NPS Form 10-900
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United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

For NPS use only

received

date entered

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

1. Name

historic: General Electric Switchgear Plant

and or common: N/A

2. Location

street & number: 7th and Willow Streets — ___ not for publication: N/A

city, town: Philadelphia — ___ vicinity of: N/A

state: Pennsylvania code: 042 county: Philadelphia code: 101

3. Classification

Category	Ownership	Status	Present Use	
___ district	___ public	___ occupied	___ agriculture	___ museum
_x_ building(s)	_x_ private	_x_ unoccupied	_x_ commercial	___ park
___ structure	___ both	___ work in progress	___ educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	N/A in process	_x_ yes: restricted	___ government	___ scientific
	N/A being considered	___ yes: unrestricted	___ industrial	___ transportation
		___ no	___ military	___ other:

4. Owner of Property

name: Willow Street Partnership c/o David Dickstein

street & number: 3200 Summer Street

city, town: Philadelphia — N/A vicinity of — state: Pennsylvania

5. Location of Legal Description

courthouse, registry of deeds, etc.: Philadelphia City Hall / Register of Deeds

street & number: Broad and Market Streets

city, town: Philadelphia state: Pennsylvania

6. Representation in Existing Surveys

title: N/A has this property been determined eligible? ___ yes _X_ no

date: N/A ___ federal ___ state ___ county ___ local

depository for survey records: N/A

city, town: N/A state: N/A

7. Description

Condition		Check one	Check one
_x_ excellent	___ deteriorated	_x_ unaltered	_x_ original site
___ good	___ ruins	___ altered	___ moved date N/A
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

In the nineteenth century, ribbons of steel replaced the rivers as the prime location for industry in great American cities. By the end of the century the Philadelphia and Reading Railroad tracks along Philadelphia's Willow Street, were lined with large factories, breweries, and warehouses marking the southern border of the zone of heavy industry that gave Philadelphia its nickname of America's Manchester. Most of those buildings that appear on the 1910 atlas have been demolished, but the early 20th century General Electric Switch Gear plant still looms above the now desolate landscape. The plant is an impressive example of its building type, a seven story factory, whose cubic quality is emphasized by the expression of its concrete frame that marks on the exterior its seven bays from east to west, and nine bays from south to north, but also describes the various plan features as well.

The principal facade faces 7th Street, and is denoted at the north end by a geometrical version of a classical tripartite doorway, crowned by a massively overscaled fragment of cornice carried on immense brackets. It is of glazed, cream terra-cotta that relates to the tonalities of the concrete, but with a finished quality appropriate to its more public function. Immediatly within is the principal stair hall, accented with the GE logo in the floor mosaic, and containing a nicely scaled metal stair.

The west facade is subdivided, more or less, into sevenths by regularly spaced concrete piers that establish the plane of the wall. An attic story above the shallow cornice, repeats the fenestration of the lower six levels - but with concrete mullions, instead of metal, creating an appropriately massive top. Each floor is marked by the projection of the concrete slab to the exterior - but it is slightly recessed from the plane of the pier, creating an expression of verticality of the column while also acknowledging the structural reality of the frame. In each typical bay a spandrel panel of dark brick is capped by a terra cotta sill. In each bay, three steel industrial sash of 40 lights, separated by iron mullions and ventillated by tilt sash provide the maximum light and air to the plant. Within the overall system, there is considerable variation. The stair tower bays at the north end are subdivided by brick piers separating double hung sash in the narrow, broad, narrow pattern of the doorway, and continues through the attic to a small pediment at the roof marking the entrance below. The south west bays are subdivided by a central pier that separates the enclosed and open portions of a then innovative smoke tower. Around the corner, on the south facade, the stair is made evident by an infill panel of brick that fills each bay to the attic. These panels are given architectural interest by a frame of soldier course brick with square tiles at the corners - a motif that would become a hall mark of the Steele Co. style.

8. Significance

Period	Areas of Significance—Check and justify below			
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	___ religion
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture
___ 1600–1699	_x_ architecture	___ education	___ military	___ social/ humanitarian
___ 1700–1799	___ art	___ engineering	___ music	___ theater
___ 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	___ transportation
_x_ 1900–	___ communications	_x_ industry	___ politics/government	___ other (specify)
		___ invention		

Specific dates 1916;1917;1921 **Builder/Architect** William Steele and Co.

Statement of Significance (in one paragraph)

The General Electric Switch Gear Plant at Seventh and Willow Streets is Philadelphia's best preserved monument to one of the great American industrial empires. At the end of the 19th century General Electric had been formed from a combination of electric manufacturers in New Jersey, near Thomas Edison's lab, in New York, in Cleveland, and in Philadelphia which became the center of switch gear manufacturing for the giant company. If the company is important in the development of the regional economy, and the electrification of American industry, the building is impressive in its own right, forming an early example of the modern factory, by the William Steele Company, a firm which deserves to be known as the Albert Kahn of the east. It was the William Steele Company that developed the architectural vocabulary of the expressed concrete frame, infilled with masonry panels, that become the typical expression of the multi-level manufacturing plant in this region. A sound case can be made, that it was this industrial vocabulary that served as a starting point for the modern, so called "Philadelphia School" centered on the work of Louis Kahn.

The history of General Electric Company is ably documented in Bernard Gorowitz, ed. A Century of Progress, The General Electric Story, (Schenectady, 1981). It recounts the merging in 1892 of the business founded by Thomas A. Edison of Menlo Park, with one formed by Philadelphians Elihu Thomson and Edwin Houston to create the General Electric Company. Because the company was formed of several independant firms, each with its own special products, General Electric was from its inception decentralized in production, but centralized in administration. Philadelphia, because of its national transportation network became an important hub of manufacturing, with the switch gear plant at the center of early 20th century development. In those years, General Electric was concentrating on the transmission of electric power from generators, produced by the company, through transmission lines - produced by the company, to electric engines, - produced by the company which in turn shifted manufacturing from its dependence on steam plants, and belt drives, to the decentralized electric motor run work station. Developments in switch gear design made that transformation possible. Switches controlled power transmission, interrupted power to prevent power surges from damaging transformers and principally regulated the flow of current in such a way as to make it a reliable, economic power source.

By 1916, the manufacture of switch board equipment was sufficiently important to warrant the creation of a separate plant. It was erected in Philadelphia, at 7th and Willow Streets in the new building, by William Steele and Sons. There "metal clad" switch gear was developed that made possible

(Continued)

9. Major Bibliographical References

See Continuation Sheets.

10. Geographical Data

Acreage of nominated property 3/4 acre

Quadrangle name Philadelphia Quad

Quadrangle scale 1:24,000

UTM References

	Zone	Easting	Northing
A	18	487170	4422960
B			
C			
D			
E			
F			
G			
H			

Verbal boundary description and justification

See Continuation Sheet

List all states and counties for properties overlapping state or county boundaries

state	N/A	code	N/A	county	N/A code N/A
state	N/A	code	N/A	county	N/A code N/A

11. Form Prepared By

name/title George E. Thomas, Ph.D.

organization Clio Group, Inc. date June 24, 1985

street & number 3961 Baltimore Avenue telephone (215) 386 - 6276

city or town Philadelphia state Pennsylvania

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

___ national ___ state X local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature

title Dr. Larry E. Tise, State Historic Preservation Officer date

For NPS use only

I hereby certify that this property is included in the National Register

date

Keeper of the National Register

date

Attest:

Chief of Registration

GPO PRINTING OFFICE : 1983 O - 419-311

The south facade articulation continues in the pattern established on the west wall with the large industrial sash above brick wall panels forming the typical treatment. Interestingly, the longer bay of the stair well makes it clear that the structural grid is not the absolute regulator that modern designers would use. Instead, some variation occurs on each facade, representing the various functions within.

In the fourth bay of the south wall another brick infill panels denotes the position of a freight elevator, which facilitated movement of materials to and from the railroad siding through regularly spaced freight doors in the third, fifth, and eighth bays. Similar doors on 7th street provide highway access, and demonstrate the logic of the siting of the building. A tall smoke stack, at the corner, put the power plant near the rail line, where coal deliveries could be made.

The east facade is shorter being only four bays wide, the last of which is another stair tower. The building then recedes west five bays, and then returns three bays to the north. At the reentrant angle is a massive plumbing - servicetower, capped by a water tank of the sprinkler system, on the roof, recalling the "served-servant" concept of Louis Kahn's Richards Medical Laboratories two genertions later. Infilling the corner space is a ruggedly developed brick clad saw tooth roofed machine shop. Fully two stories in height, with the saw toothed clerestory roof facing north, it is an impressive industrial space that adds considerably to the character of the site.

The interior is as powerful and direct as the exterior. With the exception of the small entrance hall with its floor mosaic and metal stair, the remainder is given over to a vast grid of regularly spaced "mushroom" columns which vaguely recall the proportion and mass of the primitive Doric order of Paestum. The seams of the metal formwork that enabled the builders to economically produce such complex forms can still readily be seen, as can the shapes of the wide boards used to support the floors during their pouring. The result is a massive, architecturally descriptive space that documents the attraction that progressive architects found for industrial design. The stair towers are equally powerful, with poured in place stairs and landings, hung within the concrete space frame of the stairtower. Pipe railings and balustrades complete the industrial vocabulary. The attic story, added five years later, shifted to a terra cotta clad fireproof steel system, to carry a saw tooth skylight.

The building is in remarkably good condition, and retains the vast majority of its original features, giving it an unusually high degree of integrity for a factory.

outdoor switching stations and on a regular basis made products that were described as being the "largest", or later the "smallest" of their kind. By the late 1920s, the switchgear plant had become one of the company's largest divisions, and with the construction of the adjacent machine press room, was capable of stamping metal, and covers, forming an integrated manufacturing factory.

The developments in switch gear in Philadelphia took place in a building that was as modern as its corporate owner. Built and designed by the William Steele Company, the plant was of the most modern reinforced concrete flat plate construction. Mushroom columns carry slab floors without the usual beams, modelled on C.A.P. Turner's 1910 patent system, give the building its principal architectural character. By bringing that system to the exterior, the construction of the frame was made absolutely apparent, and emphasized with the logic of modernism, construction process and functions. Clearly, it was in buildings of this sort that the roots of International Modernism should by found. And, it was the Steele Company in the east coast that systematized the construction in a manner analogous to the better known Albert Kahn in the midwest. An account of the Steele family makes their contribution apparent.

> "Steele brought Swedish Engineer Lundiulius to America. He was an expert in the technique of flat plate concrete.... A system of design-build-equip for a flat 10% fee emerged. The basic reinforced concrete frame was erected on standardized modules and concrete `flowed' into standard metal forms."

It is that system, maturing about 1915 or 16, that is in evidence in the General Electric Switch Gear plant and represented what the firm advertised as "The Steele Idea of Building construction, specialists in buildings of all description". The firm is of considerable importance in the Philadelphia region, both for heavy industrial plants and imposing architectural landmarks - many of which have been destroyed; including Shibe Park (later Connie Mack Stadium), the North American Lace Company at Seventh and Allegheny, and the Reading Terminal Commerce Building (surviving) at Broad and Callowhill.

This design uses their patent system -- in a way that illustrates the firm's design logic. The L-shaped plan provided maximum light and air, using the poured flat plate system that could be extended in any direction. Reserved from the corners, and expressed on the surface by brick infill panels, were vertical articulations, while at the rear, at the reentrant angle of the two wings were the major mechanical systems, steam risers, and toilets in a separate "servant" tower. The expression of each of these functions on the exterior, within the rationalized frame, remained a standard of Philadelphia design -- directly influencing such later architects, such as Kahn, Giurgola and Geddes, who looked to American industrial design as a model for rethinking modern architecture in the 1990s. The "served-servant" concept of Kahn's 1950s buildings is clearly anticipated here and gives Steele's buildings a significant place in the history of regional architecture.

The firm was organized in the 1880s as a contracting business, headed by William Steele (1841-1908) a Scottish carpenter. In the 1890s the scale of the business had been enlarged to the point that they were builders of Joseph Huston's Witherspoon Building, and by 1905 it included design capacities with the arrival of architect Thomas Jamison and William Lotz and engineers Charle Cramp and the aforementioned Lundiulius. By 1908, they were architects and builders pioneering the design-build method in Philadelphia. An international practice ensued, with buildings in Canada, and across the United States attesting to their reputation. In 1929, it was among the largest companies of its type in the country, operating out of their own building at 15th and Arch. The Depression ended the era of big firms; the Steele Company folded in 1935.

The General Electric plant is an important survivor from the era when Philadelphia was the manufacturing heart of the nation. This preserves the scale and the nature of work, in the early 20th century. But, it is also a design of considerable architectural interest, by a major industrial architect. With its bold expression of function and construction, and its absence of ornament, it heralded modern architecture. As such, the General Electric Switch Gear Plant deserves to be placed on the National Register of Historic Places.

Bernard Gorowitz, ed. A Century of Progress, The General Electric Story, Schenectady, New York, 1981.

Philadelphia Building Permit, 1916-3401.

Philadelphia Real Estate Record and Builder's Guide. Volume 31:24, 14 June 1916; Volume 36:26, 29 June 1921; Volume 44:9, 22 February 1929.

Carl Condit, American Building Art, Vol. II, The Twentieth Century, New York, 1960 - 61. pp. 166-170.

Peter Collins, Concrete: Vision of a New Age, New York, 1959.

G.W. Bromley, Atlas of the City of Philadelphia, In One Volume, 1910.

Boundary Description and Justification:

The site at the northwest corner of Seventh and Willow streets, extending east 175 feet 3 inches to Marshall Street, then north along Marshall Street 190 feet then west 175 feet 4 inches to Seventh Street, then south, 190 feet to the point of origin being the site of the building.

GENERAL ELECTRIC SWITCHGEAR
PLANT
Philadelphia County
Philadelphia Quadrangle
Zone 18
E487170 N4422960