NPS Form 10-900
(Rev. 8-86)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

1. Name of Property

historic name Lackawanna Iron and Coal Company Furnaces

other name/site number: Lackawanna Iron & Steel Co.; Scranton Iron Furnaces

2. Location

street & number: 159 Cedar Ave (N/A) not for publication

city, town: Scranton (N/A) vicinity

state: PA code: county:Lackawanna code:069 zip code:18505

3. Classification

Ownership of Property: public-State

Category of Property: structure

Number of Resources within Property:

Contributing	Noncontributing	
___	1	buildings
___	___	sites
4	___	structures
___	___	objects
4	1	TOTAL

Number of contributing resources previously listed in the National Register: 0

Name of related multiple property listing: Iron and Steel Resources in Pennsylvania 1716-1945

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this _ nomination _ request for determination of eligiblity meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property _ meets _ does not meet the National Register criteria. _ See continuation sheet.

Signature of certifying official — Date

State or Federal agency and bureau

In my opinion, the property _ meets _ does not meet the National Register criteria. _ See continuation sheet.

Signature of certifying official — Date

State or Federal agency and bureau

5. National Park Service Certification

I, hereby, certify that this property is:

___ entered in the National Register. _____ ____
___ See continuation sheet.

___ determined eligible for the National Register. _____ ____
___ See continuation sheet.

___ determined not eligible for the National Register. _____ ____

___ removed from the National Register _____ ____

___ other (explain):_____

_____ _____ _____
Signature of Keeper Date of action

6. Function or Use

Historic Functions	Subfunctions
10 industry	10A manufacturing facility

Current functions	Subfunctions
08 recreation and culture	museum

7. Description

Architectural Classification

other: 99 iron furnace

Materials

foundation N/A roof N/A
walls 40 stone other 30 brick

Describe present and historic appearance:

X see continuation sheet

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:
_ Nationally X Statewide _ Locally

Applicable National Register Criteria: A, C

Criteria Considerations (Exceptions): N/A
Areas of Significance: 160 industry
110 engineering

Period(s) of Significance: 1848-1903
Significant Dates: 1848-9, 1852, 1857
Years of Alterations: N/A
Significant Person(s): N/A

Cultural Affiliation: N/A

Architect/Builder: unknown

State significance of property, and justify criteria, criteria considerations, and areas and periods of signficance noted above.

X See continuation sheet

9. Major Bibliographical References

X See continuation sheet

Previous documentation on file (NPS):

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

Primary location of additional data:

X State Historic Preservation Office
__ Other state agency
__ Federal agency
__ Local government
__ University
X Other - Specify Repository: Historic Scranton Iron Furnaces

10. Geographical Data

Acreage of property: 3.84 acres

UTM References: Scranton

	Zone	Easting	Northing		Zone	Easting	Northing
A	18	444625	4583660	C			
B				D			

__ see continuation sheet

Verbal Boundary Description

X see continuation sheet

Boundary Justification

X see continuation sheet

11. Form Prepared By

name/title Daniel Perry, site adm./Diane Reed, hist. pres. spec.

organization PHMC date March 20, 1991

street & number P.O. Box 1026 telephone (717)787-8045

city or town Harrisburg state PA zip 17108

The Lackawanna Iron and Coal Company Furnaces are located in downtown Scranton, Pennsylvania, at the corner of Cedar Avenue and the exit ramp of the Central Scranton Expressway. It is located 1000' southeast of Steamtown National Historic Site. The four connected stone blast furnace stacks are surrounded by 3.84 acres. The property runs along a portion of Roaring Brook, and includes the site of the original casting shed, which spanned the south side of the furnaces, and was approximately 350' long and 100' deep (see attached 1885 map "Big Vein Workings Under Furnace & Saw Mill").

The furnaces are set into the south side of a hillside with a 10 foot wide bridge, supported by masonry arches connecting them to the rock cliff. The cliff is faced by a masonry retaining wall, which extends either side of the furnace stacks along the bank approximately 40'. There is a freestanding wall on the west end of the furnaces, with an arched opening. Its original function is unknown. Beneath the charging bridge runs a covered passageway where the downcomers and the tuyeres were located.

The two eastermost furnaces (no. 1 & 2) date c. 1848-1849, and are built of smooth dressed stone blocks. They are approximately 40 feet high and are 40 feet wide at the base. No. 3 and no. 4 furnaces were constructed c. 1852 and c. 1857 respectively. These are constructed of rough dressed stone blocks. They are also 40 feet high. Furnace 3 is 46 feet wide at the base, and furnace 4 is 48 feet wide at the base. All of the furnace stacks still contain vestiges of their firebrick linings. The first, third and fourth stacks contain ruins of their nineteenth century hearths. The three masonry arches which connect the furnaces are approximately 36 feet high and measure 13 feet wide at ground level. They are constructed of stone with brick facing on the arches held in by tie bars with decorative bolts. It is not known when they were constructed. The furnaces were stabilized in 1969 by the Pennsylvania Department of Parks and Recreation. A noncontributing visitors facility (restrooms) was constructed of block, and a wooden platform and safety railings were added to the top of the furnace stacks. A covered pavilion was constructed over the westernmost furnace stack. A parking lot and walkways to accomodate visitors were also added, as well as interpretive signs.

All associated iron and steel making buildings and equipment had been removed in 1903-04. At one time the firm stretched for some distance along Roaring Brook. By 1860, the company had a rolling and puddling mill, a foundry, and various support shops. In the immediate vicinity of the furnaces, the 1885 map shows a stock house, which was served by a four track railroad siding, located above the furnaces on the top of the bank. To the west were located the engine houses and the boiler house. East of the furnace stock house were an additional engine house and two boiler houses. To the southeast was the blacksmith and car shop.

Although the Lackawanna Iron and Coal Co. Furnaces have lost their surrounding industrial components, the furnace structures as a unit show good integrity. The addition of the decking, railings and pavilion on top of the furnaces detracts from their integrity, but all are reversible structures.

The Lackawanna Iron and Coal Company Furnaces are nominated under Criterion A in the area of significance of industry. The furnaces represent the remnants of an industry with important statewide significance. Lackawanna was a significant producer of T rails, which were a critical element in transportation and westward expansion, so its influence was felt outside the region. Lackawanna is also significant under Criterion C for engineering. The furnaces represent a very unusual "ganged" (serially connected) complex. Although historically there were other furnaces which were linked, these are the only ones which remain intact. The apparent reason for the lineal placement of the furnaces was to allow them to share hot blast equipment, such as was the case at Lock Ridge Furnace in Lehigh County. This improved the efficiency of the complex, and was more cost effective. If each of the furnaces is considered individually, they are comparable in size and construction to other anthracite furnaces such as St. Charles in Lancaster County, or Lock Ridge Furnace. The distinction of the complex under Criterion C lies in its unusual configuration, not in its individual elements.

As early as 1838, William Henry was investigating the feasibility of establishing an anthracite fueled blast furnace along Roaring Brook in the Lackawanna Valley. Well schooled in the process of making iron, Henry had been the first American to experiment sucessfully with applying a hot blast to the smelting of iron ore at the Oxford Furnace in Belvidere New Jersey. Henry noted that the Roaring Brook area contained abundant deposits of anthracite coal, limestone, and iron ore. The availability of the raw materials, in combination with the reliability of Roaring Brook for water, made the location where the furnaces were eventually located ideal.

When Henry made his initial explorations in what was then called "Slocum Hollow" in the late 1830's, the area included a saw mill, grist mill, whiskey still, hotel, and several small dwellings. In 1840 Henry bought 503 acres in alliance with his son-in-law Seldon Scranton, George Scranton, and Sanford Grant. Seldon Scranton was the proprietor of Oxford Furnace. Although Seldon did not have sufficient capital of his own to finance the operation, with his brother George, and their cousins Joseph and Erastus Scranton of Augusta, Georgia, they were able to raise sufficient funds. Later, Phillipp H. Mattes of Easton purchased a one-fourth interest in the firm for $5,000.

In October of 1840 William Henry took up residence in nearby Hyde Park, so he could supervise the construction of the blast furnace. Under Henry's direction, the furnace was completed by Simon (Simeon) Ward and William Manness in the late spring. Thomas P. Harper completed construction of the waterwheel shortly thereafter. Nearby, company houses were also being erected. Unfortunately, the hot blast equipment did not arrive until early autumn 1841, thus delaying the completion of the works.

On October 9, 1841 the first "campaign" was initiated. However, lack of sufficient air pressure caused the tuyeres to become blocked, and within several hours operations had to be suspended. Difficulties with the water flow and continuing problems with the tuyeres postponed the succesful operation of the furnace until mid January of 1842, when John F Davis, a Welsh ironmaker familiar with anthracite furnaces was able to bring the furnace into successful operation. That furnace is no longer standing.

The partners had intended to produce pig iron which they hoped to ship via wagon to the canal at Pittston and Honesdale. Eventually, they anticipated moving their iron from the furnace to major markets by rail. During the period when they were attempting to work out the technical problems with the furnace, the price of iron was declining steadily, and transportation costs took a toll on the company's meager return.

Facing financial ruin, the partners believed they could be more successful with a finished product. They decided to process a portion of their pigs into nails. However, the construction of a puddling mill and nailworks required additional capital. Seldon and George Scranton again turned to their Georgia cousins, and Selden was also able to arrange a $20,000. loan from John Howland of Howland and Co. of New York City. By May 1843 the nail factory was under construction.

In September 1843 the company had reorganized under the name of Scrantons and Grant. The active partners were George and Seldon Scranton and Sanford Grant, while Philipp Mattes, Joseph Scranton, Erastus Scranton and John Howland were silent partners. Together the Scrantons controlled $44,400. worth of stock, which represented 51.6% of the company. During that same year, George and Seldon's younger brother Charles Scranton became supervisor of operations. George, who had served in that capacity, returned home to Oxford Furnace in New Jersey.

During the summer of 1844 the furnace averaged five to seven tons of pig iron a day. In April of 1844 the rolling and puddling mill had gone into operation, and by July the nail factory began production, with a capacity of 100 kegs of nails a day. However, they had produced so many nails that they glutted the market. Unfortunately, the nails also proved to be so brittle that many broke when hammered. Whether this was caused by the poor quality of the local iron ore, or poor puddling and rolling procedures, the result was universal customer complaints. Although steps were taken to improve the quality, by 1845 the market was again in decline.

Faced with mounting debts and low revenue, the company decided to switch from manufacturing nails to producing T rails for the railroads. In an effort to gain familiarity with this new process, Seldon and Charles visited the Montour Works in Danville Pennsylvania in early 1846. George travelled to New York in an attempt to find financial backers for the enterprise.

Although he found few investors, he did come into contact with Benjamin Loder, President of the New York and Erie Railroad. The railroad had a contract to complete a rail connection from Piermont on the Hudson River west to Binghamton, New York by December 31, 1848, or forfeit a $3,000,000 contract with the state of New York. Faced with the uncertainty of the domestic rail supply and the expense of English rails, Loder saw the desirability of supporting Scranton's expansion, and he loaned the company money and placed an order for 4,000 tons of T rail. The railroad sent Loder and board member William E. Dodge to inspect the ironworks in October of 1846. Subsequently they advanced $90,000 to the company, as well as an additional contract for 12,000 tons of rail.

The furnace delivered its product at various points along the new railroad line by mule drawn wagon. Those deliveries enabled the railroad to complete the line to Binghampton with four days to spare.

In November 1846 the company reorganized as Scrantons and Platt, with Joseph C. Platt, Joseph Scranton's son-in-law coming into the firm in place of Sanford Grant. They sold additional shares in the company, listing their capital stock value at $230,000. With this new infusion of capital, and the prestige of the New York and Erie Railroad associations, George Scranton believed that Lackawanna would soon be the strongest iron works in the country.

In 1847, the company listed 800 employees, including many Welsh, Irish, and German immigrants, many of whom lived just across Roaring Brook in an area owned by the company referred to as Shanty Hill.

In 1848-9 two of the furnaces still standing (1 & 2) were constructed. During the summer of 1850 the company began work on the Liggett's Gap Railroad. This was a major step toward improving the transportation links in and out of the Lackawanna Valley connecting the ironworks to the Erie Railroad at Great Bend, a distance of 48 miles. By April 14, 1851 the renamed Delaware and Western Railroad Company was hauling iron ore and coal to the furnaces, and bar iron and T rail to market. In 1852, furnace 3 was built.

In 1853 the firm reorganized again and became the Lackawanna Iron & Coal Co. The company's assets in 1854 included three furnaces, the rolling and puddling mills, foundry, two blacksmith shops, car shop, two carpenter's shops, saw mill, grist mill, office, company store, 200 dwellings, boarding house, manager's houses, ore and coal mines, tavern, and a recently completed hotel. At the time, the rail mill was the third largest in the country. It was also in 1854 that the company converted from water to steam to power the blast. In 1857, the last of the extant furnaces was completed, and by 1865 Lackawanna had the capacity to manufacture 60,000 tons of iron annually, - greater than any works in America. In 1872 the original 1841 furnace was replaced by a larger furnace. (This furnace was dismantled in 1902 and moved to the company's new plant in Lackawanna, New York.) In 1875 the company rolled its first steel rails, which was to become its chief product.

In 1883 William Scranton left the firm, following a disagreement with other board members. With the help of his brother Walter he built the Scranton Steel Company to the west of the Lackawanna Works. By 1890, Scranton Steel's two six ton Bessemer converters were producing 250,000 net tons of ingots per year, and were rolling 220,000 net tons of steel rails a year. The competition ended in 1891 when the two companies merged to form the Lackawanna Iron and Steel Company, the third largest steel works in America. In 1894 the newly formed company manufactured 500,000 net tons of steel rail. This amount of T rail represented one sixth of the total national output.

Because of the high cost of shipping suitable iron ore into Scranton from the midwest, as well as the changing markets, a decision was made to move the plant to Buffalo, New York. In 1903 the Scranton property was sold to the Wyoming Valley Railroad, who contracted with a Philadelphia company that scrapped all of the equipment, and tore down all the structures except the stone blast furnaces.

In the late 1960's the furnaces were acquired by the Commonwealth of Pennsylvania, and were administered under the state park system. The furnaces were transferred to the Pennsylvania Historical and Museum Commission in 1971.

Published sources

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Wolf, George D. William Warren Scranton: Pennsylvania Statesman. University Park: Penn State Univerisity Press, 1981.

Manuscripts

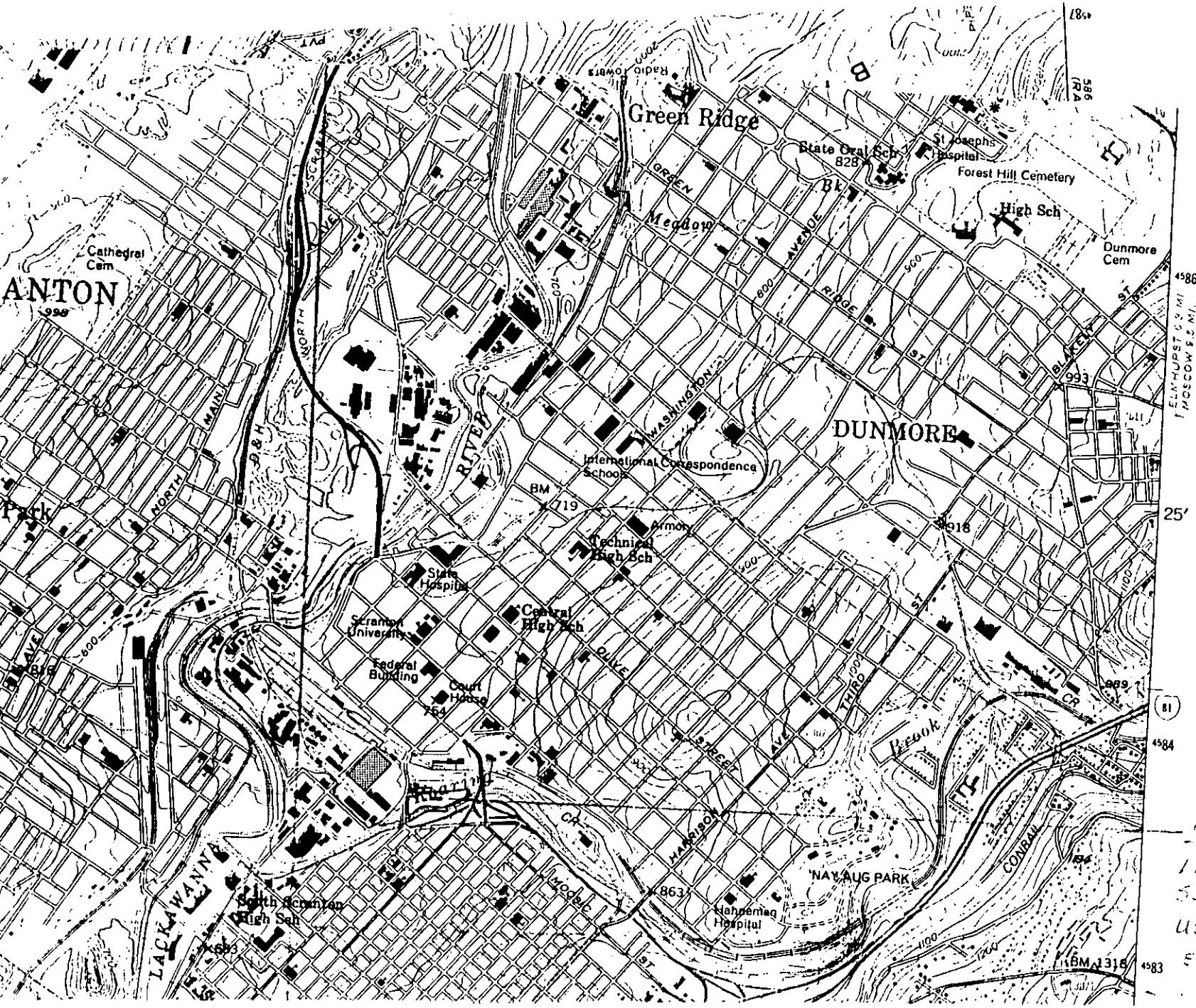
Scranton-Littell Papers, Lackawanna Historical Society, Scranton Pennsylvania.

Scranton Family Papers, Hagley Museum and Library, Wilmington Delaware.

Beginning at a point located on the Easterly right of way line of Cedar Avenue, State Route L.R. 5, par., said point also marking the Southerly corner of lands of the Standard Beef Company; Thence along the line of said Standard Beef Company the following six (6) courses and distances: (1) N 56 degrees 40' 20" E, 50.40 feet (2) N 1 degree 44' W. 26.00 feet (3) N 88 degrees 16' E, 47.20 feet (4) N 1 degree 44' W, 7.50 (5) N 88 degrees 16' E, 134.50 feet and (6) N 1 degree 44' W. 10.80 feet to a point; Thence along a line parallel to the center of the Lackawanna and Wyoming Valley Railroad Spur and 30 feet therefrom, N 87 degrees, 57' E. 85.40 feet; Thence at right angles S 2 degrees 03' E, 15.00 feet; Thence parallel to said Spur and 45 feet therefrom N 87 degrees 57' E, 18.30 feet to a point of curvature opposite R.R. P.T. Sta. 45 - 81.70; Thence on a curve to the right, parallel to said Spur and 45 feet therefrom, with a radius of 242.94 and an arc length of 95.43 feet, with a chord bearing of S 80 degrees 51' 20" E, and a distance of 95.43 feet , with a chord bearing of S 80 degrees 51' 20" E, and a distance of 95.32 feet to a point of tangency; still parallel to said Spur and 45 feet therefrom S 69 degrees 40' E, 68.80 feet to a point; thence N 20 degrees 20' E, 5.0 feet to a point opposite Railroad Station 44 - 00; Thence, still parallel to said Spur and 40 feet there from having a radius of 359.62 feet and an arc length of 98.20 feet with a chord bearing of S 77 degrees 25' 40" E, 97.53 feet to a point opposite R.R. Station 42 - 00; Thence N 4 degrees 38' E, 27.50 feet to a point, Thence on a curve to the left, parallel to the centerline of said Spur and 12.5 feet therefrom, having a radius of 332.12 feet and an arc length of 94.36 feet with a chord bearing of N 86 degrees 00' 20" E, 93.88 feet to a point; Thence S 13 degrees 30' 40" E, 29.41 feet to a point located 40 feet measured at right angles from the centerline of Roaring Brook Channel change; Thence parallel to said centerline and 40 feet therefrom S 58 degrees 39' 10" W, 136.43 feet to a point; Thence N 31 degrees 20' 50" W, 10.0 feet to a point; Thence on a curve to the right parallel to the centerline of said Channel and 50 feet therefrom, having a radius of 237.94 feet and an arc length of 128.56 feet with a chord bearing of S 74 degrees 12' 50" W, 127.96 feet to a point; Thence S 0 degrees 13' 50" E, 57.30 feet to a point; Thence S 58 degrees 39' 10" W, 20.0 feet to a point in the center of existing Roaring Brook Channel; Thence downstream along said centerline the following two (2) courses and distances: (1) S 89 degrees 14' W, 339.90 feet and

(2) S 46 degrees 13' W, 246.20 feet to a point on the Easternly right-of-way line of L.R. 5, Par.; Thence, along said right-of-way line of L.R. 5 Par.; Thence along said right-of-way parallel to the centerline and 40 feet therefrom N 1 degree 46' W, 364.10 feet to the place of BEGINNING.

Boundary justification: The nominated property encompasses the property of the Pennsylvania Historical and Museum Commission, and contains all extant elements remaining of the furnace industrial complex.



LACKAWANNA IRON & STEEL CO
LACKAWANNA COUNTY
SCRANTON QUADRANGLE
USGS ZONE 18
EASTING 444605