

Bunnell Water Tower

By Randy Jaye



Figure 1 - Full West View of the Bunnell Water Tower – which is located at 100 Utility Street, Bunnell, FL 32110 – (photograph by author – August 2018).

Towering over the city of Bunnell, FL is its most visible and iconic landmark: the city of Bunnell elevated steel water tower with hemispherical bottom tank (commonly referred to as the “Tin Man”) – (Figures 1-5, 8 & 9). It was built in 1926 by Chicago Bridge & Iron Works¹ (who built numerous other water towers). It was part of a new waterworks system for Bunnell that included the elevated tank on tower, reservoir building and pumping station (Figures 6-7) that went into operation in December 1927. The elevated tank on tower and pumping station are extant and are currently operating on a daily basis. The original reservoir building was removed sometime in the 1970s. The pumping station measures 33’ x 24’ and houses pumping equipment, electric and electronic control and monitoring equipment. It includes brick walls, nine

windows measuring 7’-0” x 3’-6” (two have been enclosed with bricks to make wall space for the installation of modern electric and electronic control and monitoring equipment), double front wood doors measuring 7’-0” x 3’-6” each, a back wood door measuring 7’-0” x 3’-6”, a wood framed hip roof with asphalt shingles and the building stands on a concrete foundation.

The water tower is 125 feet high and its elevated steel tank holds 75,000 gallons of water and the structure is in excellent original cosmetic and mechanical condition. The elevated steel water tank

includes a conical top with ball finial, Horton hemispherical bottom², cast iron riser pipe and is supported by four steel trestle columns (legs) on concrete foundations and reinforced with steel cross braces. A ladder on the southwest column provides access to a circular deck with hand rails around the bottom of the central section of the tank, and another ladder leading from the circular deck provides access all the way to the ball finial at the peak of the conical top of the tank. The east and west sides of the elevated tank have black painted signage that read “City of Bunnell, Crossroads of Flagler County”.

The structure is a significant part of Bunnell’s local history as it was instrumental in the development and modernization of the area. Bunnell’s Centennial (1913 to 2013) logo includes the elevated water tower displayed as a prominent landmark confirming it was an important influence throughout the first 100 years of the city’s history.



City of Bunnell’s Centennial Logo – Source: City of Bunnell.

History of the Bunnell Water Tower

There were multiple reasons why the City of Bunnell needed a new modern water system in the 1920s. First, residents complained of unpalatable hard (bad tasting water with high mineral content) from their old water system. Second, the city needed a modern water system to attract new residents and businesses. Third, a new modern water system would reduce the city’s insurance rates. Fourth, a new modern water system would provide higher pipeline pressure and water faster and more reliably in case of fire emergencies by strategically placing fire hydrants in various sections of the city. Fifth, the old water system had a wooden tank that was obsolete and beginning

to rot on its tower. And, sixth, a new modern water system would potentially provide uniform pressure and soft, purer and better tasting water.

In 1926, it was no surprise that the voters of Bunnell approved \$100,000 for an infrastructure improvement that included acquiring a site for an operations plant, constructing, maintaining and equipping a new waterworks system for the city. Bonds were sold to finance the project.

New Waterworks System Project

In January 1927, Bunnell signed a contract with the Gray Artesian Well Company of St. Augustine to drill a well approximately 90 feet deep with casing that is suitable for pumping for the new waterworks system. After the well was completed water was tested by the Florida State Board of Health who declared it to be of fine quality, pure with no color or taste and with only three hundred to a million hardness. A second well was drilled so there would be a sufficient quantity of water for the city as it grew. The contracted price for these wells was \$2,375 each.

Bids for furnishing materials, labor and construction for the new waterworks were opened on March 28, 1927. More than fifteen bids were received by Engineer N.A. Hotard. On April 11, 1927, the Bunnell city commission awarded the contract to the Hopper Construction Company.

On July 7, 1927, material began arriving at the site of the new water plant, which was determined by the newly dug artesian wells. F.W. Hopper, of the Hooper Construction Company, stated that the project would most likely be finished in 140 working days and ahead of schedule. Construction of the new water system did move fast and by September 8, 1927 the majority of the main pipes and fire hydrants were installed and concrete forms for the reservoir were nearly completed. Representatives from the Chicago Bridge & Iron Works were working on erecting the steel water tank and its tower. The city purchased the steel water tower structure through the J.B. McCrary Company.

On October 27, 1927, Engineer Paynter, who was leading the construction project of the new waterworks, predicted that the system would be operational by December 1, 1927 despite a pump that was scheduled to arrive late. Paynter also announced that the new system could temporarily be connected to the present water source until the new wells and pumps were available. The potential delay regarding cutting up sections of State Road No. 4 was avoided when chairman of the Bunnell city commission, J.J. McLanahan, announced that a satisfactory agreement with State

Road Engineer Thrasher was reached. The agreement details were that four places in State Road No. 4 would be cut up and after the water mains are installed the trenches will be covered and refilled with concrete.

On December 1, 1927, Bunnell City Clerk, John Gerz, announced that due to a few construction delays the new waterworks system should be operational within the next two weeks. Some water meters were still pending installation but Gerz said they would be ready when the new system is ready to be turned on. Bunnell officials said, “this will prove in time [to be] one of the best advertisements for Bunnell that could be named”.

New Waterworks System Put into Operation in 1927

On December 12, 1927, Bunnell’s new waterworks system went operational, and Earl Brockett was placed in charge of the plant. Almost immediately the old system’s lines were cut off and all consumers were connected onto the new waterworks system. Bunnell city clerk, John P. Gerz, said that people who did not use the old water system started to submit applications to connect to the new system and expected that the number of new customers to increase. The *Flagler Tribune* reported on December 15, 1927 that “One of the most important events ever to occur in Bunnell took place this week when the new \$100,000 waterworks system was turned on for the first time...”

The new waterworks system included several miles of 10, 8, 6 and 2 inch mains that were laid on all city streets, fire hydrants, an elevated steel water tank on tower, storage reservoir and a pumping station.

After the new waterworks system went operational water samples were taken on a monthly basis and sent to the Florida State Board of Health in Jacksonville to be examined by a chemist. According to a report published in the *Flagler Tribune* on June 28, 1928 Chief Engineer, E.L. Filby stated, “from the...analytical data we would say that the bacterial or sanitary quality of your water is very good.”

Bunnell Water Tower’s Original Maintenance Instructions

The original 1927 elevated tank maintenance instructions, now hanging on the wall in Bunnell’s new water treatment plant, from Chicago Bridge & Iron Works state the following:

Applying to Hemispherical Bottom Tanks with Cast Iron Riser Pipe and without a Heating System

PLEASE DO NOT REMOVE THIS BOARD

- (1) This structure should be painted every four to five years. Before painting, all rusty spots should be wire brushed. Use a good grade of zinc, lead, or graphite paint and employ a careful, conscientious painter.
- (2) The column shoes, or bases, should be kept clean and no foreign matter should be allowed to accumulate around and in contact with the steel work. Hot ashes and cinders are especially detrimental to the columns and under no circumstances should this material come in contact with the steel.
- (3) The diagonal rods, or wind bracing in the tower, are absolutely necessary to the strength of the structure and without them the tower may collapse. They should not be removed to make way for driveways or small buildings. In case anything of this kind is contemplated, write the Chicago Bridge & Iron Works, giving the clearance desired.
- (4) The small radial rods, or “spider rods” at the top of the tank under the roof are not necessary to the strength of the tank and are put in for erection purposes only. If they should rust out, they may be removed without any injury to the structure. Do not allow workmen or painters to walk on these rods as they may become unsafe.

VERY IMPORTANT

- (5) During the cold periods, see that there is always circulation in the riser pipe. This may be accomplished by turning a faucet in the pump house on in the tank vicinity and allowing it to run all night or during periods when there is no other drain on the water system. A slight movement of water in the tank riser pipe prevents a freeze-up and possible bursting of the pipe.
- (6) When the tank is being painted, it is well to take off the collars of the frost casing and examine the expansion joint to see that it is operating properly.

Bunnell Water Tower and a Modern Co-Removal Ion Exchange Process

In October 2015, the city of Bunnell opened a new \$4.8 million water and sewer plant (the world’s first municipal application of the Orica MICo [MIEX® Co-removal] ion exchange process). This

system uses both softening and dissolved organic carbon resins to remove both organics and hardness from the city's groundwater supply. The original Bunnell Water Tower is connected with this new facility and providing water, at a pressure of 52 psi, to Bunnell residents and businesses. The co-removal ion exchange process is projected to meet the city's finished water demand through 2030. The Florida Chapter of the American Public Works Association named Bunnell's new Ion Exchange Water Treatment Plant the 2016 Project of the Year for environmental projects under the \$5 million category.

The Bunnell Water Tower's Current Usage

Currently, the Bunnell Water Tower is in daily operation, more than ninety years since it was erected and first placed in service, and provides the city with water pressure during emergencies when electric and generator sources are not available (as the city's two modern 350,000 gallon ground storage tanks cannot provide water pressure during these types of emergencies). Keeping the Bunnell Water Tower operational is important to the city, especially in times of emergencies, and it undergoes an inspection on a yearly basis and is repainted every five years.

Listing on the National Register of Historic Places

The initial nomination was approved by the Florida National Register Review Board on November 8, 2018 and was then sent to the U.S. Department of the Interior, National Park Service for final approval by the Keeper of the National Register. On February 4, 2019, the Bunnell Water Tower was officially listed under a multiple nomination (Florida's New Deal Resources MPS) on the National Register of Historic Places.

Notes

¹ **Chicago Bridge & Iron Works (CB&I)** was established in 1889 when Horace Ebenezer Horton's (1843-1912) Minneapolis-based engineering firm merged with the Kansas City Bridge and Iron Company. The new company established its iron bridge building operations in Washington Heights, Illinois (a suburb of Chicago). In 1890, the CB&I purchased the King Bridge Company as the demand for bridges was surging. The company diversified its operations by building other structures including the first metallic water towers and standpipes. In 1914, the war in Europe prompted the purchase of war material from American companies and CB&I obtained war-related orders which increased the growth of company. After the United States entered WWI in 1917 CB&I received war-related orders to build 150 5,000-ton barges. After WWI ended in 1918 CB&I began building huge oil storage tanks for the global petroleum industry, and phased out their bridge building. During WWII CB&I began making landing ship tanks for war production and their number of employees rose from 4,000 in 1941 to 20,000 in 1942. After WWII CB&I entered the cryogenics, hydroelectric and nuclear power, liquefied natural gas and space program industries. CB&I also reentered the bridge making business as well. In 1977, CB&I became a public company. In 1979, a corporate reorganization forced a name change to CBI Industries because the company was not using iron, had ceased bridge building again and was no longer based in Chicago. A vertical integration strategy in the beginning of the 21st century added several petroleum and gas industry companies including Howe-Baker, Engineering Construction and Water divisions of Pitt-Des Moines Inc. and London-based John Brown Hydrocarbons Limited which increased revenues. In January 2005, the Federal Trade Commission ruled that its four-year-old acquisition of units from Pitt-Des Moines Inc. had violated antitrust law. The FTC required CB&I to spin off some of its assets to restore domestic competition. In May 2018, shareholders of CB&I and McDermott International approved a merger, despite efforts by the offshore drilling contractor Seasub 7 to block the deal. The merger has effectively created a vertically integrated onshore and offshore engineering and construction company.

² **Horton hemispherical bottom** water tanks were invented by Chicago Bridge & Iron Works Company founder Horace Ebenezer Horton, who worked with his son, George T. Horton (1873-1945) who was an industrialist and engineer, to perfect the design. The hemispherical shaped bottom design eliminated the need for a complex tank deck. The company's first elevated steel plate water tank with a full hemispherical bottom was erected in Fort Dodge, Iowa in 1892.

Bibliography

- Bonds Sold and Contract Is Let for Waterworks. *Flagler Tribune*. April 14, 1927.
- Bunnell Water is 'Very Good' says Board of Health. *Flagler Tribune*. June 28, 1928.
- City Commission Contracts for Well. *Flagler Tribune*. May 19, 1927.
- City Commissioners Hold Special Meet on Water Project. *Flagler Tribune*. January 20, 1927.
- City of Bunnell Hosts Ribbon Cutting for Water Treatment Plant. *Water and Waste Digest*. December 15, 2015.
- Civic Improvements. *Flagler Tribune*. January 6, 1927.
- Complete One of City Wells Today. *Flagler Tribune*. August 4, 1927.
- Construction of Waterworks is Progressing Fast. *Flagler Tribune*. September 8, 1927.
- Drilling Resumed by Contractor on Waterworks Well. *Flagler Tribune*. July 14, 1927.
- Dubie, Carol Ann. (1980). *The Architecture and Engineering of Elevated Water Storage Structures: 1870-1940*. The Graduate School of Arts and Sciences of the George Washington University.
- Hampton, Liz. McDermott, Chicago Bridge & Iron shareholders approve merger. Reuters. May 2, 2018. <https://www.reuters.com/article/us-cb-i-m-a-mcdermott-intern/mcdermott-chicago-bridge-iron-shareholders-approve-merger-idUSKBN1I3253> Accessed August 12, 2018.
- History of Chicago Bridge & Iron Company, N.V. Reference for Business. <http://www.referenceforbusiness.com/history2/15/Chicago-Bridge-Iron-Company-N-V.html#ixzz5O1jMHPzC> Accessed August 12, 2018.
- Jaye, Randy. *Flagler County, Florida: A Centennial History*. St. Petersburg, FL: Booklocker, 2017.
- London, Aaron. Bunnell Water Tower, Coquina City Hall Added to National Register. *Flagler/Palm Coast News-Tribune*. February 13, 2019.
- New Water Plant in Operation First of This Month. *Flagler Tribune*. December 15, 1927.
- Old Water Tank Being Torn Down. *Flagler Tribune*. April 5, 1928.
- Operation of New Water System Soon. *Flagler Tribune*. December 1, 1927.
- Paving and Water Works Are Improvements Voted. *Flagler Tribune*. October 30, 1926.

Town Commission Gets Several Bids for Waterworks. *Flagler Tribune*. March 31, 1927.

Water Mains Put Under State Road. *Flagler Tribune*. November 10, 1927.

Waterworks Construction Bids to be Opened Monday, March 28 [1927]. *Flagler Tribune*. March 17, 1927.

Wells, Bruce. *Horace Horton's Spheres*. Exploring Energy News. September 2017, page 5.

Work Begins this Week on Town's New Water Plant. *Flagler Tribune*. July 7, 1927.

Work Begun on Excavations for Water Reservoir. *Flagler Tribune*. August 18, 1927.

Water System to be Cut in Dec. 15 [1927]. *Flagler Tribune*. October 27, 1927.



Figure 2 - Bottom View of Water Tank – (photograph by author – August 2018).



Figure 3 – Chicago Bridge & Iron Works Manufacturers Label on SW column of the Water Tower – (photograph by author – August 2018).



Figure 4 - Columns of Water Tower - Ground Attachments – (photograph by author – August 2018).



*Figure 5 - Ladder on the SW steel column of the Water Tower –
(photograph by author – August 2018).*



Figure 6 - SW View of Original Pumping Station – (photograph by author – August 2018).



Figure 7 - NW View of Original Pumping Station – (photograph by author – August 2018).



Figure 8 - East Side of Elevated Water Tank – (photograph by author – August 2018).



Figure 9 – NW Side – Full View of the Water Tower – (photograph by author – August 2018).