NPS Form 10-900
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NAT REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

1044

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 How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. 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. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name **RICHMOND FURNACE HISTORICAL AND ARCHAEOLOGICAL DISTRICT**

other names/site number

2. Location

street & number **STATE ROAD, CONE HILL ROAD, FURNACE ROAD** ☐ not for publication

city or town **RICHMOND** ☐ vicinity

state **MASSACHUSETTS** code **MA** county **BERKSHIRE** code **003** zip code **01254**

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this ☒ nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ☒ meets ☐ does not meet the National Register Criteria. I recommend that this property be considered significant ☐ nationally ☒ statewide ☐ locally. (☐ See continuation sheet for additional comments.)

Judith B. McDonough 7/21/99

Signature of certifying official/Title Judith B. McDonough, Executive Director Massachusetts Historical Commission, State Historic Preservation Officer — Date

State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. (☐ See continuation sheet for additional Comments.)

Signature of certifying official/Title — Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:

☒ entered in the National Register
☐ See continuation sheet.
☐ determined eligible for the National Register
☐ See continuation sheet.
☐ determined not eligible for the National Register
☐ removed from the National Register
☐ other (explain): _____

for Signature of the Keeper — Date of Action

Barbara J. Wilson 8/31/99

Richmond Furnace
Name of Property

Berkshire, MA
County and State

5. Classification

Ownership of Property
(Check as many boxes as apply)

x private
X public-local
x public-State
_ public-Federal

(Check only one box)

_building(s)
x district
_ site
_ structure
_ object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
28	35	building
112	1	sites
6	0	structures
2	0	objects
148	36	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing.)

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

DOMESTIC: single, multiple dwelling
INDUSTRY: extractive facility, processing site

Current Functions
(Enter categories from instructions)

DOMESTIC: single dwelling

7. Description

Architectural Classification
(Enter categories from instructions)

EARLY 19TH CENTURY: Federal
MID 19TH CENTURY: Greek Revival, Italianate

Materials
(Enter categories from instructions)

foundation Stone: marble
walls Stone: marble
roof slate
0ther glass

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

Materials

foundation	BRICK, CONCRETE
walls	ASBESTOS, ASPHALT, BRICK, CONCRETE, METAL/ Aluminum, SYNTHETIC/Vinyl, WOOD/Weatherboard, Shingle
roof	ASBESTOS, ASPHALT, METAL/Tin, STONE/Slate, WOOD/Shingle
other	EARTH, METAL/Iron, Cast Iron

Description

The Richmond Furnace Historic and Archaeological District is located in the town of Richmond in southwestern Berkshire County, Massachusetts. Richmond measures 19.2 square miles and is bordered by Hancock and Pittsfield to the north, Lenox to the east, West Stockbridge to the south, and Canaan, Columbia County, New York to the west. The villages of Richmond and Richmond Furnace are located in a picturesque valley between the Berkshire and Taconic mountain ranges to the east and west, respectively. The steep wall of 564 ft-tall Lenox Mountain rises on the southeast, and the lower mass of Deane Hill lies to the west. Richmond and Richmond Furnace are located along northeast-southwest-trending State Road (Route 41), that crosses a gently rolling terrain which includes a mix of high woodlands, open agricultural fields, and low swamps. The village of Richmond Furnace is located approximately 12 miles southwest of the center of Richmond, a small group of residences and municipal buildings clustered at the crossing of State Road and the Consolidated Rail Corporation (Conrail)'s former New York Central Railroad--Boston & Albany (B & A) Division railroad tracks.

The Richmond Furnace Historic and Archaeological District is an L-shaped, 290-acre area with an average elevation of 300 ft above sea level, that includes sections of Cone Hill and Furnace roads, Furnace Lane, and a section of State Road, the main thoroughfare that runs through the western edge of the district. The district contains two major groups of resources, with industrial archaeological structures and features concentrated in the central and eastern parts of the district, and the remaining ironworker houses and administrative buildings located on Furnace Lane and State Road in the central and western parts of the district. The district is bisected by Furnace Brook, also known as Griffing Brook, which is fed by tributaries flowing from the north and west with sources outside the district. Furnace Brook runs just east of, and parallel to, State Road, and crosses Furnace Road at the south edge of the district. The district includes two bodies of water; Furnace Pond ("Upper Pond") (late 18th century) (Map No.152), a dammed power reservoir located north of the Blast Furnace (1829, 1905) (Map No. 166) on Furnace Brook; and the Cone Mine Open Pit (Quarry Pond)

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(1825-1904) (Map No. 1), a flooded, man-made mine excavation located on Furnace Road in the southeastern portion of the district.

The Richmond Furnace Historic and Archaeological District contains 112 contributing and one noncontributing sites; 28 contributing and 35 non-contributing buildings, six contributing structures; and two contributing objects, for a total of 148 contributing and 36 noncontributing resources. A large proportion of the historic resources within the Richmond Furnace Historic District are industrial archaeological resources associated with the extraction of the raw materials required to make cast pig iron, and the actual Richmond Iron Works (RIW) Blast Furnace (c. 1829, 1905) and ancillary infrastructure. A significant architectural component, including administrative and worker housing structures, is also included. The following archaeological site descriptions are organized to logically follow the pig iron production processes from raw material to finished product.

The Richmond Furnace Historic District includes remains of both shaft- and open pit-type iron ore mines. The Cone Mine complex is a group of sites located at the extreme southeastern tip of the district, east of the Cone Open Pit Mine (Quarry Pond), a U-shaped, 900 ft long, naturally-flooded, man-made open pit mining excavation with steep, clay banks. This complex includes the Old Cone Open Pit Mine (1795) (Map No. 13), a shallow, flat-bottomed, grassy, former open-pit mine excavation approximately 400 feet in diameter, now bisected by the driveway embankment leading to a modern, noncontributing house at 412 Furnace Road immediately to the north. Immediately north of the Old Cone Open Pit Mine and the driveway is the Cone Mine Ore Crusher and Washer House Lower (Map No. 56) and Upper (Map No. 57) Foundations (c. 1825-1908), which consist of a two-tiered arrangement of vertical, rough-laid Stockbridge marble block walls approximately 30 ft. long built into the north ore bed bank. An irregular, grass-covered pile of prepared ore lies at the foot of the lower wall. Two linear Ore Conveyor Ramps extend north and northeast from the elevated Cone Mine Crusher and Washer House Foundations. The Cone No. 5 Shaft Mine Ore Conveyor Ramp (c. 1860-1900))Map No. 16) consists of a shallow rubble embankment which extends several hundred feet to the Cone No. 5 Shaft Mine site. This coal-cinder-strewn site includes the Cone No. 5 Shaft Mine Collar (c. 1860-1908) (Map No. 11), a rubble-filled depression from which a constant cold draft emanates, and the Cone No. 5 Shaft Mine Machine Pads (c. 1860-1908) (Map No. 12), three adjacent, low, rubble-and-concrete piers with regularly-spaced, threaded iron pins that originally supported the steam engine and hoist equipment for the mine shaft. A small cluster of contributing foundations is located immediately east of this shaft site. The Cone No. 4 Shaft Mine Ore Conveyor Ramp (c. 1860-1908) (Map No. 15) begins as a rubble embankment which trends into a shallow cut through the steep east bank of the Cone Open Pit Mine (Quarry Pond) and down into the water. The Cone No. 4 Shaft Mine Ore Conveyor Ramp originally continued to the north side the pit to the Cone No. 4 Shaft Mine Collar (c. 1860-1908) (Map No. 9), where the rough-laid stone hoist house and shaft collar walls, as well as hoist equipment bases with threaded iron mounting pins, are visible on the north bank of the pond at low water.

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A series of small depressions along both sides of Furnace Road at the bend at the southwest corner of the Quarry Pond appear to be small shafts or subsidence pits along the east-west strike of the iron ore deposit. This deposit trends east to the smaller Olcott/Carr Mine (1873-1905) (Map No. 28) site east of Furnace Road. The iron ore deposit also trends west under Furnace Road to the Klondike Mine, located south and west of Furnace Road. A cluster of associated features are located just east of the mine along the trace of "New Road" (c. 1905) (Map No. 69), one of three roads originally leading from Furnace Road to the Klondike Mine. These features include two small foundations, possibly the sites of worker houses, and closest to the mine shaft, the remains of the heavily-constructed Klondike Mine Dynamite Storage Bunker Foundation (1905) (Map No. 95), used for storing explosives used in blasting in the mine.

The Klondike Mine complex consists of numerous sites. The easternmost site is the Klondike Mine Pond No. 1 (late 18th century) (Map No. 110), a small water-filled pit marking the location of an old ore bed. The Klondike Mine Prepared Ore Conveyor Footings (1905) (Map No. 99), a series of low, rectangular rubble-and-concrete piers, march up a short, steep hill immediately north of the shaft. These footings originally supported a trolley, or conveyor, which raised run-of-mine ore from the shaft and dumped it into the ore crusher. The massive reinforced concrete Klondike Mine Crusher/Washer House Foundation (1905) (Map No. 104) stands on the crest of the rise at the upper end of the tram footings. A second set of footings located west of, and at a slight angle to, the first set extend back down the short hill to the south, ending at a high stone wall. These are the Klondike Mine Prepared Ore Conveyor Footings (1905) (Map No. 105), which supported a conveyor that carried the crushed and washed ore back down the hill to an elevated ore bunker, which rested on the Klondike Mine Ore Storage Bunker Footings (1905) (Map No. 106), rectangular concrete support piers located at the foot of the stone wall. The Klondike Mine Lower Road (1905) (Map No. 107), an outbound iron ore haul road, extends from the ore bin location north to Furnace Road. Associated machinery features located on the flat area above the shaft, tramway, and crusher features include the Klondike Mine Steam Hoist Engine Foundation (1905) (Map No. 98), a large, rectangular depression, and the Klondike Mine Hoist Motor Pads (1905) (Map No. 97), four low, rectangular concrete pads with regularly-spaced vertical, threaded steel pins that originally supported a steam engine and equipment for hoisting and crushing the ore. A second road, the Klondike Mine Upper Road (1905) (Map No. 92) parallels the Klondike Mine Lower Road and extends north to Furnace Road.

The ironmaking process at Richmond used wood charcoal for smelting fuel. Historic photographs show that this charcoal was made in circular, beehive-shaped, brick kilns. The kilns were grouped in two sets of three. Charcoal Kiln Nos. 4-6 Sites (1860-1913) (Map Nos. 88, 89, and 90) are located approximately 100 ft southeast of the intersection of Furnace Lane and Furnace Road. The three closely-spaced, brick, circular kiln foundations are oriented north-south, and located on flat ground, with a rise to the east which may have facilitated loading and operation of the kiln from the top via timber bridges. The north kiln still has its cast-iron door lintel in place. Charcoal Kiln Nos. 1-3 Sites (1860-1913) (Map Nos. 173, 174, and 175) are located north of Furnace Road and just south of the Blast Furnace. The outer kilns have Stockbridge Marble

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foundations, and the center, brick kiln retains its cast-iron door lintel.

The ironmaking process also required limestone, used in the blast furnace as a smelting flux. Limestone was quarried in a cluster of six pits, the Limestone Furnace Flux Quarry Sites 1-5 (Map Nos. 21-25) (c. 1830), and Limestone Furnace Flux Quarry Site 6 (Map No. 6) (1920), located immediately west of the Cone Hill Cemetery on Cone Hill Road (1779-1994) (Map No. 20).

Water power was required to operate the blast furnace, which in its earliest configuration utilized a waterwheel-powered air blast. The source of this power was Furnace Brook, fed by two main tributaries that meet at the north end of Furnace Pond (late 18th century). The north tributary winds through the rear of a series of long east-west house lots north of Furnace Pond. The west tributary, originally dammed by the Richmond Iron Works as a source of power, flows through the breached Upper Reservoir Dam (c. 1830) (Map No. 184), an earthen structure located immediately west of the Conrail railroad tracks, in the northwest corner of the district. This dam originally retained a large water power reservoir, now drained.

The Furnace Pond Main Dam (late 18th century, 1906) (Map No. 155) at the south end of Furnace Pond is a complex structure. The substructure of the dam consists of a low, late eighteenth-century fieldstone dam buried under later improvements and a 1906 railroad embankment. Small segments of the original dam are visible at the eastern upstream end, and where the Furnace Main Pond Dam Bridge (1906) (Map No. 157) crosses the Furnace Pond Main Dam Spillway (1906) (Map No. 156). Located on the downstream side of the dam, east of Furnace Brook, is the Furnace Pond Main Dam Mill Site (mid-to late-18th century) (Map No. 158), possibly the foundation of a corn mill. This site consists of two massive Stockbridge marble foundations, one parallel to the dam and one perpendicular to it. The rest of this foundation has been buried by subsequent enlargement of the dam. A long linear trench, the original Furnace Headrace (c. 1829) (Map No. 163) for the early blast furnace bellows water wheel, runs from the Furnace Pond Main Dam south to the Blast Furnace site.

Furnace Brook also powered several eighteenth-century, pre-Richmond Iron Works mills. The Furnace Pond North Dam Site (late 18th century) (Map No. 153), consists of the remains of a low, fieldstone-and-timber dam at the north end of Furnace Pond. Remains of this dam consist of stones and wooden planks containing hand-forged nails. The spillway at the east end of the dam includes a number of submerged six-inch timbers, and a wooden sluiceway can be seen along the east side of the pond below the dam. The Furnace Pond Mill Raceway (late 18th century) (Map No. 154) is evidence of another early water-powered industry. Two mill stones were recovered here, one of which is known to be located in West Stockbridge. A third mill stone is said to be located near the west bank below the dam but has not been located. Downstream from the furnace site, and just north of Furnace Road, are the Captain Russell Griffing Sawmill Site (1763) (Map No. 63), and the Captain Russell Griffing Gristmill Site (c. 1777-1789) (Map No. 65). The Sawmill Site is the

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oldest mill site documented in Richmond to date. This site, located on the east bank of Furnace Brook, includes several long stone foundation walls, evidence of a water wheel pit and tail race, and remains of an iron-banded, wood-stave turbine penstock tube later installed by the RIW. The Gristmill Site is located on the west bank of Furnace Brook, opposite the Sawmill Site. There is no sign of the foundation of this mill, however, two Mill Stones (c. 1777–1789) (Map Nos. 47 and 48) from this mill flank the driveway of the noncontributing modern house at 87 Furnace Road. These mill sites have the potential to include associated occupational-related features including trash pits/areas, and privies.

The water power flowing from the north and the raw materials transported from the south met at the Blast Furnace site. This site was chosen for its combination of favorable topographical features which characterize early blast furnace sites. The Blast Furnace (1829, 1905) is located approximately 125 feet east of Furnace Brook on a dry, elevated, level area. The Blast Furnace is located at the foot of a steep, approximately 40-ft high bluff which rises immediately to the east. This bluff is divided into a three-tiered terrace by the Furnace House Lower (Map No. 167), Middle (Map No. 168), and Upper (Map No. 169) Foundations (c. 1829), three massive Stockbridge Marble block drywalls, with later concrete alterations including slab floors, a chimney support, and two Blowing Machine Mounting Pads (1912) (Map Nos. 170 and 171). This substructure originally supported an extensive, rambling complex of timber-framed, gable-roofed structures located behind and above the furnace stack, which included blowing engines and steam boilers, raw materials storage, and furnace loading equipment.

The surviving stone Blast Furnace stack is the most obvious, impressive, and symbolic feature of the site. The Blast Furnace stack is a squat, truncated, steeply-battered pyramid of roughly-dressed gray Stockbridge Marble blocks measuring 34 ft high, 30 ft wide at the base, and 25 feet wide at the top. The most notable feature of the stack are the large, pointed Gothic arches, one to a side, located at the base of the furnace. The shape of the arches, originally lined with red brick, is typical of the blast furnace construction techniques of the I.N. Bartram Company, who built many of the blast furnaces in the region. The Blast Furnace stack is strengthened by an arrangement of wrought iron binder rods running parallel to, and inside of, the walls. Vertical rows of large, webbed, rectangular, cast iron retaining washers for the binder rods are visible near the corners of the stack. Massive iron beams that once supported the overhanging top house extend horizontally from the top of the stack. The top surface of the stack is stone, and includes the rectangular footprint of the brick hot blast stove on the south side. The stack is hollow, with a rough, round hole at the top. All of the original furnace lining, which included layers of silica firebrick inside the stone stack, with an intervening insulating sand layer, has fallen into the hearth area, creating a mound of debris that may conceal features related to a water-cooled hearth. All of the Stockbridge Marble stones on the interior are discolored red, evidence of their long-term exposure to the intense heat of the furnace. The stones are seriously spalling and exfoliating, potentially weakening the structure. The ends of two large, cast-iron pipes protrude from the upper walls of the furnace interior. These pipes diverted a portion of the hot blast furnace

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gases to fuel the steam engines and to heat the blast air in the hot blast stove atop the furnace. The north, east, and west arches were the tuyere arches, or hot air blast nozzle arches, where the preheated air blast was directed into the hearth through special nozzles. The south arch was the work arch, where molten iron and slag were run from the furnace. A large timber-framed, monitor-roofed casting shed originally extended from the south elevation, enclosing a special sand bed for casting the iron pigs. This casting bed surface may still survive intact under a shallow layer of fill.

The downstream, south end of the original Furnace Headrace is located approximately 100 ft north of the stack and includes a concrete Headrace Spillway (c. 1906) (Map No. 164) at its southern end. A large transverse, rectangular depression immediately west of the end of the canal is the original Furnace Water Wheel Pit (c. 1829) (Map No. 165). The Furnace Tailrace Exit (c. 1829) (Map No. 62), a small stone-lined arch, is located roughly 200 ft southwest of the Blast Furnace.

The Blast Furnace plant was accessed at the top by Furnace Lane to the east, and a spur track of the Boston & Albany Railroad, which extended east over the dam and south into the upper charcoal shed, where a section of the Rail Spur Bed (1906) (Map No. 41) can still be seen. The massive Stockbridge Marble Charcoal Shed Foundation (c. 1829) (Map No. 40) still stands above the Blast Furnace to the east and northeast. Access to the bottom of the furnace from the south was via a Cart Path (c. 1830) (Map No. 60) that begins at the intersection of Furnace Road and Furnace Lane to the south and runs north to the Blast Furnace. From there the Furnace Driveway (c. 1830) (Map No. 160) proceeds north over the small, reinforced concrete, one-lane Furnace Brook Bridge (c. 1945) (Map No. 161), and leads north to State Road.

An L-shaped concrete pad located immediately northwest of the furnace stack is the Colonial Rock Wool Company Garage Foundation Slab. This feature is associated with a post-Richmond Iron Works concern which dug the glassy slag banks west of the stack for the manufacture of "rock wool" insulation. This activity resulted in the Hearthstone and Salamander Dump (c. 1830-1923) (Map No. 61), a concentration of archaeological remains of blast furnace hearths, including unused hearthstones, iron "skull " accumulations removed from hearths, entire quartzite and/or firebrick hearth bottoms, and "salamanders", accumulations of infusible materials associated with periodic relining of the hearth, and occasional operational mishaps.

The iron ore smelting process at Richmond Furnace produced prodigious quantities of slag waste material. Charcoal iron blast furnace slag can be divided into two recognizable types. Slag generated by cold air blast furnaces tends to be a heavy, hard, glassy, silica-rich material colored black, dark green, purple, or bright blue from trace metal content. Hot blast slag tends to be a lighter, gray, frothy-textured material higher in calcium carbonate. The slag was an available, in-house source of fill material and was used to enlarge the furnace site, and improve the grade of haulage roads throughout the district. Although this waste material

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is ubiquitous in the area surrounding the furnace, the Slag Pile Area (c. 1829–1923) (Map No. 87), located east of the intersection of Furnace Lane and Furnace Road, is the most significant slag deposit. Slag was carted and dumped here in long, high, lenticular mounds which extend from Charcoal Kiln Nos. 4, 5, and 6 south more than 1000 ft to a swampy area south of the Klondike Mine site.

The Richmond Furnace Historic District includes 59 buildings, of which 28 are contributing, and 35 are noncontributing. Most of the noncontributing buildings are garages and small sheds. The buildings along State Road include contributing nineteenth-century ironworkers' houses, a schoolhouse, and several noncontributing twentieth-century houses. The ironworkers' houses are in various states of alteration, and can be divided into two groups that reflect two major phases of worker house construction. Along the west side of State Road stand five similar Greek Revival-style houses set back from the road on large rectangular lots that back up to the Conrail railroad tracks. At the north end of the district on the east side of the road is a distinctive streetscape of nine similar Greek Revival-style ironworkers' houses on small, long, narrow, parallel lots, and further south, several noncontributing houses. Noncontributing buildings stand immediately outside the district at the north and south ends, with early-twentieth-century houses on State Road to the north, and early- to mid-twentieth-century houses on State Road, and in a small, early subdivision on dead-end Pilgrim Street to the south. Outstanding individual buildings include the "Ironmaster's House"/Boarding House at 20 Furnace Lane (c. 1832) (Map No. 30), the Richmond Iron Works Office at 56 Furnace Lane (1862) (Map No. 38) at 56 Furnace Lane, and the Richmond Furnace School at 2953 State Road (c. 1890) (Map No. 180). Additional c. 1873 ironworker's houses stand on Furnace Lane and Furnace Road.

The "Ironmaster's House"/Boarding House at 20 Furnace Lane (c. 1832) is a complex-plan, gable-roofed, Flemish bond brick, and timber-frame, Greek Revival-style building located at the foot of Furnace Lane north of the intersection with Furnace Road. It is the most substantial surviving building in the district and one of only two brick buildings (see RIW Office). The main block of the house is a 2 1/2-story, 5- by 3-bay, brick building with an overhanging, side-gabled, slate roof, a marble foundation, and single, corbeled, brick end chimneys. The main entrance is located in the west elevation and consists of a paneled wood door with multi-pane transom and sidelights, with a simplified Doric molding scheme and a massive marble lintel. Windows are rectangular, six-over-six, double-hung sash, with heavy flush marble lintels and narrow, protruding marble sills. Quarter-round windows flank the chimney in the attic story gable walls. Wood trim includes soffits and returns. A second, attached, perpendicular brick ell extends east from the northeast corner of the house. It is similar to the main block in form, materials, and details. These two blocks are joined by a 1-story, hipped roof entry addition. A modern 2-story, clapboard-sheathed, gable roofed addition with shed dormers extends east from the brick ell, and a modern, gambrel-roofed, clapboard garage is located immediately north of the house.

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The next group of buildings to be constructed were a group of ironworkers' houses built on the west side of State Road by the RIW about 1840. The five surviving examples are 2274 (Map No. 119), 2834 (Map No. 141), 2836 (Map No. 144), 2900 (Map No. 176), and 2922 (Map No. 177) State Road (c. 1840). These are small, 1 2-story, 5-to-3 by 2-bay, overhanging gable-roof, timber-frame, Greek Revival-style dwellings in varying condition and states of alteration, but clearly recognizable as part of the same architectural program and having similar structural evolutions. A particularly characteristic feature common to the less altered examples are asymmetrically-located, horizontal, three-light attic windows at the eaves on one or both long elevations of the house. These houses are all set near the road on roughly square, one- to ten-acre lots, and several retain their original contributing agricultural buildings. 2774 State Road is the least modernized, although abandoned and deteriorated, example of this mode of dwelling. It is set on a rough-cut Stockbridge Marble foundation, and includes an early summer kitchen addition, a feature common to most RIW worker houses, and in this instance located on the rear (west) elevation. Features include a standing-seam, side-gable, metal roof, and imitation brick-patterned asphalt siding. A small, contributing timber-frame Barn at 2774 State Road (c.1840) (Map No. 120) is located to the southwest. 2806 State Road burned in the 1960s, although its noncontributing garage still stands. 2834 and 2836 State Road, also side-gable houses set on cut stone foundations, are similar houses. 2834 State Road is the more altered of the two, with aluminum siding and a prominent front shed dormer and a two-story rear addition. 2836 State Road retains its summer kitchen addition, located on the north elevation. Both of these properties include contributing agricultural buildings including two small barns, a chicken coop, and a tool shed, all located to the west. 2900 State Road has intact wood trim including soffits, returns, and recessed front entrance with sidelights. The rear summer kitchen is a recent, sensitive addition, and the house best reflects the original appearance of the ca. 1840 group of worker houses. 2922 State Road is the most substantial and elaborate of the RIW worker's houses, and consists of three attached sections with overhanging, standing-seam, metal, gable roofs. The rear (west) ell appears to be the original section of the house. It is a small, 1 1/2-story, 2 by 4-bay, front-gable, clapboard-sheathed building with a standing-seam metal roof, 6/6 double-hung wood sash, and a small 2 by 1-bay wood entrance shelter. It is attached to the rear (west) elevation of the larger, later, main block, a 2 1/2-story, front gable dwelling notable for its recessed south bay east entrance with Ionic columns, Doric pilasters, a paneled door, and horizontal entablature. Doric pilasters rise at the corners and support a pediment with full entablature and a central, decorative-mullioned square window. A 1-story ell with full-length, shed-roof front porch extends from the south elevation. The property includes a large, contributing, complex-plan, side-opening Barn at 2922 State Road (c. 1840) (Map No. 178).

The Richmond Iron Works Office at 56 Furnace Lane (1862) is a 12-story, brick-walled, T-shaped plan building, resting on a random-ashlar marble and brick foundation. Incorporating elements of both Greek Revival and Italianate styles, it is the most architecturally distinctive building in the district, and one of two substantial, brick buildings. The main block of the house is a side-gabled, 1 1/2-story, building with a central, corbeled, brick chimney and an asphalt-shingled, shallow-pitch roof. A flat-roofed, 1-story wing

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with a large, elaborate, octagonal cupola extends south from the main block. The building is unified by a corbeled, dentilated, decorative brick cornice which wraps around the building at the roofline and forms a full pedimented entablature on the gable ends, each of which include a circular attic vent with a wrought iron grill. The projecting south wing is flanked by entrance porches, the east porch is a modest, although sympathetic replica of the original west porch, a full-length structure with Doric wood columns supporting elliptical arches under an overhanging, classically-molded, shallow hipped roof. All doors and windows have segmental-arch openings with shallow Italianate brick hoods. A 3- by 1-bay, paneled, rectangular, wood bay window extends from the north wall and the south wall of the south block. These bays include heavy rectangular storm windows that partially conceal the original windows, which like the lights in the doors, are of Italianate, round-arch design. The interior is notable for its degree of preservation. All original heavy molded woodwork is intact, including the double doors at the former Paymaster's window, and the rectilinear, geometric paneled ceiling moldings. Additional original interior features include an octagonal skylight beneath the cupola in the south wing, and a double-compartment "salamander" type fireproof iron safe. The Richmond Iron Works Office is currently used as a dwelling.

The next major building phase was the construction of a series of ironworker's houses built by the RIW about 1873. These densely-clustered, regularly-spaced, front-gabled, Greek Revival-style worker houses are located on the east side of the north end of State Road. The dwellings are sited at the extreme west end of long, narrow, one- to two-acre lots and stand close to State Road, forming a distinctive streetscape. Surviving examples include 2755, 2771, 2779, 2785, 2793, 2801, 2805, and 2815 State Road (c. 1873). Although altered to a greater or lesser degree by maintenance and modernization, they retain a uniformity of form and scale. All have been altered to some degree with replacement siding, windows, new porches, and additions, although some retain some notable original features. 2755 State Road retains its original decorative scrollwork eave brackets; and 2779 State Road retains its original 4/4, double-hung window sash. Other examples of this ca. 1873 phase of worker housing are located at 30 (Map No. 32) and 42 (Map No. 34) Furnace Lane, and 199 Furnace Road (Map No. 49). Most properties include noncontributing, post-1947 garages and/or shed outbuildings. One contributing outbuilding, located southwest of 2815 State Road, is the former Klondike Mine Dry House (1905) (Map No. 137), which was moved from the Klondike Mine around 1926 and adaptively reused as a garage.

The district includes the contributing archaeological sites of twelve known RIW worker houses. These sites consist of rectangular foundation depressions, some with fragments of fieldstone walls or stone doorsteps. These sites include 532 Cone Hill Road (Map No.5) (1825-1908), Map Nos. 17, 18, 19, and 20 on Cone Hill Road (c. 1860-1908), Map No. 29 on Cone Hill Road (1873-c. 1905), Map Nos. 52 and 53 at 199 Furnace Road (c. 1873), Map Nos. 93 and 94 on Furnace Road (c. 1905), and Map Nos. 112 and 113 on Furnace Road (c. 1830).

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The district includes several contributing agricultural buildings including the barn at 42 Furnace Lane (c. 1873) (Map No. 35), the barn at 2774 State Road (c. 1840) (Map No. 120), the barn and shed at 2834 State Road (c. 1840, 1920) (Map Nos. 142 and 143), the barn and chicken coop at 2836 State Road (c. 1840, 1900) (Map Nos. 145 and 141), and the barn at 2922 State Road (c. 1840) (Map No. 178). These are typically timber-frame structures, most of which are still used for storage.

The Richmond Furnace Schoolhouse at 2953 State Road (c. 1890) is a 1 1/2-story, timber-frame, complex-plan building with a shallow-pitch, asphalt-shingled, hipped roof and a prominent north, and smaller south, hipped roof wings, all sheathed in clapboard and flush board, and resting on a stone foundation with some concrete block patching. An original gable-roof dormer rises from the front (west) roof plane. A long shed-roofed addition extends the length of the rear, and a small enclosed side porch is located at the southwest corner. The entrance is located in a modern gable-roofed portico on the north elevation. Windows are a mix of 9/6, 6/6, and 4/1 sash. An original chimney rises from the ridge of the south wing, and an exterior concrete block chimney has been added to the front of the main block. Despite additions and alterations, the building retains much of its original form and scale.

All contributing residential, industrial, agricultural, and commercial structures and sites have the potential to have associated occupational-related features including trash pits/areas, privies, and wells.

A number of early- to late-twentieth-century buildings, all noncontributing, are also located within the district. These include a prefabricated ranch house at 87 Furnace Road; a contemporary house at 421 Furnace Road; a 1930s house and library and a former commercial building at 2821 State Road; modern houses at 2851 and 2867 State Road; and a 1930s Dutch Colonial Revival and small contemporary houses at 2871 State Road.

The district includes one burial ground, the Cone Hill Cemetery on Cone Hill Road (1779–1994) (Map No. 20). This cemetery includes 205 marked graves dating from 1778 to 1994, including 25 Revolutionary War veterans, one veteran of the Civil War, and one veteran of the Second World War. Gravestone materials include slate and granite, with stones fashioned from local white marble predominating. This cemetery may also include unmarked graves.

Prehistoric Description

While no prehistoric sites are currently located in the Richmond Furnace Historic and Archaeological District, sites may be present. One prehistoric site is located in the general area (within one mile). Environmental characteristics for the district also include several locational criteria (slope, drainage, distance to wetlands) that are favorable indicators for many types of prehistoric sites. The district

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includes several well drained level to moderately sloping terraced landforms in close proximity to Furnace Brook and related wetlands. Furnace Brook drains southerly converging with the Williams River then Housatonic River several miles to the south. It is unknown, at present, to what extent iron mining and furnace operations may have impacted potential prehistoric resources. Given the above factors, regional site densities, and the size of the district (290 acres), a moderate to high potential exists for the recovery of significant prehistoric resources. The above information also indicates that prehistoric sites in the area may be limited to smaller short term campsites and special purpose type sites rather than larger habitation sites.

(end)

Richmond Furnace
Name of Property

Berkshire, MA
County and State

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

X **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.

_ **B** Property is associated with the lives of persons significant in our past.

X **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

X **D** Property has yielded, or is likely to yield, Information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

_ **A** owned by religious institution or used for religious purposes.

_ **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 of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

ARCHAEOLOGY
ARCHITECTURE
ENGINEERING
INDUSTRY

Period of Significance

1723-1926

Significant Dates

1763 1829 1905
1923 1926

Significant Person
(Complete if Criterion B is marked above)

n/a

Cultural Affiliation

n/a

Architect/Builder

I.N. Bartram & Co.
Richmond Iron Works Co.

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

_ preliminary determination of individual listing (36 CFR 67) has been requested
_ previously listed in the National Register
_ previously determined eligible by the National Register
_ designated a National Historic Landmark
_ recorded by Historic American Buildings Survey #_____
_ recorded by Historic American Engineering Record #_____

Primary location of additional data:

_ State Historic Preservation Office
_ Other State agency
_ Federal agency
x Local government
_ University
_ Other

Name of repository:
Richmond Historical Commission

Statement of Significance

The Village of Richmond Furnace, south of Pittsfield, in southwestern Berkshire County, Massachusetts, is an unusually intact nineteenth-and early-twentieth-century New England ironmaking community. The Richmond Furnace Historic and Archaeological District is significant for the degree of integrity of location, design, setting, materials, workmanship, feeling, and association that it retains. Production of pig iron began at this location in 1830 when Gates, Pettee & Company built a charcoal-fired, stone stack blast furnace to smelt abundant local iron ore. The ironworks at Richmond Furnace was one of dozens that operated over 188 years in the Salisbury Iron District, which includes northwestern Connecticut, southwestern Massachusetts, and part of adjacent New York State. The ironworks at Richmond Furnace produced merchant pig iron that was sold as a raw material to other ironworks and foundries for conversion into finished cast iron products. Gates, Pettee & Company reorganized as the Richmond Iron Works (RIW) in 1843. Although the operation went by several different names during its history, the Richmond Iron Works was the name longest associated with, and twice held by, the ironworks. The company was an important source of iron for the Union during the Civil War and eventually operated several other blast furnace plants, dominating pig iron production in southwestern Massachusetts. The RIW's high-quality pig iron became popular with railroad car wheel manufacturers for its durability. The RIW periodically incorporated technological advances to maximize the efficiency of the Richmond blast furnace. This blast furnace was one of two in the Salisbury Iron District to operate until 1923, an extremely late date for this type of iron furnace. The Richmond blast furnace is now one of only 11 in the region with any significant standing remains. The builders and operators of this blast furnace were significant figures in the region's iron industry with connections to other New England ironworks. The Richmond Furnace Historic and Archaeological District also includes the remains of open-pit and shaft iron ore mines, charcoal kilns, limestone quarries, worker houses, a waterpower complex, extensive stone foundations, and the blast furnace site itself, which contains evidence of advances in furnace construction and ironmaking practice. Many of the original RIW buildings, including the Office, School, Ironmaster's House/Boarding House, and two phases of Greek Revival-style worker houses are still standing and inhabited.

Prior to the arrival of the first European settlers in the Richmond area about 1760, the area was inhabited by the Stockbridge Indians, an amalgam of original inhabitants and refugee members of displaced tribes from the east and south. Although Springfield, Massachusetts had been founded in 1636, the physical obstacle of the Berkshire Mountains and the remoteness of the Native American-occupied areas beyond to the west inhibited settlement in the Housatonic Valley for more than another hundred years. With British domination of New England certain after victory in the French and Indian war, Colonial settlers began to cross the Berkshires. Berkshire County was incorporated in 1761, and in 1762 Massachusetts passed an act dividing its western lands into townships and large, rectangular lots. The town now known as Richmond was incorporated as *Richmont* in 1765. This town originally included what is now Lenox, a village which was separately incorporated in 1767 due to the communication problems posed by intervening Lenox Mountain. In 1785 Richmont successfully petitioned the Massachusetts Legislature to change the name of the town to

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Richmond in honor of Charles Lennox, third Duke of Richmond, an English parliamentary reformer who supported colonial independence during the Revolutionary War (Annin 1964:1-10).

With the exception of the establishment of Richmond's iron industry in the late 1820s, Richmond's economy was overwhelmingly agricultural, with population in the 1820s standing at about 850 (Annin 1964:125). The few recorded industries were small water-powered fulling, grist, saw, and woolen mills; tanneries; a brick works; minor marble quarrying; and other activities typical of self-sufficient eighteenth- and nineteenth-century agriculturally-based communities. Griffing Brook, now known as Furnace Brook, supported several prior industrial operations, the archaeological remains of which now lie within the district. These sites include the eighteenth-century Furnace Pond North Dam Site (late 18th century) (Map No. 153), Furnace Pond Mill Raceway (late 18th century) (Map No. 154), and Furnace Pond Main Dam Mill Site (mid- to late-18th century) (Map No. 158), all on Furnace Pond, and the Captain Russell Griffing Sawmill Site (1763) (Map No. 63) and the Captain Russell Griffing Gristmill Site (ca. 1777B1789) (Map No. 65), all on the Lower Pond. The RIW operated a sawmill on the Griffing sawmill privilege until the late nineteenth century (Edwards 1997: Outline). These mill sites have the potential to reveal information about the development of water power, grist, and saw mill technologies, construction techniques, and adaptive reuses. Associated occupational-related features including trash pits/areas, privies, and wells have the potential to contain classes of artifacts related to milling and mill workers, including tools, personal items, and other artifacts that may reveal information about milling practices.

An important industrially related development of the early nineteenth century was the construction of the Western Railroad between 1838 and 1841. This railroad met the 1835 Boston & Worcester (B & W) Railroad at the latter Massachusetts city, and linked Boston and Massachusetts industries with the Hudson River and the Erie Canal near Albany. This new transportation route provided new sources and markets for goods, a situation which allowed area ironworks to grow from concerns of local significance to regional and national suppliers of pig iron (Annin 1964:104-109). The Western and B & W railroads were consolidated as the Boston & Albany (B & A) Railroad in 1867. During the late 1800s, nearby Pittsfield emerged as the social and industrial center of central Berkshire County, however, Richmond retained its rural, agricultural character, with numerous dairy farms supplying the Pittsfield-area milk market. During and after World War II, employment opportunities at General Electric's Pittsfield plant and associated urban growth turned Richmond into a bedroom suburb of Pittsfield. Agriculture still dominates the local economy; in 1996, 16 per cent of Richmond residents (41 people) were involved in farming, the highest percentage of any community in the Berkshires (Town of Richmond n.d.).

The existence of the Salisbury Iron District and the location of the Richmond Iron Works was the result of regional and local geological and topographical factors. Tectonic, glacial, and weathering processes left deposits of specific industrial rocks and minerals in the surrounding region that combined to create a fortuitous economic geology, including not only all of the raw materials needed for making iron, but those

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needed to build the furnace itself. Richmond is underlain by a complex sequence of Precambrian and Cambrian metamorphic rocks including the iron-bearing Walloomsac Schist, which weathered, depositing rich "brown hematite" (goethite and limonite iron oxide) ore formations along its contact with the Stockbridge Marble. Over its entire period of operation, the RIW operated or was associated with as many as 17 mines along this ore formation, including the Cone and Klondike mine complexes, located in the southeast corner of the district. Stockbridge Marble was used as a flux to aid the iron smelting process. This stone was extracted from a complex of limestone quarries in the Cone Hill Road area in the northeast corner of the district. Area quarries also provided the dimension stone with which the iron furnace and the foundations of many village structures were built. The region also contains the schistose, micaceous, Dalton Quartzite, an unusually refractory, or heat-resistant stone, which was quarried exclusively for blast furnace hearthstones in several locations, most notably in Sharon, Connecticut, south of Richmond. In the early days of operation, clay-rich sand derived from the weathering of the Everett Schist was dug in Lenox for the molding sand beds used to form the individual iron "pigs" that were cast from the blast furnace. This material was later replaced by "Albany sands", high-quality glacial lake-bottom sands found south of Albany, New York. Glacial action influenced the local topography, forming the lake terrace above the furnace, and the Furnace Brook watercourse on which the RIW's blast furnace plant was strategically situated (Kirby 1996: Geologic Report 1-9).

Early New England ironmaking operations relied on specific raw materials: iron ore and charcoal fuel, and additionally, in the case of the blast furnace, limestone flux. The scale of operations needed to feed a blast furnace required the management of vast stands of timber and limestone quarries, which constituted separate support industries. To produce wood charcoal, hardwood was felled in April, after the sap had finished running. The timber was then cut to length and burned in an oxygen-starved environment. At Richmond this was first done in simple earth-covered mounds on the mountainsides, and later, in a complex of beehive-shaped, brick charcoal kilns immediately south of the Richmond blast furnace. The product was a pure, high fixed-carbon fuel which produced both the heat and chemical environment required for the reduction of iron ore to molten iron in the blast furnace. As many as 125 bushels of charcoal fuel were required to make one ton of iron (Rolando 1993:5). Crushed limestone provided a source of calcium carbonate flux, which combined with silica, phosphorous, and other impurities in the ore and purified the iron during smelting.

Early New England iron production utilized two different methods of reducing iron ore to a useful product. The direct method used a bloomery forge to make wrought iron, and the indirect method used a blast furnace to make cast iron. Indiscriminate and unqualified use of the terms "forge", "furnace", and "foundry" in both historic and contemporary literature have caused confusion over the types and locations of historic ironmaking sites. The bloomery forge was an apparatus that looked like an oversized blacksmith forge, in which the ore was heated and manipulated to form a pasty iron "bloom", which was pounded into bars under a large, water-powered hammer to expel the silica slag. The final product was wrought iron, a compound characterized by microscopic, parallel grains of slag which imparted a degree of malleability that made it

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appropriate for manufacturing springs, blades, and other objects requiring high tensile strength (Kierstead 1997:6-7).

Blast furnaces like the one at Richmond were larger structures, consisting of a truncated, steep-walled, pyramidal stone stack 20 to 40 feet high. Blast furnaces were usually located at the base of a steep hill, near a strong source of running water. This location allowed the ore, fuel, and flux to be loaded into an opening on the top of the blast furnace via a timber trestle, or charging bridge, and provided a source of water power for the air blast. Blast furnaces had arched openings at their base. The main "work arch" allowed access to the furnace hearth, from which the iron and slag were periodically drawn. Other arches contained tuyeres, or nozzles through which air was directed into the hearth to aid the smelting process. The earliest air blast apparatus were powered by a water wheel attached to a bellows. During the mid-nineteenth century, more sophisticated blowing tubs, and later, steam-powered blowing engines were developed. At the center of the furnace stack was a vertical, cylindrical lining of refractory, or heat-resistant material. The upper stack was typically lined with slate until the advent of refractory firebrick in the 1820s. The heat and carbon monoxide produced by the burning charcoal reduced the iron ore in the stack to molten iron, and the limestone flux combined with the impurities and floated on top of the molten iron that collected in the crucible in the bottom of the furnace. The crucible, or hearth, was built up with blocks of specially-selected, refractory-grade, natural quartzite, which was slowly replaced after the 1870s by water-cooled hearths made of hollow, cast-iron cooling plates with a firebrick lining. Unlike the bloomery forge, fluid iron ran molten from the blast furnace, and was cast directly into molds to assume any shape, hence the name cast iron. The iron was also cast into merchant bars called "pigs". The name pig iron is given to these bars as they were cast in rows from a central trough in an arrangement resembling piglets suckling a sow. Unlike wrought iron, this material had a random grain structure and was more suitable for applications where compressive strength was desired, such as storage vessels or stove parts. The product of a blast furnace was more versatile, as cast pig iron could be converted to a high-quality wrought iron in a type of forge called a finery, or remelted elsewhere in a foundry cupola furnace to make castings. Bloomery forges required less capital, raw materials, and labor to construct, supply, and operate, and were typically the first ironmaking operations to start up, followed by the more heavily-capitalized, labor, raw material, and physical plant-intensive blast furnace and refining forge operations (Kierstead 1997:6-7).

The Salisbury Iron District is one of three geographically separate southern New England ironmaking districts that developed in the mid-eighteenth century: the Southeastern Massachusetts Iron District, the Central Uplands Iron District, and the Salisbury Iron District. The Southeastern Massachusetts Iron District, comprised of Bristol, Plymouth, and southern Norfolk counties, grew out of the first large-scale attempts to create integrated ironworks in New England, which took place earlier, in the mid-seventeenth century, under Massachusetts Provincial Governor John Winthrop. Winthrop built and operated blast furnaces and forges with varying degrees of success at East Haven, Connecticut, and Braintree and Saugus, Massachusetts. The last site is now the Saugus Ironworks National Historic Site. After the failure of the experiment at Saugus,

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skilled ironworkers were attracted to Raynham and other surrounding southeastern Massachusetts communities, which had abundant supplies of bog-type iron ore and timber for charcoal fuel. For the remainder of the seventeenth century, the main product was wrought iron, made in bloomery forges. About 1710 blast furnaces began to reappear in this area, and the iron industry flourished from the 1730s until after the Revolution. The Southeastern Massachusetts Iron District was a major contributor to Colonial self-sufficiency in iron, and to Revolutionary ordnance production. After 1800, iron production in this district shifted from primary iron production to foundry-type operations where pig iron produced elsewhere was melted in cupola-type furnaces (Kierstead 1997:6-7).

The little-studied Central Uplands Iron District was located within, and drew its ore from, a wide band of iron-bearing metamorphic schists that stretches from northeastern Connecticut, north through Massachusetts to southern New Hampshire. Remoteness and lower-quality ore hindered development of this area's iron industry, which supported numerous small bloomeries and only a handful of blast furnaces, including those at Stafford, Connecticut, and Hardwick and Warren, Massachusetts, during the mid- to late eighteenth century (Gradie 1997).

The Salisbury Iron District developed along similar patterns as the previous two districts. The first ironmaking sites were early-eighteenth-century bloomeries. The first iron works in the Salisbury Iron District were David Lamb's ca. 1735 bloomery forge at Lime Rock, Connecticut, and the Livingston Furnace at Ancram, NY, built in 1740 (Kirby 1996: *John Adam Beckley Blast Furnace*). In 1761, a blast furnace was erected at Lime Rock, Connecticut. By 1770, Samuel Forbes was producing forge hammers, gun barrels, grist mill parts, and anchors at his works in East Canaan, and area iron founders possessed the skills to cast 1,000 lb potash kettles (Gordon 1990:65). Like the Southeastern Massachusetts Iron District, the Salisbury Iron District ironworks made a significant contribution to Revolutionary War ordnance production; 150 tons of cannon were cast in Salisbury, Connecticut, in 1776 (Gordon 1996:202). After the Revolution the Salisbury Iron District continued to grow. In 1780 and 1794, Samuel Forbes and John Adam constructed rolling mills for the production of wrought iron bars, and manufactured nails and saws for the local marble quarrying industry. By 1802, Litchfield County, Connecticut, the heart of the Salisbury Iron District, had 50 bloomery forges and three slitting mills in addition to its numerous blast furnaces (Gordon 1996:65). At this time the abundant rich ore, timber and limestone, as well as more powerful water privileges increasingly attracted experienced ironmasters including members of the Adam, Ames, and Pettee families from the Southeastern Massachusetts District, which was then fading in importance (Galer 1997; Ingram 1997). During this period the district became known for its high-quality wrought iron, which was preferred for rifle manufacturing by U.S. Government armories in Springfield, Massachusetts and Harper's Ferry, West Virginia (Gordon 1996:65,205). About 1830, Salisbury Iron District iron products and markets were changing. Inability to manufacture uniform product and loss of markets for wrought iron prompted Salisbury Iron District ironmasters to shift their operations and concentrate on the manufacture of pig iron from blast furnaces (Gordon 1996:67). It was at this time that the Gates, Pettee & Company formed and built the Richmond Blast Furnace (1829, 1905) (Map No. 166) and associated infrastructure.

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The presence of iron ore in Richmond was recorded as early as 1763, when original settler Micah Mudge sold a parcel of his land and reserved half-interest in the iron ore located there. In 1765 David Pixley was granted the right to mine ore provided that he restore any roads affected by digging. The Richmond Selectmen"s map of 1795 indicates "ore of the first quality, but it lies deep and is raised at great expense." On this map, iron ore is indicated throughout the south end of Richmond, where the Richmond Iron Works later located. The first iron mining activity consisted of scattered surface mining. Ore was being mined from the Old Cone Open Pit Mine (1795) (Map No. 13) as early as 1807, with ore hauled to Glendale or West Stockbridge for processing into wrought iron in bloomery forges (Annin 1964:117; Edwards 1997: Timeline).

The rapid expansion of Richmond's iron industry was the result of the realization of the great extent of the Cone iron ore deposit on what was the Cone Farm in southern Richmond, just north of the West Stockbridge line, in 1825. In that year John Milton Holley, John Churchill Coffing, and Seneca Pettee, all of Lakeville, Connecticut; and Samuel Gates of Richmond, purchased four acres of land around the Old Cone Open Pit Mine. Mining at the main Cone Open Pit Mine (1825-1904) (Map No. 1) began in 1825. Holley and Coffing were ironmasters who built and operated blast furnaces including those at Lime Rock, Connecticut, built in 1830, and Van Deusenville, Massachusetts, built in 1833. Holley was the father of noted mid- to late-nineteenth-century iron industry authority Alexander Lyman Holley. Seneca Pettee was a member of an ironmaking family that moved to the Salisbury Iron District from Foxboro, Massachusetts; members were involved in the construction and operation of iron blast furnaces throughout New England during the nineteenth century. These men organized as Gates, Pettee & Company in 1825, and purchased the Captain Russell Griffing Sawmill and Grist Mill sites, located on a swiftly-flowing stream and the best mill privilege in Richmond. They also purchased the upper and lower mill ponds immediately to the north and south of the blast furnace site, respectively. The first blast furnace was built within the footprint of the present furnace stack in 1829B1830. Between its construction in 1829 and shut down in 1923, the blast furnace stack was expanded and modified to keep pace with technological improvements in iron smelting. It is almost certain that archaeological resources associated with the earliest furnace operations were obliterated by later furnace construction and rebuilding.

About 1830 the 500 ft Upper Reservoir Dam (c. 1830) (Map No. 184) was constructed, and on January 19, 1832, the "Ironmasters House"/ Boarding House (1832) (Map No. 30) lot was purchased, and the present dwelling was constructed (Edwards 1997: Timeline). This building is indicated as the Ironmaster's House in a map representing the RIW site in 1857 (Drew and Edwards 1980:7) and is also indicated as a Boarding House in a county atlas (Beers 1876). This building is typical of the simple, Federal-style ironmaster's house typically found at many Appalachian and New England iron furnace sites. Records indicate that during 1830, the first year of operation, the Richmond blast furnace produced 800 tons of iron, for an average of 2.10 tons per day (Edwards 1997:Timeline).

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Gates, Pettee & Company's 1829 blast furnace was constructed and operated in a manner similar to all blast furnaces of its era as described above. The stack was several feet shorter than the present one, with an arch at the bottom for tapping the slag and iron, and at least one additional arch for the air blast nozzles. The hearth was of tymph-and-dam construction, that is, it had an open front through which the operators could observe and tend the descending burden and the iron and slag accumulating in the hearth. The air blast blowing apparatus was driven by a waterwheel located in the Furnace Water Wheel Pit (ca. 1829) (Map No. 105) located a few dozen feet north of the stack. The water wheel drove a pair of cylindrical, 6 ft by 5 ft, iron-banded, wood-stave blowing tubs with internal plungers which forced the ambient air-temperature, or Acold@ blast through a bustle pipe around the base of the hearth and through the tuyere nozzles into the hearth (Rolando 1993:3-4).

Between 1838 and 1841 the Western Railroad constructed its Worcester, Massachusetts-Albany, New York main line, passing through Richmond Furnace several hundred feet west of the RIW blast furnace plant. Prior to the arrival of the railroad, pig iron had been shipped to the Hudson River by draft animal. There is no specific written evidence of the early impact of the railroad on the RIW; however, several events of the 1840s indicate significant business growth. On September 13, 1843, Gates, Pettee & Company incorporated as the Richmond Iron Works Company, with the addition of several new officers and a public stock offering. On September 6, 1844, the RIW entered into an agreement with the Burden Iron Works, a major Troy, New York, ironworks, for 1,000 tons of No. 2 pig iron (Coffing n.d.). Although annual furnace capacity figures are unknown for this period, this constituted a major order, totaling perhaps half or more of the RIW's annual output.

During this period other iron blast furnaces were constructed in the Salisbury Iron District. Massachusetts additions include Van Deusenville in 1834, Housatonic in 1835, Lenox in 1839, Lanesboro in 1847, North Adams in 1845, Cheshire in 1848, and two furnaces at West Stockbridge in 1850 and 1853. In 1854 the RIW purchased John C. Coffing's Van Deusenville, Massachusetts blast furnace, and rebuilt it in 1857 (Edwards 1997: Timeline; Keith and Harte 1932: Table). Acquisition and modernization of this furnace likely roughly doubled the RIW's ironmaking capacity. All transportation of raw materials was accomplished by draft animals. Ore was carried to Lenox and Van Deusenville in saddle bags, and charcoal was transported in special wagons.

Spurred by the growth of the RIW, Richmond's population rose to 1152 by 1840. The earliest immigrant furnace workers were Welsh, Scotch, and English with experience in mining and smelting iron. After the start of the Irish potato famine in 1844, inexperienced immigrant Irish workers joined the forces at the RIW. Wages at this time stood at $1.00 a day (Annin 1964:125). The RIW operated a company store from the outset, and first provided lodging at the ca. 1832 "Ironmasters House "/Boarding House. About 1840 the RIW constructed a series of Greek Revival-style dwellings along the west side of State Road. Five of these

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dwellings stand today within the district at 2274 (Map No. 119), 2834 (Map No. 141), 2836 (Map No. 144), 2900 (Map No. 176), and 2922 (Map No. 177) State Road (c. 1840).

These early houses were built on large lots which were farmed by their tenants, who used some of the RIW's 100 or more draft animals to tend their fields. Draft animals employed in the mines during the week were used for tilling agricultural plots on Sundays (Edwards 1997: personal communication). Richmond Furnace was essentially self-reliant for most foodstuffs, and several contributing agricultural buildings still stand in this area today, including the barn at 42 Furnace Lane (c. 1873) (Map No. 35), the barn at 2774 State Road (c. 1840) (Map No. 120), the barn and shed at 2834 State Road (c. 1840, 1920) (Map Nos. 142 and 143), the barn and chicken coop at 2836 State Road (c. 1840, 1900) (Map Nos. 145 and 141), and the barn at 2922 State Road (c. 1840) (Map No. 178). In 1921, the RIW still had roughly 50 acres under cultivation (Colt 1921:1).

A Richmond Furnace school (no longer extant) was established in 1830 and eventually became the largest of Richmond's six schools (Annin 1964:125). This school was located just south of the present Richmond Furnace School at 2953 State Road (ca. 1890) (Map No. 180) on the same parcel of land (Edwards 1999).

All contributing residential, industrial, and commercial structures have the potential to have associated occupational-related features including trash pits/areas, privies, and wells. Detailed analysis of these resources could potentially contribute information relating to the domestic and personal lives of workers and their families, tenancy, the social and economic structure of the work force, and many of the trades and occupations associated with furnace operation. Agricultural resources have the potential to reveal information on the nature of the relationship between the RIW and its workers, the nature and technology of agricultural production, individuals employed in farming, and the extent to which the community was self-reliant for foodstuffs. These resources may also identify potential cottage industries important to a self-reliant community.

In 1862, on the eve of the Civil War, the RIW constructed the Richmond Iron Works Office at 56 Furnace Lane (1862) (Map No. 38) at the head of Furnace Lane. The RIW Office is a Greek Revival-style brick building with Italianate details including bays, arch-topped windows, and an octagonal cupola. It is the most ornate of the RIW buildings and stands as an architectural expression of the corporate pride and identity of the expanding RIW. The RIW Office served as the central administrative center for the RIW's two blast furnace plants with all accounting, payroll, supply, and other company business transacted there (Edwards 1997: personal communication). When the Civil War broke out in April 1861, the RIW's Richmond and Van Deusenville blast furnaces were two of at least 20 blast furnaces operating in the Salisbury Iron District (Keith and Harte 1935:Table). The Salisbury Iron District was a significant contributor of raw material for the Union forces during the Civil War. It is alleged that the Richmond Furnace supplied iron for the construction of the Union ironclad boat *Monitor*. This claim is difficult to substantiate; however, the RIW

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did sell iron ore to the North Adams Iron Company, pig iron from which was used at that works and at the Burden Iron Works in Troy, NY in the construction of armor plate for the ironclad (Annin 1964:121–122). The 11-inch, smooth-bore Rodman guns mounted in the turret of the *Monitor* were likely made of RIW pig iron; for at the time of the ship's construction, "the output of the [Richmond] furnace was devoted almost exclusively to the manufacture of...Rodman guns. All the iron which went into the construction of the guns for the *Monitor* also came from this stack" (Kreutzberg 1914:65). The Rodman guns in question were cast at the South Boston Iron Works at South Boston, Massachusetts (Edwards 1997: Outline; Timeline).

In 1864 the RIW added to its pig iron capacity with the purchase of the c. 1851 Cheshire, Massachusetts, blast furnace, built by James N. Richmond and Seneca Pettee (Edwards 1997: Timeline). Like Richmond and Van Deusenville, the operation of this third blast furnace was overseen from the RIW's Richmond Furnace Office. During the Civil War, the RIW made substantial technological improvements to the Richmond Blast Furnace. These improvements were in keeping with contemporary furnace practice as recommended in industry primers of the era such as Frederick Overman's classic *The Manufacture of Iron,* first published in Philadelphia in 1850. In 1863 the stack was partially rebuilt, incorporating a closed hearth. The waterwheel-and-blowing-tub-air blast system was replaced by a Woodruff & Beach steam blowing engine driven by a Hartford boiler (Edwards 1997: Outline). This blowing engine is said to have run continuously for 3 years and 14 days during the Civil War, and annual output for this period has been placed at 10,000 to 12,000 tons per year (Annin 1964:120). Although it is likely that great demands were placed on the capacity of many blast furnaces during the Civil War, the 10,000 to 12,000 ton per year figure (roughly 27 to 33 tons per day) is quite high, and probably represents output for all three of the RIW's blast furnaces, and not just for the Richmond works. It is also unclear whether the unbroken 3-year, 14-day period of time quoted for blowing engine operation really represents a continuously-lit furnace "campaign"; however, this span of time was about average for natural quartzite hearth refractory materials of the era (Kierstead 1996: 8-11).

The years surrounding the Civil War are notable for the RIW's blast furnace improvement and rebuilding activities. The RIW rebuilt the 1848 Cheshire blast furnace in 1866, only two years after acquiring it, and rebuilt the 1834 Van Deusenville blast furnace in 1857, three years after acquiring it (Keith and Harte 1935: Table). Although the nature of these projects is undocumented, it can be assumed from the available technology of the period that they were similar to the improvements known to have been made to the Richmond blast furnace. In 1834 the use of apparatus to moderately preheat the incoming blast air was introduced in the United States at blast furnaces in Oxford, New Jersey, and Bennington, Vermont. Heated blast was common in the Salisbury Iron District by the time of the Civil War. Although no specific record of heated blast installation at Richmond at this time exists, it is possible, as this technology was adopted at both the Cheshire and Van Deusenville furnaces at the time of their rebuilding by the RIW (Keith and Harte 1935: Table). The RIW's expansion through horizontal integration and consistent modernization made it a

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progressive iron manufacturer in the Salisbury Iron District and prepared the RIW for post-Civil War activity.

After the Civil War, the RIW became an important Salisbury Iron District merchant pig iron manufacturer. "Richmond Iron" from all three RIW blast furnaces was successfully marketed to specialty iron foundries in the Northeastern and Midwestern United States. "Richmond Iron" became a trade name, and was marketed as both a primary and alloying ingredient for foundry iron castings. RIW iron enjoyed a reputation for toughness and was favored for applications characterized by constant or repeated heavy impact or pressure. According to company sources, Richmond ore included minor percentages of naturally-occurring manganese, nickel, and titanium (Kreutzberg 1914:65). These metallic elements are indeed used as alloys for strengthening iron and steel. Of the three, manganese is most commonly associated with the type of iron ore deposits found in the Richmond area. Manganese in particular is used for malleable, or work-hardening iron castings, which actually harden with age and use. Richmond iron was used for the manufacture of malleable and chilled castings, in which the intended wearing surface of the casting was cooled more quickly than the rest, creating an outer "rind" of more fine-grained, wear-resistant iron.

It has been stated that the output of the RIW for 40 years after the Civil War was devoted exclusively to the foundries of the Pennsylvania Railroad and the Chicago, Milwaukee & St. Paul Railroad (Annin 1964:125). This appears to be a simplification, although "Richmond Iron" was highly regarded by railroad foundries (Kreutzberg 1914:65). The RIW also sold pig iron to the Henry Burden Iron Works, Troy, NY, which used the tough material for high-impact applications including horseshoes. There is no record of how the RIW marketed its product, however, there is evidence that it ultimately enjoyed wider markets than just railroad foundries. Despite advancing competition from merchant pig iron producers in the Pennsylvania and Midwestern iron districts, RIW iron continued to sell specialty pig iron and enjoyed a reputation for quality. An undated advertisement from the early twentieth century touts Richmond "Special Charcoal Pig Iron", with customers including the Cambria Steel Company, Farrell Foundry and Machine Company, and the Youngstown Foundry and Machine Company, in addition to the Pennsylvania Railroad (Annin 1964:128). The advertisement lists uses for Richmond iron, including "Car Wheels, Automobile and Gas Engine Cylinders, Crusher Plates, Piston Rings, and Hydraulic High Pressure Work", all demanding applications eventually superseded by steel due to metallurgical superiority and in some cases by laws mandating its use. Other customers included the E. Gifford Company, the Ramapo Wheel and Foundry Company, and even General Electric's nearby Pittsfield plant. In addition to pig iron, the RIW sold calamine, a zinc oxide deposit which accumulated on the inside of the upper blast furnace stack walls, to the New Jersey Zinc Company (Edwards 1997:Outline).

During the last half of the nineteenth century, the RIW expanded its raw materials holdings to support its added blast furnace capacity. The RIW acquired 28 parcels of land in Richmond and adjacent West Stockbridge, including iron mines, charcoal woodlots, and limestone quarries. The RIW eventually owned

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13,000 acres in Alford, Cheshire, Dalton, Great Barrington, Hancock, Housatonic, Lenox, Pittsfield, Richmond, Stockbridge, Washington, and West Stockbridge, Massachusetts; Berlin and Canaan, New York; and Stamford, Vermont. The company came to dominate Massachusetts ironmaking operations in the Salisbury Iron District (Annin 1964:120; Edwards 1997:Outline).

There is some confusion over the number and location of blast furnaces operated by the RIW after the Civil War. The Cheshire and Van Deusenville blast furnaces are certain, bringing the total to three furnaces including Richmond. However, an undated, post-Civil War advertisement illustrating the relationship of the RIW as a supplier of pig iron to the Ramapo Wheel and Foundry Company of Ramapo, New Jersey, includes lithographs of these three furnaces, and also the Lenox blast furnace (Ramapo n.d.). The Lenox blast furnace was built about 1780, rebuilt in 1839, and was shut down by 1881 (Keith and Harte 1935:Table). If the Lenox furnace was indeed owned or operated by the RIW, it was likely for only a short period after the Civil War. It has also been stated that the RIW owned furnaces in Adams and West Stockbridge (Richmond Historical Commission n.d.: Richmond). The Adams furnace was built in 1845 and shut down in 1864. The three West Stockbridge furnaces were built in 1850, 1853, and 1857; the 1850 furnace was rebuilt in 1872 and shut down at an unknown date; the 1853 furnace was shut down in 1855; and the 1857 furnace was also shut down at an unknown date (Keith and Harte 1935:Table). It is therefore possible that the Lenox furnace and two of the West Stockbridge furnaces could have been briefly operated by the RIW after the Civil War; however, no further documentation has been found.

The 1870 U.S. Census for Richmond, Massachusetts includes only 184 of the RIW's workers. This representation includes 84 Irish, 49 Americans, 29 English, nine French, five Canadians, three Scots, and three Germans (U.S. Government 1870).

After 1825 the presidency of Gates, Pettee & Company, and later the RIW was held variously by Samuel Gates, John Churchill Coffing, or John Henry Coffing. In 1875 William Henry Barnum became president of the RIW, and served in that capacity or that of treasurer until 1889. Barnum was the son of Milo Barnum, who moved from the ironmaking town of Dover Plains, New York to Lime Rock Connecticut in 1820. Milo Barnum quickly realized the potential of the Lime Rock-area iron industry and formed the Barnum & Richardson Company with his son-in-law Leonard Richardson. In 1840 William Henry Barnum joined Barnum & Richardson and eventually managed and controlled the company, which became the largest of the Salisbury Iron District iron concerns. Barnum served three terms in the U.S. House of Representatives and was later a U.S. Senator from Connecticut. President Grover Cleveland presented the eulogy at his funeral. At its height, Barnum & Richardson operated an iron "empire", with iron ore mines, timber reserves, limestone quarries, and eight blast furnaces including the Beckley Nos. 1, 2, and 3 at East Canaan, as well as furnaces at Sharon Valley, Cornwall Bridge, Falls Village, and Lime Rock, Connecticut; and Millerton, New York. Unlike the RIW, Barnum & Richardson was vertically as well as horizontally integrated; it operated foundries in Lime Rock, and Chicago, Illinois, with railroad car wheels the main

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product. Barnum & Richardson's Beckley No. 3 charcoal-fired blast furnace closed in 1923, and along with the Richmond furnace, was the last to operate in the Salisbury Iron District (Kirby 1996:*The John Adam Beckley Blast Furnace* 3-5).

Barnum's tenure as president of the RIW was a period of further technological improvements at Richmond. In 1885 the blast furnace was equipped for a hotter air blast. A large, brick hot blast stove containing 28 U-shaped iron pipes was built atop the Richmond blast furnace stack. Larger-diameter pipes were installed in the furnace stack to draw hot gases off the top of the interior smelting chamber and circulate them around the U-shaped pipes in the hot blast stove. The incoming cold blast air pressurized by the blowing apparatus flowed through the interior of the U-shaped pipes and was heated by the hot gases passing through the stove. The blast air was heated to 500Ef, and then forced into the blast furnace hearth through the tuyeres at .75 psi (Rolando 1993:4). The RIW also installed water-cooled tuyeres with internal cooling water passages. This was an essential modification associated with the use of hot blast, as the increased hearth temperatures would melt a conventional, solid cast metal tuyere.

During the last half of the nineteenth century, the quarrying of hearthstone, procurement of blast furnace materials, and construction of blast furnaces and plants in the Salisbury Iron District was dominated by the I.N. Bartram Company of Connecticut. Like many of the charcoal iron blast furnaces located within the historic ironmaking districts in the U.S., most of the blast furnace stacks of the Salisbury Iron District share a common, identifiable typology. The characteristic features of this typology include distinctive, squat proportions; a steeply-battered profile; closely-laid, quarry-faced, irregularly-coursed stone walls; and occasional incorporation of a slightly-overhanging capstone course. However, the most distinctive feature of the Salisbury Iron District blast furnaces are the broad, compound-curve, pointed, Gothic arches, usually originally lined with multiple courses of brick (now missing on the Richmond blast furnace). These arches are unlike the stone, Roman arches common to many other Northeastern U.S. blast furnaces, and the steeply-pitched, triangular stone openings found on blast furnaces in the Central Appalachians. The consistent Salisbury Iron District "style" of blast furnace construction may be associated with the I.N. Bartram Company, as they were the most prolific and well-known builders of these structures in the region.

Under Barnum's control, the RIW also added to its sources of raw materials. In 1894 the RIW purchased the iron ore mines and reserves of the Berkshire Ore Company, as well as the assets of the Stockbridge Iron Co., which last operated a blast furnace in 1855 (Edwards 1997: Timeline; Keith and Harte 1932:Table). During the last quarter of the nineteenth century, the RIW's payroll approached 700 workers (Rolando 1993:3). About 1873 the RIW constructed a second phase of worker housing. These dwellings are vernacular versions of their earlier ca. 1840 Greek Revival predecessors. The buildings are concentrated in a closely-spaced row on the east side of State Road, at the north end of the district, and several other examples were built on Furnace Lane and Furnace Road. These dwellings include 30 (Map No. 32) and 42 (Map No. 34) Furnace Lane, 199 Furnace Road (Map No. 49), and 2755 (Map No. 116), 2771 (map No.

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118), 2779 (Map No. 121), 2785 (Map No. 123), 2793 (Map No. 126), 2801 (Map No. 129), 2805 (Map No. 132), 2815 (Map No. 136), and the dwelling at 2821 (Map No. 139) State Road (c. 1840).

The archaeological sites of eleven known RIW worker houses at 532 Cone Hill Road (Map No.5) (1825-1908), Map Nos. 17, 18, 19, and 20 on Cone Hill Road (c. 1860-1908), Map Nos. 52 and 53 at 199 Furnace Road (c. 1873), Map Nos. 93 and 94 on Furnace Road (c. 1905), and Map Nos. 112 and 113 on Furnace Road (c. 1830) and potential associated related features including trash pits, privies, and wells have the potential to reveal information relating to the domestic and personal lives of RIW workers and their families, tenancy, the social and economic structure of the workforce, and other trades and occupations associated with the ironworks.

In 1873 a Post Office was established at the ironworks. From 1879 to 1900 the Post Office was located in the RIW Office. Postmaster during this period was RIW Bookkeeper Harvey Dresser, also a Richmond selectmen and school committeeman (Lincoln and Drickamer n.d.:102). In 1890 the RIW sold land to the Town of Richmond for construction of the Richmond Furnace School at 2953 State Road (c. 1890) (Map No. 180), built to replace the ca. 1830 schoolhouse (no longer extant) (Edwards 1997:Timeline). In 1872, the RIW gave land to the Town of Richmond for the enlargement of the Cone Hill Cemetery on Cone Hill Road (1779-1994) (Map No. 20) on Cone Hill Road. This cemetery includes 205 marked graves dating from 1778 to 1994, including 25 Revolutionary War veterans, one veteran of the Civil War, and one veteran of the Second World War. The Cone Hill Cemetery is also the burial place of Samuel Gates, Richmond Resident and founding member of Gates, Pettee & Company. Less than a dozen RIW workers were interred at this cemetery, however, their remains may have the potential to reveal unique information regarding general health, including pathologies, related to nineteenth-century mining and furnace workers. This cemetery also has the potential to include unmarked graves.

In 1900 the Richmond Iron Works name was changed to the Richmond Iron Company with no change in ownership. In 1905 Richard Alonzo Burget took over as president and reinstated the Richmond Iron Works name. Burget lived in Cheshire, Massachusetts, where he had managed the RIW's Cheshire blast furnace plant. Some improvements to Richmond operations can be attributed to Burget. The RIW extensively rebuilt the Richmond blast furnace stack to accommodate a larger interior diameter for additional smelting capacity, raising the furnace stack height to approximately 33 ft and the maximum smelting chamber diameter between 8 and 9 ft. The most significant addition to the blast furnace was a 50 in-diameter water-cooled hearth. Unlike the earlier quartzite hearths, which were custom-built from local, natural materials and individually tailored to fit each furnace, water-cooled hearths were prefabricated units which used processed refractory materials. After the 1885 addition of hot blast, hearth temperatures rose to almost 3,000 degrees f, and the hearth was constantly exposed to this heat, as well as highly erosive, chemically-acid, silicate slag for periods approaching five years. This upgrading required the water-cooled tuyeres installed at that time. The next step in hearth technology was the water-cooled hearth. The first water-cooled hearth

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installed in the U.S. was at a blast furnace at the Vulcan Iron Works in St. Louis, Missouri, in 1871 (Kierstead 1996). This type of blast furnace hearth consisted of a hollow cylinder of segmental, cast-iron plates with a refractory brick lining. This unit was installed in place of the older quartzite hearth beneath the furnace stack lining. The cast-iron plates were hollow, allowing the passage of circulating cooling water. The refractory brick lining was more heat-resistant and had a known rate of destruction; the water cooling allowed a thin layer of slag to "freeze" on the interior of the refractory firebrick lining, preventing its rapid erosion. At Richmond, the new water-cooled hearth also included double water-cooled, bronze tuyeres located 272 inches above the hearth floor. These improvements greatly increased the life of the hearth lining, allowing for extended furnace campaigns of several years, and increased capacity due to reduced accumulations of infusible materials in the hearth (Kierstead 1996). Through these improvements, the capacity of the furnace was increased, and tap-to-tap times were reduced from twelve to eight hours (Kreutzberg 1914:66). The Richmond blast furnace was one of roughly half-a-dozen blast furnaces in the district that operated after 1900, and that were known to have been equipped with a water-cooled hearth. The other blast furnaces with water-cooled hearths include the Beckley Nos. 1 and 3 at Canaan, Connecticut; Lime Rock, Connecticut; and the furnaces at Copake Falls and Maltby, New York. Most of the Copake Falls water-cooled hearth remains, and no other intact example of this early type of water-cooled hearth in known to survive. In 1906B1907, the RIW upgraded its other operating blast furnace at Cheshire, Massachusetts, with a similar water-cooled hearth (Keith and Harte 1935:Table).

The RIW mines were consolidated at the Cone mines, and later at the Klondike Mine, which received modern equipment. The Cone Mine Open Pit had been worked by the Richmond Iron Company from 1825 and was one of the oldest and largest iron mines in Berkshire County when it closed in 1904. The Cone Mine complex also had five underground shafts. The first shaft, located near Furnace Road south of the Open Pit, was opened in 1873. The second and third shafts are underwater at the east end of the pit, and the fourth shaft is located at the west end of the pit. The fifth shaft, located southeast of the east end of the pit was a vertical 200 ft deep shaft, and was the only operating mine in Richmond in 1907. This mine was abandoned in 1908 due to flooding, and the Klondike Mine was then opened across Furnace Road to the west. Development work on the Klondike Mine actually began in 1905, and it remained in operation until cessation of Richmond blast furnace operations in 1923. This mine had a 45 degree, 150 ft shaft and horizontal drifts up to 1500 ft. long on three levels for a total of approximately two miles of underground workings. The veins of ore were said to widen with depth. The mine had to be pumped 20 hours a day, with mine water filtered and used in the steam boilers and ore washing process. The mine was equipped with two horizontal tube boilers for the hoisting engines and one 80 HP steam engine linked by a belt to an electrical generator for the Bradford ore crusher and washer plant, and for mine illumination. The ore from both the Cone mines and the Klondike Mine was in rock form between walls of clay. The iron ore was blasted free, hoisted to the surface, crushed, and washed of clay and dirt at the mine. The mine produced 10,000 to 12,000 tons of iron ore per day, with ore typically averaging from 40 to 50 per cent iron. The RIW extracted 10 per cent more iron ore than needed to maintain a stockpile for several month's operation (Chute 1945:42-45;

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Kreutzberg 1914:66-67). Little is known about the Olcott/Carr Mine (1873-1877) (Map No. 29), located east of Cone Hill Road, 500 feet northeast of the Cone Mine Open Pit. This mine belonged to the Olcott Iron Manufacturing Company, a cast-iron stove manufacturer in Albany, New York. It consisted of a 100 ft-deep shaft with several short horizontal drifts (Edwards 1997:Outline). These mine areas that remain flooded have the potential to contain classes of organic artifacts related to mining and mine workers, including tools, shoring structures, personal items, and other artifacts that may reveal information about mining practices, including safety.

By 1905 the local manufacture of charcoal fuel had become prohibitively expensive, and the RIW entered into an agreement with the Manufacturer's Charcoal Company of Bradford, Pennsylvania. This company sold charcoal for the United States Industrial Alcohol Company, which generated the material as a by-product of distillation of wood for chemicals such as wood alcohol and acetic acid. This symbiotic relationship relieved the Manufacturer's Charcoal Company of an unwanted by-product and gave the RIW a source of cheap fuel. The price of wood charcoal had risen from 1 cent per bushel to ten or twelve cents by 1905, was fixed at 20 cents during World War I, and rose to 31 cents after the war (Annin 1964:128). In order to transport the charcoal directly to the Richmond blast furnace site, the RIW built a railroad spur track from the Boston & Albany main line to the area above the blast furnace, where it ran alongside a large charcoal shed. The rail line went directly over the Furnace Pond Main Dam, which had to be raised roughly six feet to accommodate the new railroad track bed.

In 1909 Samuel Gilbert Colt became RIW vice-president, and served as president from 1910 until the dissolution of the RIW in 1926 (Edwards 1997: Officers of the Richmond Iron Works 1825-1923). Samuel G. Colt was born in Pittsfield in 1872. He attended the Sheffield Scientific School at Yale University in Hartford, Connecticut, and received his degree in Mechanical Engineering from Cornell University in Ithaca, New York. He later held a position at Carnegie Steel in Pittsburgh, Pennsylvania, and was employed by the Stanley Electrical Manufacturing Company, which later became the Pittsfield works of General Electric. After his 1905-1926 tenure with the RIW, he became Director of the Western Massachusetts Electrical Company, now a division of Northeast Utilities. Colt's first wife was Frances Kitteridge Crane, a member of the Dalton-based Crane Paper manufacturing family. Colt died in 1955 (Anon. *Berkshire Eagle* 1955).

Under Colt, the RIW made further capital investment in the Richmond blast furnace plant, making improvements in blast furnace construction, and raw materials handling and supply. The RIW installed an overhead tramway to deliver pre-measured fuel, ore, and flux to a loading opening at the top of the blast furnace stack. Although this system was primitive in comparison to the blast furnace materials handling innovations made in the Pittsburgh, Pennsylvania, District in the 1890s, the RIW apparently recognized the advantages of mechanized materials handling over the older, manual furnace charging methods and developed their own more efficient mechanized loading system. In 1911 the RIW closed its Cheshire, Massachusetts blast furnace and consolidated its operations at the Richmond blast furnace plant, and made

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its last round of technological improvements. The company scrapped the 1865 air blast blowing engines and replaced them with two Sturtevant No. 9 positive Roots-type blowers, made in Readville, Massachusetts. The power plant was upgraded with two Babcock & Wilcox 75 HP watertube boilers. These boilers were fired by burning recycled carbon monoxide waste gas from the blast furnace, an efficiency improvement typical of blast furnace plants of the period. The phenomenon of incremental upgrades to antiquated stone stack blast furnaces was not unusual; it was practiced in many other ironmaking districts in the eastern United States (Bennett 1997). The furnace engine room included a 5 kW generator. In 1916, the RIW began to purchase its electricity from the Pittsfield Electric Company, eliminating total reliance on its own generating equipment. This line ran from Pittsfield to Richmond, and brought the first electricity to many homes along its route. The RIW purchased an internal combustion-engined truck for deliveries; however, the company continued to rely on numerous draft animals for ironworks operations until 1923 (Edwards 1997: personal communication).

RIW blast furnace plant modernizations first followed a pattern characterized by vertical integration with acquisition of multiple blast furnaces, accompanied by rapid, simultaneous, incremental technological improvements. Later, the company retreated to one site–Richmond, with increased horizontal integration to insure adequate supplies of raw materials. The RIW first concentrated equally on its Richmond, Van Deusenville, and Cheshire blast furnaces. The 1834 Van Deusenville blast furnace was rebuilt in 1857, closed down in 1896, and possibly operated again until 1906, when it was abandoned in favor of the Cheshire and Richmond blast furnaces, which were equipped with water-cooled hearths at that time. The 1848 Cheshire blast furnace was rebuilt in 1866 and temporarily shut down in 1893. In 1906-1907, Cheshire, the younger and more recently modernized of these two blast furnaces, was rebuilt much like Richmond, with a 32 ft stack, an 8 ft-diameter smelting chamber, and a water-cooled hearth. The Cheshire blast furnace was shut down in 1911, the year before the RIW made its final modernizations at the Richmond plant (Kreutzberg 1914:67; Edwards 1997:Timeline; Keith & Harte 1923:Table).

During the late nineteenth and early twentieth centuries, the RIW, and indeed the Salisbury Iron District, were strongly associated with production of railroad car wheels, including both the raw material and finished product. The RIW was one of the last U.S. manufacturers of charcoal pig iron. The relationship between the longevity of the RIW's dedicated markets into the 1920s and the apparently antiquated method of pig iron production is the result of several factors. During the early and mid-nineteenth century, there was little accurate, scientific, physical materials testing technology or sophisticated understanding of the chemical relationships of iron to its crystalline microstructure. Ironmasters relied primarily on empirical and mechanical methods to determine the physical characteristics of their products. Each blast furnace made iron with fairly consistent chemical content and physical properties so long as it was charged with the same raw materials and operated in a consistent fashion. Eventually the products of particular blast furnaces were settled on by manufacturers of specialty products as the best source for their application. Toward the end of the nineteenth century, this situation led to the establishment of reputations for iron from certain

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ironmaking districts and even from specific blast furnaces. These reputations were the result of consistent use of raw materials and blast furnace practice. Although railroads began to use cast steel wheels in 1903, charcoal pig iron like that produced at Richmond and Canaan, Connecticut, continued to enjoy a market niche until the 1920s. Railroad car wheel casting companies established relationships with the RIW and other Salisbury Iron District iron companies because their pig iron was of proven suitability, rather than on the basis of truly scientific testing. The Salisbury Iron District ore happened to produce iron with an excellent microstructure for making castings with tough interiors and wear-resistant outer faces, and was therefore ideal for railroad applications (Gordon 1996:216-218).

Perpetuation of the RIW's product composition and resulting dedicated markets may have influenced the choices the company made when modernizing the Richmond blast furnace. Changes in blast furnace construction and practice risked changes in the metallurgy of the product, and iron manufacturers were often unwilling to employ new equipment and procedures. As a result the operators of late charcoal furnaces gained a reputation of operating technologically backward, inefficient blast furnaces (Gordon 1996:217). Indeed, some never even adopted heated blast, as they or their customers believed that cold-blast iron was superior for their specific application. The RIW did modernize in some areas such as hot blast, materials handling, and water-cooling, but retained charcoal fuel rather than switching to anthracite or coke, like the Pennsylvania and some Salisbury Iron District ironworks had done earlier. The RIW continued to use local, rather than imported iron ores. Indeed, the RIW was aware that the composition of its ore was a key factor in their iron's reputation (Kreutzberg 1914:65). The technological advances incorporated by the RIW can therefore be seen as advances to increase output and efficiency, which would increase revenue and allow expansion and the resultant advantages and profits inherent with increased economies of scale. Otherwise, the RIW maintained the consistency of its blast furnace charge, and therefore the chemistry of its iron. The RIW made choices that increased the efficiency of its operation while maintaining the consistency of its product.

A small group of surviving turn-of-the century RIW records indicates that by the mid-1890s RIW iron was subjected to chemical analysis and physical testing. These records include analyses of "Richmond" pig iron by independent metallurgical testing laboratories in states including Connecticut, Massachusetts, New Jersey, Pennsylvania, and Rhode Island. These analyses typically identified proportions of phosphorus, sulphur, silicon, manganese, carbon, and iron. According to these records, RIW pig iron was used as an alloy for engine castings by companies such as the Cambria Iron Company of Johnstown, Pennsylvania, and by the Macintosh & Seymour Company (Richmond Iron Works ca. 1891-1915:Company Records). Apparently Salisbury iron, and "Richmond Iron" was still used by the U.S. Government for military applications. An advertisement from the Salisbury Carbonate Iron Company notes the "large amount of castings to be made from charcoal pig iron for mortar carriages and gun carriages required by the United States Government for coast defense and other work..." (Salisbury Carbonate Iron Company, n.d.). The RIW records include several U.S. Ordnance Department reports of mechanical tests of "Richmond Iron" made with the 800,000

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lb U.S. Testing Machine at the Watertown Arsenal at Watertown, Massachusetts (U.S. Ordnance Department 1895). In this period the RIW's letterhead included the words "Richmond Iron" in quotation marks, confirming industry use of the specific geographical place name as a general trade name (Richmond Iron Works ca. 1891-1915:Company Records). In 1911, the Pittsfield Works of the General Electric Company compared "Richmond" charcoal pig iron to "regular coke [-fueled blast furnace] iron" in mechanical tests. The coke iron broke under 2200 lbs of transverse force, while the "Richmond" iron withstood 3650 lbs of force in the same test (Gifford 1911). Despite the unknown circumstances and variables involved in this experiment, this sort of testimonial contributed to the long-lasting reputation of charcoal pig iron. In 1914 the Richmond works included a drill press for sampling the iron, evidence of mechanical testing of the physical properties of the iron at the blast furnace (Kreutzberg 1914:66). By 1921 the Rogers, Brown & Company were the sole sales agent for "Richmond Iron", which was then "sold entirely on analysis basis", indicating that some form of chemical testing was performed prior to shipment (Colt 1921:2).

The RIW's Richmond blast furnace ran until the early 1920s, and as a result accounts from the 1980s exist from two men who observed Richmond blast furnace operations firsthand. These accounts provide insight into the nature of life and work at the Richmond blast furnace and iron mines. Richard Malumphy, interviewed in 1980 at the age of 83, worked for the RIW at Richmond as a youth. Malumphy's grandfather, father, and brothers were all RIW employees. His grandfather was a teamster for the company, and woke at 4 a.m. to tend the draft animals used by the operation. His father was a blacksmith, who made drills and sharpened tools in his shop near the mines (Drew and Edwards 1980:4). Malumphy's family were part of the second wave of foreign RIW workers, Irish and Scotch immigrants who came after the early, skilled English miners. Richard Malumphy ran the steam hoist and monitored the water pumps at the Klondike Mine. According to Malumphy, the miners worked in pairs, drilling and blasting the iron ore, and timbering the underground passages with chestnut logs felled on RIW property. Each pair of men was expected to mine four tons of ore per day (Annin 1964:127). The ore was trammed along the drifts, or horizontal passages, and raised to the surface by a skip hoist. The mine produced 45 to 48 tons of iron ore per day, and Malumphy kept track of the tonnage on a pegboard located at the top of the shaft. The ore was sifted through a grizzly, or coarse screen; crushed, and washed before being shipped to the furnace. There were occasional cave-ins at the mine, and Malumphy remembered one instance where two men were rescued after being trapped for half-an-hour. According to Malumphy, the RIW employed French Canadians as woodcutters, and later in the RIW's history, it employed numerous Italians (Drew and Edwards 1980:5).

One of these Italians was the father of Angelo Balestro, who came to Richmond with his father when he was five years old. Balestro's father worked at the mines, the charcoal kilns, and the limestone quarries, and passed operational information down to his son Angelo. According to Balestro, the blast furnace was charged every half-hour with a cartload of charcoal, 50 bushels of iron ore, and 200 lbs of limestone. The raw materials were kept in a 90 by 30 ft top house which held raw materials for several day's use. A jaw crusher was used to crush the limestone flux. The ironworks purchased charcoal from local farmers and

(continued)

burners, as well as from sources in New York and Vermont, and could store 200,000 bushels in its charcoal shed. The blast furnace was run at 2,600-2,800 degrees f, and the men worked 12-hour shifts. The pig molds in the sand beds were tamped with a specially-shaped wood mold on a stick, and between 30 and 40 pigs were cast from each heat (Drew and Edwards 1980:6). According to Richard Malumphy, working conditions were hard, but not unpleasant. Remarking on his experience loading iron pigs onto freight cars, he said: "The pigs weighed about 60 pounds each...you don't toss them around like marshmallows." According to Malumphy, "It wasn't noisy. You talk about pollution...men who worked there were all healthy!" According to Balestro, "There was no smoke coming out of the stack at the furnace...charcoal burned clean. The men thought it was a good company to work for. They got $9.00 a week for a 10-hour day, six days a week". For $3.00 a month, the RIW rented houses to their workers. The men picked their pay up once a week at the office, and purchased goods at a company-operated store. In 1921 the RIW had 20 tenement houses in fair condition, and three of better condition (Colt 1921:1) The nighttime tapping of the molten iron from the furnace was a dramatic event, often attended by the villagers (Drew and Edwards 1980:7).

References to the quantity of iron produced by the Richmond blast furnace, although spotty, give a reasonable sense of production trends. Records indicate that during 1830, the first year of operation the blast furnace produced 800 tons of iron, for an average of 2.10 tons per day (Edwards 1997:Timeline). In 1856 the blast furnace produced 2,242.5 tons of iron in a 43-week campaign, or 7.45 tons per day (Lesley 1859:28). During the 1917-1918 campaign, at which time the blast furnace was at the peak of its technological improvement, it produced 4,805 tons of iron in 340 days, or approximately 14 tons of iron per day (Edwards 1997:Timeline). Other sources indicate that the Richmond blast furnace's Civil War-era production was between 10,000 to 12,000 tons per year, or an average of between 27 and 33 tons per day (Annin 1964:120). As discussed previously, this figure is likely for all three of the RIW's blast furnaces, and not for Richmond alone, making the Richmond blast furnace's average output during the Civil War closer to 3,300 to 4000 tons per year, or 9 to 11 tons per day, a more realistic figure for single-furnace output of the era. For the years ending March 31st, 1918, 1919, 1920, and 1921, Richmond blast furnace annual production totaled 5,000; 4,045; 3,185; and 3,354 tons, respectively, for an average of 10.68 tons per day for the four-year period (Colt 1921:2). The six-fold increase in capacity between 1830 and 1920 was undoubtedly due to increased furnace size and efficiency, and reduced down-time brought about by adoption of new technology. By comparison, the smallest blast furnaces in the U.S. now produce 2,000-3,000 tons per day, and the largest and most technologically advanced blast furnaces produce 10,000 tons or more per day, the equivalent of twice the best known *annual* production from the Richmond blast furnace plant.

In September 1921 the RIW possessed a newly re-lined Richmond blast furnace and newly opened limestone quarries; had rehabilitated their iron ore mines, having identified at least twenty years of ore reserves; and maintained eight months of stockpiled ore. Despite these indicators, the RIW's financial situation was unfavorable. The Richmond blast furnace had been idle for eight months due to a downturn in the iron market, and the cost of maintaining the operation idle resulted in debts of $35,000 (Colt 1921:1-2). Little

(continued)

is known about the status of the operation in the ensuing years; however, in 1923 RIW president Samuel G. Colt shut down the Richmond blast furnace and closed the iron mines. Colt sold many of the 18 RIW company dwellings standing at that time to the occupants who were renting them. Descendants of these workers still live in several of these houses on State Road (Edwards 1999). By 1926 all RIW property had been disposed of. In 1926, most of the timber-framed buildings directly associated with iron production were dismantled and sold for their lumber by C.B. Lindholm, a Pittsfield, Massachusetts, contractor (Edwards 1999). Also dismantled were the company store, ice house, horse barns, charcoal sheds, blacksmith and wagon shops, mine buildings, and miscellaneous sheds (Annin 1964:128-129). Several large barns were moved and exist today outside the district (Edwards 1999). The Richmond Iron Works was officially dissolved on June 3, 1926, after 101 years of existence, and the furnace and mine sites eventually became overgrown.

After the RIW shut down, the area remained residential. Starting about 1925, Angelo Balestro, a descendant of a RIW miner, operated a variety of businesses in the former RIW house at 2821 State Road (Map No. 139) (pre-1923) and later in the adjacent building at the same address, Map No. 140, built in 1930. 2821 State Road was used as a package store from 1925 until the 1970s. The adjacent building served as Richmond's first fire station from about 1950 to 1961, when a new fire station was built in another part of the town. It was then used as a gasoline station, and an office and vehicle storage building for a sand and gravel operation until the mid-1980s. The building was converted into a local craft store in 1993 and was leased by the town for library space in 1996. Daniel Rovario, owner of the house at 2771 State Road (Map No. 118) (c. 1873), constructed an extensive "Italian" garden that was open to the public after 1925. This garden extended to Furnace Brook at the rear of the property and was an unusual, although short-lived, attraction for this area. During the 1940s Pilgrim Street, a short, dead-end street located outside and south of the district was built for a minor residential development of five small houses (Edwards 1999). The Richmond Furnace railroad station was torn down in 1946; extensive railroad right-of-way regrading associated with track realignment and fiber-optic cable installation has obliterated any trace of this building. Despite these minor changes, the village of Richmond Furnace still retains its historical integrity and is a remarkably intact example of an extremely unusual resource, a New England ironworks community.

The only large, twentieth-century industrial operation in Richmond, the American Gypsum Company's perpetual plaster lime kilns, lasted another ten years after the RIW shutdown. The remains of this plant still stand on Summit Road at Richmond Summit on the Boston & Albany Railroad, approximately three miles north of Richmond Furnace (Annin 1964:129). The Cone and Klondike mines were the scene of World War II strategic minerals exploration during 1943. Test bores were made on the orebodies, and there was talk of reopening the mines, however, no action was taken (Drew and Edwards 1980:7). The company records of the RIW remained in the large RIW Office walk-in safe until the 1960s, when the occupants discarded them (Edwards 1997: personal communication).

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In 1945, the Colonial Rock Wool Company of West Stockbridge quarried the extensive slag dumps around the furnace as a source of raw material for manufacturing slag wool, an early form of fiberglass insulation. This was the first industry of its kind in New England. In the process of digging out the slag, numerous industrial archaeological artifacts were unearthed and pushed to the east bank of Furnace Brook. This bank was first built up to contain Furnace Brook for the installation of a turbine installed at the RIW sawmill located at the Captain Russell Griffing Sawmill site downstream. This bank comprises the Hearthstone and Salamander Dump (c. 1829-1923) (Map No. 61), which contains quarried blocks of trimmed Sharon, Connecticut, Dalton Quartzite refractory hearthstone; iron "skull" accumulations from furnace hearth walls; and numerous furnace hearths and salamanders, accumulations of infusible materials associated with periodic relining of the hearth, and occasional operational mishaps. These artifacts vary in composition from natural quartzite, to assemblies of quartzite and firebrick, to all-firebrick masses. They represent the entire history of Salisbury District charcoal-fired blast furnace hearth construction, ranging from all-natural materials, to the increasing use of firebrick, to the installation of water-cooled tuyeres and entire water-cooled hearths. They provide evidence of changing technology developed to withstand higher blast temperatures and prolong furnace campaign length. Although salamanders exist at many other blast furnaces, few sites contain such a large, comprehensive, and accessible collection of blast-furnace hearth-related features. The entire district contains significant industrial archaeological potential in the form of limestone quarry and charcoal kiln sites, open-pit and shaft mine complexes, and eighteenth- and nineteenth-century mill areas. Worker dwelling sites possess the potential to reveal information about the lives of ironworkers over nearly a 100-year period. The furnace area itself has the potential to reveal information about pig iron manufacturing, particularly technological advances in the handling of raw materials; finished and waste products; and iron smelting and casting.

The RIW closed for a number of reasons. After the 1890s, Salisbury Iron District ironworks were competing with the new ironmaking districts of Pennsylvania and the Midwest. The Salisbury Iron District managed to maintain profitability by adopting new technology and pursuing new markets while relying on the long-respected qualities of its product. Ultimately the RIW and the Salisbury Iron District succumbed to loss of profitability due to a number of factors. Like the technological advances made at other early twentieth-century Salisbury Iron District furnaces, the various modernizations to the old stone stack at Richmond were simply stopgap measures which could only drive capacity and efficiency so far. The new heavily-capitalized, modern iron and steel empires of the Midwest utilized much larger, coke-fired furnaces using abundant, rich Great Lakes ores. Their economies of scale and new technology allowed greater capacity, efficiency, and consistency of iron production for steelmaking. They were located near the sources of consumption, and enjoyed superior transportation. The Salisbury Iron District was no longer in an advantageous location for the processing or shipment of pig iron. The manufacture of pig iron had shifted from independent merchant production to captive blast furnaces within the growing steel industry. What merchant pig iron manufacturing survived was on a new, massive, heavily-mechanized scale, with advances such as the Uehling rotary pig caster, which replaced the sand bed casting floor and the workers who tended

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it. Advances in metallurgy, most importantly the development of high-volume, Bessemer and Open-Hearth steel making, made cast iron an obsolete, and later, even outlawed material for many applications, including railroad-related ones.

Ironically, in 1927, just four years after the Richmond furnace was shut down, a state-of-the-art merchant pig iron blast furnace and rotary pig caster was built in Everett, Massachusetts by the Mystic Pig Iron Company, a division of Eastern Gas & Fuels Associates, a Northeast U.S. mining and utility association. This blast furnace plant took advantage of new, low-cost, ocean-borne sources of South American iron ores, a ready supply of illuminating-gas-plant by-product coke fuel, and a new local, captive cast iron pipe market. This operation, the only modern merchant pig iron plant built in New England, closed in 1952 (Stone 1930; Anderson and DeLawyer 1995:115,194). In nearby Troy, New York, at the old Burden Iron Works, the Republic Steel Corporation operated a modern merchant pig iron blast furnace using rich Adirondack magnetite iron ore, and a pig casting machine until 1969. By this time most of the captive merchant pig iron facilities associated with U.S. steel mills had shut down. The last modern U.S. merchant pig iron blast furnace plant, the 1958 Jim Walters Resources furnace in Birmingham, Alabama, shut down in the mid-1980s.

At its height, the Salisbury Iron District included at least 55 blast furnaces in Connecticut, New York, and Massachusetts. These blast furnaces began to shut down during the 1850s and most were inactive by 1890. The only two Massachusetts blast furnaces to operate in the twentieth century were the Cheshire blast furnace, shut down in 1911, and the Richmond blast furnace. The Richmond blast furnace and the Canaan, Connecticut, Beckley No.3 blast furnace were the last two operating charcoal-fired blast furnaces in New England, and among the last operating in the U.S., when they shut down in 1923 (Keith and Harte 1935:Table). Richmond's contribution to the regional iron has been summarized thus: "The Richmond furnace did some of the best work of all those in the Salisbury Iron District, and produced a very large amount of iron of a quality which contributed to the good name of Salisbury iron." (Keith and Harte 1935:21). Like Richmond's blast furnace, most of the Salisbury Iron District blast furnaces were extensively altered or rebuilt during their lives. Eleven blast furnace stacks still stand in varying condition in the Salisbury Iron District: Bulls Falls, East Canaan, North Kent, Lime Rock (recently restored by its owner), Salisbury, and Roxbury, Connecticut; Chatham, Copake Falls, and Dover Furnace, New York, and the sole Massachusetts blast furnace at Richmond. Little if any evidence of the other Massachusetts blast furnace plants survive, and some remaining associated buildings stand at some locations, however, none of the sites in any of the three states possess the extent and degree of archaeological and historical integrity found in the Richmond Furnace Historic and Archaeological District.

(continued)

Prehistoric Significance

Since patterns of prehistoric settlement and subsistence in Richmond are poorly understood and few sites are recorded, any prehistoric sites found in the district could be significant. Prehistoric sites in this area can be important by contributing information to our knowledge of prehistoric settlement and subsistence in the Berkshire uplands of Western Massachusetts and interior streams at the headwaters of the Housatonic River drainage. Prehistoric sites in this area can also be important by further defining the extent of native socio/political and socio/economic relationships with Native peoples in neighboring river drainages to the west in the New York areas, to the south in Connecticut, or in more eastern locales in Massachusetts, including the Connecticut River Valley. The district lies within the Housatonic River drainage, which flows southerly through Connecticut. The district is also in close proximity to New York, which abuts Richmond to the west. The Hudson River drainage also lies a short distance north of the district. Major Native American core settlement areas also exist along the Connecticut River to the east. Prehistoric sites in this area can help test the importance of drainage system boundaries versus geographic proximity and their influence on Native American subsistence and settlement systems. Prehistoric sites in the district area may also contain information relating to Native lithic technologies, especially lithic procurement and the reduction of raw materials. The latter information could be significant by establishing a prehistoric precedent for the mining of raw materials and their processing.

(end)

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Galer, Gregory
1997 Interview with author

(continued)

Richmond Furance
Name of Property

Berkshire, MA
County and State

10. Geographical Data

Acreage of Property 290 acres

UTM References See continuation sheet.
(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing
1.	~~18~~ 18	632940	4691230
2.	~~18~~ 18	633310	4691090
3.	~~18~~ 18	633520	4691090
4.	~~18~~ 18	633500	4690840

x See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title William F. Edwards, Chair, Richmond Historical Commission and Matthew Kierstead, Industrial Historian, PAL, with Betsy Friedberg, NR Director, MHC

organization Massachusetts Historical Commission date July 1999

street & number 220 Morrissey Boulevard telephone 617-727-8470

city or town Boston state MA zip code 02125

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items (Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name multiple

street & number _____ telephone _____

city or town Richmond state MA zip code 01254

Gradie, Robert M. III
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Ingram, David B.
1997 Interview with author

Maps

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(end)

10. Geographical Data

UTM References

5. 18 ~~19~~ / 634380 / 4690840
6. ~~19~~ / 634430 / 4690500
7. ~~19~~ / 634560 / 4690500
8. ~~19~~ / 634560 / 4690290
9. ~~19~~ / 634360 / 4690290
10. ~~19~~ / 634450 / 4690120
11. ~~19~~ / 634440 / 4689890
12. ~~19~~ / 633480 / 4689890

(continued)

13. ~~19~~ / 633520 / 4690390

14. ~~19~~ / 633100 / 4690470

15. ~~19~~ / 633180 / 4690790

16. ~~19~~ / 632840 / 4690900

Verbal Boundary Description (see also District Base Map)

Beginning at a point at the northwest corner of Map 105, Parcel 5 (105/5)
-southwest to a point west of the southwest corner of the barn at 105/5
-northwest 650 feet into 412/20
-southwest 650 feet
-southeast 650 feet to the northwest corner of 105/2
-south to the southwest corner of 106/4
-east to State Road
-south to a point opposite the southwest corner of 106/5
-east across State Road to the southwest corner of 106/5
-southeast to the northeast corner of 106/7
-east to the northwest corner of 106/13
-south across State Road to an intersection with Furnace Brook
-southeasterly along Furnace Brook to the West Stockbridge line
-east to the southeast corner of 411/7
-northeast to the southeast corner of 411/5
-northwest to the southwest corner of 411/6
-northeast to Furnace Road
-northwest to a point opposite the southwest corner of 411/18
-east across Cone Hill Road to the southeast corner of 411/18
-north 450 ft
-west 500 ft to the west side of Cone Hill Road
-north to the southeast corner of 411/12
-west to the northwest corner of 106/19
-north to the northeast corner of 105/9
-west to the west side of State Road
-northwest to the northwest corner of 105/5, the point of beginning.

(continued)

Boundary Justification

The boundaries include the full extent of known contiguous, intact, historic architectural and archaeological resources associated with the development of water-powered industry within the district during its period of significance. The boundaries follow legally recorded property boundary lines, roads, and natural watercourses, with the exception of the Upper Reservoir, Olcott/Carr Mine, and Charcoal Area sites, where line-of-convenience boundaries were established to include important resources. Additional land area could be added in the future if further research indicates that significant associated resources lie outside the boundaries described here.

(end)

Photographic Information

Photographers: William F. Edwards, Matthew A. Kierstead
Date of Photographs: August, 1997

Addresses: William F. Edwards
Richmond Historical Commission
932 State Road
Richmond, MA 01254

Matthew A. Kierstead
The Public Archaeology Laboratory, Inc.
210 Lonsdale Avenue
Pawtucket, RI 02860

Key to Photographs:

1. Cone Open Pit Mine (Quarry Pond), looking west
2. Cone No. 4 Shaft Mine Collar, looking north
3. Cone Hill Cemetery, looking north
4. AIronmaster=s House@/Boarding House, looking southeast
5. Richmond Iron Works Office, looking northeast
6. Cone Mine Ore Crusher and Washer House Upper and Lower Foundations, looking northeast
7. Klondike Mine Ore Crusher/Washer House Foundation, looking north
8. Worker House at 2755 State Road, looking northeast
9. Worker Houses on State Road, looking south
10. Worker House at 2774 State Road, looking southwest
11. Worker houses and agricultural outbuildings at 2834 and 2836 State Road, looking north

(continued)

12. Furnace Pond Main Dam, Bridge, and Spillway, looking north

13. Charcoal Shed Foundation, looking northeast

14. Blast Furnace, looking northeast

15. Charcoal Kiln No. 5 foundation, looking south

16. Worker House at 2900 State Road, looking southwest

17. Worker House at 2922 State Road, looking northwest

18. Worker House and Barn at 2922 State Road, looking southwest

19. Richmond Furnace School, looking east

(end)

NPS Form 10-900-a
(8-86)

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number _____ Page _____

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 99001044 Date Listed: 8/31/99

Richmond Furnace Historical and Archeological District	Berkshire	MA
Property Name	County	State

N/A
Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

for Signature of the Keeper	8/31/99 Date of Action

==========

Amended Items in Nomination:

Areas of Significance
Archeology - Historic/non-aboriginal

Cultural Affiliation is Euro-American.

The correct zone for the UTM coordinates is 18, not 19 as printed on the form, continuation sheet and map.

This information was confirmed with Betsy Friedberg of the Massachusetts Historical Commission.

DISTRIBUTION:

National Register property file
Nominating Authority (without nomination attachment)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Richmond Furnace Historical and Archeological District

MULTIPLE NAME:

STATE & COUNTY: MASSACHUSETTS, Berkshire

DATE RECEIVED: 7/29/99 DATE OF PENDING LIST: 8/10/99
DATE OF 16TH DAY: 8/26/99 DATE OF 45TH DAY: 9/12/99
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 99001044

REASONS FOR REVIEW:

APPEAL:	N	DATA PROBLEM:	N	LANDSCAPE:	N	LESS THAN 50 YEARS:	N
OTHER:	N	PDIL:	N	PERIOD:	N	PROGRAM UNAPPROVED:	N
REQUEST:	N	SAMPLE:	N	SLR DRAFT:	Y	NATIONAL:	N

COMMENT WAIVER: N

✓ ACCEPT ___ RETURN ___ REJECT _____ DATE

ABSTRACT/SUMMARY COMMENTS:

This is a remarkable district. It may be eligible as an NHL with the Labor Archeology Theme Study.

RECOM./CRITERIA A C D

REVIEWER B. Little DISCIPLINE archeology

TELEPHONE 343 9573 DATE 8/31/99

DOCUMENTATION see attached comments Y/(N) see attached SLR (Y)/N

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 1

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 2

RICHMOND FURNACE HISTORIC AND ARCHAEOLOGICAL DISTRICT
RICHMOND
BERKSHIRE COUNTY, MASSACHUSETTS

PHOTOGRAPH NUMBER 3

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 4

Richmond Furnace and Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 5

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 5

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 7


2755

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 8

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 9

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 10

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 11

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 12

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 13

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 14

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 15

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 16

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 17

Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 18

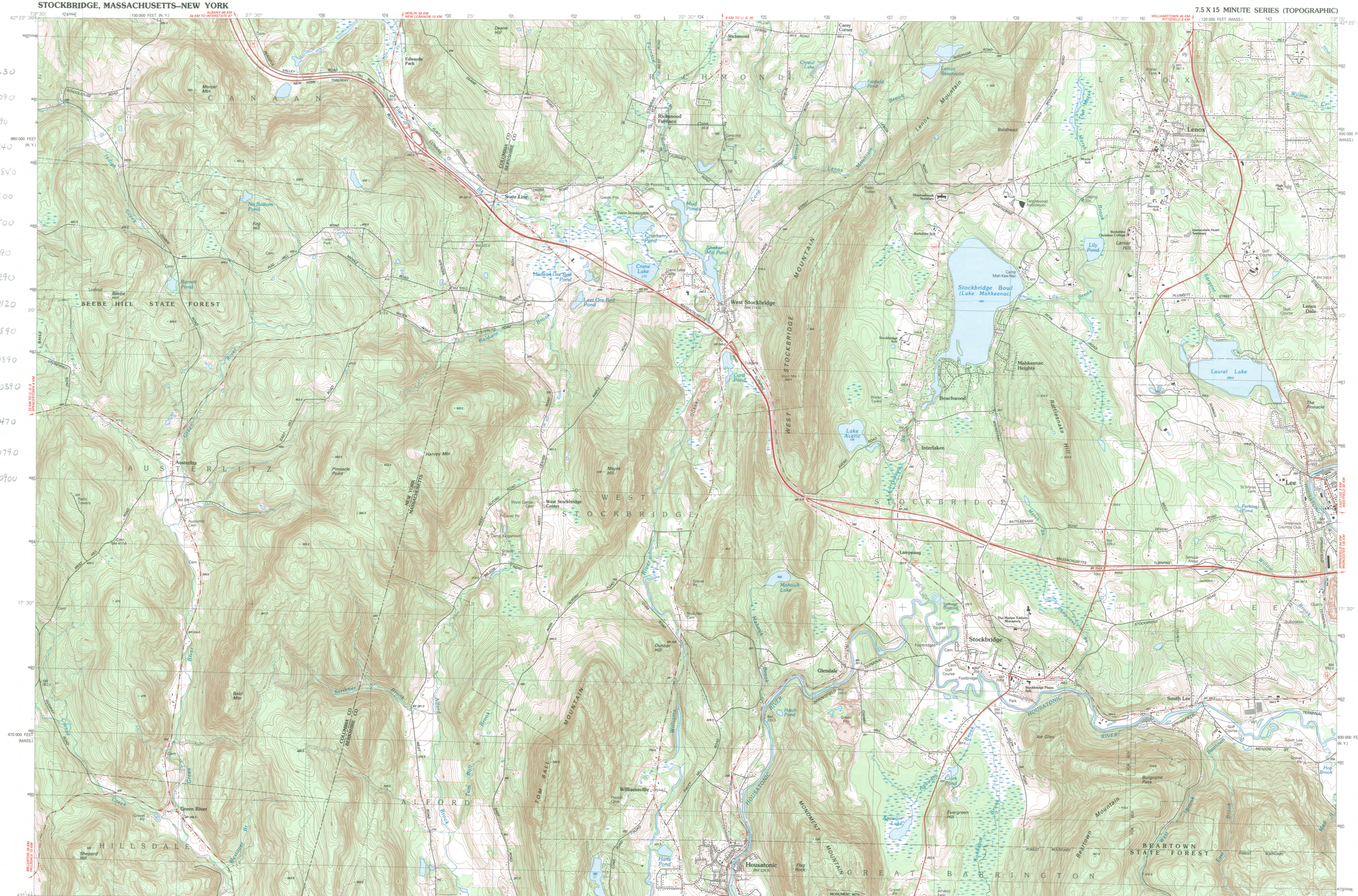
Richmond Furnace Historic and Archaeological District
Richmond
Berkshire County, Massachusetts

Photograph Number 19

ULTMs
ZONE 19
1. 632940 4691230
2. 633310 4691090
3. 633520 4691090
4. 633520 4690840
5. 634380 4690840
6. 634430 4690500
7. 634580 4690500
8. 634560 4690290
9. 634360 4690290
10. 634430 4690120
11. 634440 4689890
12. 633480 4689890
13. 633520 4690390
14. 633100 4690470
15. 633180 4690790
16. 632840 4690900

STOCKBRIDGE, MASSACHUSETTS–NEW YORK

7.5 X 15 MINUTE SERIES (TOPOGRAPHIC)



INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1987

SCALE 1:25 000
1 CENTIMETER ON THE MAP REPRESENTS 250 METERS ON THE GROUND
CONTOUR INTERVAL 3 METERS

KILOMETERS 1 0 1 2 3 4
MILES 1 0 1 2

500 0 1000 2000 3000 4000 5000 METERS
1000 0 2000 4000 6000 8000 10 000 12 000 14 000 16 000 FEET

STOCKBRIDGE, MASSACHUSETTS–NEW YORK
42073-C3-TM-025
1987

42073-C3-TM-025

Stockbridge

MASSACHUSETTS–NEW YORK

1:25 000-scale *metric* topographic map

RICHMOND FURNACE HD

RICHMOND, (BERKSHIRE) MA

7.5 X 15 MINUTE QUADRANGLE SHOWING

- Contours and elevations in meters
- Highways, roads and other manmade structures
- Water features
- Woodland areas
- Geographic names

GEOLOGICAL SURVEY

1987

Produced by the United States Geological Survey in cooperation with Massachusetts Department of Public Works
Control by USGS, NOS/NOAA, and Commonwealth of Massachusetts agencies
Compiled by photogrammetric methods from aerial photographs taken 1980. Field checked 1981. Map edited 1987
The west half of this area also covered by 7.5-minute 1:25,000-scale map: State Line dated 1973
The east half of this area supersedes Stockbridge 1:25,000-scale map dated 1973
Projection and 1000-meter grid, zone 18
Universal Transverse Mercator
10,000-foot grid ticks based on Massachusetts coordinate system, mainland zone and New York coordinate system, east zone
1927 North American Datum
To place on the predicted North American Datum 1983, move the projection lines 5 meters south and 36 meters west as shown by dashed corner ticks
There may be private inholdings within the boundaries of the National or State reservations shown on this map

CONTOUR INTERVAL 3 METERS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

CONTROL ELEVATIONS SHOWN TO THE NEAREST 0.1 METER
OTHER ELEVATIONS SHOWN TO THE NEAREST 0.5 METER

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

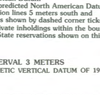
CONVERSION TABLE

Meters	Feet
1	3.2808
2	6.5617
3	9.8425
4	13.1234
5	16.4042
6	19.6850
7	22.9659
8	26.2467
9	29.5276
10	32.8084

To convert meters to feet multiply by 3.2808

To convert feet to meters multiply by 0.3048

DECLINATION DIAGRAM



UTM grid convergence (GN) and 1987 magnetic declination (MN) at center of map
Diagram is approximate

ADJOINING MAPS

1	2	3
4		5
6	7	8

1 East Chatham 1:24 000
2 Pittsfield West
3 Pittsfield East
4 Chatham 1:24 000
5 East Lee
6 Hillsdale 1:24 000
7 Great Barrington
8 Otis

FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092

Topographic Map Symbols

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road; trail
Route marker: Interstate; U. S.; State
Railroad: standard gage; narrow gage
Bridge; drawbridge
Footbridge; overpass; underpass
Built-up area; only selected landmark buildings shown
House; barn; church; school; large structure
Boundary:
National, with monument
State
County, parish
Civil township, precinct, district
Incorporated city, village, town
National or State reservation; small park
Land grant with monument; found section corner
U. S. public lands survey; range, township; section
Range, township; section line: location approximate
Fence or field line
Power transmission line, located tower
Dam; dam with lock
Cemetery; grave
Campground; picnic area; U. S. location monument
Windmill; water well; spring
Mine shaft; prospect; adit or cave
Control: horizontal station; vertical station; spot elevation
Contours: index; intermediate; supplementary; depression
Distorted surface: strip mine, levé, sand
Bathymetric contours: index; intermediate
Perennial lake and stream; intermittent lake and stream
Rapids, large and small; falls, large and small
Swamp; marsh
Submerged marsh; land subject to controlled inundation
Woodland; scattered trees
Scrub; mangrove
Orchard; vineyard

A pamphlet describing topographic maps is available on request

412

105
106

411

UPPER RESERVOIR AREA

CONRAIL BOSTON & ALBANY DIVISION RAILROAD

STATE ROAD

FURNACE POND

FURNACE BROOK

BLAST FURNACE AREA

CHARCOAL AREA

LIMESTONE FURNACE FLUX QUARRY AREA

CONE HILL CEMETERY

CONE HILL ROAD

ROUTE 41

PILGRIM STREET

FURNACE LANE

FURNACE ROAD

STATE ROAD

SLAG PILE AREA

KLONDIKE MINE COMPLEX

CONE OPEN PIT MINE (QUARRY POND)

CONE MINE COMPLEX

OLD CONE OPEN PIT MINE (MINE BED)

WEST STOCKBRIDGE TOWN LINE

BASE MAP

RICHMOND FURNACE HISTORIC AND ARCHAEOLOGICAL DISTRICT RICHMOND, MASSACHUSETTS NATIONAL REGISTER OF HISTORIC PLACES 1997

(100) MAP NUMBERS CORRESPOND TO DISTRICT DATA SHEET

N

SCALE 1" = 150'

FEET 75 0 150 300 450

METERS 37.5 0 37.5 75 112.5

MAP KEY

- Contributing Buildings
- Noncontributing Buildings
- Contributing Archaeological Sites
- Contributing Structures
- Contributing Objects

The Public Archaeology Laboratory, Inc.
210 Lonsdale Avenue
Pawtucket, RI 02860

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

July 22, 1999

Ms. Carol Shull
National Register of Historic Places
Department of the Interior
National Park Service
Mail Stop 2280, Suite 400
1849 C Street, NW
Washington, DC 20240

Dear Ms. Shull:

Enclosed please find the following nomination form:

Richmond Furnace Historic District, Richmond (Berkshire Co.), MA

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 properties included in the district were notified of pending State Review Board consideration 30 to 45 days before the meeting and were afforded the opportunity to comment.

Sincerely,

Betsy Friedberg

Betsy Friedberg
National Register Director
Massachusetts Historical Commission

enclosure

cc: William F. Edwards, Chair, Richmond Historical Commission
Matthew Kierstead, PAL, Preservation Consultant
Roger Manzolini, Chair, Richmond Board of Selectmen

220 Morrissey Boulevard, Boston, Massachusetts 02125 · (617) 727-8470
Fax: (617) 727-5128 · TDD: 1-800-392-6090
www.state.ma.us/sec/mhc

99001044
DR 11/13/09

The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

November 2, 2009

Mr. J. Paul Loether
National Register of Historic Places
Department of the Interior
National Park Service
1201 Eye Street, NW, 8th floor
Washington, DC 20005

Dear Mr. Loether:

It has come to our attention that the National Register does not have in its files a copy of the district data sheet for the Richmond Furnace Historic and Archaeological District, Berkshire County, Massachusetts. The district was listed in the National Register on August 31, 1999. Enclosed, please find a copy of the data sheet that was submitted with the nomination in 1999. If you have any questions, please do not hesitate to contact me.

Sincerely,

Betsy Friedberg

Betsy Friedberg
National Register Director
Massachusetts Historical Commission

Enclosure

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc

RICHMOND FURNACE HISTORIC AND ARCHAEOLOGICAL DISTRICT
RICHMOND, MASSACHUSETTS
DISTRICT DATA SHEET

NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
1	411/8		Cone Open Pit Mine (Quarry Pond) (Section-see also 411/7, 9, and 10)	424 Cone Hill Road	1825-1904	n/a	C/SI	1
2	"	RIC.81	House	"	1984	No Style	NC/B	
1	411/9		Cone Open Pit Mine (Quarry Pond) (Section)	426 Cone Hill Road	1825-1904	n/a	See 411/8 above	
3	"		Quarry Road 1 (Section-see also 411/ 10 and 12)	"	ca. 1830	n/a	C/SI	
4	"	RIC.82	House	"	1988	No Style	NC/B	
5	411/6		Worker House Foundation	532 Cone Hill Road	1825-1908	n/a	C/SI	
6	"		Cone Mine Tailings Pile (Section-see also 411/7)	"	1825-1908	n/a	C/SI	
7	"	RIC.83	House	"	1971	No Style	NC/B	
8	"		Drainage Ditch	"	1825-1908	n/a	C/SI	
9	411/7		Cone No. 4 Shaft Mine Collar	Cone Hill Road	ca. 1860-1900	n/a	C/SI	2
10	"		Cone No. 4 Shaft Mine Machine Pads	"	ca. 1860-1900	n/a	C/SI	
11	"		Cone No. 5 Shaft Mine Collar	"	ca. 1860-1908	n/a	C/SI	
12	"		Cone No. 5 Shaft Mine Machine Pads	"	ca. 1860-1908	n/a	C/SI	
11	"		Cone Open Pit Mine (Quarry Pond) (Section)	"	1825-1904	n/a	See 411/8 above	
13	"		Old Cone Open Pit Mine (Mine Bed) (Section-see also 411/2, 3)	"	1795	n/a	C/SI	
14	"		Cone Mine Road (Section-see also 411/1, 2)	"	1857	n/a	C/SI	
15	"		Cone No.4 Shaft Mine Ore Conveyor Ramp (Section-see also 411/2, 3)	"	ca. 1860-1900	n/a	C/SI	

RICHMOND FURNACE HISTORIC AND ARCHAEOLOGICAL DISTRICT
RICHMOND, MASSACHUSETTS
DISTRICT DATA SHEET

NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
16	"		Cone No. 5 Shaft Mine Ore Conveyor Ramp (Section-see also 411/3)	"	ca. 1860-1908	n/a	C/SI	
17	"		Worker House Foundation	"	ca. 1825-1908	n/a	C/SI	
18	"		Worker House Foundation	"	ca. 1825-1908	n/a	C/SI	
19	"		Worker House Foundation	"	ca. 1825-1908	n/a	C/SI	
6	"		Cone Mine Tailings Pile 1 (Section)	"	ca. 1825-1908	n/a	See 411/6 above	
1	411/10		Cone Open Pit Mine (Quarry Pond) (Section)	Cone Hill Road	1825-1904	n/a	See 411/8 above	
3	"		Quarry Road 1 (Section)	"	ca. 1830	n/a	See 411/8 above	
20	411/11	RIC.803	Cone Hill Cemetery	Cone Hill Road	1779-1994	n/a	C/SI	3
21	411/12		Limestone Furnace Flux Quarry Site 1	Cone Hill Road	ca. 1830	n/a	C/SI	
22	"		Limestone Furnace Flux Quarry Site 2	"	ca. 1830	n/a	C/SI	
23	"		Limestone Furnace Flux Quarry Site 3	"	ca. 1830	n/a	C/SI	
24	"		Limestone Furnace Flux Quarry Site 4	"	ca. 1830	n/a	C/SI	
25	"		Limestone Furnace Flux Quarry Site 5	"	ca. 1830	n/a	C/SI	
26	"		Limestone Furnace Flux Quarry Site 6	"	ca. 1920	n/a	C/SI	
3	"		Quarry Road 1 (Section)	"	ca. 1830	n/a	See 411/8 above	
27	"		Quarry Road 2 (Section-see also 106/19)	"	ca. 1830	n/a	C/SI	
28	411/18		Olcott/Carr Shaft Mine Site	Cone Hill Road	1873-1877	n/a	C/SI	
29	"		Worker House Foundation	"	1873-ca. 1905	n/a	C/SI	
30	106/17	RIC.17	RIW "Ironmaster's House"/Boarding House	20 Furnace Lane	1832	Greek Revival	C/B	4

NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
31	"		Garage	"	1970	No Style	NC/B	
32	106/16	RIC.84	RIW Worker House	30 Furnace Lane	ca. 1873	Greek Revival	C/B	
33	"		Garage	"	1940	No Style	NC/B	
34	106/15	RIC.85	RIW Worker House	42 Furnace Lane	ca. 1873	Greek Revival	C/B	
35	"		Barn	"	ca. 1873	No Style	C/B	
36	"		Shed	"	post-1923	No Style	NC/B	
37	"		Shed	"	post-1923	No Style	NC/B	
38	106/14	RIC.86	Richmond Iron Works Office	65 Furnace Lane	1862	Greek Revival/ Italianate	C/B	5
39	"		Garage	"	1990	No Style	NC/B	
40	"		Charcoal Shed Foundation (Section-see also 105/20)	"	1829	n/a	C/SI	
41	"		Railroad Spur Bed (Section-see also 105/20)	"	1906	n/a	C/SI	
42	"		Ore Pile (Section-see also 105/20)	"	1923	n/a	C/SI	
43	106/13	RIC.87	House	87 Furnace Road	1970	No Style	NC/B	
44	"		Blacksmith Shop Site	"	ca. 1870	n/a	C/SI	
45	"		Wagon Shop Site	"	ca. 1870	n/a	C/SI	
46	"		Bridge Abutment (Section-see also 106/11)	"	ca. 1763	n/a	C/SI	
47	"	RIC.905	Mill Stone 1	"	ca. 1777-1789	n/a	C/O	
48	"	RIC.906	Mill Stone 2	"	ca. 1777-1789	n/a	C/O	
49	106/18	RIC.88	RIW Worker House	199 Furnace Road	ca. 1873	Greek Revival	C/B	
50	"		Barn	"	1940	No Style	NC/B	

NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
51	"		Garage	"	1950	No Style	NC/B	
52	"		Worker House Foundation	"	ca. 1873	n/a	C/SI	
53	"		Worker House Foundation	"	ca. 1873	n/a	C/SI	
54	106/20	RIC.89	House	293 Furnace Road	1973	Colonial Revival	NC/B	
55	411/3	RIC.90	House	421 Furnace Road	1971 (modern)	Contemporary	NC/B	
13	"		Old Cone Open Pit Mine (Mine Bed) (Section)	"	1795	n/a	See 411/7 above	
56	"		Cone Mine Ore Crusher and Washer House Upper Foundation	"	ca. 1825-1908	n/a	C/SI	6
57	"		Cone Mine Ore Crusher and Washer House Lower Foundation	"	ca. 1825-1908	n/a	C/SI	
15	"		Cone No. 4 Shaft Mine Ore Conveyor Ramp (Section)	"	ca. 1860-1900	n/a	See 411/7 above	
16	"		Cone No. 5 Shaft Mine Ore Conveyor Ramp (Section)	"	ca. 1860-1908	n/a	See 411/7 above	
58	"		Cone Mine Tailings Pile 2	"	ca. 1825-1908	n/a	C/SI	
59	106/11		Shed	Furnace Road	Post-1923	No Style	NC/B	
60	"		Cart Path (Section-see also 105/20, 106/21)	"	ca. 1830	n/a	C/SI	
61	"		Hearth Stone and Salamander Dump	"	ca. 1830-1923	n/a	C/SI	
62	"		Furnace Tailrace Exit	"	ca. 1829	n/a	C/SI	
46	"		Bridge Abutment (Section)	"	ca. 1763	n/a	See 106/11 above	
63	"		Captain Russell Griffing Sawmill Site	"	1763	n/a	C/SI	
64	"		Captain Russell Griffing Sawmill Raceway	"	1763	n/a	C/SI	

RICHMOND FURNACE HISTORIC AND ARCHAEOLOGICAL DISTRICT
RICHMOND, MASSACHUSETTS
DISTRICT DATA SHEET

NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
65	"		Captain Russell Griffing Gristmill Site	"	ca. 1777-1789	n/a	C/SI	
66	"		Wash House Foundation	"	ca. 1890	n/a	C/SI	
67	"		Wash House Foundation	"	ca. 1890	n/a	C/SI	
68	"		Building Site	"	pre-1829	n/a	C/SI	
69	106/19		"New Road" (Section-see also 105/20, 106/21)	Furnace Road	ca. 1905	n/a	C/SI	
70	"		Large Charcoal Mound	"	ca. 1830-1913	n/a	C/SI	
71	"		Charcoal Area 1	"	ca. 1830-1913	n/a	C/SI	
72	"		Charcoal Area 2	"	ca. 1830-1913	n/a	C/SI	
73	"		Charcoal Area 3	"	ca.1830-1913	n/a	C/SI	
74	"		Charcoal Area 4	"	ca. 1830-1913	n/a	C/SI	
75	"		Charcoal Area 5	"	ca. 1830-1913	n/a	C/SI	
76	"		Charcoal Area 6	"	ca. 1830-1913	n/a	C/SI	
77	"		Charcoal Area 7	"	ca. 1830-1913	n/a	C/SI	
78	"		Charcoal Area 8	"	ca. 1830-1913	n/a	C/SI	
27	"		Quarry Road 2 (Section)	"	ca. 1830	n/a	See 411/12 above	
79	"		"Old Road" 1	"	ca. 1830-1913	n/a	C/SI	
80	"		"Old Road" 2	"	ca. 1830-1913	n/a	C/SI	

RICHMOND FURNACE HISTORIC AND ARCHAEOLOGICAL DISTRICT
RICHMOND, MASSACHUSETTS
DISTRICT DATA SHEET

NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
81	"		"New Road" Foundation	"	ca. 1830	n/a	C/SI	
82	"	RIC.907	Stone Wall	"	Late 18th cty.	n/a	C/ST	
83	106/21		Cone No. 1 Shaft Mine Site	Furnace Road	1873	n/a	C/SI	
84	"		Cone No. 1 Shaft Mine Drain	"	1873	n/a	C/SI	
85	"		Cone No. 2 Shaft Mine Site	"	ca. 1860-1900	n/a	C/SI	
86	"		Drainage Ditch (Section-see also 411/2)	"	ca. 1860-1900	n/a	C/SI	
87	"		Slag Pile Area	"	ca. 1830-1923	n/a	C/SI	
88	"		Charcoal Kiln No. 1 Site	"	1860-1913	n/a	C/SI	
89	"		Charcoal Kiln No. 2 Site	"	1860-1913	n/a	C/SI	
90	"		Charcoal Kiln No. 3 Site	"	1860-1913	n/a	C/SI	
91	"		Cistern	"	1860-1913	n/a	C/SI	
60	"		Cart Path (Section)	"	ca. 1860	n/a	See 106/11 above	
92	"		Klondike Mine Upper Road	"	1905	n/a	C/SI	
69	"		New Road (Section)	"	1905	n/a	See 106/19 above	
93	"		Worker House Foundation	"	ca. 1905	n/a	C/SI	
94	"		Worker House Foundation	"	ca. 1905	n/a	C/SI	
95	"		Klondike Mine Dynamite Bunker Foundation	"	ca. 1905	n/a	C/SI	
96	"		Klondike Mine Dynamite Bunker Collapse Hole	"	ca. 1905	n/a	C/SI	

RICHMOND FURNACE HISTORIC AND ARCHAEOLOGICAL DISTRICT
RICHMOND, MASSACHUSETTS
DISTRICT DATA SHEET

NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
97	"		Klondike Mine Hoist Motor Pads	"	ca. 1905	n/a	C/SI	
98	"		Klondike Mine Steam Hoist Engine House Foundation	"	ca. 1905	n/a	C/SI	
99	"		Klondike Mine Hoist Footings	"	ca. 1905	n/a	C/SI	
100	"		Klondike Mine Shaft Collar	"	ca. 1905	n/a	C/SI	
101	"		Klondike Mine Dry House Foundation	"	1905	n/a	C/SI	
102	"		Klondike Mine Blacksmith Shop Foundation	"	1905	n/a	C/SI	
103	"		Foundation	"	1905	n/a	C/SI	
104	"		Klondike Mine Crusher/Washer House Foundation	"	ca. 1905	n/a	C/SI	7
105	"		Klondike Mine Prepared Ore Conveyor Footings	"	ca. 1905	n/a	C/SI	
106	"		Klondike Mine Ore Storage Bunker Footings	"	ca. 1905	n/a	C/SI	
107	"		Klondike Mine Lower Road	"	ca. 1905	n/a	C/SI	
108	"		Klondike Mine Tailings Area No. 1	"	1905-1923	n/a	C/SI	
109	"		Klondike Mine Tailings Area No. 2	"	1905-1923	n/a	C/SI	
110	"		Klondike Mine Pond No. 1 (Former Open Pit Ore Mine Bed)	"	late 18th cty.	n/a	C/SI	
111	"		Klondike Mine Pond No. 2	"	ca. 1905	n/a	C/SI	
112	"		Worker House Foundation	"	ca. 1830	n/a	C/SI	
113	"		Worker House Foundation	"	ca. 1830	n/a	C/SI	
14	411/1		Cone Mine Road (Section)	Furnace Road	1857	n/a	See 411/7 above	
114	"		Cone Mine Machinery Foundation	"	1873	n/a	C/SI	
115	"		Cone Mine Shaft No. 3 Site	"	ca. 1860-1900	n/a	C/SI	
14	411/2		Cone Mine Road (Section)	Furnace Road	1857	n/a	See 411/7 above	
			Cone Mine No. 4 Shaft Mine Ore Conveyor Ramp		ca. 1860-			

RICHMOND FURNACE HISTORIC AND ARCHAEOLOGICAL DISTRICT
RICHMOND, MASSACHUSETTS
DISTRICT DATA SHEET

NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
15	"		(Section)	"	1908	n/a	See 411/7 above	
13	"		Old Cone Open Pit Mine (Mine Bed) (Section)	"	1795	n/a	See 411/7 above	
86	"		Drainage Ditch (Section)	"	ca. 1860-1900	n/a	See 106/19 above	
116	105/9	RIC.19	RIW Worker House	2755 State Road	ca. 1873	No Style	C/B	8, 9
117	"		Garage	"	1955	No Style	NC/B	
118	105/10	RIC.73	RIW Worker House	2771 State Road	ca. 1873	No Style	C/B	9
119	105/5	RIC.69	RIW Worker House	2774 State Road	ca. 1840	Greek Revival	C/B	10
120	"		Barn	"	ca. 1840	No Style	C/B	
121	105/11	RIC.74	RIW Worker House	2779 State Road	ca. 1873	No Style	C/B	9
122	"		Garage	"	1980	No Style	NC/B	
123	105/12	RIC.75	RIW Worker House	2785 State Road	ca. 1873	No Style	C/B	9
124	"		Garage	"	1978	No Style	NC/B	
125	"		Shed	"	After 1923	No Style	NC/B	
126	105/13	RIC.76	RIW Worker House	2793 State Road	ca. 1873	No Style	C/B	9
127	"		Garage	"	1950	No Style	NC/B	
128	"		Shed	"	After 1923	No Style	NC/B	
129	105/14	RIC.77	RIW Worker House	2801 State Road	ca. 1873	No Style	C/B	9
130	"		Garage	"	1950	No Style	NC/B	
131	"		Shed	"	After 1923	No Style	NC/B	
132	105/15	RIC.78	RIW Worker House	2805 State Road	ca. 1873	No Style	C/B	
133	105/4		RIW Worker House Foundation	2806 State Road	ca. 1840	n/a	C/SI	

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NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
134	"	RIC.99	Garage	"	1950	No Style	NC/B	
135	"		Cellar Hole	"	ca. 1840	n/a	C/SI	
136	105/16	RIC.79	RIW Worker House	2815 State Road	ca. 1873	No Style	C/B	
137	"	RIC.80	Garage (Former Klondike Mine Dry House)	"	1905	No Style	C/B	
138	"		Garage	"	ca. 1950	No Style	NC/B	
139	105/17	RIC.92	House	2821 State Road	pre-1923	No Style	C/B	
140	"	RIC.93	Library	"	1930	No Style	NC/B	
141	105/3	RIC.94	RIW Worker House	2834 State Road	ca. 1840	Greek Revival	C/B	11
142	"		Barn	"	ca. 1840	No Style	C/B	
143	"		Shed	"	ca. 1920	No Style	C/B	
144	105/2	RIC.95	RIW Worker House	2836 State Road	ca. 1840	Greek Revival	C/B	11
145	"		Barn	"	ca. 1840	No Style	C/B	
146	"		Chicken Coop	"	ca. 1900	No Style	C/B	
147	105/18	RIC.96	House	2851 State Road	1984	No Style	NC/B	
148	105/19	RIC.97	House	2867 State Road	1946	No Style	NC/B	
149	105/20	RIC.98	House	2871 State Road	1931	Dutch Colonial Revival	NC/B	
150	"		Garage	"	ca. 1931	No Style	NC/B	
151	"		House	"	1985	No Style	NC/B	
152	"		Furnace Pond ("Upper Pond")	"	late 18th cty.	n/a	C/SI	
153	"		Furnace Pond North Dam Site	"	late 18th cty.	n/a	C/SI	
154	"		Furnace Pond Mill Raceway	"	late 18th cty.	n/a	C/SI	

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NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
155	"	RIC.908	Furnace Pond Main Dam	"	late 18th cty., 1906	n/a	C/ST	12
156	"	RIC.909	Furnace Pond Main Dam Spillway	"	1906	n/a	C/ST	
157	"	RIC.910	Furnace Pond Main Dam Bridge	"	1906	n/a	C/ST	
158	"		Furnace Pond Main Dam Mill Site	"	mid-to-late 18th cty.	n/a	C/SI	
159	"		State Road-Furnace Site Road	"	ca. 1830	n/a	C/SI	
160	"		Furnace Driveway	"	ca. 1830	n/a	C/SI	
161	"	RIC.911	Furnace Brook Bridge	"	ca. 1945	n/a	C/ST	
41	"		Rail Spur Bed (Section)	"	1906	n/a	See 106/14 above	
162	"	RIC.101	Water Valve Shed	"	After 1926	No Style	NC/B	
163	"		Furnace Headrace	"	ca. 1829	n/a	C/SI	
164	"		Headrace Spillway	"	ca. 1906	n/a	C/SI	
165	"		Furnace Water Wheel Pit	"	ca. 1829	n/a	C/SI	
40	"		Charcoal Shed Foundation (Section)	"	ca. 1829	n/a	See 106/14 above	13
166	"	RIC.900	Blast Furnace	"	1829, 1905	n/a	C/ST	14
167	"		Furnace House Lower Foundation	"	ca. 1829	n/a	C/SI	
168	"		Furnace House Middle Foundation	"	ca. 1829	n/a	C/SI	
169	"		Furnace House Upper Foundation	"	ca. 1829	n/a	C/SI	
170	"		Blowing Machine Mounting Pad No. 1	"	1912	n/a	C/SI	
171	"		Blowing Machine Mounting Pad No. 2	"	1912	n/a	C/SI	

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NR MAP NO.	MAP/ LOT	MHC NO.	NAME/FUNCTION	STREET ADDRESS	DATE	STYLE	RESOURCE TYPE	PHOTO NO.
172	"		Colonial Rock Wool Company Garage Foundation Slab	"	ca. 1945	n/a	NC/SI	
42	"		Ore Pile (Section)	"	ca. 1923	n/a	See 106/14 above	
173	"		Charcoal Kiln No. 4 Site	"	ca. 1860-1913	n/a	C/SI	
174	"		Charcoal Kiln No. 5 Site	"	ca. 1860-1913	n/a	C/SI	15
175	"		Charcoal Kiln No. 6 Site	"	ca. 1860-1913	n/a	C/SI	
60	"		Cart Path (Section)	"	ca. 1830	n/a	See 106/11 above	
176	105/1	RIC.72	RIW Worker House	2900 State Road	ca. 1840	Greek Revival	C/B	16
177	106/4	RIC.70	RIW Worker House	2922 State Road	ca. 1840	Greek Revival	C/B	17, 18
178	"		Barn	"	ca. 1840	No Style	C/B	18
179	"		Shed	"	"fter 1923	No Style	NC/B	
180	106/5	RIC.58	Richmond Furnace School	2953 State Road	ca. 1890	Queen Anne	C/B	19
181	"		Garage	"	1987	No Style	NC/B	
182	"		Shed	"	After 1923	No Style	NC/B	
183	"		Shed	"	After 1923	No Style	NC/B	
184	412/20		Upper Reservoir Dam	West Road	ca. 1830	n/a	C/SI	

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Total Resources

	CONTRIBUTING		NONCONTRIBUTING
28	Contributing Buildings	35	Noncontributing Buildings
112	Contributing Sites	1	Noncontributing Site
6	Contributing Structures		
2	Contributing Objects		
TOTAL		TOTAL	
148	Contributing Resources	36	Noncontributing Resources