northern section of the north wing of the building has had its windows sealed with plywood panels; windows of the main block and south wing are metal replacements with 1/1 sash. Despite the loss of the four bays, the building continues to retain sufficient integrity to be considered contributing.

The southern section of the divided building consists of the main block and the south wing of 25 bays. Attached to the south wing on its west façade is a tower occupying bays 21 and 22. Two and a half stories in height, the tower has a front-gabled roof with a full entablature that returns to form a pediment. A second, added tower of roughly 3½ stories is found in bay number eleven on the west façade (Photo 12). The main block of Building 103 is the largest of the three main blocks of these Federal Square buildings (Photo 13). It is five bays wide—as are 101 and 102—but it is eight bays deep on the west façade, projecting further into the landscape of the green than the more shallow main blocks of Buildings 101 and 102. Its west façade has a first-floor entry reached by double ramp stairs. It has a flat-roofed portico on Doric columns and pilasters and a glass-and-metal replacement entry. At second-story and attic level, the center bay of this block is made up of a pair of slender windows with 1/1 sash beneath a single pedimented lintel. Flanking the window pair at attic level are small arched windows whose brownstone lintels are arched and have keystones in relief. The west façade of the main block is a parapet wall, as at Buildings 101 and 102, but here the center wall between two chimneys is gabled and in the panels at each side of the arched windows are brownstone date stones with "1794" on the north side and "1890" on the south side. Projecting from the north elevation of the main block are two bays of the former north wing. The interior walls of the wing at the demolished bays have been bricked-in and there is a large ventilation grille at attic level on the south side. The south elevation of the northern section of the north wing is blind.

Parapet walls remain on the north elevation of the north wing and the south elevation of the south wing where the parapet wall is visible above its junction with an added connector to Building 111. The north section of the north wing has a two-story stairtower two bays wide with pedimented roof, as well as a 3½-story tower (Photo 11). It duplicates the one on the south wing with the exception of a deteriorated, front-gabled portico on braces at the ground-floor entry. As at the other two buildings, there is dentil-pattern ornament at the cornice of the building.

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Shays' Rebellion Monument

The Shays' Rebellion Monument (SPR.986, Sketch Map #3) is located on State Street mid-way on the block. It consists of a rough-cut stone boulder about four feet high, ten feet in diameter, and thirty feet in circumference. On its south side a copper plaque is fixed that reads:

This tablet marks the Battle Place Of Shays' Rebellion January 25, 1787

Erected by the George Washington Chapter Sons of the American Revolution A. D. 1900

Building 105

Building 105 (SPR.4415, Sketch Map #105), built in 1937, is approximately 30 feet east of Building 103's south wing and parallel to it (Photo 14). Building 105 is a 2½-story brick building with a slate-covered, side-gable roof. The main block of the building is sixteen bays long—each bay separated by pilasters—and three bays deep, and there is a one-story, flat-roofed concrete-block addition on its north elevation. The addition is four garage-bays wide and one deep (Photo 15). The main block of 105 has 1/1 sash and simple gable ends with no parapet walls. Three metal ventilators are equally spaced along its roof ridge. There is an entry centered on the east elevation and a second one on the south elevation (Photo 16). Neither is distinguished as the main entry.

Buildings 104 South and 104 North

Building 104 (SPR.4416, Sketch Map #104S, and SPR.4417, Sketch Map #104N) was constructed in 1940, and a large portion of it was demolished in 2014, leaving two separate sections at the north and south sides of Federal Square adjacent to Magazine Street, the easternmost part of Federal Square. The two sections are nominally connected by a new brick wall constructed in 2015, known as the Magazine Street Brick Wall, which imitates the fenestration of the demolished single-story portion.

The south section of Building 104, the original façade of the building, is two stories in height, has a flat roof, and a shallow, brownstone pavilion, three bays wide where once was located its original center entrance (Photo 21). The center entry has been bricked in as a window, and a masonry planter has been erected in front of it to discourage the appearance of an entry. The building is four brick bays long at each side of the pavilion. The large bays that once contained industrial sash now contain replacement metal-and-glass multiple-light fixed windows. Thin stringcourses of concrete act as window sills. The modest Art Deco building was constructed in a rusticated brick pattern with narrowly separated blocks of bricks at the spandrels between its windows. On its west elevation, Building 104 South abuts a brick connector that was constructed ca. 1977; on its east elevation, 104 South is three bays deep with an added single bay that corresponds to the new façade, now completed, constructed on its north side where previously it was open to the large manufacturing floor. The new façade added to the building is one story in height with two, two-story pavilions rising above the one-story elevation (Photo 22).

Building 104 North is two stories on its north elevation and ten bays long. Each bay that formerly contained industrial metal sash now has replacement metal window compositions. On its south elevation a new addition, now completed, corresponding to that on 104 South, has two two-story pavilions rising above a new one-story façade (Photo 23). The brickwork on 104 North is identical to its former south

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section, being rusticated in the spandrels between window openings. The original section of the building has a flat roof.

Magazine Street Brick Wall

Connecting Buildings 104 north and south, parallel to Magazine Street, is a newly constructed structure (2015) (SPR.983, Sketch Map #9), a single-story brick wall that functions as a piece of sculpture evoking the east elevation of Building 104, the east and west walls of which were demolished. The Magazine Street wall is approximately fifteen feet high and two feet thick and has eighteen unglazed, window-type openings, four of which have metal grids inserted in the openings, suggesting the twenty-light window sash of the former building. Behind the four metal grids are enlarged historic photos of Building 104 and its employees in the process of arms manufacture. The openings of the wall have brownstone sills and there is a metal cap along its upper edge (Photo 24).

Building 112

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Building 112 was built in 1941 (SPR.4418, Sketch Map #112, Photo 17). Set on the north side of Federal Square parallel to Lincoln Street, it is a 1½-story, front-gabled brick building with a slate roof. On its west façade, the building is three bays wide with a metal, double-leaf entry in a slightly recessed brick bay between two blind recessed bays. Corbelled bricks ornament the top of the recessed bays. The building is five bays deep with asymmetrical fenestration incorporating louvered openings and small windows.

Building 111

Building 111 (SPR.4419, Sketch Map #111) faces State Street mid-block on the south side of Federal Square (Photo 18). Constructed in 1942, it is a three-story, flat-roofed industrial building with a brick exterior. It has a shallow, contrasting brownstone entry pavilion centered on its fifteen-bay south façade. The brick of the façade is laid in a rusticated pattern between bays and at the corners, and three narrow concrete stringcourses act as sills to the industrial-scale window openings. Concrete coping tops the brick wall. Windows have replacement metal sash, though the original opening size remains. On the first and second floors, each sash composition has six vertical panels below three large panels. On the third floor the smaller openings contain only the six vertical panels. Four solar panels are installed on the west side of the south façade between the first-floor windows. The brownstone entry pavilion, three bays wide, rises above the three stories of the building in a modified stepped parapet. The center entry is sheltered by an added glass-enclosed portico under a flat-roofed canopy suspended from the building wall by metal struts (Photo 19). Windows in the pavilion at first and second floors are recessed, while those of the third story are flush with the pavilion. Windows have replacement metal sash that repeats the pattern of the larger windows. Above the third floor windows is a sign for "STCC Technology Park."

There is an attached three-story, two-bay brick connector between Buildings 111 and 104 South. It was designed ca. 1977 to continue the rusticated brick pattern of Building 111, but is set back from the plane of the earlier building. At first-floor level it has a glass and metal entranceway under a cloth canopy. Its replacement metal sash is the same composition as the windows of Building 111.

Building 111 has a north addition at its western end, added after 1962. The addition is set on the east side of and connects to a one-story brick extension of Building 111. The brick extension is two bays wide and one deep and has the same sash composition of six vertical panels below three large panels, as does Building 111 on its south and west elevations. The three-story north addition joins Building 111 to the connector between Buildings 102 and 103 on its north. It is three stories in height, has a flat roof, and on its west façade it is three bays wide. The north addition has metal siding. There is a glass and metal entry on its west façade under a flat-roofed canopy that is supported on two metal posts. On its east elevation it

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has a ramp to a pedestrian entry and loading dock at first story and at the second story are two metal sash of the same configuration as the west facade (Photo 9).

Security Office

The Security Office (SPR.4420, Sketch Map #4) is located at the gate opening to Federal Square from Federal Street (Photo 3). It is set on a low plinth bordered by granite curbing. Built ca. 1977, it is a one-story, square brick building under a slate-covered, truncated hipped roof. A solid-panel balustrade ornaments the roof and shields the HVAC equipment on the roof's surface. Doric columns support the southwest and northeast roof corners above recessed entries. Each of the two metal entries is flanked by a window with a metal double-hung sash. On the east and west elevations are metal picture windows with horizontally sliding sash.

Perimeter Fencing

Encircling the Federal Square Block is wrought-iron fencing erected ca. 1980 (SPR.985, Sketch Map #5). Approximately ten feet in height, the fencing is made up of staves, the tops of which are shaped into alternating spikes and spears, and the posts separating sections of 21 staves are topped with a double-faced battle axe, duplicating the fencing that surrounds Armory Square (Photo 26).

Springfield Technical Community College Assistance Corporation Sign (STCCAC)

At a one-way pedestrian exit in the fencing on State Street is a low granite sign for the STCCAC (SPR.984, Sketch Map #6), erected ca. 2000. Granite posts about 2 feet high and 5 inches by 5 inches in width and depth support a granite beam about 6 feet long and 2 ½ feet high. Attached to the face of the beam is a painted metal sign with the name of the technology park and its owner, the Assistance Corporation. The perimeter fencing at this point runs behind the sign so its view is not obscured from State Street.

The Joseph Wait Milestone Replica

The Wait Milestone Replica (SPR.987, Sketch Map #7, Photo 20) is a 2010 replacement for a milestone erected in 1763 near the southwest corner of Federal Square. It sits on grass and is surrounded by a low metal fence. Made of a polymer material, the replica is a rectangular slab about six feet high and two feet by one foot square. It is ornamented by Masonic iconography and reads:

Boston Road
This stone is erected
by Joseph Wait, Esq.
of Brookfield
for the Benefit
of Travelers.
A.D. 1763

Security Gatehouse

On the eastern edge of Federal Square at an opening in the perimeter fence is a small, one-story frame gatehouse under a copper-covered hipped roof (SPR.4421, Sketch Map #10). The upper half of its four walls is glass; the lower half is board-and-batten wood. Put in place in late 2015, the Security Gatehouse functions to monitor the traffic of the east side of the Square into Buildings 104 North and 104 South.

Gazebo

Located north of Building 111 and south of Building 103 in a courtyard is a wooden gazebo that was built in 2015 (SPR.982, Sketch Map #8, Photo 25). It is one story in height and octagonal in plan.

	quare Historic District	Hampden, Massachusetts
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8. St	atement of Significance	_
Applic	cable National Register Criteria	
(Mark listing.	"x" in one or more boxes for the criteria qualifying the property for)	r National Register
X	A. Property is associated with events that have made a significant broad patterns of our history.	at contribution to the
	B. Property is associated with the lives of persons significant in o	our past.
х	C. Property embodies the distinctive characteristics of a type, per construction or represents the work of a master, or possesses is or represents a significant and distinguishable entity whose co- individual distinction.	high artistic values,
	D. Property has yielded, or is likely to yield, information important history.	ant in prehistory or
Criteri	ia Considerations	
	"x" in all the boxes that apply.)	
	A. Owned by a religious institution or used for religious purpose	s
	B. Removed from its original location	
	C. A birthplace or grave	
	D. A cemetery	
	E. A reconstructed building, object, or structure	
	F. A commemorative property	
	G. Less than 50 years old or achieving significance within the pa	ast 50 years

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Areas of Significance	e
(Enter categories fron	
ARCHITECTURE	in mondonomy
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Period of Significan	Ce
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1631-1900	
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Significant Dates	7 1040 1041 1042-1068
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(Complete only if Cri	iterion B is marked above.)
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Cultural Affiliation	
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Architect/Builder	
Darling Brothers, (Buil-	dings 101-102-103
Fred T. Ley, Inc., (Buil	lding 104)

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Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

The Federal Square Historic District meets National Register Criterion A with local, state, and national levels of significance, and it meets Criterion C with a local level of significance. The period of significance begins in 1851 with the oldest extant resource, the Fence Post, and ends in 1968 when the Springfield Armory, which includes Federal Square, was closed by the United States government.

The land of the Federal Square Historic District at the Springfield Armory had been in use for almost two hundred years as part of the nation's arsenal and principal armory for the United States Army. The Springfield Armory on Springfield Hill consists of two areas divided by Federal Street. On the east of Federal Street is the earliest-established complex of buildings known as "Armory Square," a National Historic Site. On the east side of Federal Street is the complex of buildings begun in the late 19th century known as "Federal Square," the subject of this nomination as a historic district.

Federal Square's use as an arsenal began in 1782 at the conclusion of the Revolutionary War, when arms and ammunition were kept in a storehouse and magazine (now gone) on the Federal Square site. Its use continued as an *arsenal* where arms were tested on the site following the Civil War, as well as being stored there for repair and reuse. Beginning in 1851, when the extant Fence Post was erected as part of a plan to develop the eastern side of the armory property, and continuing from 1888 to 1892 when Federal Square grew to include additional buildings that functioned as an *armory*, manufacturing arms that were to be essential during the Spanish-American War and World War I, the Federal Square Historic District became nationally significant. Here at Federal Square, the Krag-Jorgensen and the Springfield 1903 repeating magazine rifles were manufactured, the skills required for forging, maintaining metallurgical standards, and barrel making were honed, and the Department of Ordnance requirements for interchangeability and uniformity continuously sought.

Between World War I and World War II, the shops at Federal Square and Armory Square developed and tested the M1 semi-automatic rifle, which went into production in 1935. The M1, designed and developed by mechanical engineer John Garand, was to be a significant factor in the conduct of the war. It is recognized as having saved many American lives in theaters whose conditions were as disparate as the tropical Philippines and Europe in winter. It was the shops at the Federal Square Historic District that led and dominated the manufacture of the M1 semi-automatic rifle. The shops of Armory Square were largely unused in the manufacturing process and served as an *arsenal* for storage rather than an *armory* for manufacture. During the war the Federal Square Historic District shops were the world's largest manufacturer of small arms and produced a total of 3.5 million M1 rifles. These shops also housed the Gauges Division that was charged with developing and using uniform gauges both in the Springfield Armory manufacture of arms and the manufacture of arms by private companies. Following World War II and until it was closed in 1968, the Federal Square Historic District became a research and experimentation center for the U.S. military developing and testing machine guns, aircraft guns, and small arms, pistols, and revolvers. The work accomplished at Federal Square resulted in modernized and new armaments used in the Korean and Vietnam Wars.

Federal Square buildings 101, 102 and 103, 105, 111, and 112 are architecturally significant as they represent the continuation from the 1880s of the architectural vision created in Armory Square beginning in 1815 for a grand national armory. They share the brick exteriors and decorative brickwork that raised the level of design above utilitarian industrial architecture. Buildings 111 and 104 are architecturally

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significant for having translated the Classical Revival use of brick and brownstone trim, stepped parapets, and decorative brickwork of Buildings 101, 102, and 103 into the Art Deco style as a means of maintaining cohesion among the buildings of the Springfield Armory. From a structural standpoint, the buildings represent the evolution that took place between the end of the 19th century and the first four decades of the 20th century for fireproof construction and accommodation of an ever-changing industrial process.

Narrative Statement of Significance (Provide at least one paragraph for each area of significance.)

ARCHITECTURE

Federal Square Buildings 101, 102, 103, 105, and 112 represent the design vision that was created in the early 19th century for a grand national armory begun at Armory Square and carried over from 1851 to Federal Square. The continued use at Federal Square of the Armory Square design features of stepped end gables, ornamental brickwork, Doric columns, and pedimented entries reveal the intention of the designers of the Federal Square buildings to provide architectural continuity with the buildings of Armory Square, now a National Historic Site.

The continued use of brick with brownstone trim, slate roofs, and granite stoops and trim for these buildings and for the principal façades of those constructed in the 1940 building campaign—Buildings 104 and 111—show the desire of the late 19th and 20th-century commandants to follow the Armory's grand architectural traditions. It is likely that the buildings were designed by the commandants and their staff as none of the earliest drawings is signed and initials only appear on others. From 1940, the builders are known: the Darling Brothers constructed Buildings 101, 102, and 103. Fred T. Ley, Inc., was responsible for Building 104, and J. R. Worcester and Co. Architects and Engineers built Building 111. The architectural firm Alderman and McNeish designed the infill between Buildings 102 and 103.

The architectural layout of Federal Square suggests a planned, park-like landscape within which buildings were arranged around a "green" or "common," suggesting the New England nuclear village settlement pattern. The building arrangement also brought ample light into the manufacturing spaces.

As the only remaining of the two national armories (Springfield and Harper's Ferry), the Springfield Armory, consisting of Armory Square and Federal Square, presents a planned whole. Federal Square, hitherto undesignated, deserves recognition by inclusion in the National Register of Historic Places as a National Register Historic District.

ENGINEERING

The buildings of Federal Square represent the evolution of fireproof industrial engineering from masonry buildings constructed with cast-iron columns, iron stringers, and floor joists, spanned by fireproof brickarch flooring as found in Buildings 101, 102, and 103. Following that form of construction, Buildings 105 and 112 were designed to have steel supports embedded in exterior pilasters for additional structural strength and fireproofing. Finally, the steel framework with metal exteriors and roofing of Buildings 111 and 104, with their applied masonry façades, brought fireproof industrial engineering into the 20th century.

Springfield Armory was the leader of the nation's armories in the engineering and use of gauges for achieving the interchangeability and uniformity dictated by the U.S. Department of Ordnance for small arms manufacture. Gauges were developed at Federal Square in Buildings 103 and 105 and used in all the

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manufacturing buildings for each component of the small arms manufactured at Federal Square. Inspection gauges were developed at Federal Square for ascertaining that arms privately manufactured met the standards set by Ordnance beginning with World War I and continuing through World War II and the Korean War. Indicator gauges, optical comparators and air gauges all were brought into use at the Springfield Armory to further modernization of the government industry.

MILITARY

The buildings of the Federal Square Historic District housed the manufacture of small arms for the U.S. Army that ranged from the rifle known as the "Springfield 1903" that armed U.S. soldiers during the Western Plains War of the 1850s–1870s, and the Spanish American War in 1898, to the M1 rifles that served in the Second World War and in the Korean War. They were followed by the M14, a selective-fire, fully automatic rifle manufactured at Federal Square from 1959 to 1963, which was used in the Vietnam War and continues to be used today in Army combat.

Developmental history/additional historic context information (if appropriate)

The Federal Square Historic District is part of the Springfield Armory, which is located on Springfield Hill in the City of Springfield and was established in 1794. Two additional areas were added to the Springfield Armory between 1795 and 1809, known as the Upper and Lower Watershops. They were on the Mill River in Springfield, not on Springfield Hill, and are no longer extant. What constitutes the Springfield Armory today is laid out in two squares across the top of Springfield Hill. On the west side of the hilltop is Armory Square, a National Historic Site, and on the east side of the hilltop is Federal Square, the subject of this nomination to the National Register as a historic district. Over its long history, the various sections of the Armory, and even the Armory itself, have been known by different names reflecting the viewpoints of the speaker, the map-maker, and the historian. When one wished to distinguish between the functions of the Watershops from those functions of shops on the hill, Armory Square and Federal Square were together called "the Hill Shops." When the Armory's presence on Springfield Hill was dominant in the minds of Springfield residents, the hill was often referred to as "Armory Hill," and abbreviated not infrequently to "the Armory." Officially designated a National Armory in 1794 for the northern half of the United States, Springfield Armory was called that to distinguish it from the other National Armory for the South, Harper's Ferry Armory in Virginia. To convey primarily its significance as a National Armory, some writers called it the "United States Armory." This nomination will refer to the Springfield Armory as a whole with just that title: "Springfield Armory." It will refer to the two separate sections of the Springfield Armory on Springfield Hill as "Armory Square" and "Federal Square." The latter is the Federal Square Historic District.

Historical Overview of U.S. Armories and Arsenals

Provision of military ordnance, or weapons, such as guns, cannons, and artillery, was first established in what became this country in 1629 when Massachusetts Bay Colony appointed a Master Gunner of Ordnance who began to set standards for the manufacture of arms and to coordinate their manufacture. He was followed in 1645 by the Surveyor of Ordnance who travelled among militias in the colonies selling powder and arms, and inspecting their condition and storage.

During the Revolutionary War, the manufacture, repair, and maintenance of ordnance under General George Washington took on a more complex organization with a Commission of Military Stores. The Commission sent trained armorers and mobile forges into the field to follow troops and repair and maintain their weapons. Washington also established two ordnance facilities, or arsenals, during the war—one at Springfield, Massachusetts, and one at Carlisle, Pennsylvania. From 1777 to 1781, arms

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were stored at those sites; they were also repaired and manufactured there in a limited manner. Following the Revolutionary War, the office of the Purveyor of Public Supplies was established and operated under the Treasury Department. In 1794, two National Armories were established to handle the manufacture and standardization of arms for the new country—one at Springfield, Massachusetts, and one at Harper's Ferry, Virginia.

In 1812, The Ordnance Department was organized within the federal government as a distinct military branch. It was the Ordnance Department that set up a system of arsenals and armories in the states where they were felt to be most needed. An arsenal was established at Watervliet, New York, in 1814, and a second at Watertown, Massachusetts, in 1816. This system of arsenals and armories continued through World War II with facilities established in states across the country.

Colonial Period (1675-1775)

Springfield, settled in 1636, was trading outpost on the Connecticut River that developed into an agricultural town. It was on the Old Bay Path, the major east-to-west roadway between Boston and the Connecticut River settlements, where in 1763 a Brookfield resident lost his way in the winter and, in appreciation for finding his way, erected a way marker near the corner of State Street (Old Bay Path) and Federal Street for other travelers. A replica of that monument is part of Federal Square today. The original is in the collection of the National Park Service at Armory Square.

In the 18th century, Springfield's industries grew and drew skilled workmen including several gunsmiths. In 1775, when colonists needed arms for the Revolution, they turned to Springfield's mechanics and gunsmiths for repair and for a supply of ordnance such as fuses as well as paper and cloth cartridges. Mechanics located near Springfield became part of the trade, and some moved there, making Springfield a recognized locus of this work. In 1775, weapons production began with 40 men working in scattered shops.

Architecture

The buildings manufacturing ordnance were undifferentiated from buildings of the Colonial Period's other industries, and, in fact, occupied some of their same spaces. Barns and small shops that might house a blacksmith and his forge, or a woodworker and his tools, became the space where gunsmiths and stocking shops, which made the wooden gun stocks, set up when demand grew for their work. Ordnance manufacture took over a Springfield powder factory using the some of the same raw materials but now directed to cartridges and fuses solely for guns rather than powder for clearing the land and guns for hunting.²

Federal Period (1775-1830)

As the Revolution began, Springfield's craftsmen and mechanics were quickly appreciated, and in 1777 the Continental Arsenal was established by General George Washington and Colonel Henry Knox in Springfield. Colonel Thomas Dawes drew up plans for its layout on a site that he leased from the town at the top of a bluff on Springfield Hill overlooking the Connecticut River, the location of today's Springfield Armory. The site was ideal for industry with several streams crossing it that could serve as water power; it was ideal for its proximity to the river, and for the fact that it was used by Springfield's residents as a militia training ground rather than for farming. Under Col. Dawes's plan, storehouses for arms and a magazine for powder storage were constructed first, making Springfield the military supply

Whittlesly, Derwent Standhope. <u>A History of Springfield Armory</u>, typescript, University of Chicago dissertation, 1920, pp. 12-13.

² Ibid., p.18.

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depot for war in the northeast (Figure 2). Within the year Dawes added barracks and a workshop for refilling cartridges, known as an "elaboratory." As he explained in correspondence, Dawes decided to build in brick, as stone, several miles away, would take longer to transport. Both speed of construction and the need for fire control would have been considerations for using brick or stone, rather than the more economical and available wood frame. Despite his good intentions, however, Dawes was forced to build mostly in frame, only a few buildings in brick.³

In the summer of 1780 as the war was coming to an end, the order came to Springfield to cut back on production, and soon leftover *materiel* from the war started arriving at the arsenal for safekeeping. Storage at a grander scale meant that in 1782 a new magazine was needed, and one was built in brick, protected by a stockade, at the far eastern side of the militia training ground in the area that was to become Federal Square. As activity wound down at the Armory, many of the men who had worked here moved away or found other jobs, and for a few years the depot was quiet and uneventful. Then in 1787 the men who made up Shays' Rebellion marched on the Armory's new magazine in Federal Square hoping to overrun it for the powder it held. Made up of a group of mainly farmers who joined Daniel Shays in protesting the imposition of taxes following the war, the attack on the Armory was unsuccessful, and the group left after one night's efforts and the death of three of them.⁵

Springfield, Massachusetts, and Harper's Ferry, Virginia, in 1794 were established as National Armories for the North and South, respectively. This designation meant that consistent manufacture of arms would take place, as well as storage of materials, so additional land was bought in 1795 and building expansion began. In Springfield, building began for the Lower Watershops on the Mill River and then when the Mill River's water was insufficient to power the Lower Watershops, the U.S. government bought land further upstream, erected a dam, and built the Upper Watershops in 1809. As described above, the Watershops, both Lower and Upper, were not on Springfield Hill. Rather they were constructed on the Mill River south of Springfield Hill. They had many functions over their history but mainly they served as part of the arms manufacturing process where the forges were located.

On the Springfield Hill, between 1808 and 1811 permanent building for the Armory Square portion of the Springfield Armory began with a brick store bordering a large open space known as the Quadrangle. An ordnance yard was set up where ball, cannon, and other materials were to be stored outside. On the other, or east, side of the Springfield Armory, land for Federal Square was officially purchased from Springfield after a long lease, and additional land was bought from private citizens. The land included houses, which then became homes for the growing armory workforce (Figure 3).

The expanded workforce was critical not only to reflect the Armory's national stature but also to respond to the War of 1812. The Springfield Armory's expansion was part of the country's response to the war, and one of its first challenges was improving the Model 1795 musket that had turned out to have significant problems. A new Model 1812 musket was developed within the year, and it, in turn, was replaced by a Model 1816. The naming of these arms and those to follow identifies the year in which they were put into production. Driving the design of new models were innovations by the Armory's mechanics and engineers to make interchangeable parts and to devise the milling machines that made them. For instance, in 1819, Armory worker Thomas Blanchard devised a lathe that made it possible for workmen to

Whittlesly, <u>History of Springfield Armory</u>, p.21.

⁴ Ibid., p. 34.

⁵ Springfield Armory Archives, Microfilm Records, Roll #151, Scrapbook #1, "Springfield Sunday Republican, Dec. 22, 1878".

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produce identical rifle stocks. This invention introduced mass production to the Armory. The Model 1816 was the first of the muskets whose manufacture thus became more standardized.

A new Armory Superintendent, Colonel Roswell Lee, arrived in 1815 and proceeded to make concrete two principles. The first principle was that of the interchangeability of parts of small arms as introduced by Blanchard. Henceforth, achieving uniformity and interchangeability were to define Springfield Armory's work. As explained by Michael Raber, et. al. in *Conservative Innovations and Military Small Arms*, "Virtually every development in Springfield Armory's physical plant, management of labor, procurement of materials, and manufacturing processes from 1815 to 1945 hinged on interchangeability and uniformity." Lee's second principle made concrete was the concept of Springfield as a "grand national armory" with buildings and landscape to befit its status. He began advocating for new fireproof buildings and though they were not funded, in 1817 he started organizing the Armory site by moving a blockhouse, a commissary store, and the Ordnance Yard to Federal Square near the magazine. The large space between Federal Square and Armory Square remained open; Federal Street had yet to be laid out at this point and Federal Square was designated by Colonel Lee as the place where the early residential buildings and storage were located (Figure 3).

An 1821 map shows that by that year Federal Street had gone in, dividing the east and west sections of the Armory, and that a large piece of land was left open on the street's east side. The large tract was bordered on its north and east by a row of houses and a store (Figure 3). A map whose title dates it to ca. 1810, but which is more likely from 1823 (Figure 4), shows on Federal Square the magazine, an ordnance yard, a small blockhouse, and two double houses, two single-family houses, and a store. A more detailed map dated ca. 1824 (Figure 5) calls the large tract of open land adjacent to Federal Street "The Common." Similarly, on the west side of the Springfield Armory, the large field had become "The Green." The presence of the set-aside Common on Federal Square suggests that Col. Lee in the intervening years between 1817 and 1824 had made Federal Square part of his formal plan for the Springfield Armory. It provided for prominent landscape features, i.e. the Green and the Common, as an orderly and park-like setting for the manufacture and storage of arms.

Fires in 1824 and 1825 destroyed important buildings on Springfield Hill and at the Lower Watershops. Col. Lee responded by building a forge of stone, brick, and slate, followed by the brick north and south shops around the Green. The choice of brick was to set the standard of construction for the Armory into the 20th century.

By the time the map of 1830 was drawn, Federal Square continued to hold stores, workers' houses, a military magazine, an ordnance yard, a block house, and two storehouses. However, sidewalks and a row of trees led up each side of Federal Street, and there were sidewalks crossing the street. Federal Square was organized so the houses and store(s) facing west were set off from the military buildings by grassy areas (possibly cultivated gardens), and there was a wooded area in the northeast corner of the Square (Figure 6).

Architecture

Col. Roswell Lee established the formal arrangement of the brick shops and wood-and-brick houses of the Armory around an open square. Industries situated in cities during the Federal Period commonly followed the cities' street plan with rows of aligned, two-story buildings with commercial spaces on the first floor

⁶ Carolyn C. Cooper. "A Whole Battalion of Stockers: Thomas Blanchard's Production Line and Hand Labor at Springfield Armory," <u>The Journal of the Society for Industrial Archaeology</u>, Vol. 14, no.1 Springfield Armory, 1988, pp. 37-58.
⁷ Richard Colton (ed.) <u>Conservative Innovations and Military Small Arms: An Industrial History of the Springfield Armory, 1794-1968</u>, typescript, August 1989, article by Michael Raber.

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and industrial spaces on the open second floors (described by some industrial historians as "lofts"). At Springfield, Col. Lee initiated a town-center plan with armory and arsenal buildings bordering what was to be considered the center green. An organized arrangement of industrial buildings within a designed landscape was to be developed at Federal Square.

The engineers of the United States Ordnance Department as well as the commandants of the country's first two armories, Springfield and Harper's Ferry, were the pioneers of industrial architecture design in this country. Following the lead of England's industrial builders as seen in trips and publications, the U.S. government engineers and commandants designed and built its armories, arsenals, and navy yards for maximum fireproofing and ample interior space. Whereas private industrial architecture well into the 1830s consisted mainly of a series of small frame buildings, scattered in rural areas or street-aligned in urban areas, the arsenals and armories provided innovative models of fireproofed, multi-story industrial buildings with loft-like interior open spaces.

At the Springfield Armory, the barracks of 1808 set the standard that was to be followed into the late 19th century. This three-story brick building with brick-and-stone foundations was constructed with stepped parapet end walls and a slate roof, both of which had English precedent as means of preventing the spread of fire. Brick construction up to three stories with slate roofs and parapet end walls not only were the latest in fireproof buildings but also met the goals of Springfield's Armory of being substantially designed buildings worthy of a national armory. And although the use of cast iron for building frames had been practiced in Europe's industrial buildings from the early 1700s, they were rare in the United States until about 1850. In 1824, in a building now gone, the Springfield arsenal used cast-iron columns in a cruciform plan, perhaps the first in the country. The innovations in industrial design cited above were to be continued at Federal Square into the late 1880s and 1890s.

Early Industrial Period 1830-1870

In 1833 Col. Roswell Lee died, after having put into place the concept of the grand national armory, some of its new brick buildings, and the beginnings of an ordered landscape. Major John Robb took over between 1833 and 1841, when James W. Ripley, who was experienced in ordnance, was named armory chief. Ripley shared Lee's vision for the Armory and between 1841 and 1854 oversaw major improvements in both construction and in the manufacturing process. In 1842, he had the original magazine demolished on Federal Square and a new magazine built—no longer on Federal Square and further away from its houses. Correspondence in the 1840s shows that Ripley was directly involved in construction. It was he who contracted with quarry man Luke Kibbe from Longmeadow for stone for his, the commanding officer's, house, and he who furnished the plan for its stone work. Ripley may have been responsible for preparing some of the plans for the buildings that went up at the Armory, but he also appears to have enlisted a well-known Springfield architect and builder. According to the Springfield Gazette, Chauncey Shepard produced at least one building plan in 1849 for the Armory.

Between 1845 and 1846, Ripley oversaw the introduction of steam power on Springfield Hill for power and for heating distributed from a new powerhouse on Armory Square. On the east side of the Armory, Magazine Street was fenced off in 1845, Lincoln Street was built in 1848, and the Square by 1851 had been cleared entirely of its frame buildings and of the ordnance yard that had appeared in earlier maps

10 Whittlesly, op. cit, 120.

¹² Springfield Armory Archives, Microfilm. Roll#151, "Scrapbook #1, 1846-1941," Springfield Gazette, April 22, 1849.

¹³ Constance McLaughlin Green. The History of Springfield Armory, ms. Vol. I, 1777-1919, 78.

⁸ Betsy Hunter Bradley. <u>The Industrial Architecture of the United States</u>, New York, Oxford University Press, 1999, 138-140.
⁹ Bradley, op. cit., 138.

Springfield Armory Archives, Microfilm, Roll#141, Record #102, Contracts for Ordnance Supplies. Construction, 1806-1918, Nov. 12, 1844 Ripley contract with Luke Kibbe.

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(Figures 4 and 5). A map of 1851 shows Federal Square without the buildings, but in 1861 the map was used to sketch a proposed series of buildings that were never built (Figure 7). In fact, in October of 1853 a horse show, billed as the first national show of horses, was held in the open space of Federal Square. In 1855, a year after Ripley's departure, a wood-and-iron fence was erected around Federal Square; its alternating spears and pikes repeat the motifs of the fencing around Armory Square. Between 1855, when the lot remained unbuilt upon, and 1864, Federal Square became a landscaped park (Figures 8–10). Geometric crosswalks were built and trees planted. Federal Square became a second park feature (after the Green of Armory Square) of the Springfield Armory.

Mechanical innovations continued at the Springfield Armory and the Model 1842 musket became the first gun manufactured with all interchangeable parts made by machines. ¹⁶ Other improvements were the making of smooth-bore muskets with locks adapted to percussive ignition of ammunition, which were made between 1844 and 1855. They were followed by a muzzle-loading musket with the same lock, the Model 1855. The Model 1855 was then replaced by an improved model, the Model 1861, a rifle-musket. Innovation in machinery for arms manufacture was a parallel effort, and the rifling machine was one of the more important equipment advances made during this period. ¹⁷

In 1861 the Springfield Armory's Commandant was given orders to increase the workforce and to prepare for anticipated conflict. The Springfield Armory went from building 800 muskets a day to 3,500 of the Model 1861 rifle-muskets by constructing new buildings and by working two shifts of men. At Federal Square, two new temporary sheds were put up to store materials for the increased production. At Armory Square, the long storehouses were built, along with Annex Building 27, dry house, garage, and additions to the Administration Building, among other buildings. On Federal Square, the temporary storehouses of 1861 appear to have been wood frame and had disappeared by 1864, but following the Civil War temporary structures were once again put up on Federal Square in order to protect the *materiel* that was returned and sent to Springfield for repair and future use. This repair function had been pretty well concluded by 1864; the temporary structures were taken down, leaving Federal Square once again a park (Figure 11).

Improvements made on the breech-loading rifle brought about the .45 caliber Springfield rifle, which was used during the Civil War and, with further improvements, to and through World War I. ¹⁹ Following the war, a breech-loading rifle with a trapdoor mechanism was developed. Following the Civil War, however, funding for the Armory and its workforce was cut, which meant that production of the Springfield rifle and further innovation in arms design was slowed. ²⁰

Architecture

The Early Industrial Period saw many improvements in industrial architecture across the country, some of which emanated from the nation's armories and spread by providing additional models for private builders. The use of iron structural elements gained acceptance after being introduced at the Springfield Armoryin1824. At the Harper's Ferry Armory, between 1845 and 1854, buildings were constructed with cast-iron framing elements. Between 1866 and 1872, iron beams as well as posts, and brick-arched floor

¹⁴ Springfield Armory Archives, Microfilm, Roll#151, <u>Scrapbook #1</u>, 1846-1941, clipped article from Springfield newspaper of October, 1853.

¹⁵ Whittlesly, op. cit. p. 146.

¹⁶ Whittlesly, op. cit., p.180.

¹⁷ Green. op. cit. p. 103.

¹⁸ Green, op. cit., p. 122.

¹⁹ Whittlesly, op. cit., pps. 184-185.

²⁰ Michael Raber. "Conservative Innovations, Military Small Arms and Industrial History at Springfield Armory 1794-1918", Journal of the Society for Industrial Archaeology, 1988.

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construction (floors laid above brick arches rather than wooden floor joists) appeared at the Rock Island Armory in Illinois, a form of fireproof construction that had long been used in England's industrial buildings. At the Springfield Armory, buildings remaining from this period are on Armory Square. The Officers' Quarters of the 1830s are Greek Revival-style brick buildings with slate-covered gable roofs. During the Civil War, new buildings on the Armory Square side carried out the stepped-parapet roof features with brick construction set in the landscape to maximize light into their interiors. ²²

Late Industrial Period 1870-1915

Between 1866 and 1903, despite a decrease in funding, the Springfield Armory experienced a high level of invention and experimentation that resulted in improvements in both the arms product and in production itself. The staff of the Springfield Armory understood that it was imperative to move to a magazine rifle, used elsewhere in the world, and that the buildings at Armory Square were not well-enough set up to manufacture a completely new small arm. That realization was the impetus for commencement for planning new manufacturing facilities at Federal Square, though a rifle had not been adopted or approved.²³ In fact, the Ordnance Department through the 1880s held on to the single-loading rifle as a means of controlling and conserving the use of ammunition.

Beginning in 1872, Federal Square began to be used for more than a park; its residential and storage uses were long-gone. Between 1872 and 1875 Major James Benton—who followed five commandants who served during the Civil War—had Building 29 (now gone) erected on Federal Square as an experimental firing range or firing house. Introduction of a firing range signaled the beginning of a permanent ballistic research facility on Federal Square, where the quest for a repeating or magazine rifle was carried out and various models tested at the experimental firing house.

Just before the firing house was erected, a piece of land, under an acre in size, between Federal Street and St. James Avenue was bought by the government (Figure 6). In addition to being the site of a useful spring, the piece of land brought the entire block of Federal Square into government ownership. In 1900, the Sons of the American Revolution erected a monument to Shays' Rebellion on this added piece of land.

Development of Federal Square

In the midst of the period of innovation beginning in 1866, it was apparent that additional manufacturing space would be needed for machinery to put arms into production and keep the Springfield Armory up-to-date in case of war. How and what to build was worthy of study, and the Springfield Sunday Republican reported that Benton—at that point in his career with the rank of colonel—was sent to Europe in 1874 to look at armories in Germany, France, the United Kingdom, and Russia. ²⁴ Plans were clearly being developed by the federal government to improve the Springfield Armory. As more efficient manufacturing sequences were mapped out, the largely open Federal Square grew more desirable as a site for new buildings that could meet new specifications. The relatively small and multiple existing buildings of Armory Square were not as adaptable to new layouts with substantial floor space.

Benton—by then a major—died in 1881, and although construction had not yet begun, his plans for Federal Square were well under way and soon undertaken by his successor, Lt. Col. A.R.B. Buffington. One of Buffington's first accomplishments was the creation of Benton Park on the added spring lot at St.

²¹ Bradley, op. cit., p. 140.

²² Springfield Armory, Massachusetts. <u>Historical Record</u>. <u>Building Inventory</u>, June 30, 1932, typescript, p. 1.

²³ Colton. op. cit. pp. 15-16.

²⁴ Springfield Armory Archives, op. cit. Roll#151, <u>Scrapbook #1</u>,1886. And Roll #195, <u>Letters sent to the Chief of Ordnance</u>, 1860-1870, 1886.

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James Street, which was to be maintained by the city. Correspondence of 1886 indicates that Buffington was preparing Federal Square for future building. The eastern side of the Square was filled and graded for a uniformly level surface. Curbing was run around the entire block. Federal Street itself was paved and crosswalks identified; the street's meridian was planted with grass, and gravel walks were created. Plans for the layout of Federal Square followed.

Planned Layout

Following the Civil War, industrial complexes favored an open-sided building layout in which buildings were placed so that the maximum flow of light and air into each building would not be impeded by a nearby building, and this is the plan that was adopted for Federal Square when Buildings 101, 102, and 103 were erected between 1888 and 1892. The layout of three Federal Square buildings around three sides of a landscaped green meant that none of them interfered with the light and air into another and at the same time set up a relatively orderly and sequential manufacture of arms within. The buildings were set close together for economy of movement of men and materials, and for concentration of machinery where needed. Further, the layout provided for easy future expansion of the buildings on the eastern side of the block (Figures 12 and 13). The layout maintained the town center principle established at Armory Square, and in fact, aimed to take it further, as a ca. 1892 plan for the Green at the center of Federal Square, never executed, included a fountain, along with walks and trees.

From the 1870s to early 1900s, U.S. industrial engineers focused on regulating steam production and on plant machinery layout and this focus was part of the planning for Federal Square. The source of power for the buildings was kept at Armory Square, where Building 27 held a steam engine to run equipment. Brick arched tunnels housing line shafting ran from Building 27's steam engine to Federal Square under Federal Street and into the basement of Buildings 101 and 102.

Building 101 as Architectural Model

Buildings 101, 102, and 103 (Photos 4, 5, and 8) were planned simultaneously and constructed in sequence after demolition of Building 29, the firing range. All three followed the same specifications as to construction materials and structure. Buildings 101 and 102 were to be 279 feet by 36 feet and Building 103 was 458 feet by 36 feet. Building 103 was planned as the main building of the three, the one facing Federal Street with integral date blocks on its façade. The first to be constructed, however, was the milling shop, Building 101. With slight variations that will be noted, Building 101 served as a model for all three buildings in materials, structure, form, and style.

Materials and Structure

Building 101 was the milling shop (Figure 13, Photo 4). It was constructed by the Darling Brothers of Rochdale, Massachusetts (a village in Leicester in Worcester County), who contracted with the Armory to build a fireproof milling shop for \$49,795.00, materials and construction. The building was to be complete by July 1, 1888. The specifications called for a fireproof building of deep red "sand stroke" brick, stonework of Monson or Fitzwilliam granite for stairs, trim of Longmeadow brownstone, and roofing of black Maine slate. Ironwork specified cast-iron columns, wrought-iron I-beams, wrought-iron joists, and roof rafters. From both drawings and specifications it is clear that the Springfield Armory picked up the wrought-iron-beam-and-brick-arched floor construction for fireproofing that had been introduced to this country at the Rock Island Armory in Illinois between 1866 and 1872.

²⁵ Springfield Armory Archives, <u>Contracts for Ordnance Supplies, Construction 1806-1918</u>, microfilm Roll #s141, 142, "Specifications".

²⁶ Ibid, Contract with Darling Brothers.

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Building 101 was laid out with a single row of columns down the center of each floor, the outer walls being load-bearing. A single row of columns, rather than the more common two rows of columns, allowed greater uninterrupted space for work stations and machinery. The use of wrought-iron beams with greater tensile strength mitigated the vibrations that compromised the structural integrity of cast-iron columns in other buildings housing heavy machinery. Cast-iron columns continued to be used at Building 101 but with wrought-iron I-beams supporting wrought-iron joists. The joists rested on the inner row of columns and on iron lintels above the windows. Building 101 was among the earliest industrial buildings in the country to use load-bearing brick walls spanned by iron roof trusses. This form of construction not only gained greater floor space, but it also provided through the rigid brick walls a more stable building that machinery did not shake. With the addition of steel framework at corners and inside pilasters, this form of construction became common from about 1900 in the United States.

At each floor, workers for whom light was critical were placed at the windows to maximize use of natural light, and space at each side of the row of columns was used as a corridor and space for supervisory staff and material storage. Among the dated drawings for Building 101 of 1887 and 1888 in the collection of the Springfield Armory Archives are floor plans for the basement and first floor, and for an arched tunnel under Federal Street. The drawings show that horizontal line shafting ran into the building at basement level from Building #27, and its movement or power was converted by large 48-inch- and 36-inch-diameter gear wheels to vertical shafting, where it connected at each of the three upper floors of Building 101 once again for horizontal distribution. Toilets, as shown on an 1885 plan, were placed in the basements. The 1885 plan reveals there was to be a freight-sized elevator in the front tower. Undated drawings on the same paper or linen and in a style consistent with the dated drawings exist for the south façade of Building 101, for floor plans, and for iron roof trusses, floor rafters, and stringers.

None of these drawings is signed or stamped in any manner to indicate origin, which would appear to indicate they were prepared at the Springfield Armory rather than issued from Washington, D.C. Leaving the responsibility for building design with Springfield Armory personnel is consistent with the Ordnance Department's policy of closely overseeing engineering functions at the armories, but allowing commandants latitude in decision-making within their annual budget allocations.

Form and Style

The precedent of buildings constructed with brick walls, stepped parapets, end-wall chimneys, and slate roofs had been established as early as 1817 at the Armory. That the same elements were continued from 1888 to 1892 may be seen as both a practical and an aesthetic decision. At the practical level, the continued use of brick and parapet walls with slate roofing is explained by its ongoing efficacy for fireproofing. Only the introduction of steel to the structure could have made the buildings more fireproof, but experience and cost may have been factored into the fireproofing decision. The end wall chimneys, prominent on the west side, were used once again at Building 101, an 1885 drawing shows, as part of the ventilation system for the building. The flues in the chimneys could help in the circulation of air and possibly function for exhaust in a manufacturing process. On the aesthetic level, the continuity of materials and form between buildings on the west (Armory Square) and east sides (Federal Square) created an architectural unity on Springfield Hill that maintained the conception of a "grand National Armory." ³¹

²⁷ Springfield Armory Archives, Building 101 Drawings, 1887 drawing, elevation.

²⁸ Springfield Armory Archives, <u>Building 101 Drawings</u>, construction details, 1885 and 1888.

²⁹ Bradley, op. cit. p. 142.

³⁰ Springfield Armory Archives, <u>Building 101 Drawings</u>, 1888 drawing series of arch under Federal Street and shafting from steam engine building #27.

³¹ This is the phrase coined by Commandant Roswell Lee.

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Construction and Use

The need for facilities to produce magazine rifles that were in experimental development in the 1870s had prompted the planning of Buildings 101, 102, and 103 at Federal Square. Their location, layout, design, and individual uses were all part of a single plan, but the decrease in federal funding and changes in design of the rifles that took place between 1865 and 1890 meant that construction of the three buildings had to be carried out more slowly than anticipated. It took four years for the three buildings to be constructed. At the completion of Building 101 in 1888, the Armory contracted with Darling Brothers to build a fireproof Carpenters'-Stocking Shop (Building 102) for \$54,499.00 (Figure 13, Photos 2,6, and 7). Two years later, in 1890, the Armory contracted again with Darling Brothers for Building 103, a fireproof building for machining and filing, hardening and tempering, which would house a boiler room, engine room, and blacksmith shop (Figure 13, Photos 10, 11, 12, and 13). Because of its larger size, the cost for Building 103 was \$106,950.³²

With the completion of Building 103 in 1892, the focus of arms manufacture at the Springfield Armory shifted from Armory Square to Federal Square. Until World War I, Armory Square functioned primarily for storage, steam production, and administration, with some smaller-scale manufacturing also taking place (Figure 12). Part of the work of the administration would have been oversight of a new department, the Experimental Department that was formed in 1891 and was to play a large role in the uses to which the buildings of Federal Square were put.

The strength of the planning for Federal Square was immediately put to the test. The result of the ongoing development and testing between 1866 and 1890 had been adoption of the Krag-Jorgensen rifle, a Norwegian-designed magazine rifle that could also be used as a single-shot rifle, making it appealing to the Ordnance Department. It was adopted for preliminary manufacturing at Springfield before it was approved for manufacture by Congress in 1893 and put into final production. Three models of the Krag were manufactured at Federal Square as well as a Krag carbine with a shorter barrel. As a magazine rifle with a breech mechanism and steel barrel, the Krag required manufacturing skills and machinery that Springfield's arms makers had not yet mastered. They needed new gauges, new forging patterns, new metallurgical standards and procedures for making new barrels. All these changes required not only training for arms makers who were introduced at the Watertown Arsenal in Watertown, Massachusetts, but also at private arms manufacturers.³³

Buildings 101–103 proved to have been well-planned for magazine-rifle manufacture. In Building 102 the wooden parts of the rifles were constructed—the stocks of black walnut were foremost, and new wood parts were made for hand guards, bayonet grips, and oilers for the Krag rifles. In 1897, 50,000 gunstocks were made from black walnut in Building 102. Production was to double prior to World War I when in 1908, 100,000 stocks were made. Bayonet grips and stocks were made at Building 102 on the second floor. Turning machines, boring, grooving, rabbeting, and chambering machines did the work, and stocking benches furnished the shops, where stocking meant shaping the rifle's stock and embedding into it the trigger guard, the barrel, and the buttplate.³⁴ A harness shop and paint shop were in the basement and on the first floor. Floor heaters warmed the buildings during winter.³⁵

Building 103, the machine shop, had the widest variety of operations. In the main center section was an engine room, a boiler room, and a blacksmith where smaller metal parts were forged (Figure 13). On the

34 Colton, op. cit. p. 238.

³² Springfield Armory, <u>Buildings as of 1938</u>, typescript, 1942.

³³ Whittlesly, op. cit. p. 185.

³⁵ Springfield Armory Archives, Building 102 Drawings.

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north end of Building 103, in the ell, metal was annealed and case hardened, and in the wing it was filed, polished, and proved. Gauges that had been part of the Springfield Armory's practice to maintain uniformity of parts starting in 1872 were located in the north end of Building 103. Here they were kept and inspected so that when one showed signs of wear, it could be re-tooled. Inspection of rifle parts also took place in Building 103. The south wing had an assembling shop and a test-firing space, as well as a drafting and planning section where the master armorer worked. In 1893, a new power plant was installed in the center section of Building 103 consisting of two 150-horse-power Corliss engines and four Babcock & Wilcox boilers. ³⁶

Building 101 contained the milling operations where rifle components were made on grinders, mills, and lathes (Figure 13).

In 1895, a new building was added to Federal Square: the farrier's building (now gone). Other new buildings went up during the period as well. In 1895, Gatehouse No. 3 was built (now gone). Building 106 (now gone) was constructed in 1912 as a bone pocket (animal bones provided carbon for the process of metal hardening), and in that year an experimental building (now gone) with a proving range was built where small arms and small-arms ammunition were tested.³⁷

The layout of Buildings 101-103 may have been an improvement for arms manufacture but their space was insufficient for wartime production lines. Production had to be increased in 1898 during the Spanish-American War, so even the basements of the new buildings were put to use. The Krag did not perform as well as its competition, the German Mauser, did, so research continued in order to produce a better repeating rifle. The result was the Springfield 1903 rifle that was manufactured until 1931. It was a breech loader at caliber .30, and combined features of the Krag and the German Mauser. Production of the two rifles—the Krag and the Springfield 1903—remained relatively slow even with the new buildings and machinery, as it was a much more complicated process. After 1903, reorganization of the uses of the Federal Square buildings was begun, and after 1909 the organization was set up according to the principles of Frederick Taylor, known as "scientific management." Taylor was a consultant to industry, bringing efficiency through standardization of manufacturing methods, and improvement of managementworker relations through organization. Taylor's scientific management was a principle that coincided neatly with the U.S. Ordnance Department's focus on uniformity and interchangeability of small-arms parts and the ongoing debate of paying for work by inspected piece or by hours worked. For instance, a separate bayonet inspection room was set up in 1908 in Building 101 where independent inspectors could work out of sight of the bayonet makers in the building, relieving the inspectors of the pressure of approval, which in turn, affected the pay of the arms makers.

As a result of the reorganization of the buildings' processes, machines were to be run by electrically driven shafting and belts rather than steam-driven. Bridges were constructed in the early 1900s between Buildings 101 and 103 and 102 and 103 to facilitate worker and material circulation within the three buildings. Transportation among buildings was also improved by construction of rail lines between the Watershops and Springfield Hill beginning in 1908, and trolley lines from the Armory Square storehouses to the buildings of Federal Square in 1915 (trolley tracks now gone) (Figure 14). Fire safety measures continued to be upgraded, so automatic sprinkler systems were installed in Buildings 101, 102, and 103 in 1908 and 1909, and improvements in worker comfort were added with the installation of new toilets.

³⁶ Springfield Armory Archives, <u>Building 103 Drawings</u>

³⁷ Springfield Armory Archives, <u>Massachusetts Historical Record. Building Inventory</u>, June, 30, 1932, typescript.

³⁸ Colton. op. cit. p. 206.

³⁹ Springfield Armory Archives. <u>Buildings 101, 102, 103 Drawings</u>, 1917.

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Early Modern Period (1915-1941)

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Until World War I, the US Department of Ordnance avoided contracting with private companies to manufacture arms. But the private companies produced at a faster rate than the national armories in the opening decades of the 20th century, so Winchester and Remington companies were engaged to produce arms. In 1917, when the United States entered World War I, the Springfield Amory's production increased significantly, and at Federal Square a cantonment, or military camp, was constructed of temporary buildings for the duration of the war. On the eastern side of Federal Square, wood-frame buildings went up to house and care for the military brought in to work on production. The Officers' Quarters held 20 men and two barracks held 288 men each. There was a guard house, a lavatory, a recreation building, a hospital, and a heating plant on site. A third barracks held 150 men of the Ordnance Department. A storehouse and YMCA were housed in temporary buildings as well. With its crew of onsite arms makers, Federal Square over the course of the war produced more than 265,000 M1903, boltaction rifles whose accuracy was considered a major breakthrough.

The only permanent construction that took place on Federal Square during World War I was a small brick addition to Building 102 for inspection of rifle components.

After the 1918 armistice, Federal Square went back to its peacetime mode of production, and the temporary buildings erected there were demolished. But first the Springfield Armory, and specifically the manufacturing buildings of Federal Square, became the destination of arms returning from the war for repair, service, and for disposal, as had happened after the Civil War. All the privately manufactured arms came back to the Springfield Armory, as well as 1,600 government-owned machines from the private manufacturers. Machine guns and their tripods, automatic pistols, revolvers, and rifles were returned to be checked at Federal Square for condition, uniform parts, and to be stored at Armory Square. As part of the return to peacetime levels of production, the lay-off of employees was gradually accomplished with the overall number of Springfield Armory's employees going from 4,873 to 222; contracts for materials and arms were cancelled more abruptly. Once the postwar maintenance had been completed, Federal Square personnel returned full time to research, improvement of testing, quality control, and arms manufacture. Federal Square was responsible for its own production, but also for inspecting and maintaining standards of arms produced by the private manufacturers.

After World War I, work at Federal Square focused on bringing its production quantity and speed up to the level of private manufacturers. As it was returned, the more modern machinery from the private manufacturers was installed in Buildings 101–103, and the Springfield Armory took the opportunity to install individual electric motors to run it.⁴¹ The line shafting was very gradually removed. All three main buildings retained their original purposes but new machinery brought about new set-ups and processes. Building 101 became the bolt and automatic facility and a sight shop was added to its functions in the basement in 1919.⁴² The east end of the basement was set up to make the extractor for removing spent shells from the semi-automatic rifles, and milling continued in the building with new punch presses and drills—the heaviest equipment being placed on the first floor and basement. Pre-rust proofing on metal was also done in Building 101 by immersing the metal in soda, so a soda tank was installed in 1918.

The Department of Ordnance's unswerving insistence on high standards of interchangeability and uniformity of parts had been in place since 1815. The maintenance of those standards led to the use of gauges that were manufactured in Building 103, and to an intensification of research. From this point on, scientists made up a larger percentage of the Federal Square staff. After World War I, Building 103 was

⁴² Ibid, Drawing of 1919.

⁴⁰ Green, op. cit., Vol. II, Book I, p. 3.

⁴¹ Springfield Armory Archives, <u>Building 102 Drawings</u>, 1917.

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expanded with an ell on its north end known as Building 107 (Figure 14) (now gone) to add metallurgical and chemical laboratories. As Photo 28 shows visible ghost lines from Building 107. A double heat treating process was introduced in 1918 and conducted in Building 107 for breech mechanisms. Building 102 continued as the carpentry shop but received all-new machine tools, and space was set aside in its basement for test firing. A ca. 1918 drawing of Building 102 indicates that wood-stock machinery was also in the basement and planers, profilers, and bevelers were on the second floor. Power sources were amplified in 1919 with a transformer house as Building 109 (now gone) and a generator house in the same year known as Building 108 (now gone). A new concrete bone pocket was constructed in 1918 as Building 111 (now gone and replaced by another Building 111). New power-plant equipment installed in 1919 in Building 103 set the stage for improved electrification of the buildings and their machines. However, the new turbine-driven generators that were installed in Building 103 were shut down in 1923 and the Armory bought its electricity from Springfield. Electric freight elevators were installed in 1919 and improved electric lights in 1920. As a result of the new laboratories, new support buildings, increased power generation, and new equipment, by 1924 the Armory was up to with the standards of private industry.

The Ordnance Department, meanwhile, continued to press for very high standards of parts interchangeability and for narrow parts tolerances from the armorers and inspectors at Federal Square. Their exacting standards made it very hard to develop a rifle that also met the concurrent multiple aims of the department for a lightweight, powerful, rapidly produced small arm. Research geared toward producing a semi-automatic rifle was carried out with several models proposed by armorers, led by Captain James Hatcher, who headed the Experimental Department, and by a civilian, John Garand, who came to the Armory in 1919 to work on experimental designs. The successful design that emerged from their work was the model developed by John Garand, the M1 rifle. His first model was made in 1922. In 1926 and 1929, improved models were made and in 1931 the M1 was approved at the Armory for limited production in Buildings 101–103, but it was not approved by Congress until 1935. The M1 was a combustive-gas-operating, breech-mechanism, or semi-automatic, rifle. Garand designed the machinery to manufacture the M1 as well as the piece itself. Once approved it was manufactured with ongoing modifications in Federal Square from 1937 to 1957.

Between 1931 and 1941, under the leadership of Col. J.W. Joyes, Lt. Col. T.J. Smith, and Brig. Gen. G.H. Stewart, extant Federal Square buildings were reorganized or updated and new buildings and structures were put in place to support the manufacture of the semi-automatic rifle and barrels for .50-inch caliber machine guns. Buildings 101–103 were all updated in 1939 with new doors surrounded by glass sidelights and transoms (Photo 13). Building 103 had additions on its east elevation to hold new machining in 1937 and 1941 (Photo 27), and a tunnel was built from 102 to 103. Old stacks, boilers, dust collectors, and machinery were taken out of the buildings to open space for efficient working conditions. A new exterior dust collector was built in 1931 behind Building 103 along with a chimney called Building 113, an oil-valve pit called Building 114, and a tool house. A heat-treating building was constructed on the east side of Building 103 just south of the metallurgy and chemistry lab, Building 107 (Figure 15). None of these remain. Building 105 went up in 1937 as the Paint Building that was soon converted to the Gauge Building, where final inspection gauges were developed and used in all the arms manufactured at the Armory (Photos 14 and 16). A new transformer house—Building 12—was erected in 1941 as a support building for the increased power needed (Photo 17).

⁴³ Colton, op. cit., p. 115

⁴⁴ Green, op. cit. Vol. II, Book I, p. 5.

⁴⁵ Colton. op. cit. p. 41.

⁴⁶ See model at Springfield Armory Museum for complete layout of Federal Square at this period.

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As another war became more of a certainty, it was clear that production of the M1 in projected quantities would require new, modern industrial facilities, so the 4 ½ years after the M1 was accepted were devoted to preparing the Springfield Armory for production. Production engineering, retooling of machinery, and construction of two enormous factories took place. To ensure meeting anticipated demand, the Ordnance Department contracted with Winchester Arms Company to supplement production of the M1. At nearly the same time, Congress through the National Defense Program of 1939 approved funds for the Springfield Armory. With that funding source, Building 104 for M1 production was completed in 1940 by Fred T. Ley, Inc., of Springfield. Ley was one of the country's largest construction companies, responsible for, among other large projects, Fort Devens in Massachusetts and the Chrysler Building in New York. Building 104 was constructed with space for all the M1 components' milling operations except the barrel and the stock, which were made in the original Federal Square buildings. There was a laboratory in the north end set up in 1941 (Photo 29), and milling occupied the balance of the building. It was constructed on the east side of the Federal Square block, stretching the entire length of Magazine Street between State and Lincoln streets (Figures 15 and 16). In the new building, Springfield Armory's workers produced six times the number of M1s that Winchester did.⁴⁷

Architecture

Building 105, built in 1937 (Figure 15), is one of the most architecturally conservative buildings in Federal Square. It is a three-story brick building with pilasters separating its bays—a form of industrial building common from the last quarter of the 19th century (Photos 14 and 16). The explanation for its conservative nature may lie in the fact that in 1937, Congress had not yet released war-level funding for the Springfield Armory; also, Building 105—whose original purpose was as a paint shop—could function in a several-story loft form, and was cheaper to build than a single-story factory building. A one-story generator building was added to it after the Armory was closed in 1968 (Photo 15).

Building 112, the transformer house, was put up in 1941(Figure 15, Photo 17). It followed the conservative form of Building 105 with pilasters on the exterior separating the bays. Large doors on the west end allowed machinery to be installed. Though it was a small building, its masonry construction, gabled roof covered with slate, and decorative brickwork kept it within the established style of the Armory.

Between 1939 and 1942, the one-story pedimented stairtowers on Buildings 101 and 102 were raised to the upper stories to facilitate circulation within the buildings, and notes on the drawings for the work concern preservation of the appearance of the original pedimented stairtowers. Respect for the architecture of the three original buildings at Federal Square is apparent.

On its south end facing State Street, Building 104 has a two-story brick-and-brownstone façade and on the north a more utilitarian, two-story brick elevation (Photos 21, 29). Between the two brick ends was a one-story metal and glass factory with a twin monitor roof letting light and air into the interior. The manufacturing section of the building had reinforced concrete floors and columns that could tolerate the weight and restrain movement of motor-driven, high speed machinery. The most modern machinery available was installed with conveyor systems. Industrial steel sash let optimal light into the interior, but the space was also fully lit by electric lighting, and as a modern building, its space was fully air conditioned for summer and forced-air-heated for winter. The center section of the building where milling operations were conducted was demolished in 2015.

⁴⁷ Colton. op. cit. p.41-.

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Modern Period 1942-1968

World War II brought the Springfield Armory and Federal Square to its highest level of productivity. The next few years confirmed its ability to oversee U.S. small-arms research, development, product engineering, and technical oversight of all Army small-arms procurement in the private market and in the military. In 1943, there were 13,500 employees at the Armory, 43% of whom were Women Ordnance Workers, who replaced men at war. The large workforce was concentrated at Federal Square, where Building 111 was added in 1942 for the manufacture of gunstocks and machining work (Figures 15 and 16, Photo 18). Constructed by the J. R. Worcester and Company Architects and Engineers of Boston, Building 111 on the first floor held the equipment for making gun stocks: the groovers, routers, shapers, and dozens of benches where people worked. The second floor was devoted to the machine room but also had a planning office, and a machine-parts crib. On the third floor were an assembly hall, credit union offices, and an employee cafeteria. It was the last permanent building to be constructed at Federal Square. Temporary Building 115 was constructed for metal finishing in 1942 and a temporary gatehouse at Gate No. 15 was also built in 1942. Both were demolished in 1968.

When Building 111 was constructed, a tunnel to Building 103 was included. The tunnel allowed wood for the stocks being dried in kilns installed in Building 103 to be transported quickly to Building 111. Building 103, long outfitted for mechanical and metal machining, was more closely integrated into the M1 production process than Buildings 101 and 102, whose functions were largely supplanted by those of Buildings 104 and 111. Building 103 was expanded to contain the heat treating, filing, and polishing process and altered to contain the dry kilns installed in 1940 (Figure 15). Building 101, no longer the center of the milling process taking place in 104, made a transition to bolt assemblies for the semi-automatic rifles, and Building 102 continued as a woodworking shop and had a utilities office with cabinets on its first floor, as well as locker rooms and an electrical department. Plans for a rifle range on plans dated 1945 exist, showing targets, a smoke chamber, and sand pit.

Standard sampling was introduced in 1944, reducing the need for item-by-item inspection, which had slowed pre-war production significantly.⁵⁰

Following the war, the Ordnance Department and the Army as a whole focused attention on development of atomic weapons, and development of small arms for ground troops took a secondary position. However, the Springfield Armory continued to conduct research and testing under a series of commandants. In 1949, Building 101 had, on its second floor, the latest in thread-grinding machines, and it became the center for metallographic and precision casting. In 1949, Building 103 was in part used for bullet traps in which guns were fired into tubes of water for ballistics research. This research and more led to the M14, a selective-fire, fully automatic rifle manufactured at Federal Square from 1957 to 1968. However, the Defense Department did not consider the M14 design as having met its objectives of being a lightweight shoulder rifle with a .30-caliber killing power.

Besides its M14, the Springfield Armory in the 1960s aimed to meet its design and development charge from the government by designing new weapons. Armorers came up with other new weapons design, developed experimental manufacturing methods, and designed and produced new aircraft armaments. Approximately 8,000 M79 grenade launchers, for instance, were made here between 1960 and 1962, as well as the M60 and M85 machine guns used in Vietnam. Between 1960 and 1967, the M73 machine gun was designed and developed at the Armory; nearly 10,000 of them were made here. Despite the Armory's production, in 1964 the Defense Department ruled that in the future, the military would use private

⁵⁰ Colton. op. cit. p. 115.

⁴⁸ Green, op. cit., Vol. II, Book III, Chapter I, p. 199.

⁴⁹ Springfield Armory Archives, <u>Building 104 Drawings</u>, 1940.

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manufacturers rather than its national armories for small arms. The armory was closed in 1968, overseen by the Springfield Armory's last commandant, Lt. Col. C. B. Zumwalt. ⁵¹

Architecture

Building 111 was the last of Federal Square's modern factory buildings to be constructed. These two buildings are steel-framed production sheds, a form that had evolved from the late 19th century and first few decades of the 20th century. Broad buildings at any length with concrete floors traversed by fork lifts and powered by off-site means meant spaces unencumbered by the line shafting, belting, and electric motors characteristic of Buildings 101–103. But preservation of the integrity of the original buildings at Federal Square was a value as well, so when Alderman and McNeish, architects and engineers from West Springfield, created the infill section between Buildings 102 and 103, they used the same materials and the same pattern of fenestration, height, and depth of the two buildings being connected to create a relatively seamless addition.⁵²

The architectural history of Federal Square after World War II is mainly one of abrupt loss. In 1968, under orders by the U.S. Department of Defense, a number of buildings were demolished: Building 106, the Heat Treating Building; Building 107, the Metal Finishing Building; Building 108, the Acid Storage Building; Building 109, the Heat Treating/Storage Building; the Gatehouse; Building 113, a chimney; and the two temporary buildings: 115 and 116.

1968-Present

At the 1968 closing of the Springfield Armory, the General Services Administration sold the property of the Springfield Armory to the City of Springfield. In 1974, the Milton Bradley Company bought Federal Square except for the strip along State Street that was retained by the city as Benton Park. In 1982, Milton Bradley Company sold its holdings on Federal Square to the Digital Equipment Corporation and the city sold the strip of Benton Park to Digital as well, returning it to the Federal Square property. Expansion of the parking lot south of Building 111 and Building 104 South then covered what had been Benton Park with parking space. Both the Wait Milestone and Shays Rebellion Marker are now in the grass verge owned by the City of Springfield as part of the State Street right-of-way. In 1996, Digital Equipment Corporation sold Federal Square to the Springfield Technical Community College. Today the property is owned by the Springfield Technical Community College Assistance Corporation and is developing the buildings into a technology park.

Following the government-led demolition of 1968 described above, Federal Square remained substantially as seen today. Subsequent owners of the property, Milton Bradley Company and Digital Equipment Corporation, in order to make it function for new uses, however, made some additions and subtractions. A metal connector of three stories was built between Building 111 and the south end of Building 103 ca. 1970 (Photo 9), and a new gatehouse on Federal Street was erected at the entry to Federal Square ca. 1977 (Photo 3). A brick connector between Buildings 104 and 111 was also built ca. 1977 (Photo 16, far right). By 2014, a portion of Building 103's north wing was demolished by the Springfield Technical Community College Assistance Corporation for a roadway to parking on the east side of Federal Square, and 70,000 square feet of Building 104's original 135,000 square feet were demolished that year, leaving its two end sections for use by a charter school and business rental space. The wall, described above, suggesting the former placement of Building 104's milling shop; a gatehouse on the east side of the Square and a gazebo were constructed in 2015 (Photo 25).

⁵² Springfield Armory Archives, Building 102 Drawings, 1961.

⁵¹ National Park Service, Springfield Armory, Website: http://www.nps.gov/spar. <u>The Legacy of Springfield Armory's Superintendents and Commandants</u>, p.2.

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Federal Square is now a technology park with its buildings housing a mixed group of businesses.

Preservation Considerations

The owners of Federal Square initiated this nomination to the National Register and appreciate the historical and architectural significance of the property. At the same time, the Federal Square Historic District as a commercial venture will likely face further pressures for change that could have a deleterious impact on its historic fabric. Changes to Federal Square could affect Armory Square, a National Historic Landmark, as the two sections of the Springfield Armory historically functioned as a whole, and the architecture and landscape of Federal Square is a planned reflection of that of Armory Square.

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Federal Square Historic District

Name of Property

Hampden, Massachusetts

County and State

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deral Squar	e Historic Dist	rict				Hampden, Massachuset
me of Property						County and State
Previous	locumentatio	n on file (NPS):				
preli	minary determ	ination of individual	l listing (3	6 CFR 6	(7) has been red	quested
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previ	ously determi	ned eligible by the N	Vational R	egister		
desig	gnated a Nation	nal Historic Landma	rk			
reco	ded by Histor	ic American Buildin	gs Survey	#		
		ic American Enginee				
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Federal Square Historic District	
Name of Property	

Hampden, Massachusetts County and State

Verbal Boundary Description (Describe the boundaries of the property.)

The Federal Square Historic District includes 15.17 acres of land located at 1 Federal Street in Springfield, Massachusetts. The District includes parcel number 04997-0042, as identified by the City of Springfield's property assessment data. The District is bounded to the north by Lincoln Street, to the east by Magazine Street, to the south by State Street and a short section of St. James Street, and to the west by Federal Street. Please see attached assessors map.

Boundary Justification (Explain why the boundaries were selected.)

The district boundaries follow the lot lines of Federal Square and include the former Benton Park, now a parking lot south of Building 111 and Building 104 South. Also included is the grass verge now part of the State Street right-of-way, owned by the City of Springfield, as the site of the Wait Milestone and Shays Rebellion Marker.

11. Form Prepared By		
name/title: Bonnie Parsons, preservation con	sultant, with Eri	c Johnson, consultant,
University of Massachusetts Archaeological Se	rvices, and Bets	y Friedberg, National Register
Director, MHC		
organization: Massachusetts Historical Cor	nmission	
street & number: 220 Morrissey Blvd.		
city or town: Boston state: MA	zip code:	02125
e-mail betsy.friedberg@sec.state.ma.us		
telephone(617)727-8470		
date: January 2019		

Additional Documentation

Submit the following items with the completed form:

- Maps: A USGS map or equivalent (7.5 or 15 minute series) indicating the property's location. (Figure 17)
- Sketch map for historic districts and properties having large acreage or numerous resources. (Figure 1) Key all photographs to this map. (Figure 18)
- Additional items: (Check with the SHPO, TPO, or FPO for any additional items.)
 - o Assessors map showing district boundaries (Figure 19)
 - USGS Springfield South Quadrangle showing locations of UTM coordinates of district boundaries (Figure 20)

Federal Square Historic District

Name of Property

Hampden, Massachusetts County and State

Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Name of Property: Federal Square at the Springfield Armory

City or Vicinity: Springfield

County: Hampden State: Massachusetts

Photographer: Bonnie Parsons

Date Photographed: December, 2015

Description of Photograph(s) and number:

1 of 32

MA_Hampden County_Federal Square Historic District_0001 View to the North of Federal Street. Armory Square on left; Federal Square on right. 1851 Fence Post is on the Right Street Corner

2 of 32

MA_Hampden County_Federal Square Historic District_0002

View to northeast from State Street of south elevation of Building 102 and west elevation of Building 111.

3 of 32

MA_Hampden County_Federal Square Historic District_0003 View to north of Security Office; Building 101 on right.

4 of 32

MA_Hampden County_Federal Square Historic District_0004 View to northeast of Building 101.

5 of 32

MA_Hampden County_Federal Square Historic District_0005 View to southeast of north elevation of Building 101.

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OMB No. 1024-0018

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MA_Hampden County_Federal Square Historic District_0006 View to south of Building 102 north façade.

7 of 32

MA_Hampden County_Federal Square Historic District_0007 View to northeast of west elevation of Building 102.

8 of 32

MA_Hampden County_Federal Square Historic District_0008 View to northwest of south elevation of Building 102.

9 of 32

MA_Hampden County_Federal Square Historic District_0009
View to east of infill between Building 111 (on right) to earlier infill between Building 102 (on left) and 103 (not visible).

10 of 32

MA_Hampden County_Federal Square Historic District_0010

View to northeast of Green with Building 101 on left and Building 103 on right.

11 of 32

MA_Hampden County_Federal Square Historic District_0011

View to northeast of northern section of Building 103 with demolished bays to provide new roadway on right.

12 of 32

MA_Hampden County_Federal Square Historic District_0012

View to southeast of Building 103 with main entry on left and south wing on right. At far right corner infill between Buildings 103 and 102 can be seen.

13 of 32

MA_Hampden County_Federal Square Historic District_0013 View to east of entry to Building 103 with date stones.

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MA_Hampden County_Federal Square Historic District_0014 View to northwest of Building 105.

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MA_Hampden County_Federal Square Historic District_0015 View to west of Generator Building attached to north elevation of Building 105.

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MA_Hampden County_Federal Square Historic District_0016 View to southeast of west elevation of Building 105.

United States Department of the Interior
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NPS Form 10-900
OMB No. 1024-0018

Federal Square Historic District

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MA_Hampden County_Federal Square Historic District_0017 View to northeast of Building 112, Lincoln Street in background.

18 of 32

MA_Hampden County_Federal Square Historic District_0018 View to northeast of Building 111.

19 of 32

MA_Hampden County_Federal Square Historic District_0019

View to northeast of Building 111 with closer view of entrance canopy, solar panels and window configurations.

20 of 32

MA_Hampden County_Federal Square Historic District_0020 View to northeast of Wait Marker.

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MA_Hampden County_Federal Square Historic District_0021

View to northeast of south façade of Building 104 with sealed former main entry.

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MA_Hampden County_Federal Square Historic District_0022 View to south of southern section of Building 104 and its new north façade.

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MA_Hampden County_Federal Square Historic District_0023 View to north of new south façade of northern section of Building 104, parking lot area of former milling shop floor.

24 of 32

MA_Hampden County_Federal Square Historic District_0024

View to east of New Magazine Street Wall stretching between two remaining sections of Building 104 delimiting area of former milling shop floor now demolished.

25 of 32

MA_Hampden County_Federal Square Historic District_0025

View to southwest of east elevation of south wing of Building 103 on right, north elevation of south ell on left; new Gazebo in yard.

26 of 32

MA_Hampden County_Federal Square Historic District_0026 View south toward State Street through Fencing first erected in 1851.

27 of 32

MA_Hampden County_Federal Square Historic District_0027

View to south of center block of Building 103 with on far right demolished section of north wing followed by original Boiler and Blacksmith Shop of 1892 and New Power House of 1919 on left.

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OMB No. 1024-0018

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MA_Hampden County_Federal Square Historic District_0028

View southwest of east and north elevations of north wing of Building 103, ghost of Building 107 visible on brickwork.

29 of 32

MA_Hampden County_Federal Square Historic District_0029 View to east of north remaining section of Building 104.

30 of 32

MA_Hampden County_Federal Square Historic District_0030

View to southeast of building at corner of State and Oak streets, pre-1855, one of the earliest remaining buildings on Springfield Hill, but outside the Federal Square Historic District.

31 of 32

MA_Hampden County_Federal Square Historic District_0031 View to south east of north elevation of Building 103.

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MA_Hampden County_Federal Square Historic District_0032

View to south east of south wing of Building 103. At far right in shade is connector between Buildings 103 and 102.

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United States Department of the Interior National Park Service / National Register of Historic Places Registration Form NPS Form 10-900 OMB No. 1024-0018

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Figure 18. Federal Square Historic District Map Showing Number, Location, and Direction of Photographs

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Figure 20. District Boundaries and UTM Points Indicated on the Springfield South, Mass.-Conn. 1958 (Photorevised 1979) 7.5 Minute USGS Quadrangle

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 100 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Office of Planning and Performance Management. U.S. Dept. of the Interior, 1849 C. Street, NW, Washington, DC.

Hampden, Massachusetts
County and State

Figures

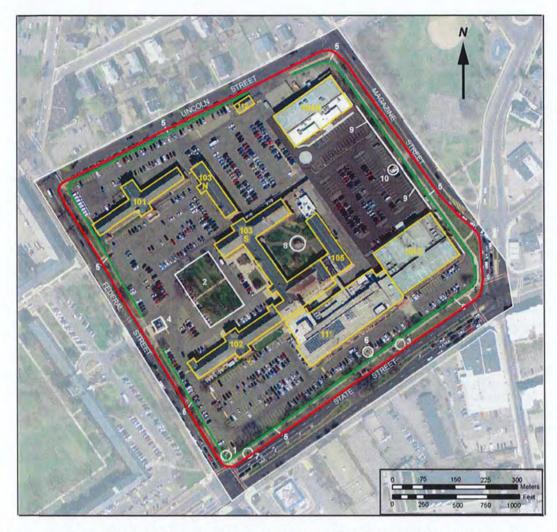


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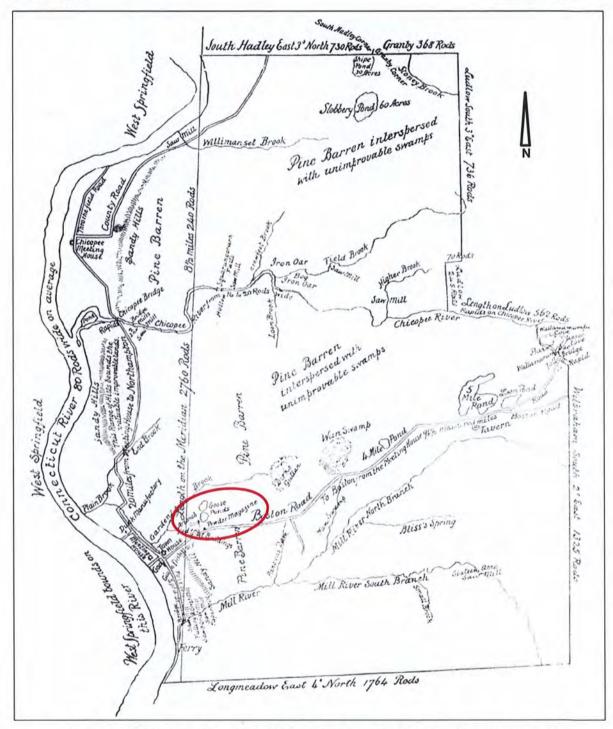


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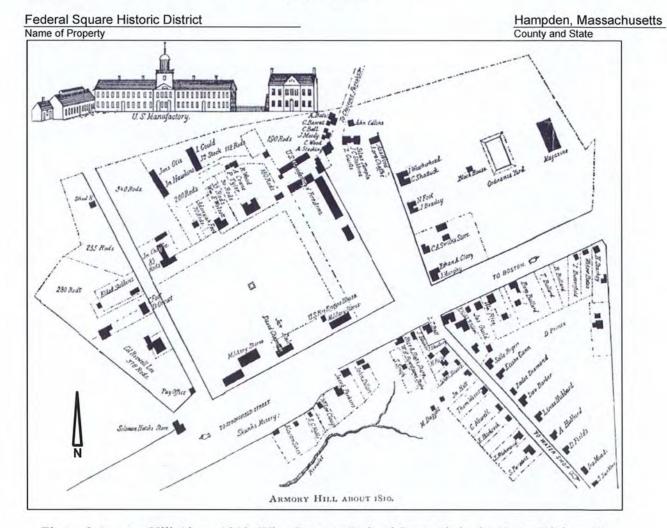


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Name of Property

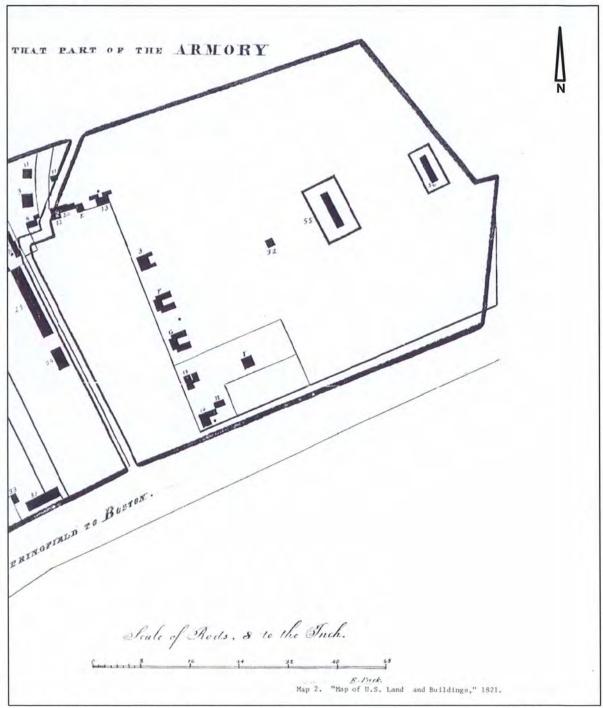


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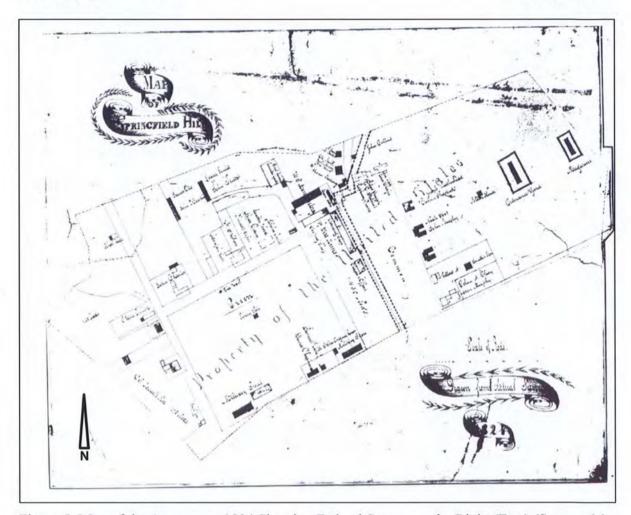


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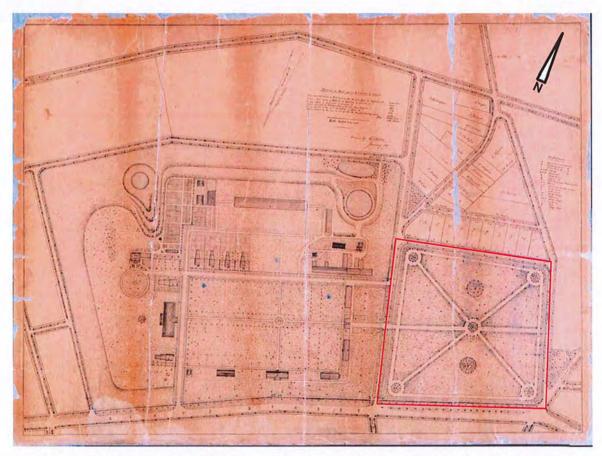


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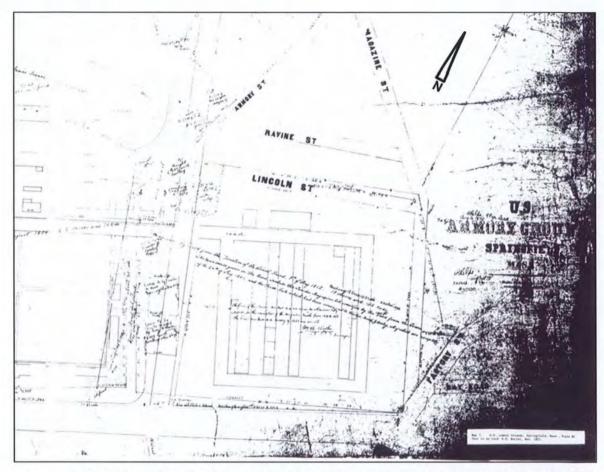


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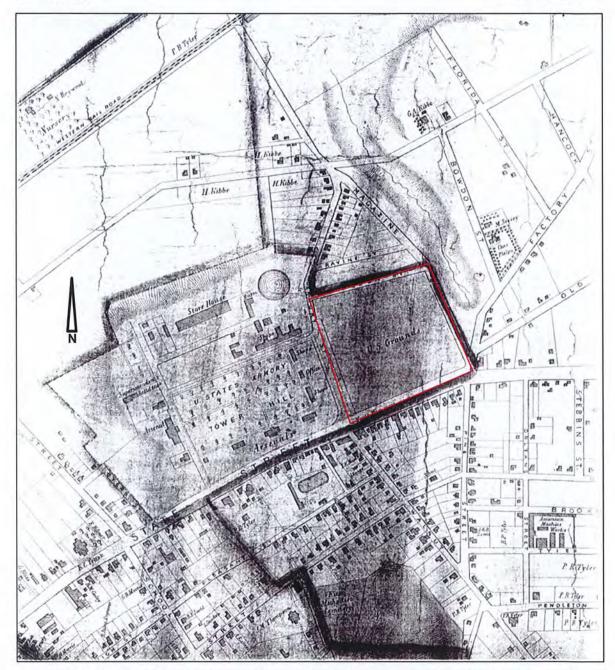


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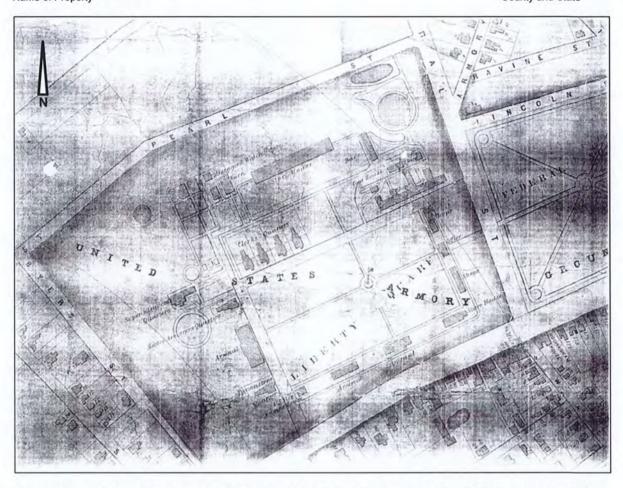


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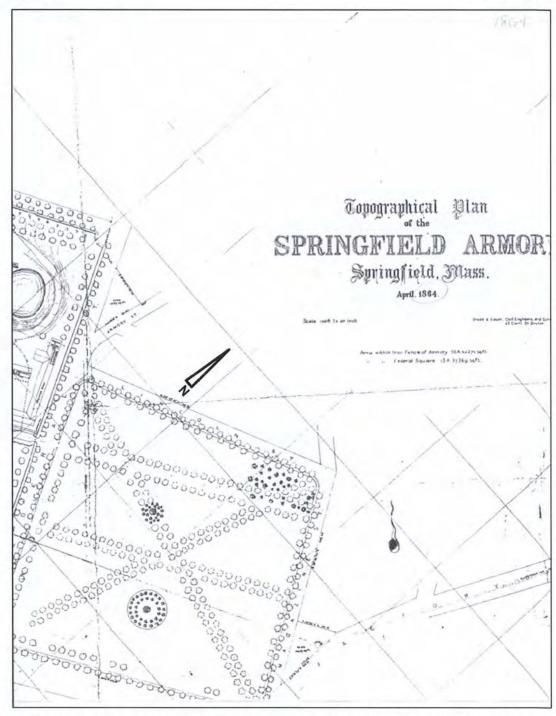


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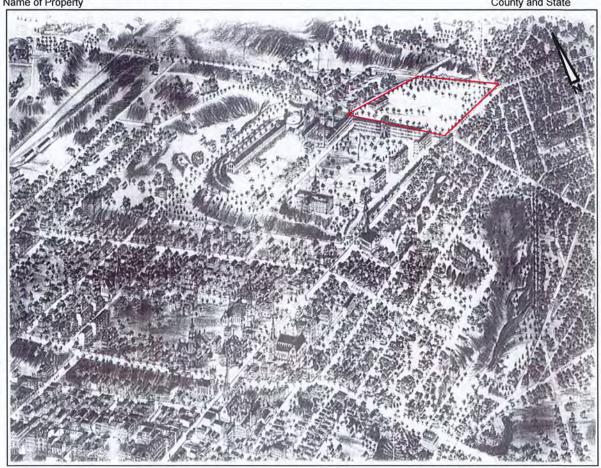


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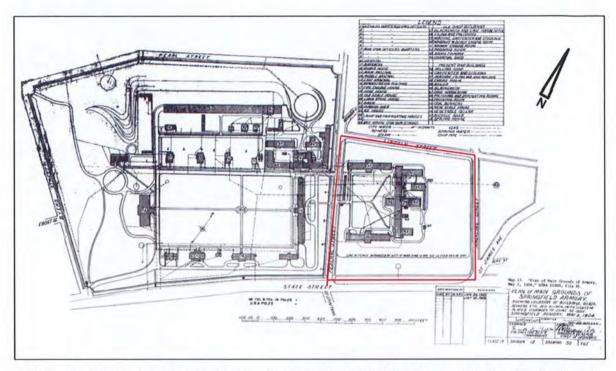


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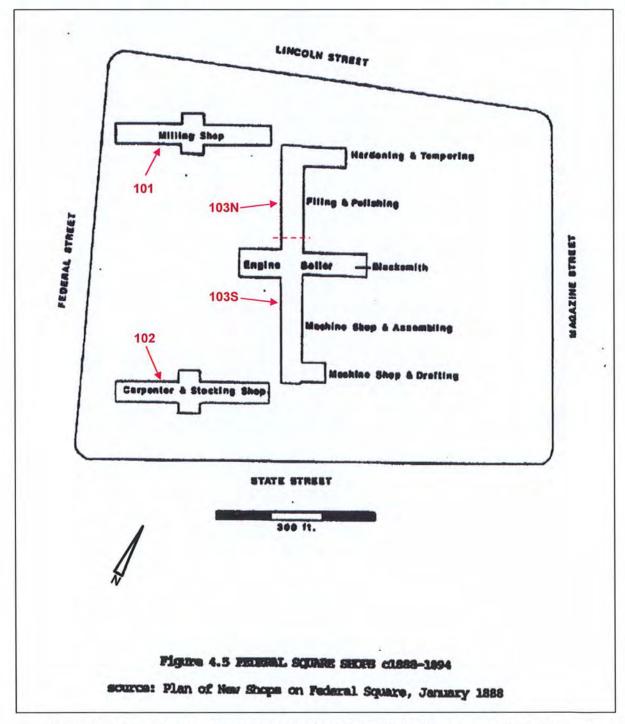


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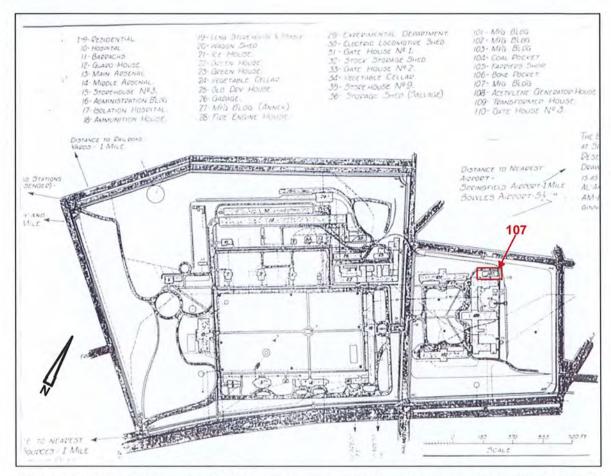


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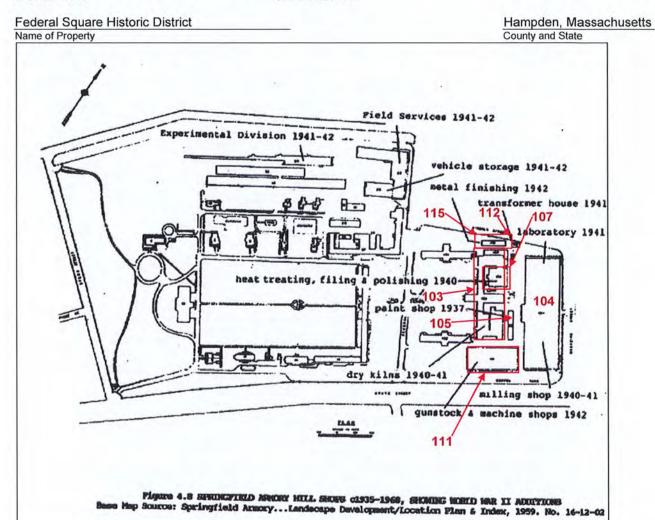


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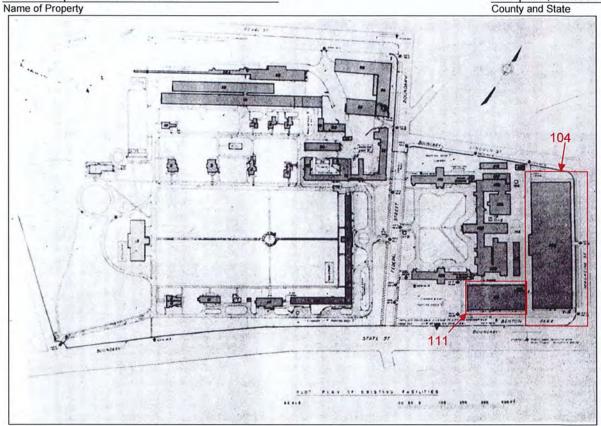


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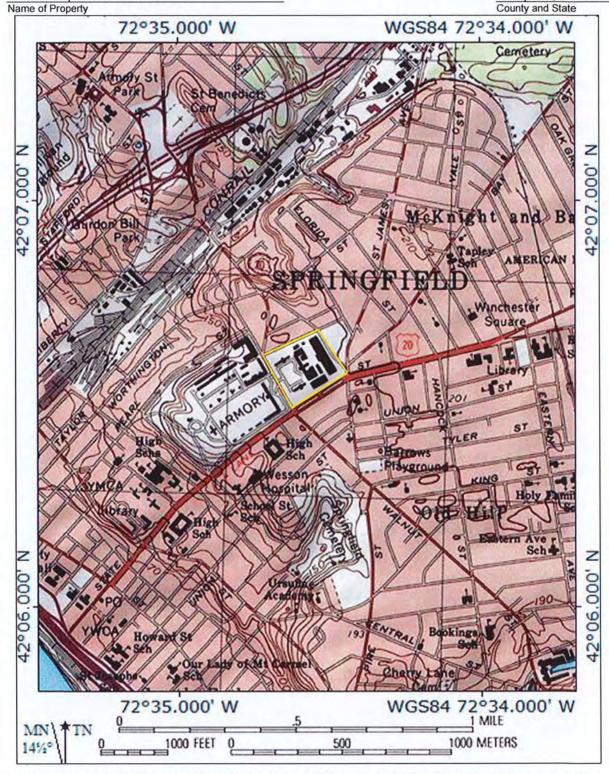


Figure 17. USGS Springfield South Quadrangle Showing Location of Federal Square Historic District Outlined in Yellow

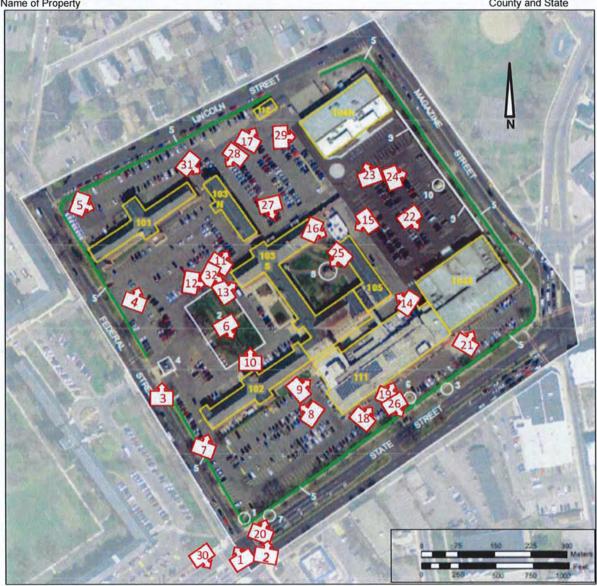
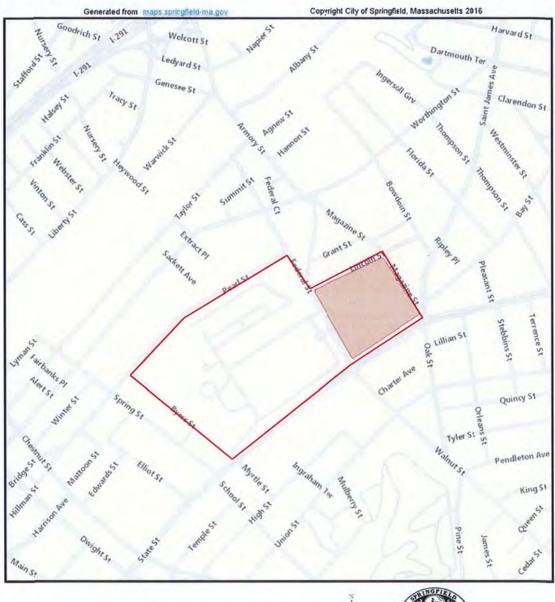


Figure 18. Federal Square Historic District Map Showing Location and Direction of Numbered Photographs

Name of Property

Hampden, Massachusetts
County and State



2/26/2018 4:48:30 PM

Scale: 1"=752' Scale is approximate



GIS information is provided on these Web Pages as a public resource for general information purposes only. It is used to locate, identify and inventory parcels of land in the City of Springfield for general purposes only and is NOT to be construed or used as a "legal description." Map and parcel information is believed to be accurate but accuracy is not guaranteed. No portion of the information should be considered to be, or used as, a legal document. The information is provided subject to the express condition that the user knowingly waives any and all claims for damages against the City of Springfield that may arise from the use of this data. Information provided on these Web Pages should be verified with the appropriate City department, and reviewed and approved by an attorney or other qualified professional prior to its use for any purpose with potential legal consequences.

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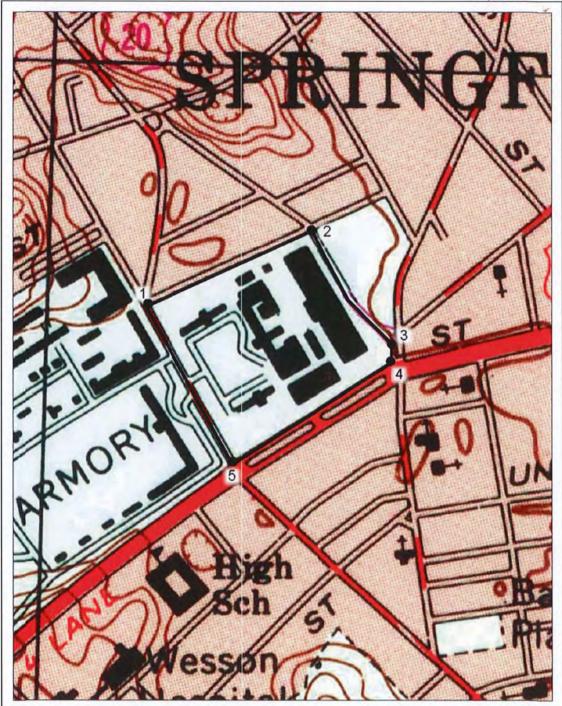


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Federal Square Historic District Springfield (Hampden County), MA

District Data Sheet

MHC#	# in Sketch Map	Photograph number(s)	Assessor	Address	Name	Date	Style	Resouce	C/NC
SPR.981	1	1	49970042	1 Federal Street	Fence Post	1851	rusticated post	Structure	С
SPR.4411	101	4, 5, 9, 10	49970042	1 Federal Street	Building 101	1888	Classical Revival	Building	C
SPR.980	2	10, 12, 32	49970042	1 Federal Street	Federal Square Green	1888	park	Site	C
SPR.4412	102	2, 6, 7, 8, 9	49970042	1 Federal Street	Building 102	1890	Classical Revival	Building	C
SPR.4413	103N	11, 28, 31	49970042	1 Federal Street	Building 103 North	1892, 2014	Classical Revival	Building	C
SPR.4414	1035	12, 13, 27, 32	49970042	1 Federal Street	Building 103 South	1892, 2014	Classicall Revival	Building	С
SPR.986	3		111100105	State Street	Shays' Rebellion Marker	1900	rustic boulder	Object	С
SPR.4415	105	14, 15, 16	49970042	1 Federal Street	Building 105	1937	utilitarian	Building	C
SPR.4416	1045	21, 22	49970042	1 Federal Street	Building 104 South	1940, 2014	Art Deco	Building	C
SPR.4417	104N	23, 29	49970042	1 Federal Street	Building 104 North	1940, 2014	Art Deco	Building	C
SPR.4418	112	17	49970042	1 Federal Street	Building 112	1941	utilitarian	Building	С
SPR.4419	111	2, 9, 18, 19	49970042	1 Federal Street	Building 111 and connector	1942, ca. 1970	Art Deco	Building	C
SPR.4420	4	3	49970042	1 Federal Street	Gatehouse/Security Office	ca. 1977	Classical Revival	Building	NC
SPR.985	5	2, 26	49970042	1 Federal Street	Perimeter Fence	ca. 1980	spike & spear	Structure	NC
SPR.984	6		49970042	1 Federal Street	STCC sign	ca. 2000	post and beam	Object	NC
SPR.987	7	2, 20	111100105	State Street	Wait Milestone Replica	2010	ornamented obelisk	Object	NC
SPR.982	8	25	49970042	1 Federal Street	Gazebo	2015		Structure	NC
SPR.983	9	24	49970042	1 Federal Street	Magazine Street Wall	2015	utilitarian	Structure	NC
SPR.4421	10		49970042	Magazine Street	Security Gatehouse	2015		Building	NC

	Contributing	Noncontributing	
Buildings	9	2	11
Sites	1	0	1
Structures	0	3	3
Objects	1	3	4
TOTAL	11	8	19

































































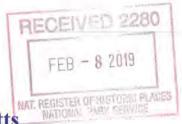
UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES EVALUATION/RETURN SHEET

Requested Action:	Nomination				
Property Name:	Federal Square Historic	District			
Multiple Name:					
State & County:	MASSACHUSETTS, Hampden				
Date Rece 2/8/201	[의 리이트		7: Date of 45th Day: I 3/25/2019	Date of Weekly List:	
Reference number:	SG100003546				
Nominator:	SHPO				
Reason For Review	:				
Appeal		PDIL	Text/D	ata Issue	
SHPO Request		Landscape	Photo	Photo	
Waiver		X National	Map/B	Map/Boundary	
Resubmission		Mobile Resource	Period	Period	
X Other		TCP	Less th	nan 50 years	
		CLG			
X Accept	Return	Reject 3	/15/2019 Date		
Abstract/Summary Comments:	Armory Square NHS.	the other "half" of the Sprir AOS: architecture/engineer ocal (architecture/engineeri	ring and military. POS		
Recommendation/ Criteria	NR Criteria: A and C.				
Reviewer Lisa D	ewer Lisa Deline		ne Historian	Historian	
Telephone (202)354-2239		Date	3/15/19		
DOCUMENTATION	I: see attached comm	ments : No see attached	I SLR : No		

If a nomination is returned to the nomination authority, the nomination is no longer under consideration by the National Park Service.





The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth Massachusetts Historical Commission

January 31, 2019

Dr. Julie Ernstein
Deputy Keeper
Acting Chief, National Register of Historic Places
Department of the Interior
National Park Service
1849 C Street NW, Stop 7228
Washington, DC 20240

Dear Dr. Ernstein:

Enclosed please find the following nomination form:

Federal Square Historic District, Springfield (Hampden County), Massachusetts

The nomination has been voted eligible by the State Review Board and has been signed by the State Historic Preservation Officer. The owners of the property were notified of pending State Review Board consideration 30 to 75 days before the meeting and were afforded the opportunity to comment.

Sincerely,

Betsy Friedberg

National Register Director

Massachusetts Historical Commission

enclosure

cc: Paul M, Stelzer, Appleton Corporation, Holyoke

Eric Johnson, UMass Archaeological Services, consultant

Bonnie Parsons, consultant

Vincent Walsh, Chair, Springfield Historical Commission

Domenic Sarno, Mayor of Springfield

Gloria DeFillipo, Chair, Springfield Planning Board

Linda Cook, Acting Superintendent, Springfield Armory National Historic Site