NPS Form 10-900
(Oct. 1990)

OMB No. 10024-0018

674

United States Department of the Interior
National Park Service

RECEIVED 2280

AUG 14 2015

Nat. Register of Historic Places
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 an 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 **AMERICAN RADIATOR COMPANY FACTORY COMPLEX**

other names/site number Pierce Plant; American Radiator & Standard Sanitary Stamping Plant; Institute of Thermal Research, Equipment Plant, and Malleable Foundry

2. Location

street & number 1801-1809 Elmwood Avenue [ ] not for publication

city or town Buffalo [ ] vicinity

state New York code ___ county Erie code 029 zip code 14207

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this [X] 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 as set forth in 36 CFR Part 60. In my opinion, the property [X] meets [ ] does not meet the National Register criteria. I recommend that this property be considered significant [ ] nationally [ ] statewide [X] locally. ([ ] see continuation sheet for additional comments.)

Richard Rupert DSHPO — 7/29/15

Signature of certifying official/Title — 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 the 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 Edson H. Beall — 9.29.15

Signature of the Keeper — date of action

5. Classification

Ownership of Property
(check as many boxes as apply)

- [X] private
- [ ] public-local
- [ ] public-State
- [ ] public-Federal

Category of Property
(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	
3	0	buildings
0	0	sites
0	0	structures
0	0	objects
3	**0**	**TOTAL**

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

N/A

Number of contributing resources previously listed in the National Register

N/A

6. Function or Use

Historic Functions
(enter categories from instructions)

INDUSTRY
Manufacturing Facility
Industrial Storage
EDUCATION
Research Facility

Current Functions
(Enter categories from instructions)

INDUSTRY
Manufacturing Facility
COMMERCE
Business

7. Description

Architectural Classification
(Enter categories from instructions)

EARLY twentieth CENTURY AMERICAN MOVEMENT/
Prairie
NO STYLE/ Industrial

Materials
(Enter categories from instructions)

foundation Stone, concrete
walls Brick, stone, steel, metal, concrete
roof Various materials
other

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

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 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 that represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

[ ] **D** Property has yielded, or is likely to yield, information important in prehistory or history.

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

[ ] **A** owned by a 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)

INDUSTRY

ARCHITECTURE

Period of Significance:

1891-1959

Significant Dates:

1891, 1906, 1909, 1912, 1914, 1916, 1935

1959

Significant Person:

N/A

Cultural Affiliation:

N/A

Architect/Builder:

E.B. Green (1906); Schmidt, Garden & Martin (1910); John Youngberg (1915); Bley & Lyman (1924);

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

9. Major Bibliographical References

Bibliography
(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 Building Survey
_____
[ ] recorded by Historic American Engineering Record
_____

Primary location of additional data:

[ ] State Historic Preservation Office
[ ] Other State agency
[ ] Federal Agency
[ ] Local Government
[ ] University
[ ] Other repository: _____

10. Geographical Data

Acreage of Property 31.94 acres

UTM References **SEE CONTINUATION SHEET FOR ADDITIONAL UTM REFERENCES**
(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing		Zone	Easting	Northing
1	18	673628	4757090	3	18	673623	4756855
2	18	673638	4756968	4	18	673607	4756809

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 Derek King, Architectural Historian [Edited by Jennifer Walkowski, NY SHPO]

organization Preservation Studios, LLC date April 7, 2015

street & number 60 Hedley Place telephone 716-725-6410

city or town Buffalo state NY zip code 14208

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 SHPO or FPO for any additional items)

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

name

street & number telephone

city or town state zip code

Overview

The former American Radiator Company Factory Complex, located in Buffalo, Erie County, is a large industrial facility constructed between 1891 and 1952 by the Pierce Steam Heating Company and its successor companies, the American Radiator Company and the American Radiator & Standard Sanitary Company. The complex is on the east side of Elmwood Avenue, a major north-south thoroughfare in Buffalo, and the principal elevations face west, oriented to Elmwood Avenue, and south, providing access to the former New York Central rail lines known as the "Belt Line." The complex is best known by the name under which it achieved international prominence: American Radiator Company.

The American Radiator Company Factory Complex consists of three distinct sections related to specific functions of the American Radiator Company production: 1.) the Institute of Thermal Research (built 1910 and expanded in 1924), 2.) the Equipment Plant (built in stages between 1891 and 1952), and 3.) the Malleable Foundry (built 1915, expanded several times by 1935). Constructed to serve as laboratory and administration space, the Institute of Thermal Research was designed as the showpiece of the factory complex, presenting its organized, architect-designed façade along Elmwood Avenue and concealing the more functional factory buildings behind. The Equipment Plant stretches eastward nearly a quarter-mile into the site and is a long, low 1-story building with dozens of additions, some of which date back to the original 1891 Pierce Plant and some added as late as the mid twentieth century. This building was utilized for a variety of purposes, including storage, wood working, welding, as a foundry, and for storage and shipping. Connected to the east portion of the building, the Malleable Foundry extends another six hundred feet and is a large, two-story brick building with full-length Aiken-style dormers and full-height windows and served as the primary foundry space after the demolition of the old Pierce Plant.

The period of significance is from 1891 to 1959 and encompasses the era during which the Pierce Steam Heating Company and its successor firm, American Radiator Company, developed and operated at the site. This begins in 1891, with the earliest existing building at the site that once comprised portions of the Pierce Plant, now incorporated as portions of the Equipment Plant, and ends with the closure of the facility in 1959. The nomination boundaries encompass those buildings historically constructed and used for the production of radiators and the business of the company during the period of significance. The nominated buildings are the brick and stone Institute of Thermal Research located at 1807 Elmwood, the brick and steel factory buildings that compose the Equipment Plant at 1805 Elmwood and 1809 Elmwood, and the large brick and steel Malleable Foundry at 1803 Elmwood. The site of the former "Pierce Plant" is included in the boundaries of the nomination and located south of the extant buildings near the rail lines at 1801 Elmwood. It is located immediately south of the Equipment Plant and extends to the Belt Line.

Setting

The American Radiator Complex is located in the North Buffalo neighborhood on the east side of Elmwood Avenue, just south of Hertel Avenue and about four miles north of Buffalo's downtown. The complex is just north of a CSX railroad corridor, which was the former New York Central "Belt Line," a railroad line that developed throughout the 1870s and created a large loop around much of Buffalo's developed area by the time of its completion in 1883. Throughout its length, small industrial districts emerged, and the "Crosscut Junction" at the intersection of Elmwood Avenue and the Belt Line was one such node. The original foundry on this site, the Pierce Plant, constructed in 1891, was the first industrial complex at this intersection, and the remaining extant buildings of the complex maintain the industrial feeling of the intersection of Elmwood Avenue and the Belt Line.

The area around the American Radiator Complex maintains much of the original industrial feeling and setting of the area, as the complex is adjacent to other former late nineteenth and early twentieth century manufacturing complexes and individual manufacturing buildings. These include the Pierce Arrow Factory Complex (NR 90PR03152), Houk Wire Wheel (NR 13NR06513), and Taylor Signal Company (NR13NR06528). The blocks north of the American Radiator Company Complex consist of former industrial sites that have been developed into shopping plazas. Nearby, along Hertel Avenue, are three residential streets containing a mix of residential and commercial buildings.

The Development of the American Radiator Company Factory Complex

The American Radiator Company Factory Complex developed largely between 1891 and 1939 and, like many factories, evolved over time as both technology and capacity were increased. As a result, the three major components of the American Radiator Company Factory Complex were expanded through many additions. While some of these additions were carefully planned and executed by architects, such as those made to the Institute of Thermal Research, those made to the production buildings such as the Equipment Plant and Malleable Foundry, were made as need dictated, with functionality valued over aesthetics.

There are four historic periods of development for the American Radiator Company Factory Complex, which encompass some of the initial construction on the site, and the complex's three major expansions. The first is from 1891-1892, when the Pierce Steam Heating Company factory was originally constructed at 1801 Elmwood along the Belt Line. Though much of the 1891-constructed facility was demolished as production technologies improved, some buildings from the initial complex were incorporated into the Equipment Plant, including two warehouses along the eastern edge of the building. Only two buildings, the Institute of Thermal Research at 1807 and Warehouse No. 2 are visible from Elmwood Avenue (Photo 1).

The second period of development occurred between 1900 and 1915, during which much of the current complex was constructed. This period coincided with the American Radiator Company's emergence as a leader in radiator production and development and the construction of expanded facilities, including unique spaces for research and manufacturing, exemplify the company's growth. Between 1906 and 1915, the Equipment Plant received six additions, including the first external Foundry, Machine Shop, Chaplet Making Shop, and Carpentry Shop for the complex. In 1910, the Institute of Thermal Research was constructed as one of the first radiator research facilities in the country. In 1915, the first portion of the external Malleable Foundry was constructed.

The third period of construction encompasses some of the biggest changes to the facility and occurred between 1915 and 1935; this period was marked by ARCO's merger with Standard Sanitary in 1929 and Ross Radiator in 1933. During this period, there were ten additions to the Equipment Plant, including two expansions to the Machine Shop in 1919 that contained offices and increased manufacturing space and a Core Room and three-story steel crane shed in 1935. In 1924, north and south wings were added to the Institute of Thermal Research containing offices and display rooms for various radiator models. By 1936, the Malleable Foundry had undergone several additions, more than tripling in size to its current extent, though the exact dates each portion was added is unclear. The growth of the Malleable Foundry and expansion of the Equipment Plant was followed by the demolition of the aging "Pierce Plant" foundry in 1939.

The fourth period of development occurred between 1936 and 1952, with no additions between 1952 and the factory's closing in 1959. As noted, the Pierce Plant was demolished in 1939, and after World War II, most of the additions were connections and expansions of several buildings. The largest expansion was the construction of three one-story buildings containing offices and storage to the north of the Equipment Plant.

After the American Radiator Company sold the complex in 1962, additions were made to some of the buildings. Constructed at an unknown date are a brick and metal-clad connector between the Equipment Plant and the Malleable Foundry, linking the two buildings and enclosing what had historically been a road and rail spur that once passed through the complex. Also added was a one-story metal clad addition with concrete foundation at the eastern side of the Equipment Plant. These non-historic additions are included within the district boundaries but were deemed non-contributing due to their construction outside of the period of significance.

Component 1: Institute for Thermal Research – 1910, 1924
1807 Elmwood Avenue
Architects: Schmidt, Garden & Martin (1910); Bley & Lyman (1924 additions)
Contributing

The Institute of Thermal Research is the showpiece of the complex. It served as both a research facility and administrative offices. It is a two-story brick building with a stone foundation (Photo 2). It has an "E"-shaped plan, formed by the original central building and laboratory (built in 1910 and designed by Schmidt, Garden, & Martin) that formed a "T," flanked by two perpendicular wings to the north and south (added in 1924 and designed by Bley & Lyman). The building's primary façade is roughly symmetrical. The north and south wings appear as mirror images of each other along the main façade on Elmwood Avenue; however, the north wing actually extends nearly forty feet further than the south wing. The western and northern elevations are the most detailed, as they are the only ones visible from the main thoroughfare of Elmwood Avenue, and large chimneys rise from the roof of the laboratory building in the rear (Photo 3).

Exterior
The exterior of the building represents an excellent example of the administration building type, presenting a designed, organized and modern appearance fronting along the main traffic thoroughfare of Elmwood Avenue. Though primarily used for research, the institute contained two wings of ornately detailed offices and a large lecture room, serving as a demonstration space and administrative center for the complex. The institute's primary and secondary elevations (west and north respectively) are more ornate than the rest of the building and serve as a buffer against the utilitarian industrial buildings to its east and a rolling green lawn with mature trees and deep setback from the street distinguish the institute along this section of Elmwood Avenue.

The primary west façade of the building is roughly symmetrical and is two-stories of beige brick with a basement. The raised base consists of seven courses of cast stone with a water table and also contains multi-light windows that illuminate the basement spaces. The façade consists of a prominent central entrance pavilion consisting of five-bays, flanked by six-bay wings, which constituted the original 1910 portion of the building. Set at each end of the building are slightly larger six-bay wings, additions to the buildings in 1924, which nearly seamlessly continue the materials, design and rhythm established in the center portion. Fenestration of the building is regular, consisting of double-hung windows at the north and south wings. In the center portion, the first floor windows are large paired hoppers over a large single operable sash. The second floor windows have a similar design but with slightly smaller massing, two fixed-light transoms over paired casements. Windows are divided by full-height pilasters. These pilasters spring from simple cast stone bases set on a continuous cast stone belt course, contain a center recess, and have simple stylized capitals. The sills of the first story windows also are incorporated into this lower belt course. Recessed slightly from the plane of the pilasters, spandrels of brick and cast stone run the length of the building. The prominent central entry pavilion is further articulated with a more detailed central entry door, which is flanked by stylized cast stone shields and an inscribed panel that reads "FOUNDED BY AMERICAN RADIATOR COMPANY A.D. 1909." The door is accessed via a broad stone stair with cheek walls. The entry pavilion is accented with additional stone shield details which overlap the pilaster capitals and interrupt the cornice. The brick parapet of the building contains a panel that reads "Institute of Thermal Research" and is flanked by two decorative cast stone details. Surmounting this, an additional stone panel was added to the top of the parapet in 1924 that reads "American Radiator Company." The wings at the end also feature the same shield motif as the earlier central pavilion; however, the motif is used at the outside corners only.

The north elevation maintains the treatment of the primary façade in the western portion before transitioning to a simple flat wall with six-over-six double-hung sash windows. This entire elevation is constructed with the same beige face brick as the primary façade, though without the decorative cornice. The south elevation of the south wing, mimics the treatment on the north wing, though it transitions to common brick as it moves eastward from the primary façade along Elmwood Avenue.

While primary elevations were constructed using fine, elegant materials such as beige face brick and cast stone, secondary elevations that face towards the production facilities on the site were built using common red brick and have simplified detailing. The laboratory wing is at the center of the "**E**" and is only visible from the rear. It consists of the original 1910 portion and an addition made in 1915 at the rear with similar massing, materials, and roof, though the fenestration is different (Photo 3). It appears to be constructed with the same red brick as the east elevations of the wings, but it is currently painted. Many of the original chimneys remain intact and rise above the roof, although some have been truncated or removed completely. A portion of the north elevation is clad in aluminum siding, likely due to masonry deterioration underneath. Tall triple-hung sash windows remain

intact on both the north and south elevations indicating the height of the interior space. Small double-hung windows are present below bringing light into the basement.

The interior of the Institute of Thermal Research contains the most ornate built out areas in the complex. Serving as the company's primary research facility for all national operations, the building was also utilized for public relations, with conferences, lectures, and meetings held at the building to highlight innovations in radiator technology. As a result, it balances more ornate finishes (woodwork, shared light transoms, Photo 6) with more utilitarian features in line with its use as a laboratory (Photos 7). There are four distinct areas: the 1910 center and laboratory wings and the 1924 north and south wings. The first floor of the center wing consists of a double-loaded north-south corridor that connects to the north and south wings and contains an entry lobby with a central staircase to the second floor. This staircase is the only staircase that leads to the center wing's second floor and also contains the only corridor that leads to the laboratory wing. The north and south wings have double-loaded east-west corridors on both first and second floors.

Though the building is the most decorative and ornate of the complex, ornament and materials are kept relatively minimal and functional on the interior of the institute building, reflecting its use as a laboratory and work-space. The staircases in the main lobby space and north and south wings are original and all have wooden handrails with simple wrought-iron rectangular balusters, rectangular pattern-pressed metal newel posts, and marble treads. Hallways throughout the building retain original full-height ceilings and wood trim, with exposed plumbing. Original wood floors were covered by tiling and carpeting, though the carpeting is being removed and replaced with oak second cut wood flooring. There is a large classroom at the center of the second floor that is the tallest room in the building.

The laboratory connects to the main building directly beneath the main lobby staircase and opposite the building's main entrance. The laboratory wing maintains its original circulation pattern, and critical features are still intact. The original split-level layout is maintained, as well as the original staircase and service elevator in the rear and full height triple-hung windows on the southern elevation (Photo 3). Original glazed brick and numbered smokestacks are being restored on the first floor, as well as the original loading and maintenance crane and mechanism at the eastern end of the laboratory (Photo 7). On the third floor the ceiling height is unaltered and the original metal beams are still exposed and articulated.

The north and south wings were designed in 1924 by Bley & Lyman and connect to the original building via narrow hallways with two large windows on the east and west elevations. Both wings are double-loaded corridors that originally contained offices on either side. The original office doors and partitions along the hallway survive, along with glass transoms, and most offices incorporate original office unpainted woodwork. At the eastern end of both hallways are rear staircases that are less ornate than the front stairwell, with simple metal railings and concrete treads, and painted brick walls.

Component 2 – Equipment Plant – 1891; 1906-1952; post 1980
1805 and 1809 Elmwood Avenue
Contributing

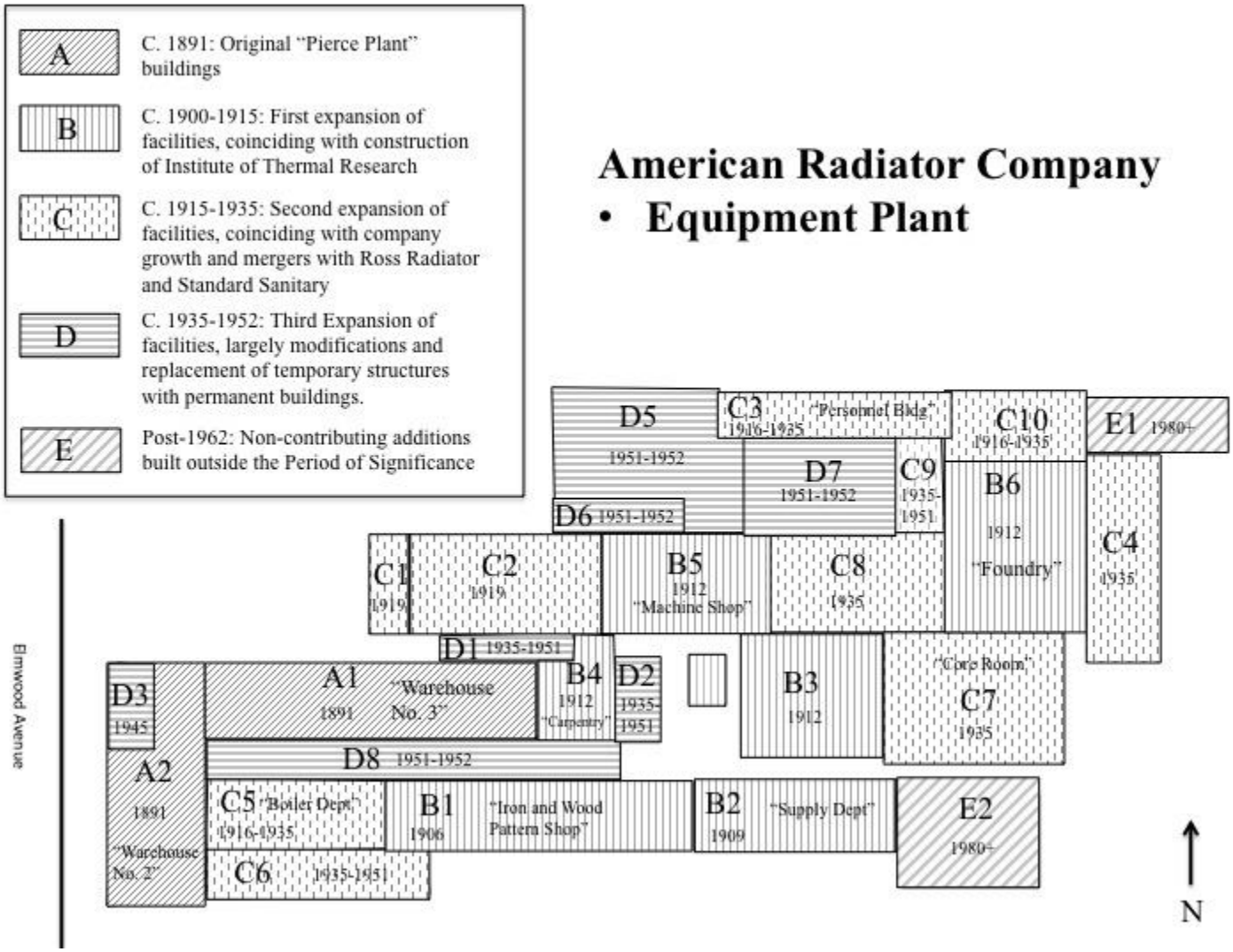


Fig 2: Equipment Plant Components with Dates

The Equipment Plant is the largest portion of the American Radiator Company Factory Complex, and it encompasses the surviving portions of the original Pierce Steam Heating Company, the first factory on the site. The Equipment Plant has grown in size and scale since the Pierce factory was constructed in the 1890s, as new functional space was needed for production. The building can be characterized as a sprawling series of

interconnected one and two-story rectilinear units, generally of brick and other fire-retardant materials, with a generally west-east orientation on the site. As the heart of production at the factory complex, the Equipment Plant was established based on functional need and not with an overarching design or plan.

Most of the additions that compose the Equipment Plant are brick, one or two stories tall, with steel frames supporting tile, or asphalt roofs. The exception is the 1892 Warehouse buildings, which is frame and heavy timber. Though several windows have been replaced or infilled, the building retains several original steel industrial sash windows.

The interior of the Equipment Plant reflects the various periods of development, with a wide variety of construction methods and materials, ranging from small wooden columns and cross-beam supports, to heavy timber framing with concrete bases, to steel and concrete construction, and finally, narrow steel framing and supports to create larger open floorplates. Nearly the entirety of the facility has concrete flooring, with the exception of the offices in the old Machine Shop (which are carpeted) and some sections of the foundry and plate shops, which have exposed areas of the original brick flooring. Most of the facility is used as storage for the ModPac paper box and printing company, either for materials or finished product. Aside from concrete flooring, window replacements, and offices in the western end of the Machine Shop, the entirety of the complex retains its original integrity from construction and use by the American Radiator Company.

Initial Construction: Warehouse Nos. 2 and 3

The oldest portions of the Equipment Plant include part of Warehouse No. 3 (A1), and portions of Warehouse No. 2 (A2), which are also the only sections of the Equipment Plant that are visible from Elmwood Avenue. Warehouse No. 3, one of the only remaining buildings from the pre-1906 expansion of the complex, retains its original window openings and is largely intact with the exception of replacement sash. The only extensive modification to these warehouses was the addition of a loading bay in 1945 fronting Elmwood Avenue at the junction of both warehouses, creating a shallow enclosure for trucks. When the Pierce Plant was demolished in 1939, a southern portion of Warehouse No. 2 was demolished but was enclosed with brick and currently contains a two floor commercial space. The original wood frames and columns of both warehouses are still extant, with Warehouse No. 2 containing narrow wooden posts with cross-frame supports jutting out at forty-five degree angles (Photo 9) and Warehouse No. 3 containing heavy timber beams with concrete bases.

Second Phase Construction: 1900-1915

Between 1906 and 1915, the Equipment Plant underwent six additions (See: Figure 3), including the construction of the one-story Iron and Wood Pattern Shop (B1) in 1906, the one-story Chaplet Making Building (B2) in 1909, and the one story Carpentry Shop (B4) in 1912, off the eastern elevation of Warehouse No. 3. Also in 1912, a large Machine Shop (B5), a tall one-story Foundry (B6) and Pattern Shop (B3) were constructed, but they were initially separate from the rest of the Equipment Plant and connected to the rest of

the facility in the following two decades. Indeed, the Machine and Carpentry shops are completely surrounded by other buildings and are not visible from any exterior elevation. All buildings from this period are constructed of brick and are one-story in height, though the Machine Shop has a full-width six-foot monitor that runs east to west. The Foundry is a one-story brick building, with brick floor, tile roof, and steel frame. Seven-foot monitors extend off the roof, with tall corner metal-clad cupolas. The only buildings with windows still visible from the exterior of the complex are the Pattern Shop and Chaplet Making building, though the large window openings have been in-filled with CMU.

Third Phase Construction: 1915-1935

Between 1915 and 1935, several more additions brought the Equipment Plant to near its current configuration. The Machine Shop was expanded in 1919 to include additional manufacturing space, as well as a two-story brick office addition (C1, C2). Most of the 1919 additions are currently built out as offices, but much of the Machine Shop is still used as manufacturing space for Mod Pac, taking advantage of the tall ceilings and long, wide floorplate to house its larger equipment. The offices in C1 are oriented toward Elmwood (Photo 4), containing twelve bays with single-light windows with blank transoms, eight of which are paired, with four non-paired bays at the center of the elevation. A modern one-story brick vestibule occupies the first four bays of the first floor, and the cornice is covered in corrugated metal, with a projecting center parapet with the words "MOD-PAC CORP, ISO 9001" in large metal letters centered on the elevation.

In 1935, more additions to the Machine Shop resulted in the Foundry being connected to the rest of the Equipment Plant, with a building to the east (C8) that's completely hidden by the surrounding buildings (C7). A one-story brick and steel addition containing offices and "Personnel" facilities (C3) was added north of the Foundry and has a projecting stepped parapet and CMU in-filled windows. During this period, there was also an addition to the Foundry (C10) itself that added two more rows of monitors to the roof, as well as tall 20-foot cupolas to the north and south end of the building. The foundry is one of the tallest portions of the Equipment Plant, with a tall ceiling supported entirely from the walls, no structural columns, and tall Aiken-style monitors. In 1935, the three-story Steel Storage and Crane Building was added (C4) east of the Foundry. It is a tall steel-frame metal-clad structure with large bays of four 24-light windows along on each elevation (some of which are covered by protective sheathing).

The 1935 "Core Room" addition south of the Foundry (C7) is very similar to the Machine Shop north and east of it, with a large central monitor, brick construction, and steel frame. Located at the heart of the complex, the addition cannot be seen from any portion of the complex's exterior except for due south. Portions of the addition's southern elevation have concrete block infill, and a smokestack and boiler house that was immediately adjacent recently collapsed. Remnants of the former Belt Line rail spur still pass just south of the Core Room along its path from the rail line west through the complex.

Fourth and Fifth Phase Construction: 1935-1952

From 1935 until 1952, the Equipment Plant received eight more additions, two of which are long one-story sections between buildings that replaced temporary frame causeways (D1 and D8) and are completely invisible from the exterior of the complex. In 1945, Warehouse No. 2 was altered to contain a wide loading dock (D3) facing Elmwood Avenue that cuts back into the building a full bay, with steel-reinforce brick columns, a simple projecting cast stone cornice, with a course of turned brick below. The largest additions in this period occurred between 1951 and 1952, when four one-story concrete block additions were added to the north of the building, filling in the area immediately east of the Foundry, south of the Personnel Building, and completely obscuring two-thirds of the Machine Shop's northern elevation. One of these additions (D7) is completely surrounded by existing buildings, while two (D5 and D6) can be seen from the west and contain large single-light windows and one loading dock. One addition (D4) north of the Steel Crane Shed was constructed in 1952 and connects the Equipment Plant to the Malleable Foundry. The last additions to the factory occurred sometime during the last 50 years, with a one-story concrete block connection (E1) built between the Malleable Foundry and the original Equipment Plant foundry, as well as a one-story concrete and metal building at the southeast corner of the Equipment Plant (E2).

Component 3 - Malleable Foundry – 1915-1935
1803 Elmwood Avenue
Builder: John E. Youngberg (1915)
Contributing

The Malleable Foundry is composed of the original Youngberg-designed 1915 "Malleable Foundry" building, as well as the subsequent additions constructed by 1935 (Photo 5). In 1935, the factory was labeled the "Malleable Iron Plant," and by 1951, it was used as storage for the factory's finished products. The Malleable Foundry is separated from the rest of the complex by a Belt Line spur that bisects the complex in half, with the Equipment Plant and Institute of Thermal Research to the west and the Malleable Foundry to the east. The same spur branches westward into the heart of the Equipment Plant, with some of the rails still evident on the site.

The Malleable Foundry is a large one-story, nearly 175,000 square foot rectangular building, with a brick foundation and brick walls with large window openings. The building has a flat roof with two rows of monitors that form a variation on the Aiken roof-type, with the wood-frame monitors emerging from the concrete-slab and tile roof, all of which is supported by metal trusses and beams in the interior. The monitors create a "high-and-low bay" effect typical of the Aiken-style roof, creating increased interior light without increasing roof area (Photo 8).[1] The interior of the Malleable Foundry retains the full ceiling height of about twenty-two feet (thirty in the raised space created by the Aiken-monitors) of the original design, with concrete floor, exposed steel columns and trusses, and unfinished brick walls. The only interior partitions occur at areas where additions were

[1] The Aiken-roof emerged around 1900 and became popular in the following decades because it was an inexpensive alternative to similar monitor-dormer designs. Betsy Hunter Bradley, *The Works: The Industrial Architecture of the United States,* (New York, Oxford University Press; 1999), 194.

added between 1915 and 1936, but the building largely maintains its original open floor-plate, including completely exposed steel trusses and pillars.

Despite its varied industrial uses, the Malleable Foundry maintains a high level of integrity and conveys its function as a large, open manufacturing space. It retains many of its original features, including simple industrial details such as its rooftop monitors, simple pilasters, and a parapet that incorporated drainage components. Key interior features include the steel truss-and-beam construction supporting exposed concrete ceiling and frame monitors. Since the building has continued to serve in a manufacturing role, there have been some alterations, but changes do not prohibit the interpretation of the space. Though original windows have been replaced with an opaque glass-alternative material and CMU infill (along north, east, and west elevations) and plywood (along southern elevation), the original openings are still articulated throughout the building.

Summary

The American Radiator Company closed the factory in 1959, and in 1962, the complex was sold. There is one non-historic non-contributing addition to the Equipment Plant. A concrete and metal shed was added to the south of the complex (E1) off the 1909 Chaplet Making building, just south of the Belt Line spur that runs through the center of the facility.

Summary

The American Radiator Company Factory Complex is significant under criterion A in the area of industry as an important manufacturing and research facility for the largest producer of radiators in the United States at the turn of the twentieth-century. American Radiator not only used the facility to manufacture radiators, but the Institute of Thermal Research, one part of the complex, helped develop and market products and aided in the advancement of the field of steam heating. Emerging ideas in the post-Civil War era regarding hygiene and wellness advocated for well-heated and ventilated homes, offices, and schools, and the development of steam-heating technology was part of the movement towards better health and more cost-effective and safer alternatives to coal heating systems. The Institute of Thermal Research was consulted by academic and research institutions to help develop national standards in radiator technology during the early twentieth century, helping the American Radiator Company solidify its role as one of the largest providers of radiators in the United States and the world.

The American Radiator Company Factory Complex is also significant under criterion C in the area of architecture as a highly intact example of a turn-of-the-twentieth century manufacturing facility in Buffalo. The complex has three primary components: 1.) the Institute of Thermal Research, an administrative and research facility (built 1910 and expanded in 1924), 2.) the Malleable Plant, an Aiken-roof foundry and manufacturing facility (built in 1915 and expanded through 1936), and 3.) the sprawling Equipment Plant, composed of buildings essential to the production of radiator equipment (in parts from 1891 through 1952, with several non-historic additions built afterwards). The growth of the complex between 1891 and 1959 documents the development of the American Radiator Company, featuring extant buildings from its parent company, "The Pierce Steam Heating Co," as well as key changes to the facility made after its merger with Standard Sanitary in 1929.

The American Radiator Company Factory Complex is also significant for its connection to Buffalo's rich and varied industrial history, in particular, its relationship with the "Belt Line." The Belt Line was a commercial and passenger train route that developed during the late 1870s and opened up large areas of undeveloped land in the city's distant regions, including North Buffalo, where the American Radiator Complex is located, to new residential and industrial development. Portions of the nominated complex were part of the original Pierce Steam Heating Company factory, the first factory located at the intersection of Elmwood and the New York Central Belt Line. This intersection, site of Crosscut Station, was the eventual location of three other important Buffalo companies, Pierce Arrow Automobile Company [NR listed], Houk Wire Wheel Manufacturing [NR listed], and Taylor Signal Company Factory [NR listed].

The most prominent building of the American Radiator Company Factory Complex is its administrative and laboratory building located along Elmwood Avenue, known as the Institute of Thermal Research. The institute

is one of the only examples of the work of Schmidt, Garden, & Martin in Buffalo. It exemplifies features distinctive not only to the administration building type, but to the "Gardenesque" style that distinguished Chicago architect Hugh Garden's designs from other Prairie-influenced buildings built in the early twentieth-century. The site was occupied continuously by the evolving company from 1891 until the American-Standard company closed the factory in 1959. It retains a high degree of integrity, representing all parts of the company's manufacturing process and history

North Buffalo in the Nineteenth Century

When the city of Buffalo ambitiously expanded its boundaries in 1854, growing from roughly 4 ½ square miles to encompass more than 42 square miles, much of the land it annexed was farmland. By the mid-nineteenth century, development had pushed far north along Main Street, one of the earliest and primary thoroughfares in and out of Buffalo, and the Village of Black Rock along the Erie Canal to the west continued to grow as well. In between those areas, particularly the portion of North Buffalo between Main and Niagara Streets that formed the city's vast 12th Ward, the area was largely sparsely settled and developed farmland with a scattering of homesteads. In the years following the Civil War, Buffalo secured its role as a shipping and manufacturing center in the interior United States, and the majority of Buffalo's early industrial areas developed as water-borne shipping areas around the harbor and Erie Canal terminus.

The rapid expansion of railroads after the Civil War contributed to rail lines replacing canals as the main form of transportation and shipping. In Buffalo, early rail lines like the Attica & Buffalo Railroad extended from the water's edge, straight through early industrial districts like the Hydraulics neighborhood, and out to outlying towns. The consolidation of many small lines, such as the 1850 combination of the Attica & Buffalo and Tonawanda lines to create the Rochester & Buffalo Railroad, which was then absorbed by the New York Central in 1853, led to even greater expansion of Buffalo's rail network. The New York Central Railroad was one of several, including the Erie Railway, Western NY & Pennsylvania, and West Shore, all of which contributed to more than 450 miles of tracks in the city by 1907.[2]

As industrial growth in the city outside of the East Side and the Buffalo waterfront became increasingly dense and congested, city leaders looked to the undeveloped land in the city's northern region as an ideal area for new manufacturing development. The growth of the New York Central Belt Line from 1871 to 1883 led to a rapid expansion of industry throughout Buffalo, creating new industrial and manufacturing nodes served by rail traffic. The rail line connected portions of the former Buffalo and Niagara Railroad, the New York Central and Hudson River Railroad, and the Lake Shore and Michigan Southern Railway to form a complete loop around

[2] Jennifer Walkowski, "National Register of Historic Places Multiple Property Documentation Form: Historic Resources of the Hydraulics/Larkin Neighborhood, Buffalo, Erie County, NY," (New York State Historic Preservation Office, 2009), Section E, Page 6.

the city.[3] The loop had nineteen stations spaced one mile apart, and some of the first areas to develop north of downtown were on stations along Niagara Street and in Lower Black Rock. Pratt & Letchworth was one of the most successful firms to develop around this time, with a 35-acre saddle-making factory located at the junction of the Belt Line and Niagara and Tonawanda Streets, just south of Black Rock. The continued growth of this company in the years following the Belt Line's construction lead to an influx of workers using the Belt Line to travel to work daily and eventually encouraging their settlement in the Black Rock area.[4] By the 1880s, Polish residents from Buffalo's East Side began migrating into Black Rock, establishing a solid community base and workforce in the area around Amherst Street.

Prior to 1890, however, there were no buildings at the Elmwood Avenue-Belt Line crossing in North Buffalo, and much of the surrounding area was farmland. While Elmwood Avenue is a major, continuous north-south artery now, in the late 1800s it was a fractured series of short, unpaved and undeveloped roadways in the city. According to the 1872 Hopkins Atlas, the lots abutting the Belt Line included three farmsteads owned by John Glaser, Mary Lieberman, and F. Schwinger and contained only two structures on the whole stretch of land. At this point, much of the 12th Ward was undeveloped, with the exception of the Village of Black Rock to the west, and there was little industry except for Pratt & Letchworth's holdings along the Scajaquada Creek near the Belt Line. In less than twenty years, all four corners around the intersection of Elmwood Avenue and the Belt Line would be bustling with industry.

The Early Years of American Radiator Company, 1891-1914

The American Radiator Company Factory Complex in Buffalo traces its origins to Ware, Massachusetts, where John B. Pierce opened up a tin shop in 1872.[5] Shortly after opening the shop, he hired a 19-year-old worker as an assistant, a young man named Joseph Bond. Within a decade, that assistant would be his business partner in a new venture, producing stoves and steam-heating devices in Buffalo, NY. John Pierce, a Maine native, was very familiar with cold climates and understood the potential success of steam radiators, not just in Buffalo, but around the country as well.[6]

Pierce and Bond formed the Pierce Steam Heating Company at a point when radiators were in high demand. In the post-Civil War era, a movement towards better health began to emerge which advocated for greater hygiene throughout society, with steam heating as one of the main ways to maintain hygiene in buildings. In particular,

[3] Aaron T. Heverin, "Past Tracks: A Queen City Built by Rail," via BuffaloHistoryWorks.com, Last updated October 1st, 2010. Buffalohistoryworks.com/ptracks/
[4] Jennifer Walkowski (2010), "National Register of Historic Places Multiple Property Documentation Form: Historic Resources of the Black Rock Planning Neighborhood, Buffalo, Erie County, NY," New York State Historic Preservation Office, Section E, page 10.
[5] The John B. Pierce Laboratory, "About Us: The History of the Laboratory," 2012, jbpierce.org/about-us/
[6] American Standard, "The History of American Standard," American Standard Brands, 2013, americanstandard-us.com/companyinfo/history

groups argued that well heated, ventilated, and circulated buildings could help mitigate the effects of "Toxic Organic Substances" and "Carbon Dioxide" on inhabitants, whether at home, work, or school. The theories relating to these effects were eventually proven incorrect, but in the late-Victorian era, the easiest solutions to reduce the risk of illness related to air quality advocated for dramatic amounts of air-circulation and ventilation, prompting most architects to incorporate large boilers and steam heating throughout their buildings.[7] On a more basic level, radiators provided steady, even, and more controllable heating than earlier fireplaces and wood-burning stoves.

Part of the Pierce Steam Heating Company's initial success was also tied to their early adoption of cast-iron radiators. Prior to the development of cast-iron radiators in 1886 by the Detroit Radiator Company, steam radiators were constructed with steel, which limited their use to those who were wealthy enough to afford their prohibitively high cost.[8] By manufacturing cast-iron radiators, Pierce and Bond's products appealed to a variety of potential clients, including mass-market consumers of more modest means.

In 1891 the pair expanded beyond their modest beginnings at 237 Perry Street and established a new factory on 20 acres along Elmwood Avenue.[9] The new Pierce Steam Heating Company Factory was located adjacent to the Belt Line railroad, giving them easy access to raw materials and providing the means to easily ship their products through the New York Central system.[10] The factory was the largest in North Buffalo at the time, eventually encompassing nearly 50 acres and featuring a foundry, machine shops, and boiler works.[11] It also was one of the only manufacturers of radiators in the city; in 1890, the U.S. Census Bureau reported only one manufacturer of "Steam Fittings and Heating Apparatus" in Buffalo, out of only 176 in the country.[12] Though the census also counted 63 "Foundries" in the city, acknowledging that, "Steam and hot water radiators and boilers are manufactured frequently by establishments of the class included in the Census reports under

---

[7] Susanne Warren, "Context Study: The Schools of New York State, Development of The School as a Building Type." (New York State Office of Parks, Recreation, and Historic Preservation; Albany, New York, 1990),123

[8] Jeffrey L. Rodengen, *The History of American Standard,"* (Write Stuff Enterprises, Inc, For Lauderdale FL; 1999), 13

[9] George Whitcomb, *Buffalo City Directory for the Year 1884,* (Courier Company, Buffalo, NY; 1884), 958. Accessed 4/4/15 via books.google.com.

[10] Tom Buckham, "Everything from Potties to Pottery," in *Buffalo Magazine, Vol 46,* February 1971, 28.

[11] Charles A. Conant, *Progress of the Empire State: A Work Devoted to the Historical Financial, Industrial, and Literary Development of New York, Vol III: Buffalo, Rochester, and Utica.* (Progress of the Empire State Company, New York; 1913).

[12] Department of Interior, Census Office, "Report on Manufacturing Industries of the United States at the Eleventh Census: 1890," Part II: Statistics of Cities, (Government Printing Office, Washington, D.C.; 1895), 676.

It should be noted that in the 1905 Manufacturers Census regarding select industries, the report on Iron Manufacturing noted that, "Steam and hot water radiators and boilers are manufactured frequently by establishments of the class included in the Census reports under "foundry and machine shop products." Therefore the two industries are closely allied and the statistics for "steam fittings and heating apparatus" should not be accepted as representing the totals for all products of this class." Accordingly, under the total count for "Foundries" in Buffalo on the 1890 Census was 63, and could have included several of Pierce Steam Heating's competitors. Department of Commerce and Labor, Bureau of the Census, "Manufacturers: Part 1, United States by Industry 1905", (Government Printing Office, Washington, DC; 1907) CLVI

"foundry and machine shop products," but, even so, the Pierce Steam Heating Company was one of the only establishments to focus exclusively on the manufacture of radiators.

The company enjoyed great success and a year later, in 1892, the two partners accepted a merger with the Michigan Radiator & Iron Mfg. Company and the Detroit Radiator Company to form the American Radiator Company (ARCO).[13] The merger was proposed by Clarence Woolley, general manager of Michigan Radiator and Iron Mfg Company, and sought to take advantage of the manufacturing ability of Detroit Radiator and Pierce Steam Heating's factories to sell his own company's innovative designs. Michigan Radiator manufactured cast-iron radiators in sections, allowing them to be produced in a variety of lengths and sizes depending on the buyer's needs.[14] Woolley secured the services of Adolphus Williamson Green, the lawyer who formed the American Biscuit Company in 1890 and would eventually headline the NABISCO merger in 1898, to assist with the merger.[15] Though the headquarters for the new conglomerate was in Chicago, Bond and Pierce were selected as president and vice-president of the new company, and the former Pierce Steam Heating factory in Buffalo continued to be the firm's center of manufacturing.

The newly formed American Radiator Company (ARCO) continued the success of the predecessor firms, largely due to the company's unique marketing and distribution model. At that time, there were only 400 companies installing hot-water heating equipment in the United States, and many of them required their own technicians to install their company's radiators due to the complexity of radiator equipment at the time.[16] Using the former Michigan Radiator Company's easily assembled and customizable radiator design, American Radiator subcontracted out radiator installation to qualified independent technicians. This business model was extremely successful, as technicians would recommend American Radiator products in order to get installation business.[17] In 1899, J.P. Morgan assisted the company's purchase of the Buffalo-based competitor Standard Radiator Co., as well as St. Louis Radiator of St. Louis, Missouri, Model Radiator of Elwood, Indiana, Holland Radiator of Bremen, Indiana, and M. Steel Company of Springfield, Ohio, a merger that established ARCO as the largest manufacturer of heating equipment in the world.[18]

Part of this distinction was also tied to global expansion. During the Chicago World's Fair in 1893, American Radiator received such favorable reaction from European visitors that it prompted Clarence Woolley, secretary

[13] Josephus Nelson Larned, Charles Elliot Finch, Ellis Henry Roberts, *A History of Buffalo: Delineating the Evolution of the City, Vol 2,* (Progress of the Empire State Company, Buffalo, NY; 1911), 10, books.google.com.
[14] Buckham, 27.
[15] Rodengen, 16.
[16] Ibid., 16.
[17] "The American Radiator Company," *Buffalo Journal of Commerce*, April 1928, 13.
[18] Buckham, 27 and Rodengen, 17.

of the board, to travel to Europe in 1894 to investigate potential markets.[19] Joseph Bond travelled to London the next year to establish their first overseas office and, since demand was so high, recommended that the board finance two further expansions: the modification of an existing French foundry to suit ARCO's manufacturing needs, and the establishment of a second factory in Germany.[20] The venture was incredibly profitable and selling under subsidiaries of American Radiator (without the "American" moniker), the company's foreign assets totaled $1,194,000 in 1905. By 1914 its total foreign surplus was almost $6,000,000, and the company continued to be the most recognized name in radiator manufacturing, both in the emerging markets and at home.[21]

In addition to profiting from robust international sales, the company continued to develop and improve its product line. Just as giving technicians motivation to market American Radiator goods led to rapid expansion at the turn of the century, the company began a ground-breaking campaign tied to research and development, not just of its own work, but in the broader field of radiator technology itself. American Radiator publicized its technological developments through a series of advertisements in popular magazines and journals of the era, directly targeting homeowners and consumers rather than architects and builders. By providing consumers with information about what products American Radiator offered, as well as how they worked and what technological innovations they incorporated, American Radiator's educational outreach relied on trusting in the costumers' intelligence. According to an issue of *The Economist* in 1912, "this campaign is largely educational and it cannot be disputed that it exerts an enormous influence in instructing the public in the value of better constructed, better equipped, and more economically operated homes. The benefits of this campaign are, of course, reflected indirectly to the entire heating industry and directly to the company's thousands of customers."[22]

One of the most prominent features of these educational campaigns was the publication of research performed at the Institute of Thermal Research in Buffalo. The facility was touted as "the only one of its kind in the world" and, constructed at a cost of $50,000 in 1910, it contained chemical and physical laboratories to perform a variety of tests connected to the radiator industry. Many of these innovations were subsequently highlighted in advertisements by the company, following the aforementioned philosophy of trusting the consumer to make the best decision. Though the company risked losing a competitive edge when other businesses began utilizing its techniques, publishing innovations furthered the company's reputation as a one interested more in the improvement of its product and the lives of its consumer than in profits. According to the same piece in *The*

[19] Mira Wilkins, "An American Enterprise Abroad: American Radiator Company in Europe, 1895-1914," in *The Business History Review,* Vol 43, No. 3 (Autumn 1969), 327.
[20] Wilkins, 330.
[21] Wilkins, 339
[22] "The American Radiator Company," in *The Economist,* Vol 47, 1912, 94

Economist, this was an effective decision: "That this is a profitable policy to pursue is sufficiently evidenced by the rapid and healthy growth of this corporation, both here and abroad."[23]

The American Radiator Company's continued growth led to the purchase of the Tonawanda Iron Corp in 1923 and a merger with the Standard Sanitary Company to form American Radiator & Standard Sanitary Corporation in 1929. Standard Sanitary began in Pittsburgh in 1875 as a manufacturer of cast-iron kettles, pots, and other dishware and by the 1920s had solidified its role as the country's premier kitchen appliance company. In 1933, American-Standard purchased Buffalo-based Ross Heater & Mfg. Company, which began in 1917 manufacturing heat exchangers, coolers, and condensers. By 1939, American Radiator and Standard Sanitary had fully merged their companies, reorganizing with twelve divisions. With Tonawanda Iron, American-Radiator & Standard Sanitary and Ross Heater, the "American Standard Family," could offer products to a variety of industries throughout the country. By 1971, the company had 170 plants around the world, with over 74,000 employees, and in Buffalo alone they had three plants, seven sales offices, and $15 million in payroll.[24]

American Radiator Company in Buffalo

Even with factories around the world, Buffalo was the center of American Radiator's early production. This was partly due to Buffalo being home to the company's then-premier factory space, the Pierce Plant, but it also benefitted greatly from the city's infrastructure at the end of the nineteenth-century. The city's role as a major inland port and the Belt Line railroad greatly assisted production, but the proximity to Niagara Falls was the greatest asset for producing in Buffalo. Many companies came to the city for similar reasons. They included the American Malt Company, whose president explained in 1899 that the advantage of Buffalo's cheap power came from being able to "shut it off when you don't need it."[25] An American Radiator advertisement in 1901 gave a similar, tongue-in-cheek explanation: "Even though we are making boilers, there won't be a particle of steam in our Buffalo plant. That's rather odd, isn't it? We are building boilers for other people, but haven't any use for them ourselves… You see, the entire plant will be powered by electricity from Niagara Falls."[26]

In addition to the Elmwood Avenue factory site, the American Radiator Company operated several other facilities at sites in the Buffalo area. In 1901, the company built the "Bond Plant," on the corner of Rano and Tonawanda Streets, naming it for the former company president who had died that year. This same year, the company purchased the Standard Radiator Company and its plant at located at the corner of Larkin and Roseville Streets in Buffalo's Hydraulics neighborhood. These purchases provided the company three plants in

[23] Ibid., 94.
[24] Buckham, 28.
[25] Mark Goldman, *High Hopes: The Rise and Decline of Buffalo, New York,* (SUNY Press, Buffalo; 1983), 130.
[26] Goldman, 130.

the city, employing 2,500 workers.[27] By 1928 they expanded further, acquiring the Tonawanda Iron Corp and opening up an additional factory on River Road in nearby Tonawanda. The merger with Standard Sanitary and the purchase of Ross Heater Manufacturing lead to even more factories, and by the mid-twentieth century, the company operated a half-dozen facilities in the city, as well as large interests in Cheektowaga and Tonawanda.[28]

The Equipment Plant and the Malleable Foundry

Although the company operated having several production facilities around the city, the Elmwood Avenue factory was always at the heart of American Radiator (and American Standard) activity in Buffalo. The foundry for the Pierce Steam Heating Company Factory, which formed the nucleus for the later growth and development of the complex at this site, was constructed in 1891 and expanded over the next 20 years, including key additions in 1906 and 1910 by prominent Buffalo architect E.B. Green.[29] The factory was the first constructed on what would become a key industrial intersection, joined by other prominent factory companies, including the Pierce Arrow Automobile company in 1906, Houk Manufacturing in 1910, and Curtiss Aeroplane, General Drop Forge, and Century Telephone Construction Co. between 1902 and 1916.

Even as other American Radiator factories were constructed or acquired throughout Buffalo, the original Pierce Plant location received increased development from 1900 through 1935. During this time period, what had initially used as warehouses to the north of the Pierce Plant grew through multiple additions to become a separate facility called the "Equipment Plant." Additionally, the American Radiator Company constructed a 81,000 square foot Malleable Foundry in 1915, which was also expanded several times over the next 20 years. This time period also covered the creation and expansion of the Institute of Thermal Research in 1910 and 1924, respectively. These three buildings would serve as the primary manufacturing spaces in the facility,

---

[27] Conant, 10.

[28] Several of the other factories that belonged to the American Radiator and Standard Sanitary company in Buffalo are still extant, although in varying states of condition. The "Bond Plant" at 25 Rano Street retains two-thirds of its original integrity, though an entire southern wing was demolished. The "Standard Plant" which housed the Standard Radiator Company in the Hydraulics neighborhood at the corner of Roseville and Larkin Street, is still extant, although it has been altered and appears to retain little of its architectural integrity. The former Ross Heater Manufacturing Company building at 1407 West Ave is also still extant, although continued use as an industrial space has resulted in many modifications, and the building is currently threatened with demolition for the creation of student housing. Several buildings remain at 23 Austin Street, location of the last factory in city limits, but it is unclear what the extent of the complex was, and how many of the extant buildings were related specifically to American Radiator or to other river-based shipping interests. The Tonawanda Iron Works site at 600 River Road, North Tonawanda, is no longer extant, having been demolished and turned into a recreational park for the municipality. The "Heat Transfer Division" building at 175 Standard Parkway in Cheektowaga, which replaced the Ross Heater building on West Ave in 1967, was originally occupied by the US Rubber Reclaiming Company, and is still extant, although it is unclear how much of its 1967 (or earlier) integrity it retains. In all, the American Radiator Complex on Elmwood Avenue represents the most intact example of industrial architecture relating to American Radiator (and American Radiator and Standard Sanitary Co.), and appears to be the best site in Buffalo that can clearly be associated with this highly prominent company.

[29] Catherine Faust, "Surviving Buildings by E.B. Green and Associates," *Buffalo as an Architectural Museum,* Ed. Chuck LaChiusa. Accessed 1/24/14 via buffaloah.com.

particularly after the Malleable Foundry's completion in 1935, which rendered the aging Pierce Plant obsolete and spurred its demolition in 1939.

The expansion of the equipment plant epitomized the haphazard development common for industrial facilities like the American Radiator Complex. It was common for factory buildings to evolve based on function, need and new technologies, adding rooms and spaces as needed. Originally consisting of Warehouses No. 2 and No.3, the Equipment Plant received six additions between 1900 and 1915, several of which were originally freestanding structures. Although the Pierce Plant contained a large east-west oriented foundry parallel to the Belt Line, it did not have many spaces for more specialized departments. By 1916, the original Pierce Plant was used exclusively as a foundry and assembly space, and more individualized components of the process were handled by the Equipment Plant to the north. Constructed in a piecemeal fashion, each addition had an individual use, such as "Chaplet Making" or "Machine Shop." In addition, the very valuable "Iron and Wood Pattern Shop" and "Wood Pattern Storage" were far removed from the foundry, probably to protect them from risk of fire, with the "Assembling Department," "Machine Department," and "Testing Rooms" between them. While separate from the Pierce Plant, a spur off the Belt Line drove right up next to the Carpenter Shop and Pattern Storage Buildings, as well as the two large warehouses, meaning that patterns could be transferred quickly to the foundry and finished products returned to the warehouses for local shipping not on the Belt Line. The additions between 1915 and 1935 expanded these facilities, as the Carpenter Shop, the Machine Shop, and a small external foundry eventually received additions that connected all the buildings into one contiguous structure.

In 1915, the American Radiator Company constructed its new "Malleable Foundry" at the eastern end of the complex. The new foundry was designed by Chicago architect John E. Youngberg, who designed additions for other American Radiator factories, including one warehouse in Chicago as well as the "National Hotel" in Cripple Creek, Colorado, during the city's gold rush near the end of the nineteenth-century. [30] At the time of its construction, foundries for malleable iron were increasing across the country, but the true impetus for the construction of the foundry was the onset of World War I in Germany. Prior to 1914, two of American Radiator's largest facilities in Europe were located in Germany (one in operation, one under construction), but with the escalating conflict, the company shut down the operations and focused development on production for the United States and Canada, bringing the manager of the European Plants (and head of the malleable department) to coordinate the design and layout of all the furnaces, ovens, and special equipment necessary for its construction.[31]

[30] *American Architect and Architecture,* Vol. 109, January to June 1916, 16
[31] "Removing Traditional Evils of Malleable Practice." in *The Foundry,* Vol. 45, February 1917, 72. Accessed 4/4/2015 via books.google.com.

Prior to 1910, a majority of iron and steel manufacturing used the "basic Bessemer process" refined by Andrew Carnegie, which mixed limestone with molten pig iron, "skimmed" the resulting slag byproduct that rose to the top of the surface, and left a very pure (and strong) steel.[32] While excellent for the production of steel girders and beams, this process could be difficult for smaller, more specialized products, and the use of malleable iron, or near-molten iron that could still be moved and molded, was preferred. Unfortunately, without going through the full Bessemer process, many products made with malleable iron tended to be weaker due to impurities that were not removed during the founding process.[33] As a result, manufacturers of small iron and steel goods were presented with the dilemma of building Bessemer-caliber foundries, despite not needing the volume or level of strength of the materials provided, or using smaller-scale foundries that met their needs, but creating lower-quality products. Often small-scale industrial interests near the end of the nineteenth century, like radiator manufacturers, often sub-contracted out some of their foundry work to larger outfits in order to utilize their stronger Bessemer-process steel.

At the turn of the twentieth century, however, as companies grew larger and more specialized, they could afford to produce larger amounts of high-quality malleable iron for their facilities. By 1915, the American Radiator Company was one of the largest outfitters of radiators in the country and could afford to create a large-scale malleable iron foundry for their purposes that did not sacrifice quality for quantity. The facility built in 1915 was originally 81,000 square feet and featured a large furnace that heated the iron until the slag separated and floated to the top, but would empty into the molds from the bottom, allowing the slag to be dispensed without the dangerous practice of "skimming," since it was not a top-pour design.[34] Additionally, the Malleable Foundry's design utilized the traditional "consolidated works" layout, with the furnace at the western end of the building, with each stage of the manufacturing process (patterns, machining, and testing) along the length of the building, before it arrived at the large loading docks to the east.[35]

The creation of the new plant turned the 55-acre Elmwood Avenue complex into not only one of the largest for the company but one of the largest manufacturing facilities in Buffalo. American Radiator also expanded the Institute of Thermal Research in 1924, adding north and south wings to the complex's administration and research building. With the completion of the Malleable Foundry in 1939, giving the factory a 170,000 square foot facility, the company demolished the original and obsolete Pierce Plant foundry. By 1939, nearly all additions to the Elmwood Avenue facility were complete, and there were only subsequent small modifications to the Malleable Foundry and to portions of the Equipment Plant in the years the facility was owned and operated by the American Radiator Company.

---

[32] Joseph S. Spoerl, "A Brief History of Iron and Steel Production," (Saint Anselm College), Accessed 4/4/2015 via anselm.edu.
[33] Enrique Touceda, "Malleable Iron Improves in Quality," in *The Foundry,* Vol. 45, September 1917, 376. Accessed 4/4/2015 via books.google.com.
[34] "Removing Traditional Evils," 73.
[35] "Removing Traditional Evils," 78.

The Institute of Thermal Research

The importance of the Elmwood facility to the company was highlighted by its selection as home for the "Institute of Thermal Research," a facility that not only pushed the bounds of radiator technology throughout the country, but was highlighted on advertisements, pamphlets, and research papers for its innovations. The first portion of the institute was constructed in 1910 and designed by the architectural firm of Schmidt, Garden & Martin. This Chicago firm specialized in commercial, religious, and public architecture, and the institute represents one of their only known buildings in Buffalo. Although built and designed to complete research, the Institute of Thermal Research also contained company offices, serving as factory administration building as well and exemplifies the factory administration building type.

Upon its construction, the Institute of Thermal Research became the centerpiece of a large and growing industrial complex, becoming a showpiece of the site. Between 1900 and 1910, the factory complex underwent thirteen expansions, dramatically increasing the footprint of the facility. Unlike the Pierce Plant, which had the organization of most consolidated works at the time, the new expansions were largely haphazard additions to previously constructed wings, creating a varied assembly of utilitarian machine shops and production sheds. The institute's location was very strategic, as Garden's decorative building hid some of the nondescript workshops behind it.

In many ways, this was a fairly standard organizational choice on the part of the company. According to architectural historian Betsy Hunter, administration buildings were often utilized to "shield" the public's view of manufacturing facilities. While architects became increasingly involved in factory design and layout at the turn of the twentieth century (most notably, the offices of Albert Kahn, designer of the neighboring Pierce Arrow Factory's manufacturing buildings), the administration buildings were often the only structures designed by architects on an industrial campus. These buildings were often separate from the rest of the complex, not only to highlight its importance within the facility, but often to protect design work and important company records in case of a fire in the main factory.[36]

Like other administration buildings of the same era, the institute fulfilled its role as the public face of American Radiator's manufacturing presence along Elmwood Avenue. The building's Prairie style design with minimalist detailing and classical massing, coupled with robust landscaping of large, lush bushes and trees at the front of the facility (two of the oaks still occupy the front lawn), truly gave it the "quality of a centerpiece" typical of factory administration buildings at the time.[37]

[36] Bradley, 36
[37] Bradley, 37

The institute was not just designed to hide the rest of the facility, however, as the Institute of Thermal Research helped pioneer radiator innovations and establish standards for measurement and heat production for the home-heating industry. As *The Economist* noted in 1912, the institute utilized a variety of cutting edge physical and chemical laboratories to test every known heating device on the market to determine efficiency and the relative value of different fuel sources. Although these tests were used to perfect their own designs, American Radiator often released them through academic papers, conferences, and educational pamphlets.[38]

American Radiator's reputation in this regard is noted through its involvement with a variety of organizations at the early part of the twentieth century, particularly the Society of Heating and Ventilating Engineers. In July of 1913, the society toured the Institute of Thermal Research during its summer meeting held at the Hotel Statler. The tour was meant to demonstrate some of the research conducted there concerning "Heat Transmission with Pipe Coils and Cast Iron Heaters under Fan-Blast Conditions."[39]

During the American Gas Institute's Chicago convention in October of 1916, it was reported that the Institute of Thermal Research was involved in a paper titled, "Manufactured Gas for House Heating," relating to the comparative costs of coal and gas fired furnaces.[40] At the December 1916 meeting of the New York State Chapter of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Andre Mertzanoff, the chief engineer for the Institute of Thermal Research, was listed as a participant in a study on formulating standards for boiler and furnace measurements.[41] In fact, during the society's panel discussion on standards, Mertzenoff noted that he felt the New York Chapter's proposed testing codes were "too broad" and suggested members of the society visit the institute to study the methods and apparatus used by American Radiator.[42]

The successful innovations being developed at the Institute of Thermal Research prompted the American Radiator Company to feature the building extensively in advertisements and company literature. In one *Country Life* ad from 1923, a drawing by Carl Heck was underlined with the question, "What are these chimneys in *my* life?" The advertisement went on to describe how each radiator model is tested in the labs of the institute, the "largest laboratory in the world devoted to the problems of better warmth."[43] The ad goes on to describe how "your" architect trusts American Radiator and how a pamphlet titled, "Better Warmth and Better Health" was available free of charge upon mailed request.

---

[38] *Economist,* 94
[39] "The Official Program for the Summer Meeting of the A.S.H.&V.E.," in *Domestic Engineering and the Journal of Mechanical Contracting, Vol 64,* (Domestic Engineering Company, Chicago; 1913), 47
[40] Staff Correspondent, "American Gas Institute Chicago Convention," in *Gas Age,* Vol. 38, (Progressive Age Publishing Co., New York City; 1916), 476, digitized by the New York Public Library, 2013
[41] The American Society of Heating and Ventilating Engineers, *Transactions, Vol 23,* (American Society of Heating and Ventilating Engineers, New York; 1917), 373
[42] *Transactions,* 101
[43] Advertisement, "What are these chimneys in my life?" in *Country Life,* February, 1923, 97

Indeed, the institute was used more as a testing facility than it was as an innovation center. As noted previously, the malleable iron foundry process often produced lower quality materials due to the impurities left in the manufacturing process. As a result, products made through the Bessemer-process were more trusted than those constructed in malleable foundries, despite innovations in malleable foundry design. To counteract this, and ensure quality, the American Radiator Company tested every batch of iron from its Malleable Foundry for impurities and used it as a selling point for their products. In an article from 1917 describing the new Malleable Foundry on the premises, it concluded by saying, "The extensive laboratories of the American Radiator Co. located in the department of thermal research, are within a few hundred feet of the foundry, and offer a service rarely at the command of a malleable plant. A sample of iron from every heat is analyzed and tested, and a record of tensile strength, elongation, ductility, etc, is kept."[44]

Advertisements in contractors' journals also espoused the feats of the institute. In Volume 48 of *Building Age and National Builder,* Ideal Arco Tanks, the "latest product to be developed by the Institute of Thermal Research" was described as a solution for buildings that have suffered from a lack of hot water. The advertisement also highlighted their marketing technique of working through private installers; it's not the homeowner, but the "builder" who will realize the benefits of utilizing products designed at the institute.[45] The building also served temporarily as the location of the company's advertising and general sales departments in the early 1920s, as the company switched to its new headquarters in New York City.[46] This temporary use may have prompted the building's expansion in 1923, as local firm Bley & Lyman was commissioned to design north and south wings for the building; the wings were constructed the following year.

The Institute of Thermal Research was the first of its kind in the country, but over the years, American-Standard opened other research facilities to complement the work being completed in Buffalo. [47] By 1949, the company also maintained laboratories in Detroit, Yonkers, Louisville, and several cities in Europe. The following year they consolidated all of their research buildings at the Louisville facilities, turning the small "Institute of Heating Research" into a large campus that headed all domestic heating and plumbing designs and development.[48]

Schmidt, Garden & Martin

The Institute of Thermal Research was designed by Hugh Garden of the firm Schmidt, Garden & Martin. The Chicago-based architectural firm, founded in 1906, was responsible for a number of works throughout Chicago

[44] "Removing Traditional Evils," 79.
[45] "Ideal Arco Tank For Hot Water Supply," in *Building Age and National Builder,* Vol 48, Issue 5-8. (Building Age Publish Corp, 1926), 25, digitized by University of Michigan, 2010.
[46] Buckham, 28.
[47] *Economist, 94*
[48] Rodengen, 69.

and the Midwest. The practice was founded by Richard Schmidt, a Massachusetts Institute of Technology-trained architect whose family emigrated from Bavaria, Germany to Chicago shortly after the American Civil War. Throughout the 1890s, Schmidt worked with several local architecture firms as a freelance draftsman on projects, some of which were designed by Louis Sullivan and Frank Lloyd Wright.[49] During this time, Garden absorbed the lessons of the popular Prairie style, popularized by Sullivan and Wright throughout the Midwest. Like many Chicago-area architects of the era, Schmidt was a student of the new architectural philosophy, in 1892 becoming a member of the Chicago Architectural Club, a group credited with the development of the Prairie architectural style.[50]

Schmidt established his own architectural firm in 1887, hiring Hugh M.G. Garden to join in 1895. In 1906, Schmidt made Garden a full partner in the firm, along with structural engineer Edgar Martin. Martin's background allowed the firm to pursue larger scale commercial and industrial projects like the Montgomery Ward Warehouse [1906; NR 1978] in Chicago. Coupled with Schmidt's business experience and Garden's imagination, the firm was especially prolific during the first decade of the twentieth century. The influence of Sullivan and Wright on Garden's designs is notable, and his interpretation of the Prairie style has been termed "Gardenesque."[51]

Even prior to the partnership, the pairing of Garden and Schmidt produced a number of notable projects in the Chicago area. Garden's unique flair was apparent in the design of the Third Church of Christ, Scientist [1901], the Madlener House [1902; NR 2008], and the Chapin and Gore Building (1904), all of which were designated Chicago Landmarks for the distinctive way that Garden approached the Prairie style, a variation referred to as "Gardenesque.".

The qualities that tend to define "Gardenesque" buildings include the contrasting of Classical and Prairie styles. In some cases, such as with the Madlener House, it is the simplified massing and utilitarian layout of the Prairie style, mixed with intricate classical detailing, such as the inclusion of composite columns and ornately decorated panels on the third floor, and carved stone surround at the entry. The Chapin and Gore Building is another interesting example, as it features the same type of tripartite organization of the façade popularized by Louis Sullivan for a tower building (including, originally, an ornate projecting cornice), but it bears similarities to other Prairie style commercial architecture. The building's utilitarian form recalls the design for Frank Lloyd Wright's Larkin Administration Building, with the deep sunken bays on the fourth through eighth floors contrasted by the second and third floors, which are narrower, bracketed by inset stone surrounds, and separated by intricately designed panels. Although the attributes for "Gardenesque" have not formally been defined,

[49] Chicago Landmarks, "Schmidt, Garden & Martin," City of Chicago, 2010-2013, cityofchicago.org
[50] Mark Kasprzyk and Douglas Gilbert, "National Register Nomination: Illinois Institute of Technology," Illinois State Historic Preservation Office, 8.37
[51] Prairie School Press, *The Prairie School Review*,, Vol 3-4, 1968, 13

Garden's designs do seem to blend classical and modern approaches to architecture, and the Institute for Thermal Research is no different, as the building reflects both classical design elements such as shield motifs, a monumental and symmetrical main façade, and a raised foundation, but the treatment of these elements, particularly through the use of cast stone, is distinctly modern in execution.

The projecting pilasters along the center wing create deep recessed windows (recalling Garden's Chapin and Gore design) and terminate in tall sweeping cast stone shield motifs, which not only widen, but sweep outward from the building to end up flush with the slightly projecting brick cornice. The same shield motif is used to accent the windows, bordering the upper transoms on the second floor and flanking the entry's transom as well, giving a heavy massing of the light-colored cast stone around the building's entrance and windows. Although not as distinctive as the Chapin and Gore building in Chicago, the Institute of Thermal Research still represents a great example of Schmidt, Garden, and Martin's work, and embodies some of the character found in Garden's other designs.

The firm's partnership with Edgar Martin led to several more ambitious designs, including the aforementioned Montgomery Ward warehouse, the Marcel Reese Hospital (1907) and the Humboldt Park Boathouse Pavilion [1907; NR listed].[52] In 1910, the same year they completed the Institute of Thermal Research, the firm also completed the design for the Corn Products Refining Co's "Pilot Building and Research Laboratory," a starkly-utilitarian Prairie style administration building for the company's new $5 million "Argo" plant in Summit, Illinois.[53]

After their commission for American Radiator, the firm continued to grow and gain prominence around the country. Similar to the way Garden had shaped the firm's design with his Prairie influences, the firm replaced Martin in 1925 to become Schmidt, Garden, and Erikson (SGE), broadening its stylistic repertoire to include more modern styles. This transition is exemplified by their design for the Illinois Institute of Technology between 1959 and 1964, which were heavily influenced by Mies van der Rohe, the main architect for the campus. SGE's adoption of the International Style allowed the firm to maintain a presence in the design community until 1995.[54]

John E. Youngberg

The design for the Malleable Foundry, although overseen by manager Harry E. Kies, was completed by John E. Youngberg, another architect out of Chicago. Born in Holland, Youngberg's family moved to Iowa when he

[52] Chicago Landmarks, "Humboldt Park Boathouse Pavilion,"; "Metropolitan Missionary Baptist Church,"; "Madlener House,"
[53] The Electronic Encyclopedia of Chicago, "Corn Products Refining Co.," The Chicago History. 2005.
[54] "Schmitt, Garden, & Erikson," Chicago Collections Consortium, Accessed 3/10/2014, http://chicagocollectionsconsortium.org/node/176

was four, and sent him to work on a Kansas cattle ranch at the age of fourteen. In Kansas, Youngberg delved into furniture making, eventually working for the Atchison, Topeka and Santa Fe Rail Road where he was recruited by the Kansas City firm Burnham and Root in 1887. In 1889, he began working for John W. Root in Chicago, earning enough recognition to be selected as one of the chief architects behind the building designs for the World's Columbian Exposition in 1893. After the exposition, he traveled through Europe and completed a program for "architecture, modeling and drawing" at L'Ecole des Beaux Arts in Paris.[55] He began his solo practice in Chicago in 1896, designing residences, including the Chamberlain House in Chicago in 1906, and industrial buildings such as the first portion of the Malleable Foundry in Buffalo in 1916.[56]

Bley and Lyman

When the company sought to expand the Institute of Thermal Research in 1924, it hired the firm of Bley and Lyman to design the additions. The firm was well known throughout the city for its designs and had extensive experience designing sympathetic additions to previously built structures in Buffalo. The locally renowned firm's design for the wings met Garden's initial building in style and form, seamlessly matching the bricks, window styles, and trim of the original section.

Lawrence Bley was born in 1884 in Hamburg, a suburb to the south of Buffalo. After graduating from Hamburg High School, he began working in the offices of Lansing & Beierl as a draftsman between 1903 and 1904. Although Bley had received no formal architectural training prior to joining the firm, Lansing made him a partner with the firm after Max Beierl's death in 1910.[57]

Duane Lyman was born in Lockport, New York in 1886, and he moved to Buffalo as a child. He attended Lafayette High School.[58] In 1908, he received a degree in Architecture and Mechanical Engineering from the Sheffield Scientific School of Yale University. After graduating, he traveled to Europe and studied the architecture of England, France, Italy, and Switzerland, which he expressed in historical references throughout

[55] Anders Schon and Martin J. Engberg, Ed. Ernst W. Olson, *History of the Swedes of Illinois, Part 1*, (Engberg-Holmberg Publishing Company, Chicago; 1908), 253. Accessed 5/1/15 via books.google.com.
[56] Terry Tatum, Elizabeth Trantowski, and Brian Goeken ed., 254.
[57] Jennifer Walkowski and Daniel McEneny (July 2008). "National Register of Historic Places Registration: Lafayette Avenue Presbyterian Church". New York State Office of Parks, Recreation and Historic Preservation.' 8.11
Nancy L. Todd (August 1993). "National Register of Historic Places Registration: Connecticut Street Armory". New York State Office of Parks, Recreation and Historic Preservation, 8.2
[58] Claire L. Ross and Francis Kowsky (January 2005), "National Register of Historic Places Registration: Saturn Club," New York State Office of Parks, Recreation, and Historic Preservation, 8.2

his career.[59] While he was known for proficiency in historical styles such as Neoclassical and Tudor Revival, his portfolio also includes Art Deco, Art Moderne, Prairie, International, and Post-Modern styles.[60]

Lyman became a partner with the Lansing and Bley architectural firm in 1913, forming Lansing, Bley and Lyman.[61] The firm's work in Buffalo included the Buffalo Tennis and Squash Club [NR 2008], the Notre Dame de Lourdes School, and the Delaware Court Building. In 1919, Lansing retired, and the partnership continued as Bley and Lyman. The firm designed the Tudor style Saturn Club [NR 2005], 800 West Ferry, and the Buffalo Federal Court House.

In 1939, after Bley's death, Lyman established Duane Lyman and Associates and continued to work extensively in Western New York. His company designed such structures as the Art Deco Christ the King Chapel at Canisius College and the Georgian Revival Williamsville High School and consulted with Minoru Yamasaki on the construction of the tall Modernist skyscraper at 1 M&T Plaza. Although Lyman primarily focused within the Buffalo Region, he worked elsewhere in New York designing the Prairie style house at 8 Berkley Drive in Lockport, New York, the Curtis Aeroplane Company Office and Laboratory in Garden City, Long Island, and the Yale University Armory in New Haven, Connecticut.[62] Lyman also assisted Minoru Yamasaki with the 1960 World Trade Center in New York City.[63]

Conclusion

The American Radiator Company Factory Complex is an excellent and largely intact industrial complex that once served one the nation's largest manufacturing companies. Its location adjacent to the Belt Line railroad at the "Crosscut Junction" enabled the factory to grow in size and prominence throughout the late nineteenth and early twentieth centuries. The earliest factory to locate along Elmwood Avenue in 1891, the American Radiator Company Factory Complex is now part of a large cluster of comparable industrial and manufacturing sites in this area of North Buffalo.

The factory complex features excellent examples of industrial architecture, including an example of an administrative and research building and an Aiken-roof manufacturing facility. The three distinct expansions of

[59] Claire L. Ross, (March 1997), "National Register of Historic Places Registration: Edwin M. and Emily S. Johnston House National Register Nomination," New York State Office of Parks, Recreation, and Historic Preservation, 8.5.; Saturn Club National Register Nomination, 8.2

[60] Frank Kowsky and Martin Wachadlo (November 2010), "National Register of Historic Places Registration: Twentieth Century Club National Register Nomination," New York State Office of Parks, Recreation, and Historic Preservation, 8.9

[61] Twentieth Century Club National Register Nomination, 8.6.

[62] Twentieth Century Club National Register Nomination, 8.9.

[63] Frank R. Kowsky (October 2008), "National Register of Historic Places Nomination: Buffalo Tennis and Squash Club," New York State Office of Parks, Recreation, and Historic Preservation, 8.3.

the facility demonstrate not only the complexity of an industrial manufacturing complex but the history of American Radiator's development and success at the turn of the twentieth century, as each expansion coincided with a distinct period of growth for the company.

The complex demonstrates the role the American Radiator Company played in the history of Buffalo industry and also in the radiator industry as a whole. The company's flagship Institute of Thermal Research, beyond its role as a visually prominent architect-designed administration building, also played a key role in helping the company develop, refine and market its radiator products. The long-term success of the American Radiator Company was tied to its dedication to creating and providing high-quality products to consumers, and part of that success was due to the work performed in research, development, and manufacturing at the American Radiator Company Factory Complex in Buffalo.

Bibliography:

American Architect and Architecture. Vol. 109, January to June 1916.

"American Gas Institute Chicago Convention." *Gas Age,* Vol. 38. Progressive Age Publishing Co., New York City. 1916. Digitized by the New York Public Library, 2013.

The American Society of Heating and Ventilating Engineers. *Transactions.* Vol 23. American Society of Heating and Ventilating Engineers, New York 1917.

American Standard. "The History of American Standard." American Standard Brands, 2013, <americanstandard-us.com/companyinfo/history>

Boyle, Caitlin T., and Derek King (2012). "National Register of Historic Places Nomination: F.N. Burt Company Factory." New York State Department of Parks, Recreation, and Historic Preservation.

Bradley, Betsy Hunter. *The Works: The Industrial Architecture of the United States.* New York, Oxford University Press; 1999.

Buckham, Tom. "Everything from Potties to Pottery." *Buffalo Magazine,* Vol 46. February 1971.

Buffalo Office of Strategic Planning, Real Estate Office. *Cobblestone Historic District Report*-Draft of "Design Guidelines: Cobblestone Historic District, Buffalo, NY." Buffalo, NY; 1994.

Chicago Landmarks. "Humboldt Park Boathouse Pavilion,"; "Metropolitan Missionary Baptist Church,"; "Madlener House;" "Schmidt, Garden, & Martin." 2010-2013. <cityofchicago.org>

Conant, Charles A. *Progress of the Empire State: A Work Devoted to the Historical Financial, Industrial, and Literary Development of New York, Vol III: Buffalo, Rochester, and Utica.* Progress of the Empire State Company, New York; 1913.

Department of Interior, Census Office. "Report on Manufacturing Industries of the United States at the Eleventh Census: 1890:" Part II: Statistics of Cities. Government Printing Office, Washington, D.C.; 1895.

Faust, Catherine. "Surviving Buildings by E.B. Green and Associates." Buffalo as an Architectural Museum <buffaloah.com>

The Electronic Encyclopedia of Chicago. "Corn Products Refining Co." The Chicago History. 2005.

Goldman, Mark. *High Hopes: The Rise and Decline of Buffalo, New York.* SUNY Press, Buffalo; 1983.

Heverin, Aaron T. "Past Tracks: A Queen City Built by Rail." BuffaloHistoryWorks.com. October 1st 2010.

The John B. Pierce Laboratory. About Us: The History of the Laboratory." 2012. <jbpierce.org/about-us/>

"Ideal Arco Tank For Hot Water Supply." *Building Age and National Builder,* Vol 48, Issue 5-8. Building Age Publish Corp, 1926. Digitized by University of Michigan, 2010.

Kasprzyk, Mark and Douglas Gilbert. "National Register of Historic Places Nomination: Illinois Institute of Technology." Illinois State Historic Preservation Office.

Kowsky, Frank and Martin Wachadlo. November 2010. "National Register of Historic Places Registration: twentieth Century Club National Register Nomination." New York State Office of Parks, Recreation, and Historic Preservation.

Larned, Josephus Nelson, Charles Elliot Finch, Ellis Henry Roberts, *A History of Buffalo: Delineating the Evolution of the City, Vol 2,* (Progress of the Empire State Company, Buffalo, NY; 1911. <Books.google.com>

Prairie School Press. *The Prairie School Review*. Vol 3-4, 1968.

"Removing Traditional Evils of Malleable Practice." *The Foundry.* Vol 45. 1917. <Books.Google.com>

Rodengen, Jeffrey L. *The History of American Standard.* Write Stuff Enterprises, Inc, For Lauderdale FL; 1999.

Ross, Claire L. and Francis Kowsky. January 2005. "National Register of Historic Places Registration: Saturn Club." New York State Office of Parks, Recreation, and Historic Preservation.

Ross, Claire L. March 1997. "National Register of Historic Places Registration: Edwin M. and Emily S. Johnston House National Register Nomination," New York State Office of Parks, Recreation, and Historic Preservation; Saturn Club National Register Nomination.

"Schmidt, Garden, & Erikson." Chicago Collections Consortium. <Chicagocollectionsconsortium.org>.

Schon, Anders and Martin J. Engberg, Ed. Ernst W. Olson. *History of the Swedes of Illinois: Part 1.* Engberg-Holmberg Publishing Company. 1908.

Spoerl, Joseph S. "A Brief History of Iron and Steel Production." Saint Anselm College. <anselm.edu>.

"The American Radiator Company." Buffalo Journal of Commerce. April 1928.

"The American Radiator Company." *The Economist,* Vol 47. 1912.

The American Society of Heating and Ventilating Engineers, *Transactions.* Vol 23. 1917.

"The Official Program for the Summer Meeting of the A.S.H.&V.E." *Domestic Engineering and the Journal of Mechanical Contracting, Vol 64.* Domestic Engineering Company, Chicago; 1913.

Todd, Nancy L. August 1993. "National Register of Historic Places Registration: Connecticut Street Armory". New York State Office of Parks, Recreation and Historic Preservation.

Touceda, Enrique. "Malleable Iron Improves in Quality." *The Foundry.* Vol 45, September 1917. <books.google.com>.

Walkowski, Jennifer. 2009. "National Register of Historic Places Multiple Property Documentation Form: Historic Resources of the Hydraulics/Larkin Neighborhood, Buffalo, Erie County, NY. New York State Department of Parks, Recreation, and Historic Preservation.

2010. "National Register of History Places Multiple Property Documentation Form: Historic Resources of the Black Rock Planning Neighborhood, Buffalo, Erie County, NY." New York State Department of Parks, Recreation, and Historic Preservation.

Walkowski, Jennifer, and Daniel McEneny. July 2008. "National Register of Historic Places Registration: Lafayette Avenue Presbyterian Church". New York State Office of Parks, Recreation and Historic Preservation.'

Warren, Susanne. "Context Study: The Schools of New York State, Development of The School as a Building Type." New York State Office of Parks, Recreation, and Historic Preservation; Albany, New York, 1990.

"What are these chimneys in my life?" *Country Life.* February, 1923.

Whitcomb, George. *Buffalo City Directory for the Year 1884.* Courier Company, Buffalo, NY; 1884. Accessed 4/4/15 via books.google.com

Wilkins, Mira. "An American Enterprise Abroad: American Radiator Company in Europe, 1895-1914," in *The Business History Review,* Vol 43, No. 3. Autumn 1969.

Verbal Boundary Description

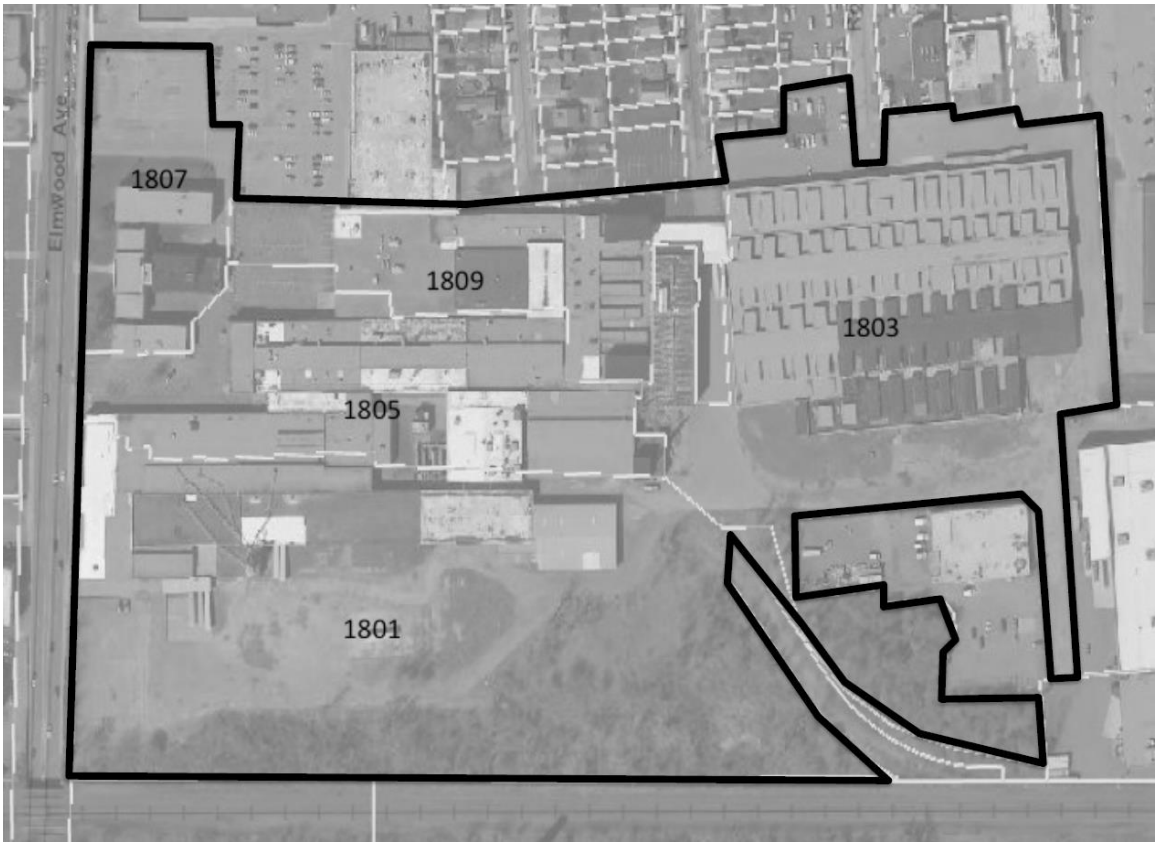
The boundary is indicated by a heavy line on the enclosed map with scale.

Boundary Justification

The boundary includes the extant buildings and site associated with the Pierce Steam Heating Company and its successor firms, the American Radiator Company and American Radiator and Sanitary on the entirety of the tax parcels at 1801, 1803, 1805, 1807, and 1809 Elmwood Avenue.

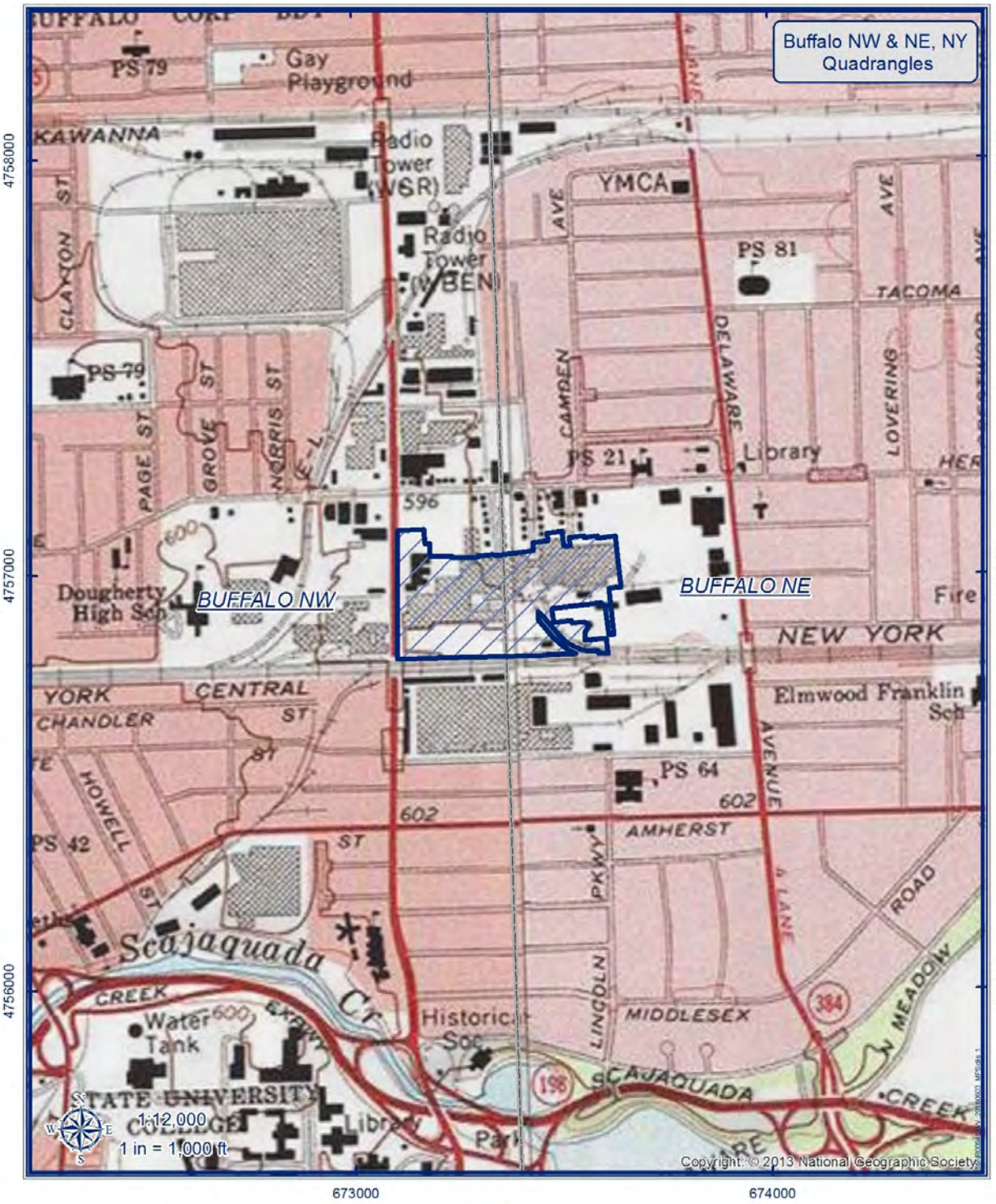
Additional UTM References:

Point	Easting	Northing
5	673105	4756798
6	673107	4757105
7	673502	4757101



American Radiator Co. Factory Complex
City of Buffalo, Erie Co., NY

1801-1809 Elmwood Ave.
Buffalo, NY 14207



Coordinate System: NAD 1983 UTM Zone 17N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter

0 295 590 1,180 Feet

American Radiator Co.

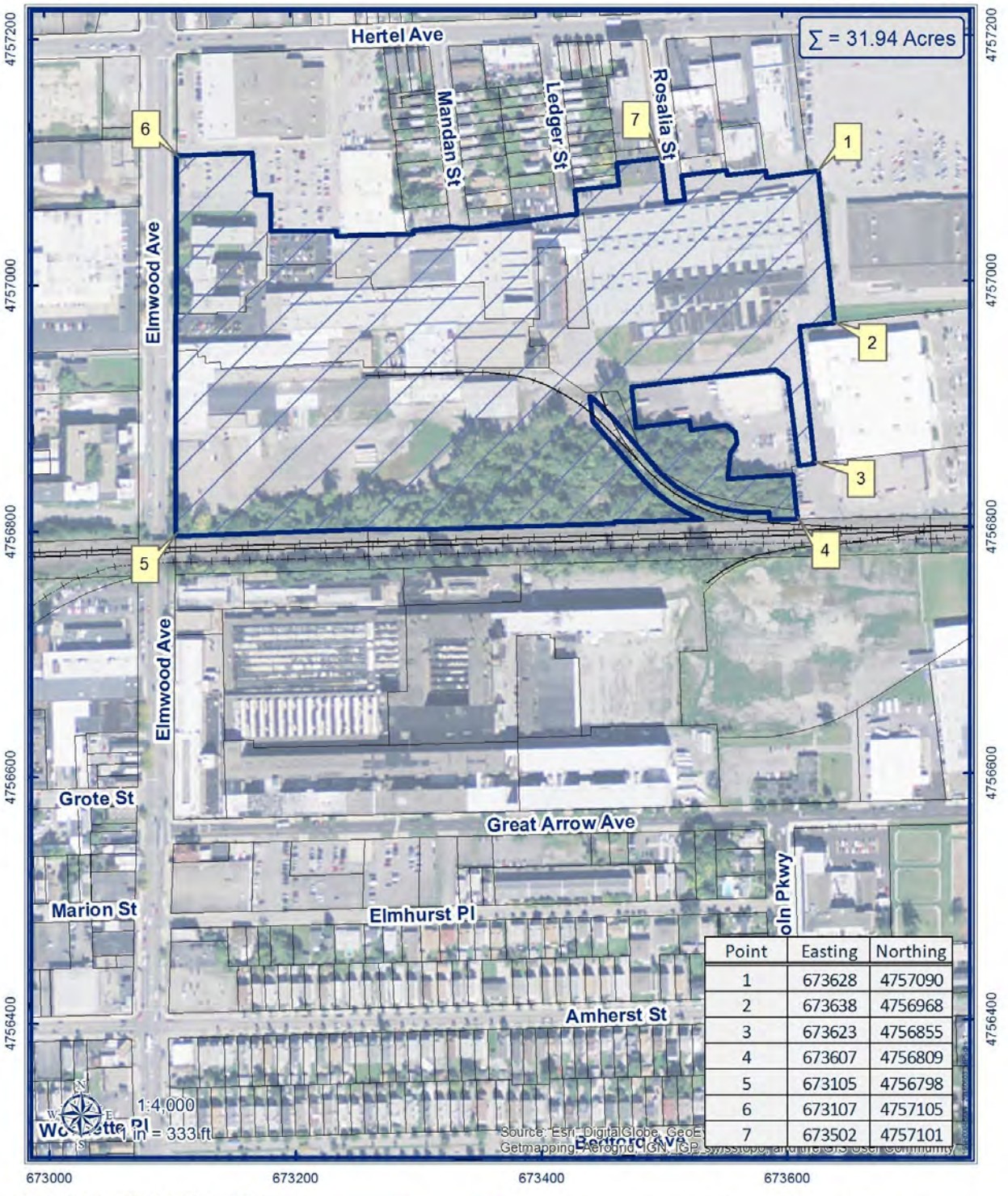
NEW YORK STATE OF OPPORTUNITY. Parks, Recreation and Historic Preservation

American Radiator Co. Factory Complex
City of Buffalo, Erie Co., NY

1801-1809 Elmwood Ave.
Buffalo, NY 14207

American Radiator Co. Factory Complex
City of Buffalo, Erie Co., NY

1801-1809 Elmwood Ave.
Buffalo, NY 14207



Point	Easting	Northing
1	673628	4757090
2	673638	4756968
3	673623	4756855
4	673607	4756809
5	673105	4756798
6	673107	4757105
7	673502	4757101

Additional Information

Photo Log:

Name of Property:	American Radiator Company Factory Complex
City or Vicinity:	Buffalo
County:	Erie County
State:	NY
Name of Photographer:	Michael J. Puma
Date of Photographs:	April-June 2015
Location of Original Digital Files:	60 Hedley Place, Buffalo, NY 14208
Number of Photographs:	10

NY_Erie County_ American Radiator Company Factory_0001
Primary façade of Institute of Thermal Research, factory loading docks, camera facing southeast.

NY_Erie County_ American Radiator Company Factory _0002
Primary facade of Institute of Thermal Research, camera facing east.

NY_Erie County_ American Radiator Company Factory _0003
Laboratory wing of Institute of Thermal Research, camera facing north.

NY_Erie County_ American Radiator Company Factory _0004
West elevation of 1919 Office addition off of Machine Shop, with modern entry vestibule, camera facing northeast.

NY_Erie County_ American Radiator Company Factory _0005
East elevation of 1915-1935 Malleable Foundry, camera facing south.

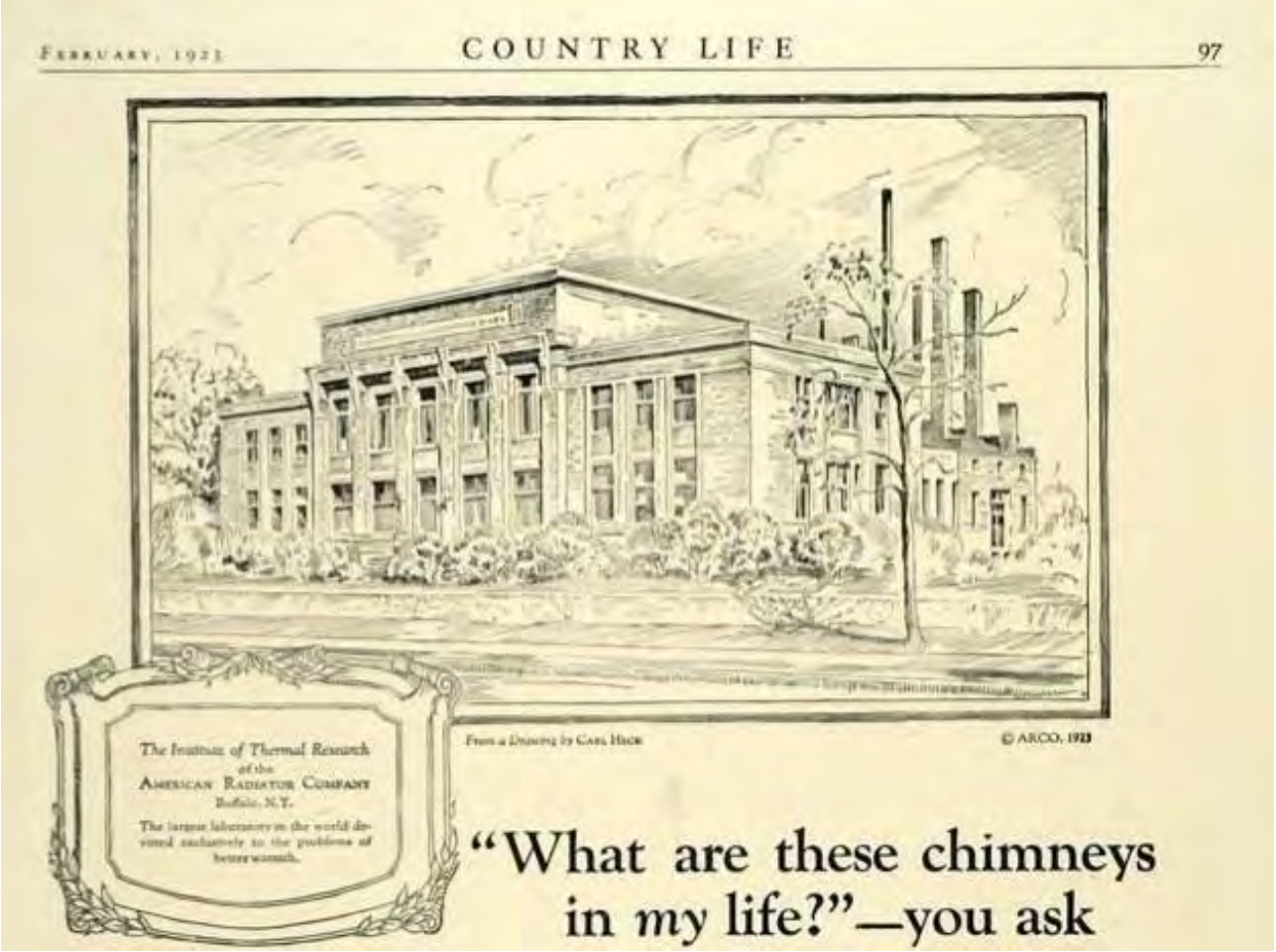
NY_Erie County_ American Radiator Company Factory _0006
Rehabilitated second floor corridor of North Wing in Institute of Thermal Research, showing metal partitions on left side of hallway, and original columns on right incorporated into new wall construction, camera facing east.

NY_Erie County_ American Radiator Company Factory _0007
Laboratory Wing undergoing rehabilitation, uncovered equipment (original testing stacks, and steel crane) will be retained and incorporated into new build out, camera facing west.

NY_Erie County_ American Radiator Company Factory _0008
1915-1935 Malleable Foundry, showing full-height ceilings and Aiken-style monitor construction, with steel frame columns and trusses below and maintaining open floor plate, camera facing east.

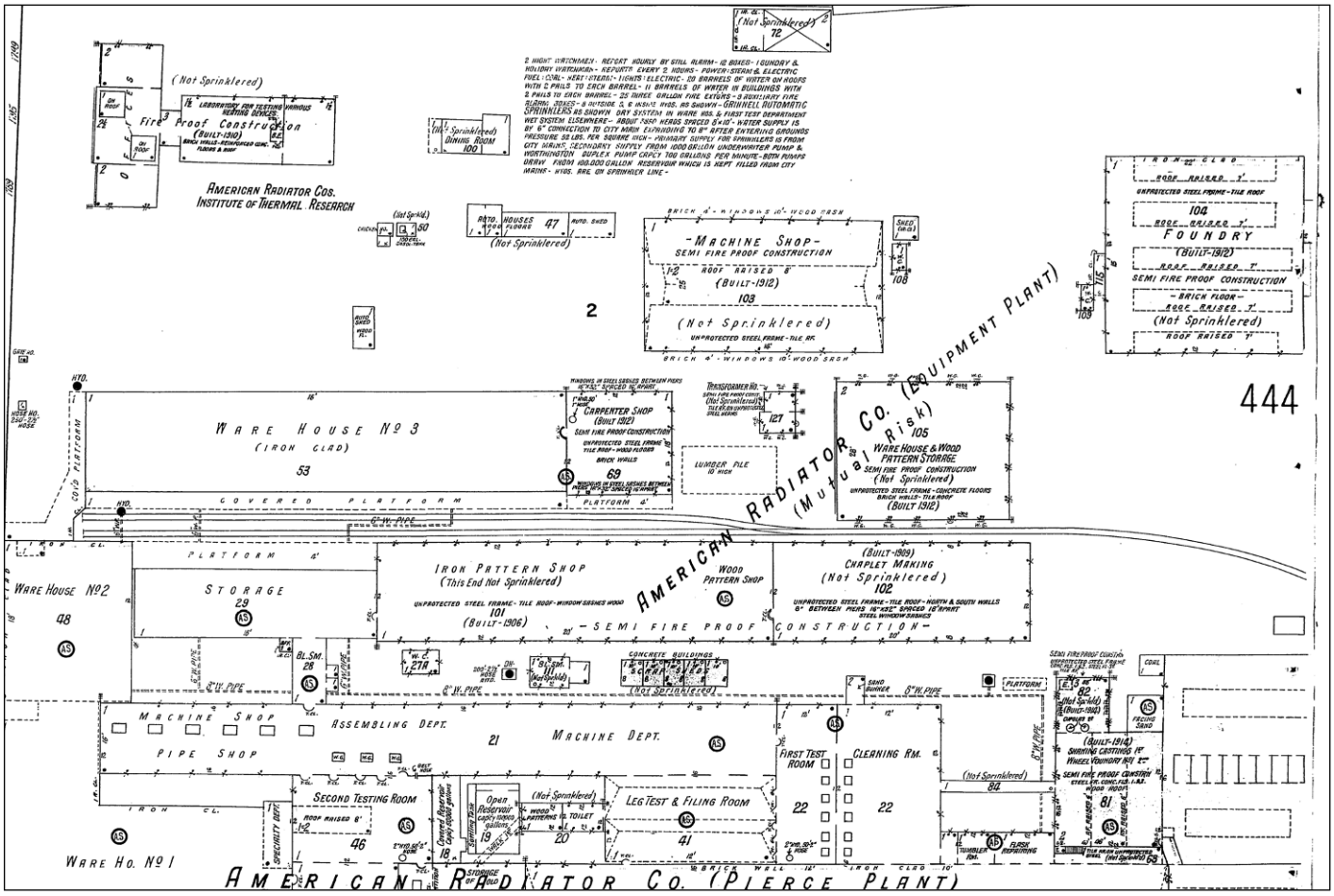
NY_Erie County_ American Radiator Company Factory _0009
1892 Warehouse No. 2, showing original frame construction and wooden columns.

NY_Erie County_ American Radiator Company Factory _0010
1909-1919 Machine Shop, showing steel frame, central dormer, and incorporation of previous demising wall into production space.



Advertisement with sketch of American Radiator Company's Institute of Thermal Research (1923)
This image shows the Institute building prior to the construction of the two wings. Notice the tall stacks, visible at the rear of the building to the right of the image, which reflect the building's use not only as an administrative and office building, but an active laboratory and testing facility.

Photograph of American Radiator Company's Institute of Thermal Research (1925)



Sanborn Fire Insurance Map (1916)

Clipping from 1916 Sanborn Fire Insurance Map showing the extent of building construction on the Equipment Plant. Not shown: Youngberg's 1915 section of 1915-1935 Malleable Foundry.


ENTER


AMERICAN RADIATOR COMPANY
INSTITUTE OF THERMAL RESEARCH


THESE SPACES RESERVED FOR
MOD-PAC
EMPLOYEES ONLY
NERAL


MOD-PAC CORP
ISO 9001


STACK
No1
HILTI
GALSBURY


TURflex
TURflex

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: American Radiator Company Factory Complex

MULTIPLE NAME:

STATE & COUNTY: NEW YORK, Erie

DATE RECEIVED: 8/14/15 DATE OF PENDING LIST: 9/09/15
DATE OF 16TH DAY: 9/24/15 DATE OF 45TH DAY: 9/29/15
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 15000674

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:	N	NATIONAL:	N

COMMENT WAIVER: N

√ ACCEPT ___RETURN ___REJECT 9.29.15 DATE

ABSTRACT/SUMMARY COMMENTS:

Entered in
The National Register
of
Historic Places

RECOM./CRITERIA_____

REVIEWER_____ DISCIPLINE_____

TELEPHONE_____ DATE_____

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

If a nomination is returned to the nominating authority, the nomination is no longer under consideration by the NPS.

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

24 July 2015

Alexis Abernathy
National Park Service
National Register of Historic Places
1201 Eye St. NW, 8th Floor
Washington, D.C. 20005

Re: National Register Nominations

Dear Ms. Abernathy:

I am pleased to submit the following three nominations, all on disc, to be considered for listing by the Keeper of the National Register:

American Radiator Factory Complex, Erie County
Endicott Johnson Medical Clinic, Broome County
Lithuanian National Association Hall, Broome County

Please feel free to call me at 518.268.2165 if you have any questions.

Sincerely:

Kathleen LaFrank
National Register Coordinator
New York State Historic Preservation Office