

SPICER MANUFACTURING COMPANY, SOUTH PLAINFIELD  
WORKS, BUILDING 3  
(Receiving and Inspection Building)  
333 Hamilton Avenue  
South Plainfield  
Middlesex County  
New Jersey

HAER NJ-144-E  
*HAER NJ-144-E*

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
U.S. Department of the Interior  
1849 C Street NW  
Washington, DC 20240-0001

# HISTORIC AMERICAN ENGINEERING RECORD

## SPICER MANUFACTURING COMPANY, SOUTH PLAINFIELD WORKS, BUILDING 3

(Spicer Manufacturing Company, South Plainfield Works, Receiving and Inspection Building)

**HAER No. NJ-144-E**

Location: 333 Hamilton Avenue  
Borough of South Plainfield  
Middlesex County  
New Jersey

U.S. Geological Survey Plainfield Quadrangle  
UTM Coordinates 18.549712.4491934

Dates of Construction: 1913

Present Owners: DSC of Newark Enterprises, Inc.  
70 Blanchard Street  
Newark, NJ 07105

Present Use: Demolished

Significance: The South Plainfield Works, originally developed by the Spicer Manufacturing Company beginning in 1910, was a nationally-significant center for the manufacture of universal joints and propeller shafts for automobiles and aircraft. At its railside location, the Receiving Building was used to inspect products, to store a variety of new and scrap materials used in manufacture or shipping, to store or maintain equipment probably used for heat treating, and probably to test samples of all steel delivered to the plant.

Project Information: Surviving structures of the former South Plainfield Works were part of the Cornell-Dubilier Electronics Superfund Site, and were demolished in 2007-2008 as part of site remediation activities outlined in the September 2004 Record of Decision as administered by the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers. Federal authority brought the project under the purview of federal acts and regulation protecting significant cultural resources from adverse project effects.\* Prior to demolition, the Spicer Manufacturing Corporation structures were determined eligible for inclusion on the National Register of Historic Places by the New Jersey State Historic Preservation Office, because of the South Plainfield Works' significance in American transportation history. Documentation of the plant to standards of the Historic American Engineering Record was completed to mitigate the removal of the significant resources.

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National Historic Preservation Act of 1966 (PL 89-655), the National Environmental Policy Act of 1969 (PL 91-190), the Archaeological and Historical Preservation Act (PL 93-291), Executive Order 11593, Procedures for the Protection of Historic and Cultural Properties (36 CFR Part 800).

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Clarence Spicer replaced an undocumented structure between the first South Plainfield Works machine shop and the drop forge building with two new structures in 1913: a heat-treating plant demolished c1929-1947, and a nearby building along the Lehigh Valley Railroad tracks used at various times for at least the following known activities:

- receipt of lumber and other unidentified materials;
- construction of wood shipping boxes;
- storage or recycling of scrap material;
- storage of parts patterns, and of chemicals and equipment probably used for heat treating;
- inspection of finished or partly finished products.

Relatively small rooms in the latter structure, later identified as Building 3 or the Receiving Building, housed a chemical department and pyrometers by 1926. The chemical department was evidently established in April 1917 primarily to test samples of all steel delivered to the plant. The pyrometers, probably optical types with calibrated filaments used to measure high temperatures, were almost certainly used at the heat treating furnaces or case-hardening boxes in the Heat Treating Building just southwest of Building 3 (Figure 6; Spicer Manufacturing Corporation 1918, 1920, 1926; Sauveur 1926: 297-8; Temperature.com, Inc. 2003-2005; Gordon 2008).

Placement of the 82-foot-long, concrete-framed, brick-sided structure along the factory rail siding resulted in an asymmetrical quadrangular plan, with a 36-foot-long east wall and a 45.5-foot-long west wall. Original framing surviving in 2007 included exterior concrete columns and deep longitudinal beams supported in part by a brick transverse interior wall, as discussed below. While there are no available interior or exterior historical photographs, views of the plant drawn in 1915 and 1923 show horizontal concrete beams on the northeast and northwest exterior walls separating two stories of windows or doors. A 1926 site plan also indicates that two thirds of Building 3 had two stories. There were no horizontal exterior beams below the brick cornice in 2007, and only the southeastern third of the building had two floors with fenestration similar to that shown in the 1915 and 1923 views. These data, the absence of any interior concrete columns or signs of a second story in the middle transverse bays, and other features visible in 2007 suggest there may have been significant alterations of Building 3 after c1929.\* Despite this possibility, the deep concrete ceiling beams replicated earlier timber-framed factory building designs, as did Building 8 (HAER No. NJ-144-H), and reflected transitional concrete construction during the decade after c1905 when flat floor and roof slabs were first cast integral with columns, allowing the elimination of such beams (Figures 2, 3, 5, 8; Lesley 1907; Spicer Manufacturing Company 1913, 1915; Spicer Manufacturing Corporation 1923, 1926; Gordon and Malone 1994: 334).

With a 36-foot-long southeast wall and a 45.5-foot-long northwest wall, Building 3 in 2007 had 16-inch-thick walls which rose 19.8 feet above undocumented concrete foundations to a ceramic-pipe-topped parapet on a 2-foot-high brick cornice with dentilated detailing on the south facade. The cornice rested on 2-foot-high reinforced-concrete beams running along the entire perimeter, supported by 3.3-foot-long, 15.8-foot-high reinforced-concrete columns which defined three bays on the southwest wall and six bays on the northeast wall. The building corners were formed of similar material. Five reinforced-concrete longitudinal roof beams, with sections matching those of the exterior beams to which the roof beams are tied, run the full length

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\* A garage immediately to the west was created following the Spicer Manufacturing Corporation occupation by infill of the narrow space between Buildings 3 and 1 (Figures 1, 8; Photograph HAER No. NJ-144-E-1).

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of the building at asymmetrical centers of approximately 7.5 feet. The concrete roof was almost flat, sloping down slightly to the southeast and northwest from a 2-foot-high, 12-inch-wide transverse reinforced-concrete beam which ran between exterior columns 28 feet from the northwest end of the building. It is likely that an original concrete column near the center of the transverse beam was later replaced by a 10-inch-square, 14.2-foot-high I-beam supporting a 16-by-10-inch I-beam beneath the concrete beam (Figure 8; Photographs HAER No. NJ-144-E-1 and NJ-144-E-2).

The transverse beam and a brick wall 28.5 feet to the southeast defined three interior bays corresponding to exterior openings, some of which matched those shown on the 1915 and 1923 views. Four metal-sash, concrete-sill windows, 10.5 to 12.2 feet high with fixed and pivoting lights, filled two sides of the building's western corner and half of the two westernmost bays on the northeast exterior wall. On the southwest facade, shorter, fixed-light metal-sash windows with concrete sills in the two easternmost bays were placed above 8- and 8.5-foot-wide door openings later modified with smaller doors. These two bays suggest the original installation of a second floor in the center as well as the eastern third of the building. On the northeast facade, only the easternmost bay retained two levels of wood windows corresponding to two interior levels. Most of the windows were covered by brown vertical-lined texture plywood. A 10-foot-wide, 6.8-foot-high former sliding door in the middle bay of the northeast facade may also have been a modified remnant of the original rail-side freight handling facilities. Southeast of the brick interior wall, the two-level bay had wood-framed office enclosures post-dating the Spicer Manufacturing Corporation, and wood stairs in the south corner of the building leading to a low, wood-framed second story (Figure 8; Photographs HAER No. NJ-144-E-1 and NJ-144-E-2).

### SOURCES OF INFORMATION/BIBLIOGRAPHY

Day, Joseph P.

1929. 3 Factories for Sale Formerly Occupied by Spicer Mfg. Co. Joseph P. Day Real Estate Agent, New York, New York. Original in the collections of The History Factory, Chantilly, Virginia. Archive Number 11-0-0-8-4 (827).

Dunham-Clarín Company

- 1917 Map of Property Situated at South Plainfield, Middlesex County, New Jersey, Property of Spicer Manufacturing Corporation, July, 11, 1917. Original in the collections of The History Factory, Chantilly, Virginia. Archive Number 11-0-0-6-3942.

Gordon, Robert B. (Professor Emeritus, Geology and Geophysics, Yale University)

- 2008 Personal communication.

Gordon, Robert B., and Patrick M. Malone

- 1994 *The Texture of Industry*. New York: Oxford University Press.

Lesley, Robert W., comp.

- 1907 *Concrete Factories: An illustrated review.....* New York: Bruce & Banning for Cement Age Company.

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Sauveur, Albert

- 1926 *The Metallography and Heat Treatment of Iron and Steel*, 3<sup>rd</sup> edition. Cambridge, MA: The University Press.

Spicer Manufacturing Company

- 1913 Diagram Showing Location of Watchmen's Keys – Spicer Manufacturing Company. Original in the collections of The History Factory, Chantilly, Virginia. Archive Number 1-2-6-4-1 (504).

- 1915 Bird's Eye View of the Spicer Manufacturing Company." Original in the collections of The History Factory, Chantilly, Virginia. Archive Number 1-5-6-3-1 (741).

Spicer Manufacturing Corporation

- 1918 The Chemical Laboratory. *The Drive Shaft* II, 12: 4-5. December. Original in the collections of The History Factory, Chantilly, Virginia. Archive Number 5-4-0-0-1-1 (432).

- 1920 Spicer Universal Joints and Propeller Shafts. Original in the collections of The History Factory, Chantilly, Virginia. Archive Number 5-3-0-1-6 (401).

- 1923 South Plainfield Works of the Spicer Manufacturing Corporation, South Plainfield, New Jersey. Copy in the collections of The History Factory, Chantilly, Virginia. Archive Number 05050000102021301.

- 1926 Department and Building Location Plan, Spicer Manufacturing Corporation, South Plainfield, New Jersey. Original in the collections of The History Factory, Chantilly, Virginia. Archive Number 5-4-0-0-(432).

Temperatures.com, Inc.

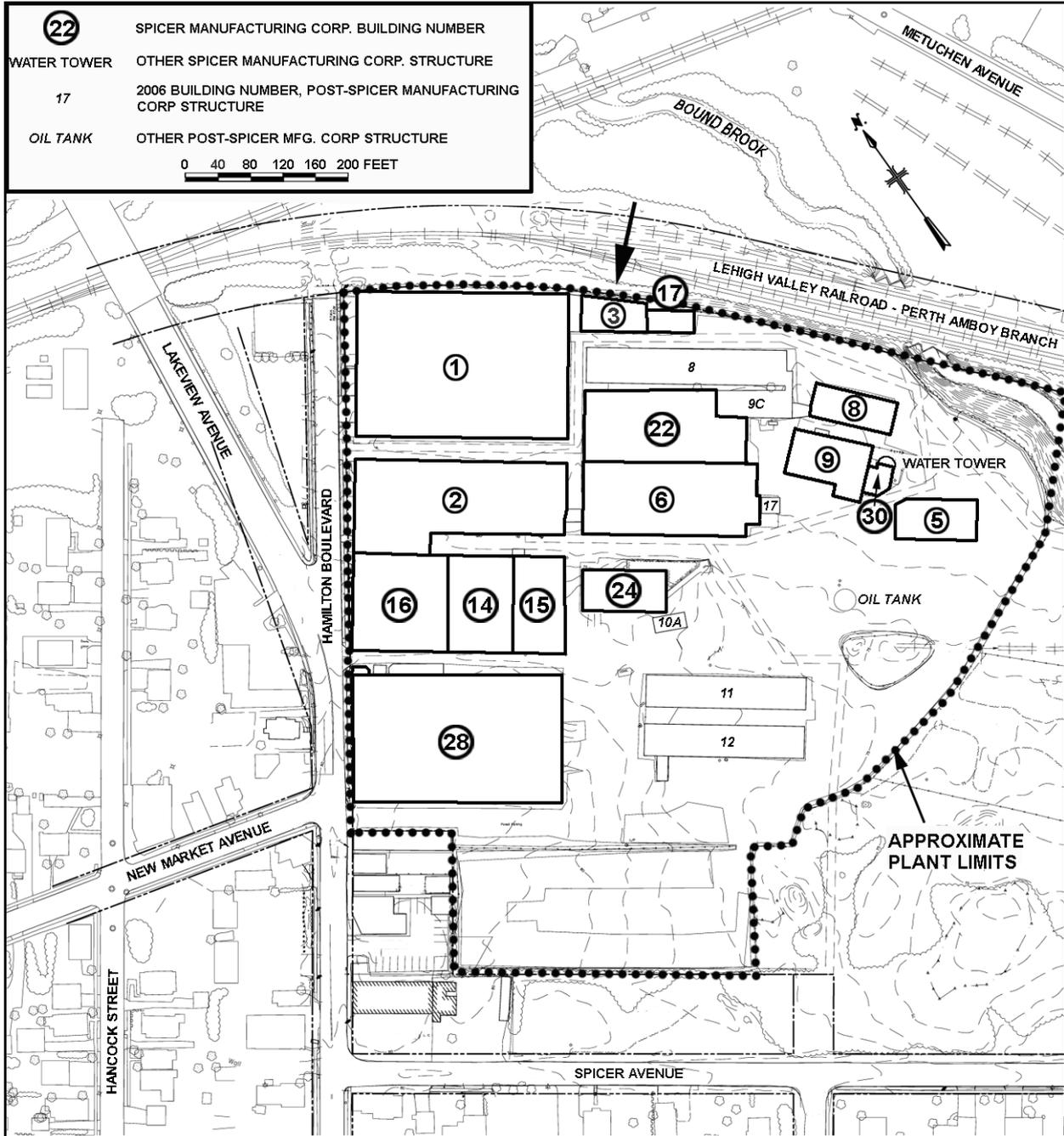
- 2003-2005 Optical Pyrometers: How They Work. Available on World Wide Web at <http://www.temperatures.com/opyro.html>

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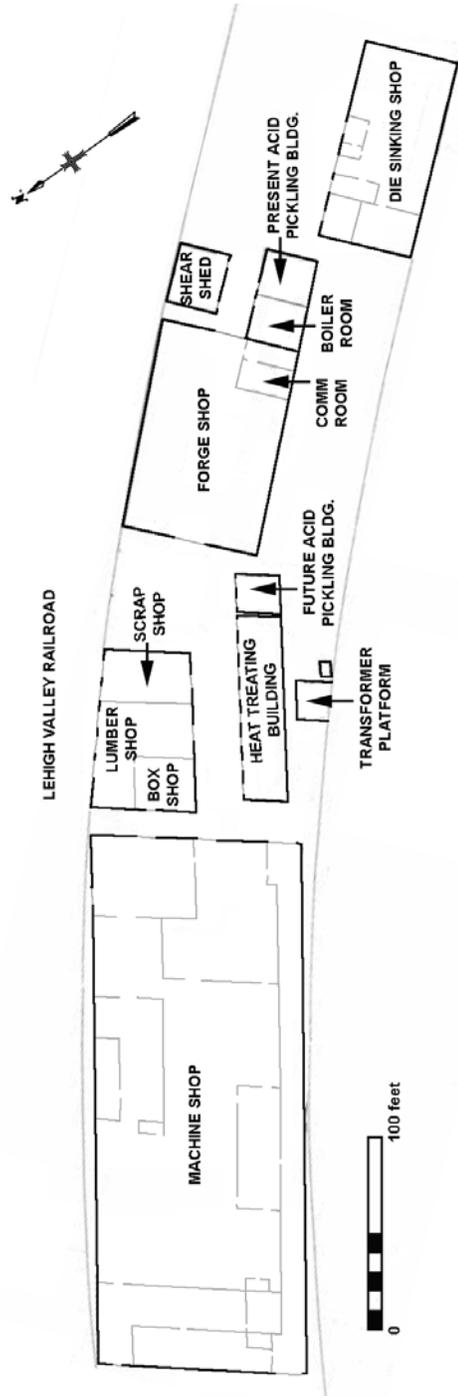
**Figure 1. BUILDING 3 LOCATION AT FORMER SPICER MANUFACTURING CORP. PLANT**

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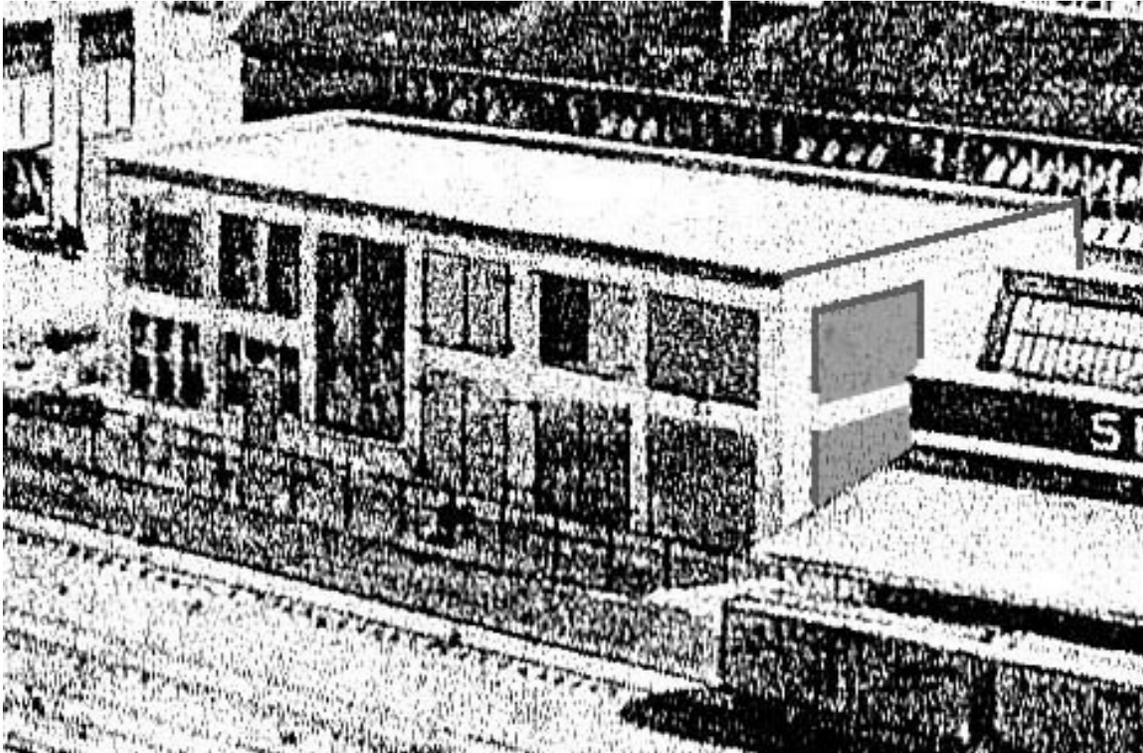
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**Figure 7. SOUTH PLAINFIELD WORKS IN 1913**  
Source: redrawn from Spicer Manufacturing Company 1913



**Figure 3. DETAIL TO SOUTH OF BUILDING 3 c1915**  
Source: Spicer Manufacturing Company 1915

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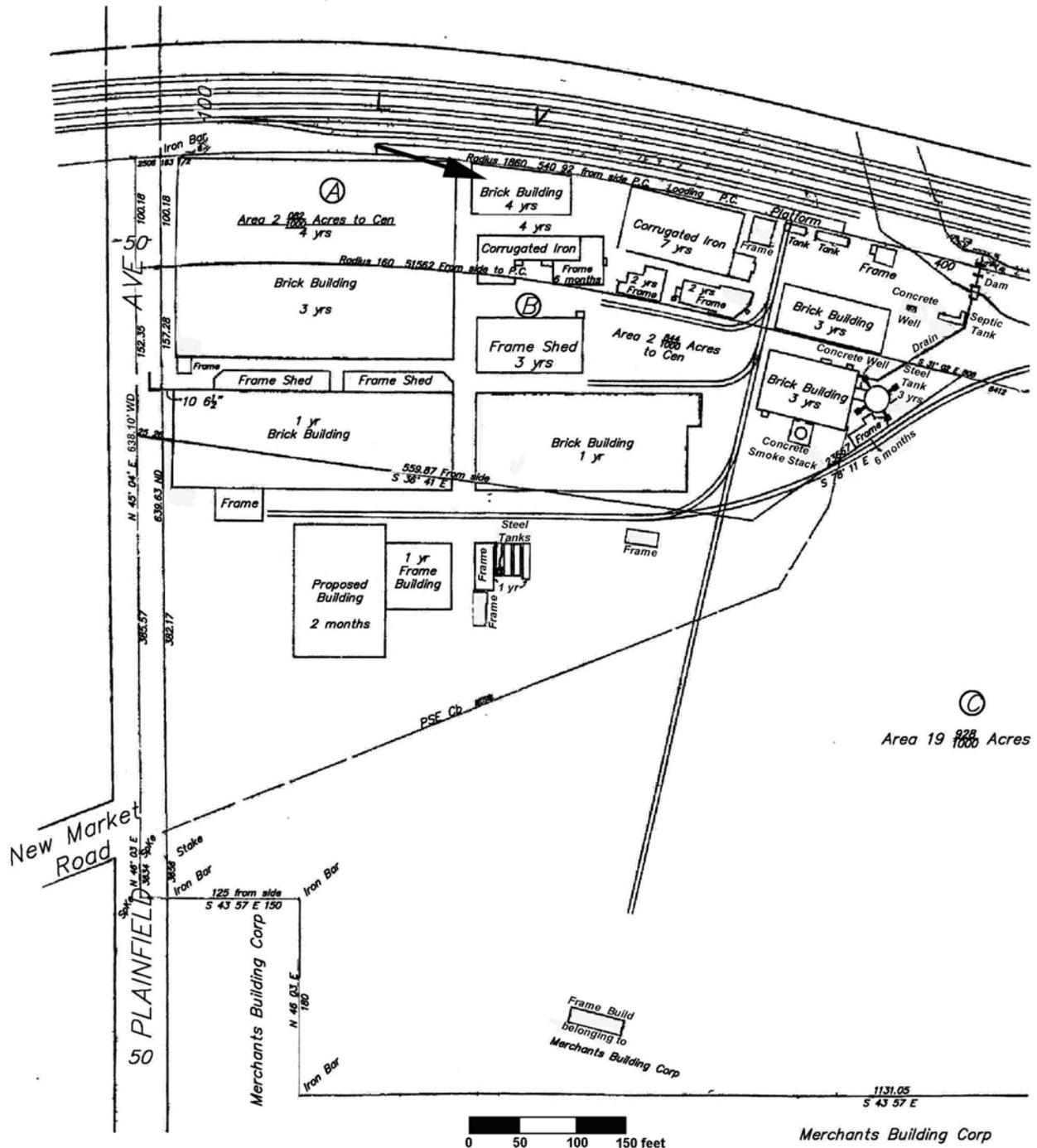


Figure 4. BUILDING 3 AND 1917 SOUTH PLAINFIELD WORKS

Source: Dunham-Clarín Company 1917, re-lettered

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**Figure 5. DETAIL TO SOUTH OF BUILDING 3 c1923**

source: Spicer Manufacturing Corporation 1923

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DEPARTMENT			BUILDING		
No.	Name	Area No.	Name	Area No.	Area
1	Office	11840	Administration	1	48600
2	Eng. & Drafting	37786	Machine Shop	2	29922
3	Stores		Receiving & Mlc.	3	7340
4	Dies	4120	Heat Treat & Sand	4	5300
5	Forge	10286	Blot Maintenance and	5	8870
6	Sleeves & Balls	8100	Stamping	6	19968
7	Flanges	14100	Forge	7	8640
8	Flanges	14100	Die Shop	8	4120
9	Shafts	5800	Power House	9	8000
10	Shafts		Shear Shed and	10	1425
11	Heat Treat	9600	Wash House		
12	Heat Treat	9600		12	
13	Inspection	700	Shipping	13	780
14	Finished & Semi-Finished	6810	Shipping and	14	13190
15	Storage	35072	Shipping	15	9025
16			Assembly & Prod	16	16920
17	Tool Room	980	Iron Shed	17	1700
18	Machine Repair	8310	Pump House	18	220
19	Power House	6850		19	
20	Power House	19270	Blacksmith Shop	20	1000
21	Stamping	1800	Feed. Tract.	21	1800
22	Service	1600	Oil House	22	5200
23	Plumbing	1020	Forge	23	1620
24	Plumbing	1925	Well Pump House	24	170
25	Electrical			25	
26	Guards	22	Storage & Garage	26	41600
27	Guards			27	
28	Well Pump		Water Softener	28	182
29	Well Pump		Water Softener	29	560
30	Millwrights	8150	Blag	30	
31	Blacksmith	1000		31	
32	Blacksmith			32	
33	Blacksmith			33	
34	Blacksmith			34	
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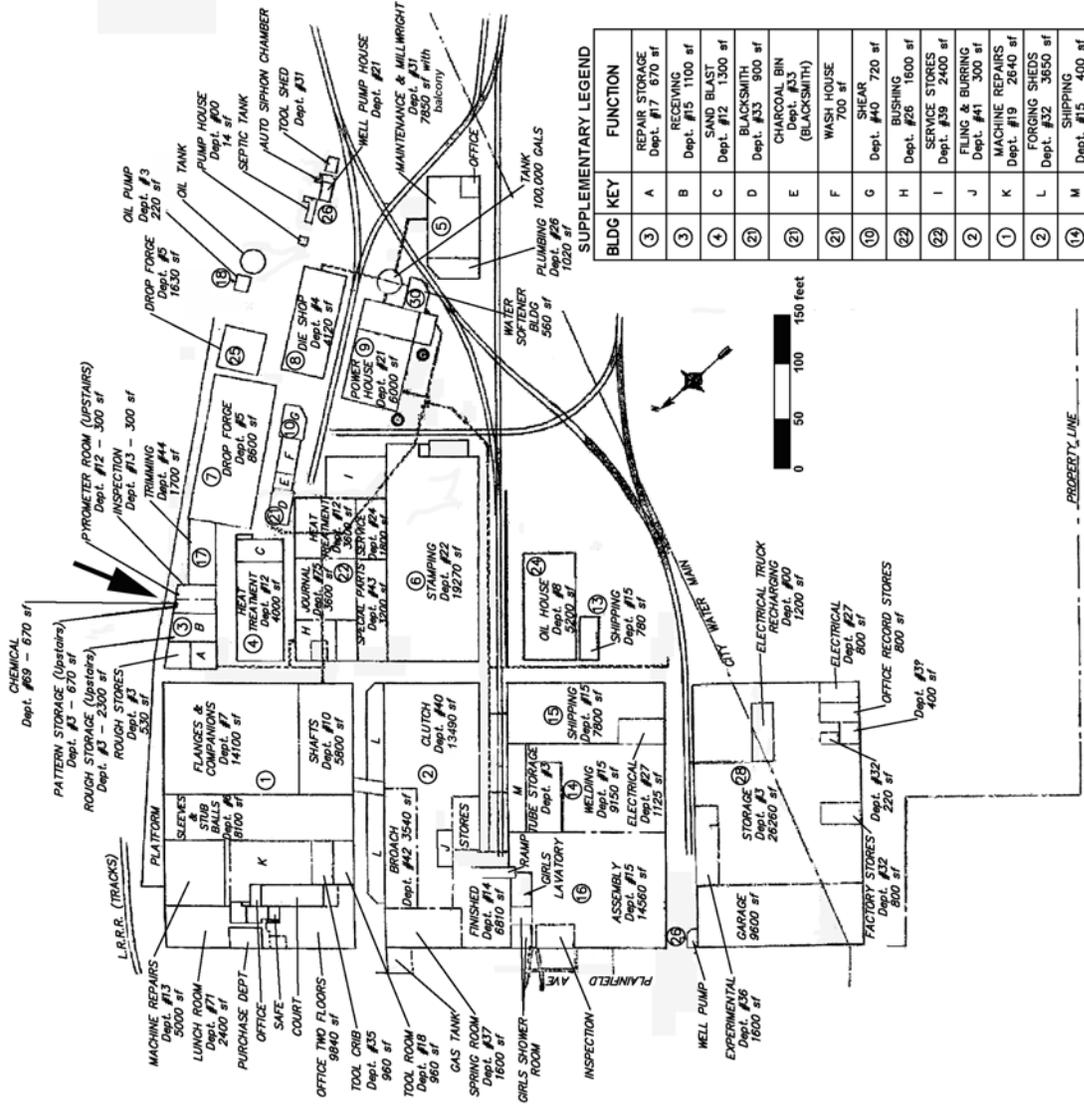


Figure 6. BUILDING 3 AND 1926 SOUTH PLAINFIELD WORKS  
Source: Spicer Manufacturing Corporation 1926, with re-lettering

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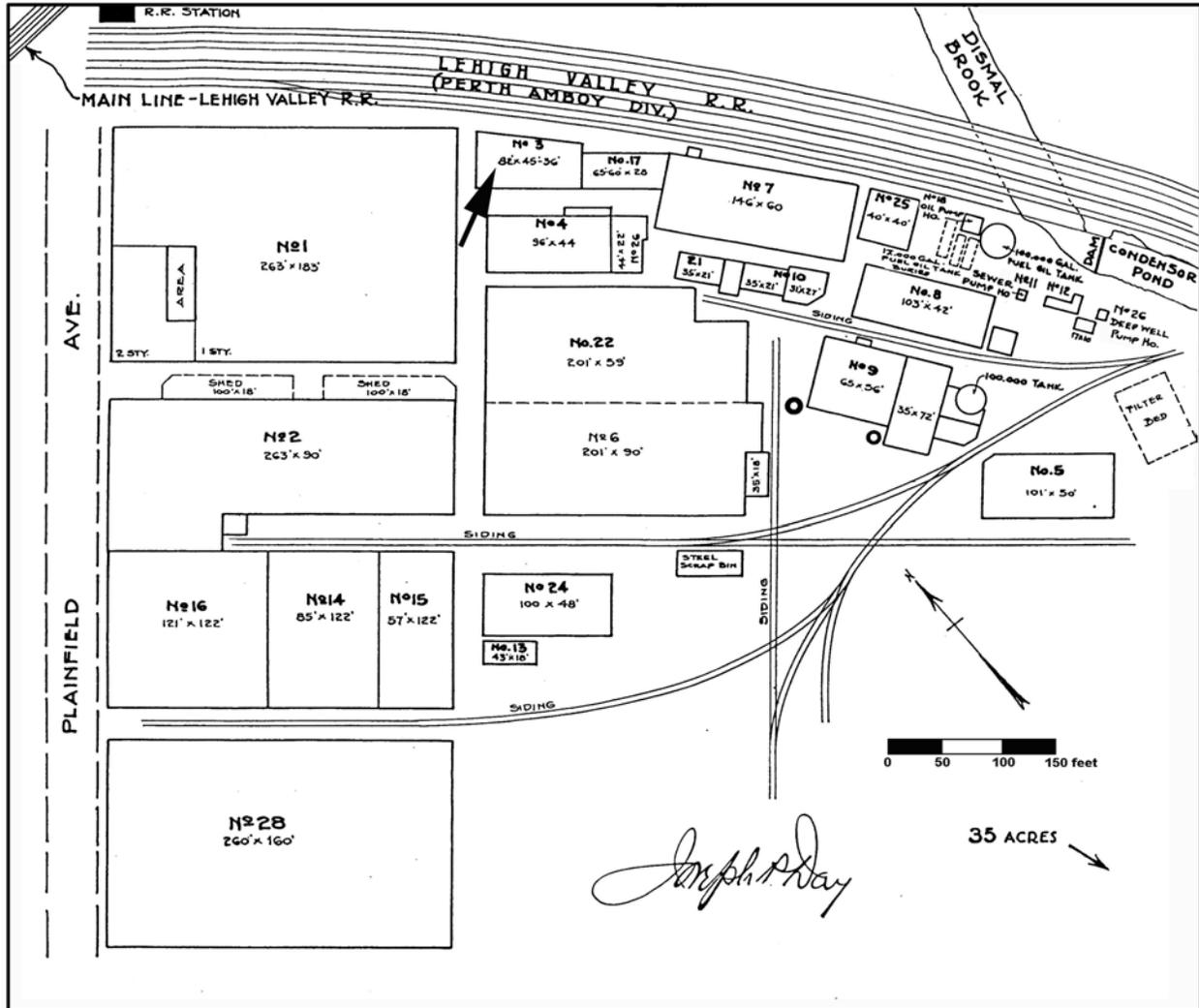


Figure 7. BUILDING 3 AND 1929 SOUTH PLAINFIELD WORKS

Source: Day 1929

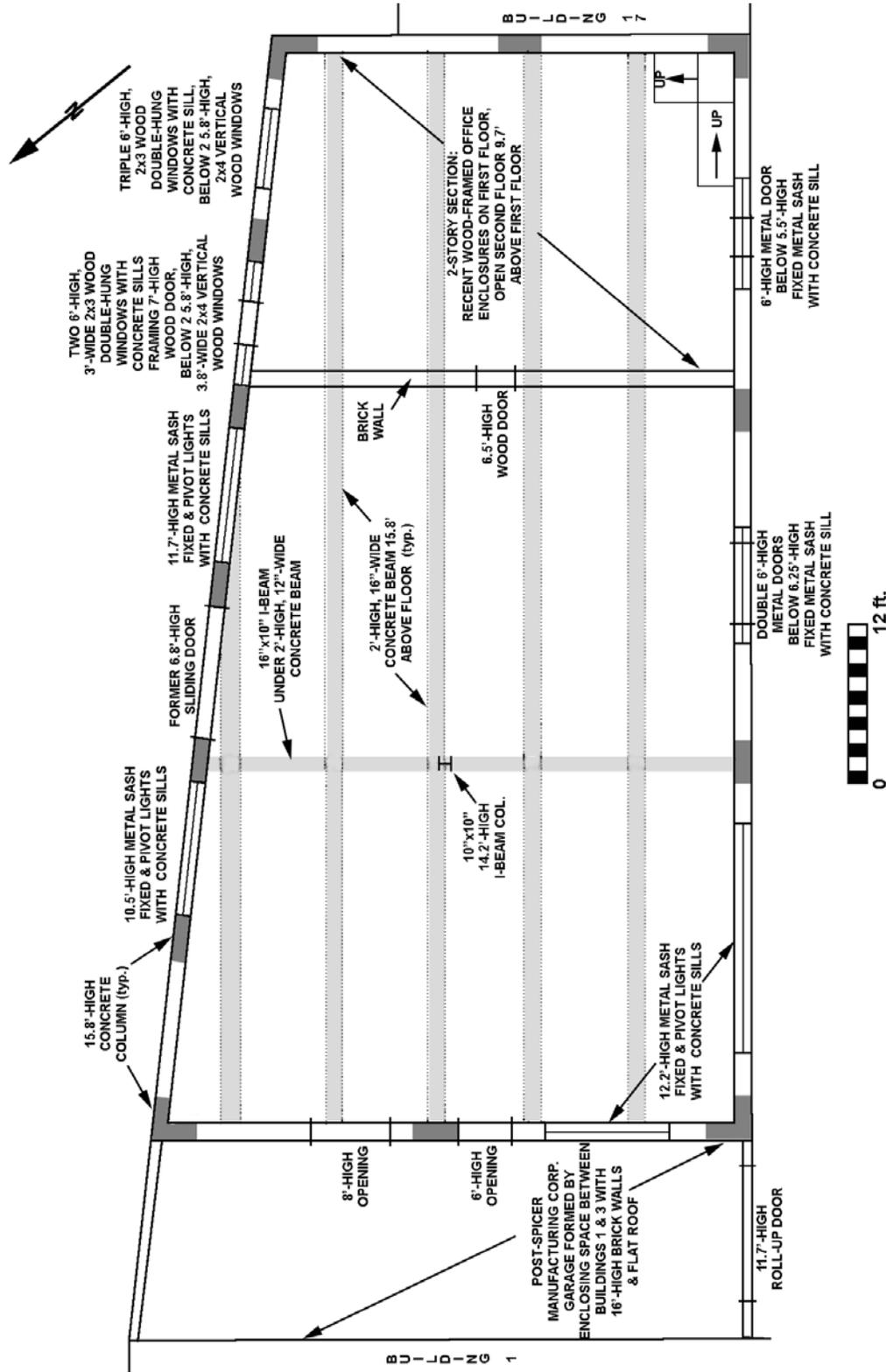


Figure 8. SKETCH PLAN