

SPICER MANUFACTURING COMPANY, SOUTH PLAINFIELD
WORKS, BUILDING 1
(Administration and Machine Shop Building)
333 Hamilton Avenue
South Plainfield
Middlesex County
New Jersey

HAER NJ-144-A
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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 1

(Spicer Manufacturing Company, South Plainfield Works, Administration and Machine Shop Building)

HAER No. NJ-144-A

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: c1910-1915

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. Building 1, which housed all administrative offices and the most extensive machining areas throughout South Plainfield Works history, was built in several phases. The building's function, and its location near the Lehigh Valley Railroad, gave it a visual prominence which the company enhanced with signage and simple architectural detailing.

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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The 182-by-263-foot complex known as Building 1 at the South Plainfield Works consisted of three contiguous, structurally-distinct brick buildings erected in three or four phases c1910-1915. Located at the junction of present Hamilton Boulevard and the Lehigh Valley Railroad, Building 1 was always the largest at the plant and included the company offices and lunch room as well as the main machine shop areas for finishing of universal joint components. A 1913 plan indicates, with some dimensional ambiguity, that the longitudinal north half of Building 1 was in place. Subsequent historical plans and images, and 2007 documentation work, confirm this structure was a 92.5-foot-wide steel-framed, one-story, sawtooth-roof factory building with thirteen 20-foot-wide transverse bays and three 30-foot-wide longitudinal interior bays. A cruder sketch map done in 1912 shows a building at this location, of unknown materials, indicated as being 92 by 220 feet. It is therefore possible that Clarence Spicer built most of the sawtooth-roofed structure on the 1913 plan when he first opened the plant in 1910, and added two transverse bays (more likely at the southeast end) c1910-1913. During the first period of extensive plant expansion beginning c1914, Spicer Manufacturing Company built the south longitudinal half of Building 1 in several stages. One historical view suggests the first stage included a flat-roofed brick office approximately 65 feet long fronting present Hamilton Boulevard and 38 feet wide, behind which two wood-framed structures ran back to the southeast end of the c1910-1913 sawtooth-roofed building. By 1915, the office was expanded to an 89.5-foot-wide, 62-foot-long complex including an courtyard described below, and fronted an 89.5-foot-wide, 201-foot-long, sawtooth-roofed factory virtually identical in design to the adjacent section to the northeast. Addition of the c1914-1915 factory space involved demolition of the earlier, smaller buildings behind the first office, and removal of most of the southeast wall of the earlier machine shop, probably with installation of the 7.5-inch-thick concrete block wall seen in 2007, similar to the sequence seen in Buildings 6 and 22 as discussed in HAER No. NJ-144-F (Figures 1-9; Ryno 1912; Spicer Manufacturing Company 1913, 1915; Spicer Manufacturing Corporation 1920, 1923, 1926; Day 1929; Boesch 2006: 5-3; Photograph HAER No. NJ-144-1).

The 16-inch-thick brick exterior walls, on concrete foundations up to 3.5 feet high, enclosed factory spaces which were structurally identical on both longitudinal sides of Building 1. The wood-roofed, northeast-facing sawtooth monitors had 25.4-foot exterior peaks with ceramic-pipe-topped parapets on the northeast, southeast, and southwest walls which were approximately 16.5 feet high at lowest points. Interior framing along transverse roof truss lines between 3-foot-wide brick pilasters on the exterior walls included 12.9-foot-high, 6-by-7-inch columns of paired steel channels with riveted plate fasteners, 3-by-4- and 3-by-5-inch steel angle top and bottom chords, respectively, and 2-by-3-inch steel angle braces. Longitudinal bracing of paired 2-by-8-inch steel channels ran between columns and divided each bottom chord into thirds. Monitor framing supported purlins of 8-by-12-inch timber and, above the columns, 9-inch-high I-beams. Monitor lights consisted of movable steel sash set above 3-foot-long timber boards. In the southwest-most corner of the factory spaces, most of the monitor area in two transverse bays were enclosed with wood-framed, wood-sided walls, and a wood floor supported by two additional columns. This enclosure served as an undocumented attic accessible from the adjacent second floor of the office, as described below (Figures 8-9; Photographs HAER Nos. NJ-144-A-6 through NJ-144-A-9).

Typical original ground-level fenestration consisted of approximately 13-to-17-foot-wide, 9.7-to-10.3-foot-high concrete-sill windows with fixed and tilting steel sash, including slightly smaller versions around the courtyard next to the office complex. Most windows were infilled, covered with vertical-sided plywood, or converted to garage-type doors after 1930. Immediately above the windows, the exterior of the older, northeastern half of Building 1 had a variety of simple, faintly-classicized decorative brick features, and a large sign, reflecting the structure's visual prominence near the railroad. Aside from the northwest wall of

the office complex, these were virtually the only examples of architectural ornament at the South Plainfield Works as it survived in 2006-2007. The unidentified builder or architect of the decorated parts of Building 1 defined a 3-foot-high frieze-like brick band on the southeast wall, with a raised two-brick-high belt course at the bottom, a one-brick raised belt course in the middle, and a five-brick-high corbelled cornice above topped with the ceramic wall top. This same arrangement was replicated at the same elevations on the northwest wall, along present Hamilton Boulevard, with additional elements above the cornice to create a concrete-topped parapet 24.5 feet above the ground which completely masked the sawtooth monitors behind. The parapet had a second, 6.2-foot-high frieze-like band above the lower cornice, decorated with six 2.3-foot high rectangular medallions defined by raised brick headers and small concrete squares, each 12.8 feet wide above corresponding window or door openings. Above this second frieze element, a brick cornice defined by a raised header row and a five-brick-high corbelled projection ended at the concrete parapet top. The parapet was carried around the north-most bay of the northeast wall, and presumably had a corresponding return at the original southwest corner of the c1910-1913 building. Above the concrete parapet top, there were six 2-foot-high, 5-foot-wide rectangular brick-and-concrete pediment-like projections, which appear to have been placed to hide further the sawtooth monitor peaks from public view. Two more of these projections were placed on the parapet return section noted above. When the two-story office complex was built c1914, the northwest facade was given a simpler version of the same parapet treatment, without the medallions or the uppermost pediment-like projections (Figures 3, 5; Photographs HAER No. NJ-144-1; HAER Nos. NJ-144-A-1 through NJ-144-A-5).

On the northeast side of Building 1, there was no decorative frieze or cornice brick embellishment. Instead, the upper 2.7 feet of the wall was a flat brick surface on which painted letters had proclaimed SPICER MFG CO. SOUTH PLAINFIELD, N.J. UNIVERSAL JOINTS until the change in corporate name in 1917. Shortly thereafter, the sign was re-painted to read SPICER MFG CORP. SOUTH PLAINFIELD, N.J. UNIVERSAL JOINTS & PROPELLER SHAFTS (Figures)

In the original factory spaces, there were no signs during 2006-2007 documentation of pre-1930 interior spaces for the lunchroom, machine repair, or machine operations including finishing of solid or tubular shafts and universal joint sleeves, stub balls, flanges, and companions. There were no original exterior doors on the northwest side of the factory space. Two garage-type door openings, one each on the northeast and southwest walls, were probably original; the door on the northeast side may have served a rail siding, although little raw material probably entered Building 1. There were four large door openings on the southeast side, all of which may have originated as c1910-1915 features. Aside from the exterior modifications, Building 1 factor spaces remained structurally intact in 2007 with the addition of some interior office and bathroom space, two transverse concrete-block walls, and a large garage entry at the north corner. By the mid-1920s, many of the industrial departments responsible for these components or machine repairs worked on both sides of the longitudinal party wall between the sawtooth-roofed building sections, suggesting that two large openings in that wall were original to c1914-1915 construction. Most factory floor areas were concrete, but several areas with wood-block flooring probably reflect original construction designed to allow for machine movement without floor damage. The Toledo plant which replaced the South Plainfield Works was extensively floored in this way to maximize production flexibility (Figures 8-9; Spicer Manufacturing Corporation 1926; Kouwenhoven 1962: Chapter 9; Photographs HAER Nos. NJ-144-A-1 through NJ-144-A-9).

As completed c1915, the two-story office block included an ell-shaped array of interior spaces, and a 20-by-59-foot courtyard in the northeast corner of the block accessed by a man-door under a brick segmental arch at the southwest end of the open space. The courtyard provided light to the southeast side of the office block, and may also have served as an amenity accessible to workers and managers, perhaps reflecting Clarence Spicer's paternalistic approach to labor relations. The original ground-floor entry opening to the offices, at the north corner of the complex, survived in 2007. Most office walls were brick, although 2007 inspections suggested there may have been some small wood-framed wall sections. First-floor windows, including one interior window looking into the courtyard, were of the type and size described above. The 6-foot-high second-floor windows on the northwest wall were similar in type, and arrayed directly above, those on the first level. Along the second-floor southwest wall, there were three quadruple arrays of a narrow, 5-foot-high, wood-framed double-hung windows by c1915, one of which appears to have been replaced at an unknown time by a 42-inch-wide, 7-foot-high double wood door which opened under a 3-by-6-inch I-beam hoist bolted to the ceiling. There were also at least four pairs of similar windows looking into the courtyard. An exterior metal stair on this side provided access to the second floor, as did a wood stair near the northeast end of the ground floor. The interior stair ran next to a two-story, 14-foot-square brick safe. The ground floor, with 12.4-foot-high brick and wood columns supporting the flooring above, had a decorative tin ceiling, and was open space in 2007. Most of the second floor had an 8-foot-high ceiling supported by brick walls, wood columns finished with vertical siding, and wooden office partition walls along the northwest side finished with similar horizontal siding. The small part of the ell on the second floor had ceilings 8.9 to 9.5 feet high, with a shed roof sloping down towards the northeast. A narrow door led from the ell to the attic space created by enclosing part of a sawtooth-roof section immediately southeast, for undocumented purposes (Figures 3, 5, 8-9; Spicer Manufacturing Corporation 1926; Photographs HAER Nos. NJ-144-A-10 through NJ-144-A-12).

SOURCES OF INFORMATION/BIBLIOGRAPHY

A. Historical Photographs

One photograph (No. 0530) in the collections of The History Center, South Plainfield Historical Society, South Plainfield, New Jersey, is a c1914 panorama of Building 1 showing the office block as originally built. Several other photographs in the collections of The History Factory, Chantilly, Virginia show office interiors. Many photographs in the latter collection show machining operations, but in some cases it is not clear if they represent work at the South Plainfield Works. One photograph in a company publication does show operations and equipment in Building 1 (Spicer Manufacturing Corporation n.d.: 7).

B. Bibliography

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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).

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1912. Sketch Map of the Spicer Facility at South Plainfield. In Farm Accounts Book of Lewis Ryno for the years 1882 – Post 1912. Original in the Special Collections of Rutgers University, Alexander Library, New Brunswick, NJ.

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

- n.d. Spicer Propeller Shafts for Motor Cars. Original in the collections of The History Factory, Chantilly, Virginia. Archive Number 5-3-0-1-6 (401).
- 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).

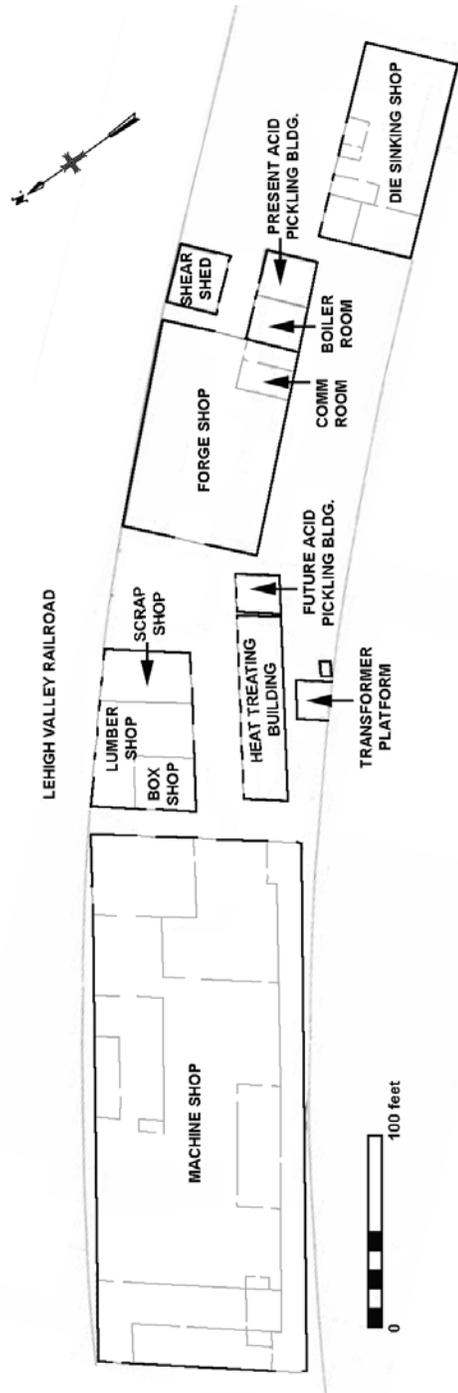


Figure 7. SOUTH PLAINFIELD WORKS IN 1913
Source: redrawn from Spicer Manufacturing Company 1913

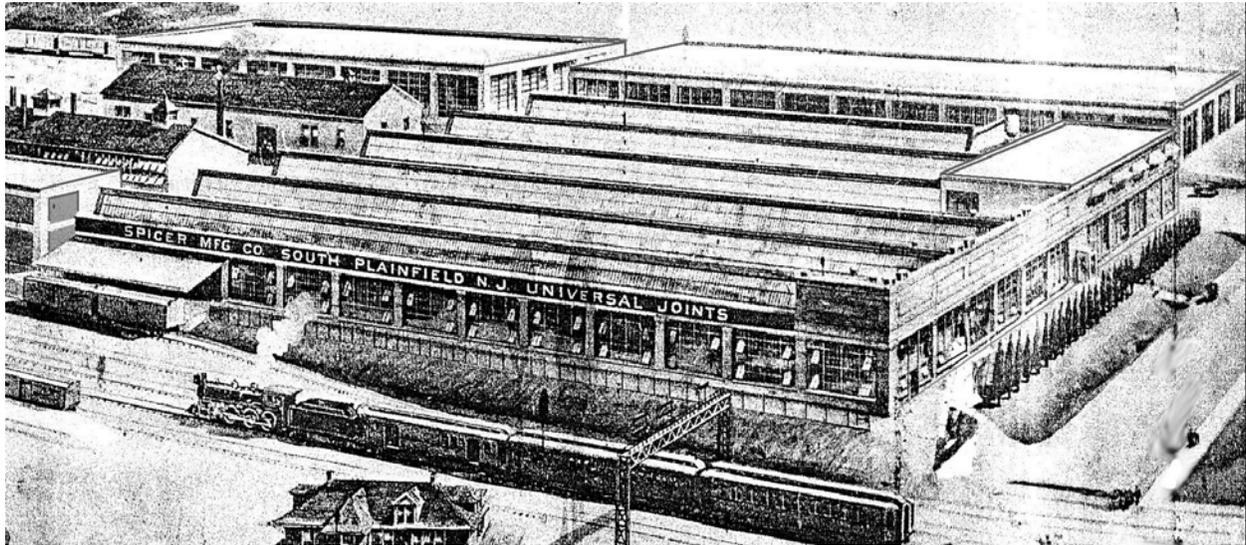


Figure 3. DETAIL TO SOUTH OF BUILDING 1 c1915
Source: Spicer Manufacturing Company 1915

Building 1 is shown in the foreground, with six sawtooth roof sections; the office complex is at upper right on Building 1, adjacent to the factory roofs.

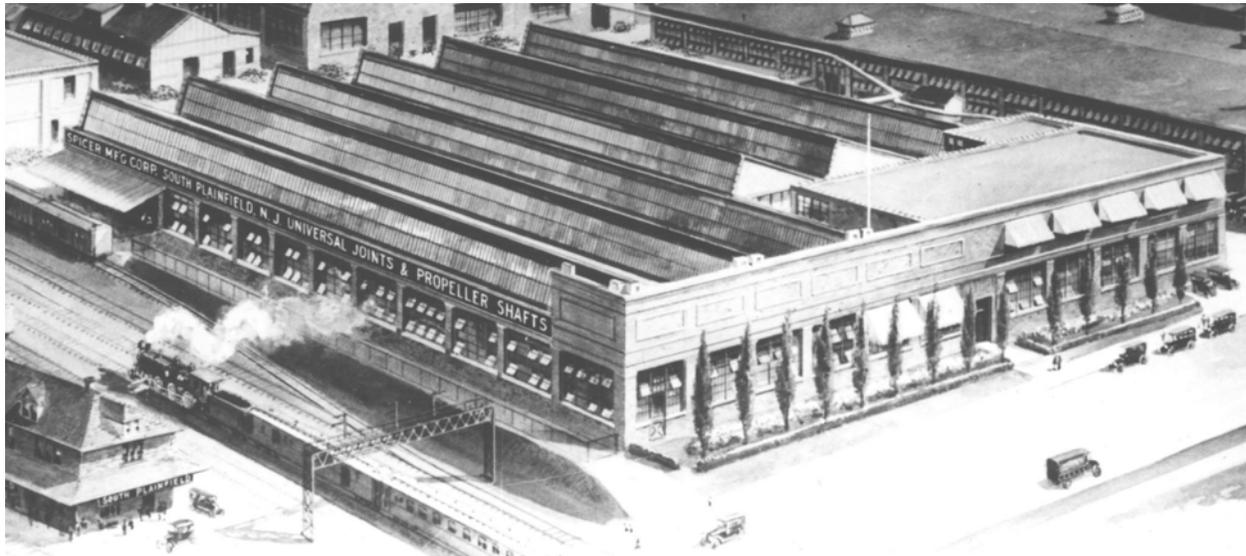


Figure 5. BUILDING 1 AT 1923 SOUTH PLAINFIELD WORKS
Source: Spicer Manufacturing Corporation 1923

In this south-facing view, Building 1 is in foreground, with large painted sign on northeast facade; office block is at right.

DEPARTMENT				BUILDING			
No.	Name	Area	No.	Name	Area	No.	Area
1	Office	11640	1	Administration	49800		
2	Eng. & Drafting	37760	2	Machine Shop	25922		
3	Stores		3	Receiving & Misc.	7340		
4	Die	4120	4	Hest Treat & Sand Blast	5300		
5	Forge	10260	5	Maintenance and Millwright	8870		
6	Sleeves & Balls	8100	6	Stamping	19868		
7	Flanges	14100	7	Forge	8640		
8	Die Shop	14100	8	Forge	8640		
9	Die Shop	14100	9	Forge	8640		
10	Shafts	5800	10	Steel Shed and Wash House	1425		
11	Hest Treat	9600	12	Shipping	780		
13	Inspection	700	13	Shipping and Storage	13190		
14	Finished & Semi-Finished	6810	14	Shipping and Storage	13190		
15	Assembly, Welding, & Shipping	35072	15	Shipping	9025		
16	Tool Room	960	16	Assembly & Prod	16920		
17	Machine Repair	8310	17	Prod Shed	1700		
18	Power House	6850	18	Pump House	220		
19	Stamping	19270	19	Blacksmith Shop	1000		
20	Service	1800	20	Machine Shop & Heat Treat	18800		
21	Plumbing	1020	21	Oil House	5200		
22	Electrical	1925	22	Well Pump House	170		
23	Guards	22	23	Storage & Garage	41600		
24	Repair Storage	670	24	Well Pump & Guard House	182		
25	Receiving	8150	25	Water Softener	560		
26	Sand Blast	1300	26	Blug			
27	Blacksmith	1000					
28	Tool Crb	1360					
29	Blacksmith	1600					
30	Spring	1600					
31	Service Stores	2400					
32	Clutch	13490					
33	Filing and Burring	300					
34	Brush House	3540					
35	Shear Parts	3200					
36	Shear & Trim	2425					
37	Chemical	670					
38	Hospital	550					
39	Restaurant	2400					
40	Journal	3600					
41	Laboratories-General	1800					
42	Garage	9600					
43	Elect. Truck Charging	1200					
44	Total	250002					

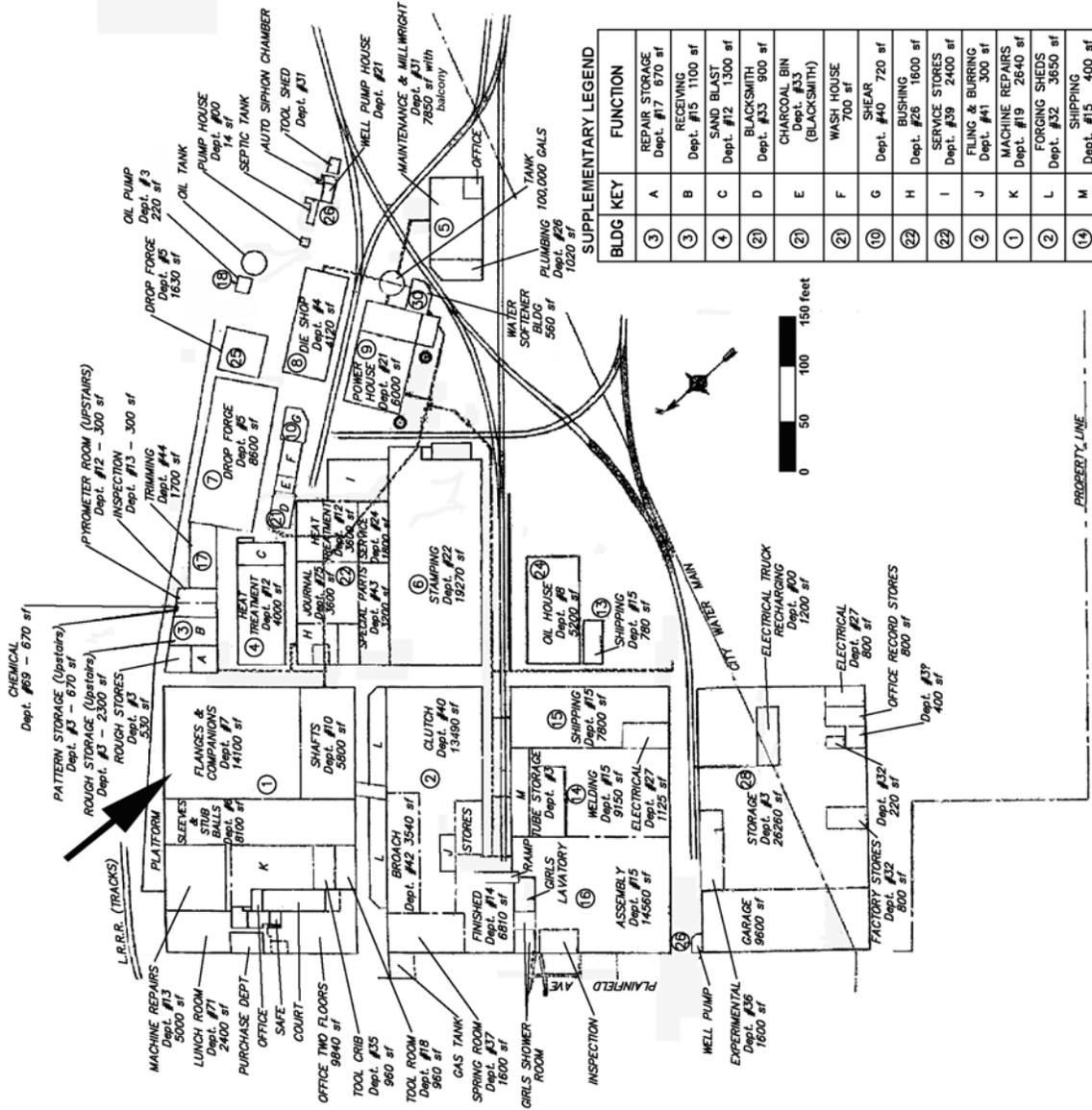


Figure 6. BUILDING 1 AND 1926 SOUTH PLAINFIELD WORKS
 Source: Spicer Manufacturing Corporation 1926, with re-lettering

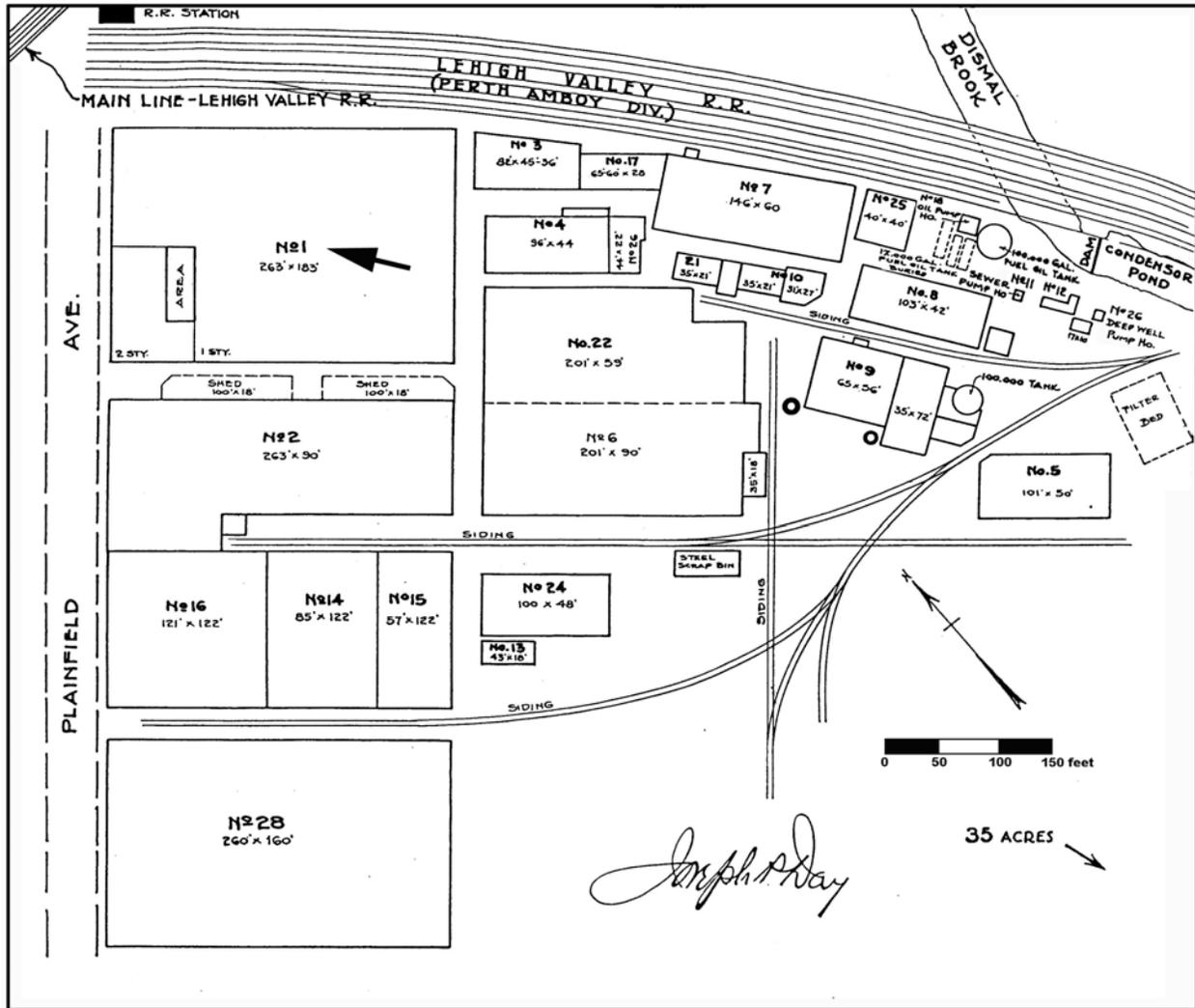


Figure 7. BUILDINGS 6 AND 22 AT 1929 SOUTH PLAINFIELD WORKS

Source: Day 1929

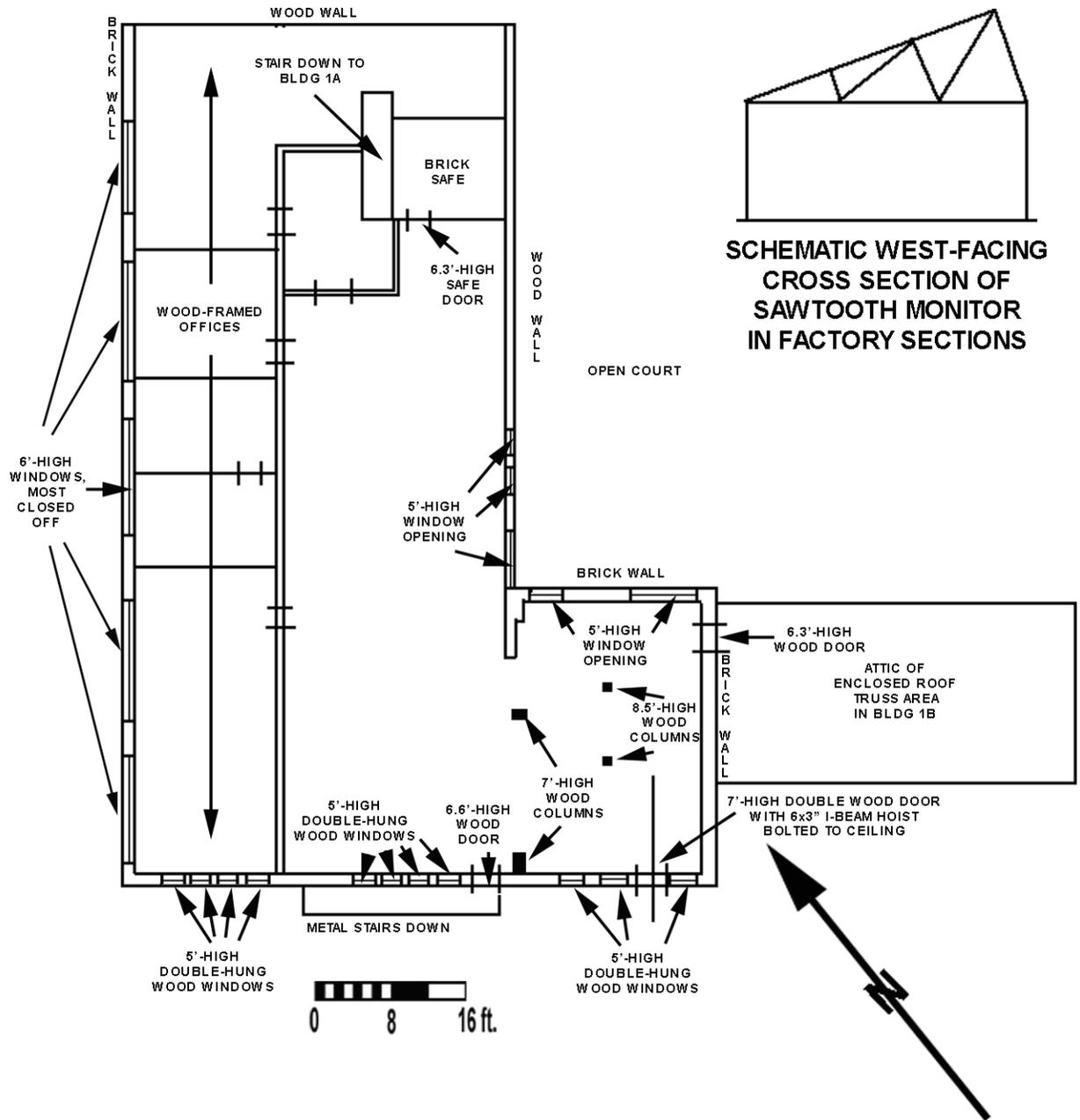


Figure 9. SKETCH PLANS OF 2007 SECOND FLOOR CONDITIONS, AND MONITOR ROOF CROSS SECTION