SCOTT AIR FORCE BASE, ELEVATED WATER STORAGE TANKS

HAER IL-1196-B

(Facilities No. 8010 and 8020)
West side of Hangar Road, between Main Street and 5th Street
O'Fallon Vicinity
St. Clair County
Illinois

PHOTOGRAPHS WRITTEN HISTORICAL AND DESCRIPTIVE DATA REDUCED COPIES OF MEASURED & INTERPRETIVE DRAWINGS

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Midwest Regional Office
601 Riverfront Drive
Omaha, NE 68102

HISTORIC AMERICAN ENGINEERING RECORD

INDEX TO PHOTOGRAPHS

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Leslie Schwartz, Photographer, February 2021

IL-1196-B-1	View of Water Towers 8010 and 8020 looking northeast from the center of the parking lot bounded by 5 th Street, E Street, Heritage Drive, and B Street.
IL-1196-B-2	View of Water Towers 8010 and 8020 looking east from E Street.
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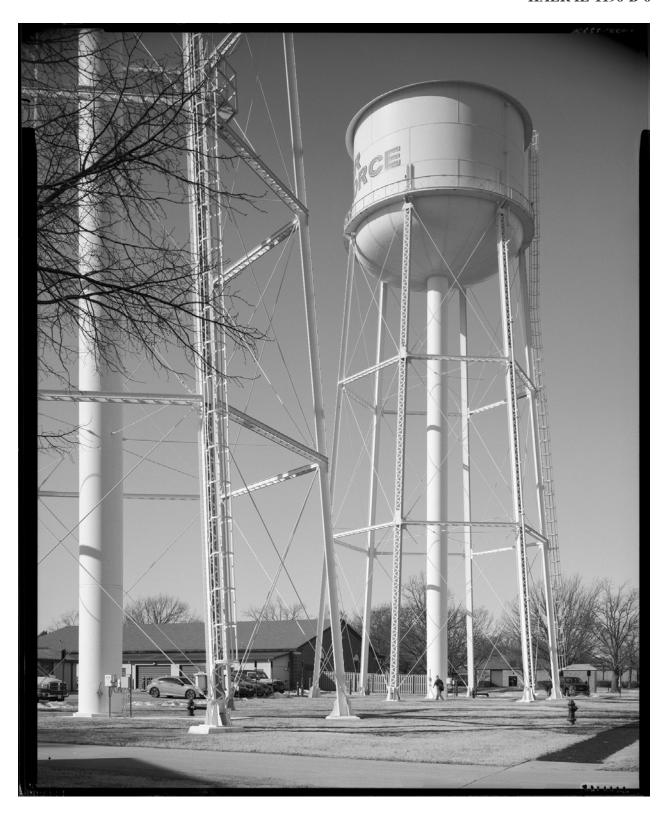




















HISTORIC AMERICAN ENGINEERING RECORD

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Location: West side of Hangar Road, between Main Street and 5th Street

O'Fallon vicinity St. Clair County

Illinois

Scott Air Force Base is located approximately twenty-five miles east of St. Louis, Missouri in Shiloh Township, St. Clair County, Illinois. Access to the base is via Illinois State Highways 158 or 161 and Interstate 64, two miles to the north of the base. The closest communities are O'Fallon, five miles to the northwest; Lebanon, seven miles to the northeast; and Belleville, seven miles to the

southwest.

The Scott Air Force Base, Elevated Water Storage Tanks (Facilities No. 8010 and 8020) are located at latitude: 38.539184, longitude: -89.859999. This point represents the center of the site on which the two water storage tanks are located and was obtained on June 1, 2023, using Google Earth (WGS84). There is no restriction on its release to the public.

Present Owner: United States Department of Defense

Present Use: Water tower

Significance: Established in 1917 as a training center for pilots and crews of airplanes and

airships and utilized by various branches of the United States Army and Air Force, Scott Air Force Base and the related built environment is nationally significant for its association with World War I; World War II; human and material resource mobilization; Lighter-than-Air Craft; and communications

training.

Scott Air Force Base has a distinguished history as it not only played a significant role in traditional twentieth-century aviation but also as a center for experiments in Lighter-Than-Air aviation, including dirigible and balloon

training during the 1920s and 1930s.

The base is also architecturally significant as the built environment of Scott Air

Force Base is a visual and tangible representation of its heritage.

Historian: Erica Ruggiero, McGuire Igleski & Associates, Inc., 2021.

Photographer: Leslie Schwartz, Leslie Schwartz Photography, 2021.

Delineator(s): Sarah Haas, McGuire Igleski & Associates, Inc., 2021.

Project Information: This HAER documentation project was undertaken to document Water Towers

8010 and 8020 at Scott Air Force Base, St. Clair County, Illinois, prior to the

demolition of the subject property as agreed upon between the United States Department of the Air Force, the Illinois State Historic Preservation Office, and American Water MSG.

Adhering to HABS/HAER guidelines, the subject property was documented through research of historic records, photographs, and maps. Historic material was reviewed as available at relevant archives and repositories. One site visit was conducted to photographically document the site, take note of the existing site conditions, features, and alterations over time, and take field measurements.

Draft digital photographs of the proposed views for HAER photography were submitted for review by the Illinois State Historic Preservation Office (ILSHPO). The ILSHPO was also consulted regarding the inclusion of historic images/maps and narrative report outline.

The completed HAER documentation will be provided to the Heritage Documentation Programs in the National Park Service for eventual deposit in the Library of Congress, and the ILSHPO will deposit the recordation package with the Abraham Lincoln Presidential Library in Springfield, Illinois.

Preparation of this documentation was funded and assisted by American Water MSG and was undertaken by Erica Ruggiero and Sarah Haas of McGuire Igleski & Associates, Inc, Evanston, Illinois, under the direction of Erica Ruggiero. Photography was performed by Leslie Schwartz, Leslie Schwartz Photography, Chicago, Illinois.

PART I. HISTORICAL INFORMATION

A. Physical History

- **1. Date(s) of construction:** Original Construction 1939 (Water Tower 8010); 1941 (Water Tower 8020). Dates of construction were provided by the Scott Air Force Base archives.
- 2. Architect/Designer/Engineer: Chicago Bridge and Iron Company
- 3. Original and subsequent owners:

United States Department of Defense (Original and Current)

- 4. Builder, contractor, suppliers: Chicago Bridge and Iron Company
- **5. Original plans and construction:** There are no known original plans or drawings available for the towers, though undated sketch plans were provided by American Water MSG.
- 6. Alterations and additions:

There are no known alterations or additions.

B. Historical Context

Scott Air Force Base (AFB) was established in 1917 as a training center for pilots and crews of airplanes and airships and utilized by various branches of the United States Army and Air Force. It is one of the oldest air bases in the country and has significantly contributed to various aspects of Air Force history, including: The Aviation Section of the Signal Corps; Army Air Service; Army Air Corps; Army Air Forces; and Air Force.

In June 1917, the War Department leased 640 acres from Shiloh Valley Township for the construction of an aviation field. Originally known as Scott Field (1917-1947), named after Corporal Frank S. Scott, Scott AFB (1948 to present) was a major training center for pilots and ground crews for the American Expeditionary Forces' Air Service. During the first year, dozens of wooden barracks, hangars, administrative buildings, and support structures were constructed.

Flying was discontinued at Scott AFB following World War I, and the base population dropped substantially. Local residents grew concerned that the field would be too close and sent representatives to Washington twice in early 1919. Four months after Armistice Day on November 11, 1918, the War Department purchased Scott AFB in March of 1919, though the future function of the center would be debated for the next two years.

In 1921, Scott AFB was chosen as a Lighter-Than-Air (LTA) station emphasizing dirigible aviation. LTA ships were used at the base to research the capabilities of aerial photography and meteorology, and conduct altitude experiments, Experimentation with dirigibles was the primary purpose of Scott AFB from 1921 to 1937.

The following year, the Air Service Balloon and Airship School opened in 1922, accompanied by a military population of almost 700 men, which required the construction of new facilities. The W.M. Sutherland Building and Contracting Company of St. Louis began the construction of the second-largest airship hangar in the nation, eventually completed in 1923 due to the complexity and scale of the project. During the 1920s, the base saw several other new developments, including the construction of a boiler house and steam heating system, a sewage station, an extension of the base water supply, an electric substation, two fireproof buildings for the production of hydrogen gas, a 500,000-cubic foot hydrogen gas tank, a railroad track to service the airship hangar, a bituminous macadam road, and a new concrete building to house the Air Intermediate Depot in 1923. The base was the site of one of the few helium storage and repurification plants in the country. Two storage tanks were constructed in 1925-26 and 1928-29. In 1927, W.C. Johnson, a local contractor, completed a 176-foot-high mooring mast. The mooring mast was designed to anchor dirigibles during inflating and repair procedures.

Because of Scott AFB's central location, it was then selected to be the new home of the General Headquarters Air Force (GHQAF), which managed the air combat arm of the U.S. Army, in 1936.

To meet the needs of the GHQAF, a massive new building program was initiated. In 1938, Scott AFB was expanded from 628 acres to 1,574 acres. A year later, it was again increased to 1,882 acres, nearly three times its original size. Most of the frame World War I and Lighter-Than-Air structures were demolished. Only a few buildings were saved, including the electric LTA substation, the 9th Airship Squadron headquarters/barracks building, nine sets of brick noncommissioned officer's quarters at the south end of the base, and a brick theater. A WPA workforce of 2,500 men and a funding appropriation of \$7.5 million led to the construction of several new buildings in 1939, including several dozen officers' quarters in addition to several new industrial and administrative buildings such as two warehouses,

Water Tower 8010, a maintenance building, Quartermaster office, post exchange, gymnasium, and a fire and guard house.

Due to the outbreak of World War II, the move of the GHQAF to Scott AFB was never completed; instead, Scott AFB was selected to be the Basic School of the Air Corps Technical School (ACTS), which provided training for aircraft mechanics, welders, armorers, and radio operator-mechanics. With the arrival of ACTS, the multi-million-dollar expansion of the base continued into 1940 with the construction of twenty-one more buildings, including a 200-man barracks, Water Tower 8020, Hangar No. 1, a central heating plant, a new entrance gate, a forty-three-bed hospital, and a General Headquarters Air Force office.

Despite a tremendous increase in construction during 1939 and 1940, the built environment of the base remained insufficient to house the training school personnel, and cantonments were seen as the most efficient way to expand. Cantonments served as separate communities, with their own amenities such as chapels, recreational facilities, and post exchanges. Over four hundred temporary frame structures were built in just two years between three cantonments. The last building phase was completed in 1942 and consisted of a fourth cantonment, which was composed of approximately seventy buildings that housed shipping and receiving activities for the base.

During World War II, Scott AFB was the training ground for hundreds of airmen, primarily radio operators and mechanics. By June 1945, the base had trained 77,370 technicians responsible for vital command and control communications throughout the Air Forces. The base acted as the Air Force's parent radio communications school as other radio schools were started in Mississippi, Wisconsin, South Dakota, and Illinois, which followed the model established at Scott AFB.

In 1949, a major command headquarters was housed at Scott Field with the relocation of the HQ Air Training Command (ATC). Scott continued as a major training base for the Air Force until 1957.

In 1957, Scott AFB became the home of the Headquarters Military Air Transport Service. By February 1959, the Air Training Command had left the base, ending its communications and technical training programs. The 1405th Air Base Wing maintained the base properties and served as the base's host unit. The 1405th Air Base Wing was renamed the 1405th Aeromedical Transport Wing in 1964 and was in charge of patient airlifts in the United States. The 375th Aeromedical Airlift Wing absorbed the duties of the 1405th ATW when it was inactivated in 1966. The 375th Aeromedical Airlift Wing was redesignated the 375th Airlift Wing in December 1991. Reorganization in the Air Force resulted in the redesignation of the Military Airlift Command (MAC) to the Air Mobility Command (AMC) in June 1992.

Scott AFB is the only base serving as host to three major commands. These commands are the Air Mobility Command, the Air Force Communications Command, and the U.S. Transportation Command.

Construction and Engineering of Water Towers 8010 and 8020

Water Tower 8010 is a steel 200,000-gallon water tank, completed on May 3, 1939, at a cost of \$32,797. Water Tower 8020 is a steel 300,000-gallon water tank, completed on May 14, 1941, at a cost of \$33,092. Both structures were built as part of the base's water supply system during the expansion program between 1938-1942. Plans for the welded steel multicolumn elevated storage tanks were prepared by the Chicago Bridge and Iron Company.

The Chicago Bridge & Iron Co. (CB&I) was founded in 1889 as part of a merger between Horace Ebenezer Horton's Minneapolis-based bridge business and the Kansas City Bridge and Iron Company, operated by George Wheelock and A.M. Blodgett. The new company established manufacturing facilities in Chicago's Washington Heights neighborhood, and in 1890 absorbed the operations of the Des Moines-based George E. King Bridge Company. By 1893, CB&I had contracts to build several hundred bridges across the country, as demand for the replacement of the nation's deteriorating wooden bridges for iron bridges rose during the latter half of the nineteenth century. Other structures CB&I was contracted to build included the first metallic water towers and standpipes, and a Horse Exchange Amphitheatre for the Chicago stockyards.

The company struggled over the next four years due to the Panic of 1893, followed by a devastating fire that destroyed the Washington Heights plant in 1897. As the plant was rebuilt, previous contracts were completed at subcontracted factories. Simultaneously, the popularity of the company's water towers helped to stabilize the company after Horton's son, George Horton, perfected a hemispherical tank bottom that eliminated the need for a complex tank deck.

During the first decade of the twentieth century, the company was awarded several hundred contracts for water tanks, bridges, and miscellaneous structures, though the Panic of 1907 would see many of these contracts canceled as public funds for infrastructure improvements disappeared overnight.

The short-lived financial panic followed by the onset of World War I resulted in an increase in the demand for war materials from American manufacturers. CB& I received hundreds of war-related orders, including one to build 150 5,000-ton barges.

Under the leadership of George Horton, following his father's death in 1912, the company shifted its focus to Central and South American governments in 1919, in lieu of the reconstruction of Europe. Soon CB&I was fulfilling large orders for oil storage tanks, first in the United States and then in Cuba, Venezuela, Aruba, and Mexico, followed by orders from the Dutch East Indies, Malaya, India, and China. The flourishing tank business prompted Horton to phase out the company's bridge-building business to focus on plate steel structures. During this time, Horton also invented a twelve-hole rivet punch, capable of boring a dozen perfectly placed rivet holes at once instead of boring rivet holes with templates. Known as the "Chi bridge Spacer," it shortened production schedules, enabling the company to secure more business until the company abandoned rivets altogether for leak-proof welded seams.

In 1922, CB&I purchased the rights to a "floating roof" storage system patented by a Bureau of Mines engineer named John H. Wiggins., which allowed the tank's roof to float on the stored product, trapping the contents within and preventing losses to leakage or evaporation.

The company was not unaffected by the Great Depression in 1929 but survived on limited work from the oil industry in the Middle East, the Dutch East Indies, and Italy. The decline in work for CB&I was short-lived. During the 1930s, the company entered several new fields, including the brewery business, following the repeal of the Eighteenth Amendment in 1933 and the end of Prohibition. In the 1930s, the company also introduced electric arc welding technology into its products, which allowed entire structures, rather than just components, to be welded, reducing the weight of the structures and resulting in more efficient designs.

With America's entry into World War II, CB&I turned its attention to wartime production and secured government contracts for dry docks and ships. The company's first contract was for forty Landing Ship Tanks which were designed to deliver heavy mobile machinery from ships to beachheads. The company's dry docks were capable of lifting 100,000-ton ships out of the water for repairs.

As the war drew to a close, CB&I was highly regarded for its excellent production schedule and cost control, and the company entered the postwar era on a strong financial footing. The company continued to manufacture water and oil tanks while branching out into the emerging fields of cryogenics, hydroelectric, and nuclear power, and liquified natural gas. After forty years, the company temporarily re-established its bridge department to build the caissons for the construction of Michigan's Mackinac Bridge.

In the early 1960s, the company saw tremendous international growth with the establishment of subsidiaries in Germany, Holland, and Mexico, the construction of operations in the Philippines, Italy, and Japan, and the acquisition of several engineering companies, which expanded CB&I's reach into industrial waste disposal and water and sewage plants.

CB&I experienced a significant boom in business with the Arab oil embargo in 1973, as oil consumers had little storage capacity for oil, as product delivery became infrequent.

CB&I became a public company in 1977 and underwent a corporate reorganization two years later to create CBI Industries, which took ownership of Chicago Bridge & Iron. Leadership felt the name change was necessary as the company was no longer based in Chicago, did not build bridges, and no longer used iron.

During the 1980s, the company sought to continue its diversification, due to ongoing struggles with the energy industry, with the acquisition of Liquid Carbonic, the world's leading supplier of carbon dioxide, in 1984. In the 1990s, CBI Industries continued to diversify its operations as it began to construct floating casinos and invested in high-tech industries, in addition to a series of acquisitions in the petroleum and gas production fields at the end of the twentieth century. CBI Industries entered the twenty-first century with ninety percent of its profits derived from the hydrocarbons industry and the establishment of a new business line focused on retrofitting petrochemical plants to meet increasingly stringent emissions requirements.

The Chicago Bridge & Iron Co. is well known for the construction of several historic structures, many of which are listed in the National Register of Historic Places, including: the Bunnell Water Tower (Florida); Blakeman Bridge (Illinois); Evansville Standpipe; (Wisconsin); Hartford Water Tower (Arkansas); Lake Ditch Bridge (Indiana); Mahned Bridge (Mississippi); Manning Water Tower (Iowa); Monette Water Tower (Arkansas); Otranto Bridge (Iowa); Tyronza Water Tower (Arkansas); Water Street/Darden Road Bridge (Indiana); and the West Water Tower and Ground Storage Tank (Illinois).

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

Water Tower 8010

Water Tower 8010 is an elevated steel water tank built in 1939. The structure is composed of a round water tank with a conical roof supported by five steel support columns or "legs". Extending from the bottom of the tank is a large riser pipe that connects with piping located beneath the structure. The water tank measures 38 feet in diameter and is 145 feet in height.

Water Tower 8020 is an elevated steel water tank built in 1941. The structure is composed of a round water tank with a conical roof supported by five steel support columns or "legs". Extending from the bottom of the tank is a large riser pipe that connects with piping located beneath the structure. The water tank measures 41 feet in diameter and 147.5 feet in height.

B. Description: Water Tower 8010 and 8020

1. Overall dimensions:

Water Tower 8010: 38 feet in diameter and 145 feet in height.

Water Tower 8020: 41 feet in diameter and 147.5 feet in height.

- **2. Foundations:** The five steel support columns or "legs" for each water tower are bolted to a concrete footing or "column shoe", but the extent of the below-grade foundation is not visible or known.
- **3.** Walls: The exterior walls of the water tank are painted steel.
- **4. Structural system, framing:** The structural system of each water tower is composed of a series of steel supporting columns and cross braces that support the elevated welded steel water storage tank.

5. Openings:

- **a. Doorways and doors:** There are no fenestration openings (e.g., doors or windows) at either tower.
- **b. Windows:** There are no fenestration openings (e.g., doors or windows) at either tower.
- c. Other: N/A

6. Roof:

- **a. Shape, covering:** Both water towers have a low-pitched conical steel roof with a center vent at the peak of the roof. Water Tower 8010 also has a small platform at the center of the roof.
- b. Cornice, eaves: N/A
- **7. Decorative features:** As a utilitarian structure, there are no decorative features prevalent at either water tower.
- C. **Description of Interior:** There are no interior spaces associated with either Water Tower 8010 or 8020.

D. Site:

1. General setting and orientation: Located in southern Illinois, The terrain of Scott AFB is relatively flat, with elevations ranging from 440 to 460 feet above sea level. The area of the base is drained by Ash Creek, which runs along the western and southern

boundaries, and Silver Creek, along the eastern edge of the base. Dense woodlands flank Silver Creek at the base's eastern boundary. To the north of the base are predominately agricultural lands and stands of timber that flank Cardinal Creek.

The site of Scott AFB was chosen for its level terrain, excellent drainage, and location adjacent to the Southern Railway (SOU) line. A one-mile railroad spur was extended north from the SOU to connect with the base. Vehicular access to the base is provided by Illinois State Highways 158 and 161 and Interstate 64.

The flat, open landscape was ideal for the construction of runways and for aviation visibility. The layout of the field followed "a standard single-unit plan" that Captain Clinton Edgar and Engineer Albert Kahn devised at the beginning of World War I. The base was laid out on a grid plan with streets oriented north-south and east-west.

PART III. SOURCES OF INFORMATION

A. Original Architectural Drawings:

There are no known original plans or drawings available for the towers, though undated sketch plans were provided by American Water MSG.

B. Early Views:

One undated view of Water Tower 8010 and Water Tower 8020 was provided by Cultural Resources Manager Mark E. McCoy, P.G., at the Scott Air Force Base archives.

C. Interviews:

None

D. Bibliography:

1. Primary and unpublished sources:

Kennedy, Betty R. *An illustrated history of Scott Air Force Base*, 1917-1987. Illinois: Military Airlift Command United States Air Force Scott AFB, 1987.

Thomas and Associations Preservation Planners. *Inventory and Evaluation of Historic Buildings and Structures on Scott Air Force Base*. Illinois: Headquarters of Air Mobility Command Scott AFB, 1992.

E. Likely Sources Not Yet Investigated:

N/A

F. Supplemental Material:

Selected historic illustrations and photographs are appended. See Appendix I.

APPENDIX I – SUPPLEMENTAL MATERIALS

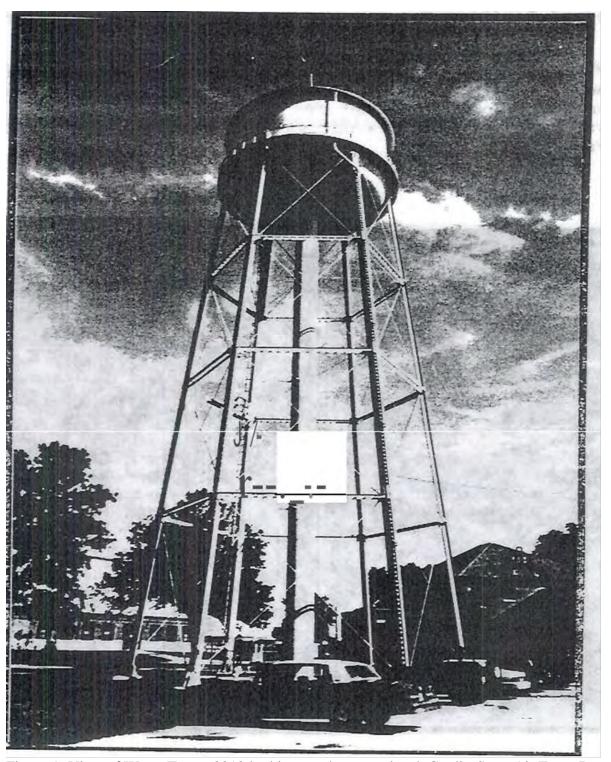


Figure 1: View of Water Tower 8010 looking southeast, undated. Credit: Scott Air Force Base archives.

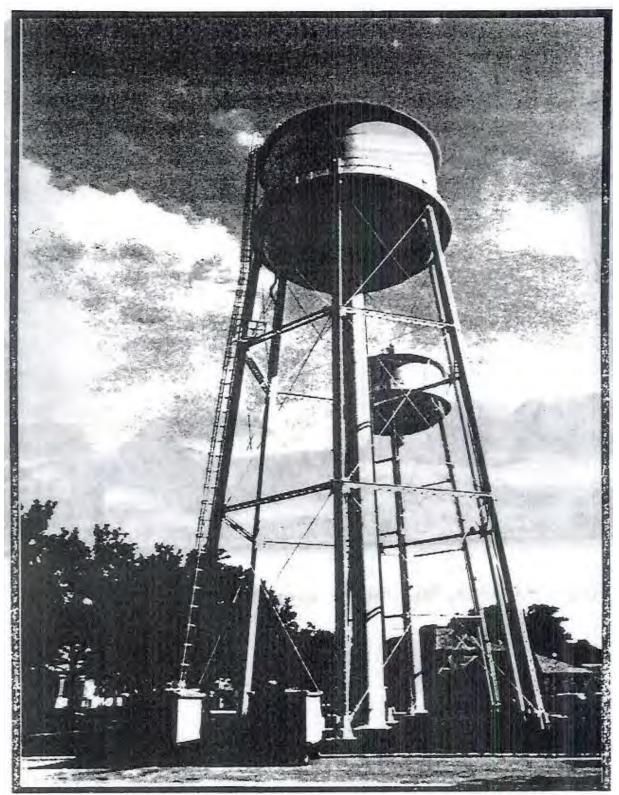


Figure 2: View of Water Tower 8020 looking southwest, undated. Credit: Scott Air Force Base archives.

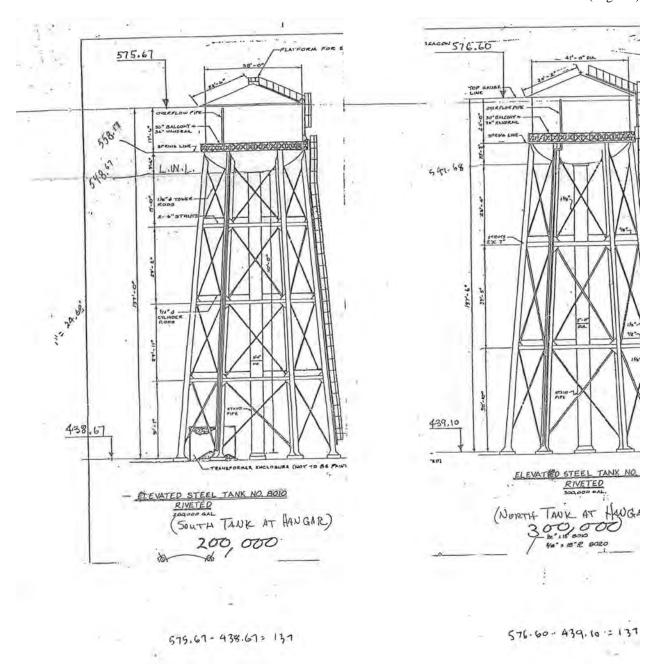


Figure 3: Undated sketch plans of Water Towers 8010 and 8020. Credit: American Water MSG.



Figure 4: View of Water Towers 8010 and 8020 looking northeast from the center of the parking lot bounded by 5th Street, E Street, Heritage Drive, and B Street, January 2020.



Figure 5: View of Water Towers 8010 and 8020 looking east from E Street, January 2020.



Figure 6: View of Water Tower 8020 looking southwest from the east side of Hangar Road, north of the hangar, January 2020.



Figure 7: View of Water Tower 8010 looking north from the east side of Hangar Road just south of 5th Street, January 2020.



Figure 8: View of Water Tower 8020 looking east from the parking lot immediately to the west of the tower, January 2020.

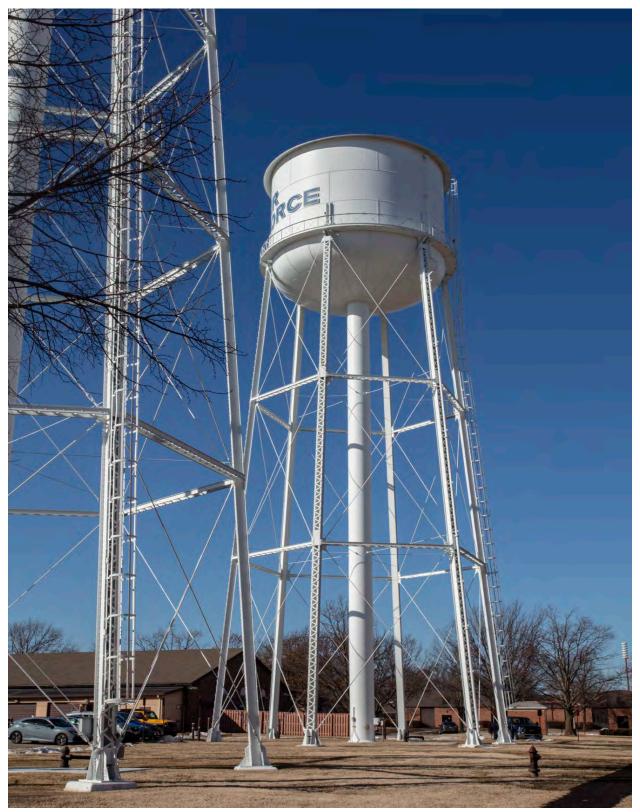


Figure 9: View of Water Tower 8020 looking northwest from the west side of Hangar Road at the entrance to the parking lot, January 2020.



Figure 10: View of Water Tower 8020 looking north from the center of Water Tower 8010, January 2020.



Figure 11: Detail view of the welded steel columns of Water Tower 8010 at the southeast corner of the tower, January 2020.



Figure 12: Detail view of the welded steel structure and base of the elevated storage tank of Water Tower 8010 looking up, January 2020.



Figure 13: Detail view of the welded steel columns of Water Tower 8010 at the southwest corner of the tower, January 2020.

