

North Star Woolen Mill
St. Anthony Falls Historic District,
109 Portland Avenue South
Minneapolis
Hennepin County
Minnesota

HAER No. MN-93

HAER
MINN
27-MINAP,
24-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Midwest Support Office
Department of the Interior
1709 Jackson Street
Omaha, Nebraska 68102

HISTORIC AMERICAN ENGINEERING RECORD

NORTH STAR WOOLEN MILL

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Location: 109 Portland Avenue South, Minneapolis, Hennepin County, Minnesota

UTM: Zone 15, E 479640 N 4980500

Quad: Minneapolis South, Minnesota (1967, revised 1972)

Date of Construction: ca. 1890 (alterations, 1922, 1925, 1939)

Present Owner: Brighton Development Corporation

Present Use: Vacant

Significance: The North Star Woolen Mill is historically significant for its association with the development of the West Side Milling District in Minneapolis. Established in 1864, the North Star Woolen Mill remained in operation until its closure in 1949. It was the first water powered mill in the West Side Milling District and reflects the industrial development that occurred along the Mississippi River during the nineteenth century. Although Minneapolis never became a major textile center, the North Star Woolen Mill became a national leader in the production of fine woolen blankets. The extant mill complex was constructed between ca. 1890 – 1939. The mill is located in the St. Anthony Falls Historic District that was listed in the National Register of Historic Places in 1971.

Project: Brighton Development Corporation is proposing to convert the mill complex into 37 units of housing. The rehabilitation will result in various modifications to the complex, including demolishing the 1939 warehouse, installing balconies on the Main Factory Building and increasing the size of its original window openings. The Blanket Building's interior, which is in poor structural condition will be removed and rebuilt.

Historian: Martha H. Frey, May 1998

I. HISTORY

A. The West Side Milling District

The history of the West Side Milling District begins with St. Anthony Falls, the Mississippi River's only naturally occurring cataract. Drawn to the water power potential of the falls, Fort Snelling soldiers established the first sawmill on the west side in 1821. Two years later a government grist mill was in operation. The falls drew early settlers to the areas that were eager to utilize and control its water power capabilities. Soon privately-owned sawmills and planing mills began to develop rapidly around the falls. In 1849 the village of St. Anthony was established on the east side of the river adjacent to the falls.

Two private companies capitalized on water power at the falls. On the east side of the river, Franklin Steele, the founding father of St. Anthony, established the St. Anthony Falls Water Power Company in 1856. At roughly same time, in the newly established town of Minneapolis, the west side's water power system and half the water power rights to the river were developed by the Minneapolis Mill Company. The Minneapolis firm was established by Robert Smith and other businessmen including Dorilus Morrison. Later, C.C. and W.D. Washburn became part owners of the company. The Minneapolis Mill Company retained ownership of the land that was to become the West Side Milling District, the area loosely bounded by the Mississippi River, South Second Street, Eighth Avenue South and Fourth Avenue South.¹

Sharing the water power from the river necessitated a cooperative agreement between the two water power companies. In order to divert the water to either side of the river, a large reversed "V" shaped dam was constructed above the falls. This dam, which was constructed between 1856—58, allowed water to flow into St. Anthony's mill pond on the east side and to the west side mill pond.

While the two water power companies were created at approximately the same time, they had vastly different approaches to exploiting the falls' water power. The owners of the Minneapolis Mill Company looked to well established eastern mill towns such as Holyoke, Lawrence, and Lowell, Massachusetts, for water power models. To develop and design their water power system the company hired Charles H. Bigelow, a Lawrence engineer. The company also implemented

¹ Lucile Kane, The Falls of St. Anthony: The Waterfall That Built Minneapolis (St. Paul: Minnesota Historical Society, 1987), 9-10, 30-39 This book provides a good overview of the water power and industrial development at St. Anthony Falls in Minneapolis.

a system of leasing that ensured strict control over the development of the area into a dense industrial district. Nearly replicating a lease that had been used by the Hadley Falls Company in Holyoke, the Minneapolis Mill Company firmly regulated the use of its water power. This initial lease became the foundation for all deeds conveyed by the company. It provide a strong foothold for the company whereby water power and land must be conveyed perpetually, thus assuring the company continued control even if ownership of the land changed.

The central feature of Bigelow's design was the west side canal which roughly paralleled the Mississippi River and ran in a northwest to southeast direction (the canal is now infilled and where First Street South is located). The construction of the canal spurred the development of one of the most intricate water power systems constructed in the United States. This canal, which was originally 14 feet deep, 215 feet long and 50 feet wide, allowed water to be carried inland, thus allowing water-powered industries to be established along its length. Headraces were constructed from the canal to convey water to wheel pits. The water left the wheel pits through tailraces that led back to the river. New flour mills were rapidly constructed along the canal and a dense milling district began to develop. By 1869, there were 8 flour mills in operation on the West Side.²

The St. Anthony Water Power Company, on the east side of the river, suffered various setbacks which affected its overall performance. The company's fractured management created disputes about how the water power system should be developed. Ensuing lawsuits from outside parties over riparian rights and the lack of substantial improvements affected the company's effectiveness and retarded the development of an east side milling district.

Unlike the St. Anthony Water Power Company, the Minneapolis Mill Company undertook several strategic steps to ensure the development of a flour milling district on the west side. Beginning in the 1870s, Minneapolis Mill Company purchased and ceased operations of most of the west side sawmills to guarantee an adequate water power supply for the growing flour milling industry. Gradually the west side sawmills closed and a new sawmilling district developed upstream from the falls in North Minneapolis where larger steam-powered mills were established. Under the direction of engineer William De la Barre, the west side's water power services were improved by widening and deepening the west side canal and lowering the headraces.³

² Ibid., 42-61.

³ James Berman, ed., St. Anthony Falls Rediscovered (Minneapolis: Minneapolis Riverfront Development Coordination Board, 1980), 37-38 and Kane, 119.

In addition to the development of an extensive water power system, other factors contributed to Minneapolis becoming a major flour milling city. Technological improvements in milling, such as the change from mill stones to steel rollers, improved flour production and quality. In the 1880s, a period of consolidation occurred whereby many small mills in Minneapolis were united to form large corporations like the Washburn Crosby Company (later reorganized in 1928 as General Mills, Inc.) in the West Side Milling District. Railroad improvements, and particularly the elevated trestle established by Minneapolis Eastern to the north of the west side canal (ca. 1880), the Stone Arch Bridge (1883), and the Minneapolis Western's First Street trestle over the canal (1886) greatly enhanced access to and from the West Side Milling District. In 1889 a total of twenty-two flour mills located in the east and west side milling areas were producing 36,000 barrel of flour a day, making Minneapolis the country's leading flour manufacturing center.⁴

By the 1930s, Minneapolis had ceased to dominate flour milling as Buffalo, New York, became the country's leader in flour production. Buffalo benefited from its proximity to Canadian wheat and favorable legislation that allowed millers to import Canadian wheat duty free. This, coupled with the reduction of local wheat cultivation, changes in freight rates, and other market factors, resulted in a period of steady decline for the West Side Milling District as one by one mills closed and were demolished. During the 1950s, the Crown Roller Mill and the Washburn "A" Mill were the only mills in the area still in production. The closing of the Washburn Crosby Mill by General Mills, Inc., in 1965 signaled the end of flour milling on the west side.⁵

B. North Star Woolen Mill

The North Star Woolen Mill is an important industrial complex that is associated with the growth and development of Minneapolis's West Side Milling District. Originally constructed in 1864, the current mill complex dates from ca. 1890 – 1939 and reflects the company's consolidation and expansion. Like the adjacent flour mills, the North Star Woolen Mill utilized the area's water power and became the largest manufacturer of woolen blankets in the nation.

The woolen mill was established by the Eastman, Gibson and Company in 1864. Early owners of the company included W. W. Eastman, Paris Gibson, and John DeLaitre. The first mill building was a four-story limestone structure that measured 50' x 70' that was located at the corner

⁴ Kane, 115.

⁵ Berman, 37-38 and Kane, 172-173.

of Portland Avenue South and Second Street South in the heart of what was to become Minneapolis's West Side Milling District.⁶

Spurring the development of the West Side Milling District was the development of an impressive water power system just down river from St Anthony Falls. This water power system featured a large inland canal with a network of raceways to and from mills the were located along its length. Utilizing the water power system, early industrialist envisioned that Minneapolis would develop into a major textile center like those in the eastern part of the United States.

The North Star was the first mill to obtain water power via a raceway that extended from the south side of the canal.⁷ On April 1, 1864, the mill was deeded "one and one-half mill powers of water" and the right to construct a headrace from the Minneapolis Mill Company's canal and a tailrace to the Mississippi River.⁸ As noted in the *Grand Manufacturing Review for 1867*, "This mill was the first at the Falls operated by a power created by the fall of water through a perpendicular artificial shaft, discharging through a subterranean channel, a system which has since been adopted in a number of instances with remarkable results."⁹ Other textile industries, including a carding mill and two woolen mills, were established in the West Side Milling District by the 1860s. These mills generally met local needs until the 1870s when railroads began to transport finer quality textile products from Eastern mills, thus undermining the market for local textiles. As Eastern textiles gained favor, the local textile industry dwindled and by 1885 the only textile mill left in the West Side Milling District was the North Star Woolen Mill.¹⁰

In 1867 Alexander Tyler bought out the interests of Eastman and Delaittre and the firm became known as Gibson and Tyler. By 1869 the mill had begun to focus on producing high-quality woolen blankets. North Star blankets were sold under brand names such as the Falls of St. Anthony, Itasca, Red River, Cardinal, Royal Rose, and Mountaineer.¹¹ The firm boasted customers such as the Pullman Palace Car Company who used North Star blankets in their trains. The company's line of Jacquard

⁶ Ibid., 49.

⁸ Memorandum on Title of North Star Woolen Mill Company to its Water Power, n.d., Box P438, manuscripts collection, Minnesota Historical Society, St. Paul, Minnesota.

⁹ Minnesota Historical Society, BC8.1 .W.956, Box 159, WPA. Photocopied transcript from "Grand Manufacturing Review for 1867."

¹⁰ Berman, 49.

¹¹ Kane, 111.

blankets, that had special designs woven in them, were particularly popular.¹² Marshall Field was a major customer, and eventually owned one-fourth interest in the company.¹³

The mill was selling its goods nation-wide by the 1870s. The 1870 census for industry in the City of Minneapolis notes that the mill had the capacity for carding 800 pounds of wool per day and employed 34 men, 32 women and 4 children. Machinery and equipment in the mill included the following: 1,040 spindles, 3 sets of cards, 12 broad looms, 5 narrow looms, 4 narrow gigs (for napping), 1 broad gig, 1 cloth brush, 1 cloth shear, 1 cloth dryer, 1 wool dryer (for drying fibers or carbonizing), 2 fulling mills, 1 scouring mill, and 1 hydro extractor.¹⁴ In 1871 the main limestone mill received a 45 feet addition. By 1874 the mill had roughly 130 employees and women made up approximately two-thirds of the work force.¹⁵

In 1876 the North Star Woolen Mill received first place for its fine blankets at the Philadelphia Exposition and won other prizes at various fairs and competitions across the country.¹⁶ Although the mill was recognized for its high quality products, that same year the financially distressed mill declared bankruptcy.¹⁷ The Minneapolis Mill Company, one of the city's two water power companies, purchased the mill and hired managers to oversee its operations. One of these managers was William G. Northup.¹⁸ Northup would be an important figure in the company's history and under his leadership the company grew and prospered. He was president of the company during two major expansions of the Minneapolis mill: the 1922 Picker Building and the 1925 Main Factory Building. He also helped establish sales offices in New York and elsewhere throughout the United States.¹⁹ Northup is also attributed with designing harness boards for Jacquard looms and received a patent for this invention in 1887.²⁰ He would stay with the company for fifty years.

¹² "North Star to Close Plant This Week", *Minneapolis Tribune*, 11 December 1949.

¹³ William G. Northup, interview by Lucille Kane and conducted in the Minneapolis offices of the North Star Woolen Mill Co., Minneapolis, Minnesota, transcribed, 16 November 1949.

¹⁴ United States of American Census of Industry, 1870, City of Minneapolis.

¹⁵ Minnesota Historical Society, BC8.1 .W.956, Box 159, WPA. Photocopied transcript from *St. Paul Pioneer*, Sunday Supplement, "Minneapolis: A City of Industries," 21 June 1874.

¹⁶ Northup interview, 1.

¹⁷ Details regarding the cause of the mill's bankruptcy could not be obtained.

¹⁸ Kane, 110-111.

¹⁹ "North Star Woolen Mill Co.: 80-Year-Old Minneapolis Firm's Blanket's Known 'Round the World'", *Comm. W.*, 27 July 1943.

²⁰ United States of America Patent No. 373151, located in Box P438, manuscripts collection, Minnesota Historical Society, St. Paul, MN.

Later his son William G. Northup, Jr. joined the firm in 1905 and, like his father and eventually became president of the company. Under his leadership the Minneapolis mill continued to expand with a new Chemical Treatment Plant and warehouse. He oversaw the mill's expanded production during World War II. He invented a cloth measuring and registering device in 1923 that would attach to a loom and record the length of material as it was woven.²¹

Around 1890 the Blanket Room (a.k.a. the Blanket Building) was constructed to the north of the original building on the site of an earlier finishing room. The Blanket Room was used for weaving and finishing blankets and had a machine and tin shop at the basement (Canal Street) level. Between 1889-1891 two brick additions were made to the original limestone mill. These additions, the Dye House and Picker Building, as well as the Blanket Room substantially increased the mill's production capabilities.²²

By the 1920s, the North Star Woolen Company was the top manufacturer of woolen blankets in the country.²³ Much of the company's trade was built on the 'contract' blankets used by hotels and transportation lines such as trains, ships and later airlines. Many of the blankets for institutional use were woven on Jacquard looms and had monograms or other unique designs.

With the firm's continued growth, it was decided to replace the old limestone mill with a new building. In 1925 the original 1864 factory was replaced with the Main Factory, a steel frame building with reinforced concrete floors and brick walls. Constructed by C.F. Haglen & Sons, the 1925 building was unique in that it was built around the existing limestone factory, which was dismantled from the top as each floor of the new mill building was completed. As noted in the *Minneapolis Tribune*:

The roof and top of the new building will be completed first. Then machinery in the top story of the old or inside building will be moved up, and [sic] the fifth floor of the old building will be

²¹ United States of America Patent No. 1475649, located in Box P438, manuscripts collection, Minnesota Historical Society, St. Paul, MN.

²² Minnesota State Historic Preservation Office, North Star Woolen Mill file, Wm. D. Correll notes, 23 June 1978. The Dye House, that was located off the north façade of 1864 mill, appears to have been removed with the 1864 mill to accommodate the 1925 Main Factory Building. The 1891 Picker Building was sited roughly at the location of the 1922 Picker Building. A portion of the earlier Picker Building was utilized in the construction of the 1922 building.

²³ "Old Landmark Passing From Mill District," *Minneapolis Tribune*, 9 August 1925.

wrecked. The process will be repeated story by story until the new building reaches the ground with manufacturing almost uninterrupted.²⁴

During the construction of the Main Factory Building a portion of the Blanket Building's southern half was dismantled, including its six-story tower²⁵. At the same time boxed concrete girders were constructed over the mill's original wheel pit and the canal lining and rack support were modified.²⁶

Initially, the mill utilized local wool from Minnesota and Wisconsin. However, by the 1930s, the mill was securing imported fibers from around the world such as merino from Australia, cashmere from Tibet, mohair from Turkey and alpaca from Peru. Coarser wool was secured from South America.²⁷

The company started making non-shrink woolen products in the late 1930s using a process developed in England. The Monsanto Chemical Company created a synthetic resin formula known as "Resloom" that was used by the mill to stop shrinkage. This process, which entailed soaking the wool fiber in a solution of sulfuryl chloride, made the wool products shrink-proof and 20 – 25 percent stronger. A one-story chemical treatment plant was constructed in 1939 off the south façade of the Main Factory Building on the former site of the Anchor Flour Mill (at Sixth Avenue South and First Street). Much of the space in this new addition was dedicated to tanks for soaking the wool in the chemical solution. That same year a

²⁴ "North Star Mills Will Build 6 Story Plant, Start at Top," *Minneapolis Tribune*, 29 January 1925. Plans maintained at the Northwest Architectural Archives suggest that the steel framing for the mill was fabricated by the American Bridge Co. located in Minneapolis, Minnesota.

²⁵ A-V Collection, Album 10, Minnesota Historical Society, St. Paul, Minnesota. This album show how a portion of the Blanket Building was encompassed by the construction of the Main Factory Building then dismantled.

²⁶ The Minnesota Historical Society has an excellent photograph album (A-V Collection, Album 10) produced by J.H. Kammerdiener and the Hibbard Studio, and other loose photographs which document the construction of the Main Factory Building. Several views show modifications to the canal (head race?) lining. Appendix A has some of these photographs. The Northwest Architectural Archives, at the University of Minnesota, has original plans for this building in the C.F. Haglin & Sons, Company collection. All citations in this report regarding C.F. Halgin & Sons, Company plans refer to those maintained at the Northwest Architectural Archives. Sheet #E4 in Tube 49 shows construction details for the boxed girders that spanned the wheel pit. Sheet #18 in Tube 49 details modifications to the canal lining and rack support. See Appendix A for a complete list of the North Star Woolen Mill plans maintained at the Northwest Architectural Archives.

²⁷ Northup interview and the *North Star Story* (Minneapolis: North Star Woolen Mill Company, 1934).

three-level warehouse was constructed to the east of the chemical treatment plant.²⁸

The mill had a history of supplying woolen goods during wartime, and provided blankets to the government for the Spanish American War and the World War I. During World War II, the North Star Woolen Mill Company had multiple contracts with the armed services and supplied blankets for the Navy. Production greatly increased during wartime and all civilian production ceased. By the end of World War II the company was manufacturing five times the volume they had before the war. To meet the demand for fine woolen blankets, the company purchased two mills outside of Minnesota in the 1940s. A plant was purchased in Lima, Ohio, in 1941. Five years later, in an attempt to keep pace with the large postwar demand, the firm purchased the Wakefield Woolen Co. in Wakefield, Rhode Island. This mill, which employed 100 people, increased the company's production by 40 percent. The growth of the company was reflected over the years with in the establishment of sales offices in many cities throughout the country, including Minneapolis, Boston, New York, Chicago, Seattle, San Francisco, Atlanta, Cleveland, and Dallas.²⁹

Prompted by Minnesota's high state income tax, increased freight rates and the desire to be closer to raw materials and markets, corporate leaders decided to close the Minneapolis mill in 1949. The mills operations were consolidated at its factory in Lima, Ohio, which had been renovated to accommodate the Minneapolis mill's closure.³⁰ Since that time, the Minneapolis complex has been used for office space or housing (Blanket Building section only) and warehousing.³¹

In 1963 the North Star Woolen Mill Company's general offices and warehouses at 218-228 2nd Street South, which been occupied by the hardware and variety distributor Janney, Semple Hill & Co., was demolished.³²

²⁸"North Star Making Non-Shrink Woolen," *Minneapolis Tribune*, 11 December 1938, and "North Star Pioneers No-Shrink Woolens," ca. 1939 (*Minneapolis Tribune*?) newsclipping from Minnesota State Historic Preservation Office, North Star Woolen Mill file.

²⁹"Mill in R. I. Is Purchased by North Star," *Minneapolis Tribune*, 8 November 1946.

³⁰*Minneapolis Tribune*, 11 December 1949, and *Textile Age*, September 1943, p. 44.

³¹Berman, 49.

³²"Another Gateway Building Leaves Us," *Minneapolis Star Tribune*, 21 March 1963.

Timeline of Events - North Star Woolen Mill

- 1864 Eastman, Gibson & Co. established by W. W. Eastman and Paris Gibson; North Star Woolen Mill established; four-story limestone mill with heavy timber framing is constructed in West Side Milling District
- 1876 North Star Woolen Mill declares bankruptcy³³
- 1877 Mill purchased by Minneapolis Mill Company
- 1881 North Star Woolen Mill is incorporated; becomes the North Star Woolen Mill Company
- 1891-92 Picker House measuring 30' x 40' constructed
- 1891 Brick Dye House constructed by E. D. Fuller (24 ½' x 75')³⁴
- 1895 Brick Bleach House constructed (18' x 27')³⁵
- 1912 North Star Woolen Mill is converted from straight waterpower to hydroelectric power³⁶
- 1922 Picker Building constructed by Pike and Cook³⁷
- 1925 Main Factory Building constructed by C. F. Haglin and Sons; replaces original 1864 limestone mill
- 1929 North Star Woolen Mill has 270 employees and uses 2,000,000 pounds of wool a year³⁸
- 1930 North Star roof sign installed³⁹

³³ Kane, 110.

³⁴ Minneapolis Building Permit # A 2520.

³⁵ Minneapolis Building Permit # A 4471.

³⁶ "North Star Woolen Mill Co.: 80-Year-Old Minneapolis Firm's Blankets Known 'Round the World," *Comm. W.*, 27 July 1943.

³⁷ Minneapolis Building Permit A 15896.

³⁸ *Minneapolis Journal*, 6 January 1929.

³⁹ Minneapolis Building Permit H 11163.

- 1939 Chemical Treatment Plant (85' X 60') and warehouse constructed
- 1949 North Star Woolen Mill factory in Minneapolis ceases production; manufacturing commences at refurbished facility in Lima, Ohio; Minneapolis complex is converted into warehouse⁴⁰
- 1960 Mill purchased by John Zellie and is known as the North Star Warehouse, Inc.; complex serves as a warehouse and a portion of the Blanket Building is used as offices and apartments
- ca. 1980 (- 1998) Mill is vacant
- 1998 Mill sold to Brighton Development Corporation

⁴⁰ State Historic Preservation Office, North Star Woolen Mill file, Historic Preservation Certification Application, Part I, n.d., 12., and "North Star to Close Plant This Week: Blanket Firm Ends 85 Years in City," *Minneapolis Tribune*, 11 December 1949.

II. Architectural Description

The North Star Woolen Mill is located at the corner of First Street South and Portland Avenue South in the St. Anthony Falls Historic District. The mill complex is composed of four connected buildings: the Blanket Building (ca. 1890), the Main Factory Building (1925), the Picker Building (1922) and a warehouse (1939).

General Condition: The mill has been vacant for over 10 years. Most features and nearly all machinery related to the production of woolen goods have been removed from the complex. It is apparent that transients have been living in sections of the building for years, primarily on the second and third floors of the Blanket Building. The mill no longer has a functioning heat plant or plumbing. Until recently, the building had no electricity. A portion of the Main Factory Building's stair tower and a recently constructed sales office on the third floor have been rewired to allow potential housing purchasers to view the building. This sales office also has electric heat.

It appears that little preventative maintenance has been done to the building in recent years. All sections of the complex have leaking roofs; water and/or signs of water damage are present on most floors. Recently, the Blanket Building's roof collapsed.

The following is a description of each part of the mill complex.

Blanket Building

The Blanket Building is the oldest section of the mill (ca. 1890). Originally a one-story building with a six-story tower at its southwest corner, the building was enlarged between 1892 and 1904 with the addition of two stories that referenced the original building's architectural features. Later, a portion of the southern half of the building, including its six-story tower, was demolished in 1925 to accommodate the construction of the Main Factory Building to the south.

Historic Use: The Blanket Building was used for carding and spinning wool and weaving and finishing woolen blankets. No documentation could be found that specified what each floor was used for or what type of equipment was in this section of the mill.

The Blanket Building is a three-story building with a raised basement. This flat roof building has heavy timber frame construction and common bond blond brick walls. The framing is made up of composite beams (typically eight 2" x 12" boards) and solid wooden posts. Much of this building's exterior remains intact, except for the infilling of windows and doorways (see MN-93-3, MN-93-7, MN-93-9).

The front of the building or west side, from the raised basement to the third floor, is divided into five bays with single rounded arch windows in each bay at every floor level (Photograph MN-93-3). The windows in the raised basement are all infilled with brick.

The first and second floors have their original four-over-four double-hung wood sash windows with wood sash storms. These windows retain their original limestone sills. The third floor windows have been infilled with glass block and their arches have been infilled with brick. These windows have cast concrete sills with an exposed aggregate finish.

The north side is divided into seven bays. At the raised basement level, the first and seventh bays have vehicular or loading dock entrances that have been infilled with brick. The window openings in the remaining bays have been infilled with brick and concrete block. The first and second floor windows were originally rounded arch like those on the west side. These windows have been infilled with concrete block that appears to have been installed in the late 1960s.⁴¹ The first (eastern) bay of the second floor has double wood doors that appear to be no longer operable. The third floor windows have been infilled with glass block. The second through fifth bays have a lower single light sash surmounted by glass block. The glass block appears to have been introduced in the late 1940s-50s when this floor was modified for office space.

The east facade has six window bays. Like the other facade, approximately half the rounded arch windows have been infilled with brick or concrete block. Some windows retain their four-over-four double-hung wood sash windows.

Interior: No machinery or equipment associated with the North Star Woolen Mill remains in the Blanket Building. The basement and first floors have open plans with evenly spaced braced posts (MN-93-11). The second and third floors were divided into offices in the 1940s.⁴² The second floor appears to have served as a cafeteria in the 1950s.⁴³ In more recent years these floors appear to have been used as apartments.

Condition: This building has significant structural problems. The roof has recently collapsed to the second floor. Water has damaged the wood framing, which is significantly deteriorated. Because of the severe deterioration, only the basement and first floors of the building were accessible. This building appears to have lead paint throughout. Some pipes may be wrapped in asbestos.

The exterior walls of the building are generally in good condition and do not appear to be showing stress or failure due to the collapsed roof and structural deterioration. Portions of the exterior may need tuckpointing and some brick replacement, especially at the basement level where there has been water damage or where windows or doors have been reintroduced or infilled. The northwest corner on the exterior and interior brickwork is

⁴¹ Minneapolis Building Permit A 37902.

⁴² Building permits suggest that these floors were altered in 1945-46. See Minneapolis Building Permit Cards #2 and #3 for 109-15 Portland Avenue South.

⁴³ Sanborn Fire Insurance Map, Minneapolis, Minnesota, Sheet 237, updated to 1957.

showing signs of differential settlement. These areas should be monitored and repaired as needed.

Main Factory Building

The Main Factory Building was constructed in 1925 and is currently the largest building in the complex. This six-story building was constructed around the original 1864 five-story mill by building a steel frame around the older structure. Once the frame was in place, the building was constructed from the top down and the older mill was dismantled one floor at a time.

Historic use by floor: The Main Factory Building was used for a variety of processes associated with the production of woolen goods. All floors generally had open plans originally. Since production in this section of the complex was vertically integrated from top to bottom, an overview of its historic use begins at the sixth floor where cleaned and oil wool fibers entered from the Picker Building. The sixth floor had a two-story section that was used as a dye room (MN-93-14). This floor was used for wool storage and housed elevator drive machinery (MN-93-15, MN-93-16).⁴⁴

The fifth floor was the Card Room. Here carding machines would comb the wool fibers to have them oriented in the same direction. Strands of wool fibers would come off the machines in loosely twisted strands call "roving" or "roping" that were wound onto large rolls.⁴⁵

The third and fourth floors were used as spinning rooms. Here rolls of roving were placed on spinning frames. The roving or roping were drawn through small rollers on the spinning frame and stretched and twisted into yarn. These floors had 5 to 10 horsepower engines that appear to have been used to power the spinning frames. Both floors retain their original 1" tongue and groove maple floor (MN-93-12).⁴⁶

The second floor, the Warp Room, had spoolers on the western half of the south wall. Here warp rolls were prepared and then dropped through an opening in the floor to the Weaving Room on the first floor (MN-93-18). This floor has a Permutit Room in the northeast corner with two steel tanks (MN-93-19).⁴⁷ This floor once had Dodge hangers and tracks for conveying materials.

⁴⁴ C.F. Haglin & Sons Co., Tube 49, sheet #A. 3, March 25, 1925.

⁴⁵ C.F. Haglin & Sons Co., Tube 49, sheet #A.10, May 15, 1925.

⁴⁶ C.F. Haglin & Sons Co., Tube 49, sheets #A.6 (April 26, 1925) #A7 (ca. 1925), and #8 (Feb 11, 1925).

⁴⁷ Retired textile engineer John Goodwin of Lowell, Massachusetts, confirmed that the Permutit Room was used for water softening. This is also noted on the Sanborn Fire Insurance Maps. Permutit Room were located on the basement, first and second floors. These rooms have large tanks that appear to have held treated water that was used for scouring the wool.

The first floor, a Weaving Room, had 52 looms. In the northeast corner of this floor is a Permutit Room. The northwest corner room was once used for administrative offices.⁴⁸

The basement had a generator room on the east side of the floor, generally over the wheel pit area in the subbasement. Reinforced concrete posts in the basement were insulated with 2" cork (the cork is no longer extant). The west side of the floor had two extractors located near the west wall; the southwest corner of this floor was used as the Soap House. Dolly washers were located on this floor in pits. In the northeast corner is a Permutit Room.⁴⁹

Description: The Main Factory Building is six stories with a raised basement and subbasement (MN-93-3, MN-93-4, MN-93-5, MN-93-7, MN-93-8, MN-93-9). This reinforced concrete building has a flat roof. The southeast quad of the building appears to have a seventh floor, however, this is where the interior of the building has a two-story section that was once used as the dye room. The largest building in the complex, it has a rectangular plan and measures approximately 129' X 87'. To the north of the building and attached to it is the Blanket Building. Immediately to the east of the Blanket Building, on the Main Factory Building's north façade, is a fire escape that extends from the first to the sixth floor. An eleven-story high stair tower, which is located off the Main Factory's northwest corner, is positioned outside the Main Building's rectangle, on top of the Blanket Building. The tower contains a stairway that extends from the basement to the sixth floor which serves this building and the Blanket Building.⁵⁰ Above the sixth floor of the tower are water storage tanks that could not be accessed or documented. Sited on the flat roof of the stair tower is a large neon sign mounted on a metal frame and facing north that reads "North Star Blankets." A large star is centered between "North Star" and "Blankets." A similar neon sign is mounted on the stair tower's south façade near the roofline. Remnants of painted signs are located on the upper panels of the west and north sides (water tank level) of the tower

The exterior of the building reflects its reinforced concrete construction. The concrete encased steel frame creates a square grid pattern that is infilled with blond brick (now soiled) in a common bond pattern with most housing two factory steel sash windows (4' 10 3/8" x 5' 2", 12 lights per window) with 6" concrete sills. This building has had few exterior alterations since its construction.⁵¹ In 1939, a Chemical Treatment Plant was

⁴⁸ C. F. Haglin & Sons Co., Tube 361, sheet #A.12. May 27, 1925.

⁴⁹ C. F. Haglin & Sons Co., Sheet # A.11, May 25, 1925; also Typical Floor plan from Roll 49 – title block is partially missing—no sheet number or date.

⁵⁰ When the reinforced concrete stairtower and Main Factory Building were constructed several bays of the Blanket Building were removed. The reinforced concrete framing for the Main Factory was extended and tied into the wood framing of the Blanket Building.

⁵¹ The northeast corner of this building appears to have been rebuilt or constructed with lighter brick. Window openings in this area have been infilled with brick. It is unknown why the brick color in this area

added off the building's south facade at the first floor level; this plant was later removed in the 1950s. When wool production ceased at the mill in 1949, some modifications were completed to facilitate its conversion to a warehouse. The south facade of the building received a freight elevator in 1953, to the east of an original bobbin elevator (also referred to as a materials lift or dumb waiter).⁵² The freight elevator covered approximately two window bays and extended from the basement to just above the building's roofline. Both the freight elevator and bobbin elevator are intact. The west side of the south facade grade level was increased approximately fifteen feet, thus covering the building's basement window well area and first floor. A concrete loading dock and freight entrance was added ca. 1953.

Interior: All floors in this building generally have an open plan (MN-93-10). A stairway is located in the northwest corner stair tower. A man lift (Humphrey Elevator) is centered roughly on the north wall and extends from the basement to the sixth floor; it is no longer operable. Centered roughly on the south wall is a freight elevator and bobbin elevator. The freight elevator extends from the basement to the sixth floor. Its construction covered two window bays.

The bobbin elevator shaft extends from the second to the sixth floor and is of wood frame construction.

Neither the freight or bobbin elevators appear to be operable. Some floors have small newer rooms that have been built within the last 30 years; none appears to have any historic significance. The interior does reflect typical mill construction of the period with rows of built-up, riveted steel H-Beam posts encased in concrete. All floors are constructed of reinforced concrete; the third and fourth floors have original 1" maple tongue and groove wood flooring. Excluding what appear to be jackspool and bobbin box conveyors in the bobbin elevator, no machinery or equipment remains in the building that was associated with its use as a woolen mill.⁵³

Condition: This building is in very good structural condition. The exterior and interior needs some brick replacement and tuckpointing. The interior has some spalling concrete

differs from the rest of the building. The lower section of this corner of the building, from the basement to the second floor, is patched with cement and brick. This area may have required repairs after tanks associated with the Permutit Rooms were installed or replaced, however, the exact nature for the repairs is unknown.

⁵² This shaft appears to have been used as a bobbin elevator. In a letter to W.G. Northup, Jr., from C. F. Halgin & Sons dated January 14, 1926, a summary of costs for various things done for the year ending December 31, 1925, is provided. An "outside bobbin elevator shaft" is noted in the letter as costing \$750.41.

⁵³ The bobbin elevator was not accessible during the beginning of the documentation project due to inoperable doors. However, contractors were able to open the doors and it was discovered that the bobbin elevator housed two conveyors. These conveyors, which extend from the second to the sixth floor of the mill, are supported by a metal frame constructed of riveted angles and channels (see MN-93-26 and MN-93-27). The conveyors appear to have been used to transport jackspools or bobbin boxes from floor to floor.

and exposed rebar, particularly where machinery and switches or hangers for tracks have been removed. Some sections of wood flooring are heaving due to water damage from the building's leaking roof.

The Picker Building

Historic Use: The Picker Building, which adjoins the Main Factory Building to the east, was used for sorting, dusting and cleaning wool. The first stage in preparing wool for production was sorting. The fleece, or complete shearing from one sheep, was inspected for imperfections and sorted by quality and intended use. Once sorted the wool was fan dusted to aerated and separate the wool fibers in preparation for washing. Washing or "scouring" the wool fibers removed impurities and the "wool grease" that was naturally present in the fleece. The wool was washed with soap, soda ash and water in a scouring train that raked the fleeces through a series of tanks or bowls.⁵⁴ The mill also used a carbonized cleaning process to remove other impurities such as vegetable matter from the fleece. After cleaning, the wool was dyed using steam pressured vats and oiled with imported olive oil. Oiling the wool was necessary to prevent breakage and prepare it for carding.

The seven-story Picker Building replaced an earlier picker house constructed in 1889 at the same location. The present building was constructed by Pike and Cook in 1922 and has a roughly rectangular plan and a flat roof. This building appears to have a partial basement that was not accessible and could not be documented. The building is a reinforced concrete structure faced with a common bond blond brick. Measuring roughly 95' x 44', the building has three fully visible façades. The south façade, which adjoins the warehouse, has four window bays. A portion of the 1889 picker house's south façade was utilized in the construction of the building. This older wall section is recognized by the segmental arch windows and the iron star tie plates. The remaining window openings are rectangular; most of the windows in this façade have been infilled with brick or glass block.⁵⁵

The east facade has six evenly-spaced window bays with one window opening per bay at each floor. Most of the window openings have been infilled with brick, glass block or plywood. Some of the windows retain their original steel factory sash windows (16 lights per window). At the first floor level the fourth window bay has been modified with what appears to have been a large opening (probably a loading dock or entrance) that is infilled

⁵⁴ The Picker Building appears to have had a four bowl scouring train. The first bowl, where wool initially entered the train, contained a bath of warm water, soap suds, and soda ash (used to emulsify the wool grease). The second bowl contained warm water and rich soap. The third bowl was used for rinsing and contained only warm water. The last bowl had cold water as a finish rinse. Appendix A has a historic view of the scouring train in the mill.

⁵⁵ It appears that two different colored bricks were used to construct this façade or a portion of the façade was rebuilt (see MN-93-5).

with brick. The northeast corner of this façade, at the sixth window bay, has no windows at the first and second floor level. The first floor level has been patched with brick and may have served as a vehicle entrance or loading dock. A rectangular opening at the second floor level has been boarded.

The north side has two window bays. These window bays have large rectangular openings that may have contained two or three factory sash windows. These openings have been infilled with brick or glass block; some infilled openings have small inset factory sash windows.

A portion of the west side, which is partially obscured by the warehouse, is visible above the third floor level. This side has two window bays. The original rectangular window openings are now infilled with glass block and brick.

Interior: The interior of the building retains none of its original machinery. All floors have an open plan with a single row of reinforced concrete columns. Many of the columns appear to have been damaged when equipment was removed or from water and ice damage. The west side of the building has a freight elevator that extends from the first to the seventh floor. Abutting the freight elevator to the north, at each floor level, are enclosed stairways.⁵⁶ In the northwest corner there is a large metal duct and an interior flue that extends from the first to the seventh floor. The flue is obscured by brick or fire tile walls.

Condition: This building is in good structural condition, however, water and equipment removal have damaged the reinforced columns, ceilings and brick walls. There are several small holes in the brick walls that will need to be patched and the leaking roof will need to be repaired or replaced. The exterior walls will require some brick replacement and tuck-pointing. The exterior walls should be cleaned.

Warehouse

In 1938-39 a Chemical Treatment Plant and warehouse were constructed off the south facade of the 1925 Main Factory Building. A one-story Chemical Treatment Plant, which measured 85' x 60', appears to have been demolished in the 1950s. This area was infilled and used as a loading dock and parking area. To the east of the Chemical Treatment Plant's site and is a warehouse. This brick building has a roughly rectangular footprint measuring 73' x 88' and has three levels. A grade change at the west and south facades gives the appearance of a one-story building (the east side of this building shows all three levels).

⁵⁶ The stairways in this building are enclosed from floor to floor, not a continuous stairway in a stairwell. This appears to have been done for fire prevention.

The warehouse's west façade, that faces a parking and loading area, has four overhead doors. At the far right hand side of this façade is a covered loading platform that is perpendicular to the building and extends out approximately 50 feet to the west. This loading platform once paralleled railroad tracks that extended along the building's south side (now Second Street South). In ca. 1955 the loading platform was lengthened and covered with a metal roof.

The south side of the building has a single overhead garage door center on the facade. The threshold for the door is approximately 3 feet above grade and appears to have been used for railroad car deliveries. The remainder of the façade is blank.

The east façade is blank excluding two evenly-spaced factory sash windows at the first floor level.

Interior: The warehouse has an open plan with three rows of I beam posts at each level. No equipment or machinery associated with the woolen mill remains in the warehouse. Condition: The warehouse appears to be in good condition with some minor water damage in the interior due to the leaking roof.