

NATIONAL HOME FOR DISABLED
VOLUNTEER SOLDIERS, NORTHWESTERN BRANCH
METAL STEAM-PIPE TRESTLE
(Milwaukee Veterans Administration Medical Center
Clement J. Zablocki Veterans Affairs Medical Center)
5000 West National Avenue
City of Milwaukee
Milwaukee County
Wisconsin

HAER No. WI-116

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

HISTORIC AMERICAN ENGINEERING RECORD
NATIONAL HOME FOR DISABLED VOLUNTEER SOLDIERS,
NORTHWESTERN BRANCH,
METAL STEAM-PIPE TRESTLE

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- Location:** Clement J. Zablocki Veterans Affairs Medical Center, 5000 West National Avenue, Milwaukee, Milwaukee County, Wisconsin
- The metal steam-pipe trestle is located at latitude: 43.024975, longitude: -87.977702. The coordinate represents the structure's north terminus. This coordinate was obtained on November 26, 2012, using the United State Geological Survey's Online National Map and converted via the FCC's Latitude Longitude Conversions calculator. The location has no restriction on its release to the public.
- Present Owner:** U.S. Department of Veterans Affairs
- Present Occupant:** Clement J. Zablocki Veterans Affairs Medical Center
- Present Use:** Not in use
- Significance:** The metal steam-pipe trestle was constructed in 1922 to carry steam pipes overland between the central power plant (Building 45) and the tuberculosis hospital (Building 70), which was also built in 1922. Constructed in the southern portion of the grounds, the tuberculosis hospital was the first major departure from the core of buildings at the Northwestern Branch and required a unique utility connection. The steam-pipe trestle creates a visual linkage to the south campus, which was untouched by institutional development prior to 1922.
- Historians:** Jessica Berglin and Charlene Roise, Hess, Roise and Company, 2013
- Project Information:** The metal steam-pipe trestle was erected during the period of significance for the National Home for Disabled Volunteer Soldiers National Historic Landmark (NHL). The pipes and trestle are no longer used and are deteriorating, with decaying elements occasionally dropping onto cars parked below, with the potential for debris to fall on the many pedestrians and cars that pass beneath the structure. To remove this hazard, the administration of the Clement J. Zablocki Veterans Administration Medical Center (Zablocki VAMC) proposed to remove the pipes and trestle in 2013. This documentation study was commissioned by the Veterans Administration to comply with a stipulation in a memorandum of

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agreement between the Zablocki VAMC, the Veterans Integrated Service Network 12, the Wisconsin State Historic Preservation Officer, the Advisory Council on Historic Preservation, and the National Park Service regarding the removal of the metal steam-pipe trestle.

Hess, Roise and Company, a historical consultant firm based in Minneapolis, has prepared this documentation study as a subcontractor to Chequamegon Bay Engineering, which has offices in Ashland and Wauwatosa, Wisconsin. Dave Cleary and Nicholas Migan oversaw the project for Chequamegon Bay Engineering. The report was prepared by Hess Roise architectural historian Jessica Berglin and overseen by principal Charlene Roise. Jerry Mathiason completed the photography as a subcontractor to Hess Roise.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of Construction: 1922
2. Architect/Engineer: Unknown
3. Builder/Contractor/Supplier: Unknown
4. Original Plans and Construction: A single original engineering plan dated February 10, 1922, remains at the VA Facilities Management Graphics Repository. The drawing differs slightly from the as-built configuration, but the principles of construction are essentially the same.

The drawing shows regularly spaced frames over a length of 1,176'. Stations are numbered in increasing half-increments from south to north. Stations 1 through 4 are apparently located on the interior of Building 70 because they are not marked. On the drawing, numbering begins with station 4.5—where the pipes enter Wing B of Building 70—and terminates with station number 20.5, after which the pipes enter the boiler room of the central power plant (Building 45). The pipes run underground between station 4.5 and the pump house (Building 90), which is designated station 9. Inside the pump house, the pipes drop approximately 15' and then daylight at station 9.5. A structural trestle commences between stations 9.5 and 10. A vertical rise occurs between stations 17.5 and 18, increasing the elevation of the trestle between stations 18 and 20.5 before it terminates at the central power plant.

The trestle carries two cast-iron steam pipes—one 7" and one 4" in diameter—and one 6" cast-iron condensate return pipe. The two steam pipes follow the elevation change between station 17.5 and 18, whereas the return pipe remains level before entering the ground at a hydrant located between stations 18.5 and 19. A note on the original drawing indicates the pipes were to have a gradual 3' slope as they extended southward from station 17.5 to the pump house. All of the pipes were originally sheltered by an enclosure consisting of wood walls and a composite gable roof, but this was removed at an unknown date.

According to the engineering drawing, each pipe was insulated with an unidentified material, which was wrapped by metal conduit. The age of the current insulating material and sheet-metal encasement is unknown.

The original drawing shows five circular hangers on the underside of a single crossbar to carry electrical cables along the trestle. Today, however, the hangers are mounted to the top side of a second, lower crossbar.

5. Alterations and Additions: A cover that originally protected the steam pipes was removed at an unknown date. Near the pump house, trestle frames were removed and replaced with steel I-beams, likely when a retaining wall was constructed in conjunction with the installation of the Spinal Cord Injury and Disorder Center (Building 144) in 2011.

Use of the steam pipes and electrical cables was discontinued at an unknown date. Cables have been removed from many of the bays.

B. Historical Context:¹

The National Asylum for Disabled Volunteer Soldiers was created by an Act of Congress signed by President Abraham Lincoln in March 1865. Although a soldiers' pension system had been in place, the establishment of a national institution for the care of Union soldiers wounded in the Civil War marked an unprecedented federal effort in veterans' care. It was renamed the National Home for Disabled Volunteer Soldiers (NHDVS or National Home) in 1873 to reinforce its identity as a domestic institution for injured soldiers rather than an almshouse for invalids. The National Home system grew during the late nineteenth and early twentieth centuries, supporting elderly veterans and wounded soldiers. When the National Home system was absorbed into the Veterans Administration in 1930, there were eleven branches located throughout the country.

After the establishing legislation passed in 1865, Congress devised a committee of one hundred members to oversee the creation of a National Home. Realizing the inefficiency of such a large committee, Congress appointed a nine-member Board of Managers in April 1866. Managers could not be members of Congress and no two managers could be residents of the same state. In addition to these nine managers, *ex officio* members of the board included the president of the United States, the secretary of war, and the chief justice.²

One of the first tasks of the Board of Managers was to select sites for the homes. Initial legislation called for the creation of three branches, though it did not specify where they would be located. To make the homes easily accessible throughout the northern states, the managers chose to locate one home in the Northeast, one in the Northwest, and one "near the geographical centre of the loyal states." A former health resort site in Togus, Maine, was selected for the Eastern Branch, the first of the National Homes. The Northwestern Branch was located in

¹ Parts of the following sections are excerpted from a documentation study of the Northwestern Branch's landscape (HALS No. WI-13) prepared by Jessica Berglin and Charlene Roise, Hess, Roise and Company, in 2012.

² *Report of the Board of Managers of the National Asylum for Disabled Volunteer Soldiers*, 40th Cong., 1st sess., 1867, House misc. doc. 45, 1–2 (hereafter *1867 Report of the Board of Managers*); Maria Barrett Butler, "The National Home for Volunteer Soldiers," *Harper's New Monthly Magazine* 73 (October 1886): 686.

Milwaukee, Wisconsin, and opened in 1867 as the second National Home. The Central Branch opened later in 1867 in Dayton, Ohio.³

The Northwestern Branch Comes to Milwaukee

Even before Milwaukee was chosen as the site of the Northwestern Branch, the city had a very active citizenry engaged in soldiers' aid work. The lady managers of the Wisconsin Soldiers' Aid Society held a fair in Milwaukee in the summer of 1865 to raise funds to build a state institution to care for wounded soldiers returning to Wisconsin. The fair ran for three weeks and the women raised over \$100,000. George Walker, a Milwaukee native who was appointed to the Board of Managers, proposed that the lady managers use the proceeds of the fair to entice the Board of Managers to select Milwaukee as the site of their northwest facility. His suggestion caused much contention among the lady managers because they had already purchased a plot of land and had plans drawn for their State Soldiers' Home. George Allen, an advisor to the lady managers, argued in support of establishing a facility for the National Home. He contended that the money raised at the fair was "barely sufficient" to operate the home the lady managers envisioned and that ongoing support would be unsustainable, with funds coming from charitable donations or through public taxes. In June 1866, the society agreed to donate its funds to the National Home on the condition that one of the facilities be located in Milwaukee.⁴

By the end of August, a selection committee appointed by the Board of Managers arrived in Milwaukee to evaluate potential locations for the Northwestern Branch. The committee members "had a view to the superior healthfulness of the city, the beauty of its surroundings, and its central location." After the selection committee reviewed several offers for land, it decided on a location just west of the city limits. A newspaper article published March 1, 1867, claimed "this location, situated just outside of the city, is perhaps the best which could have been selected. It is picturesquely situated, giving a great variety of scenery, as well as a variety of land." The site contained nearly four hundred acres combined from three farms.⁵

When the Northwestern Branch opened, it temporarily utilized existing farm buildings to house veteran residents and employees while planning of the grounds and construction of the Main Building (Building 2) was underway. Thomas Budd Van Horne designed the grounds to follow the site's rolling topography. As part of his plan, Van Horne selected a prominent hilltop site for the Main Building, which was designed by Edward Townsend Mix, a notable Milwaukee architect. The Main Building was a centralized facility that housed members' dormitories, medical offices, the kitchen and dining hall, reading rooms, amusement halls, and managers' offices.

³ *1867 Report of the Board of Managers*, 2.

⁴ *Milwaukee Sentinel*, June 6, July 17, and October 21, 1865, June 15, 1866, quoted in transcript of newspaper articles, Clement J. Zablocki Veterans Administration Medical Center Archives, Milwaukee, Wisconsin (hereafter VAMC Archives).

⁵ *Milwaukee Sentinel*, August 23, 1866, March 1 and March 2, 1867, quoted in transcript of newspaper articles, VAMC Archives.

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The Northwestern Branch soon outgrew its centralized Main Building as changes in the NHDVS admissions policies prompted the expansion of many branch facilities. In 1871, Congress removed restrictions that made many veterans ineligible for membership at one of the national soldiers' homes. When the NHDVS was founded, veterans had to prove that they were honorably discharged from the military and that their injuries were related to service in the Union Army. Under the new application requirements, veteran soldiers and sailors of the War of 1812 and the Mexican-American War were eligible for membership as long as they had not fought for the Confederate Army and they could prove their injuries were sustained while on active duty.

The Board of Managers initiated expansive building programs in response to this surge in membership. At the Northwestern Branch, the Main Building was no longer adequate to house all of the branch's functions. By 1883, new facilities at the Milwaukee campus included a pavilion-style hospital (Building 6) and Ward Memorial Hall (Building 41). The construction of the hospital and Ward Memorial Hall shifted medical and recreational activities out of the Main Building, which could then accommodate more sleeping rooms for new members.⁶

In 1884, another change in the admissions policy dramatically affected Home membership. The Board of Managers recommended to Congress that the NHDVS should extend membership to a broader group of veterans, especially aging veterans who could no longer take care of themselves, even if they could not prove a service-related disability. In 1884, Congress passed legislation that removed the restriction requiring veterans to prove their disabilities were service-related. Admission to the NHDVS became open to any veteran honorably discharged from the Union Army, and any volunteer soldier or sailor in the War of 1812 or the Mexican-American War who had not fought in the Confederate Army, provided he could not support himself due to any disability. Thus, advanced age became regarded as a cause of disability under the new provision.⁷

As a result, applications for membership spiked and the NHDVS branches were filled beyond capacity. The Northwestern Branch reported 1,684 members in 1885—an increase from 1,317 members the previous year. The managers authorized the construction of new buildings to meet the medical, administrative, social, and recreational needs of the Home. Several new barracks and officers' quarters were constructed, as well as a library, recreation hall, chapel, administration building, and canteen.

⁶ Suzanne Julin, "National Home for Disabled Volunteer Soldiers National Historic Landmark Context Study," August 2009, 15; "National Homes Hospital," *Milwaukee Sentinel*, quoted in transcript of newspaper articles, VAMC Archives; "National Home for Disabled Volunteer Soldiers, Northwestern Branch, Ward Memorial Hall," Historic American Buildings Survey Report (HABS No. WI-360-B), Summer 2008, 20.

⁷ *Minutes of the Proceedings of the Board of Managers of the National Asylum for Disabled Volunteer Soldiers*, July 1885, Microfiche CIS US EXEC MF 1789-1909 NH101-1 to NH101-3, Government Publications, Wilson Library, University of Minnesota, Minneapolis; Julin, "NHDVS NHL Context Study," 16.

Heating the Home

Expansion was taxing on the utility infrastructure at the Northwestern Branch. Until 1895, when a central power plant was constructed, many of the large institutional buildings contained their own boiler rooms for furnishing heat or they were connected to boilers serving the Main Building. A newspaper article published after the Main Building's dedication in 1869 highlighted the building's utilities, emphasizing its reliance on steam for cooking and laundering, as well as for heating purposes:

In the basements of the dining room and kitchen are the bathing room which is very ample and convenient; and the laundry. The washing and ironing are done by machinery of the latest and most approved pattern, driven by steam. The engine room is a separate building. It contains a fourteen horsepower engine and three large boilers. The former is used to pump water, saw wood and drive the machinery in the laundry and elsewhere, and the latter [to] furnish the steam with which the entire building is heated, much more uniformly and at less cost than could be done any other way.⁸

Apparently, though, the sleeping rooms in the Main Building were not adequately outfitted for heat. According to the *Milwaukee Sentinel*, "Another defect was also apparent in that there were no appliances for warming the sleeping apartments. With some reluctance, the Board of trustees gave the commandant the authority to put in steam-pipe and last fall and winter, over eight miles of pipe were . . . placed in position, thus adding very materially to the comfort of the men." Ensuring that the sleeping rooms were comfortably tempered, however, was an ongoing battle. Despite the addition of new pipes, complaints about freezing conditions arose. One veteran claimed, "A year ago we almost froze to death. We are old and can't stand much cold. Complaint was made about it and Gen. Sharpe ordered that the rooms should be made comfortable. Hickman, he's the engineer, was mad about it. He swore he would roast us out. So we had too much steam." Another member indicated that "the steam pipes in some rooms were cold as ice," and that they "had to wear overcoats to keep warm."⁹

In October 1878, new boilers were installed in anticipation of the construction of a new hospital, which opened the following year. At the new pavilion-style facility, the basement of the rear building was intended to be used as a boiler room, but "steam for heating purposes [was] carried from the main building of the National Home" instead. When the hospital expanded in 1886 to include a new convalescent ward, a boiler room was constructed in the basement to heat the entire hospital.¹⁰

⁸ "National Military Asylum," *Milwaukee Sentinel*, September 28, 1869, quoted in transcript of newspaper articles, VAMC Archives.

⁹ *Milwaukee Sentinel*, September 28, 1883, and August 17, 1884, quoted in transcript of newspaper articles, VAMC Archives.

¹⁰ *Milwaukee Sentinel*, October 2 and 30, 1878, May 27, 1879, February 27, 1880, quoted in transcripts of newspaper articles, VAMC Archives; "National Home for Disabled Volunteer Soldiers, Northwestern Branch, Hospital," Historic American Buildings Survey (HABS No. WI-360-F), Summer 2010, 14, 17.

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In 1889, Kilburn Knox, governor of the Northwestern Branch, asserted in his annual report: “We are greatly in need of some different plan of steam-heating, and I have caused to be placed in the estimates for the year ending June 30, 1889, an amount to cover the proposed change.”

Construction of a new central power plant was expected to cost \$41,000, but the appropriation was denied by Congress in its 1890 session.¹¹

Although a new power plant was not constructed as branch officials had hoped, boilers for the Main Building were replaced in fiscal year 1893. The annual report indicates the entire steam piping and radiator system throughout the Main Building was replaced with a low-pressure system, which was considered “much more safe and satisfactory” than a high-pressure system.¹²

The new system was still not sufficient, though. After many years of being petitioned for appropriations, Congress authorized funds for a central power plant, which was constructed in 1895. The annual report indicates the plant was “nearly completed” by the end of the fiscal year at a cost of \$34,064. The L-shaped power plant was positioned on the south side of the railroad tracks just west of Ward Memorial Hall. One wing of the plant housed two 231-horsepower Babcock and Wilcox water-tube boilers, while the other wing held machines for powering electric lights. Underground steam tunnels 6' in diameter connected the plant to adjacent buildings. After the central plant was constructed, boilers were removed from many of the larger buildings and boiler rooms were converted to other uses. At the convalescent ward, the boiler room became a dining room and kitchen, and in the hospital, the boiler room was “converted into sick-call, linen, sanitary, and hot-bath rooms, and [was] a source of great comfort and usefulness.”¹³

Babcock and Wilcox was one of the premier companies advancing steam technology in the latter half of the nineteenth century. Inventors had been designing steam engines and boilers since the late seventeenth century, but in 1856 Stephen Wilcox proposed a “significant ‘break-through’ for water-tube boilers.” All water-tube boilers operated on the same principle: water was heated as it moved through tubes and was vaporized as its temperature rose, with the steam eventually being released through a valve. In one of the earliest water-tube boiler designs, a group of small tubes were closed on one end and connected to a central reservoir at the other end while steam was released out of a valve at the top. Another design featured vertical tubes that connected a water

¹¹ *Annual Report of the Board of Managers of the National Home for Disabled Volunteer Soldiers, For the Fiscal Year Ending June 30, 1889* (Washington, D.C.: Government Printing Office, 1890), 89.

¹² *Annual Report of the Board of Managers of the National Home for Disabled Volunteer Soldiers, For the Fiscal Year Ending June 30, 1893* (Washington, D.C.: Government Printing Office, 1894), 65.

¹³ *Report of the Board of Managers of the National Home for Disabled Volunteer Soldiers, For the Fiscal Year Ended June 30, 1895* (Washington, D.C.: Government Printing Office, 1896), 73, 86; map of proposed boiler house and steam tunnel included in “Right-of-way for tunnel under CM&SP Railway Tracks,” contract dated October 13, 1894, Contracts box, VAMC Archives; *Annual Report of the Board of Managers of the National Home for Disabled Volunteer Soldiers, For the Fiscal Year Ending June 30, 1897* (Washington, D.C.: Government Printing Office, 1898), 71; “Governor’s Report of the Northwestern Branch, National Home for Disabled Volunteer Soldiers, For the Year Ending June 30, 1922,” (hereafter “Governor’s Report, 1922”), 11, typescript copy, VAMC Archives,.

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chamber below the tubes to a steam chamber above, where the valve was located. Wilcox's design "incorporated inclined water tubes connecting water spaces at the front and rear, with a steam space above, allowing better water circulation and more heating surface." George Herman Babcock joined Wilcox in 1866 and the first boiler designed under their partnership was patented in 1867. The boiler featured a taller, narrower profile and a more elaborate heating chamber than Wilcox's first patent.¹⁴

According to a Babcock and Wilcox publication, *Steam: Its Generation and Use*, steam was initially used "to provide heat and power for local industrial use. With the advent of practical electric power generation and distribution, utility companies were formed to serve industrial and residential users over wide areas." In Philadelphia, a plant for the Brush Electric Light Company was among the early electric power stations in America. Four 73-horsepower Babcock and Wilcox boilers were installed at the plant, which was constructed in 1881. As utility demands increased for both industrial and residential users, power stations required greater generating capacities. For instance, in 1903, Chicago's Commonwealth Edison Company built the Fisk Street Station, which housed ninety-six 508-horsepower Babcock and Wilson boilers, greatly surpassing its Philadelphia predecessor.¹⁵

At the Northwestern Branch, which was beyond the reach of Milwaukee's municipal service, all of the power was produced at the central plant. Four new Babcock and Wilcox water-tube boilers were installed to keep up with the facility's growing energy demands—two in 1898 and two in 1912. Additionally, the central power plant was outfitted with a new generating system for lighting in 1907. Equipment installed that year included one Ideal engine, one Milwaukee Electric Company generator, one Greeker-Wheeler equalizer, and one Milwaukee Electric Company equalizer.¹⁶

Changes in the New Century

In 1898 the United States became engaged in a war with Spain. At the close of the Spanish-American War, the managers of the National Homes were faced with the dilemma of already overcrowded branches and a new group of veterans returning from conflicts in Cuba and the Philippines. Although they were not yet officially eligible for admission, many of the recently injured veterans applied for entrance into the National Home system upon their return. In response, Congress passed legislation in 1900 that opened Home membership to this new band of veterans, who were noticeably younger than the general population already in residence. In subsequent years, the Board of Managers opened additional branches to house Spanish-American War veterans.¹⁷

¹⁴ Babcock and Wilcox, *Steam, Its Generation and Use* (New York: Babcock and Wilcox, 1972), 4-5.

¹⁵ *Ibid.*

¹⁶ "Governor's Report, 1922," 11.

¹⁷ Judith Gladys Cetina, "A History of Veterans' Homes in the United States, 1811-1930" (Ph.D. diss., Case Western Reserve University, 1977), 354-357; Julin, "NHDVS NHL Context Study," 22-23.

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The young veterans brought new diseases back from their foreign campaigns. Tuberculosis, yellow fever, and leprosy were not common at the homes before the new veterans' arrival. Epidemics spread through many of the branches, and tuberculosis rose as the greatest health threat in the first decades of the twentieth century. Isolation in a cool, mild climate was considered the best treatment for tubercular patients. The climate at the Mountain Branch in Johnson City, Tennessee, and the Battle Mountain Sanitarium in Hot Springs, South Dakota, made both locations well suited for tuberculosis care. The managers constructed facilities specifically designed for treatment of the disease and concentrated tubercular patients at these two branches.¹⁸

The Northwestern Branch showed signs of decline as the Board of Managers' focus shifted to newer facilities. Membership at the Northwestern Branch was steadily decreasing as more elderly Civil War veterans died. The shrinking membership was so marked that the Board of Managers recommended closing the Milwaukee Home in 1917. The United States' entrance into World War I that year, however, resulted in an influx of new veterans and drastic changes in the administration of veterans' benefits.¹⁹

Until World War I, the federal institutions charged with managing veterans' benefits were the Bureau of Pensions and the NHDVS. At the onset of the war, however, new governmental programs were established to protect American assets and servicemen. In 1914, the Bureau of War Risk Insurance was created under the War Risk Insurance Act to cover American vessels and cargoes against the risks of war. After the United States entered the war in April 1917, the act was amended to also insure officers and crews serving on American ships. A later amendment to the act expanded insurance even further. The newest provision increased pension and compensation benefits to dependents of servicemen who became disabled or died in the line of duty. It also established voluntary life and disability insurance policies for enlisted men and a vocational rehabilitation program for those permanently disabled in military service. Perhaps the most important provision under the new amendment, however, was the expansion of medical benefits. In accordance with the new law, all veterans were eligible for medical treatment and hospital care, not just those residing in a National Home. Thus, new hospitals were built and existing facilities—including NHDVS branches—were expanded to provide medical treatment to World War I veterans.²⁰

Three agencies were charged with administering the new system of benefits: the Public Health Service, the Bureau of War Risk Insurance, and the Federal Board for Vocational Education. The

¹⁸ Cetina, "A History of Veterans' Homes," 361–366; Julin, "NHDVS NHL Context Study," 24.

¹⁹ *Minutes of the Proceedings of the Board of Managers of the National Home for Disabled Volunteer Soldiers, December 4, 1916—June 6, 1930* (Washington, D.C.: Government Printing Office, n.d.) (hereafter *Proceedings 1916–1930*), 21.

²⁰ Gustavus A. Weber and Laurence F. Schmeckebier, *The Veterans' Administration: Its History, Activities, and Organization* (Washington, D.C.: The Brookings Institution, 1934), 89–92, 212–218; Julin, "NHDVS NHL Context Study," 26.

Public Health Service was primarily charged with duties related to medical treatment, including a building program for new hospital facilities. A major task of the Bureau of War Risk Insurance was handling insurance and financial benefits due to World War I veterans. Lastly, programs offered through the Federal Board for Vocational Education provided the new young veterans with occupational training so they could enter the workforce with vocational skills after returning from the war. The growing number of bureaucratic entities created a fragmented system that was inefficient at responding to veterans' needs. After congressional review, the three new agencies coordinating World War I veterans' benefits were merged into the Veterans' Bureau in 1921.²¹

Many of the benefits offered by the newly formed Veterans' Bureau mirrored benefits offered through the Bureau of Pensions and the NHDVS. As part of the Veterans' Bureau's hospital-building program, many National Home facilities were reevaluated to meet the changing needs of the new pool of veterans. Returning soldiers had been exposed to disease, trench warfare, and other physical and emotional damage, and needed updated treatment facilities to address these twentieth-century challenges. As a result, many of the NHDVS branches instituted ambulatory halls, psychiatric wards, and tuberculosis wings.²²

Designed for Disease

In 1922, the Northwestern Branch opened a new \$1.2-million tuberculosis hospital (Building 70). Separate from the rest of the campus, the new hospital was the first large-scale departure from the primary core of facilities north of Lake Wheeler. It was intentionally isolated in the southwest portion of the grounds to keep tubercular patients at a distance from other members of the Home. The pavilion-style hospital echoed the design of the older hospital, with multiple wings stemming from a central unit and connected by a long, narrow corridor. The site provided fresh air and open space necessary for the treatment of tuberculosis. Smaller ambulatory wings were constructed near the new hospital in 1922 as well.²³

Many instructional treatises circulated in the early twentieth century regarding the design of tuberculosis hospitals because the arrangement of buildings—as well as their heating and ventilation—was considered a crucial component of patients' care. In *Tuberculosis Hospital and Sanatorium Construction*, author Thomas Spees Carrington outlined specifications for not only the hospital facility itself, but also for ancillary buildings and utility networks. Many of the characteristics Carrington identified were already in effect at the Northwestern Branch, including the creation of a power plant separate from institutional buildings:

²¹ Weber and Schmeckebeier, *The Veterans' Administration*, 218–227.

²² Julin, “NHDVS NHL Context Study,” 25.

²³ Building Schedule at Veterans Administration, Wood, Wisconsin, 1944, VAMC Archives; Building Number and Location Plan, Veterans Administration, Wood, Wisconsin, August 2, 1944, VAMC Archives; *Proceedings, 1916–1930*, 201, 218. In their meeting in June 1921, the NHDVS Board of Managers discussed the necessity of building a large tuberculosis unit at the Northwestern Branch. At their meeting in December of the same year, the Board of Managers allotted funds for the construction of that facility.

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Where a central heating and lighting plant is to be assembled, it can be housed either in the basement of one of the buildings or in an especially constructed power house. There is, however, a strong feeling against installing it in the basement of any sanatorium or hospital building, as the heat from the boilers is very disagreeable and the noise and dust penetrate to other parts of the structure. If the institution grows, the time is sure to come when it will have to be removed, and therefore it is advisable to house even a very small plant in an isolated power house when starting an institution.²⁴

Edward F. Stevens, an architect specializing in hospital design in the early twentieth century, emphasized the importance of a hospital's power plant in *The American Hospital of the Twentieth Century*, likening it to a power plant for an industrial manufactory. He argued that at a hospital, steam had to be produced in an economical way because it was used for a variety of purposes. In addition to needing heating and electricity, hospitals had an intrinsic, constant demand for steam for laundering and sterilization. Because of this continual demand and the need to economize steam production, Stevens maintained "there is little saving made . . . by using low pressure heating and using gas or electricity for sterilizing."²⁵

At the Northwestern Branch, the tuberculosis hospital's isolated location required a unique utility connection to bring steam heat from the central power plant to the north. Rather than tunneling steam pipes underground—a labor-intensive endeavor that presented many obstacles—an aboveground metal trestle was constructed to carry the pipes. With the trestle, the Home's engineer avoided tunneling under the creek that ran west of Lake Wheeler and tearing up roadways in the pipes' path. Furthermore, instead of interfering with a dense web of underground utility connections running throughout the central portion of the campus, the aboveground trestle bypassed these lines altogether. The pipes went underground before the pump house, which was also constructed in 1922 just north of the hospital. From there, pipes were tunneled underground to the central wing of the tuberculosis hospital.²⁶

According to a caption on a photograph taken when the trestle was under construction, the frames were constructed with "Bates expanded metal poles," referring to a structural system manufactured by the Bates Expanded Steel Truss Company in Chicago. The company's expanded steel poles were commonly used in constructing light poles and electric streetcar trestles because they provided greater strength than wood beams and were lighter than solid steel

²⁴ Thomas Spees Carrington, *Tuberculosis Hospital and Sanatorium Construction*, 3rd ed. (New York: National Association for the Study and Prevention of Tuberculosis, 1914), 43–44.

²⁵ Edward F. Stevens, *The American Hospital of the Twentieth Century* (New York: Architectural Record Publishing Company, 1918), 196.

²⁶ Map of Northwestern Branch, NHDVS, 1917, VAMC Archives; Plot Plan, Veterans Administration, Wood, Wisconsin, February 23, 1955, Facilities Management Records, Clement J. Zablocki Veterans Affairs Medical Center, Milwaukee, Wisconsin; 1944 Building Schedule. Utility lines are visible in the 1955 plot plan. The metal steam-pipe trestle is marked "steam line." Building 90 is designated "pump house—high-pressure steam line and traps from central heating plant." The steam line north of the pump house is defined as "overhead," while the line south of the pump house is labeled "underground."

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I-beams. An article appearing in *Electric Railway Journal* in 1915 described the new system, in which special rolled steel beams were “expanded hot and formed into Warren trusses.” Shortly after the poles left the expansion machine, they were dipped in a preservative bath to provide additional resistance against environmental elements, making the product an even more attractive alternative to wood poles. According to the article, the lattice of diagonal cross-members was preferable because the truss provided great carrying capacity with minimal weight, eliminating metal that was “not performing its proportional share in carrying any load applied to the pole.”²⁷

Because of the surge in demand anticipated from the construction of the tuberculosis hospital, a new boiler was installed at the power plant in 1922. The newest boiler was the seventh at the plant and, at 400 horsepower, it was the most powerful. Like those installed previously, the newest addition was a Babcock and Wilcox water-tube boiler.²⁸

The steam pipes extending from the central power plant to the new tuberculosis ward at the Northwestern Branch were a crucial component of daily hospital operations. The trestle carried the steam pipes from the power plant to the hospital in an economical and direct fashion, bypassing the existing utility infrastructure. Furthermore, the trestle created a visual linkage between the original campus and the south campus, which, prior to 1922, was untouched by institutional development.

²⁷ Trestle photograph, construction photograph collection, VAMC Archives.; “Steel Pole Strength Per Pound Increased,” *Electric Railway Journal* 46, no. 9 (1915): 370.

²⁸ “Governor’s Report, 1922,” 11.

PART II. STRUCTURAL/DESIGN INFORMATION

A. General Statement:

1. **Character:** Although the metal steam-pipe trestle has undergone some alterations to reinforce its stability, it retains many historic design characteristics, including serpentine lattice in the structural columns, roller bearings mounted to the crossbars, and diagonal steel angle bracing. A wood enclosure formerly concealed the pipes. This was removed at an unknown date, exposing the pipes and necessitating additional insulation and sheathing. Although removing the enclosure modified the trestle's appearance, it did not alter the function of the structure.
2. **Condition of Fabric:** The trestle is in fair condition. Several frames are rusted and show evidence of structural reinforcement and repair; some sections of reinforcement are failing. The pipes and insulation are deteriorating and metal conduit has been removed in some locations. Many of the electrical cable hangers are broken, and although much of the cable has been removed, it is sagging in locations where it remains.

B. Description:

The trestle is formed by a series of steel post-and-beam frames, connected by horizontal steel I-beams running in a north-south direction. Each frame is constructed of two Bates expanded metal poles connected by two crossbars. The Bates poles comprise two vertical steel girders separated by a steel lattice, giving the posts a zigzag appearance. Each Bates pole is set into a concrete footing in the ground. The existing structure does not have the lateral cross-braces visible in the original drawing. Rather, steel angle bracing runs diagonally between the vertical columns and the horizontal I-beams.

Two crossbars connect the top of each pair of Bates poles, providing a base for carrying three cast-iron pipes. Three roller bearings are mounted to the upper crossbar to support the pipes, while five circular hangers are mounted on the lower crossbar to carry electrical cables. The roller bearings vary in size, according to the size of the pipe being carried. In some locations, steel yokes reinforce the stability of the pipes.

The three pipes are insulated with a fibrous material and encased in sheet metal; neither sheathing is historic. Parts of the sheet metal have been replaced, as evidenced by patching.

C. Mechanicals:

Steam was generated by seven Babcock and Wilcox water-tube boilers housed in the central power plant, which is no longer in service. As steam was released from the boilers, it was carried in the two steam pipes that exit the power plant and extend

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southward toward Building 70. According to the engineering drawing, a 12" header valve connects each pipe to the boilers at an elevation of 20.5'. The pipes drop approximately 15' before exiting the boiler room. As the pipes extend southward, they are carried by the metal trestle, which takes a large step down in elevation between stations 17.5 and 18. The steam pipes enter the ground before reaching the pump house, where there is an immediate vertical rise of approximately 15'.

The steam, after traveling 1,176' along the trestle, would lose both pressure and heat by the time it reached the pump house. A section drawing of the pump house shows a condensate pipe dropping from the steam pipe, where water produced by cooled vapor drained before the steam approached the 15' rise. A notation accompanying the condensate pipe reads "4" pipe set 2 ft. in floor. See detail on Sheet No. 2," referencing an unknown additional drawing. Another label accompanies a floor drain apparent in the drawing, reading "6" drain to low point." The engineering plan provides neither additional captions nor a more detailed drawing, but it appears that a cylinder pump was located at the base of the 15' vertical pipe to re-pressurize the steam and push it through the rise and into underground pipes extending from the pump house to Wing B of Building 70.

The steam provided radiant heat to Building 70 before condensing. A return pipe travels the same path as the steam pipes but carries cold air and condensate in the opposite direction. Rather than following the vertical rise between stations 17.5 and 18, the return pipe remains level until it goes underground to return recycled water to the boilers.

D. Site Information:

Because of the campus's undulating topography, the trestle spans a diverse cross-section of land. A valley is nestled between the pump house and the power plant. Aside from the sudden change between stations 17.5 and 18, the elevation of the pipes is relatively consistent despite the rolling landscape.

PART III. SOURCES OF INFORMATION

A. Primary Sources

Annual Reports available at Clement J. Zablocki Veterans Administration Medical Center Archives, Milwaukee, Wisc.:

Annual Report of the Board of Managers of the National Home for Disabled Volunteer Soldiers, For the Fiscal Year Ending June 30, 1889. Washington, D.C.: Government Printing Office, 1890.

Annual Report of the Board of Managers of the National Home for Disabled Volunteer Soldiers, For the Fiscal Year Ending June 30, 1893. Washington, D.C.: Government Printing Office, 1894.

Annual Report of the Board of Managers of the National Home for Disabled Volunteer Soldiers, For the Fiscal Year Ending June 30, 1895. Washington, D.C.: Government Printing Office, 1896.

Annual Report of the Board of Managers of the National Home for Disabled Volunteer Soldiers, For the Fiscal Year Ending June 30, 1897. Washington, D.C.: Government Printing Office, 1898.

“Governor’s Report of the Northwestern Branch, NHDVS, Year Ending June 30, 1922.”
Typescript copy.

U.S. Congress. House. *Report of the Board of Managers of the National Asylum for Disabled Volunteer Soldiers for the Year 1867.* 40th Cong., 1st sess., July 18, 1867.

Meeting Minutes available at Clement J. Zablocki Veterans Administration Medical Center Archives, Milwaukee, Wisc.:

Minutes of the Proceedings of the Board of Managers of the National Home for Disabled Volunteer Soldiers, December 4, 1916—June 6, 1930. Washington, D.C.: Government Printing Office, n.d.

Meeting Minutes available on Microfiche at Government Publications, Wilson Library, University of Minnesota, Minneapolis:

Minutes of the Proceedings of the Board of Managers of the National Home for Disabled Volunteer Soldiers. CIS US EXEC MF 1789–1909 NH101-1 TO NH101-3.

Patent available through the United States Patent and Trademark Office database:

W. A. Bates. Expanded Metal Structure. Patent Number 1,788,145, January 6, 1931.

B. Drawings, Plans, Maps, Photographs

Materials available at Facilities Management Records, Clement J. Zablocki Veterans Administration Medical Center, Milwaukee, Wisc.:

Engineering Flat Files, Graphics Repository.

Land Transfer Files, Facilities Management.

Plot Plan and Building Schedule Field, Facilities Management.

Materials available at Clement J. Zablocki Veterans Administration Medical Center Archives, Milwaukee, Wisc.:

Aerial Views Flat Files.

Building Schedules and Plot Plan Files.

Construction Photograph Collection.

Contracts Collection.

Historic Photograph and Postcard Collection.

Maps Flat Files.

C. Reference Bibliography:

Babcock and Wilcox. *Steam: Its Generation and Use*. New York: Babcock and Wilcox, 1972.

Butler, Maria Barrett. "The National Home for Volunteer Soldiers." *Harper's New Monthly Magazine*, October 1886. <http://digital.library.cornell.edu/cgi/t/text/text-idx?c=harp;cc=harp;view=toc;subview=short;idno=harp0073-5> (accessed July 2, 2012).

Carrington, Thomas Spees. *Tuberculosis Hospital and Sanatorium Construction*. 3rd ed. New York: National Association for the Study and Prevention of Tuberculosis, 1914.

Cetina, Judith Gladys. "A History of the Veterans' Homes in the United States, 1811–1930." Ph.D. diss., Case Western Reserve University, 1977.

Halverson, Kristin Gilpatrick. "Northwestern Branch, National Home for Disabled Volunteer Soldiers Historic District." National Register of Historic Places nomination. Edited by Todd Hunter and Patricia Lynch. January 25, 2005.

Julin, Suzanne. "National Home for Disabled Volunteer Soldiers National Historic Landmark Context Study." August 2009.

———. "Northwestern Branch, National Home for Disabled Volunteer Soldiers." National Historic Landmark nomination. Edited by Patty Henry, Alexandra Lord, and Dena Sanford. August 25, 2010.

Kelly, Patrick J. *Creating a National Home: Building the Veterans' Welfare State, 1860–1900*. Cambridge, Mass.: Harvard University Press, 1997.

National Home for Disabled Volunteer Soldiers, Northwestern Branch, Milwaukee County, Wisconsin: Photogravures. New York: Albertype, 1894.

"Northwestern Branch, National Home for Disabled Volunteer Soldiers, 5000 West National Avenue, Milwaukee, Milwaukee County, Wisc." Historic American Buildings Survey Report (HABS No. WI-360).

Stevens, Edward F. *The American Hospital of the Twentieth Century*. New York: Architectural Record Publishing Company, 1918.

Weber, Gustavus A., and Laurence F. Schmeckebier. *The Veterans' Administration: Its History, Activities, and Organization*. Washington, D.C.: The Brookings Institution, 1934.

D. Newspapers

Articles available in newspaper transcripts files, Clement J. Zablocki Veterans Administration Medical Center Archives, Milwaukee, Wisc.:

Milwaukee Sentinel, June 6, July 17, and October 21, 1865.

Milwaukee Sentinel, June 15 and August 23, 1866.

Milwaukee Sentinel, March 1 and March 2, 1867.

Milwaukee Sentinel, September 28, 1883.

Milwaukee Sentinel, August 17, 1884.

Milwaukee Sentinel, October 2 and 30, 1878.

Milwaukee Sentinel, May 27, 1879.

Milwaukee Sentinel, February 27, 1880.

"National Military Asylum." *Milwaukee Sentinel*, September 28, 1869.