

6/12/03

**United States Department of the Interior
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 instruction. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter or computer, to complete all items.

1. Name of Property

historic name: Western Union Telegraph Company Tenley Site
other names/site number: Tenley Site Tenley Tower

2. Location

street and number: 4623 41st Street NW N/A not for publication
city or town: Washington N/A vicinity
state: District of Columbia county: District of Columbia zip code: 200161831

3. State/Federal/Tribal Agency Certification

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

Signature of certifying official/Title Date

State or Federal agency or Tribal Government

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 or Tribal Government

4. National Park Service Certification

I hereby certify that the property is:	Signature of the Keeper	Date of Action
<input type="checkbox"/> entered in the National Register. <input type="checkbox"/> See continuation sheet.	_____	_____
<input type="checkbox"/> determined eligible for the National Register. <input type="checkbox"/> See continuation sheet.	_____	_____
<input type="checkbox"/> determined not eligible for the National Register.	_____	_____
<input type="checkbox"/> removed from the National Register.	_____	_____
<input type="checkbox"/> other. (explain:)	_____	_____

5. Classification

Ownership of Property

(Check as many boxes as apply)

- private
- public-local
- public-State
- public-Federal

Category of Property

(Check only one box)

- building(s)
- district
- site
- structure
- object

Number of Resources within Property

(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
1	0	buildings
0	0	sites
1	1	structures
0	0	objects
2	1	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)

Commerce/Trade

Historic Subfunctions

(Enter subcategories from instructions)

Communications Facility

Current Functions

(Enter categories from instructions)

Commerce/Trade

Current Subfunctions

(Enter subcategories from instructions)

Communications Facility

7. Description

Architectural Classification

(Enter categories from instructions)

Modern Movement

Materials

(Enter categories from instructions)

Foundation	Concrete
Walls	Brick
	Limestone
Other	Steel

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.)

- A** Property is 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.
- C** Property embodies the distinctive characteristics of a type, period, or method of construction or 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 the boxes that apply.)

Property is

- A** owned by 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)

Communications
Engineering

Period of Significance

1947-1996

Significant Dates

1947

1948

1963

Significant Person

(Complete if criterion B is marked above)

N/A

Cultural Affiliation

Architect/Builder

Leon Chatelain, Jr.
Jeffress-Dyer, Inc.

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 Buildings Survey
- recorded by Historic American Engineering Record
- See continuation sheet for additional HABS/HAER documentation.

Primary location of additional data:

- State Historic Preservation Office
- Other State Agency
- Federal Agency
- Local Government
- University
- Other (Repository Name: National Museum of American History, Smithsonian Institution. Archives Center.)

10. Geographical Data**Acreage of Property:** 1.00**UTM References**

(Place additional UTM references on a continuation sheet.)

1	18	319746	4313092	3			
	Zone	Easting	Northing		Zone	Easting	Northing
2				4			

 See continuation sheet**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: David S. Rotenstein, Consulting Historian

organization:

date: 6/12/2003

street & number: 10308 Edgewood Avenue

telephone: (301) 592-0646

city or town: Silver Spring

state: Maryland

zip code: 20901-1908

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 the SHPO or FPO for any additional items)

Property Owner

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

name: American Tower Corporation

street & number: 116 Huntington Avenue

telephone: (617) 375-7500

city or town: Boston

state: Massachusetts

zip code: 02116-

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Program Center, National Park Service, 1849 C Street NW, Washington DC 20240; and the Office of Management and Budget, Paperwork Reductions Projects (1024-0018), Washington, DC 20503.

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Section number 7. Narrative Description

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The Western Union Telegraph Company microwave transmission facility is a communications tower and attached equipment wing located in a mixed residential-commercial neighborhood in Washington, DC's, Tenleytown neighborhood. The facility was constructed on a rectangular block on the east side of 41st Street N.W. immediately north of 41st Street's intersection with Wisconsin Avenue.

The tower is an octagonal masonry building that rises 90 feet above the ground level. It measures measuring 9'-3" on each side and is attached to the square equipment wing which measures 38x40 feet. The tower was built on a concrete foundation (below-grade footer) and is constructed of brick walls and its exterior is clad by dressed limestone facing. There are five internal floors within the tower and an 11-foot-high aluminum turret housing microwave antennas caps the flat roof. The first floor consists of an office space and maintenance work spaces; access to the upper portions of the tower is via a metal staircase in the eastern side of the tower core. Entry to the tower is through a vestibule and door leading from the rear wing.

The tower has rectangular metal-frame windows in the north and south facades at the first, second, and third story levels. The "Tower Floor" (upper) level has eight (one for each side) removable rectangular fiberglass and aluminum panels that conceal the enclosed microwave antennas. The tower walls rise to a low parapet around the flat roof and narrow walkway between the parapet and the aluminum turret.

The tower's decoration is minimal, its style informed by the moderne. Slight curves and tapering along the parapet create an entasis effect. The only ornamentation is the "Western Union" corporate name in 13-foot-high bronze letters on the tower's west façade.

The attached wing, located on the tower's east side (rear), was built as a two-story reinforced concrete building to house a battery room, engine room, and other parts of the facility's physical plant on the first floor and communications equipment on the second story. The facility's main entrance is through a door on the north side of the tower into the wing's west façade. The rectangular metal door is set in a rectangular projecting bay with fluting and the building's address - "4623" - in bronze numerals set above the door. The wing's west façade is symmetrical: the tower rises in the center and is flanked on the north by the building entrance and the south by a rectangular metal-frame window.

The tower and wing were modified several times during the facility's history. Briefly, in 1948, a 43-foot experimental metal antenna may have been mounted on the turret. In 1963, Western Union constructed a one-story reinforced concrete addition to the wing on which it built a four-legged lattice tower to mount additional microwave antennas. The added tower rises 165 feet above the addition and two microwave reflector horn antennas cap it, along with an observation platform. The 1963 tower was attached to the one-story addition roof by concrete pedestals.

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Section number 8. Narrative Statement of Significance

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The Western Union Telegraph Company Tenley tower site is a landmark in engineering history. Built in 1947 to serve as the southern terminal station in the Western Union New York-Washington-Pittsburgh radio relay triangle, the Tenley tower was the only architect-designed building in the nation's first private-sector microwave communications system designed solely as an antenna structure. The Tenley tower site is eligible for listing in the National Register of Historic Places under Criteria A for its association with the Western Union system and the development of modern communications and under Criterion C for its architecture.

In March 1945 the Federal Communications Commission (FCC) authorized the Western Union Telegraph Company to place into service an experimental microwave relay system between New York, New York, and Philadelphia, Pennsylvania. The system to beam telegraph signals between stations used radio frequencies that had previously only been used by military radar systems. The experimental system that used unattended stations placed at regular intervals to facilitate a line-of-sight radio relay allowed Western Union to refine the radio beam telegraphy process by improving its equipment to maintain constant signal strength. The equipment used in Western Union's experiments was made by the Radio Corporation of America (RCA) under license to Western Union. The company's goal was to develop a system that increased the capacity for sending telegraphs, to eliminate much of the company's wireline reliance (i.e., make poles and wires obsolete) and to position it for providing transmission services for emerging television technology.[1]

While conducting the tests on the New York and Philadelphia system, Western Union applied to the FCC to construct a fully functional radio relay triangle between New York, Washington, DC, and Pittsburgh, Pennsylvania. On 7 November 1945, the FCC granted Western Union a "Radio Station Construction Permit" to build its facility at:

"41st Street, near Wisconsin Avenue ... to communicate with experimental stations of the permittee as necessary for development of commercial point to point radio communications between New York City, New York, Pittsburgh, Pennsylvania, Washington, D.C., and Philadelphia, Pennsylvania, (via intermediate relay stations)."[2]

As its license for use of the high frequency spectrum was being evaluated by the FCC, Western Union began acquiring properties for its relay stations in the triangle. The company planned to collocate antennas on existing buildings in New York (its corporate headquarters) and Pittsburgh as terminal stations in two of the three cities. In Washington, however, the company decided to construct a new facility in the District's Tenleytown neighborhood.

Tenleytown - originally known as "Tenallytown - is an urban neighborhood in the District of Columbia's northwestern section. It occupies the highest elevation in the District (420 feet above sea level) and developed in the nineteenth century along roads known today as Wisconsin Avenue and River Road. Because of its elevation, broadcasters and other radio users sought sites in Tenleytown to achieve the greatest coverage possible. Among the early broadcasters to build transmission facilities in Tenleytown were WTOP (CBS television) and WRC (NBC radio and television).[3]

Western Union bought the property at 4623 41st Street NW in September 1945.[4] The next month, the Washington Evening Star reported that the company was planning to build a 90-

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Section number 8. Narrative Statement of Significance

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foot tower "for wireless transmission of messages along a chain of towers." [5] The magazine Business Week reported that the new Western Union system would "make obsolete hundreds of thousands of miles of wire circuits in its present 2,300,00-mile telegraphic network. In their place will rise radio relay towers at intervals of around 30 miles." [6]

Western Union hired Washington, DC, architect Leon Chatelain Jr. (1902-1979) to design the new Tenley transmission tower at the site which was at 397 feet above sea level. [7] Chatelain began preparing renderings of the new tower as early as October 1945 and his firm was busy drafting plans for the facility by December of that year. In June 1946, Western Union received a building permit from the District of Columbia to "erect one 2-story limestone & brick building & 90 ft. tower." [8] Construction began in July 1946 when Western Union's contractor, Jeffress-Dyer, Inc., demolished a one-story stuccoed frame house at the site; the tower was completed on 24 March 1947.

The relay towers in the system were completed by the summer of 1947 and the radio relay triangle was fully on-line by February 1948. [9] Engineers at the time hailed the system as revolutionary because it rapidly became the most reliable communications system in use with "Interuptions due to interference and propagation failures ... entirely absent." [10] The system also facilitated the spread of television throughout the area served by the radio relay triangle (and later the entire United States). According to Western Union engineers H.P. Corwith and W.B. Sullinger,

"Present engineering also contemplates sharing the towers and other physical plant along many of these routes with inter-city television circuits, should future circumstances make it desirable to furnish such facilities... Thus it can be seen that microwave radio offers the promise of adequate facilities for Western Union's many services as well as the means for expanding its field of public communications." [11]

In 1947, Popular Science wrote of the new microwave technology: "The difference between these new systems and those of the past is as great as that between oxcarts and stratoliners." [12] Western Union's pioneering microwave relay system was the first operational private-sector system in the United States. It was followed by American Telephone & Telegraph (AT&T), Raytheon, and General Electric, among others.

The Tenley site designed by Leon Chatelain Jr. was modified several times during its use by Western Union. In 1948, Chatelain's engineers designed a temporary 42-foot guyed antenna to be mounted on the tower's original turret. The building permit was issued in June 1948, however it is unclear if the extension was ever added. [13] In 1963, Chatelain again prepared designs for Western Union to add a third story to the tower's equipment wing and a four-legged 165-foot lattice tower with microwave horn reflector antennas. The 1963 lattice tower and horns remain on the building.

Chatelain's tower is the only architect-designed facility in the Western Union system. The remainder of the relay towers that were specially built were metal lattice "Forestry Type" towers. "In the interests of universality, it was decided to standardize on steel towers of different heights, all with the same size apparatus cabin on top," wrote Western Union engineer

Julian Z. Millar in a 1946 article on the system. [14] His modernist tower is an outstanding example of radio transmission architecture and was built in accordance with

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prevailing industry standards: "Because a radio transmitter is a very modern phenomenon, it seems appropriate that the transmitter building should usually follow a style belonging within that broad range roughly known as 'contemporary'." [15]

Western Union continued to operate the facility until its sale in 1996 to Micronet, Inc. In 1997, Boston, Massachusetts-based American Tower Systems (now, American Tower Corporation) acquired Micronet and all of its assets - including the Tenley site and another Western Union facility in the radio relay triangle in Severn, Maryland. The site currently is used as communications facility, mainly for personal wireless services.

Notes

1. Business Week, "Western Union Wins O.K. on the Experimental Use of High Frequency Relays in Place of Wire Lines, at Regular Rates," Business Week March 31 1945: 42; Archives Center, National Museum of American History, Smithsonian Institution, Western Union Telegraph Company Records, Box 3, Folder 1, n.d., The Western Union Telegraph Company History of Technical Progress, 1935-1945. Volume I. Compiled by P.J. Howe; Julian Z. Millar, "A Preview of the Western Union System of Radio Beam Telegraphy, Part I," Journal of the Franklin Institute 241.12 (June 1946): 397-413; Leland E. Thompson, "A Microwave Relay System," Proceedings of the I.R.E. 34.12 (December 1946): 939-40.
2. FCC File No. T1-PE-530A. Application appended to the Western Union District of Columbia building permit.
3. Judith Beck Helm, Tenleytown, D.C.: Country Village Into City Neighborhood (Washington, DC: Tennally Press, 1981).
4. District of Columbia Land Records. Deed Book 8164, p. 331.
5. Washington Evening Star, October 23, 1945.
6. Business Week, "Telegraph Company Adopts High Frequency Radio for Use on Heavy Traffic Circuits. System Dooms Conventional Pole Lines," Business Week October 27 1945: 20.
7. Chatelain received his architecture degree from The George Washington University and he began practicing in Washington in 1930. He served as the president of the American Institute of Architects (1956-1958) and was a Fellow of the Royal Architects Institute of Canada. Among the buildings he designed are the Equitable Life Insurance Company building (now occupied by Fannie Mae), the C&P Telephone building in Bethesda, Maryland, and the Federal Deposit Insurance building in Washington. He also designed an underground magazine for Nike missile batteries during the Cold War. The Washington Post, "Noted District Architect Leon Chatelain Jr. Dies," May 8, 1979. Leon Chatelain III, personal communication, August 2002.
8. District of Columbia Building Permits. National Archives. Building Permit No. 286579.
9. H.P. Corwith and W.B. Sullinger, "Western Union's Microwave Relay System," Western Union Technical Review July 1948: 99-109; Archives Center, National Museum of American History, Smithsonian Institution, Western Union Telegraph Company Records, Box 2, Folder

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9, n.d., Uncompleted Manuscript for Engineering Progress 1945-1950, The Western Union Telegraph Company.

10. Thompson, "A Microwave Relay System" 936.

11. Corwith and Sullinger, "Microwave Relay System" 108.

12. Martin Mann, "The Microwaves Are Coming," Popular Science November 1947: 94.

13. Photographs of the tower taken in November 1949 do not show the extension.

14. Julian Z. Millar, "A Preview of the Western Union System of Radio Beam Telegraphy, Part II," Journal of the Franklin Institute 242.1 (July 1946): 23-40.

15. Western Electric Corporation, The Architecture of Broadcast Transmitter Buildings, Western Electric Oscillator, 9 (1948) 28.

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Section number 9. Major Bibliographical References

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Business Week. "Telegraph Company Adopts High Frequency Radio for Use on Heavy Traffic Circuits. System Dooms Conventional Pole Lines." Business Week October 27 1945: 20.

---. "Western Union Wins O.K. on the Experimental Use of High Frequency Relays in Place of Wire Lines, at Regular Rates." Business Week March 31 1945: 42.

Corwith, H.P., and W.B. Sullinger. "Western Union's Microwave Relay System." Western Union Technical Review July 1948: 99-109.

Mann, Martin. "The Microwaves Are Coming." Popular Science November 1947: 94-99.

Millar, Julian Z. "A Preview of the Western Union System of Radio Beam Telegraphy, Part I." Journal of the Franklin Institute 241.12 (June 1946): 397-413.

---. "A Preview of the Western Union System of Radio Beam Telegraphy, Part II." Journal of the Franklin Institute 242.1 (July 1946): 23-40.

Thompson, Leland E. "A Microwave Relay System." Proceedings of the I.R.E. 34.12 (December 1946): 936-41.

Archives Center, National Museum of American History, Smithsonian Institution, Western Union Telegraph Company Records, Box 2, Folder 9. Uncompleted Manuscript for Engineering Progress 1945-1950, The Western Union Telegraph Company. n.d.

Western Electric Corporation. The Architecture of Broadcast Transmitter Buildings. Western Electric Oscillator. 9, 1948.

Archives Center, National Museum of American History, Smithsonian Institution, Western Union Telegraph Company Records, Box 3, Folder 1. The Western Union Telegraph Company History of Technical Progress, 1935-1945. Volume I. Compiled by P.J. Howe. n.d.

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Section number 10. Geographical Data

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Verbal Boundary Description

The historic property comprises all of the lot at 4623 41st Street, NW (Lot No. 6 and part of Lot No. 5 in Square 1769). The lot is bounded by 41st Street NW on the west, a public alley on the east, and adjacent properties at 4619 41st Street NW (south) and 4625 41st Street NW (north).

Verbal Boundary Justification

The historic property's boundary conforms to the historical proportions of the urban lot acquired by the Western Union Telegraph Company in 1945.

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Photographs

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The following information is the same for all of the photographs:

Name of property: Western Union Telegraph Company Tenley Site

County and State: Washington, District of Columbia

Name of photographer: David S. Rotenstein

Date of photograph: June 2003

Location of original negative: files of David S. Rotenstein

1. Tenley Site as viewed from 41st NW, view to the east.
2. Tenley Site as viewed from 41st NW, view to the southeast.
3. Tenley Site, south façade and tower. View to the north.
4. Tenley Site, oblique view of the south and east façade. View to the northwest.
5. Tenley Site, north façade, view to the south.
6. Tenley Site, close-up of tower and turret. View to the southeast.
7. Tenley Site, detail of sign, west façade of tower. View to the east.
8. Tenley Site, main entrance in west façade. View to the east.