

Hardin City Water Works (Hardin City Hall)
101 E. Fourth
Hardin
Big Horn County
Montana

HABS No. MT-71

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2-HARD,
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Buildings Survey
National Park Service
Rocky Mountain Regional Office
Department of the Interior
P.O. Box 25287
Denver, Colorado 80225

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HISTORIC AMERICAN BUILDINGS SURVEY

HARDIN CITY WATER WORKS
(Hardin City Hall)

HABS No. MT-71

Location: Northeast corner of Cheyenne and Fourth, Hardin, Big Horn County, Montana

Present Owner: City of Hardin

Present Use: city water works (filtration plant), garage and shops, City Council meeting room

Significance: The Hardin City Water Works building is significant as a physical representation of the relatively rapid growth of Hardin. Within several years of its founding in 1907 and incorporation in 1911, Hardin and its citizens were able to construct this building to house a state-of-the-art water treatment facility for the city water supply system and to house city offices and an up-to-date city fire department. Aside from subsequent additions to the water treatment portion of the building, the Hardin City Water Works has sustained few alterations.

PART 1. HISTORICAL INFORMATION

The Hardin City Water Works, also known as the Hardin City Hall, was built in 1919-1920 as part of an addition to the community water system and to house the city council meetings and the town's fire trucks. Ray M. Murray, a Billings engineer, designed the overall project, which from the point of view of the community was principally an improvement to the existing city water supply system. He sub-contracted the design of the actual building to the architectural firm of McIver, Cohagen, and Marshall, also of Billings. The Security Bridge Company of Billings was awarded the contract to construct the improvements and additions to the water supply system and Security sub-contracted actual construction of the building to Percy Wilcox, a general contractor from Hardin. The City Water Works marks a steady improvement in public utilities by the City of Hardin (newly incorporated in 1911) during the first decade of its formal existence.

Hardin was a relatively late arrival as a city in Montana. Now the county seat of Big Horn County, Hardin is about 45 miles southeast of Billings on the northern edge of the Crow Indian Reservation and near the confluence of the Big Horn and Little Big Horn rivers. Following the Fort Laramie Treaty of 1851, Crow lands originally encompassed almost all of the Yellowstone River basin in southeastern Montana and part of northern Wyoming. The United States government first reduced the size of the Crow lands by a treaty in 1868 which established the reservation and promised annuities and other services to the Crow. Continued pressure from railroad, agricultural, and mining interests, however, forced the Crow to cede more lands to the government in 1881, 1891, and 1904. That last cession included land, called the "ceded strip," between the Yellowstone River and the present northern boundary of the reservation. It also followed by ten years the completion along the Little Big Horn River of a rail line of the Chicago, Burlington, and Quincy Railroad. This new route connected the Burlington's midwestern network of trackage with the Northern Pacific's transcontinental line at Huntley, just east of Billings, and gave the Burlington a direct connection to the Pacific Northwest.¹

Prior to building its line through Wyoming and southern Montana to Huntley, the Burlington had been in the practice of "colonizing" unsettled areas of the midwestern plains where it constructed its initial network. The Burlington slowly extended its lines westward and at the same time founded new towns along its right-of-way and encouraged agricultural settlement near the new towns to insure that there would be freight traffic. The owners and managers of the Burlington incorporated the Lincoln Land Company to establish these small agricultural towns along the extended rail lines. Construction of the line across sparsely-populated Wyoming and southern Montana to Huntley contrasted with the Burlington's earlier expansion: the goal for the Huntley line was to quickly gain access to Pacific markets by laying track over a great distance in a relatively short time rather than to expand routes slowly while methodically establishing an agricultural population base which would support local freight service. Therefore, the Lincoln Land Company did not initially establish new towns along the Wyoming/Montana route as it had in the colonized areas. When the "ceded strip" was opened for settlement along the Burlington's line, however, the railroad saw an opportunity to establish new markets in the Big Horn basin.

In 1904, officials of the Burlington and the Lincoln Land Company selected a desirable site for a new town just north of the reservation boundary and began to negotiate with the superintendent of Crow Agency to devise a method of acquiring the desired land for the town before the government opened the ceded strip for public homesteading. In the summer of 1906, the Lincoln Land Company purchased its desired land from the families of deceased Indians² and the government opened the remainder of the "ceded strip" to homesteading. Early in 1907, the Lincoln Land Company surveyed and platted a townsite and in May of that year held the first auction for lots in the new town of Hardin. Construction of a few business blocks and residences began immediately. In the spring of 1908, Hardin's early citizens formed the Hardin Water and Power Company. They laid a redwood stave water main along Center Street and provided three fire hydrants. The Chicago, Burlington, and Quincy Railroad sold water from its 100,000-gallon water tank to the town. A town fire department, consisting of fifty volunteers, built a small wood frame fire

station in 1910 which housed a cart equipped with fifty feet of hose and eighteen huckets. A year after incorporation in 1911, the City of Hardin built a new wood frame fire hall and city council chambers.³

In July 1914, the city council interviewed engineers to design a new city water system and selected B.C. Lillis. He designed a system which included an intake on the Big Horn River, 4,800 feet of ten-inch steel pipe from the river to a new 70,000-gallon city water tank, 3,000 feet of eight-inch main running from the tank along 4th Street, and laterals from the main serving the entire city. The Security Bridge Company of Billings submitted the low bid and received the contract to construct the new city water system.⁴ The Security Bridge Company was Montana's largest bridge construction contractor and also built numerous water and sewerage systems throughout the state and region.⁵ Established in Minneapolis by William S. Hewett and his cousin Arthur in 1906, Security was a major bridge contractor in Minnesota and the Dakotas as well as Montana. William had established his own bridge construction business in 1897 and Arthur was his travelling agent. In 1904 Arthur established a branch office in Billings. After Security moved its headquarters from Minneapolis to Billings in 1911, Arthur became president and William, while maintaining his financial interest in the company, devoted much of his time to other interests, such as the development of pre-cast and pre-stressed concrete structures, especially large water tanks.⁶

By 1919, it was obvious that Hardin needed to improve its water supply system because water taken from the Big Horn River during low water was sometimes "so discolored that it was hardly fit to wash in let alone drink."⁷ The city aldermen interviewed engineers to design improvements and additions to the 1914 city water supply system and selected Ray M. Murray of Billings.⁸ Little is known of Murray. His first appearance in a Billings city directory was in 1913-1914, listed as the manager of the Montana Bridge Structural Company. During the years following, through 1922, Murray called himself a civil engineer and consulting engineer. During his tenure in Billings, he did not join the Montana Society of Engineers.⁹ Nevertheless, the improvements he designed for

the Hardin water supply system, including a filtration plant, appear to have included the most up-to-date technologies available for municipal water supply.

To design the building to house the filtration plant (and to house the city council chambers and the community's fire fighting equipment), Murray selected the architectural firm of McIver, Cohagen, and Marshall. Both Murray and the architectural firm had offices on the third floor of the Electric Building in Billings. These three young architects formed their firm in about 1915 (McIver and Marshall resided in Great Falls and Cohagen resided in Billings), but then quickly suspended their business to enlist in the Army during World War I. After the war, they re-established their business with offices in Billings and Great Falls. Walter V. Marshall left the firm in 1920 and McIver and Cohagen continued as partners until 1936 with offices in both cities. Born on a ranch west of Great Falls, Angus V. McIver continued to live and practice in Great Falls until his retirement in 1969.¹⁰

Although documents do not explicitly state it, Chandler C. Cohagen was probably the project architect for the Hardin City Water Works building.¹¹ Born in Iowa in 1889, Cohagen moved with his parents in 1907 to Billings, where he worked as a carpenter for his father, a general contractor. After a couple of years as a carpenter, Cohagen enrolled in the University of Michigan, graduating with a degree in architecture in 1915. While in school, perhaps during summers, he also worked for the Billings architect, Curtis C. Oehme. Following graduation, he formed his Billings and Great Falls firm with McIver and Marshall and, following Marshall's departure in 1920, practiced in partnership with Angus McIver until 1936. After 1936, Cohagen practiced alone. He served on the Montana Board of Examiners for twenty-eight years and in 1962 was elected president of the National Council of Architectural Registration Boards. In addition to numerous major projects in Billings, Cohagen designed the libraries on the campuses of the University of Montana in Missoula and Western Montana College in Dillon, Deaconess hospitals in Billings and Great Falls, and public schools in Sidney, Miles City, Roundup, Laurel, Bridger, Fromberg, and Joliet, Montana, and Greybull and Gillette,

Wyoming. His other Hardin buildings (some of which he designed independently, some of which he designed while in partnership with McIver and Marshall) include the Big Horn County School, the Junior High School, the Big Horn Creamery, the Methodist Episcopal Church, the Theatre, and the Morssette residence.¹²

Early design sketches for the Hardin City Water Works show that Cohagen was considering a building with architectural embellishment: one version was in a Colonial Revival style and another had stylized California Mission ornamentation. Probably because of budgetary constraints, however, Cohagen was not able to apply many architectural frills to the building and the construction drawings represent the building as it now stands, a fairly simple stuccoed building with a minimum of ornamentation.¹³ The simplified version of the water works building, along with the other additions and improvements to the Hardin water supply system went to bid in the fall of 1919 and on November 4, bids were opened. The Security Bridge Company submitted the low bid and was awarded the contract for \$89,517.50. Of this amount, \$26,000 was for the actual building; the remainder of the contract covered costs of the filtration equipment, improvements to the intake works on the Big Horn River, and other work.¹⁴

Security undertook construction of the various elements of the water works. It sub-contracted the construction of the building, however, to Hardin general contractor, Percy Wilcox. Arriving in Hardin about 1910, Wilcox soon became one of the main building contractors in town. In addition to the City Water Works building, he built the Hardin State Bank (1911), the Hardin Mercantile (1917), the Carnegie Library (1918), the Lee Block (1919), which housed the Big Horn County offices for a short time, and several residences.¹⁵

As originally built, the Hardin City Water Works building consisted of a two-story block at the corner of Fourth and Cheyenne, which housed the fire department and the city offices, and a connected one story block on an elevated base, which housed the filtration equipment, to the east. The sedimentation basin (originally called the coagulating basin) was built to

extend to the east of the filtration equipment.¹⁶ Filtration equipment was manufactured and installed by the Pittsburgh Filter and Engineering Company of Pittsburgh, Pennsylvania. Specifications for the improvements and additions to the city water supply system called for one filter. Bidders were asked to bid on a second filter as an alternate (the building was built to accommodate two filters). Due to budgetary constraints, the aldermen chose to install only one filter with the initial construction. The new building and filtration system were accepted by the city council on November 9, 1920, following a month of tests of the equipment by Prof. W. M. Cobleigh, the state chemist from Montana State College in Bozeman.¹⁷ The limited budget also had not allowed for the finishing of the office and meeting spaces on the second floor. These spaces were not finished until 1924.¹⁸

The new improvements and additions to the Hardin water supply system allowed the city to take silt-laden water from the Big Horn River, process it for storage, and supply clear, pure water for domestic consumption of Hardin's citizens and other uses. River water was pumped into a mixing chamber at the southwest corner of the sedimentation basin where alum was added. This helped cause the sediment to settle out of the water as it passed slowly through the sedimentation basin, a large horseshoe-shaped chamber which was (and is) cleaned of sediment once a year. After passing through the sedimentation basin, the water was pumped into a tank above each filter, through which it passed by means of gravity into a clear well. From the clear well, water was pumped to the city water tank. Fred Noll of the Pittsburgh Filter and Engineering Company claimed, upon completion of the installation of the equipment, that Hardin's system "is of the very latest design and is the most efficient filtration plant to be found anywhere in the world."¹⁹ Although this claim undoubtedly reflects a bit of bravado on the part of the manufacturer, technical journals from the period indicate that Hardin's system was indeed the state-of-the-art for the period.²⁰ Hardin's improvements also came at a time when other small Montana cities, such as Glendive and Three Forks, were improving their water systems.²¹

The City Water Works building has sustained few alterations since its original construction. Eventually, the second filter was installed. The only major alterations to the building came in 1955 and 1978, and both of these involved the water supply system. In 1955, the city of Hardin built an addition to house number 3 and 4 filters on the north side of the one-story filtration equipment block. At the same time, the city added to the plant another sedimentation basin which extends to the north of the original basin. Both sedimentation basins are covered with sod. In 1978, the city replaced most of the original pumps, valves, and piping in the plant. At that time the city also installed equipment for mixing polymer to the river water, in addition to the alum, and built the small enclosure around the mixing equipment over the mixing chamber. That same year, the city took the old boiler, which had heated the building, out of service and installed a new forced-air furnace into a space which was enclosed over the main stairs.²²

The two-story portion of the building is currently scheduled for demolition. It will be replaced by a new one-story building which will provide garage and shop space as well as a new meeting room for the Hardin City Council. A structural engineer who inspected the building found that the concrete foundation under the two-story block is badly deteriorated and recommended that if the building were to be rehabilitated, the foundation should be replaced (at significant cost). As an alternative, the City of Hardin has decided to demolish the two-story block and replace it. Because the federal Economic Development Administration (EDA) is providing partial funding for the project, EDA must comply with section of 106 of the National Historic Preservation Act of 1966. This HABS recording is intended to mitigate the adverse effect of demolition of a portion of a building which contributes to the Hardin Downtown Commercial Historic District (listed on the National Register of Historic Places in 1985). The one-story portion of the building, which houses the pumps and filters (both the original section and the 1955 addition) will not be demolished and will continue to function as the filtration plant for the Hardin water system. The new building will be attached to the filtration plant and has been designed to be architecturally compatible with the historic district.

PART 11. ARCHITECTURAL INFORMATION

The Hardin City Water Works building is a rectangular, two-story stuccoed structure with a flat roof and a minimum of architectural ornament. It has been well maintained over the years and, other than the deteriorated concrete foundation, is in fairly good condition.

The original portion of the building is about 56 feet wide (north-south) and about 69 feet long (east-west). It is comprised of the front two-story block, which is 56 feet by 39 feet and located at the corner of Fourth and Cheyenne, and a one-story block along the east side which is 30 feet by 46 feet and which is set back from the Fourth Street facade of the main block by 10 feet. The top of the parapet wall of the two-story block is 31 feet above the sidewalk. There is a one-story addition (1955) to the north of the original one-story section which measures about 30 feet square. Sedimentation basins, covered with sod, extend to the east (the original basin) and north (1955) of the one story block. A small enclosure (1978) measuring about 15 feet by 30 feet sits atop the west end of the original basin adjacent to the original one story block.

The entire building sits on concrete foundations. The perimeter walls of the two-story block are hollow clay tile and brick, and the walls of the original one-story story block are cast concrete. The walls of the 1955 addition are brick and the walls of the 1978 enclosure are concrete block. The exterior surfaces of the original building were stuccued at the time of construction and all subsequent additions are stuccoed (close inspection revealed that the original section of the building has received a second coat of stucco). A cant moulding of brick beneath the stucco, which creates a water table, surrounds the entire original building. The parapet walls of the original building are corbelled to produce a banded entablature effect beneath the stucco. Small brick diamond shapes are set into the frieze of the parapets around all four sides of the two-story block. There is a brick chimney at the southeast corner of the two-story block.

The two-story block has major facades facing both Cheyenne and Fourth. The three arched door openings for the fire department bays are along the west side fronting Cheyenne; the door to the main interior stairs, recessed beneath another arch, is along the south side fronting Fourth. The fire department openings have simple indented archivolt. The central of the three fire department openings now has an overhead garage door and the other two openings have double garage doors. (The top portion of an original garage door is still in place behind the plywood sheating of the tympanum of the latter two openings.) A pair of second-floor windows, each with 6/1 double-hung wood sash, is centered over each of the three fire department doors. At the south end of the west facade are two small openings: the first-floor opening is now boarded over, the second-floor opening has wood louvres. The main pedestrian opening, centrally-located on the south facade, has a simple raised archivolt and the tympanum, on the same plane as the facade, bears the raised lettering: "CITY OF HARDIN WATER WORKS, 1920". The recessed double doors are topped by a six-light transom. There are seven window openings on the symmetrical south facade: one on each side of the main entry and five on the second floor. All windows have 6/1 double-hung wood sash. Window openings on both of these facades, as well as throughout the original building, have aluminum storm sash, steel lintels, and simple rowlock sills covered with stucco.

The north elevation has garage door opening (not arched) at the east end of the two-story block. The opening has the three original doors and a transom still in place behind plywood. There are a pair of first-floor window openings at the west end of the north elevation and a single window opening at the east end of the second floor of the north elevation. The north elevation of the one-story block is now covered by the 1955 addition. On its north elevation, the addition has a single door and a single window with glass block. The east elevation of the two-story block has six window openings with 6/1 double-hung wood sash. The east elevation of the one-story block and its 1955 addition have three window openings with 6/1 double-hung wood sash. The mixing chamber enclosure is also located along the east elevation. The south elevation of the one-story block has a centrally-located door opening (not arched) with a pair of truncated doors and flanked by a small opening on each

side. These provide access to the basement. There are three symmetrically-arranged window openings on the first floor, each with 6/1 double-hung wood sash.

The original one- and two-story sections of the Hardin City Water Works building are actually in a split-level configuration. The first floor of the main two-story block is at grade and the first floor of the one-story block is approximately midway between the first and second floors. The basements of both sections are at the same level (the floor-to-ceiling height of the basement under the one-story block is greater than that of the partial basement under the two-story block). The first floor of the two-story block is divided into four bays by the 8-inch by 8-inch wood posts which support 8-inch by 10-inch beams which in turn support the 2-inch by 10-inch joists of the second floor. Two posts support each beam with one located about 12 feet from each end wall. The beams, which run east-west, are spaced about 13 feet 6 inches, and the joists, which run north-south, are on 16-inch centers. The three northern bays housed the fire department and now serve as shop and garage space for the city water department crews. A wood frame partition (not original) divides the northern-most bay from the rest. The southern bay is divided into (from east to west) an office, a vestibule for the main pedestrian entry, and a stairway to the second floor. A toilet room is located under the stairs. A small toilet room has been added near the southeast corner of the southern fire department bay. The fire department bays have a concrete floor, the original toilet room has a fir floor, and the office and the vestibule have linoleum floors. The hollow clay tile walls in the fire department bays are unfinished and the office, vestibule, and original toilet have plaster walls.

The second floor was originally built with a landing at the top of the stairs, an office in the southeast corner, and a large open room over the fire department bays for use by the City Council. A space over the stairs has been enclosed with un-taped sheetrock to house the new furnace, and another office, with plywood partitions, has been added to the southeast corner of the assembly room. The original office has a vault, manufactured by the Victor

Safe and Lock Company of Cincinnati, in its southeast corner. Floors throughout the second floor are oak and all of the original perimeter walls and partitions are finished in plaster. The partition separating the original office, landing, and stairs from the assembly room is load-bearing. The roof over the assembly room is supported by two trusses which are visible below the accoustical tile ceiling. The original office, landing, and stairs have a plaster and lathe ceiling. Window openings have simple sills and no other trim. Doors are simple five-panel units with simple bronze hardware.

The first floor of the one story block is reached by a half-flight of stairs up from the southeast corner of the fire department bay. Along the west wall of this area are (from south to north) the laboratory and filters number 1 and 2. The rest of the area is open and was designated on the original plans as the operating floor.²³ The 1955 addition houses filters number 3 and 4. The mixing chamber enclosure, which is to the east of the filters, houses equipment for adding alum and polymer to the river water prior to its passage through the sedimentation basin. The laboratory contains the necessary equipment for routine testing of water both prior to treatment and following filtering and chlorination. The laboratory partitions are lathe and plaster. All other wall finishes in this portion of the building (the perimeter walls) are exposed concrete painted high-gloss white. Other than new pipes, this area of the building is largely unchanged since its construction. The original incandescent light fixtures, with rather ornate glass globes, still hang by chains over filters number 1 and 2.

The basement of the one story block is accessed by a flight of stairs down from the southeast corner of the fire department bay. At the base of the stairs (south side of the basement) is the pump room. A Fairbanks-Morse pump, now used as a back-up, is the only significant remaining piece of original equipment, all other original equipment in the pump room having been replaced in 1978. The north side of the basement is taken up by the clear well, a large concrete chamber which holds fully-treated water prior to its being pumped to the water tower. The filters sit atop the west side of the clear well and a pipe gallery is located atop the east side. There is also a clear

well beneath the 1955 addition. The only basement areas under the two-story block are the boiler room and the coal room which are located under the stairs, vestibule, and first floor office. The area under the fire department bays is unexcavated. The original boiler is still in place, but is no longer in use.

Located at the northeast corner of Cheyenne and Fourth, the Hardin City Water Works building is one block from Hardin's main commercial street, called Center. Across Cheyenne to the west is a small concrete-block building on the corner and the new city office and garage complex to the north of the corner. Diagonally across the intersection of Cheyenne and Fourth is a vacant used car lot with a small sales booth on the corner. Across Fourth to the south is a one-story brick automotive parts shop and garage. There are no buildings nearby the water works on its own block because of the amount of ground occupied by the sedimentation basins.

PART III. SOURCES OF INFORMATION

Original Architectural Drawings

Original drawings by the firm McIver, Cohagen, and Marshall are housed at the Special Collections Library at Montana State University, Bozeman. They comprise set number 30 of the Chandler C. Cohagen Collection, collection number 2086. Besides the original construction drawings, the file contains several preliminary design sketches which indicated that Cohagen had initially contemplated a building with significantly more architectural ornamentation than that which was finally constructed.

Early Views

The earliest known early view of the building is in the Golden Anniversary Edition of the Hardin Tribune-Herald (May 16, 1957). This view shows that the garage doors were changed prior to 1957. Other than the additions at the rear of the building, little else has changed since the 1919-1920 construction.

Interviews

Larry Vandersloot, Hardin City Utilities Superintendent, August 17, 1987, interview by Fred Quivik in Hardin.

Nancy Young, Hardin City Clerk, August 17, 1987, interview by Fred Quivik in Hardin.

Primary and Unpublished Sources

Hardin City Council Minutes, Office of the City Clerk, Hardin

Secondary and Published Sources

Billings Branch of the American Association of University Women. "The Seven Arts in Billings: 1930-1940." 1941, a loose leaf notebook in the Montana Room, Billings Public Library, Billings.

Billings Gazette.

Bordeleau, Alfred F., David K. Duncan, and Philip R. Korell. "Architects Past and Present: Great Falls, Montana." unpublished materials presented to the Great Falls Public Library by the Great Falls Society of Architects, 1961.

Burlingame, Merl G. and K. Roos Toole. A History of Montana. (New York: Lewis Historical Publishing Company, 1957).

Engineering News-Record.

Great Falls Tribune.

Hardin Tribune and Hardin Tribune-Herald.

Journal of the Society of Montana Engineers.

Northwest Publishing Company's Directory of Billings. 1922, in the Montana Room, Billings Public Library, Billings.

Page-Werner and Partners, Historical Research Associates, and James R. McDonald. "Historical and Architectural Survey of a Selected Area within the Great Falls Revitalization District." 1984, on file at the State Historic Preservation Office, Montana Historical Society, Helena.

Polk's Billings City Directory. 1913-1914, 1916, 1917, 1918, 1919, in the Montana Room, Billings Public Library, Billings.

Quivik, Fredric L. "Development of the Built Environment in the Original Townsite of Hardin, Montana." 1984, on file at the State Historic Preservation Office, Montana Historical Society, Helena.

_____. Historic Bridges of Montana. (Washington, DC: The National Park Service, 1982).

_____. "Montana's Minneapolis Bridge Builders." IA: the Journal of the Society for Industrial Archeology, 10(1984): 35-54.

Sanborn Fire Insurance Map Company. "Hardin, Montana, 1910." Montana Historical Society, Helena.

Likely Sources not yet Investigated

Special Improvement District # 17, file, Office of the City Clerk, Hardin. The City Clerk maintains files on each special improvement district established by the Hardin City Council. This particular file, however, is missing. If it is ever found, it may reveal addition information concerning considerations on the part of the City of Hardin (its City Council or staff); the consulting engineer, R.M. Murray; or the architects, McIver, Cohagen, and Marshall in arriving at the design for the City Water Works building which was finally constructed.

prepared by: Fredric L. Quivik
Architectural Historian
Renewable Technologies, Inc.
September, 1987

ENDNOTES

1. For an overview of the colonization practices of the Chicago, Burlington, and Quincy Railroad, the reduction in size of the Crow Indian Reservation, and the consequent founding of Hardin, see Fredric L. Quivik, "Development of the Built Environment in the Original Townsite of Hardin, Montana," 1984, a narrative historical overview prepared as part of a National Register survey of Hardin's Original Townsite and on file at the State Historic Preservation Office, Montana Historical Society, Helena. Most of the background information on the Burlington comes from two books by Richard C. Overton: Burlington West: A Colonization History of the Burlington Railroad (Cambridge: Harvard University Press, 1941) and Burlington Route: A History of the Burlington Lines (New York: Alfred A. Knopf, 1965).
2. The plan to which the Secretary of the Interior agreed involved issuing allotments of land to deceased Indians and then allowing the families of these Indians to sell the land to bidders. Lands sold in this manner came to be known as "dead Indian allotments." To insure that it acquired the lands it wanted for its new townsite, the Lincoln Land Company submitted very high sealed bids for the "dead Indian allotments." See Quivik, "Original Townsite of Hardin," pp. 14-15.
3. Billings Gazette, May 21, 1939, reminiscences of Carl Rankin; "From Sagebrush Flat to Thriving City," Hardin Tribune-Herald, Golden Annivesary Edition, May 16, 1957, reminiscences of Carl Rankin; Sanborn Fire Insurance Map Company, "Hardin, Montana, 1910," housed at the Montana Historical Society, Helena.
4. Selection of Lillis to design the new water system is described in the Hardin City Council Minutes (at the Office of the City Clerk) for meetings of July 13, 15, and 22, 1914. Lists of bidders to construct the system and a description of the selection of the Security Bridge Company are in the Hardin City Council Minutes for meetings of September 8 and 9, 1914. A description of the new water system is in "Water Works Contract is Let," Hardin Tribune, September 11, 1914.
5. For a discussion of the work of the Security Bridge Company in the context of bridge construction in Montana, see Fredric L. Quivik, Historic Bridges in Montana (Washington, DC: National Park Service, 1982).
6. For a general discussion of the background of the Hewetts and the Security Bridge Company in the context of other Minneapolis bridge builders, see Fredric L. Quivik, "Montana's Minneapolis Bridge Builders," IA: the Journal of the Society for Industrial Archeology 10(1984): 35-54.
7. "Filtration Plant for Water System," Hardin Tribune, September 12, 1919.
8. Hardin City Council Minutes, meeting of September 5, 1919.

9. Murray is listed in the 1913-1914, 1916, 1917, 1918, 1919 Polk's Billings City Directories and in the 1922 Northwest Publishing Company's Directory of Billings, all available in the Billings Public Library. Murray is not found in any of the standard biographical sources for Montana. According to lists in the Journal of the Society of Montana Engineers, he was not a member of the Montana Society of Engineers, to which many of Montana's prominent civil engineers belonged.

10. Early Polk's Billings City Directory listings for McIver, Cohagen, and Marshall are found in the 1917, 1918, and 1919 issues. On Marshall, see "A.V. McIver, Great Falls Architect, Retires," Great Falls Tribune, February 9, 1969; Alfred F. Bordeleau, David K. Duncan, and Philip R. Korell, "Architects Past and Present: Great Falls, Montana," unpublished materials presented to the Great Falls Public Library by the Great Falls Society of Architects, 1961; Page-Werner and Partners, Historical Research Associates, and James R. McDonald, "Historical and Architectural Survey of a Selected Area within the Great Falls Revitalization District," 1984, on file at the Great Falls Public Library and the State Historic Preservation Office, Montana Historical Society, Helena.

11. Cohagen was the partner who resided in Billings and original drawings for the buildings are included in Chandler C. Cohagen collection which was donated to the Special Collections Library, Montana State University, Bozeman.

12. Merl G. Burlingame and K. Ross Toole, History of Montana, Vol. III, (New York: Lewis Historical Publishing Company, 1957) p. 14; Billings Gazette, May 8, 1962 and September 15, 1968. For photographs of several of Cohagen's major designs and a list of other major projects, see "The Seven Arts in Billings, 1930-1940," a loose leaf notebook compiled by the Billings Branch of the American Association of University Women, 1941, on file in the Montana Room, Billings Public Library. For original drawings of Cohagen's projects, see the Chandler C. Cohagen Collection, collection no. 2086, Special Collections Library, Montana State University, Bozeman.

13. See sketches in file no. 30, Chandler C. Cohagen Collection. The additions and improvements to the Hardin water supply system was designated as Special Improvement District # 17. The Office of the City Clerk maintains a fairly complete file on each Special Improvement District since the city was incorporated. Unfortunately, the file on Special Improvement District # 17, which may have included notes or correspondence concerning consideration of the more elaborate architectural treatments of the building, is lost and cannot be found by the City Clerk.

14. Hardin City Council Minutes, meeting of November 4, 1919.

15. Quivik, "Original Townsite of Hardin," pp. 32-36.

16. McIver, Cohagen, and Marshall, "Hardin Water Supply System," file no. 30, Chandler C. Cohagen Collection; "Contract Let for Filtration Plant to Security Bridge Company at \$89,517.50," Hardin Tribune, November 7, 1919.

17. Hardin City Council Minutes for November 4, 1919; "Filtration Plant Accepted by City," Hardin Tribune, November 12, 1920.
18. "Finishing of City Hall in Progress," Hardin Tribune, January 25, 1924.
19. "Filtration Plant Accepted By City."
20. "Flint Water Filter Improvements and Reconstruction," Engineering News-Record, 84(June 17, 1920): 1189-1190; "Detroit's New 350-Million Gallon Filtration Plant," Engineering News-Record, 84(June 17, 1920): 1194-1196; "Coagulation of Water with Alum by Prolonged Agitation," Engineering News-Record, 86(June 2, 1921): 924-927.
21. After a long period of difficulty providing a clear, pure supply of water for its citizens, Glendive constructed a filtration plant in 1916-1917 (see William A. Babcock, Jr., "Historic Resources of Glendive, Montana," 1987, National Register nomination on file at the State Historic Preservation Office, Montana Historical Society, Helena). Three Forks improved its water and sewer systems in 1916-1918. Security Bridge Company undertook the construction. Montana experienced drought during those years and the consequent low water left many cities with a contaminated supply. According to an article titled "Three Forks Water System Is Model For Other Towns" in the September 5, 1919, Hardin Tribune, Three Forks experienced no such problems. Furthermore, as a result of the new water system Three Forks' fire insurance rating went from the lowest to the highest. Appearing the week before the Hardin City Council approved Security's bid for the improvements and additions to the city water supply system, the article was probably published by the Tribune to encourage the City Council to proceed with the project.
22. Fred Quivik, interview with Larry Vandersloot, Utilities Superintendent, City of Hardin, August 17, 1987.
23. Note this and other designations in the original drawings: "Improvements and Additions for Water Supply System at Hardin." Inspection of the original drawings indicates that neither the one story nor the two story section of the building have undergone much change.

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Transmitted to the Library of Congress in February, 1988 by Holly K. Chamberlain, HABS historian.